



Quantitative vs. Fundamental Institutional Money Managers: An Empirical Analysis

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Criticism of quantitative money managers



- Recent criticism of quant money managers (Petroff and Center (2009), Patterson (2010)) focuses on three points:
 - The quant space has become too “crowded” because everyone employs more or less the same alpha factors (value, momentum, and quality).
 - Quant managers rely too much on public information and back-testing based on historical data to identify mispricing.
 - As a result, their excess returns have become highly correlated and are being arbitrated away.
 - A quote from Bloomberg.com’s Susan Antilla (Feb 3, 2010) in her review of Scott Patterson’s (WSJ) book:
 - “To become a potentially market- destroying “it” group on Wall Street, you need some arrogance, enough brains to justify making huge financial bets, utter cluelessness about lessons learned from finance’s booms and busts, and a sincere belief that your unique contributions to wall Street will mean, ahem, that this time it really is different, so old truths can be ignored. Such is the profile of Wall Street’s nerdy quants...”



Research questions

- Is there more crowding among quantitative managers compared to fundamental managers?
- Has the active return-to-active risk ratio (information ratio) of quantitative managers declined over time relative to fundamental managers?
- How different are their style exposures and portfolio characteristics?
- Focus on institutional money managers in:
 - U.S. Large-cap (core, value, growth, and enhanced index).
 - EAFE.



Data

- Data from *eVestment Alliance* which collects monthly data on active money managers on performance and portfolio characteristics.
 - The data goes back to the early 1980s but the database was started only in 2000 and is based on self-reporting by money managers.
 - The database is used widely in manager search and performance measurement by consultants and institutional investors.
 - In determining style classifications, the database relies on self-reporting and its own analysis.
 - Quant. Vs. fundamental distinction is based solely on self-reporting.
- There is no survivorship bias in the database after 2000 but there is a back-filling bias and a self-reporting bias.
- The period covered is 1995-2009 time-period; there were hardly any quantitative managers in the early 1990s. In particular, the 2001-2009 time period may provide the cleanest and most reliable data. Assets under management are available only after 2000.

All Active U.S. Large Cap (Value, Core, Growth, Enhanced Index): Assets under management

\$AUM in billions			# of firms			
					Quant AUM as % Total	# Quant firms as % # Total
Date	Fundamental	Quantitative	Fundamental	Quantitative	AUM	Firms
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.S. Large Cap Value: Assets under management

\$AUM in billions			# of firms			
					Quant AUM as % Total	# Quant firms as % # Total
Date	Fundamental	Quantitative	Fundamental	Quantitative	AUM	Firms
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.S. Large Cap Core: Assets under management

\$AUM in billions		# of firms		Quant AUM as % Total	# Quant firms as % # Total
Date	Fundamental	Quantitative	Fundamental	Quantitative	AUM Firms
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%

U.S. Large Cap Growth: Assets under management

		\$AUM in billions		# of firms			
						Quant AUM as % Total	# Quant firms as % # Total
Date	Fundamental	Quantitative	Fundamental	Quantitative	AUM	Firms	
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.S. Large Cap Enhanced Index: Assets under management

\$AUM in billions			# of firms		Quant AUM as % Total AUM	# Quant firms as % # Total Firms
Date	Fundamental	Quantitative	Fundamental	Quantitative		
<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%



EAFE: Assets under management

\$AUM in billions		# of firms			Quant AUM as % Total	# Quant firms as % # Total
Date	Fundamental	Quantitative	Fundamental	Quantitative	AUM	Firms
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%

***All managers who use EAFE as the benchmark (value, core, growth)

Performance of *fundamental* large-cap *value* money managers

Year	EW alpha	VW alpha	Top 25% by AUM	Next 25% by AUM	Bot. 50% by AUM	# of Firms	Median	R1000V
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
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			

***Note that 2009 returns are for only 9 months (Jan-Sep)

Performance of *quantitative* large-cap *value* money managers

Year	EW alpha	VW alpha	Top 25% by AUM	Next 25% by AUM	Bot. 50% by AUM	# of Firms	Median	R1000V
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
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			

***Note that 2009 returns are for only 9 months (Jan-Sep)

Performance of *fundamental* large-cap *core* money managers

Year	EW alpha	VW alpha	Top 25% by AUM	Next 25% by AUM	Bot. 50% by AUM	# of Firms	Median	R1000
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
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			

***Note that 2009 returns are for only 9 months (Jan-Sep)

Performance of *quantitative* large-cap *core* money managers

Year	EW alpha	VW alpha	Top 25% by AUM	Next 25% by AUM	Bot. 50% by AUM	# of Firms	Median	R1000
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
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			

***Note that 2009 returns are for only 9 months (Jan-Sep)

Performance of *fundamental* large-cap *growth* money managers

Year	EW alpha	VW alpha	Top 25% by AUM	Next 25% by AUM	Bot. 50% by AUM	# of Firms	Median	R1000G
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
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						

***Note that 2009 returns are for only 9 months (Jan-Sep)

Performance of *quantitative* large-cap *growth* money managers

Year	EW alpha	VW alpha	Top 25% by AUM	Next 25% by AUM	Bot. 50% by AUM	# of Firms	Median	R1000G
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
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			

***Note that 2009 returns are for only 9 months (Jan-Sep)

Performance of *fundamental* enhanced index money managers

Year	EW alpha	VW alpha	Top 25% by AUM	Next 25% by AUM	Bot. 50% by AUM	# of Firms	Median	S&P 500
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
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			

***Note that 2009 returns are for only 9 months (Jan-Sep)

Performance of *quantitative* enhanced index money managers

Year	EW alpha	VW alpha	Top 25% by AUM	Next 25% by AUM	Bot. 50% by AUM	# of Firms	Median	S&P 500
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
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			


***Note that 2009 returns are for only 9 months (Jan-Sep)

Performance of *fundamental* EAFE money managers

Year	EW alpha	VW alpha	Top 25% by AUM	Next 25% by AUM	Bot. 50% by AUM	# of Firms	Median	MSCI EAFE
1995	2.15					68	2.51	11.22
1996	9.11					78	8.87	6.05
1997	7.18					85	6.41	1.77
1998	-3.86					91	-3.11	19.97
1999	16.74					97	10.65	26.97
2000	5.90					98	4.59	-14.16
2001	4.76	4.65	5.29	1.91	6.17	105	3.92	-21.45
2002	3.62	1.80	2.28	1.73	4.72	111	2.09	-15.94
2003	1.13	-0.57	-0.55	-0.93	2.06	116	0.25	38.59
2004	-0.07	0.20	1.68	-1.58	0.45	122	-0.89	20.25
2005	2.06	1.41	1.43	1.34	2.17	129	2.19	13.54
2006	0.81	0.39	0.61	-0.18	1.05	133	0.53	26.35
2007	2.18	1.18	1.73	2.33	2.21	137	1.25	11.19
2008	1.61	1.95	3.45	1.31	0.67	139	0.61	-43.39
2009	2.99	0.60	0.68	2.52	4.47	134	1.99	28.97
2001-2009								
Alpha	2.42	1.67	2.37	1.16	2.88		1.83	
Trk.error	1.49	1.50	1.71	1.47	2.00		4.72	
IR	1.62	1.11	1.38	0.78	1.44			
2007-2009								
Alpha	2.40	1.09	2.73	2.14	2.24		1.75	
Trk.error	0.69	0.68	1.40	0.65	1.91		4.93	
IR	3.46	1.60	1.95	3.29	1.17			

***Note that 2009 returns are for only 9 months (Jan-Sep)

Performance of *quantitative* EAFE money managers



Year	EW alpha	VW alpha	Top 25% by AUM	Next 25% by AUM	Bot. 50% by AUM	# of Firms	Median	MSCI EAFE
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
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			

***Note that 2009 returns are for only 9 months (Jan-Sep)

Style exposures of U.S. large cap based on a 4-factor model

2001-2009

Large Cap Value Managers					Large Cap Core Managers				
	Mkt	Size	Value	Mom		Mkt	Size	Value	Mom
Fund	0.88	-0.04	0.26	-0.02	Fund	0.90	-0.05	0.04	0.01
Quant	0.92	-0.04	0.29	0.03	Quant	0.96	-0.05	0.03	0.07
Quant-Fund	0.04	0.00	0.02	0.05	Quant-Fund	0.06	0.00	-0.01	0.06
t-stat	(3.12)	(-0.19)	(1.49)	(5.39)	t-stat	(4.92)	(0.13)	(-0.92)	(7.24)
R1000V	0.93	-0.11	0.37	0.00	R1000	0.97	-0.10	0.01	-0.01
Large Cap Growth Managers					Large Cap Enhanced Index Managers				
	Mkt	Size	Value	Mom		Mkt	Size	Value	Mom
Fund	0.98	-0.01	-0.18	0.05	Fund	0.98	-0.10	0.06	-0.02
Quant	1.02	0.01	-0.24	0.08	Quant	0.95	-0.10	0.03	0.00
Quant-Fund	0.04	0.03	-0.06	0.03	Quant-Fund	-0.03	0.01	-0.02	0.02
t-stat	(3.01)	(1.48)	(-3.74)	(3.31)	t-stat	(-3.66)	(0.67)	(-2.25)	(3.50)
R1000G	1.02	-0.09	-0.39	-0.02		0.96	-0.13	0.01	-0.01



Style Factors: 2000-2009

		Size	Value	Price
Year	Mkt-RF	(SMB)	(HML)	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

U.S. Large Cap Portfolio Characteristics



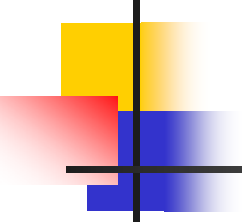
Year	Median AUM \$ millions	Dividend Yield	Trailing P/E	Forward P/E	P/B	Wt.avg. Market cap \$ millions
<u>Fundamental Value</u>						
Sep-09	\$940.7	2.20%	15.70	14.33	1.90	\$59,794.5
<u>Quantitative Value</u>						
Sep-09	\$378.4	2.23%	14.24	13.21	1.77	\$65,932.0
<u>Fundamental Core</u>						
Sep-09	\$405.1	1.74%	17.87	15.40	2.43	\$63,535.0
<u>Quantitative Core</u>						
Sep-09	\$670.7	2.01%	15.80	13.61	2.22	\$71,193.4
<u>Fundamental Growth</u>						
Sep-09	\$598.0	1.18%	20.65	17.58	3.29	\$57,312.0
<u>Quantitative Growth</u>						
Sep-09	\$234.9	1.51%	16.66	15.70	3.20	\$65,912.0
<u>Fundamental Enhanced Index</u>						
Sep-09	\$583.6	2.00%	16.97	14.83	2.30	\$77,813.5
<u>Quantitative Enhanced Index</u>						
Sep-09	\$749.6	2.08%	16.18	15.02	2.22	\$74,383.0
<u>Fundamental EAFE</u>						
Sep-09	\$1,871.6	2.90%	15.80	14.83	1.80	\$43,514.4
<u>Quantitative EAFE</u>						
Sep-09	\$1,152.0	3.25%	15.60	13.50	1.55	\$46,510.0



Co-movement among quant and fundamental managers

- We compute average pair-wise correlations among the excess returns (in excess of appropriate Russell or EAFE benchmarks) of quant and fundamental managers for various time periods.
- The average pair-wise correlation is one measure of commonality or “crowding”.
- Is the correlation higher among quant managers than fundamental managers?
- Did it increase during the 2007-2009 time period (the market downturn and the financial crisis) for the quant managers?
- We also examine the cross-sectional dispersion in alpha.

Average 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%

Cross-sectional dispersion in alpha (2001-2009)

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

Cross-sectional dispersion in alpha (2007-2009)

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



Final thoughts..

Performance differences between quant and fundamental managers depend on the time-period and the investment style:

- No noticeable differences in the U.S. large-cap value space.
- In the U.S. large-cap core, growth, and the enhanced index spaces difficulties for quants during 2007-2009 due to their 2009 performance. In the U.S. this is because of the extreme negative performance of momentum (-83%). The chances of similar negative performance in the future are remote.
- Difficulties for quants also in the EAFE space
- The evidence is inconsistent with the “crowding” argument.
 - Assets managed by quants have remained stable over time.
 - Pair-wise correlations among quant managers are similar to that of the fundamental managers.
 - Dispersion in the alphas of quants is similar to that of the fundamentals.
- Bottom line: Not all quant managers are the same. There is as much heterogeneity among quant managers as there is among fundamental managers.