Performance Implications of Active Management of Institutional Mutual Funds[1]

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Abstract: Although mutual fund performance has been dissected from almost every angle, very little attention has been paid to the connection between the actual active decisions made by management and the subsequent performance outcomes. In this paper we use information on institutional mutual funds to examine the implications of active positions and style tilts taken by management for the fund's realised alpha, tracking error and information ratio. We identify some areas where the funds across the entire sample have success (active positions, and growth and winning stock tilts) and others where they fall short (value and loser stock tilts). We identify that there is significant variation in these findings when we extend our analysis to examine the impact of these active decisions on performance for different styles of funds during periods of weak and strong markets. Finally, we repeat the analysis by incorporating the initial choice of investment style with the active decisions in order to judge their dual impact on investment performance.

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An age old question has been why are investors willing to incur significant costs by delegating the majority of their investment funds to active managers (French, 2008). The studies of the performance of active funds are numerous with the general finding being that as a group they underperform their benchmark once account is taken of their management fees and the other incremental costs associated with employing active managers. Of course, the fact that the active manager does not outperform does not preclude that many managers will outperform their benchmark over any measurement period. However, most managers are appointed on the basis of their past performance which will only translate into value-adding future outperformance if it proves that there is a high level of persistence in manager performance (Gohal and Wahal, 2008). Again the empirical evidence suggests that there is little evidence of such persistence which adds to the argument that investors would be better to placed to delegate the majority of their funds to low costs passive management (Busse et al., 2010).

Although we have studies that examined the implications of both fund and managers characteristics for fund performance dating back two decades (Golec, 1996; Chevalier and Ellison, 1999; Yan, 2008; Karoui and Meier, 2009)), it is only in very recent times we have be seen a move towards trying to establish a direct link between the active decisions made by managers and their investment outcomes. Cremers and Petajisto (2009) and Petajisto (2010) developed a measure of the extent to which a fund's actual weights differed from their benchmark weights (which we shall refer to as a fund's active position). They found that the best performance came from the managers who took the largest active positions while the "closet indexers" generated negative after-fees performance. Wermers (2010) introduced a measure of active management that captured three types of style drift: value/growth, size and momentum. Unlike an earlier study by Brown and Harlow (2001), Wermers found evidence to suggest that greater style drift is positively associated with superior performance.

The focus of this paper will be on the active positions and style drifts of institutional active managers and how they impact on the fund's realised performance (excess returns relative to the benchmark), risk (tracking error to the benchmark) and the manager's information ratio (excess returns divided by tracking error)which is a commonly used measure of his skill. We decompose our findings in a number of dimensions including tracking the relationship between the active decisions made by fund management and fund performance during (i) periods of good and bad market performance, (ii) by the size of the fund, and (iii) by type of investment style pursued by the fund (growth, value and market neutral). We will provide evidence on the typical positions made by managers and the implications of these positions for investment outcomes. As such we will provide information relevant to the active /passive debate by way of providing insights as to what forms of active decisions made by fund managers have in the past brought rewards to their clients. Our results highlight numerous instances of manager strength and manager failings that suggest factors that investors should take into account when choosing funds.

The structure of the paper is as follows: Section 1 we provide a more detailed introduction to our study. In Section 2, we outline the data and methodology used in this study. We report our findings in Section 3 while Section 4 provides us with the opportunity to provide a summary of our findings and to suggest some opportunities for further research.

Section 1: Introduction

Capital markets are replete with managers whose mandates are to get the best investment outcome for their clients. The resulting competition between managers has been considered beneficial largely because of the contribution that it makes to producing efficient pricing in markets. However, the extent and form of the competition that we currently see in (particularly) equity markets has been subject of much discussion in recent years. Initially, the concern was with the ability of active manager to add value for their clients. It was the work of Treynor (1965), Sharpe (1966) and Jensen (1968) that gave credence to the use of passive management as a cost-effective way of gaining market exposure. An equally important challenge for active management has come from the evidence on market anomalies that have evolved over the last 40+ years. Now we have a situation where not only are active managers being challenged on the grounds that they do not make a positive contribution to the wealth of their clients but managers are also seen as being detrimental to the establishment of efficient pricing within markets. Bird et al. (2011A) and Vayanos and Woolley (2008) demonstrate how a combination of costly active managers with performance chasing clients will produce inefficient pricing.

The starting point of our discussions is that each mutual fund follows a particular investment style (e.g. small cap/large cap, value/growth) and the fund's performance is measured relative to a benchmark which is representative of that style. It is usual to divide the two stages of active management into a stock selection phase and a portfolio construction stage. Stock selection is the process by which a manager determines the extent to which he likes each stock (i.e. his expected alpha for each stock). The manager's alpha estimate will reflect his expectations relating to stock's factor exposure (i.e. how well will small cap stocks perform over the time horizon) and to idiosyncratic characteristics of the stock (e.g. the likely success of a new product that it is about to launch). The estimates of the alpha's (i.e. the manager's preferences) then become the basis for the portfolio construction phase where the manager determines the weights to be assigned to each stock in the portfolio.

There are many ways that an active manager can attempt to add value and these will vary depending on the mandate of the manager. In this paper we restrict our attention to the management of a domestic equity portfolio in order to reduce the range of value adding options (e.g. excluding the currency decision which would be relevant to active global equity managers). Similar to Cremers and Petajisto (2009), we also assume that we are only dealing with long-only investment in the underlying securities and thus avoid any consideration of derivative securities. This presumption is fairly accurate as the typical

fund is restrictive in the use that it can make of derivative securities. Another assumption made is that funds are always fully invested and so we preclude the option for management to attempt to time the market by switching their holding between shares and cash. The typical mandate of a fund precludes it from pursuing any significant market timing.

We use the actual weights assigned to stocks to back out two of the most important active decisions made by a fund: the active position that it takes on individual stocks and the style tilts that it takes with respect to several factors/anomalies that have been demonstrated to play an important role in explaining stock returns. The active position is a measure of the extent to which the actual holdings of a fund differ from its benchmark. Cremers and Petajisto (2009) found a positive relationship between active stock positions and performance suggesting that it is the most active managers who will achieve the best performance. One possibility is that a manager will generate a large active position while still investing in stocks whose characteristics are consistent with the manager's investment style. However, another option available to fund managers in their quest for better performance is introduce into their portfolios stocks that result in factor exposures that are at variance with his style. Therefore, the second measure of active management that we introduce is a measure of style tilts that are based on three individual factors (i.e. value/growth, momentum and size). Wermers (2010) found a positive association between style tilts and performance. In summary, in this paper we evaluate the performance implications of four types of active decisions made by managers: the active position, the value/growth style tilt, the momentum style tilt and the size style tilt.

The intention of a manager when taking active positions is to produce a return that exceeds the benchmark (the excess returns commonly referred to as the **alpha**). Of course there is no guarantee that any active decision will lead to a positive outcome so there are risks for investors from appointing active managers. This risk is typically measured by the standard deviation of the excess returns which is commonly referred to as the fund's ***tracking error***. Further, it is also common to use the fund's **information ratio**, which is calculated by dividing the fund's realised excess return by its tracking error, as a measure of the skill of the manager. It is important to recognise that excess returns, tracking error and information ratio are all ex-post measures which are influenced not only of the extent of the active decisions made by the manager but also the manager's skill and the behaviour of the market over the measurement period.

Markets are inherently noisy and hence it has it has proved difficult to extract a reliable measure of the competence of managers using historical data Our focus in this paper is on providing some insights into their competence by identifying the relationship between decisions over which the managers have control, active position and the three style tilts, and the outcomes from their investment decisions, excess returns (alpha), tracking error and information ratio. By examining this relationship between the various active decisions by management and the subsequent investment outcomes, we will obtain insights into the areas where active management has most to offer and so provide an indication as to where to focus when trying to identify managers with the greatest potential

to add value. For example, Bird et al. (2011) have identified that *ceteris paribus* it is the manager's who perceive that they have the greatest potential to add value who will take the largest active positions. If managers are best placed to assess their ability, then the extent of the active positions taken by managers would provide a useful signal to investors attempting to identify managers with the greatest ability.

Section 2: Data and Method

The Ex-Ante Measures of Active Management

In this paper we concentrate our attention on two measures of active management: active positions and style tilts. Active position is a measure of the extent to which the weights assigned to stocks in the fund's actual portfolio differ from the weights assigned to stocks in the fund's benchmark. If the active positions aggregated to zero, then this would mean that each stocks is assigned its index weighting which of course would be an index fund. Active management involves assigning weights to benchmark stocks that are different to their benchmark weightings ad/or investing in stocks that are not in the benchmark. The measure that we use for *active position* is fundamentally the same as that developed in Cremers and Petajisto (2009). As Cremers and Petajisto pointed out, an active portfolio can be regarded as an investment in the benchmark portfolio plus a long and a short portfolio of equal magnitude. The measure of active management that they propose is equivalent to the proportion that this long/short portfolio represents of the total fund:

$$\text{Active position} = 0.5 \sum_{j=1}^{N} abs\,(w_{f,j} + w_{i,j})$$

where the active position is one half of the aggregate of the absolute differences between the actual fund weighting in a particular stock, $w_{f,j}$, and the index weighting for that stock, $w_{i,j}$.

We have quarterly data on fund portfolio holdings from Thomson Reuters and the quarterly portfolio holdings of 18 indexes. Therefore once we have assigned a particular index as the benchmark for a fund, we have all of the information required to calculate the fund's active position on a quarterly basis. The benchmark index that Cremers and Petajisto assign to a fund each quarter is that which in that which minimises the fund's active position in that quarter. Although we agree with the principle of determining the appropriate benchmark for a fund based on the index that it most closely tracks, we do not agree with the approach of making this assessment on a quarterly basis and so potentially assigning a different benchmark to a fund each quarter. The approach that we take is similar to that of Cremers and Petajisto to the extent that we determine each quarter the index that most closely tracks each fund's actual portfolio (i.e the index that gives it the smallest active position). As a consequence over the life of each fund we have a benchmark index assigned each quarter. We then allocate to each fund as its benchmark, that index that was chosen in the greatest number of quarters. In this way, we are able to maintain the principle of choosing the index that is closest to the actual holdings while being able to maintain a single benchmark over the life of the fund.

As discussed previously, it is possible for a fund to have large active positions without introducing any serious departures from the fund's benchmark exposures to value/growth, momentum and size. This would be the case, for example, where the manager of a small cap growth fund restricted his investments to be solely in small cap growth stocks. However, the managers may also have expectations as to the relative performance of various factors over the investments time horizon and wish to build this into their portfolios. For example, a small cap growth manager might expect that large cap stocks will perform best over the investment time horizon and so tilt his portfolio more towards large cap stocks than one would expect to be the case in a small cap growth portfolio. In this instance, the performance of the fund not only reflects the consequences of the active positions but also the relative performance of the factors behind the style tilts.

We develop ***a measure of style tilt*** that reflects the extent to which the style exposures in the fund's portfolio differ from those in the fund's benchmark. The approach that we use to measure style tilts has its foundations in a method used in Wermers (2010). The Wermers measure is based upon each stocks exposure to three factors: value/growth momentum and size. Value/growth is measured by the stocks book-to-market; momentum by the stock's return over the previous six months and size by the market value of the firm's equity. Every quarter each stock is ranked on the basis of each of these factors and assigned a score from one to five: a one if it ranks in the top quintile by that factor, a two if in the second quintile and so on. For example a stock that ranks at the end of a quarter in the top quintile of book-to-market will be assigned a score of five for its value/growth factor.

The style tilt for each stock is then calculated as follows:

$$\text{Style Tilt in dimension } l = \sum_{j=1}^{N} (w_j^a C_j^l - w_j^i C_j^l)$$

where w_j^a is the weight of stock j in the funds portfolio, w_j^i is the weight of stock j in the fund's benchmark portfolio and C_j^l is stock j's score in dimension l which is determined as explained above. There are three dimensions (size, value/growth and momentum) and each quarter each fund would have a separate style tilt score for each dimension. Unlike the active position score which can only be positive, the style tilts can take on positive or negative values. For example, if the small cap growth fund had a size tilt of +0.4, then it would have a positive tilt towards size which means that on average it stocks have a higher market cap than do the stocks in the fund's benchmark.

The Ex-Post Measures of Fund Performance

Our interest is on the influence of the active decisions made by fund managers on the performance of the funds. We use three commonly used measures of performance that we calculate on a quarterly basis: excess return (alpha); tracking error; information ratio. The excess returns are calculated relative to the fund's benchmark index, the tracking error is the standard deviation of these excess returns calculated on a daily basis over the quarter

while the information ratio is the excess return for the quarter divided by the tracking error of the quarter.

The Data

Our data set extends from 1999 to 2009 with the majority of the data being collected on a quarterly basis. We restrict our analysis to those mutual funds that have been designated as managing funds from institutional clients. The reason that we do this is because we want to restrict our analysis to managers investing on behalf of more sophisticated clients whose fund choice is more driven by the perceived ability of the managers rather on the advice of third parties who advice is heavily influenced by the level of commissions paid by the funds (Baker et al., 2009). Most of the data pertaining to the funds is obtained from CRSP Survivor-Bias-Free US Mutual Fund Database with the only exception being the quarterly fund holdings data which is obtained from Thomson Reuters S12 Mutual Fund Holdings.[2]

Central to our analysis are the measures of active management namely Active positions and estimation of Style Drift. Consistent with Cremers and Petajisto (2009), we estimate the level of active management by comparing the holdings of a mutual fund with the holdings (i.e. composition) of the index. In order to construct the active position, we require both fund holdings data (from Thomson Reuters) and data on index constituents. We collected index compositions data for a total of 18 equity market indexes of which nine belonged to the Russell family (namely the Russell 1000, Russell 2000, and Russell Midcap indexes, plus the value and growth components of each) and sourced from Standard and Poors (the S&P400, S&P500 and S&P600 indexes, plus the value and growth components of each)[3].

Finally the market and accounting data relating to the stocks that are necessary for the estimation of style drift are obtained from Compustat. We make use of the CRSP/Compustat Merged Database (CCM) to link the stock data to funds information to perform our analysis.

Sample and Data Selection

The fund selection process began by collecting actively managed funds over the period from 1999 to 2009 from the universe of CRSP Survivor-Bias-Free US Mutual Fund Database.[4] From the sample of active funds, we isolated the institutional funds using the

[2] Given that CRSP fund holdings data was only available from 2003, the use of Thomson Reuters S12 Fund holdings data enables us to significantly expand the sample period.

[3] We wish to thank Russells and Stand and Poor for providing this information)

[4] Consistent with other studies in the mutual fund area, we use the funds' strategic objective provided by CRSP to filter our sample. Since CRSP provide several sets of strategic objectives (namely Strategic Insights and Lipper Investment Objectives) and neither set of strategic objectives data covers the entire sample period, we use a combination of Strategic Insights and Lipper Investment Objectives to filter our final sample. We selected funds with the following Lipper Investment objectives: G, GI, LSE, MC, MR and SG. Funds from the Strategic Insights objective codes, we selected AGG, GRI, GRP, ING, SCG and GMC.

institutional fund identifier (inst_fund) from CRSP.[5] The final sample contains over 1835 actively managed institutional funds for our sample period.

We pooled the quarterly fund information to form our final sample. To be included in the final sample, we require information for the fund for at least 3 quarter. In order to eliminate the impact of outliers, we trimmed the fund fees, excess returns and turnover at the 1st and 99th percentile. After all the restriction, the final sample consists of over 36000 fund quarter observations over the 1999-2009 period[6].

The Methodology

The analysis is conducted by pooled regressions with one of excess returns, tracking error and information ratio as the dependent variable and all of the four measures of active management as the explanatory variables. The excess returns are calculated on a before-fees basis as we wish to capture the impact of active management (the inputs) on performance (the outputs) and do not wish to contaminate the results by the introduction of fees. We also make no adjustment to the excess returns by way, for example, of the Fama and French (1993) three-factor model or the Carhart (1997) four-factor model as again as we are trying to identify how tilts on these factors affect performance, it would not be appropriate to adjust the performance measures in advance for the impact of these factors. Similar to Cremers and Petajisto (2009) we include in most of our regressions, a number of control variables that have been found to have some association with fund performance: turnover, expenses, size, age, past inflows, past returns and benchmark returns. Our basic regression equation is set out below where the dependent variable is excess returns:

$$r_{i,\,t\ to\ t+1} = a_i + b_{1,i}AP_{i,t} + b_{2,i}VGST_{i,t} + b_{3,i}MST_{i,t} + b_{4,i}SGST_{i,t} + \sum_{j=1}^{9} CV_{i,j,t} + Year\ Fixed\ Effects + e_{i,t} \quad (1)$$

where $r_{i,\,t\ to\ t+1}$ is the quarterly return for fund *i* relative to is benchmark index over the period *t* to *t=1;*

$AP_{i,}$ is the active position of fund *i* at time *t*

$VGST_{i,}$ is the value growth style tilt for fund *i* at time t

$MST_{i,t}$ is the momentum style tilt for fund *i* at time t

$SGST_{i,t}$ is the size style tilt for fund *i* at time t

$CV_{i,j,t}$ is the value for control variable *j* for fund I at time t

This equation is repeated with the fund's tracking error ($t_{i,\,t\ to\ t+1}$) and information ratio as the dependent variable. The items of interest in these equations are the coefficients, $b_{1..4,}$ which provide us with information on the association between the four active decisions and each of the three dependent variables. A positive value for the coefficient on active positions does not suggest that all funds benefit from taking large active positions relative to their benchmark but rather that on average the performance of the funds has benefited from taking larger active

[5] Data regarding institutional fund status became from1999 which is the reason that our study has been confined to the 1999-2009 period.

[6] We started in 1999 as that was the year in which S&P first provided a separate designation for institutional mutual funds.

positions. A positive value on each of the style tilts (e.g a tilt towards value stocks) also suggests that on average funds have benefited for a tilt towards value stocks relative to that which is implicit in their benchmark. By implication it also suggests that funds would have been penalised by any tilts in the opposite direction (e.g. towards growth stocks). We question whether it is correct to assume a linear assumption relationship between style tilts and fund performance. In order to test this we expand Equation 1 by the use of dummy variables to allow for the possibility that there is a different relationship between fund performance and negative and positive style tilts. Our findings confirm this to be the case with even some instances where both positive and negative style tilts on the same factor have a positive impact on performance highlighting the potential for managers to generate improved performance by the judicial variation in the style tilts that they introduce to their fund through time.

Table 1 Index benchmark allocations and index returns

This table shows the distribution of funds to the allotted benchmark indices. We determine each quarter the index that most closely tracks each fund's actual portfolio (i.e. the index that gives it the smallest active position). As a consequence over the life of each fund we have a benchmark index assigned each quarter. Funds are allocated allocate to each fund as its benchmark, that index that was chosen in the greatest number of quarters. Returns are each index's average annualised index returns over the sample period.

Index Name	Number Of Funds	Return (%PA)
Russell 1000	191	1.28%
Russell 1000 Growth	21	-1.09%
Russell 1000 Value	272	2.86%
Russell 2000	7	4.89%
Russell 2000 Growth	139	2.00%
Russell 2000 Value	87	7.09%
Russell Mid	5	5.94%
Russell Mid Growth	166	3.29%
Russell Mid Value	94	6.63%
S&P 400	20	6.85%
S&P 400 Growth	47	5.71%
S&P 400 Value	48	7.96%
S&P 500	319	0.87%
S&P 500 Growth	117	-0.38%
S&P 500 Value	89	1.83%
S&P 600	27	6.66%
S&P 600 Growth	130	5.59%
S&P 600 Value	56	7.00%

In all the analysis discussed to date both the measures of active management and of performance are calculated relative to the benchmark index assigned to the fund. By so doing we have abstracted from the fund's style and so evaluated the consequences for the fund's performance of the active decisions taken by the management relative to their assigned

benchmark. One value adding decision made by managers that is often ignored in academic studies is the choice of style when the fund is established but not all styles are created equal as is reflected by the fact that some styles outperform other styles over extended time periods. We report in Table 1, the number of funds assigned to each of our 18 indexes and also the annualised performance of each of these indexes which reflects the extent to which some styles have outperformed others over our 11 years sample period. In order to incorporate the style choice as well as the active decisions into our analysis we repeat much of the analysis as discussed above but this time using a well-diversified market index (the Russells 1000) to calculate both the performance of each fund and also the four measures of active management.

Summary Statistics

We present in Panel A of Table 2 details of the extent of the active decisions by management for the different styles of funds and also under differing prevailing market conditions. First considering the information for all funds, it is apparent that managers in aggregate have a slight tilt towards value stocks and strong momentum stocks but little in the way of a size tilt. Further, it seems that the managers do not differentiate the extent of their active positions or their value/growth tilt through good and bad market conditions. However, they do slightly reduce their momentum tilt[7] and increase their tilt towards small cap stocks during period of weak market performance.

There would seem to be discernible differences between the active management decisions made by the different types of active managers. The growth funds run the highest active positions while the style neutral managers run the lowest. Again the growth managers run the largest tilt towards value stocks with the other managers being quite neutral with respect to value/growth tilt. The style neutral managers have a much smaller tilt towards strong momentum stocks (winners) than is the case for the other two types of managers. Finally, there is little difference in the size tilts pursued by the three types of managers.

In Panel B of Table 2, we repeat the same information as in panel A, except this time we divide our sample on the basis fund size rather than market conditions. In very few instances is there a suggestion that any of the types of managers for which the fund size has a great influence on the active decisions that are made. The major exceptions being that the smaller funds take on a larger tilt towards winning momentum stocks and small cap stocks than do the large funds. Otherwise the information contained in Panel B confirms a number of previous findings such as the growth funds take on the largest tilts towards value stocks and winning stocks.

[7] In subsequent discussion of the momentum tilt, we describe a positive tilt as a tilt towtads winning stocks (i.e. stocks that have realised very good performance over the previous six months) and a negative tilt as a tilt towards losing stocks (i.e. stocks that have performed poorly over the previous six months).

Table 2 Mean and Standard Deviations of active management measures

This table details the average and standard deviations of our active management measures for each type of funds. In Panel A, we contrast the fund's average active management measures in different market condition. We define "strong" market conditions as the years: 1999, 2003-2006 and 2009. The remaining years of the sample are designated as years of "weak" market conditions. In Panel B, we contrast the difference in the level of active management for the smallest and largest tercile of funds. We sort the sample by the fund's tangible net assets. We then classified as "Small" fund for all the funds that falls in the first tercile, while the largest tercile of the sample are designated as the "large" funds.

Panel A

	ALL FUNDS							
	Active		B/M Drift		Mom Drift		Size Drift	
Market Conditions	Weak	Strong	Weak	Strong	Weak	Strong	Weak	Strong
Ave Positions	0.762	0.763	0.048	0.052	0.139	0.170	-0.032	-0.026
Std Deviations	(0.157)	(0.154)	(0.328)	(0.367)	(0.403)	(0.450)	(0.268)	(0.240)
	GROWTH FUNDS							
	Active		B/M Drift		Mom Drift		Size Drift	
Market Conditions	Weak	Strong	Weak	Strong	Weak	Strong	Weak	Strong
Ave Positions	0.832	0.827	0.136	0.172	0.177	0.212	-0.029	-0.025
Std Deviations	(0.124)	(0.127)	(0.318)	(0.377)	(0.447)	(0.467)	(0.277)	(0.282)
	VALUE FUNDS							
	Active		B/M Drift		Mom Drift		Size Drift	
Market Conditions	Weak	Strong	Weak	Strong	Weak	Strong	Weak	Strong
Ave Positions	0.782	0.784	-0.005	-0.037	0.120	0.169	-0.038	-0.031
Std Deviations	(0.145)	(0.139)	(0.355)	(0.370)	(0.418)	(0.492)	(0.277)	(0.249)
	STYLE NEUTRAL FUNDS							
	Active		B/M Drift		Mom Drift		Size Drift	
Market Conditions	Weak	Strong	Weak	Strong	Weak	Strong	Weak	Strong
Ave Positions	0.657	0.668	0.002	0.019	0.115	0.125	-0.029	-0.022
Std Deviations	(0.150)	(0.152)	(0.285)	(0.314)	(0.319)	(0.369)	(0.246)	(0.170)

Panel B

	ALL FUNDS							
	Active		B/M Drift		Mom Drift		Size Drift	
Fund Size	Small	Large	Small	Large	Small	Large	Small	Large
Ave Positions	0.766	0.743	0.045	0.056	0.162	0.119	-0.038	-0.008
Std Deviations	(0.148)	(0.167)	(0.350)	(0.341)	(0.435)	(0.399)	(0.298)	(0.209)
	GROWTH FUNDS							
	Active		B/M Drift		Mom Drift		Size Drift	
Fund Size	Small	Large	Small	Large	Small	Large	Small	Large
Ave Positions	0.829	0.816	0.161	0.154	0.200	0.152	-0.033	0.003
Std Deviations	(0.116)	(0.142)	(0.344)	(0.347)	(0.450)	(0.439)	(0.288)	(0.248)
	VALUE FUNDS							
	Active		B/M Drift		Mom Drift		Size Drift	
Fund Size	Small	Large	Small	Large	Small	Large	Small	Large
Ave Positions	0.778	0.774	-0.036	-0.001	0.154	0.109	-0.033	-0.021
Std Deviations	(0.138)	(0.147)	(0.353)	(0.364)	(0.463)	(0.430)	(0.273)	(0.246)

Table 2 continued

	STYLE NEUTRAL FUNDS							
	Active		B/M Drift		Mom Drift		Size Drift	
Fund Size	Small	Large	Small	Large	Small	Large	Small	Large
Ave Positions	0.673	0.643	-0.001	0.016	0.126	0.096	-0.051	-0.006
Std Deviations	(0.147)	(0.158)	(0.314)	(0.287)	(0.373)	(0.316)	(0.335)	(0.104)

Section 3: The Findings

We report in Table 3 our findings across the complete sample where we run the regression as set out in Equation 1 but expanded with dummies on the positive and negative style tilts and also with and without the control variables. Overall, it is evident that the active decisions made by management have a significant impact on both a fund's return and its risk characteristics. Our findings confirm those of Cremers and Petajisto (2009) that there is a strong positive relationship between the active position of a fund and its subsequent performance. This confirms our previous discussion where we suggested that the magnitude of the active positions made by a manager might provide a useful as to his ability.

We do not get the same clear message when we look at the style tilts as they can take on either positive or negative values. (i.e. a fund can either overweight or underweight a certain factor relative to their benchmark index). It proves that we are justified for including the positive and negative style tilts as separate variables as the coefficients on each prove to be different in almost all instances[8]. The tilt that has little or no implications for performance is the size tilt where the coefficients are insignificant for both large cap and small cap tilts under all market conditions. In contrast momentum tilts in both directions have generated excess returns with a tilt towards wining stocks having a positive impact and one to losing stocks having a sizable negative impact[9]. Finally, it is clear that a growth tilt has a positive impact on realised excess returns whereas there is weak evidence that a value tilt has a negative impact.

It is interesting to consider these findings in the light of the information contained in Panels A and B of Table 2. On average the managers, but particularly the growth managers run a tilt towards value stocks whereas it is the growth tilts that have worked best over our sample period. We see a better outcome when it comes to momentum tilts as all styles of managers run a sizable tilt towards winning stocks which proves to be beneficial to performance over our sample period. On average we find that all styles of managers run a small cap size tilt but this proves ineffectual with respect to its impact on performance. Overall, we have a strong indication of the potential for active decisions to have a significant impact on fund performance.

[8] We conducted Wald tests on the coefficients on the positive and negative values for each style tilt to test for this significance.

[9] In evaluating the coefficients, we have to remember that it is a negative coefficient on a negative style tilt (i.e. a tilt towards value, losers and small cap stocks) that is indicative of improved performance.

Table 3 Regression results for effectiveness of active management

This table reports the results of the base regressions. The dependent variables are 3 measures of fund performance, namely excess returns, tracking error and the information ratio. Excess returns are the difference between the fund returns in relation to its assigned benchmark index. Tracking error is the standard deviation of the excess returns calculated on a daily basis over the quarter. Finally Information ratio is the excess return divided by the tracking error. Our explanatory variables are the measure of active management, namely Active Position, Value Growth Tilt (denoted as V/G Tilt), Momentum Tilt (Mom. Tilt) and Size Tilt. The Active Position is calculated by compare fund holdings to the holdings of the benchmark index. The style tilt measures are calculated as the difference in style drift of the fund and its designated benchmark index. In regression (b), we also included a number of control variables including fund turnover, fund fees, measure of fund size (i.e. tangible net asset), fund age, fund inflows, past returns (measured as fund returns in the previous 2 quarters) and contemporaneous Index returns. Yearly fixed effects are included (but not reported) in the all regression. The notations ***, ** and * denotes statistical significance at the 1%, 5% and 10% level respectively

Dep. Var.		Excess Returns		Tracking Error		Information Ratio	
Variable							
Active Pos.		0.0081***	0.0082***	0.0431***	0.0414***	0.4511***	0.5187***
V/G Tilt	+	-0.0035***	-0.0012	0.0041***	0.0053***	-0.0716*	-0.0177
	-	-0.0064***	-0.0087***	0.0017***	-0.0006	-0.2189***	-0.2810***
Mom. Tilt	+	0.0028***	0.0023***	0.0092***	0.0090***	0.1222***	0.1209***
	-	0.0182***	0.0138***	-0.0087***	-0.0098***	0.4683***	0.3551***
Size Tilt	+	-0.0007	0.00022	0.0026***	0.0030***	-0.0304	0.0713
	-	0.0017	0.0006	-0.0072***	-0.0074***	0.0736*	0.0328
Turnover			-0.0016***		0.0010***		-0.0418***
Fees			-0.0042***		0.0009***		-0.2110***
Log (TNA)			0.0006		0.0005***		0.0331**
$(Log(TNA))^2$			-0.0005***		-0.0001*		-0.0160***
Age			1.11E-05		0.0001***		0.0009
Qtr inflows			-6.76E-06**		3.16E-06***		-0.0002**
Prev. returns			0.0753***		0.00435***		1.9086***
Index returns			-0.0986***		-0.0478***		-2.7486***
Adjusted R^2		0.0403	0.0887	0.4676	0.5121	0.0354	0.0716

We also report in Table 3, the impact of the active decisions on the risk of the active decisions as measured by the fund's tracking error relative to its benchmark index. In the absence of any active decisions, the tracking error will be zero and so it comes as no surprise to find that almost all active decisions are positively related to tracking error. This is not always the case as it is possible at the margin for an active decision to reduce tracking and we find some weak evidence of this in the case of tilts towards growth stocks. Judged on the basis of the t-statistics, it is the tilts towards winners, losers, small cap stocks, and value stocks (in that order) which have the largest impact on the realised tracking error.

A fund's information ratio may be regarded as a risk-adjusted measure of the consequences of active decisions for fund performance and this provides a useful measure of the ability of fund management. It proves that in about 50% of the instances that there is a significant relationship between our measures of active decisions and the information ratio. Our findings confirm that it is the active managers who take the largest active positions who generate the best performance. Further, we find the best performance comes from tilting the portfolio towards growth stocks and stocks with recent good performance while the style tilts to avoid are those made by managers towards value stocks with poor recent performance. In arriving at this assessment it has to be remembered that all active decisions are judged relative to the fund's benchmark index which themselves vary widely across funds. Therefore, there is not a one-to-one relationship between a particular active decision performing well and stocks with a particular characteristic performing well. We will see more on this when we divide our sample in terms of fund style and when we judge the results of the active decisions against a single index that is representative of the whole market.

Before leaving Table 3, it is worthwhile to pass some observations on the control variables, almost all of which have significant coefficients. The findings confirm that both turnover and fees are strong negatives when it comes to choosing managers as they are associated with lower and more volatile returns. As all of our performance is measured on a before-fees basis, these findings provide a clear indication that excessive trading is something to avoid and that high fees are more indicative of inferior active skills. It also proves that that the funds that achieve superior performance relative to their benchmark tend to be large, have recent good performance but relatively low cash flows. Finally, the indication is that active managers have most to offer during periods of poor market performance.

Different Market Conditions

The period covered by our sample was characterised by two periods when the market performed particularly well and two periods when the market went into significant decline. The evidence quoted above suggests that fund performance is significantly influenced by the performance of the market and one would presume that this would also pertain to the success of the active decisions made by fund managers. Hence we repeated our analysis but this time differentiating the impact of the active decisions on performance to that applying during periods of strong and weak market conditions. Our findings are reported in Table 4.

The findings reported in Table 4 clearly establish the need not only to differentiate between style tilts in both directions but also to incorporate the state of the market conditions into the analysis. It proves that the positive contribution that level of active position makes to performance is restricted largely to periods when markets are weak. At other times, active positions have a relatively small impact on fund performance. In the light of this, one might expect managers to vary the extent of their active positions in accordance with the market conditions but there is no evidence of them as a group doing this.

Table 4 Regression results for effectiveness of active management in different market conditions.

This table examines the impact and performance of active management under different market conditions. We define "strong" market conditions as the years: 1999, 2003-2006 and 2009. The remaining years of the sample are designated as years of "weak" market conditions. Control variables and Yearly fixed effects are included (but not reported) in all regressions. The notations ***, ** and * denotes statistical significance at the 1%, 5% and 10% level respectively

Dep. Var.		Excess Return		Tracking Error		Information Ratio	
Mkt. Conds.		Weak	Strong	Weak	Strong	Weak	Strong
Variable							
Active Pos.		0.0175***	-0001	0.0507***	0.0315***	0.8498***	0.1922**
V/G	+	-0.0036**	0.0011	0.0088***	0.0026***	-0.0932*	0.0453
Tilt	-	-0.00142**	-0.0062***	-0.0019**	-0.0005	-0.3995***	-0.2512***
Mom.	+	0.0020	0.0028***	0.0122***	0.0068***	0.1516***	0.1032***
Tilt	-	0.0279***	0.0029**	-0.0141***	-0.0063***	0.5303***	0.2209***
Size	+	-0.0015	0.0060**	-0.0008	0.0072***	-0.0363	0.2076**
Tilt	-	0.0059***	-0.0063***	-0.0052***	-0.0096***	0.2962***	-0.3072***
Adjusted R^2		0.0928		0.5219		0.0748	

The previously identified expertise of managers when tilting their benchmark portfolio towards growth stocks is shown to exist during both weak and strong markets. However, the poor performance associated with their value tilts is shown to be largely restricted to periods of weak market performance. The managers' ability to add value by their momentum tilts towards winners is strongest in strong markets while the losses that they incur from tilts towards losers are much greater in periods of weak market conditions. The overall implication being that the active momentum decisions have better outcomes during strong markets with the good news being that they are more active in implementing momentum style tilts during such periods. Finally we have the size tilts that proved to be relatively ineffectual over our whole sample period. By splitting the sample up into periods of weak and strong markets we now see all of the performance added due to tilts towards large cap stocks occurs when markets are strong whereas tilts towards small cap stocks perform poorly when markets are weak but do quite well when markets are strong. Overall, we have observed that there is fairly wide variation in the performance outcomes of style tilts across different market conditions.

Large or Small Funds?

Bird et al. (2011B) demonstrate that the level of active management within a fund is very much dependent on where the fund is in its life cycle. New smaller funds with little reputation tend to be the most aggressive but this tapers off overtime especially if the fund experiences rapid growth in funds under management. The question we ask here is whether the impact of the various active decisions on performance also changes with the size of the funds. We report in Table 5 the relationship between the four active decisions

and investment outcomes for both small and large funds. Surprisingly we find little in the way of difference with the only instances being the large funds doing better with their growth tilts and the small funds doing better with their winner tilts. As we have come to expect almost all of the active decisions cause an increase in tracking error with the one exception here being the growth tilts by small funds.

Table 5 Regression results for effectiveness of active management by various small and large fund managers

Table 5 presents the results of the analysis on the effectiveness of active management taken by small and large funds. We sort the sample by the fund's tangible net assets. We then classified as "Small" fund for all the funds that falls in the first tercile, while the largest tercile of the sample are designated as the "large" funds. Control variables and Yearly fixed effects are included (but not reported) in all regressions. The notations ***, ** and * denotes statistical significance at the 1%, 5% and 10% level respectively

Dep. Var.		Excess Return		Tracking Error		Information Ratio	
Fund Size.		Small	Large	Small	Large	Small	Large
Variable							
Active Pos.		0.0077***	0.0080***	0.0417***	0.0411***	0.5036***	0.4886***
V/G Tilt	+	0.0007	-0.0012	0.0041***	0.0057***	-0.0023	0.0029
	-	-0.0065***	-0.0126***	0.0019**	-0.0016*	-0.2083***	-0.4091***
Mom. Tilt	+	0.0055***	0.0019	0.0081***	0.0088***	0.1445***	0.1559***
	-	0.0100***	0.0152***	-0.0078***	-0.0105***	0.3357***	0.3288***
Size Tilt	+	-0.0004	0.0037	0.0008	0.0058***	0.0817	0.0825
	-	0.0011	0.0036	-0.0053***	-0.0082***	0.0136	0.0435
Adjusted R^2		0.0893		0.5141		0.0724	

Different Investment Styles

The next question that we address is whether the ability to translate active decisions into good investment outcomes differs across managers pursuing different investment styles. We separate the funds to one of three groups (growth, value or market neutral) on the basis of their allocated benchmark index[10]. Our findings are reported in Table 6 for the different styles of managers under both weak and strong market conditions.

[10] The three sub-groups proved to be of approximately equal size. We ended up with approximately 13,000 quarterly observations for growth funds, 12,000 for value funds and 11,000 for market neutral funds.

Table 6 Regression results for effectiveness of active management by various investment styles

Table 6 presents the results of our analysis of the effectiveness of active management undertaken by various styles of funds. We classify managers into Growth, Value and Market Neutral style based on the designated benchmark index. For example, the sample of Value managers contains all the funds that have a value index (i.e. S&P400 Value, S&P500 Value, S&P600 Value, Russell 1000 Value, Russell 2000 Value and Russell Mid Value) as its designated benchmark. We define "strong" market conditions as the years: 1999, 2003-2006 and 2009. The remaining years of the sample are designated as years of "weak" market conditions. Control variables and Yearly fixed effects are included (but not reported) in all regressions. Yearly fixed effects are included (but not reported) in all regressions. The notations ***, ** and * denotes statistical significance at the 1%, 5% and 10% level respectively.

Dep. Var.		Excess Returns					
Fund Type		Growth Manager		Value Manager		Market Neutral Manager	
Mkt. Conds.		Poor	Strong	Poor	Strong	Poor	Strong
Variable							
Active Pos.		-0.0015	0.0065	0.0457***	0.0152***	0.0181***	-0.0082***
V/G Tilt	+	0.0021	0.0031	-0.0162***	-0.0017	0.0125***	0.0074***
	-	-0.0196***	-0.0177***	-0.0087**	-0.0020	-0.0146***	-0.0070***
Mom. Tilt	+	0.0093***	0.0080***	-0.0034	-0.0042**	0.0079***	0.0052***
	-	0.0315***	0.0081***	0.0299***	0.0027	0.0200***	-0.0028
Size Tilt	+	-0.0069	0.0136***	0.0136***	-0.0130***	-0.0164*	0.0218**
	-	0.0030	-0.0072**	0.0094***	0.0079	0.0048**	-0.0053**
Adjusted R^2		0.1060		0.1894		0.1191	
Dep. Var.		Tracking Error					
Fund Type		Growth Manager		Value Manager		Market Neutral Manager	
Mkt. Conds.		Poor	Strong	Poor	Strong	Poor	Strong
Variable							
Active Pos.		0.0545***	0.0384***	0.0467***	0.0381***	0.0393***	0.0215***
V/G Tilt	+	0.0044***	0.0011*	0.0143***	0.0057***	0.0123***	0.0044
	-	-0.0041	-0.0032***	-0.0046***	-0.0024**	0.0041***	0.0024**
Mom. Tilt	+	-0.0112***	0.0049***	0.0136***	0.0099***	0.0082***	0.0057***
	-	-0.0154***	-0.0045***	-0.0118***	-0.0083***	-0.0099***	-0.0049
Size Tilt	+	-0.0030**	0.0055***	0.0014	0.0086***	-0.0047	-0.0118***
	-	-0.0067***	-0.0096***	-0.0077***	-0.0087***	-0.0034***	-0.0056***
Adjusted R^2		0.6226		0.5083		0.4402	

Table 6 (continued)							
Dep. Var.		Information Ratio					
Dep. Var.		Growth Manager		Value Manager		Market Neutral Manager	
Mkt. Conds.		Poor	Strong	Poor	Strong	Poor	Strong
Variable							
Active Pos.		0.1076	0.0397	2.0034***	1.5231***	0.9575***	-0.1643
V/G Tilt	+	-0.0076	0.1310**	-0.3538***	-0.2262**	0.1634	0.4346***
	-	-0.4875***	-0.5250***	-0.1989	-0.0018	-0.3569***	-0.4853***
Mom. Tilt	+	0.3346***	0.2349***	0.1500*	-0.0556	0.1921**	0.2855***
	-	0.4061	0.3174***	0.7826***	0.2636**	0.4535***	-0.0568
Size Tilt	+	0.0471	0.4325***	0.1985	-0.2898*	-0.3196	0.3717
	-	0.2140***	-0.2731***	0.4888***	-0.2848**	0.1414*	-0.0675
Adjusted R^2		0.0774		0.1818		0.0931	

The findings highlight many key differences between the performance consequences of the active decisions made by the different styles of managers. We have previously shown from the Cremers and Petajisto result that larger active positions lead to better investment outcomes only holds when markets are weak. Now we find that the positive contribution active positions made to performance only holds for value funds and are actually reversed for market neutral managers during strong markets. It is clear that interpreting a large active position as a positive signal when choosing between managers is not a good rule to follow in all situations.

Fortunately, the evidence suggests that value managers do exploit their advantage in making decisions with respect to the extent of their active positions as they have a very poor record when it comes to style tilts with there only being two instances of where such tilts result in added value: growth tilts and large cap tilts, both during periods of weak market conditions. In contrast there are five instances where their style tilts actually detract from performance: value tilts, loser tilts and small cap tilts during strong market conditions, and winner tilts and large cap tilts during weak market conditions. The growth managers are clearly superior to the value managers when it comes to making decisions about style tilts. Their growth tilts and their winner tilts add value under all market conditions while their tilts to both large and small cap stocks also add value but only during periods of strong market conditions. The only instance of their tilts reducing returns is the tilts that growth funds make to losing stocks under all market conditions. Fortunately, the growth managers have a strong bias to large cap stocks which is where their strength lies when it comes to making size tilts. The style neutral managers are also adept at making style tilts, especially tilts between growth and value where they add value through tilts in both directions during both weak and strong market conditions. In addition, they add value through tilts towards winners in all market conditions and to both

small and large cap stocks during periods of strong market performance. They fall down most when market conditions are weak where they lose on all of their size tilts and also their tilts towards losing stocks. On average the style neutral managers are the least active, taking the smallest active positions and style tilts. However, our analysis in Table 6 establishes the active decisions that they do take eclipse those of the value managers and overall are on a par with those of the growth managers.

As one would expect almost all of the active decisions made by managers have a significant positive impact on the tracking error of their fund. However as has been noted previously, this need not necessarily be the case as some active decisions can at the margin cause a decrease in a fund's tracking error. We have three instances of this in our data: tilts towards small cap stocks by style neutral managers during periods of weak market conditions and tilts towards winners by growth managers during weak market conditions. It is the combination of excess returns (alpha) with tracking error that provides us with a good measure of the expertise of management. The analysis of the impact of the active decisions on the information ratio confirm the expertise of the value managers in this area while to a lesser extent the market neutral managers achieve a similar outcome but only during periods when the market is weak. The analysis of the style tilts confirms that managers of value funds show little competence in this area. The major exception being the outperformance that they realise when tilting their portfolios towards small cap stocks during periods of weak market conditions. One aspect of their performance that is disturbing is the finding that that they detract from performance when tilting their portfolios towards their supposed area of expertise in value stocks. In contrast both the growth and the style neutral managers display competence when introducing value tilts to their portfolios at times when the market is strong. Further, these two styles of managers also display competence when tilting their portfolios towards growth stocks and winning stocks. The major deficiency of the growth managers being in the active decisions that they make when tilting their portfolio towards small cap stocks while those of the style neutral managers are restricted to their tilts towards losers and small cap stocks made during periods of weak market performance[11].

Russell 1000

All the analysis to date has been directed towards identifying the performance implications of the active decisions made by investment managers. Hence we have measured their active decisions relative to a benchmark representative of their investment style. The role of active fund managers is to exploit persistent inefficiencies in markets and the active decisions are one way of doing this. Another decision made by the manager that has significant implications for the absolute performance of a fund is the original choice of its investment style. From the information contained in Table 1, we observe that the annualised return of the best performing index was 7.76% (S&P 400 Value), that for the

[11] We have chosen to not report the coefficients for the control variables where we run the separate regressions for the different styles of management. The only significant difference to those reported in Table 3 for the whole sample is that it is only for the growth managers where turnover has a significant negative impact on performance. In the case of the other two styles, the coefficient remains negative but is no longer significant.

worst performing index was -1.09% (Russell 1000 Growth) while the Russell 1000 index realised an annualised return of 1.28%. This wide variation in performance is very much influenced by the "active decisions" inherent in the various indexes relative to the Russell 1000. By the use of multi-factor models when measuring fund performance, academics seemed intent of denying managers any credit for their choice of investment style. In order to address this shortcoming, we (again) repeat the analysis but this time assigning all funds the same index (Russell 1000) which is representative of the market. In this way we evaluate the performance impact of the combination of the two decisions made by management: the choice of the investment style for the fund and their on-going active decisions when implementing the style. We report the results of our analysis in Table 7 where all active decisions and performance are measured relative to the Russell 1000 for the three styles of management (growth, value and market neutral) and the two types of market conditions (weak and strong)[12]. Our findings provide us with some useful insights as to the relative contributions that the style choice decision and active decisions make to the performance of fund.

Table 7 Regression results for effectiveness of active management where performance is gauged against the Russell 1000 Index

Table 7 presents the results of our analysis of the effectiveness of active management undertaken by various styles of funds where fund performance is gauged against Russell 1000 Index. The dependent variables are three measures of fund performance, namely excess returns, tracking error and the information ratio. Excess returns are the difference between the fund returns in relation to the Russell 1000 index. Tracking error is the standard deviation of the excess returns calculated on a daily basis over the quarter. Finally Information ratio is the excess return divided by the tracking error. We classify managers into Growth, Value and Market Neutral style based on the designated benchmark index. For example, the sample of Value managers contains all the funds that have a value index (i.e. S&P400 Value, S&P500 Value, S&P600 Value, Russell 1000 Value, Russell 2000 Value and Russell Mid Value) as its designated benchmark. We define "strong" market conditions as the years: 1999, 2003-2006 and 2009. The remaining years of the sample are designated as years of "weak" market conditions. Control variables and Yearly fixed effects are included (but not reported) in all regressions. Yearly fixed effects are included (but not reported) in all regressions. The notations ***, ** and * denotes statistical significance at the 1%, 5% and 10% level respectively.

Dep. Var.		Excess Returns					
Fund Type		Growth Manager		Value Manager		Market Neutral Manager	
Mkt. Conds.		Poor	Strong	Poor	Strong	Poor	Strong
Variable							
Active Pos.		-0.0343***	0.0182***	0.0406***	0.0234***	0.0134***	0.0127***
V/G Tilt	+	0.0136***	-0.0008	0.0157***	-0.0004	0.0079***	0.0024
	-	-0.0421***	0.0037	-0.0223***	-0.0053*	-0.0086**	-0.0036
Mom. Tilt	+	0.0142***	0.0133***	0.0214***	0.0063***	0.0143***	0.0066***
	-	0.0411***	0.0067	0.0378***	0.0027	0.0260***	0.0068**
Adjusted R^2		0.1222		0.0985		0.1363	

[12] We exclude the size tilt because of the extreme value calculated when the Russell 1000 is used as the benchmark. The Russell 1000 has a large cap bias resulting in the positive size tilts having little cross-sectional variation while a significant proportion of the negative style tilts take on very large values.

Table 7 (continued)							
Dep. Var.		Tracking Error					
Fund Type		Growth Manager		Value Manager		Market Neutral Manager	
Mkt. Conds.		Poor	Strong	Poor	Strong	Poor	Strong
Variable							
Active Pos.		0.0926***	0.0651***	0.0689***	0.0599***	0.0554***	0.0492***
V/G Tilt	+	-0.0062***	-0.0012*	-0.0049***	-0.0011	0.0050***	-0.0041***
	-	0.0116***	-0.0023***	0.0019	-0.0070***	0.0087***	0.0084***
Mom. Tilt	+	0.0021***	0.0057***	0.0079***	0.0053***	0.0060***	0.0052***
	-	-0.0137***	-0.0034*	-0.0156***	-0.0060***	-0.0155***	-0.0047***
Adjusted R^2		0.5601		0.4931		0.5919	
Dep. Var.		Information Ratio					
Dep. Var.		Growth Manager		Value Manager		Market Neutral Manager	
Mkt. Conds.		Poor	Strong	Poor	Strong	Poor	Strong
Variable							
Active Pos.		-0.0704	1.0074***	1.0979***	1.5450***	0.7641***	0.9705***
V/G Tilt	+	0.2852***	0.0541	0.2000***	0.0544	-0.0447	0.2490***
	-	-0.8354***	0.0964*	-0.8408***	-0.018	-0.4713***	0.0039
Mom. Tilt	+	0.2567***	0.3686***	0.4486***	0.1766***	0.3190***	0.2775***
	-	0.8255***	0.7587***	0.7790***	0.2526***	0.8143***	0.4142***
Adjusted R^2		0.1224		0.0990		0.0915	

After we have incorporated style choice in our analysis, the active positions taken by the value managers (still) make the strongest contribution to performance, particularly during times when market conditions are weak. The market neutral managers remain the second best in making decisions about active positions with such decisions now making a positive contribution to performance under all market conditions whereas previously they only were able to add value during periods of weak market performance. The incorporation of style choice by the market neutral managers with their active decisions has caused them to be managers almost the equal to the value managing when it comes as deciding on active positions. Finally we have the growth managers who remain the laggards in this area with the active positions inherent in their benchmark making a positive contribution at times when markets are strong but detracting from performance when markets are weak. The impact of incorporating style choice with the active decisions has resulted in growth managers seemingly making worse choice during periods when markets are weak and better choices during periods when markets are strong.

We observe that the growth/value style tilts make a positive contribution to the performance of all three types of managers during periods when markets are weak but that they have little or no effect on performance when markets are strong. Previously the style tilts by value managers towards value stocks was to the detriment of their performance. This has improved with the incorporation of their value style with their active value tilts now making a positive contribution to performance during periods when market conditions are poor. The previous analysis found that the active value/growth style tilts by the managers of market neutral funds added value under all market conditions but with the incorporation of their style choice, these tilts now only add value during periods of weak market conditions. Therefore, the apparent good performance of the market neutral managers in tilting their portfolios towards value and growth stocks has been diluted once the impact of their style choice is taken into consideration. The incorporation of style choice by growth managers has resulted in the growth/value tilts adding value when markets are weak but being ineffectual when markets are strong. This contrasts with our previous finding that their tilts towards growth stocks improved performance under all market conditions while those to value were ineffectual. Again the incorporation of style choice has changed our views of the eptitude of growth managers when making value/growth style tilts.

With the incorporation of investment style choice, the implications of style tilts are quite straightforward. Under both weak and strong market conditions, all funds benefits from tilts towards winning stocks but unfortunately lose from all tilts made to losing stocks. This is consistent with the previous evidence on the market impact of such active decisions made by growth managers and market neutral managers but represents quite a turnaround for the value managers whose active momentum tilts in both directions were found to detract from performance. This suggests that the choice of a value style over our sample period has introduced a tilt towards wining stocks that has proved quite beneficial to performance.

At the margin, it would appear that the incorporation of style choice has proved most beneficial for the value managers who are now competitive with the growth and market neutral managers in terms of their style tilts, whereas the prior analysis found them to be inferior when evaluated on the basis of their active decisions. The conclusion that we would draw from this is that the choice by investors of managers pursuing a value style has been beneficial as is indicated by the returns realised by such funds over our sample period. An important contribution to this good outcome have been the style tilts attributable to the value style of investing but the evidence suggests that active decisions made by the value managers has worked to the detriment of the realisation of the full potential of the style.

A final observation is that the combined impact of style choice and active decisions has some nice implications for tracking error. The typical outcome is that any departures from a fund's benchmark will cause an increase in its tracking error. We have previously found isolated instances when the opposite is the case when considering the active decisions of fund managers. With the introduction of the style choice, the number of the

frequency of these instances have grown although all being limited to the tracking error impact of value/growth tilts of all three types of managers.

Section 4: Summary Conclusions

There has been a plethora of papers that analysed the ex-post performance of mutual funds from every possible perspective. Numerous authors have examined the contribution of market timing and cash holding decisions to performance while others have related performance to numerous funds and manager characteristics. One area that has been become the subject of attention in very recent times has been the performance consequences of the stock selection and portfolio construction decisions made by fund managers. In this study we provide the most comprehensive study to date of the impact that active decisions made by the managers of institutional mutual funds have on fund performance. Specifically we look at four distinct active decisions by managers: the extent of their active positions and their style tilts in three dimensions (value/growth, momentum and size). We gauge the impact of these decisions on the fund's excess returns, tracking error and information ratio all of which are measured relative to a benchmark index that is reflective of the investment style of the fund.

Our results provide some support for the main findings of Cremers and Petajisto (2009) that the more aggressive managers (i.e. those that take the largest active positions) who realise the best performance. However, we establish that the positive contribution that the funds' active positions make to performance is restricted to periods of poor market performance. Further, the value managers are the only ones whose performance consistently benefit from these active positions while the market neutral managers only benefit in weak markets and the growth managers not at all.

The style tilts that work best for managers are those towards growth stocks and winners. Size tilts prove to be inconsequential whiles those to value stocks and losers actually work to erode performance. Once different market conditions are taken into account, the growth/winner tilts work best in strong markets while the value/losers tilt lose most in weak markets. It also proves that tilts towards both large and small cap stocks do add value in strong markets. Overall, it seems that growth managers and market neutral managers are better than value markets in making style tilts.

As the choice of investment style by a fund is a major determinant of its performance, we extended our analysis to evaluate the combined contribution of the style choice and the active management to performance. Our major finding being that value managers who were previously inferior to the growth and market neutral managers in making style tilts are now their equals. This is consistent with the value style being the best performer over our sample period which is something that the value managers have been able to enhance by their active positions but detract from due to their style tilts.

The major contribution of this paper is to provide insights into where management succeeds and fails in converting its active decisions into superior performance. In a practical sense this should prove useful in directing investors as to where to look when seeking to identify superior managers. The use of the modelling to date is limited by the fact that it provides on average results and does not tell us anything precise about any particular fund. For example, the fact that in aggregate growth managers are particularly good at identifying the losing stocks which are about to mean-revert in performance does that not mean that all growth managers have this skill. An obvious extension of this work is to develop it further so that it can more directly be used in our search for the Holy Grail, how to better be able to identify those managers who will produce good performance in the future..

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