

Quantitative vs. Fundamental Institutional Money Managers: An Empirical Analysis

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Executive Summary

The performance of quantitative money managers in the recent market and economic downturn has come under severe criticism.¹ This criticism has focused on three points: (a) the quant space is too "crowded" because everyone employs more or less the same alpha factors (value, momentum, quality, etc.), (b) quantitative managers rely too much on similar historical data and statistical methodologies to identify new sources of alpha which therefore tend also to be similar, and (c) as a result, their excess returns have become highly correlated and have been arbitrated away.

This criticism raises three important research questions:

- a) Is there more crowding among quantitative managers compared to fundamental managers?
- b) Has the active return-to-active risk ratio (information ratio) of quantitative managers declined over time relative to fundamental managers?
- c) How different are the style exposures and portfolio characteristics of quantitative and fundamental managers?

We use data from *eVestment Alliance* to address these research questions and focus only on long only institutional managers. *eVestment Alliance* collects monthly data about performance and portfolio characteristics on active money managers who self-report the data. It classifies managers as quantitative or fundamental and by investment style. In determining style classifications, *eVestment* relies both on self-reporting and its own analysis. The quantitative vs. fundamental distinction, however, is based solely on self-reporting. The database was launched in mid-2000 but data is available as far back as the early 1980s. The database is widely used in manager search and performance measurement by consultants and institutional investors. There is no survivorship bias in the database after 2000 but there is a back-filling bias (managers might back-fill historical data once they start reporting) and a self-reporting bias. There is no reason, however, to believe that these biases affect the data collected for quantitative and fundamental managers differently. Thus, the relative performance between quantitative and fundamental managers is likely to be bias free. Given the various data issues, for this study, we focus on the 1995-2009 time-period although the key results focus on the 2001-2009 time-period, which is likely to be the least problematic.

¹ See Petroff and Center (2009) "What are you really getting? A philosophical and practical reexamination of single market (domestic) quantitative strategies" of WURTS & Associates and Scott Patterson (2010): "The Quants: How a new breed of math whizzes conquered Wall Street and nearly destroyed it."

The study focuses on the U.S. large cap space (value, core, growth, and enhanced index (against S&P 500 and Russell 1000)) and EAFE (value, core, and growth). We pay particular attention to value-weighted performance results, which are representative of the performance of large (by assets under management) money managers, which in turn is more reflective of institutional investor experience. Our main findings are as follows:

- 1) The evidence is inconsistent with the crowding argument:
 - a) Quantitative assets under management (AUM) as a percent of total assets under management in the U.S. large cap space (as defined above) have remained stable over the last ten years at around 16%. The number of quantitative firms as a percentage of all firms (quantitative plus fundamental) has also remained stable at around 29%. There is no evidence that there was a huge increase in assets managed by quantitative managers in U.S. (See Table 1). In EAFE, the AUM doubled from 12.4% in December 2000 to 26.6% in September 2009. However, this increase is likely due to many U.S. quantitative managers launching EAFE strategies at a later date. In any event, concerns about crowding in the quantitative space is mostly directed at U.S. strategies not EAFE strategies.
 - b) Average pair-wise correlations in the monthly excess returns (in excess of appropriate benchmarks) of quantitative managers are low and similar to that of the fundamental managers. Moreover, there is no evidence these correlations increased more than that of the fundamental managers during the crucial 2007-2009 time-period (See Table 10).
 - c) There is as much dispersion in the alphas of quant managers as there is among the alphas of fundamental managers both during the 2001-2009 time-period and the more recent 2007-2009 time-period (See Table 11).
- 2) Performance findings based on short time periods (and the resulting high standard errors) have to be interpreted with caution. Nevertheless, we find performance differences between quantitative and fundamental managers depend on the time-period and the investment style:
 - a) There are no noticeable differences in performance between quantitative and fundamental managers in the value space (See Table 2). The evidence, if anything suggests that larger (based on assets under management) quantitative value managers achieved higher information ratios than larger fundamental managers during the 2001-2009 time period as well as during the 2007-2009 time period (value-weighted (VW) results are representative of large manager performance and equal-weighted (EW) results are representative of small manager performance). The differences, however, are unlikely to be statistically significant.
 - b) In the core, growth, and enhanced index spaces, quantitative managers experienced difficulties in the 2007-2009 time-period primarily due to their poor performance in 2009 (Tables 3 to 5). These difficulties are due to their somewhat more positive exposure to momentum (see point 3 below) and the extreme negative performance of the momentum factor in 2009 (-83% for the simple price

momentum factor which is the worst in its history).² Quantitative managers in the EAFE space also experienced difficulties in 2009 although they had better performance during the longer 2001-2009 time period (Table 6).

- 3) The style exposures based on a four-factor model consisting of market, size, value, and momentum factors (all from Ken French's website) indicate that there are some small differences between quantitative and fundamental managers in their exposure to momentum. Quantitative managers tend to buy somewhat higher momentum stocks than the fundamental managers. However, in a year with such large negative realization for the momentum factor, even small differences can translate to substantial differences in performance (see Table 7 for style exposures and Table 8 for the style factor returns from 2000 to 2009). In evaluating how quantitative managers in the core, growth, and enhanced index spaces would perform in the future, we have to consider the fact that the chances of similar extreme negative performance for the momentum factor in the near future are likely remote. There is also very little difference in the portfolio characteristics (P/E, P/B, dividend yield, etc.) of quantitative and fundamental managers within each investment style (See Table 9). Differences across style are more significant than differences within style between fundamental and quantitative managers.

A minimalist interpretation of our findings is that not all quantitative managers are the same. There is as much heterogeneity among quantitative managers as there is among fundamental managers. Among the institutional long only managers that we study there are clear differences in the performance of quantitative managers depending on the time period and the investment style. More broadly, there are quantitative managers with investment horizons ranging from a few seconds to a few months and there are long-term, buy-and-hold quantitative managers who have investment horizons of up to three years.³ It is erroneous to group them all together.

²Factor data from Ken French's website: see http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

³ For a popular perspective on high-frequency quants "who typically hold stocks for 11 seconds" see May 16, 2010 New York Time article by reporter Julie Creswell titled "Speedy New Traders Make Waves Far From Wall St."

Table 1
Institutional U.S. Large Cap and EAFE Money Managers: Assets Under Management

This table presents summary statistics on the assets under management (AUM) and the numbers of firms in the U.S. large-cap core, value, growth, and Enhanced index (against S&P 500 and Russell 1000) and MSCI EAFE (value, growth, core who use EAFE as the benchmark) styles. Each year from the end of 2000 to September of 2009 all quantitative and fundamental firms in the U.S. large-cap universe with AUM available in the *eVest Alliance* database are used in the analysis. The total number of firms with monthly portfolio returns available for each of the time-periods can be higher than the number of firms listed in the table because (a) we exclude firms with AUM less than \$10 million in computing the statistics in this table and (b) not all firms with available returns may report statistics on AUM and other portfolio characteristics. *eVest* also reports another category referred to as *combined* implying that they use a combination of quantitative and fundamental approaches. They are excluded from this table and all subsequent analysis. As of September 2009, the total AUM reported as combined in the U.S. large cap space is about \$227 billion.

Date	\$AUM in billions		# of firms		Quant AUM as % Total AUM		# Quant firms as % Total Firms	
	Fundamental	Quantitative	Fundamental	Quantitative				
<u>All Large Cap</u>								
Dec 2000	\$850	\$148	146	55	14.8%		27.4%	
Dec 2001	\$1,196	\$165	223	97	12.1%		30.3%	
Dec 2002	\$1,032	\$168	279	113	14.0%		28.8%	
Dec 2003	\$1,530	\$264	339	145	14.7%		30.0%	
Dec 2004	\$1,756	\$344	383	163	16.4%		29.9%	
Dec 2005	\$2,357	\$438	443	173	15.7%		28.1%	
Dec 2006	\$2,698	\$520	486	186	16.2%		27.7%	
Dec 2007	\$2,635	\$550	490	205	17.3%		29.5%	
Dec 2008	\$1,361	\$283	447	191	17.2%		29.9%	
Sep 2009	\$1,599	\$321	431	172	16.7%		28.5%	
<u>Large Cap Value</u>								
Dec 2000	\$278	\$19	51	17	6.5%		25.0%	
Dec 2001	\$484	\$24	82	28	4.8%		25.5%	
Dec 2002	\$432	\$23	104	31	5.0%		23.0%	
Dec 2003	\$688	\$43	121	40	5.9%		24.8%	
Dec 2004	\$818	\$58	133	45	6.6%		25.3%	
Dec 2005	\$1,044	\$69	157	45	6.2%		22.3%	
Dec 2006	\$1,237	\$86	173	49	6.5%		22.1%	
Dec 2007	\$1,182	\$90	176	54	7.1%		23.5%	
Dec 2008	\$645	\$53	160	49	7.6%		23.4%	
Sep 2009	\$710	\$65	156	46	8.4%		22.8%	
<u>Large Cap Core</u>								
Dec 2000	\$108	\$18	23	10	14.4%		30.3%	
Dec 2001	\$191	\$44	43	26	18.7%		37.7%	
Dec 2002	\$166	\$45	48	33	21.5%		40.7%	
Dec 2003	\$246	\$67	68	41	21.4%		37.6%	
Dec 2004	\$267	\$81	79	47	23.2%		37.3%	
Dec 2005	\$453	\$103	95	51	18.5%		34.9%	
Dec 2006	\$539	\$113	117	53	17.4%		31.2%	
Dec 2007	\$511	\$130	115	58	20.3%		33.5%	
Dec 2008	\$220	\$69	107	54	23.9%		33.5%	
Sep 2009	\$234	\$78	102	45	25.1%		30.6%	

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Table 1 continued

Date	SAUM in millions		# of firms		Quant AUM as % Total AUM	# Quant firms as % # Total Firms
	Fundamental	Quantitative	Fundamental	Quantitative		
<u>Large Cap Growth</u>						
Dec 2000	\$438	\$21	69	11	4.6%	13.8%
Dec 2001	\$470	\$13	90	20	2.7%	18.2%
Dec 2002	\$401	\$11	117	20	2.7%	14.6%
Dec 2003	\$556	\$20	137	27	3.5%	16.5%
Dec 2004	\$606	\$29	159	33	4.6%	17.2%
Dec 2005	\$786	\$45	178	33	5.4%	15.6%
Dec 2006	\$880	\$55	182	39	5.9%	17.6%
Dec 2007	\$895	\$63	184	47	6.6%	20.3%
Dec 2008	\$468	\$36	169	45	7.1%	21.0%
Sep 2009	\$617	\$38	163	36	5.9%	18.1%
<u>Enhanced Index</u>						
Dec 2000	\$26	\$89	3	17	77.6%	85.0%
Dec 2001	\$51	\$84	8	23	62.3%	74.2%
Dec 2002	\$33	\$88	10	29	72.5%	74.4%
Dec 2003	\$40	\$134	13	37	77.2%	74.0%
Dec 2004	\$65	\$177	12	38	73.2%	76.0%
Dec 2005	\$73	\$221	13	44	75.1%	77.2%
Dec 2006	\$41	\$267	14	45	86.6%	76.3%
Dec 2007	\$46	\$266	15	46	85.2%	75.4%
Dec 2008	\$28	\$125	11	43	81.5%	79.6%
Sep 2009	\$37	\$139	10	45	78.8%	81.8%
<u>EAFE</u>						
Dec 2000	\$253	\$36	45	10	12.4%	18.2%
Dec 2001	\$391	\$74	66	15	16.0%	18.5%
Dec 2002	\$322	\$64	81	22	16.6%	21.4%
Dec 2003	\$456	\$102	98	24	18.4%	19.7%
Dec 2004	\$620	\$167	106	28	21.3%	20.9%
Dec 2005	\$748	\$212	111	31	22.1%	21.8%
Dec 2006	\$957	\$294	119	37	23.5%	23.7%
Dec 2007	\$1,029	\$356	118	39	25.7%	24.8%
Dec 2008	\$526	\$187	116	32	26.2%	21.6%
Sep 2009	\$642	\$232	113	37	26.6%	24.7%

Table 2
Performance of Institutional Large Cap Value Money Managers

This table computes the annual excess returns (with respect to Russell 1000 Value index) of an equal-weighted portfolio of fundamental and quantitative value money managers each year from 1995 to 2009. The returns for 2009 are 9-month returns ending in September 2009. Each year's portfolio excess return is an equal-weighted average of the annual excess returns of individual firms. If an individual firm has multiple products under the same style, the firm's return is an equal-weighted average of all the product returns. When each product has multiple return series (separate account composite, erisa, non-erisa, net fee accounts), all return series are averaged (equal-weight) at the monthly frequency except the net fee accounts. The monthly returns for each product are compounded to compute annual product returns. The time-series average excess return (alpha) is computed as the geometric average of raw annual portfolio returns less the geometric average of annual R1000 value returns. The tracking error is the standard deviation of annual excess returns. The annual excess return of each firm is computed by subtracting the compounded monthly returns of the Russell 1000 value index from the compounded raw returns of the firm. The number of firms is the number of firms with available 12 monthly returns each year. IR is the information ratio computed as the ratio of average excess returns and the tracking error and is a measure of the reward-to-risk ratio. EW refers to equal weighting of returns of firms and VW refers to value weighting by beginning-of-year assets under management (AUM). Since AUM is only sparsely available for quantitative managers before 2000, value weighted portfolio returns are reported only starting 2001. Top 25%, Next 25% and Bottom 50% refer to portfolios of firms by assets under management. These portfolios are formed bases on AUM at the beginning of the year. The portfolios are equal-weighted.

Panel A: Fundamental Managers								
Year	EW Portfolio excess returns	VW Portfolio excess returns	Top 25%	Next 25%	Bottom 25%	# of Firms	Median	R1000V
			by AUM EW ex.ret.	by AUM EW ex.ret.	by AUM EW ex.ret.			
1995	-2.77					81	-2.79	38.35
1996	1.81					89	2.02	21.63
1997	-4.60					98	-4.61	35.18
1998	-1.22					103	-1.91	15.62
1999	1.17					111	-0.40	7.35
2000	6.82					120	6.08	7.02
2001	7.29	4.51	4.24	6.71	9.48	143	6.82	-5.59
2002	-0.61	-2.00	-2.53	-1.51	-1.38	155	-0.58	-15.52
2003	1.70	2.60	2.59	1.75	1.68	166	1.36	30.03
2004	-1.57	-1.35	-1.51	-1.31	-2.22	177	-1.66	16.49
2005	0.12	0.62	-0.31	1.04	-0.53	183	0.16	7.04
2006	-3.59	-4.27	-3.97	-2.85	-3.70	196	-3.82	22.21
2007	3.43	1.83	1.62	2.25	4.18	199	4.02	-0.17
2008	1.50	-2.21	-1.00	-0.48	2.75	193	1.75	-36.85
2009	6.30	6.80	7.14	5.83	6.14	183	4.50	14.84
1995-2009								
Alpha	1.26						1.15	8.77
Trk.error	3.69						6.36	
IR	0.34							
2001-2009								
Alpha	1.74	0.48	0.52	1.20	2.03		1.35	
Trk.error	3.57	3.56	3.53	3.28	4.28		5.88	
IR	0.49	0.13	0.15	0.37	0.47			
2007-2009								
Alpha	3.65	1.31	1.98	2.10	4.50		3.50	
Trk.error	2.42	4.51	4.16	3.17	1.70		6.39	
IR	1.51	0.29	0.48	0.66	2.64			

Table 2 continued on the next page...

Table 2 continued...

Panel B: Quantitative Managers								
Year	EW Portfolio excess returns	VW Portfolio excess returns	Top 25%	Next 25%	Bottom 25%	# of Firms	Median	R1000V
			by AUM - EW port. ex.ret.	by AUM - EW port. ex.ret.	by AUM - EW port. ex.ret.			
1995	-1.15					17	-0.90	38.35
1996	1.82					22	1.73	21.63
1997	-0.30					24	-0.67	35.18
1998	2.61					26	1.99	15.62
1999	1.43					28	0.60	7.35
2000	0.61					32	2.10	7.02
2001	2.77	5.89	6.90	1.12	2.36	39	3.18	-5.59
2002	0.01	0.55	1.09	-1.97	0.84	41	-0.10	-15.52
2003	0.36	1.78	0.94	0.64	1.52	49	0.33	30.03
2004	-0.33	0.18	0.35	-1.66	-0.66	56	-0.34	16.49
2005	2.31	2.39	1.22	2.50	1.75	62	1.61	7.04
2006	-2.17	-2.25	-3.75	-3.04	-2.57	64	-2.25	22.21
2007	3.60	1.92	2.82	4.21	3.72	67	3.02	-0.17
2008	0.87	0.23	0.50	0.28	1.15	65	0.98	-36.85
2009	0.93	1.79	1.28	3.50	-2.22	63	0.13	14.84
1995-2009								
Alpha	1.00						0.71	8.77
Trk.error	1.57						4.69	
IR	0.64							
2001-2009								
Alpha	1.05	1.45	1.41	0.61	0.82		0.71	
Trk.error	1.76	2.20	2.76	2.51	2.09		3.93	
IR	0.59	0.66	0.51	0.24	0.39			
2007-2009								
Alpha	1.87	1.24	1.53	2.48	1.14		1.39	
Trk.error	1.56	0.94	1.18	2.09	2.98		4.14	
IR	1.20	1.33	1.29	1.19	0.38			

Table 3
Performance of Institutional Large Cap Core Money Managers

This table computes the annual excess returns (with respect to Russell 1000 Core index) of an equal-weighted portfolio of fundamental and quantitative core money managers each year from 1995 to 2009. The returns for 2009 are 9-month returns ending in September 2009. Each year's portfolio excess return is an equal-weighted average of the annual excess returns of individual firms. If an individual firm has multiple products under the same style, the firm's return is an equal-weighted average of all the product returns. When each product has multiple return series (separate account composite, erisa, non-erisa, net fee accounts), all return series are averaged (equal-weight) at the monthly frequency except the net fee accounts. The monthly returns for each product are compounded to compute annual product returns. The time-series average excess return (alpha) is computed as the geometric average of raw annual portfolio returns less the geometric average of annual R1000 returns. The annual excess return of each firm is computed by subtracting the compounded monthly returns of the Russell 1000 core index from the compounded raw returns of the firm. The cross-sectional volatility is the cross-sectional standard deviation of excess returns across firms. The number of firms is the number of firms with available 12 monthly returns each year. IR is the information ratio computed as the ratio of average excess returns and the tracking error and is a measure of the reward-to-risk ratio. EW refers to equal weighting of returns of firms and VW refers to value weighting by beginning-of-year assets under management (AUM). Since AUM is only sparsely available for quantitative managers before 2000, value weighted portfolio returns are reported only starting 2001. Top 25%, Next 25% and Bottom 50% refer to portfolios of firms by assets under management. These portfolios are formed bases on AUM at the beginning of the year. The portfolios are equal-weighted.

Panel A: Fundamental Managers								
Year	EW Portfolio excess returns	VW Portfolio excess returns	Top 25%	Next 25%	Bottom 25%	# of Firms	Median	R1000
			by AUM EW ex.ret.	by AUM EW ex.ret.	by AUM EW ex.ret.			
1995	-3.85					53	-4.59	37.77
1996	1.28					59	0.78	22.45
1997	-1.28					61	-1.48	32.85
1998	-4.14					64	-4.61	27.02
1999	-1.42					70	-0.75	20.91
2000	8.94					79	7.82	-7.79
2001	7.52	5.38	4.83	4.92	7.46	93	6.80	-12.45
2002	2.39	-1.04	-1.76	-1.35	3.61	108	1.85	-21.65
2003	-0.57	-0.45	-0.32	-1.17	-0.83	116	-1.45	29.90
2004	0.75	0.49	1.79	-0.89	0.51	124	0.62	11.39
2005	1.15	1.37	1.58	-0.62	0.41	129	1.17	6.27
2006	-0.86	-1.19	-0.55	-0.91	-1.34	134	-0.69	15.46
2007	2.45	1.55	2.05	3.16	1.52	137	2.08	5.77
2008	3.51	-1.22	0.66	4.09	4.41	131	3.46	-37.60
2009	-0.09	4.51	3.91	0.79	-2.03	124	0.17	21.07
1995-2009								
Alpha	1.58						1.39	7.95
Trk.error	3.63						5.19	
IR	0.44							
2001-2009								
Alpha	2.24	0.93	1.33	1.21	2.10		1.74	
Trk.error	2.60	2.45	2.12	2.49	3.09		4.71	
IR	0.86	0.38	0.63	0.49	0.68			
2007-2009								
Alpha	2.61	1.06	2.09	3.39	2.23		2.16	
Trk.error	1.85	2.87	1.63	1.70	3.22		4.81	
IR	1.41	0.37	1.28	1.99	0.69			

Table 3 continued on the next page...

Table 3 continued...

Panel B: Quantitative Managers								
Year	EW Portfolio excess returns	VW Portfolio excess returns	Top 25%	Next 25%	Bottom 25%	# of Firms	Median	R1000
			by AUM - EW port. ex.ret.	by AUM - EW port. ex.ret.	by AUM - EW port. ex.ret.			
1995	-0.36					19	-0.80	37.77
1996	1.19					20	1.73	22.45
1997	1.68					23	2.53	32.85
1998	1.37					25	2.04	27.02
1999	5.62					31	1.42	20.91
2000	3.95					38	1.64	-7.79
2001	0.96	-0.56	-1.43	-3.11	3.25	42	1.64	-12.45
2002	2.08	1.12	1.62	0.55	2.07	50	1.79	-21.65
2003	-0.41	-0.40	-0.92	-1.08	0.03	58	-0.82	29.90
2004	2.30	0.93	0.41	2.09	1.92	64	1.89	11.39
2005	2.73	0.39	0.84	2.84	2.33	69	2.45	6.27
2006	-0.36	-0.25	0.04	-0.58	-0.29	71	0.31	15.46
2007	0.95	-1.19	-0.65	0.25	1.81	69	0.69	5.77
2008	1.90	1.70	0.98	1.71	1.14	71	0.91	-37.60
2009	-3.57	-5.21	-4.43	-3.97	-3.34	66	-3.93	21.07
1995-2009								
Alpha	1.50						1.13	7.95
Trk.error	2.11						3.73	
IR	0.71							
2001-2009								
Alpha	0.98	-0.16	-0.22	-0.02	1.21		0.71	
Trk.error	1.96	2.03	1.80	2.30	1.97		3.70	
IR	0.50	-0.08	-0.12	-0.01	0.62			
2007-2009								
Alpha	0.30	-0.95	-0.93	-0.13	0.23		-0.01	
Trk.error	2.92	3.47	2.78	2.95	2.80		4.07	
IR	0.10	-0.27	-0.33	-0.04	0.08			

Table 4
Performance of Institutional Large Cap Growth Money Managers

This table computes the annual excess returns (with respect to Russell 1000 Growth index) of an equal-weighted portfolio of fundamental and quantitative growth money managers each year from 1995 to 2009. The returns for 2009 are 9-month returns ending in September 2009. Each year's portfolio excess return is an equal-weighted average of the annual excess returns of individual firms. If an individual firm has multiple products under the same style, the firm's return is an equal-weighted average of all the product returns. When each product has multiple return series (separate account composite, erisa, non-erisa, net fee accounts), all return series are averaged (equal-weight) at the monthly frequency except the net fee accounts. The monthly returns for each product are compounded to compute annual product returns. The time-series average excess return (alpha) is computed as the geometric average of raw annual portfolio returns less the geometric average of annual R1000 growth returns. The tracking error is the standard deviation of annual excess returns. The annual excess return of each firm is computed by subtracting the compounded monthly returns of the Russell 1000 growth index from the compounded raw returns of the firm. The number of firms is the number of firms with available 12 monthly returns each year. IR is the information ratio computed as the ratio of average excess returns and the tracking error and is a measure of the reward-to-risk ratio. EW refers to equal weighting of returns of firms and VW refers to value weighting by beginning-of-year assets under management (AUM). Since AUM is only sparsely available for quantitative managers before 2000, value weighted portfolio returns are reported only starting 2001. Top 25%, Next 25% and Bottom 50% refer to portfolios of firms by assets under management. These portfolios are formed bases on AUM at the beginning of the year. The portfolios are equal-weighted.

Panel A: Fundamental Managers								
Year	EW Portfolio excess returns	VW Portfolio excess returns	Top 25%	Next 25%	Bottom 25%	# of Firms	Median	R1000G
			by AUM EW ex.ret.	by AUM EW ex.ret.	by AUM EW ex.ret.			
1995	-1.83					79	-1.61	37.19
1996	1.05					92	1.16	23.12
1997	1.72					104	1.20	30.49
1998	-5.25					127	-5.62	38.71
1999	1.40					140	-1.02	33.16
2000	18.52					161	17.62	-22.43
2001	6.04	2.04	1.88	3.39	5.50	173	5.80	-20.42
2002	5.01	1.45	2.00	3.17	5.61	184	4.67	-27.89
2003	0.16	-2.27	-0.80	-1.55	2.20	193	-0.55	29.76
2004	3.63	2.88	2.99	3.12	2.71	195	3.19	6.30
2005	2.24	2.86	2.72	0.49	2.50	201	1.81	5.27
2006	-0.13	-2.55	-2.77	0.21	0.47	207	-0.02	9.09
2007	2.46	3.01	3.89	2.29	1.27	204	1.58	11.82
2008	0.45	-1.35	-2.24	1.55	1.14	203	0.02	-38.43
2009	-1.56	1.34	2.31	-3.89	-1.94	189	-1.58	27.11
1995-2009								
Alpha	2.97						2.34	6.44
Trk.error	5.29						8.01	
IR	0.56							
2001-2009								
Alpha	2.39	0.81	0.98	1.37	2.55		1.89	
Trk.error	2.53	2.26	2.41	2.45	2.37		5.95	
IR	0.94	0.36	0.40	0.56	1.07			
2007-2009								
Alpha	0.58	0.52					0.35	
Trk.error	2.01	2.20					5.42	
IR	0.29	0.24						

Table 4 continued on the next page...

Table 4 continued...

Panel B: Quantitative Managers								
Year	EW Portfolio excess returns	VW Portfolio excess returns	Top 25%	Next 25%	Bottom 25%	# of Firms	Median	R1000G
			by AUM - EW port. ex.ret.	by AUM - EW port. ex.ret.	by AUM - EW port. ex.ret.			
1995	-0.03					9	0.16	37.19
1996	-1.35					10	-2.16	23.12
1997	2.35					14	2.54	30.49
1998	-3.51					17	-3.57	38.71
1999	5.07					22	1.45	33.16
2000	9.99					26	8.96	-22.43
2001	1.50	-1.99	-3.63	-1.97	0.79	30	1.39	-20.42
2002	3.69	1.48	0.03	3.31	2.87	36	2.26	-27.89
2003	0.48	-0.27	-0.54	-0.69	1.84	40	1.23	29.76
2004	5.46	4.47	1.99	4.32	5.13	45	4.13	6.30
2005	3.38	2.51	2.59	2.34	2.23	50	2.15	5.27
2006	1.13	-1.80	-3.25	3.92	1.10	57	1.75	9.09
2007	0.88	-1.22	-0.56	-2.28	0.30	60	-0.53	11.82
2008	0.10	-0.17	-0.81	-0.30	0.84	57	-0.41	-38.43
2009	-5.15	-5.19	-4.27	-2.85	-6.44	54	-4.35	27.11
1995-2009								
Alpha	1.98						1.16	6.44
Trk.error	3.71						4.57	
IR	0.53							
2001-2009								
Alpha	1.49	-0.16	-1.00	0.71	1.18		1.16	
Trk.error	2.98	2.82	2.40	2.84	3.14		4.37	
IR	0.50	-0.06	-0.42	0.25	0.38			
2007-2009								
Alpha	-1.10	-1.90	-1.80	-1.65	-1.23		-1.24	
Trk.error	3.28	2.65	2.07	1.34	4.06		3.78	
IR	-0.33	-0.72	-0.87	-1.23	-0.30			

Table 5
Performance of Institutional U.S. Enhanced Index Money Managers

This table computes the annual excess returns (with respect to S&P 500 or Russell 1000 indices, 80% use the S&P 500 index) of an equal-weighted portfolio of fundamental and quantitative enhanced index money managers each year from 1995 to 2009. The returns for 2009 are 9-month returns ending in September 2009. Each year's portfolio excess return is an equal-weighted average of the annual excess returns of individual firms. If an individual firm has multiple products under the same style, the firm's return is an equal-weighted average of all the product returns. When each product has multiple return series (separate account composite, erisa, non-erisa, net fee accounts), all return series are averaged (equal-weight) at the monthly frequency except the net fee accounts. The monthly returns for each product are compounded to compute annual product returns. The time-series average excess return (alpha) is computed as the geometric average of raw annual portfolio returns less the geometric average of benchmark returns. The tracking error is the standard deviation of annual excess returns. The annual excess return of each firm is computed by subtracting the compounded monthly returns of the benchmark from the compounded raw returns of the firm. The number of firms is the number of firms with available 12 monthly returns each year. IR is the information ratio computed as the ratio of average excess returns and the tracking error and is a measure of the reward-to-risk ratio. EW refers to equal weighting of returns of firms and VW refers to value weighting by beginning-of-year assets under management (AUM). Since AUM is only sparsely available for quantitative managers before 2000, value weighted portfolio returns are reported only starting 2001. Top 25%, Next 25% and Bottom 50% refer to portfolios of firms by assets under management. These portfolios are formed bases on AUM at the beginning of the year and they are equal-weighted.

Panel A: Fundamental Managers								
Year	EW Portfolio excess returns	VW Portfolio excess returns	Top 25%	Next 25%	Bottom 25%	# of Firms	Median	S&P 500
			by AUM EW ex.ret.	by AUM EW ex.ret.	by AUM EW ex.ret.			
1995	0.19					7	-2.21	37.58
1996	2.87					8	1.06	22.96
1997	2.81					8	0.87	33.37
1998	1.51					9	1.79	28.58
1999	-0.38					11	0.28	21.03
2000	2.49					12	0.26	-8.99
2001	2.58	0.75	1.57	1.99	2.21	13	1.29	-11.93
2002	0.78	-1.39	-0.41	-1.98	1.66	15	0.76	-22.08
2003	3.30	2.04	6.27	0.59	3.85	15	1.20	28.76
2004	0.98	1.60	2.18	0.15	0.92	17	0.44	10.92
2005	0.14	0.14	0.01	-0.36	-0.32	18	-0.30	5.06
2006	0.36	-0.09	-0.82	0.38	0.32	17	0.34	15.77
2007	-0.83	-0.13	-0.63	-0.81	-1.26	17	-0.53	5.54
2008	-3.41	-0.84	-0.41	-5.25	-3.70	16	-1.17	-37.02
2009	4.55	1.92	1.79	4.43	8.04	13	3.11	19.25
1995-2009								
Alpha	0.97						-0.05	7.78
Trk.error	1.99						2.42	
IR	0.49							
2001-2009								
Alpha	0.58	0.25	0.85	-0.63	0.87		-0.05	
Trk.error	2.35	1.22	2.26	2.65	3.32		2.77	
IR	0.25	0.21	0.38	-0.24	0.26			
2007-2009								
Alpha	-0.87	0.04	0.08	-1.92	-0.24		-0.60	
Trk.error	4.06	1.43	1.34	4.84	6.20		2.57	
IR	-0.21	0.03	0.06	-0.40	-0.04			

Table 5 coninued on the next page...

Table 5 continued...

Panel B: Quantitative Managers								
Year	EW Portfolio excess returns	VW Portfolio excess returns	Top 25%	Next 25%	Bottom 25%	# of Firms	Median	R1000G
			by AUM - EW port. ex.ret.	by AUM - EW port. ex.ret.	by AUM - EW port. ex.ret.			
1995	0.63					16	0.37	37.59
1996	1.06					19	1.25	22.94
1997	0.25					24	0.30	33.36
1998	-0.61					25	0.67	28.55
1999	-1.12					28	0.35	21.04
2000	2.51					29	0.28	-9.06
2001	1.43	0.99	0.21	0.55	1.24	33	1.19	-11.95
2002	1.69	1.12	1.38	1.39	1.10	40	1.44	-22.05
2003	0.22	0.01	0.09	-0.27	0.47	46	0.13	28.90
2004	1.40	1.32	1.67	1.60	0.79	48	1.02	10.96
2005	1.65	1.68	1.57	1.87	1.83	51	1.57	5.21
2006	1.08	0.17	0.49	0.89	1.06	52	1.01	15.74
2007	-0.68	-2.20	-1.86	-0.83	-0.35	53	-0.29	5.57
2008	0.56	0.46	0.45	0.84	0.54	54	0.53	-37.12
2009	-0.98	-1.36	-1.65	-0.85	-0.76	50	-1.82	19.68
1995-2009								
Alpha	0.73						0.68	7.81
Trk.error	1.09						1.83	
IR	0.67							
2001-2009								
Alpha	0.81	0.34	0.34	0.68	0.73		0.55	
Trk.error	1.00	1.28	1.29	1.02	0.80		1.71	
IR	0.81	0.26	0.27	0.67	0.91			
2007-2009								
Alpha	-0.20	-0.84	-0.82	-0.06	-0.04		-0.24	
Trk.error	0.82	1.36	1.28	0.97	0.66		1.77	
IR	-0.24	-0.61	-0.64	-0.06	-0.06			

Table 6 continued...

Panel B: Quantitative Managers								
Year	EW Portfolio excess returns	VW Portfolio excess returns	Top 25%	Next 25%	Bottom 25%	# of Firms	Median	R1000G
			by AUM - EW port. ex.ret.	by AUM - EW port. ex.ret.	by AUM - EW port. ex.ret.			
1995	1.04					12	0.43	11.22
1996	6.15					15	4.26	6.05
1997	7.05					18	4.43	1.77
1998	-1.11					20	-1.18	19.97
1999	5.27					22	2.19	26.97
2000	3.20					26	0.42	-14.16
2001	2.26	0.77	0.43	0.77	3.12	30	1.09	-21.45
2002	3.69	2.13	1.45	4.56	5.14	33	2.62	-15.94
2003	1.93	1.93	1.12	0.85	2.06	35	1.03	38.59
2004	2.61	1.28	-0.35	2.61	1.94	37	1.69	20.25
2005	2.80	1.98	2.78	2.84	1.34	39	1.55	13.54
2006	2.67	1.82	1.70	1.38	3.21	42	1.28	26.35
2007	0.79	-1.09	-1.02	0.56	1.39	45	0.09	11.19
2008	0.34	0.25	0.57	-0.67	0.50	46	-0.05	-43.39
2009	0.03	-0.68	-0.53	-1.21	0.25	45	-0.54	28.97
1995-2009								
Alpha	2.63						1.42	4.85
Trk.error	2.28						4.65	
IR	1.15							
2001-2009								
Alpha	1.96	0.94	0.73	1.29	2.25		0.98	
Trk.error	1.24	1.20	1.21	1.80	1.53		3.96	
IR	1.58	0.78	0.61	0.72	1.47			
2007-2009								
Alpha	0.45	-0.60	-0.11	-0.55	0.78		-0.08	
Trk.error	0.39	0.68	0.82	0.91	0.60		3.91	
IR	1.17	-0.88	-0.14	-0.61	1.31			

Table 7
Style exposures of U.S. large cap institutional money managers

This table reports the factor loadings of large cap institutional money managers (equal-weighted fund of managers) based on a monthly four-factor model consisting of the three Fama-French factors: market factor (Mkt-tbill), size factor (SMB) and value factor (HML) augmented by a momentum factor. All factors are downloaded from Ken French's website. NOBS refers to number of time-series observations and Adj.Rsq. refers to adjusted R-square from the time-series regressions. The model regresses excess returns (in excess of monthly treasury bill returns) of manager portfolios on the four style factors. For comparison, we also present the style exposures of the Russell benchmarks. There are 177 monthly observations in the Jan 1995-Sep 2009 period and 105 for the Jan 2001-Sep 2009 period.

	1995-2009 time period					2001-2009 time period				
Panel A: Large Cap Value Managers										
	Mkt	Size	Value	Mom	Adj.Rsq.	Mkt	Size	Value	Mom	Adj.Rsq.
Fundamental	0.87	-0.09	0.33	-0.07	0.95	0.88	-0.04	0.26	-0.02	0.98
t-stat	(51.15)	(-4.53)	(14.76)	(-5.22)		(47.91)	(-1.53)	(11.76)	(-1.52)	
Quantitative	0.93	-0.12	0.34	-0.01	0.97	0.92	-0.04	0.29	0.03	0.98
t-stat	(66.47)	(-7.01)	(18.21)	(-0.82)		(56.19)	(-1.86)	(14.33)	(2.31)	
Quant - Fund	0.06	-0.02	0.00	0.06	0.33	0.04	0.00	0.02	0.05	0.25
t-stat	(6.16)	(-2.25)	(0.30)	(8.39)		(3.12)	(-0.19)	(1.49)	(5.39)	.
Russell 1000 Value	0.94	-0.16	0.41	-0.04	0.95	0.93	-0.11	0.37	0.00	0.97
t-stat	(52.90)	(-7.64)	(17.65)	(-2.97)		(43.10)	(-3.38)	(14.01)	(-0.29)	
Panel B: Large Cap Core Managers										
	Market	Size	Value	Mom	Adj.Rsq.	Market	Size	Value	Mom	Adj.Rsq.
Fundamental	0.91	-0.11	0.08	-0.02	0.98	0.90	-0.05	0.04	0.01	0.99
t-stat	(83.99)	(-8.39)	(5.41)	(-2.38)		(85.22)	(-3.44)	(3.04)	(0.77)	
Quantitative	0.97	-0.13	0.05	0.06	0.99	0.96	-0.05	0.03	0.07	0.99
t-stat	(98.48)	(-11.05)	(3.75)	(7.40)		(101.10)	(-3.68)	(2.24)	(9.87)	
Quant - Fund	0.07	-0.02	-0.03	0.08	0.50	0.06	0.00	-0.01	0.06	0.38
t-stat	(7.44)	(-2.08)	(-2.37)	(11.00)		(4.92)	(0.13)	(-0.92)	(7.24)	.
Russell 1000	0.98	-0.15	0.01	-0.01	0.99	0.97	-0.10	0.01	-0.01	0.99
t-stat	(151.51)	(-19.31)	(1.50)	(-2.80)		(113.89)	(-7.74)	(0.58)	(-1.43)	
Panel C: Large Cap Growth Managers										
	Market	Size	Value	Mom	Adj.Rsq.	Market	Size	Value	Mom	Adj.Rsq.
Fundamental	0.98	-0.08	-0.15	0.05	0.98	0.98	-0.01	-0.18	0.05	0.99
t-stat	(78.97)	(-5.52)	(-9.22)	(5.31)		(65.34)	(-0.62)	(-9.66)	(4.93)	
Quantitative	1.00	-0.06	-0.22	0.08	0.97	1.02	0.01	-0.24	0.08	0.99
t-stat	(68.20)	(-3.47)	(-11.45)	(6.90)		(62.17)	(0.62)	(-11.84)	(7.16)	
Quant - Fund	0.03	0.02	-0.07	0.03	0.34	0.04	0.03	-0.06	0.03	0.22
t-stat	(2.49)	(1.68)	(-5.27)	(3.48)		(3.01)	(1.48)	(-3.74)	(3.31)	.
Russell 1000 Growth	1.02	-0.17	-0.39	-0.02	0.97	1.02	-0.09	-0.39	-0.02	0.99
t-stat	(61.69)	(-8.79)	(-17.78)	(-1.58)		(50.71)	(-3.13)	(-15.62)	(-1.69)	
Panel D: Enhanced Index Managers										
	Market	Size	Value	Mom	Adj.Rsq.	Market	Size	Value	Mom	Adj.Rsq.
Fundamental	1.00	-0.18	0.07	-0.03	0.99	0.98	-0.10	0.06	-0.02	0.99
t-stat	(110.14)	(-16.20)	(5.78)	(-4.18)		(92.42)	(-6.60)	(4.41)	(-2.33)	
Quantitative	0.96	-0.17	0.06	-0.01	0.99	0.95	-0.10	0.03	0.00	0.99
t-stat	(111.11)	(-16.78)	(4.84)	(-1.40)		(94.90)	(-6.44)	(2.84)	(0.39)	
Quant - Fund	-0.03	0.00	-0.01	0.02	0.38	-0.03	0.01	-0.02	0.02	0.40
t-stat	(-5.75)	(0.16)	(-1.85)	(4.64)	.	(-3.66)	(0.67)	(-2.25)	(3.50)	.
S&P 500	0.97	-0.19	0.02	-0.02	0.99	0.96	-0.13	0.01	-0.01	0.99
t-stat	(108.22)	(-17.95)	(1.38)	(-2.83)		(84.47)	(-7.77)	(1.01)	(-1.81)	

Table 8
Style Factor Realizations: 2000-2009

This table provides annual returns of the four factors: Mkt, Size, Value, and Price Momentum from 2000-2009. The 2009 realization for price momentum is highlighted in bold to emphasize the extreme negative realization.

Year	Mkt-RF	Size (SMB)	Value (HML)	Price Mom
2000	-16.97	-1.97	41.09	15.1
2001	-15.12	18.89	18.48	4.47
2002	-22.47	3.47	10.04	25.71
2003	32.12	27.76	4.65	-24.47
2004	11.82	4.9	9.74	-0.5
2005	4.34	-2.24	8.95	15.46
2006	11.4	0.5	14.34	-7.83
2007	2.63	-8.21	-12.48	21.38
2008	-39.96	4.18	1.01	13.39
2009	31.58	7.9	-5.15	-83.36

Table 9
Institutional Manager Portfolio Characteristics

This table reports characteristics of portfolios reported by U.S. large cap and EAFE institutional money managers as of year-end (in 2009 it is as of September end). NFIRM refers to number of firms reporting more than \$10mm in assets under management (AUM) which is less than the number of firms with available returns for that year. Median AUM is the median firm's assets under management. All valuation characteristics are cross-sectional medians for the year. Wt.avg. Market cap and median Market cap refer to the size of the companies held by the money managers in their portfolios. Average is the time-series average of cross-sectional medians.

Year	NFIRM	Total AUM \$ millions	Median AUM \$ millions	Dividend Yield	Trailing P/E	Forward P/E	P/B	Wt.avg. Market cap \$ millions	Median Market cap \$ millions
Panel A: U.S. Large Cap Value Managers									
<u>Fundamental</u>									
Sep-09	156	\$710,313.4	\$940.7	2.20%	15.70	14.33	1.90	\$59,794.5	\$24,994.0
2000-2009 Average	131	\$751,886.9	\$1,350.3	2.13%	16.39	14.77	2.40	\$60,787.2	\$22,078.0
<u>Quantitative</u>									
Sep-09	46	\$65,237.6	\$378.4	2.23%	14.24	13.21	1.77	\$65,932.0	\$15,741.2
2000-2009 Average	40	\$53,064.6	\$446.6	\$0.0	\$15.3	\$13.7	\$2.2	\$72,706.1	\$16,077.3
Panel B: U.S. Large Cap Core Managers									
<u>Fundamental</u>									
Sep-09	102	\$233,892.8	\$405.1	1.74%	17.87	15.40	2.43	\$63,535.0	\$27,144.0
2000-2009 Average	80	\$293,499.9	\$819.9	1.58%	19.34	17.07	3.18	\$72,274.2	\$25,143.0
<u>Quantitative</u>									
Sep-09	45	\$78,338.1	\$670.7	2.01%	15.80	13.61	2.22	\$71,193.4	\$16,037.0
2000-2009 Average	42	\$74,854.4	\$713.2	1.74%	17.96	15.69	2.95	\$84,020.0	\$20,152.9
Panel C: U.S. Large Cap Growth Managers									
<u>Fundamental</u>									
Sep-09	163	\$617,047.7	\$598.0	1.18%	20.65	17.58	3.29	\$57,312.0	\$25,000.0
2000-2009 Average	145	\$611,810.7	\$682.3	0.93%	24.84	21.52	4.38	\$67,988.0	\$26,468.2
<u>Quantitative</u>									
Sep-09	36	\$38,354.3	\$234.9	1.51%	16.66	15.70	3.20	\$65,912.0	\$15,615.5
2000-2009 Average	31	\$33,208.5	\$266.6	1.09%	22.39	19.64	4.34	\$76,848.5	\$16,765.0
Panel D: U.S. Large Cap Enhanced Index Managers									
<u>Fundamental</u>									
Sep-09	10	\$37,386.6	\$583.6	2.00%	16.97	14.83	2.30	\$77,813.5	\$13,508.0
2000-2009 Average	11	\$44,085.1	\$1,185.5	1.86%	18.57	16.46	2.81	\$94,368.6	\$16,311.5
<u>Quantitative</u>									
Sep-09	45	\$139,323.9	\$749.6	2.08%	16.18	15.02	2.22	\$74,383.0	\$11,051.7
2000-2009 Average	37	\$159,069.3	\$773.1	1.82%	18.10	16.39	2.90	\$90,512.3	\$14,392.3
Panel E: EAFE Managers									
<u>Fundamental</u>									
Sep-09	113	\$642,024.5	\$1,871.6	2.90%	15.80	14.83	1.80	\$43,514.4	\$18,419.5
2000-2009 Average	97	\$594,325.2	\$1,609.3	2.52%	17.44	15.61	2.23	\$40,803.6	\$15,586.9
<u>Quantitative</u>									
Sep-09	37	\$232,312.7	\$1,152.0	3.25%	15.60	13.50	1.55	\$46,510.0	\$8,820.0
2000-2009 Average	28	\$172,509.1	\$1,071.1	2.77%	14.99	14.37	1.96	\$45,327.9	\$10,656.5

Table 10
**Crowding: Pair-wise correlations among institutional large-cap
and EAFE money managers**

This table computes average pair-wise correlations among monthly excess returns (with respect to appropriate Russell large cap or EAFE benchmarks) of quantitative managers and fundamental managers. The correlations are computed for two time-periods: (a) January 2000 to June 2007, (b) July 2007 to September 2009. The table also reports percent of pair-wise correlations that are positive. We require a minimum of 20 monthly excess returns for the first period and 12 monthly excess returns for the second period in order to compute pair-wise correlations.

Time-period	Quantitative		Fundamental		Between quantitative and fundamental	
	Corr	% > 0	Corr	% > 0	Corr	% > 0
<u>Large Cap Value Managers</u>						
Jan 2000-June 2007	0.17	73.0%	0.17	74.8%	0.09	63.8%
July 2007-Sep 2009	0.23	73.1%	0.22	74.7%	0.19	71.2%
<u>Large Cap Core Managers</u>						
Jan 2000-June 2007	0.21	77.0%	0.12	67.7%	0.08	63.6%
July 2007-Sep 2009	0.25	77.7%	0.15	67.1%	0.12	64.9%
<u>Large Cap Growth Managers</u>						
Jan 2000-June 2007	0.27	83.2%	0.32	84.2%	0.23	79.2%
July 2007-Sep 2009	0.13	68.5%	0.09	59.4%	0.04	53.6%
<u>Large Cap Enhanced Index Money Managers</u>						
Jan 2000-June 2007	0.20	84.0%	0.03	50.7%	0.06	63.0%
July 2007-Sep 2009	0.16	74.1%	0.07	55.8%	0.05	58.2%
<u>EAFE Money Managers</u>						
Jan 2000-June 2007	0.13	70.8%	0.12	65.9%	0.07	59.5%
July 2007-Sep 2009	0.13	68.7%	0.14	67.6%	0.06	58.0%

Table 11
Dispersion in Alphas

2001-2009								
Style	Type	0.10	0.25	Median	0.75	0.90	Range 0.90-0.10	Median Trk.error
Large cap value	Fund	-1.33	0.04	1.35	2.84	4.47	5.80	5.88
	Quant	-1.29	-0.42	0.71	1.25	3.82	5.11	3.93
Large cap core	Fund	-0.88	0.53	1.74	2.95	4.51	5.39	4.71
	Quant	-1.23	-0.16	0.71	1.84	3.08	4.31	3.70
Large cap growth	Fund	-0.86	0.46	1.89	3.24	4.98	5.84	5.95
	Quant	-0.83	-0.10	1.16	2.09	3.65	4.47	4.37
Enhanced Index	Fund	-2.22	-0.46	-0.05	1.85	2.85	5.07	2.77
	Quant	-0.41	-0.08	0.55	1.26	1.75	2.16	1.71
EAFE	Fund	-1.29	0.17	1.83	3.66	6.77	8.06	4.72
	Quant	-2.14	-0.11	0.98	3.24	4.80	6.94	3.96
2007-2009								
Style	Type	0.10	0.25	Median	0.75	0.90	Range 0.90-0.10	Median Trk.error
Large cap value	Fund	-1.26	1.33	3.50	5.65	8.04	9.30	6.39
	Quant	-1.43	0.21	1.39	2.79	5.40	6.83	4.14
Large cap core	Fund	-0.96	1.01	2.16	3.97	6.20	7.16	4.81
	Quant	-2.21	-1.15	-0.01	1.00	2.80	5.01	4.07
Large cap growth	Fund	-3.37	-1.30	0.35	2.13	3.81	7.18	5.42
	Quant	2.16	3.02	3.78	6.59	9.47	7.31	3.78
Enhanced Index	Fund	-7.07	-2.09	-0.60	0.24	1.37	8.44	2.57
	Quant	-1.99	-0.84	-0.24	0.29	1.64	3.63	1.77
EAFE	Fund	-1.35	-0.01	1.75	3.99	6.69	8.05	4.93
	Quant	-2.79	-1.63	-0.08	1.87	4.50	7.29	3.91