

**EVALUATING PERFORMANCE PERSISTENCE
IN US OPEN-END MUTUAL FUNDS**

by

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PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS OF THE DEGREE OF

MASTER OF BUSINESS ADMINISTRATION

In the Global Asset and Wealth Management Program
of the
Faculty
of
Business Administration

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SIMON FRASER UNIVERSITY

Fall 2009

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Abstract

Performance persistence in US open-end mutual funds is a contentious issue. This paper examines the performance persistence by analyzing monthly returns of mutual funds under nine investment styles over the periods of January 1993 to December 2008. We find that there is some evidence to support the persistence of mutual fund performance. Albeit this, a zero-investment best-minus-worst strategy does outperform the market with a certain level of consistency.

Keywords: Performance persistence; Capital asset pricing model; Carhart four-factor pricing model; Zero-investment best-minus-worst strategy

Acknowledgements

We would like to express our sincere thanks to Dr. Robert Grauer for supervising this project.

We thank Dr. Christina Atanasova, our second reader, for her valuable advice to improve this project.

We also thank Lei Zheng and Timothy Xie, our classmates, for generously providing us data to complete this project.

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1. INTRODUCTION

It is commonly believed that investors buy mutual funds with superior track records since they believe that past winners outperform the market. Empirical studies (Patel, Zeckhauser and Hendricks, 1992; Sirri and Tufano, 1998) have shown evidence to support this phenomenon, which is referred to as the “hot hand” effect (Hendricks, Patel and Zeckhauser, 1993). Jegadeesh and Titman’s (1993) empirical study also suggests that there is a positive persistence in mutual fund performance. The authors utilize a trading strategy of buying last period’s winners and selling last period’s losers to realize positive returns in the following 12 months after the formation of said strategy. In addition, Carhart (1997) ascertains that under-performing funds persistently yield low returns over multiple years while last year’s top performers can sustain their higher-than-average performance for another year, but not any years thereafter.

In this paper, we separately investigate nine different styles of US open-end mutual funds covering the periods from 1993 to 2008. Following Carhart’s (1997) statistical approach, we utilize two models in this study: the Sharpe (1964) – Lintner (1965) capital asset pricing model (CAPM) and Carhart’s (1997) four-factor pricing model (FFPM) to test our mutual funds’ performance persistence.

In our study, we find some evidence to support the performance persistence of US open-end mutual funds. Portfolios consisting of prior year’s best performing mutual funds can generate positive mean returns in the following year. We also obtain a similar result to Carhart’s (1997) that poor performing funds have the tendency to under-perform as in the preceding year. We employ Jegadeesh and Titman’s (1993) zero-investment best-minus-worst strategy to long

portfolio 1 and short sell portfolio 10 (where 1 is the best and 10 is the worst performing portfolio) for every fund style. We found this strategy under the assumption that investors are allowed to short sell mutual funds in the market. The results show these portfolios generate positive monthly excess returns. Furthermore, by analyzing this strategy under the CAPM, we find that five out of nine investment styles have the ability to significantly outperform the market at the 95% confidence level whilst the remaining four have positive but insignificant performance. This lends strength to our conclusion that mutual fund performance is persistent to a certain extent.

Moreover, Carhart (1997) investigates the impacts of investment expenses and turnover on mutual fund performance. Due to limited data source, we do not address these two factors in our study.

2. DATA

We study the monthly return data from January 1993 to December 2008 to test the performance persistence in 9344 US open-end mutual funds. The monthly return data are collected from Morningstar, Inc. Database as of May 2009. The data were originally extracted by Lei Zheng and Timothy Xie¹.

Based on the market capitalization and investment styles of the underlying securities, Morningstar, Inc. groups the US open-end mutual funds into nine different styles: Large Growth, Large Blend, Large Value, Mid-cap Growth, Mid-cap Blend, Mid-cap Value, Small Growth, Small Blend and Small Value. A fund is classified as “Growth” if it invests most of the underlying assets into growth stocks; a fund is categorized as “Value” if a majority of the assets are invested in value stocks. If the investment style does not belong to either “Growth” or “Value”, it is categorized as “Blend”. Our data pool contains 1429 Large Growth funds, 2111 Large Blend funds, 1942 Large Value funds, 433 Mid-cap Growth funds, 481 Mid-cap Blend funds, 917 Mid-cap Value funds, 397 Small Growth funds, 682 Small Blend Funds and 831 Small Value funds. To maintain un-biasness in the selection of fund styles, we include all nine styles into our examination. **Table I** shows the summary statistics for the monthly return data of each individual distinct style.

¹ Zheng, L. and Xie, T. (2009). Evaluating US Open-end Mutual Fund Performance.

Lei Zheng and Timothy Xie are the graduates from the Master of Financial Risk Management 2008 class at Simon Fraser University Segal Business School.

Since Morningstar, Inc. only includes the surviving funds, this may expose our analysis to a certain level of survivorship bias which could adversely influence our conclusions. This is due to the fact that the truncation by survivorship may lead to a conclusion in favor of mutual fund performance (Brown, Goetzmann, Ibbotson and Ross 1992). This is especially so when dealing with small capitalization funds. On the other hand, Carhart (1997) finds that the mean returns generated from a survivor-only sample are very close to the ones generated from survivorship-bias-free data.

Market returns utilized in the CAPM and FFPM are value-weighted returns on all New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and National Association of Securities Dealers Automated Quotations System (NASDAQ) stocks obtained from Center for Research in Security Prices (CRSP). The small-minus-big (SMB) factor is constructed using the average return on the three small portfolios minus the average return on the three big portfolios. The high-minus-low (HML) factor is constructed using the average return of two value portfolios minus the average return of two growth portfolios. The momentum (MOM) factor is constructed using average returns on the two high prior-return portfolios minus the average return on the two low prior-return portfolios. SMB, HML and MOM portfolio returns, as well as riskfree rates, are downloaded from Kenneth R. French-Data Library.

Summary statistics for Market Excess Return (RMRF), SMB, HML and MOM (**Table II**) show that all four factors possess the characteristics of high variance and low correlations with each other. These low cross correlations among the four factors imply that multicollinearity will be of little concern to our analysis. Additionally, due to its relatively higher mean, the MOM factor accounts for significantly more variations among the mean monthly returns.

3. METHODOLOGY AND MODELS

3.1 *The Capital Asset Pricing Model*

The CAPM is the most contemporary model utilized in finance to determine the expected return of an asset. In our study, we use this model to measure the mutual funds' sensitivity to market risk (represented by beta, β) and their abnormal returns (represented by alpha, α).

$$r_{it} - r_{ft} = \alpha_{it} + \beta_{it}(r_{mt} - r_{ft}) + \varepsilon_{it} \quad (1)$$

where r_{it} and r_{ft} are the rate of returns for portfolio i and riskfree assets at time t respectively; r_{mt} is the value-weighted return on all NYSE, AMEX, and NASDAQ stocks from CRSP at time t . The intercept term measures abnormal performance relative to the security market line.

3.2 *Carhart Four-Factor Pricing Model*

Carhart augments the Fama-French (1996) three-factor model by adding a momentum factor to better capture market anomalies. The FFPM outlines the importance of the four factors in accounting for the variations in asset returns. These four factors include the market premium (market excess return), the size premium (the portfolio return difference between small-cap firms and large-cap firms, i.e. SMB), the book-to-market premium (the portfolio return difference between high book-to-market and low book-to-market firms, i.e. HML) and the momentum premium (the return spread between previous period's winning stock returns minus the prior losing stock returns).

$$r_{it} - r_{ft} = \alpha_{it} + \beta_{it}(r_{mt} - r_{ft}) + s_{it}SMB_t + h_{it}HML_t + p_{it}MOM_t + \varepsilon_{it} \quad (2)$$

where r_{it} and r_{ft} are the rate of returns for portfolio i and riskfree assets respectively; r_{mt} is the value-weighted return on all NYSE, AMEX, and NASDAQ stocks from CRSP; SMB is constructed based on $\frac{1}{3}$ (Small Value + Small Neutral + Small Growth) – $\frac{1}{3}$ (Big value + big neutral + big growth) at time t; HML is constructed based on $\frac{1}{2}$ (Small Value + Big Value) – $\frac{1}{2}$ (Small Growth + Big Growth) at time t; MOM is calculated based on (equal-weight average of firms with the highest 30% 11-month return lag one month) – (equal weight average of firms with the lowest 30% 11-month return lag one month). In this case, the intercept measures abnormal performance relative to the four-factor model.

3.3 Portfolio Return (r_{it}) Construction Methodology

In order to test our mutual funds' short term performance persistence, we adopt the methodology used by Carhart (1997) and Hendricks, Patel and Zeckhauser (1993). On January 1 each year from 1993 to 2008, we sort the mutual funds into 10 deciles based on the prior 12-month compound returns within each individual style. More specifically, mutual funds ranked above the 90th percentile are placed into portfolio 1 while portfolio 10 contains the bottom 10th percentile of mutual funds. Because our funds may not necessarily be divisible by a factor of 10, we decided to rank them into their respective deciles as follows: if there are 178 Large Blend mutual funds ranked on January 1, 1993, the first 8 portfolios shall contain 18 funds each; the last two portfolios shall have only 17 funds each. In this manner, each portfolio will have a fairly equal weighting of funds assigned to it. Within each portfolio, we calculate 12 equally-weighted

monthly returns for every year which will represent the r_{it} term on the left hand side of equations (1) and (2).

In addition, we conduct our analysis on zero-investment best-minus-worst portfolio for all nine styles of mutual funds, represented by 1-minus-10 spreads. The zero-investment best-minus-worst strategy is quintessentially focused on performance persistence by longing the prior-best performing portfolio (portfolio 1) while simultaneously short selling the prior-worst performing portfolio (portfolio 10). To utilize this strategy, we make one assumption that investors are allowed to short sell mutual funds. To utilize this strategy, we make one assumption that investors are allowed to short sell mutual funds.

4. EMPIRICAL RESULTS/FINDINGS

To assess fund performance persistence, we first compare the post-formation monthly excess returns with respect to their relative portfolio ranks. If there is indeed evidence of persistence, the ordering of pre- and post-formation portfolio rankings should remain consistent where the order of the mean returns would be in line with their respective decile ranks i.e. the highest return would be consistently found in portfolio 1 and the lowest in portfolio 10. Based on our findings, we do not observe a strong systemic pattern between portfolio rank and mean return. To be more specific, the mean returns from portfolio 1 to portfolio 10 follow a decreasing trend, but not monotonically. In addition, we find that the post-formation portfolio 1 always has the highest monthly excess return (except for Mid-cap Value, Small Blend and Small Value mutual funds²), while portfolio 10 consistently has the lowest return (except for Large Growth, Mid-cap Growth and Mid-cap Blend funds³).

Generally, investors would have more confidence in investing with funds that demonstrate superior track records because they believe superior performance is attributable to the skills of fund managers and that this outperformance of the market will continue into the near future. However, using the CAPM we demonstrate that investing in mutual funds that have a sound prior 1-year return does not provide abnormal returns for investors. We find that there are no signs of positive abnormal returns for the prior best performing portfolios for all nine styles except for Large Blend (**Table IV**). Portfolio 1 in Large Blend has a positively significant alpha

² Refer to **Table VIII**, **Table X** and **Table XI** for portfolio 1s' monthly excess returns in Mid-cap Value, Small Blend and Small Value respectively.

³ Refer to **Table III**, **Table VI** and **Table VII** for portfolio 10s' monthly excess returns in Large Growth, Mid-cap Growth and Mid-cap Blend respectively.

of 17 basis points, or roughly 2% annually. Other portfolios that also demonstrate positively significant alphas include portfolio 8 in Mid-cap Value and portfolio 2 in Small Value⁴, with returns of 34 and 36 basis points respectively. On the contrary, there are also four portfolios that exhibit negative abnormal returns based on the CAPM. These funds are portfolio 7, 8 and 9 in Large Growth and portfolio 7 in Large Blend⁵, with returns of -0.14, -0.18, -0.18 and -0.11 respectively. Our conclusion is that there is still evidence, albeit insignificant in certain portfolios, to support the tendency for performance persistence where the poorest performers have the lowest alphas.

Since the CAPM does not explain the return variations well, we incorporate the FFPM into our analysis. In general, the FFPM captures more variations. This is demonstrated by the higher adjusted R-squared ratios for all nine styles where in small-cap mutual funds, the FFPM explains 20% more variation as compared to the CAPM. Therefore, we use the FFPM to test whether the abnormal returns generated by the CAPM can be better accounted for after taking the three market factors of SMB, HML and MOM into consideration. We find that most of the significant alphas generated within the CAPM model disappear when regressed against the FFPM factors. This implies that most of the abnormal returns in the CAPM are in fact not attributable to the skills of fund managers but rather are captured by the SMB, HML and MOM market factors.

Utilizing the FFPM model, we do not derive any positively significant alpha across the 10 decile portfolios within all nine fund styles. However, we do realize 6 negatively significant alphas, which are found in portfolio 4 in Large Growth, portfolio 7 in Large Blend, portfolio 8 in Mid-

⁴ Refer to **Table VIII** for portfolio 8 in Mid-cap Value and **Table XI** for portfolio 2 in Small Value.

⁵ Refer to **Table III** for portfolio 7, 8 and 9 in Large Growth and **Table IV** for portfolio 7 in Large Blend.

cap Growth, portfolio 6 in Small Growth, as well as portfolio 1 and 10 in Small Blend⁶. There is no definitive pattern for these negatively significant FFPM alphas. In addition, they do not occur in any of the value style funds. Although there is the possibility for this phenomenon to occur stochastically, it could be also associated with the growth or blend style of the portfolios.

In all, by incorporating the SMB, HML and MOM factors into the CAPM, the FFPM provides a much more founded framework to explain the return variations. Under a cross-sectional comparison among the four factors of the FFPM, SMB and MOM tend to capture a majority of the variations since the beta coefficients for SMB and MOM follow a systemic and predictable pattern while the beta coefficients for HML and RMRF are almost identical across each fund style's 10 decile portfolios. Furthermore, the MOM coefficients have a relatively strong decreasing tendency within all of the nine styles.

Based on our analysis so far, we conclude that the mutual fund performance persistence is moderate for all nine fund styles. However, the previous year's performance can still be a signal to investors when they select mutual funds. For example, by employing the zero-investment best-minus-worst strategy, an investor can generate positive excess returns under any fund style. This conclusion is summarized in **Table XI** where an enumeration of all the 1-minus-10 spreads under nine fund styles are shown to obtain positive monthly excess returns. Under the CAPM, buying last year's best performing portfolio and selling the worst portfolio can significantly generate abnormal returns for five out of nine styles (which include Large Blend, Large Value,

⁶ Refer to **Table III** for portfolio 4 in Large Growth, **Table IV** for portfolio 7 in Large Blend, **Table VI** for portfolio 8 in Mid-cap Growth, **Table IX** portfolio 6 in Small Growth, as well as **Table X** for portfolio 1 and 10 in Small Blend.

Small Growth, Small Blend and Small Value). However, under the FFPM, only Small Value maintains the significantly positive abnormal return of 26 basis points. This means that the FFPM factors are able to contribute to a significant amount of explanatory power in excess return variations. In all, no matter what factor captures the return variation, investments utilizing the best-minus-worst strategy can definitely generate positive returns in the preceding year, adding to their ex-ante estimation of future investment values. This indirectly implies that mutual fund performance persistence still exist to a certain level.

We also test the robustness of our findings by excluding recent high volatile market movement data (i.e. January 2008 to December 2008). The results are very similar to our previous findings in the sense that monthly excess returns, the CAPM alphas and FFPM alphas are following a decreasing trend but not monotonically. The major difference after excluding 2008 data is that mean monthly excess returns increase by approximately 0.3% on average.

5. CONCLUSION

The topic of whether investing in prior outperforming mutual funds can lead to higher-than-average expected returns is a conundrum upon itself in the area of finance. Many empirical studies have shown results that are either in support of or against this dichotomous issue. As shown in our results, five out of nine mutual fund styles under CAPM show evidence that investing in the preceding year's top performing funds can maintain superior returns in the following year. However, among these five styles, only Large Blend systemically outperforms the market, with an abnormal return of 17 basis points (~2% per year).

Shifting from the CAPM to the FFPM model, we do not find any significant pattern to the abnormal returns of any portfolio under the nine different fund styles. Compared to the CAPM, the FFPM does have strong explanatory power for the return variations since the abnormal returns identified by the CAPM model are diluted under the FFPM analysis. This improvement is attributable mainly to the SMB and MOM factors. Above all else, we do find that the zero-investment best-minus-worst strategy can consistently generate positive returns under all investment styles. Analyzing these excess returns under the CAPM, five out of nine styles generate positively significant alphas. Even after adopting the FFPM model, we still can observe this abnormal return in the Small Value mutual funds.

All in all, we have formed the grounds for architecting a fairly strong argument for the claim that persistence in portfolio returns exists to a certain extent. This has been justified beyond a reasonable doubt through our analysis of the return rankings, the CAPM alphas and the FFPM alphas.

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APPENDIX: TABLES

Table I: Summary Statistics of Monthly Returns
Formed from 1993.1 – 2008.12, 192 Months

The Sharp ratio shows the monthly excess return adjusted by the risk unit. It is defined by $s_p = \overline{R}_p / \hat{\sigma}_p$, where \overline{R}_p is portfolio p's average excess return, $\hat{\sigma}_p$ is the estimated standard deviation of the portfolio p's excess return.

Style	Mean	Standard Deviation	Sharp Ratio
Large Growth	0.59	4.03	0.069
Large Blend	0.56	4.78	0.054
Large Value	0.61	3.79	0.079
Mid-cap Growth	0.77	4.65	0.099
Mid-cap Blend	0.75	5.69	0.077
Mid-cap Value	0.81	4.16	0.121
Small Growth	0.76	4.76	0.094
Small Blend	0.76	6.22	0.073
Small Value	0.79	4.4	0.109

Table II: Summary Statistics for RMRF, SMB, HML and MOM

Formed on Lagged 1-Year Return from 1993.1 – 2008.12, 192 Months

RMRF is the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate. SMB factor is constructed using the average return on the three small portfolios minus the average return on the three big portfolios. HML factor is constructed using the average return on the two value portfolios minus the average return on the two growth portfolios. MOM factor is constructed using average return on the two high prior return portfolios minus the average return on the two low prior return portfolios. (All data mentioned above can be downloaded from Kenneth R. French Library).

Factor	Monthly Excess Return	Std Dev	t-stat for Mean=0	Cross Correlations			
				RMRF	SMB	HML	MOM
RMRF	0.33	4.37	1.06	1.00			
SMB	0.18	3.68	0.68	0.21	1.00		
HML	0.40	3.40	1.62	-0.42	-0.45	1.00	
MOM	0.92	4.95	2.57	0.22	0.14	-0.08	1.00

Table III: Summary Statistics for Large Growth US Open-end Mutual Funds
Formed on Lagged 1-Year Return from 1993.1-2008.12, 192 Months

RMRF is the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate. SMB factor is constructed using the average return on the three small portfolios minus the average return on the three big portfolios. HML factor is constructed using the average return on the two value portfolios minus the average return on the two growth portfolios. MOM factor is constructed using average return on the two high prior return portfolios minus the average return on the two low prior return portfolios. (All data mentioned above can be downloaded from Kenneth R. French Library).

Portfolio	Monthly Excess Return	Std Dev	CAPM			4-Factor Model					
			Alpha	RMRF	Adj R-sq	Alpha	RMRF	SMB	HML	MOM	Adj R-sq
1 (High)	0.43	5.31	0.05 (0.35)	1.13 (34.27)	0.861	-0.05 (-0.49)	1.08 (46.05)	0.11 (3.91)	-0.25 (-7.88)	0.21 (11.08)	0.948
2	0.29	5.03	0.02 (0.20)	1.09 (38.88)	0.888	-0.07 (-1.02)	1.05 (60.60)	0.09 (4.50)	-0.22 (-9.56)	0.20 (14.11)	0.968
3	0.31	4.86	-0.05 (-0.54)	1.07 (50.09)	0.930	-0.09 (-1.50)	1.04 (67.86)	0.03 (1.61)	-0.20 (-9.48)	0.14 (11.02)	0.973
4	0.26	4.73	-0.09 (-1.14)	1.06 (59.81)	0.950	-0.12 (-2.14)	1.03 (75.95)	-0.01 (-0.47)	-0.16 (-8.93)	0.11 (10.17)	0.978
5	0.24	4.63	-0.11 (-1.57)	1.04 (65.12)	0.957	-0.09 (-1.57)	1.00 (71.63)	-0.03 (-1.64)	-0.17 (-8.91)	0.07 (5.84)	0.976
6	0.22	4.64	-0.13 (-1.81)	1.04 (65.40)	0.958	-0.11 (-1.77)	1.01 (66.58)	-0.03 (-1.70)	-0.15 (-7.15)	0.06 (4.81)	0.971
7	0.20	4.62	-0.14 (-1.97)	1.03 (63.03)	0.954	-0.10 (-1.56)	1.00 (63.65)	-0.07 (-4.05)	-0.17 (-7.79)	0.05 (3.95)	0.969
8	0.16	4.57	-0.18 (-2.64)	1.02 (64.78)	0.957	-0.12 (-1.79)	0.99 (60.50)	-0.07 (-3.81)	-0.14 (-6.45)	0.02 (1.17)	0.965
9	0.16	4.72	-0.18 (-2.11)	1.05 (52.54)	0.936	-0.03 (-0.35)	0.98 (48.04)	-0.06 (-2.62)	-0.19 (-6.91)	-0.05 (-3.03)	0.950
10 (Low)	0.17	5.32	-0.21 (-1.59)	1.15 (38.15)	0.885	0.05 (0.41)	1.05 (34.14)	-0.08 (-2.10)	-0.22 (-5.39)	-0.14 (-5.45)	0.910
1-10 Spread	0.25	2.85	0.26 (1.25)	-0.02 (-0.38)	0.001	-0.10 (-0.60)	0.03 (0.68)	0.18 (3.87)	-0.03 (-0.46)	0.34 (10.56)	0.459

Table IV: Summary Statistics for Large Blend US Open-end Mutual Funds
Formed on Lagged 1-Year Return from 1993.1-2008.12, 192 Months

RMRF is the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate. SMB factor is constructed using the average return on the three small portfolios minus the average return on the three big portfolios. HML factor is constructed using the average return on the two value portfolios minus the average return on the two growth portfolios. MOM factor is constructed using average return on the two high prior return portfolios minus the average return on the two low prior return portfolios. (All data mentioned above can be downloaded from Kenneth R. French Library).

Portfolio	Monthly Excess Return	Std Dev	CAPM			4-Factor Model					
			Alpha	RMRF	Adj R-sq	Alpha	RMRF	SMB	HML	MOM	Adj R-sq
1 (High)	0.48	4.15	0.17 (2.92)	0.93 (70.04)	0.963	0.05 (0.87)	0.98 (73.81)	0.02 (1.31)	0.11 (6.07)	0.07 (6.13)	0.972
2	0.39	4.12	0.08 (1.68)	0.93 (82.87)	0.973	0.02 (0.46)	0.97 (90.80)	-0.05 (-3.76)	0.10 (6.57)	0.02 (2.29)	0.982
3	0.34	4.06	0.04 (0.85)	0.92 (88.65)	0.976	-0.02 (-0.69)	0.97 (112.40)	-0.07 (-7.28)	0.09 (7.62)	0.03 (3.66)	0.988
4	0.34	4.06	0.03 (0.65)	0.92 (83.76)	0.974	-0.00 (-0.06)	0.96 (113.71)	-0.11 (-11.22)	0.06 (5.41)	0.01 (2.19)	0.988
5	0.27	4.04	-0.03 (-0.65)	0.91 (76.20)	0.968	-0.02 (-0.66)	0.94 (107.93)	-0.12 (-11.69)	0.06 (4.66)	-0.03 (-3.54)	0.987
6	0.24	4.00	-0.06 (-1.16)	0.90 (74.00)	0.967	-0.04 (-1.39)	0.94 (117.00)	-0.13 (-13.80)	0.06 (5.23)	-0.03 (-4.78)	0.989
7	0.19	4.01	-0.11 (-2.07)	0.90 (73.31)	0.966	-0.09 (-2.92)	0.93 (126.40)	-0.11 (-12.96)	0.07 (7.39)	-0.05 (-8.38)	0.991
8	0.21	3.93	-0.08 (-1.58)	0.88 (73.77)	0.966	-0.06 (-1.71)	0.91 (107.78)	-0.09 (-8.70)	0.08 (6.67)	-0.05 (-7.83)	0.988
9	0.17	4.03	-0.12 (-1.63)	0.89 (52.03)	0.934	-0.09 (-1.92)	0.93 (76.96)	-0.11 (-7.55)	0.12 (7.55)	-0.08 (-8.18)	0.976
10 (Low)	0.14	4.10	-0.16 (-1.51)	0.88 (37.39)	0.880	-0.09 (-1.35)	0.92 (52.33)	-0.10 (-5.01)	0.17 (6.97)	-0.13 (-9.38)	0.951
1-10 Spread	0.34	1.72	0.32 (2.62)	0.05 (1.79)	0.017	0.14 (1.50)	0.06 (2.55)	0.12 (4.48)	-0.06 (-1.79)	0.20 (10.47)	0.500

Table V: Summary Statistics for Large Value US Open-end Mutual Funds
Formed on Lagged 1-Year Return from 1993.1-2008.12, 192 Months

RMRF is the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate. SMB factor is constructed using the average return on the three small portfolios minus the average return on the three big portfolios. HML factor is constructed using the average return on the two value portfolios minus the average return on the two growth portfolios. MOM factor is constructed using average return on the two high prior return portfolios minus the average return on the two low prior return portfolios. (All data mentioned above can be downloaded from Kenneth R. French Library).

Portfolio	Monthly Excess Return	Std Dev	CAPM			4-Factor Model					
			Alpha	RMRF	Adj R-sq	Alpha	RMRF	SMB	HML	MOM	Adj R-sq
1 (High)	0.36	3.80	0.09 (0.90)	0.81 (33.43)	0.855	-0.04 (-0.65)	0.92 (57.38)	-0.04 (-2.40)	0.35 (15.99)	-0.03 (-2.69)	0.952
2	0.36	3.67	0.11 (1.00)	0.77 (30.85)	0.834	-0.03 (-0.45)	0.89 (59.50)	-0.04 (-2.42)	0.37 (18.47)	-0.05 (-4.00)	0.956
3	0.34	3.77	0.08 (0.70)	0.79 (30.13)	0.827	-0.03 (-0.55)	0.90 (60.54)	-0.08 (-4.36)	0.37 (18.14)	-0.06 (-5.35)	0.958
4	0.32	3.75	0.06 (0.56)	0.78 (30.46)	0.830	-0.05 (-0.85)	0.90 (60.90)	-0.07 (-4.37)	0.36 (18.09)	-0.06 (-5.14)	0.958
5	0.31	3.78	0.05 (0.41)	0.78 (28.44)	0.810	-0.05 (-0.81)	0.90 (57.29)	-0.09 (-4.68)	0.37 (17.58)	-0.08 (-6.31)	0.954
6	0.34	3.74	0.09 (0.69)	0.76 (26.13)	0.782	-0.01 (-0.21)	0.88 (57.97)	-0.09 (-4.91)	0.40 (19.53)	-0.09 (-7.64)	0.956
7	0.27	3.76	0.01 (0.09)	0.76 (26.72)	0.790	-0.06 (-0.98)	0.88 (56.49)	-0.10 (-5.64)	0.37 (17.58)	-0.10 (-8.27)	0.954
8	0.26	3.76	0.00 (0.02)	0.77 (26.61)	0.788	-0.07 (-1.16)	0.88 (54.74)	-0.08 (-4.43)	0.38 (17.52)	-0.11 (-8.26)	0.951
9	0.22	3.89	-0.04 (-0.26)	0.77 (24.27)	0.756	-0.08 (-1.05)	0.88 (47.19)	-0.09 (-4.36)	0.39 (15.25)	-0.14 (-9.49)	0.938
10 (Low)	0.18	4.04	-0.09 (-0.61)	0.81 (24.76)	0.763	-0.08 (-1.09)	0.89 (46.28)	-0.05 (-2.24)	0.38 (14.43)	-0.19 (-12.09)	0.939
1-10 Spread	0.18	1.25	0.18 (2.00)	-0.00 (-0.10)	0.000	0.04 (0.56)	0.03 (1.34)	0.01 (0.25)	-0.03 (-1.19)	0.15 (10.05)	0.381

Table VI: Summary Statistics for Mid-cap Growth US Open-end Mutual Funds
Formed on Lagged 1-Year Return from 1993.1-2008.12, 192 Months

RMRF is the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate. SMB factor is constructed using the average return on the three small portfolios minus the average return on the three big portfolios. HML factor is constructed using the average return on the two value portfolios minus the average return on the two growth portfolios. MOM factor is constructed using average return on the two high prior return portfolios minus the average return on the two low prior return portfolios. (All data mentioned above can be downloaded from Kenneth R. French Library).

Portfolio	Monthly Excess Return	Std Dev	CAPM			4-Factor Model					
			Alpha	RMRF	Adj R-sq	Alpha	RMRF	SMB	HML	MOM	Adj R-sq
1 (High)	0.67	6.53	0.25 (0.97)	1.25 (21.09)	0.701	0.03 (0.20)	1.13 (35.65)	0.55 (15.02)	-0.29 (-6.71)	0.31 (11.93)	0.936
2	0.54	2.74	0.15 (0.77)	1.15 (24.91)	0.766	-0.04 (-0.39)	1.07 (38.45)	0.48 (14.87)	-0.14 (-3.70)	0.21 (9.32)	0.937
3	0.53	6.01	0.14 (0.64)	1.20 (24.29)	0.756	-0.06 (-0.57)	1.11 (39.20)	0.46 (13.96)	-0.22 (-5.64)	0.25 (11.16)	0.941
4	0.44	5.92	0.03 (0.15)	1.23 (29.54)	0.821	-0.07 (-0.63)	1.12 (43.01)	0.40 (13.18)	-0.22 (-6.09)	0.15 (7.26)	0.948
5	0.33	5.69	-0.06 (-0.35)	1.19 (30.47)	0.830	-0.19 (-1.85)	1.11 (43.09)	0.39 (13.02)	-0.14 (-4.08)	0.15 (7.38)	0.945
6	0.44	5.78	0.04 (0.24)	1.21 (30.52)	0.831	-0.05 (-0.43)	1.11 (40.88)	0.39 (12.45)	-0.17 (-4.55)	0.13 (5.70)	0.941
7	0.50	5.75	0.10 (0.56)	1.21 (31.29)	0.838	0.05 (0.41)	1.10 (39.07)	0.36 (10.89)	-0.19 (-5.06)	0.10 (4.53)	0.935
8	0.16	5.49	-0.23 (-1.57)	1.17 (35.58)	0.870	-0.29 (-2.48)	1.11 (38.12)	0.31 (9.17)	-0.06 (-1.62)	0.05 (2.32)	0.925
9	0.35	5.49	-0.04 (-0.26)	1.17 (34.29)	0.861	-0.04 (-0.29)	1.11 (31.43)	0.24 (5.77)	-0.06 (-1.19)	0.00 (0.01)	0.890
10 (Low)	0.24	5.48	-0.14 (-0.95)	1.16 (33.82)	0.858	-0.10 (-0.69)	1.08 (31.27)	0.27 (6.65)	-0.06 (-1.38)	-0.05 (-1.66)	0.893
1-10 Spread	0.42	3.24	0.39 (1.69)	0.09 (1.66)	0.014	0.12 (0.76)	0.05 (1.31)	0.29 (6.24)	-0.22 (-4.17)	0.35 (11.02)	0.599

**Table VII: Summary Statistics for Mi-cap Blend US Open-end Mutual Funds
Formed on Lagged 1-Year Return from 1993.1-2008.12, 192 Months**

RMRF is the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate. SMB factor is constructed using the average return on the three small portfolios minus the average return on the three big portfolios. HML factor is constructed using the average return on the two value portfolios minus the average return on the two growth portfolios. MOM factor is constructed using average return on the two high prior return portfolios minus the average return on the two low prior return portfolios. (All data mentioned above can be downloaded from Kenneth R. French Library).

Portfolio	Monthly Excess Return	Std Dev	CAPM			4-Factor Model					
			Alpha	RMRF	Adj R-sq	Alpha	RMRF	SMB	HML	MOM	Adj R-sq
1 (High)	0.65	5.58	0.28 (1.39)	1.11 (23.75)	0.748	0.05 (0.36)	1.07 (27.96)	0.49 (11.08)	0.04 (0.79)	0.15 (4.79)	0.874
2	0.35	4.80	0.01 (0.07)	1.02 (33.09)	0.852	-0.14 (-1.46)	1.00 (40.41)	0.40 (13.73)	0.16 (4.87)	0.02 (1.08)	0.928
3	0.45	4.68	0.12 (0.96)	1.00 (35.55)	0.869	-0.10 (-1.08)	1.05 (44.92)	0.33 (11.99)	0.31 (9.79)	0.02 (1.14)	0.933
4	0.45	4.55	0.13 (1.01)	0.96 (33.66)	0.856	-0.03 (-0.30)	0.97 (39.17)	0.34 (11.96)	0.20 (5.92)	0.01 (0.70)	0.920
5	0.28	4.63	0.06 (0.45)	0.99 (34.83)	0.865	-0.07 (-0.65)	1.02 (37.17)	0.25 (7.92)	0.26 (6.96)	-0.04 (-1.60)	0.906
6	0.49	4.70	0.16 (1.20)	1.00 (33.50)	0.855	0.02 (0.15)	1.02 (40.02)	0.34 (11.53)	0.29 (8.53)	-0.05 (-2.44)	0.921
7	0.48	4.61	0.16 (1.28)	0.98 (35.05)	0.866	-0.06 (-0.56)	1.04 (40.40)	0.27 (9.10)	0.29 (8.25)	0.04 (1.71)	0.917
8	0.40	4.43	0.09 (0.73)	0.93 (31.62)	0.840	-0.03 (-0.29)	0.97 (37.47)	0.28 (9.48)	0.32 (9.26)	-0.07 (-3.59)	0.909
9	0.47	4.69	0.15 (1.06)	0.98 (30.80)	0.833	0.06 (0.52)	1.02 (34.86)	0.23 (6.77)	0.33 (8.36)	-0.11 (-4.63)	0.895
10 (Low)	0.33	4.35	-0.03 (-0.19)	1.09 (26.83)	0.791	0.13 (0.89)	1.03 (27.25)	0.23 (5.15)	0.15 (3.01)	-0.27 (-8.90)	0.865
1-10 Spread	0.32	3.95	0.31 (1.10)	0.01 (0.22)	0.000	-0.08 (-0.34)	0.04 (0.60)	0.27 (3.90)	-0.11 (-1.43)	0.42 (8.91)	0.413

Table VIII: Summary Statistics for Mid-cap Value US Open-end Mutual Funds
Formed on Lagged 1-Year Return from 1993.1-2008.12, 192 Months

RMRF is the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate. SMB factor is constructed using the average return on the three small portfolios minus the average return on the three big portfolios. HML factor is constructed using the average return on the two value portfolios minus the average return on the two growth portfolios. MOM factor is constructed using average return on the two high prior return portfolios minus the average return on the two low prior return portfolios. (All data mentioned above can be downloaded from Kenneth R. French Library).

Portfolio	Monthly Excess Return	Std Dev	CAPM			4-Factor Model					
			Alpha	RMRF	Adj R-sq	Alpha	RMRF	SMB	HML	MOM	Adj R-sq
1 (High)	0.55	4.32	0.25 (1.90)	0.90 (30.28)	0.828	0.02 (0.22)	0.98 (38.48)	0.28 (9.55)	0.39 (11.25)	-0.01 (-0.28)	0.907
2	0.54	4.14	0.26 (1.85)	0.84 (25.63)	0.776	0.04 (0.37)	0.93 (34.98)	0.26 (8.43)	0.47 (12.92)	-0.04 (-2.01)	0.889
3	0.48	4.31	0.18 (1.29)	0.88 (27.16)	0.795	-0.03 (-0.27)	0.97 (36.79)	0.26 (8.32)	0.46 (12.86)	-0.05 (-2.51)	0.899
4	0.54	4.32	0.25 (1.67)	0.87 (25.70)	0.777	0.09 (0.89)	0.97 (37.19)	0.18 (5.81)	0.48 (13.69)	-0.11 (-5.29)	0.902
5	0.52	4.21	0.25 (1.45)	0.79 (19.91)	0.676	0.02 (0.14)	0.95 (32.91)	0.13 (4.03)	0.61 (15.75)	-0.09 (-3.94)	0.874
6	0.54	4.15	0.27 (1.71)	0.81 (21.98)	0.718	0.04 (0.42)	0.94 (35.51)	0.18 (5.85)	0.58 (16.02)	-0.08 (-3.91)	0.890
7	0.43	4.22	0.16 (0.94)	0.80 (20.75)	0.694	-0.07 (-0.56)	0.94 (32.22)	0.21 (6.12)	0.59 (14.93)	-0.10 (-4.24)	0.872
8	0.60	4.19	0.34 (1.98)	0.79 (19.96)	0.677	0.17 (1.40)	0.91 (29.67)	0.15 (4.24)	0.55 (13.30)	-0.13 (-5.16)	0.855
9	0.44	4.45	0.16 (0.86)	0.84 (20.18)	0.682	-0.04 (-0.31)	0.96 (31.98)	0.27 (7.67)	0.62 (15.21)	-0.15 (-6.31)	0.878
10 (Low)	0.27	4.42	-0.02 (-0.12)	0.86 (22.18)	0.721	-0.08 (-0.66)	0.92 (30.82)	0.23 (6.65)	0.47 (11.58)	-0.21 (-8.60)	0.877
1-10 Spread	0.28	2.00	0.27 (1.85)	0.04 (1.24)	0.008	0.10 (0.80)	0.06 (1.75)	0.05 (1.37)	-0.08 (-1.91)	0.20 (7.88)	0.321

Table IX: Summary Statistics for Small Growth US Open-end Mutual Funds
Formed on Lagged 1-Year Return from 1993.1-2008.12, 192 Months

RMRF is the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate. SMB factor is constructed using the average return on the three small portfolios minus the average return on the three big portfolios. HML factor is constructed using the average return on the two value portfolios minus the average return on the two growth portfolios. MOM factor is constructed using average return on the two high prior return portfolios minus the average return on the two low prior return portfolios. (All data mentioned above can be downloaded from Kenneth R. French Library).

Portfolio	Monthly Excess Return	Std Dev	CAPM			4-Factor Model					
			Alpha	RMRF	Adj R-sq	Alpha	RMRF	SMB	HML	MOM	Adj R-sq
1 (High)	0.66	6.64	0.24 (0.88)	1.25 (20.16)	0.681	-0.01 (-0.09)	1.12 (39.17)	0.81 (24.27)	-0.12 (-3.10)	0.21 (9.17)	0.950
2	0.66	6.89	0.22 (0.80)	1.31 (20.55)	0.690	-0.01 (-0.11)	1.17 (40.13)	0.78 (23.01)	-0.20 (-5.11)	0.24 (10.29)	0.952
3	0.56	6.53	0.16 (0.58)	1.23 (19.95)	0.677	-0.10 (-0.87)	1.10 (38.36)	0.81 (24.23)	-0.10 (-2.59)	0.21 (8.89)	0.948
4	0.41	6.40	0.00 (0.01)	1.23 (21.12)	0.701	-0.19 (-1.83)	1.08 (42.53)	0.78 (26.28)	-0.13 (-3.87)	0.16 (7.77)	0.957
5	0.47	6.11	0.07 (0.31)	1.23 (25.33)	0.772	-0.09 (-0.89)	1.12 (42.97)	0.64 (21.17)	-0.08 (-2.20)	0.12 (5.69)	0.951
6	0.34	6.27	-0.07 (-0.31)	1.24 (24.02)	0.752	-0.24 (-2.47)	1.12 (46.13)	0.71 (25.08)	-0.09 (-2.62)	0.13 (6.44)	0.960
7	0.36	6.32	-0.06 (-0.27)	1.27 (25.54)	0.774	-0.20 (-1.61)	1.16 (36.78)	0.64 (17.32)	-0.06 (-1.48)	0.10 (3.85)	0.933
8	0.32	6.04	-0.09 (-0.45)	1.22 (26.19)	0.783	-0.21 (-1.76)	1.12 (373.63)	0.63 (13.38)	-0.02 (-0.40)	0.05 (1.95)	0.935
9	0.37	5.86	-0.03 (-0.13)	1.19 (26.54)	0.788	-0.09 (-0.71)	1.09 (33.23)	0.60 (15.76)	0.03 (0.76)	-0.02 (-0.85)	0.916
10 (Low)	0.07	6.07	-0.34 (-1.66)	1.23 (26.39)	0.786	-0.27 (-1.78)	1.10 (28.07)	0.54 (11.90)	-0.03 (-0.64)	-0.11 (-3.59)	0.889
1-10 Spread	0.59	2.96	0.58 (2.70)	0.02 (0.45)	0.001	0.26 (1.66)	0.03 (0.68)	0.27 (5.78)	-0.09 (-1.59)	0.33 (10.07)	0.508

Table X: Summary Statistics for Small Blend US Open-end Mutual Funds
Formed on Lagged 1-Year Return from 1993.1-2008.12, 192 Months

RMRF is the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate. SMB factor is constructed using the average return on the three small portfolios minus the average return on the three big portfolios. HML factor is constructed using the average return on the two value portfolios minus the average return on the two growth portfolios. MOM factor is constructed using average return on the two high prior return portfolios minus the average return on the two low prior return portfolios. (All data mentioned above can be downloaded from Kenneth R. French Library).

Portfolio	Monthly Excess Return	Std Dev	CAPM			4-Factor Model					
			Alpha	RMRF	Adj R-sq	Alpha	RMRF	SMB	HML	MOM	Adj R-sq
1 (High)	0.46	5.14	0.13 (0.66)	0.99 (21.32)	0.705	-0.20 (-2.08)	0.98 (40.12)	0.72 (25.34)	0.30 (9.00)	0.10 (4.93)	0.939
2	0.56	4.75	0.25 (1.38)	0.92 (21.82)	0.715	-0.09 (-1.11)	0.94 (46.50)	0.68 (29.01)	0.67 (13.53)	0.07 (4.49)	0.952
3	0.53	4.82	0.21 (1.18)	0.94 (23.21)	0.739	-0.12 (-1.50)	0.98 (49.24)	0.67 (28.83)	0.42 (15.56)	0.04 (2.24)	0.955
4	0.46	4.65	0.16 (0.90)	0.90 (22.14)	0.721	-0.19 (-2.51)	0.94 (49.34)	0.66 (29.82)	0.44 (17.06)	0.05 (3.03)	0.955
5	0.52	4.75	0.21 (1.18)	0.94 (23.44)	0.743	-0.11 (-1.32)	0.97 (47.98)	0.64 (27.52)	0.43 (15.83)	0.01 (0.85)	0.952
6	0.43	4.73	0.12 (0.68)	0.92 (22.51)	0.727	-0.16 (-1.58)	0.97 (38.69)	0.60 (20.55)	0.51 (15.03)	-0.05 (-2.61)	0.924
7	0.47	4.74	0.16 (0.89)	0.93 (23.26)	0.740	-0.10 (-0.96)	0.99 (36.30)	0.55 (17.38)	0.50 (13.62)	-0.06 (-2.77)	0.912
8	0.38	4.72	0.07 (0.41)	0.93 (23.32)	0.741	-0.16 (-1.50)	0.97 (35.02)	0.54 (16.92)	0.47 (12.56)	-0.07 (-3.13)	0.901
9	0.41	4.85	0.09 (0.52)	0.93 (23.76)	0.748	-0.14 (-1.33)	1.01 (36.92)	0.55 (17.36)	0.50 (13.57)	-0.08 (-3.86)	0.915
10 (Low)	0.10	5.22	-0.24 (-1.30)	1.04 (24.13)	0.754	-0.38 (-3.06)	1.03 (33.14)	0.59 (16.26)	0.40 (9.52)	-0.14 (-5.68)	0.905
1-10 Spread	0.36	2.31	0.38 (2.27)	-0.05 (-1.29)	0.009	0.18 (1.29)	-0.05 (-1.37)	0.13 (3.37)	-0.10 (-2.21)	0.24 (8.67)	0.411

Table XI: Summary Statistics for Small Value US Open-end Mutual Funds

Formed on Lagged 1-Year Return from 1993.1-2008.12, 192 Months

RMRF is the value-weight return on all NYSE, AMEX, and NASDAQ stocks minus the one-month Treasury bill rate. SMB factor is constructed using the average return on the three small portfolios minus the average return on the three big portfolios. HML factor is constructed using the average return on the two value portfolios minus the average return on the two growth portfolios. MOM factor is constructed using average return on the two high prior return portfolios minus the average return on the two low prior return portfolios. (All data mentioned above can be downloaded from Kenneth R. French Library).

Portfolio	Monthly Excess Return	Std Dev	CAPM			4-Factor Model					
			Alpha	RMRF	Adj R-sq	Alpha	RMRF	SMB	HML	MOM	Adj R-sq
1 (High)	0.58	4.37	0.31 (1.70)	0.82 (19.69)	0.671	0.01 (0.08)	0.87 (33.71)	0.62 (20.59)	0.50 (14.26)	-0.03 (-1.23)	0.907
2	0.64	4.42	0.36 (2.06)	0.85 (21.31)	0.705	0.09 (0.92)	0.90 (36.55)	0.57 (19.76)	0.52 (15.45)	-0.06 (-3.12)	0.916
3	0.48	4.49	0.20 (1.07)	0.85 (20.24)	0.683	-0.09 (-0.78)	0.93 (33.26)	0.53 (16.45)	0.59 (15.55)	-0.06 (-3.59)	0.896
4	0.43	4.40	0.16 (0.87)	0.82 (19.16)	0.659	-0.14 (-1.40)	0.91 (36.09)	0.54 (18.32)	0.65 (19.04)	-0.09 (-4.65)	0.911
5	0.47	4.55	0.18 (0.96)	0.85 (19.56)	0.668	-0.14 (-1.31)	0.95 (33.78)	0.56 (17.27)	0.63 (16.66)	-0.06 (-2.66)	0.899
6	0.45	4.46	0.17 (0.92)	0.83 (19.25)	0.661	-0.12 (-1.11)	0.93 (34.86)	0.51 (16.43)	0.66 (18.32)	-0.11 (-5.00)	0.904
7	0.44	4.26	0.19 (0.99)	0.77 (17.63)	0.621	-0.10 (-1.87)	0.87 (29.45)	0.50 (14.67)	0.64 (16.14)	-0.10 (-4.10)	0.872
8	0.40	4.51	0.12 (0.64)	0.83 (18.70)	0.648	-0.17 (-1.48)	0.94 (32.08)	0.51 (15.15)	0.67 (16.96)	-0.11 (-4.53)	0.888
9	0.47	4.64	0.19 (0.91)	0.83 (17.23)	0.610	-0.06 (-0.44)	0.90 (28.50)	0.58 (15.76)	0.66 (15.44)	-0.16 (-6.28)	0.874
10 (Low)	0.24	4.77	-0.06 (-0.31)	0.90 (19.87)	0.675	-0.25 (-1.90)	0.95 (28.59)	0.52 (13.57)	0.56 (12.45)	-0.16 (-5.87)	0.870
1-10 Spread	0.34	1.92	0.37 (2.70)	-0.08 (-2.46)	0.031	0.26 (2.01)	-0.08 (-2.51)	0.09 (2.46)	-0.06 (-1.42)	0.13 (5.02)	0.230

Table XII: Portfolio 1 and 10 Performance Comparison

Portfolio	Monthly Excess Return	Std Dev	CAPM			4-Factor Model					
			Alpha	RMRF	Adj R-sq	Alpha	RMRF	SMB	HML	MOM	Adj R-sq
Large Growth											
1 (High)	0.43	5.31	0.05 (0.35)	1.13 (34.27)	0.861	-0.05 (-0.49)	1.08 (46.05)	0.11 (3.91)	-0.25 (-7.88)	0.21 (11.08)	0.948
10 (Low)	0.17	5.32	-0.21 (-1.59)	1.15 (38.15)	0.885	0.05 (0.41)	1.05 (34.14)	-0.08 (-2.10)	-0.22 (-5.39)	-0.14 (-5.45)	0.910
1-10 Spread	0.25	2.85	0.26 (1.25)	-0.02 (-0.38)	0.001	-0.10 (-0.60)	0.03 (0.68)	0.18 (3.87)	-0.03 (-0.46)	0.34 (10.56)	0.459
Large Blend											
1 (High)	0.48	4.15	0.17 (2.92)	0.93 (70.04)	0.963	0.05 (0.87)	0.98 (73.81)	0.02 (1.31)	0.11 (6.07)	0.07 (6.13)	0.972
10 (Low)	0.14	4.10	-0.16 (-1.51)	0.88 (37.39)	0.880	-0.09 (-1.35)	0.92 (52.33)	-0.10 (-5.01)	0.17 (6.97)	-0.13 (-9.38)	0.951
1-10 Spread	0.34	1.72	0.32 (2.62)	0.05 (1.79)	0.017	0.14 (1.50)	0.06 (2.55)	0.12 (4.48)	-0.06 (-1.79)	0.20 (10.47)	0.500
Large Value											
1 (High)	0.36	3.80	0.09 (0.90)	0.81 (33.43)	0.855	-0.04 (-0.65)	0.92 (57.38)	-0.04 (-2.40)	0.35 (-15.99)	-0.03 (-2.69)	0.952
10 (Low)	0.18	4.04	-0.09 (-0.61)	0.81 (24.76)	0.763	-0.08 (-1.09)	0.89 (46.28)	-0.05 (-2.24)	0.38 (14.43)	-0.19 (-12.09)	0.939
1-10 Spread	0.18	1.25	0.18 (2.00)	-0.00 (-0.10)	0.000	0.04 (0.56)	0.03 (1.34)	0.01 (0.25)	-0.03 (-1.19)	0.15 (10.05)	0.381
Mid-cap Growth											
1 (High)	0.67	6.53	0.25 (0.97)	1.25 (21.09)	0.701	0.03 (0.20)	1.13 (35.65)	0.55 (15.02)	-0.29 (-6.71)	0.31 (11.93)	0.936
10 (Low)	0.24	5.48	-0.14 (-0.95)	1.16 (33.82)	0.858	-0.10 (-0.69)	1.08 (31.27)	0.27 (6.65)	-0.06 (-1.38)	-0.05 (-1.66)	0.893
1-10 Spread	0.42	3.24	0.39 (1.69)	0.09 (1.66)	0.014	0.12 (0.76)	0.05 (1.31)	0.29 (6.24)	-0.22 (-4.17)	0.35 (11.02)	0.599
Mid-cap Blend											
1 (High)	0.65	5.58	0.28 (1.39)	1.11 (23.75)	0.748	0.05 (0.36)	1.07 (27.96)	0.49 (11.08)	0.04 (0.79)	0.15 (4.79)	0.874
10 (Low)	0.33	4.35	-0.03 (-0.19)	1.09 (26.83)	0.791	0.13 (0.89)	1.03 (27.25)	0.23 (5.15)	0.15 (3.01)	-0.27 (-8.90)	0.865
1-10 Spread	0.32	3.95	0.31 (1.10)	0.01 (0.22)	0.000	-0.08 (-0.34)	0.04 (0.60)	0.27 (3.90)	-0.11 (-1.43)	0.42 (8.91)	0.413
Mid-cap Value											
1 (High)	0.55	4.32	0.25 (1.90)	0.90 (30.28)	0.828	0.02 (0.22)	0.98 (38.48)	0.28 (9.55)	0.39 (11.25)	-0.01 (-0.28)	0.907
10 (Low)	0.27	4.42	-0.02 (-0.12)	0.86 (22.18)	0.721	-0.08 (-0.66)	0.92 (30.82)	0.23 (6.65)	0.47 (11.58)	-0.21 (-8.60)	0.877
1-10 Spread	0.28	2.00	0.27 (1.85)	0.04 (1.24)	0.008	0.10 (0.80)	0.06 (1.75)	0.05 (1.37)	-0.08 (-1.91)	0.20 (7.88)	0.321
Small Growth											
1 (High)	0.66	6.64	0.24 (0.88)	1.25 (20.16)	0.681	-0.01 (-0.09)	1.12 (39.17)	0.81 (24.27)	-0.12 (-3.10)	0.21 (9.17)	0.950
10 (Low)	0.07	6.07	-0.34 (-1.66)	1.23 (26.39)	0.786	-0.27 (-1.78)	1.10 (28.07)	0.54 (11.90)	-0.03 (-0.64)	-0.11 (-3.59)	0.889
1-10 Spread	0.59	2.96	0.58 (2.70)	0.02 (0.45)	0.001	0.26 (1.66)	0.03 (0.68)	0.27 (5.78)	-0.09 (-1.59)	0.33 (10.07)	0.508
Small Blend											
1 (High)	0.46	5.14	0.13 (0.66)	0.99 (21.32)	0.705	-0.20 (-2.08)	0.98 (40.12)	0.72 (25.34)	0.30 (9.00)	0.10 (4.93)	0.939
10 (Low)	0.10	5.22	-0.24 (-1.30)	1.04 (24.13)	0.754	-0.38 (-3.06)	1.03 (33.14)	0.59 (16.26)	0.40 (9.52)	-0.14 (-5.68)	0.905
1-10 Spread	0.36	2.31	0.38 (2.27)	-0.05 (-1.29)	0.009	0.18 (1.29)	-0.05 (-1.37)	0.13 (3.37)	-0.10 (-2.21)	0.24 (8.67)	0.411
Small Value											
1 (High)	0.58	4.37	0.31 (1.70)	0.82 (19.69)	0.671	0.01 (0.08)	0.87 (33.71)	0.62 (20.59)	0.50 (14.26)	-0.03 (-1.23)	0.907
10 (Low)	0.24	4.77	-0.06 (-0.31)	0.90 (19.87)	0.675	-0.25 (-1.90)	0.95 (28.59)	0.52 (13.57)	0.56 (12.45)	-0.16 (-5.87)	0.870
1-10 Spread	0.34	1.92	0.37 (2.70)	-0.08 (-2.46)	0.031	0.26 (2.01)	-0.08 (-2.51)	0.09 (2.46)	-0.06 (-1.42)	0.13 (5.02)	0.230