Ranking Mutual Fund Families: Minimum Expenses and Maximum Loads as Markers for Moral Turpitude

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"Thus, just as gambling in the casino is a zero-sum game before the croupiers rake in their share (I'm told that this is called "vigorish," or "the vig") and a loser's game thereafter, so beating the stock and bond markets is a zero-sum game before intermediation costs, and a loser's game thereafter." John C. Bogle (2005a).

"money management – is provably what is generously called a zero sum game, which is to say, zero before management fees and transaction costs." Jeremy Grantham (2006, p.3).

Abstract We evaluate the performance of 51 mutual fund families based on a study of their diversified US managed mutual funds over an 11 year period and explore the determinants of performance gross of published expenses. We find that mutual fund families which charge loads, high expenses to their most favored investors and have high turnover tend to perform badly, even gross of these fees. However, gross of published expenses, managed mutual fund portfolios of those families without loads, with low expenses in their least expensive class, and with low average turnover beat the corresponding indexes.

Keywords Mutual fund families · Performance · Turnover · Expense ratio · Loads

JEL Classification G10 • G11 • G20

1 Introduction

In this paper we test a strong form of the hypothesis of John Bogle and Jeremy Grantham, quoted above, by asking whether there are many or any fund families which beat the stock indexes. We also look for a formula to describe fund family performance gross of published expenses in order to answer the question of whether in the absence of these expenses actively managed mutual funds beat stock indexes. In the process we offer techniques for the evaluation of mutual fund families. *Barron's* has ranked mutual fund families annually over the last eleven years. This paper was stimulated by its ranking of mutual fund families (Strauss 2005). Reinker, Tower and Zheng (2005) suggested some ways to improve the rankings in a letter to the editor. Here we expand on those suggestions and attempt to provide a useful evaluation of mutual fund families. Our work is strongly influenced by Bogle (1998 & 2002b), Cahart (1997), Malkiel (1995) and Minor (2001). All of them have assessed the influence of the expense ratio on mutual fund performance. Malkiel finds that for diversified U.S. mutual funds, when survivorship bias is accounted for, diversified U.S. mutual funds gross of expenses do not beat the broadbased S&P 500 index. Cahart finds that loads, high turnover and high expenses mark mutual funds for low performance, even gross of expenses and loads. We ask the same questions, except we examine the role of the characteristics of mutual fund families in explaining mutual fund performance.

Different classes of the same fund (e.g. A, B, C, Investor and Institutional) are in fact the same fund with different expense structures attached. We think of mutual fund families as price discriminators, who charge wealthier investors more than poorer investors and in some cases charge unwary investors more than wary investors, so we break down our analysis into examinations of different classes of mutual funds. A fund

family that is good for wary investors may treat the unwary badly. See, for example, Zheng and Tower's (2005) analysis of Fidelity's mutual funds. Fidelity charges more for their advisor funds than for their non-advisor funds, without any improvement in performance gross of expenses.[1]

Reinker and Tower (2004) conclude that historically Vanguard's low-cost actively managed U.S. funds outperformed its index funds over the longest period they considered (1977 through 2003). They examine historical portfolios, so their evaluations reflect a combination of the wisdom of the Vanguard company in setting up funds, the wisdom of managers in selecting stocks, styles and jumping between styles, and the wisdom of investors in picking funds. In response to Kizer's (2005) discovery that the differences in performance of the two portfolios reflected differences in style, with Vanguard's managers investing more heavily in small stocks and value stocks than was the case with Vanguard's index funds, Reinker and Tower (2005) revisited the issue and discovered that once performance was adjusted for style, the managed portfolio underperformed the index portfolio by almost precisely the managed portfolio's excess expenses over that of the indexed portfolio, reversing their earlier conclusion.

This convinced us that investment style is critical. Rodriguez and Tower (2008) revisit the question of Vanguard's indexed versus managed portfolios, while correcting for style. They find that the returns of the two types of funds are comparable. Tower and Yang (2008) find that Dimensional Fund Advisors, DFA, with its system of enhanced

[1] Fidelity's advisor funds are similar to their regular funds but not identical, which makes price discrimination seem more legitimate. Both types of funds have similar minimum investment requirements. AIM's R class funds are identical to their advisor funds, except for the loads and expenses, and both have similar minimum investment requirements. It could be argued that loads and high expenses are ways that mutual fund families recoup the costs of serving small accounts and clients who need advice. But no load, low expense funds are available from some firms, sometimes even from the same firm, even for small accounts. Moreover, free and sensible advice is available on line from various sources, including Paul Merriman, GMO, and the Vanguard Diehards web discussion group.

indexing, has beaten Vanguard's passively indexed mutual funds, even after adjusting for style, taking into account DFA's higher expenses and the fact that one must pay additional advisor and custodial costs to invest with DFA.

In this study, we evaluate mutual fund families in three ways. In one analysis, as in the two studies just discussed, we use tracking indexes. We compare equally weighted managed fund portfolios (which are reweighted so that investors hold equal values in all of them at the beginning of each month) with a tracking index that imitates the portfolio's style. The excess return of the former measures whether the family picks stocks and styles just before they appreciate, controlling for average style choice: i.e. it measures whether the fund family possesses stock selection and style jumping skills.

In a second analysis we compare the performance of the equally weighted portfolio relative to the Wilshire 5000 index of roughly the largest 7000 US stocks. This measures these skills as well as the ability of a mutual fund family and its managers to select styles that appreciate over the long run: family style selection skills.

Historical portfolios assume rebalancing each January to match the assets that investors held at the beginning of each year. In a third analysis, we evaluate the return of historical portfolios *vis a vis* the Wilshire 5000 index. This differential measures the wisdom of families' administrators, managers and advisors in combination with those of their investing clients: mutual fund family and investor skills.

2 Literature review

Much previous literature on the performance of mutual funds did not distinguish between different classes of mutual fund. See for example Bogle (1998), Bogle (2002b), Haslem, Baker and Smith (2008) and Malkiel (1995). Haslem used Morningstar's distinct

portfolios, so only one class of each mutual fund portfolio is represented. Malkiel used the largest share class for each mutual fund and wrote to us that it is only in recent years that share classes have proliferated. Consequently, now it is more important to pay attention to different share classes than it once was. We believe useful insights come from treating each class of mutual fund explicitly, as we do here.

Malkiel finds that high expense funds have lower gross (before deduction of expenses) returns, but the regression coefficient is not significant. Bogle (2002b) also finds that high expense funds have lower gross returns. Haslem, Baker and Smith (2008) finds (p.49) "Superior performance on average, occurs among large funds with low expense ratios, low trading activity and no or low front-end loads.

The annual Ranking of mutual fund families in *Barron's* doesn't adjust for equity style, uses short (one year) periods, and doesn't distinguish between classes. The most comparable work is that of Cahart (1997). We believe that he treats different classes of the same mutual fund as different funds, but he does not say. Cahart finds (p.80) that "expense ratios, portfolio turnover, and load fees are significantly and negatively related to performance."

Barras, Scaillet and Wermers (2008) argue that conventional analysis finds that more managers are able to outperform the market than is truly the case, because these studies do not correct for luck. They aggregate different share classes of the same mutual fund by assets under management. By correcting for luck, they discover that the number of managers that beat the market net of expenses has dramatically fallen over time, so virtually none exist today: 0.6% of fund managers, although on a gross return basis 9.6% of mutual fund managers display market-beating ability.

We find no discussion in the literature comparing more than a few mutual fund families, other than the *Barron's* rankings. We believe this is the first study to provide such a comparison, other than *Barron's*. Nor do we find any studies that discuss the relationship between the expenses and loads of one class of fund on performance of other classes of the fund. We believe that determining and publicizing the performance of different mutual fund families as well as the adverse impacts of turnover, expenses and loads, not just ranking, should lead to more competition and better performance for clients by the industry.

3 What did we expect to find?

Based on the previous literature, we expected to find that the performance of mutual funds gross of expenses and load fees was negatively affected by expenses and turnover. Given that some mutual fund families have been involved in scandals which shrink returns to their clients, we expected to find that there was some effect specific to particular mutual fund families. We thought that those fund families who provided low expenses to their best clients would be more likely to attract a large proportion of watchful clients, and to keep them would tend to undertake other measures to assure superior performance, gross of expenses. But, based on previous work, we could not be confident that would be the case.

4 The tracking index

We wish to examine the performance of mutual fund families over a long period in order to minimize the importance of random disturbances to fund performance. We focus on portfolios of diversified U.S. managed funds. We also wish to compare the performance of these portfolios offered by each family to a collection of indexes and a "riskless" asset,

which mimics their month-to-month performances. We restrict our data set to those funds that continuously held at least 75% of their assets in diversified equities and held no more than 5% of their assets in foreign stock throughout their entire lives. So we exclude sector funds, international funds, global funds, balanced funds, and bond funds.

We wish to select indexes that match closely the index funds that are available to investors. The returns of these indexes approximate the returns of the corresponding index funds raised by the expenses and other costs of the index funds. The index basket we select consists of 11 indexes: Barra Large Cap Value, Barra Large Cap Growth, Barra Mid Cap Value, Barra Mid Cap Growth, Barra Small Cap Value, Barra Small Cap Growth, Wishire 5000, S&P 500, S&P Midcap 400, S&P Smallcap 600, and MSCI Eafe Ndtr_D. The basket is designed to encompass the indexes that some index funds are constructed to mimic. For the "riskless" asset we used the 90 day U.S. Treasury bill series, whose real return is, of course, not riskless, but it is as riskless as investors can get.

One of these Barra indexes only dates back to 1993, so we are restricted to the 11 year period January 1994 through January 2005.

The data we use are the returns of those managed U.S. diversified stock funds within the same class that date back to at least January 1994. For each fund family we use the class with the most funds that were in existence for the entire period, and we restrict our analysis to fund families that had at least four funds within the same class. We draw on data from the Morningstar Principia Pro disks and the Center for Research in Security Prices, CRSP.

Many of our calculations compare the performance of various mutual fund portfolios and mutual funds from each family with that of the collection of indexes and the risk free asset that had a pattern of real monthly return differentials (over that of the risk free asset) which is closest to that of the mutual fund portfolio. This collection of indexes and the risk free asset we label the tracking portfolio.

We find the tracking portfolio as follows. We define the excess return of the portfolio or index basket as its real return minus that of the riskless asset. We want to find the basket of indexes and the risk free asset that has a pattern of excess returns which most closely tracks the excess returns of the mutual fund portfolio. The monthly excess return of a tracking portfolio with shares, s_i, of the various indexes and the rest invested in the risk free asset, is just the sum of the s_i's each multiplied by the monthly excess return of the corresponding index. To find the tracking portfolio which most closely tracks the mutual fund portfolio, we find the tracking portfolio whose series of excess returns most closely matches the series of excess returns of the mutual fund portfolio. Our criterion for closest match is minimum of the sum of the mean square differentials between the excess return of the portfolio and that of the tracking portfolio. This is the same criterion as in an ordinary regression.

So we regress the monthly portfolio excess return on the excess return of the 11 indexes. In the regression we constrain each coefficient to lie between zero and one, suppress the constant term, and constrain the sum of the coefficients to add up to no more than one. The resulting coefficients are the portfolio shares of the tracking basket.[2] The

[2] Sharpe (1992) uses a similar technique. He does not suppress the constant term, and interprets the constant as the outperformance of the portfolio in question. His approach answers a slightly different question. It finds the tracking index whose return, *apart from the constant term*, has the smallest mean square deviation from that of the portfolio. The technique used here finds the tracking index whose return

constraints mean that each index is held in a non-negative amount in the tracking index, and the portfolio shares of the indexes add to no more than one. The tracking portfolio consists of a fraction of the portfolio invested in each of the indexes equal to the regression coefficient and a fraction of the portfolio invested in the riskless asset equal to one minus the sum of the index coefficients. The calculation can be easily carried out with Microsoft Excel's solver. This method of style analysis is discussed in Bodie, Kane and Marcus (2008, pp.875-879).

For example, the regression coefficients for the equally weighted Vanguard family managed equity fund portfolio are zeros except 0.01 for large value, 0.70 for Wilshire 5000, 0.10 for small cap, 0.15 for midcap growth, 0.04 for small cap growth and zero for the riskless asset.

Thus we can think of the Vanguard managed equity fund portfolio as being approximated by a tracking portfolio consisting of 1 % large value, 70% Wilshire 5000, 10% small cap, 15% midcap growth and 4 % small cap growth and none of the riskless asset.

In many of our calculations we compare the performance of the mutual fund portfolio with the basket of stock indexes with the same relative weights as in the tracking portfolio. We call this basket the "tracking index." So if the sum of the stock index weights in the tracking portfolio is 0.7, we multiply each of the stock index weights in the tracking portfolio by 1/0.7 to obtain the weights in the tracking index. Our tracking index is actually an index basket, not just a single index as Bogle (1998 & 2002b) uses.

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has the smallest mean square deviation from that of the portfolio. In practice there is unlikely to be much difference between the two alternatives. In retrospect, though, we believe that Sharpe's approach is better.

Throughout the paper all returns are real returns. We calculate real rates of return using the consumer price index from the Bureau of Labor Statistics; **the term "return" refers to the continuously compounded real return expressed as percentage points per year, and "standard deviation of return" refers to the monthly real return.** Our average returns are average real geometric continuously compounded returns.[3] All returns are expressed as % age points per year. Investors care about risk as well as return. Consequently, we calculate both non-risk adjusted and risk-adjusted returns.

5 Risk adjustment

Risk adjustment works this way. For each pair of managed fund family portfolio and its tracking index, we ask: What would the average rate of return be if the managed fund or index portfolio with the higher standard deviation of return, our proxy for risk, had been combined with a riskless asset so as to make its standard deviation of return equal to that of the portfolio with the lower standard deviation of return. For the risk free rate of return, we use the return on the 90 day US Treasury bill index.

This method of risk adjustment never imagines the investor to sell a mutual fund short, because this is impossible to do, except with the more recently developed ETFs. Investors who are concerned solely with return should look at the return differentials we calculate, whereas those concerned with risk as well should look at the risk-adjusted returns. Modigliani & Modigliani (1997) developed this methodology, and refer to it as the M^2 technique. Reinker & Tower (2004) modified it to eliminate short sales. [4]

[3] There is one exception. In constructing the tracking index portfolio, one needs to work with returns compounded monthly, not continuously.

[4] Work by Eugene Fama and Ken French, available on French's web site, shows that investment style explains fund returns. Also, popular pieces by Arnott, Hsu, & West (2008), Hebner (1997), and Siegel

The 90 day U.S. Treasury bill index is not truly risk free. But its standard deviation of return is small. One can construct the efficient frontier for the high-risk portfolio with average return on the vertical axis and standard deviation of return on the horizontal, as the proportion of the "risk free asset" is changed in the portfolio. This efficient frontier is curved, with the end points lying at the return and standard deviation of the Treasury bill index and the high-risk portfolio. Reinker and Tower (2004) used Microsoft Excel's solver to equate the standard deviation of the risk-adjusted high-risk portfolio with that of the low-risk portfolio. In this paper, to save effort we approximate the efficient frontier by a straight line through its two endpoints, so that the risk-adjusted return of the high standard-deviation portfolio is a function of the geometric average returns to the high-risk portfolio and the 90 day Treasury bill index and the standard deviations of these portfolios as well as that of the low-risk equity portfolio. Risk

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(2005) have advised investors to disproportionately weight two particular styles, small and value. Consequently, we wanted to show by how much the portfolio considered would beat the portfolio of indexes with the most similar style: hence our style adjustment.
We wanted our method of risk adjustment to compare two portfolios with the same risk. The way many mutual fund investors reduce the riskiness of their portfolio is to increase the proportion of short term bonds in their portfolio, and we wanted our method to reflect that. Since most investors can't sell bonds short, we made the two portfolios comparable in risk by increasing the bond share in the riskier portfolio. We decided not to use the Sharpe or Treynor methods of risk adjustment, because we felt that comparing the returns of portfolios of comparable risk, as M^2 does, was intuitively appealing, a view apparently shared by Bogle (2002b) who uses this technique in his comparison of indexed and actively managed funds. The Sharpe criterion is the gain in return per unit of risk undertaken, but this is of limited use to investors unless the amount of risk undertaken in the two funds is known. Suppose the diluting asset is truly riskless. Then the Sharpe criterion is the rate of return premum above the risk-free rate of a portfolio that combines the asset with the riskless asset in proportions that cause the standard deviation of return of the portfolio to equal one. Thus, if the diluting portfolio is truly riskless, the M^2 criterion is a linear function of the Sharpe criterion. Consequently, ranking of a collection of mutual funds according to either criterion would be identical. In the real world, it is impossible to find an asset with a good return that generates a constant real rate of return over all periods within a time span, e.g. an inflation-protected treasury bill that offers a 1%/year real return over the next ten years, regardless of when one cashes it in. Thus, our view is that M^2 is a practical and intuitive method of risk adjustment.

We are interested in the risk associated with investing our entire wealth in a portfolio, not just adding a little bit of the portfolio to an indexed portfolio. Thus we are interested in both systematic and unsystematic risk, which rules out the Treynor method. The M2 method is one of the mainstream ways of risk adjustment. For example Bodie, Kane and Marcus (2008, pp. 591-2) give it a whole section, whereas Sharpe, Treynor and Jenson share one section.

adjustment is more sensible for fund portfolios than for individual funds, since some randomness cancels out in a portfolio.

6 Survivorship bias

The studies by Bogle (1998 & 2002b), and Halslem, Baker and Smith (2008) and part of the study by Malkiel(1995)suffer from survivorship bias: the tendency of mutual fund companies to kill badly performing mutual funds, and merge their assets into better performing mutual fund families. Thus the mutual funds extant for long periods are those which have performed better than average. Cahart (1997) was free of this bias. The CRSP database records the performance of dead funds when they were extant. We had expected to find that our study was subject to survivorship bias too. In fact only one fund which met our critera for inclusion in the study was killed during the period we examined: Scudder Dynamic Growth Class A. Since there are 294 funds in our study survivorship bias is not an issue for us. However, we were lucky, and blindly chose a period for which survivorship was not an issue. Of the funds which met our criterion 14% were killed after January 2005, when our study ended through 2007. Thus, while survivorship bias did not get us into trouble, given our selection of fund families to study, future studies should follow Carhart's example, and allow the fund mix to include all funds that were extant at each moment in time. Still, we selected fund families that had at least four funds operating in the same share class over the entire period, so there is some survivorship bias in our selection of fund families.

7 Table 1: fund family returns

All returns are **real**. In all the tables the return differentials are expressed in percentage points per year.[5] Each return differential is the **continuously compounded** return of the portfolio of the fund family minus the continuously compounded return of the tracking index or the Wilshire 5000 benchmark. If this return differential is negative, which means that the fund family portfolio under performs the tracking index or the Wilshire 5000, the return differential is shaded. If the expense ratio of a fund family portfolio is more than 1, which means that the expense charged by this fund family is relatively high, the expense ratio is shaded.

Table 1 presents fund families' names, the share class analyzed, the number of funds in the share class, turnover, expense ratio, and net performance. For each family we selected the share class with the largest number of mutual funds to work with. The analysis examines 51 fund families and a total of 294 funds in them. Expense and turnover are the average expense and turnover of the equally weighted portfolio over the entire period. Equally weighted portfolios are rebalanced at the beginning of each month and historic portfolios reflect asset holdings at the beginning of each year by clients in that mutual fund company and asset class. "Vanguard index" refers to the portfolio of all Vanguard U.S. diversified index funds. The return is the geometric average continuously compounded geometric return expressed as % per year. For the equally weighted portfolio, we subtract the return of the tracking index from the return of fund family's equally weighted portfolio to get the style adjusted return differential. For the historic portfolio we subtract the return of Wilshire 5000 from the return of fund family's historic

[5] With continuous compounding the nominal return differential equals the real return differential when we do not risk adjust. But risk averse investors are more likely to pay attention to stable real returns than stable nominal returns, so for calculating the risk adjusted return differential it is important to work with real returns..

portfolio. This gives us the non style-adjusted return differential. The last three rows present averages over all fund families, the percent of fund families outperforming the tracking index or the Wilshire 5000, and the performance differentials for the portfolios of Vanguard Index funds.

In the tables, "ret" means real return differential, "Exp" means expense ratio, "RA" means risk-adjusted, "NRA" means not risk-adjusted, SA means style-adjusted, and NSA means not style-adjusted.

Table 1 presents non risk-adjusted and risk adjusted return differentials for the equally weighted portfolios *vis a vis* their tracking indexes and for the historic portfolio *vis a vis* the Wishire 5000. For example, the average underperformance of the actively managed fund portfolios, NRA is 1.56 percentage points per year, and the fraction of these mutual funds portfolios beating the tracking index is 17.6%. Had the front end and deferred load fees been included in the calculations, the underperformance for A and B classes would have been even larger as indicated by the loads in Exhibit 3. The differentials for the Vanguard index portfolios are close to zero, which implies that smart stock picking by these so called indexers almost makes up for the expenses of running these index funds.

Compared to either the tracking index or the Vanguard index portfolios, actively managed fund families have not performed well. The fund managers of these fund families have not demonstrated stock or style picking skills sufficient to make up for the expenses of running their managed funds. However, there are six fund families which beat the tracking index or the Wilshire 5000 by every criterion: American Funds, DFA, GMO, Lord Abbett, Merrill Lynch and Royce. But it is a mistake to make too much out

of these results, for we are comparing different classes for different families, i.e. we are comparing apples and oranges. Still for each family we selected the class with the largest number of mutual funds, so these comparisons focus on the class that the family chose to concentrate on.

8 Table 2: gross return differentials

Different classes of the same mutual fund have the same returns except for the differential expense ratios published in Morningstar's Principia Pro Disks. Thus the gross return of one class is the same as any other class, where gross return is return before expenses are subtracted to determine the return that investors receive, the net return. Moreover, the gross return continuously compounded equals the net return plus the expense ratio. This is why we use continuous compounding.

For each fund family, we add the average expense ratio to the continuously compounded net return presented in Table 1 to obtain the continuously compounded gross return. Table 2 presents differentials for fund family gross return minus the return of the Wilshire 5000 index or tracking portfolio.

The second and third columns present the style-adjusted gross performance differentials of the equally weighted portfolio (the portfolio return minus the tracking index return). The fourth and fifth columns present the gross performance of the equally weighted portfolio minus that of the Wilshire 5000. The sixth and seventh columns present the gross performance of the historic portfolio minus the Wilshire 5000 index.

The last three rows show the average differentials, the percent of fund families that outperform the index, and Vanguard's index portfolio's gross performance.

The equally-weighted style-adjusted differentials are negative (NRA= -0.36 & RA = -0.25). So on average the stock picking and style shifting skills of managers are not enough to offset the brokerage costs of buying and selling stocks, costs which are not reflected in published expense ratios.

The equally-weighted non style-adjusted differentials are positive (NRA = 0.44 & RA = 0.41 % age points per year). So on average administrators set up funds and managers pick styles in such a way as to beat the Wilshire 5000 on both a risk-adjusted and non risk-adjusted basis, before the management expense is subtracted from return. The managers beat their tracking indexes, but expenses that are greater than these margins mean that investors do not share in the surplus.

In light of these calculations it is intriguing to see that historically, based on gross return, investors lose to the Wilshire 5000 index (NRA= -0.75 & RA = -0.43). Thus investors do less well than if they invested equal amounts in all funds offered by their families, a naive and extreme form of portfolio diversification. They are lousy fund pickers.

One reason it is important to present risk adjusted returns is that without them, readers could argue that even equity funds hold some money most of the time, and these holdings drag down returns on average, but reduce risk, so the fact that equity funds hold some money does not necessarily bring risk adjusted returns down below those of the indexes. That our average gross risk adjusted return differentials are negative in each case where the gross non-risk adjusted return differential is also negative allows us to dispel that argument.

The fund families which in every regard out perform the indexes are DFA, GMO, Lord Abett, Merrill Lynch, Royce, T. Rowe Price, Vanguard managed, Victory, Westore, and WM. The Vanguard index portfolio also outperforms.

We find that the average gross return of the equally weighted portfolios beats the benchmark Wilshire 5000. Malkiel (1995) asks a similar question in his Table I. He finds that the average gross return of all diversified US equity funds underperforms the benchmark S&P 500 index from 1982 through 1991. Part of this difference may result from the fact that our calculation assumes rebalancing at the beginning of each month within each fund family, so that in our calculations implicitly funds are moved out of styles which become relatively overvalued.

9 Table 3: current expenses and loads

The Nasdaq stock exchange has brought a lawsuit against brokerage firms for directing clients into the wrong funds (Dale 2005) and Oppenheimer failed to offer the appropriate load discount for some purchases of large volumes of class A shares (Pruitt 2006). These issues reflect the fact that some individual investors are aware neither of the load fees nor of the impacts of these fees on the returns of fund shares. In Table 3 “Current Expense Ratios and Loads”, we reproduce some of the essential data on expense ratios, maximum front end loads, and maximum deferred loads that investors need to learn. In Exhibit 3, “K” means thousand and the “M” means million.

The first column of Table 3 presents the fund family name. The following columns present the average expense, average maximum load fees and average minimum investment requirement of various classes. These data are from CRSP in 2005 for U.S. domestic equity funds, holding more than 75% of assets in equity. These averages weight

each fund equally. We paid special attention to no-load classes with low expenses. We divide the no-load classes into two groups: the one marked as "No Load, Min Exp. & Min Invest. ≤10K" with minimum investment requirements of less than 10 thousand dollars and the other marked as "No Load, Min Exp, & Min. Invest. >10K" with minimum investment requirements of more than 10 thousand dollars. The last nine columns focus on the classes with minimum expense.

The last two rows present the averages for all the fund families and the data for the Vanguard Index portfolio.

Managed funds' expense ratios in many classes are relatively high. On average, the expense ratio of class A managed fund families is 1.32 percent, and the average expense ratio of class B managed fund families is 2.03. The average expense ratio of the class of minimum expense ratio is still 0.94 percent, 4.7 times the expense ratio of the regular Vanguard index portfolio, and more than 13.4 times the expense ratio of the minimum expense ratio class (Instl) of Vanguard's index portfolio. On average, class B funds have higher expenses than class A funds do. This is because one can escape the deferred loads of class B funds by holding them for long enough periods, whereas one can't escape the front end loads of class A funds.[6]

10 Table 4: Predicted non risk-adjusted return differentials for alternative classes of equally weighted portfolios

Table 4 shows, for equally weighted portfolios, how gross performance differentials interact with expense ratios for various classes. The three left columns present predicted net performance differentials, style adjusted, but not risk adjusted, for various classes,

[6] The minimums for institutional funds refer to the minimum that an entire institution must invest with the company. So for example, the employees of an institution may hold institutional class mutual funds with the same fund family and the aggregate of their holdings must be greater than the recorded minimum.

under the assumption that recent (2004) average expense ratios and past SA gross performance differentials will prevail in the future. They examine gross returns, the class with the lowest expense ratio, and the class with the highest expense ratio (typically class B). To get the predicted return differential, for each fund family and class, we subtract the recent average expense ratio for the relevant family and class from the continuously compounded gross return differential, SA and NRA. We rank the funds in order from best to worst for each class. These performance differentials are the amounts by which the fund portfolio is predicted to outperform its tracking index, SA and NRA.

The three columns on the right show the same things for the equally weighted portfolio with respect to the Wilshire 5000 index. This tells how well investing equally in all the funds outperforms the simple strategy of investing in the Wilshire 5000 index. We have shaded the cells corresponding to the average and three well-known portfolios: Fidelity managed, Vanguard managed and Vanguard index. Vanguard and Fidelity (nicknamed Fido) are two of the largest mutual fund families, and Vanguard has the most extensive collection of index funds of any mutual fund family.

11 Table 5: predicted risk-adjusted return differentials for alternative classes & equally weighted portfolios and Table 6: historical return differentials

Table 5 is the same as Table 4, except that it presents the corresponding risk-adjusted differentials. In the two tables, Vanguard index beats Fidelity in all the net comparisons but loses in three out of four of the gross comparisons. Table 6 presents the historical return differential with respect to the Wilshire 5000. The three columns on the left hand side show the return differentials for the historical portfolio with respect to the Wilshire 5000 index, not risk adjusted. The three on the right show the same, with risk adjustment.

This ranking shows how well clients have fared compared to investing in the Wilshire 5000 index.

Tables 4, 5 and 6 document the effects of expenses on returns. Gross of expenses, return differentials average between 0.44 and -0.75 %age points per year. The averages for the high expenses classes fall to between -1.32 and -2.52% age points per year.

They also document the efficacy of index investing. The equally weighted portfolios with style adjustment evaluate stock picking and style jumping prowess of mutual fund managers. We think this is a particularly important criterion, so much of our analysis emphasizes it. Perhaps the reader should focus on non-risk adjusted return differentials in our regressions, because of the arbitrary assumption we made in our risk adjustment that risk is shrunk by adding the 90 day treasury bill to the portfolio rather than some other low risk investment which would have also shrunk risk but had a different impact on the risk adjusted return.

When gross returns are the criterion, and we examine the style adjusted performance of the equally weighted portfolios the Vanguard index portfolio always ranks in the top 17 portfolios out of the 51 examined. When only maximum expense portfolios are examined the Vanguard index portfolio rank is 12 or better.

12 Predicting gross performance

This analysis raises a pertinent question: How is the gross performance related to turnover, maximum front-end load for any level of investment in any class, maximum back-end load for any period of investment in any class, and minimum expense. We also ask whether there are indirect effects of expense ratios, front-end loads, and back-end loads on fund family performance. Bogle (2001) has pointed out that “soaring costs have

had a powerful negative impact on the returns earned by shareholders". According to Carhart's (1997) research on individual funds, net performance is negatively affected by the expense ratio, turnover ratio and load fees. Let's see if those results are replicated here.

Building on Table 2, we constructed Table 7. This table examines average gross return differentials for equally weighted portfolios, not risk adjusted, and in comparison to the tracking index, for fund families in various categories: turnover on either side of 80% per year, expense ratio on either side of 1% per year, and load versus no load funds. Within both load categories increasing turnover or expense reduces gross return. Moreover, within each category of expense ratio and turnover ratio, load funds perform less well than do no load funds.

To further explore this issue we ran the following regression:

$$\mathbf{R_{family} = -1.52*E_{family} - 0.00827*T_{family} + 1.90} \qquad \mathbf{(1)}$$

$$\mathbf{(2.68;\ 0.01) \quad (2.25;\ 0.03) \quad (1.62;\ 0.1)}$$

where here, in all the regressions, and in Table 8 the numbers in the parentheses are the t's and P's respectively, so the first coefficient is significantly different from zero at the 1% level;

$\mathbf{R_{family}}$ is family equally weighted, style adjusted, gross return differential continuously compounded; [7]

$\mathbf{E_{family}}$ is minimum family expense ratio in 2005 for the diversified US equity mutual funds in any class in the family's collection, i.e. the average expense ratio for each

[7] Sharkansky (2002) finds higher cost of turnover. He finds that each 100% age points in crease in turnover reduces the annual return of large cap domestic funds by 1.24%/year, small cap domestic funds by 2.55%/year, and international funds by 1.54%/year. This is in addition to any impact on gross returns.

family's cheapest class of funds (This is the class that will appeal to the family's wealthiest investors);

$\mathbf{T_{family}}$ is the average family turnover for the equally weighted portfolio over the period; all variables are expressed as %/year;

R^2=0.19; Adjusted R^2 = 0.16; Observations = 51; F=5.8; $F_{significance}$ =0.006.

Our point estimate is that a one hundred percent increase in turnover reduces fund family return by 0.83 % age points per year. So turnover is expensive and Vanguard's recently implemented redemption fees charged to frequent traders should benefit those who buy and hold, especially as these fees are paid back into the fund.

The impact of minimum expense ratios is perhaps the most extraordinary result. Each one % age point per year increase in the minimum family average expense ratio shrinks gross returns of the fund family by 1.52% age points per year. So if a fund is in the minimum expense class, its net return falls by 2.52 % age points per year. Thus, high minimum expense is a marker for bad performance by a fund family. For example the three fund firms with no loads and smallest minimum expenses are DFA, GMO, and Vanguard. Their average equally weighted, style adjusted, performance differential is 1.05% / year, compared with the average of -0.36% percentage points per year better than their tracking index.

It may be that families that charge high minimum expenses do not cater to sophisticated investors, and figure they can get away with paying higher brokerage costs in return for gifts (Craig and Hechinger 2005) and some trades may be victims of front running (Lucchetti 2005).

Table 8 tests Cahart's hypothesis that gross return is negatively affected by expense ratio, turnover ratio and load fees, except we test it for fund families. It describes the regression of $\mathbf{R}_{\mathbf{family}}$ on $\mathbf{E}_{\mathbf{family}}$ and $\mathbf{T}_{\mathbf{family}}$, as defined in Equation 1, with two added explanatory variables: Front end load, which is the maximum front end load, and Deferred load, which is the maximum deferred load, both from Table 3. It reports that the coefficients for the front end load and the expense are significant at the 10% level, with the anticipated negative signs. The coefficient on family turnover is similar to that in equation 1, but the addition of the loads to the regression has eliminated its statistical significance. The coefficient on deferred load is not significant, but has the anticipated negative sign. The table reports that in moving our assets from the hypothetical family with the lowest expenses and turnover, and no loads, to the hypothetical family with the highest expenses, turnover and loads, our regression predicts a fall in gross return of 3.8%/year, (even before expenses or loads are paid).

Carhart (1997) finds a one percent increase in the expense ratio of a fund to reduce net return by 1.54% age points, per year, also surprisingly large and between our two estimates of 1.52% and 1.56%. He also found a large cost of turnover: "a 21.5 basis point cost for (one-way) buy trades and a 63 basis point cost for sell trades." These are close to our estimates, since our turnover variable, provided by Morningstar, measures the minimum of purchases and sales.

13 Good and bad mutual fund families

Barron's annual rankings of mutual fund families makes us wonder whether ranking fund families makes good sense. So we ask: Can the performance of an individual fund's

siblings within the same family predict that fund's performance? One answer lies in the following regression:

$$\mathbf{R_{fund} = 0.325*R_{sibling} \quad -0.457} \qquad \textbf{(2)}$$
$$\mathbf{(3.09, P=0.002) \quad (3.07, P=0.002);}$$

where $\mathbf{R_{fund}}$ is the equally weighted, style adjusted, gross return differential continuously compounded for the individual fund;

$\mathbf{R_{sibling}}$ is the equally weighted, style adjusted, gross return differential continuously compounded averaged over the siblings of the individual fund;

all variables are expressed as (%/year);

R^2=0.031; Adjusted R^2 = 0.028; Observations = 294; F=9.4; $F_{significance}$ =0.002.

So if a fund family's funds have experienced a gross return differential, not risk adjusted and style adjusted which is 1% age point per year higher than the average, and data on a previously unnoticed fund is discovered, our point estimate is that that fund will have a gross return differential that is 0.325 % age points above the average. The point estimate is significantly different from zero at the 0.2% level. So sibling return has substantial and significant predictive power. This finding implies that fund family behavior over one time span is likely to predict the subsequent behavior of a fund not included in the initial sample. Thus, it appears that publishing family returns is a fruitful exercise.[8]

[8] New York State Attorney General Elliot Spitzer has investigated nine fund families. We call them "bad boys" include Van Kampen, Goldman Sachs, Morgan Stanley, Putnam, Janus, Federated, AIM, Strong, and MFS. Those fund families have been charged, probed or fined by Spitzer Attorney Office. We looked through the reports online from various sources such as *Wall Street Journal, CNN/Money, Business Week* and *Fortune* to get this list of 9 fund families.

Exhibits 1, 2 and 3, show that "bad boy" fund families did not perform well over the past 11 years. Their average expense ratio and turnover ratio are higher than those of the 42 other fund families. The average performance of the "bad boy" fund families, for both net return and gross return, regardless of risk adjustment, for both equally weighted return and historic return, trailed the average performance of the other 42 fund families. For example, the average gross return differential of their equally weighted

But this exercise confirms what we already knew. Equation 1, tells us that fund family performance depends in an important and significant way on Family minimum expense. From this we expect that gross returns, SA and NRA would be more closely correlated between fund siblings than between funds from different families. Thus we have not shown that publishing mutual fund company rankings is any more useful than publishing equation 1 showing how family return depends on minimum family expense ratio and family turnover. To test whether sibling return provides any more useful information than does family minimum expense ratio and turnover of the fund, we regress:

$$\mathbf{R_{fund} = 0.231*R_{sibling} \quad -0.930*E_{family} \quad -0.00683*T_{fund} \quad +0.872} \qquad \textbf{(3)}$$
$$\mathbf{(2.09, P=0.04) \quad (-1.65, 0.10) \quad (-2.68, 0.008) \quad (1.71, 0.088)}$$

where $\mathbf{T_{fund}}$ is the average fund turnover for the equally weighted portfolio over the period, expressed as %/year;

R^2=0.070; Adjusted R^2 = 0.060; Observations = 294; F=7.2; $F_{significance}$ =0.000106.

The sibling return is significantly different from zero at the 6% level. Regression 3 tells that given values for minimum family expense ratio and fund turnover, if a fund's sibling has a one percentage point per year higher return differential than the mean, then we can guess that our fund has a return differential that is 0.231% age points higher than

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portfolios, style adjusted, was 0.41% age points per year less than that of the other fund families. Therefore, those "bad boy" fund families are bad boys based on objective measures of performance as well as on the basis of attracting Spitzer's attention. All these families have at least some load funds. Thus, loads are a marker for alleged bad behavior.

The late trading scandal is one of the focuses of Spitzer's concern. The cost of turnover multiplies the cost of the late trading scandal. Not only do late traders deprive long term investors of return directly, but they deprive them also by forcing up turnover. For more on this see Donnelly and Tower (2008).

we would have otherwise calculated, based on the family's minimum average expense ratio and the fund's turnover.

Now we ask whether adding sibling return to the other variables in regression equation 3 improved explanatory power. If it does not, then there is nothing to be gained from ranking mutual fund families that could not be inferred from observing the minimum average expense and turnover, and mutual fund family ranking is a worthless activity. Here is the truncated regression:

$$\mathbf{R_{fund} = -1.29*E_{family} \quad -0.00713*T_{fund} \quad +1.07} \qquad \textbf{(4)}$$
$$\mathbf{(-2.39,\ 0.02) \qquad (-2.78,\ 0.006) \qquad (2.11,\ 0.04)}$$

where R^2=0.056; Adjusted R^2 = 0.049; Observations = 294; F=8.6; $F_{significance}$ =0.000241.

We compare equation **(3)** with the same equation without the average sibling return differential **(4)**, and we find that adding the sibling return increased the significance of the F test from 0.000241 to 0.000106. Thus adding sibling return has augmented our ability to explain fund performance beyond knowledge just of minimum family expense ratio and fund turnover. This leads us to believe that publishing fund family performance is a useful exercise. The acid test, of course, is to discover whether performance differentials in early periods are replicated in later periods.

Equation **4** has the added benefit of testing the reliability of equation 1, as it is essentially the same equation, except it focuses on funds rather than families. In going from equation **1** to equation **4**, the coefficient on $\mathbf{E_{family}}$ falls in absolute value from **1.52** to **1.29**, while the coefficient on turnover falls in absolute value from **.00827** to **0.00713** with $\mathbf{E_{family}}$ becoming slightly less significant and turnover becoming slightly more significant.

Our approach shares much with Bernstein (1999) from which we drew the subtitle of the paper. Bernstein (1999) memorably writes:

> One [possible explanation for the large impact of expenses on mutual fund return] is moral turpitude. A fund organization which sees nothing particularly wrong charging its shareholders 200 basis points for a large cap fund is also likely quite comfortable with a wide range of other questionable activities. Such as front-running, a less than arms-length relationship with the organization's investment banking and bond-trading division, or perhaps simply a lax eye in general towards quality of execution. Readers even more evil-minded than this author will surely think of others.[9]

14 Lessons for those who rank mutual fund families

We conclude that in ranking mutual fund families it is important:

a. to distinguish between share classes,

b. to emphasize gross returns so investors can predict return differentials by adding in expenses for specific share classes,

c. to examine the role of front-end load, deferred load and the minimum family expense to search for general rules about which types of families are best,

[9] Bernstein (2000) uses single independent variable regressions to calculate the impact of expense and turnover on net annualized return for different styles of mutual fund. He finds the impact of expense to be -2.15 % age points/year for each 1% age point increase in the expense ratio. He finds turnover has a smaller effect on return than we do. He points out (1999) that Bogle (1999) finds a similar return/expense slope for large funds: -1.80. Our corresponding numbers from the multiple equation 4 are -1.29-1=2.29 %age points/year for the impact of the minimum expense ratio on fund net continuously compounded return,, and 0.713 %/year for turnover. Our coefficient for expense is similar, but the absolute value of our coefficient for turnover is larger than Bernstein's.

Bernstein treats different classes of the same mutual fund as different funds. If the average expense ratio over multiple classes of the same fund shrinks gross performance of the fund, we would expect that his regression would yield a lower impact of expense on gross return than explaining net return of each fund portfolio by a function of expense ratios for the various classes of the fund, although the fact that he uses annualized returns rather than continuously compounded returns should increase the coefficient.

d. to continuously compound rates of gross return to facilitate adjusting for expense,

e. to compare style-adjusted performance, with unadjusted performance, and historical performance of the portfolios held by clients, to isolate the efficacy of managers' stock picking from style picking and to assess the wisdom of individual investors.

f. to compare each managed mutual fund with its corresponding index basket, not just one index.

15 Lessons for investors

Investors should know that

a. The equally weighted portfolio of the average mutual fund family underperforms its tracking index gross of expenses. So transactions costs of buying and selling the stocks in the fund portfolio more than offset any return management earns from prescient stock picking and style shifting: picking stocks and styles just before they appreciate.

b. However the reverse is true of the average fund family that charges no loads, has low expenses in its least expensive class and has low turnover: it outperforms its tracking index gross of expenses.

c. The gross return of the average equally weighted portfolio average fund family beats the broad Wilshire 5000 index. So fund families and fund managers picked the right styles over the period.

d. The portfolios that investors chose underperformed the equally weighted portfolios and the Wilshire 5000 index. So investors appear to be lousy fund

pickers, although tax considerations may be partially responsible for making it difficult for them to maintain appropriate balance in their portfolios.

e. In every one of our 18 contests, investors in Vanguard's index portfolio, beat the average investor in actively managed mutual funds. For the investor with less than ten thousand dollars to invest in a fund family with no loads there are only four fund families that have a predicted style-adjusted net return differential for their equally weighted portfolios that exceed that of the Vanguard index portfolio: Royce, Lord Abbett, American, and Merrill Lynch.[10] Our point estimates are that a one hundred percentage point increase in turnover reduces fund family return by 0.82 or 0.83 % age points per year. So turnover is expensive and Vanguard's redemption fees charged to frequent traders should benefit those who buy and hold, especially as these fees are paid back into the fund.

f. High front end loads and high minimum expense ratios and high turnover are all markers for poor performance gross of expenses. If we view the first two as objective indicators of the character of mutual fund companies, then we can

[10] The prediction is the 11 year gross return differential, SA, NRA, minus the expense ratio. These predictions are: Royce: 1.05% age pts /yr, Lord Abbett: 0.34% age pts/ yr, American: 0.37% pts/yr, and Merrill Lynch: 0.15% pts/yr. They compare with the prediction for the Vanguard index portfolio of 0.07% age points/ yr. Of course in reality we would expect regression to the mean, so that fund families that have gross return differentials that deviate most substantially from the mean, will be closer to the mean in the future.

Bogle (2005b) argues that a conservative approach to selecting mutual fund families is to select those with low expense and turnover. We regressed gross return differential, SA, NRA on maximum loads, minimum expense, and turnover to predict gross return. Adding back in expense of the minimum class to predict net return of the minimum expense class, we find the only families to have positive predicted net return differentials are: DFA 0.66% per year, GMO 0.32% /year, T Rowe Price 0.40% per year, and Vanguard Managed Funds 0.77%/year. Thus there are only four mutual fund families out of 51, whose predicted returns beat the indexes. Moreover, DFA funds are available only through advisors, and GMO has a minimum account size of $5 Million.

borrow Bogle's (2002a) aphorism to concur that "Character counts." What that means in the context of this paper is that bad characters take money both directly and indirectly from their clients.

g. The impact of minimum expense ratios is perhaps the most extraordinary result. Each one % age point per year increase in the expense ratio for the cheapest class of fund shrinks the gross return of the fund family by 1.52 or 1.56 percentage points per year. Thus, high minimum expense seems to be a marker for bad performance by a fund family.

16 Some additional hypotheses and ways to improve upon this article

Future rankers of mutual fund families should deal with survivorship bias explicitly, by folding killed funds into the funds they are ultimately merged with. Moreover it may turn out that the folding of badly performing mutual funds into other funds to "sanitize" a fund family's record is a marker for bad performance.

The performance of historical portfolios should include all funds, not just those in existence at the beginning of the period, although this calculation is more laborious than ours. Wealthier investors are likely to be more sophisticated, so we expect that the performance of the aggregate portfolio of the investment class with the largest minimums and lowest fees would be better than the historical performance of the historical portfolios of other fund classes. Thus focusing on the former is likely to make fund families look good, although some families, like Vanguard, may offer their cheapest shares only for some of their funds, so diversification may be lower in the cheapest class.

We thought the performance of the equally weighted portfolio was a useful transparent calculation, but it may be useful to put larger weights on bigger funds when

one wants to assess the performance of a basket of funds as Yang and Tower (2008) do. Still if one is to use constant weights, one should use portfolio weights at the beginning of the period, rather than weights at the end of the period, because the latter artificially puts high weights on successful funds.

We expect that those families who cater primarily to large accounts, which invest primarily in low cost vehicles have higher gross returns, for they are more likely to be concerned with pleasing wary and sophisticated clients. Thus a marker for good performance might be the ratio of the value of assets in low expense accounts to those in high expense accounts.

Similarly, we expect that the portfolios invested in lower cost funds have better risk-adjusted performance relative to the Wilshire 5000, even gross of expenses than those in higher cost funds, because again the former cater to more sophisticated investors.

17 Concluding remarks

We found that mutual fund families that court sophisticated investors with low costs and loads manage to produce a product that enables others to free ride on the sophisticates. Families who exploit obviously, exploit in less obvious ways too. Bogle (2005) gave too much away in the title of his (2005) address to the Money Show in Las Vegas: "In Investing, You Get What You Don't Pay For." We suggest revising it to "In Investing, You Get a Multiple of What You and Other Clients Don't Pay For."

We found that expenses for the mutual fund families with the best gross returns after adjusting for style are characterized by these qualities: low expense ratios for their most preferred clients, low turnover and low or non-existent maximum front end and deferred loads.

We also reiterate the conclusion of many experts such as John Bogle, Warren Buffet, Jonathan Clements, Jeremy Grantham, Burton Malkiel that indexing tends to provide superior returns to most managed mutual funds. However, there are some mutual fund families that historically have beaten the Vanguard index portfolio, both gross and net of expenses.

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Table 1 Fund family return differentials 1/1/1994-1/1/2005

Family Name	Class	Funds in sample	Equally weighted ret (% pts/yr)				Historic ret (% pts/yr)	
			Exp %	Turnover %	wrt tracking index SA		wrt Wilshire NSA	
					NRA	RA	NRA	RA
AIM	A	7	1.24	83	-2.56	-2.70	-3.35	-3.47
Alger	B	4	2.32	165	-2.69	-3.06	-3.80	-3.89
AllianceBernstein	C	5	2.12	98	-3.26	-3.60	-4.08	-7.90
American Century	Regular	9	0.96	124	-0.55	-0.14	-2.00	-2.12
American Funds	A	6	0.69	30	0.37	0.79	0.95	1.92
AXP	A	4	1.00	92	-3.31	-3.41	-1.01	-0.75
BlackRock	Inv A	5	1.27	97	-1.56	-1.50	-2.54	-2.68
Columbia	Inv	7	0.98	75	-1.30	-1.19	-1.35	-1.03
Consulting	Regular	4	0.94	78	-1.03	-1.23	-0.84	-0.81
Delaware	A	7	1.31	72	-1.78	-1.80	-1.51	-0.81
DFA	Regular	5	0.39	22	1.34	1.16	3.26	3.7
Dreyfus	Regular	7	0.99	80	-2.51	-2.51	-3.19	-2.21
Evergreen	I	4	1.20	68	-3.04	-2.55	-2.33	-1.92
Federated	Regular	4	1.17	89	-0.52	-0.44	-1.39	-1.21
Fidelity	Regular	23	0.83	111	-1.27	0.04	-.93	0.11
Fifth Third	A	4	1.15	38	-2.80	-2.98	-2.37	-2.47
First Investors	A	5	1.38	79	-3.00	-2.66	-2.05	-1.71
Franklin	A	5	1.04	38	0.37	0.76	-0.70	-1.77
GMO	III	5	0.42	81	0.70	1.07	1.51	1.89
Goldman Sachs	A	4	1.34	62	-1.86	-1.45	-2.30	-1.72
Janus	Regular	6	0.95	102	-0.29	-1.31	-1.41	-2.26
John Hancock	A	7	1.38	93	-3.30	-3.31	-3.65	-3.21
Lord Abett	A	4	1.15	51	0.57	0.64	1.13	2.33
Marshall	INV	4	1.16	91	-1.40	-1.04	-2.02	-1.18
Merill Lynch	I	4	0.96	51	0.14	0.33	0.69	1.88
MFS	B	7	1.95	114	-3.77	-3.96	-4.00	-3.99
Morgan Stanley	B	6	1.70	111	-1.94	-2.19	-2.74	-2.35
Neuberger	INV	6	1.05	60	-1.27	-1.63	-1.79	-1.61
One Group	I	8	1.20	82	-1.77	-1.46	-1.98	-1.37
Oppenheimer	B	9	1.29	80	-1.54	-0.97	-1.98	-1.30
Phoenix	B	4	1.51	104	-3.44	-3.83	-5.2	-4.92
PIMCO	INV	6	0.87	96	0.10	0.56	-1.72	-1.78
Pioneer	INV	7	1.10	41	-2.71	-2.62	-2.85	-1.62
Principal	A	4	1.16	43	-3.09	-2.17	-2.29	-1.46
Putnam	A	8	1.02	83	-2.23	-2.53	-2.33	-2.59
Royce	INV	4	1.48	49	1.08	2.24	2.09	4.13
Scudder	A	5	1.25	76	-1.73	-1.35	-4.19	-4.00
Seligman	D	4	2.11	101	-4.70	-4.73	-6.75	-6.60
Smith Barney	A	7	1.07	41	-1.25	-1.05	-0.57	0.13
State Street	C	4	1.96	88	-2.78	-2.93	-4.36	-4.01
Strong	Regular	4	1.27	200	-3.15	-2.87	-5.61	-5.29
T Rowe Price	Regular	12	0.82	33	-0.85	0.02	0.26	1.47
Target	Regular	4	0.83	84	-1.58	-1.71	-0.70	-0.38
USAA	Regular	4	0.88	62	-2.31	-2.38	-3,.18	-2.72
Value Line	Regular	4	1.16	79	-0.66	-0.56	-1.06	-1.18
Van Kampen	C	5	1.76	107	-1.82	-1.72	-1.36	-1.66
Vanguard	Regular	9	0.51	69	-0.23	-0.07	-0.06	0.43
Victory	A	4	1.20	56	-0.85	-0.63	0.26	1.07
Westcore	Regular	4	1.17	73	-0.88	-0.97	-0.43	-0.31
Wilshire	INV	4	1.06	76	-1.99	-1.60	-2.60	-2.45
WM	A	4	1.35	71	0.00	-0.71	.32	0.42
AVERAGE		6	1.20	79	-1.56	-1.45	-1.77	-1.47
Family beats indx					17.6%	19.6%	17.6%	25.5%
Vanguard Index	INV	7	0.22	21	-0.01	-0.06	0.00	-0.05

Table 2 Gross return differentials 1994-2005 (%age points per year)

Name	Equal SA		Equal NSA		Historic	
	wrt tracking index		wrt Wilshire 5000			
	NRA	RA	NRA	RA	NRA	RA
AIM	-1.32	-1.46	-0.72	-1.12	-2.39	-2.51
Alger	-0.37	-0.75	0.48	-0.32	-1.88	-1.96
AllianceBernstein	-1.14	-1.47	1.00	1.26	-2.25	-5.83
American Century	0.41	0.81	1.70	2.20	-1.16	-1.29
American Funds	1.07	1.48	-1.41	-1.56	1.68	2.73
AXP	-2.31	-2.41	-1.14	-1.47	-0.12	0.15
BlackRock	-0.29	-0.24	-0.37	-0.47	-1.45	-1.59
Columbia	-0.32	-0.21	0.20	0.04	-0.48	-0.14
Consulting	-0.09	-0.29	0.68	0.31	-0.01	0.03
Delaware	-0.47	-0.49	-0.05	-0.32	-0.43	0.33
DFA	1.73	1.55	3.15	2.80	4.03	4.52
Dreyfus	-1.52	-1.53	-0.52	-0.46	-2.49	-1.43
Evergreen	-1.84	-1.36	-1.15	-0.54	-1.42	-0.97
Federated	0.65	0.73	-1.15	-0.54	-0.34	-0.13
Fidelity	-0.44	0.87	1.17	1.04	-0.21	0.92
Fifth Third	-1.64	-1.83	-0.69	-0.96	-1.38	-1.48
First Investors	-1.62	-1.28	-1.25	-1.12	-0.84	-0.47
Franklin	1.41	1.8	1.63	1.79	0.25	-0.89
GMO	1.12	1.49	2.32	2.85	2.13	2.53
Goldman Sachs	-0.52	-0.11	0.75	1.32	-1.10	-0.48
Janus	0.65	-0.36	1.33	-0.06	-0.62	-1.52
John Hancock	-1.92	-1.93	-1.64	-1.74	-2.62	-2.15
Lord Abett	1.72	1.79	2.93	3.14	2.02	3.30
Marshall	-0.24	0.13	0.66	1.04	-1.01	-0.10
Merill Lynch	1.09	1.29	2.49	2.77	1.40	2.68
MFS	-1.82	-2.01	-1.19	-1.58	-2.29	-2.28
Morgan Stanley	-0.24	-0.49	0.14	-0.42	-1.50	-1.09
Neuberger	-0.22	-0.58	1.30	0.82	-1.00	-0.81
One Group	-0.57	-0.25	0.74	0.95	-0.96	-0.30
Oppenheimer	-0.25	0.32	0.34	0.83	-1.02	-0.28
Phoenix	-1.92	-2.31	-0.85	-1.54	-4.21	-3.92
PIMCO	0.98	1.43	2.57	2.56	-1.02	-1.09
Pioneer	-1.60	-1.51	-0.56	-0.37	-2.01	-0.69
Principal	-1.92	-1.01	-1.92	-1.01	-1.40	-0.51
Putnam	-1.21	-1.52	-0.62	-1.22	-1.53	-1.81
Royce	2.55	3.71	5.06	5.49	3.64	5.83
Scudder	-0.48	-0.11	0.32	0.86	-3.28	-3.08
Seligman	-2.59	-2.62	-2.09	-2.20	-4.85	-4.69
Smith Barney	-0.17	0.02	0.52	0.81	0.42	1.18
State Street	-0.82	-0.97	0.30	0.17	-2.67	-2.29
Strong	-1.88	-1.60	-0.61	-0.14	-4.67	-4.32
T Rowe Price	0.17	0.84	1.66	2.39	1.08	2.38
Target	-0.75	-0.88	0.54	0.25	0.05	0.41
USAA	-1.44	-1.51	-1.28	-1.45	-2.53	-2.04
Value Line	0.50	0.60	1.16	0.47	-0.18	-0.30
Van Kampen	-0.06	0.04	0.29	0.14	0.06	-0.26
Vanguard	0.30	0.48	0.82	0.76	0.37	0.89
Victory	0.38	0.62	1.47	1.86	1.43	2.30
Westcore	0.31	0.21	1.14	0.78	0.66	0.79
Wilshire	-1.02	-0.60	0.80	1.25	-1.88	-1.71
WM	1.48	0.70	1.95	0.65	1.57	1.69
AVERAGE	-0.36	-0.25	0.44	0.41	-0.75	-0.43
Family beats index	35%	43%	65%	59%	31%	35%
Vanguard Index	0.27	0.44	0.50	0.42	0.19	0.14

Table 3 Class characteristics

Name	Class A		Class B		No load, min exp, min invest ≤10K			No load, min. exp, min. invest>10K			Minimum expense class		
	Exp %	Max front	Exp	Max defer	Class	Exp	Min. invest $	Class	Exp	Min. invest $	Class	Exp	Min invest $
AIM	1.45	5.5	2.12	5	R	1.55	25	Instl	0.84	100K	Instl	0.84	100K
Alger	1.25	5.25	2.09	5				Instl	1.14	1M	Instl	1.14	1M
AllianceBernstein	1.43	4.25	2.21	4				Instl	0.98	2M	Instl	0.98	2M
Americn Century	1.38	5.75	1.17	5	Inv	1.20	2500	Instl	0.80	5M	Instl	0.80	5M
American Funds	0.69	5	1.50	5	F	0.7	250				A	0.69	250
AXP	1.10	5.75	1.87	5	Instl	1.20	2K				Instl	1.20	2K
BlackRock	1.29	4.5	2.04	6.5				Instl	0.82	2M	Instl	0.82	2M
Columbia	1.31	5.75	2.05	5	Instl	1.00	1000	Z	0.95	100K	Z	0.95	100K
Consulting					Regular	0.87	10K				Regular	0.87	10K
Delaware	1.49	5.75	2.16	4	R	1.78	1000	Instl	1.01	1M	Instl	1.01	1M
DFA								Regular	0.43	2M	Regular	0.43	2M
Dreyfus	1.50	5.75	2.56	4	Regular	0.77	2.5K				Regular	0.77	2.5K
Evergreen	1.42	5.75	2.13	5	R	1.38	0	Instl	1.03	1M	Instl	1.03	1M
Federated	1.46	5	2.09	5.5	R	1.7	250	Instl	0.96	25K	Instl	0.96	25K
Fidelity	1.29	5.75	2.06	5	Regular	0.87	2500				Regular	0.87	2500
Fifth Third	1.27	5	2.02	5	Instl	1.02	1000				Instl	1.02	1000
First Investors	1.66	5.75	2.34	4							A	1.66	1K
Franklin	1.04	5.75	1.74	4				Adv	0.81	5M	Adv	0.81	5M
GMO								IV	0.39	5M	IV	0.39	5M
Goldman Sachs	1.16	5.5	1.91	7				Instl	0.76	1M	Instl	0.76	1M
Janus	2.11	5.75	3.16	5	Regular	0.9	2500	Instl	1.01	5M	Instl	1.01	5M
John Hancock	1.61	5	2.26	5	Instl	0.95	10K				Instl	0.95	10K
Lord Abbett	1.17	5.75	1.81	5	P	1.38	1K	Instl	0.81	1M	Instl	0.81	1M
Marshall					Inv	1.29	1K				Inv	1.29	1K
Merrill Lynch	1.15	5.25	1.92	4	Instl	0.94	1K				Instl	0.94	1K
MFS	1.21	5.75	1.94	4	R	1.58	1K	Instl	0.93	100K	Instl	0.93	100K
Morgan Stanley	1.12	5.25	1.83	5				Instl	0.81	5M	Instl	0.81	5M
Neuberger					Inv	0.90	1K				Inv	0.90	1K
One Group	1.21	5.25	1.96	5				Instl	0.97	200K	Instl	0.97	200K
Oppenheimer	1.24	5.75	2.10	5	Instl	0.94	0				Instl	0.94	0
Phoenix	1.50	5.75	2.25	5				Instl	1.44	250K	Instl	1.44	250K
PIMCO	1.15	5.5	1.90	7	D	1.22	5K	Instl	0.75	5M	Instl	0.75	5M
Pioneer	1.08	5.75	2.17	6	R	1.29	0	Instl	0.90	5M	Instl	0.90	5M
Principal	1.31	5.75	2.07	4	Instl	0.71	0				Instl	0.71	0
Putnam	1.09	5.75	1.84	5	R	1.31	500	Instl	0.84	150M	Instl	0.84	150M
Royce					Inv	1.48	2000	Instl	1.04	1M	Instl	1.04	1M
Scudder	1.24	5.75	2.04	4	S	1.01	2500	Instl	0.79	1M	Instl	0.79	1M
Seligman	1.64	4.75	2.40	5	Instl	1.18	0				Instl	1.18	1K
Smith Barney	1.61	5	2.26	5				Instl	0.79	5M	Instl	0.79	5M
State Street	1.38	5.75	1.17	5							S	1.08	2.5K
Strong	0.93	5.75	1.96	5	Inv	1.58	2500	Instl	1.42	1M	Instl	1.42	1M
T Rowe Price					Regular	1.00	2500	Instl	0.67	1M	Instl	0.67	1M
Target								Regular	0.93	25K	Regular	0.93	25K
USAA					Regular	1.00	3000				Regular	1.00	3000
Value Line					Regular	1.13	1000				Regular	1.13	1000
Van Kampen	1.60	5.75	1.88	5	R	1.15	0				R	1.15	0
Vanguard					Regular	0.51	3K	Instl	0.23	10M	Instl	0.36	10M
Victory	1.22	5.75			R	1.51	500				A	1.22	500
Westcore					Regular	1.14	2.5K				Regular	1.14	2.5K
Wilshire					Inv	1.70	2500	Instl	1.04	250K	Instl	1.04	250K
WM	1.23	5.5	2.26	5							A	1.23	1K
AVERAGE	1.32		2.03			1.16			0.87			0.94	
Vanguard Index					Regular	0.2	3K	Instl	0.07	10M	Instl	0.07	10M

Table 4 Ranking families by return differential, equal weight portfolio, not risk adjusted (%age points/year)

Rank	return differential wrt tracking index SA						return differential wrt Wilshire 5000 NSA					
	Gross		Min exp class		Max exp class		Gross		Min exp class		Max exp class	
1	Royce	2.55	Royce	1.51	DFA	1.30	Royce	5.06	Royce	4.02	Royce	3.58
2	DFA	1.73	DFA	1.30	Royce	1.07	DFA	3.15	DFA	2.72	DFA	2.72
3	Lord	1.72	Lord	0.91	GMO	0.73	Lord	2.93	Lord	2.12	GMO	1.93
4	WM	1.48	GMO	0.73	V Idx	0.07	PIMC	2.57	GMO	1.93	Lord	1.13
5	Frank	1.41	Frank	0.60	Lord	-0.09	Merrill	2.49	PIMC	1.82	PIMC	0.68
6	GMO	1.12	Amer	0.38	Vang	-0.21	GMO	2.32	Merrill	1.55	TRP	0.68
7	Merrill	1.09	WM	0.26	Frank	-0.33	WM	1.95	TRP	0.99	Merrill	0.57
8	Amer	1.07	PIMC	0.23	Amer	-0.43	AmCt	1.70	AmCt	0.90	Neub	0.40
9	PIMC	0.98	V Idx	0.20	VLine	-0.63	TRP	1.66	Frank	0.82	AmCt	0.32
10	Janus	0.65	Merrill	0.15	WM	-0.77	Frank	1.63	WM	0.72	Vang	0.31
11	Feder	0.65	Vang	0.07	TRP	-0.81	Victry	1.47	Vang	0.59	V Idx	0.30
12	VLine	0.50	Janus	-0.25	Merrill	-0.83	Janus	1.33	V Idx	0.43	VLine	0.03
13	AmCt	0.41	Feder	-0.31	West	-0.83	Neub	1.30	Janus	0.43	West	0.00
14	Victry	0.38	AmCt	-0.39	PIMC	-0.92	Fido	1.17	Neub	0.40	Victry	-0.04
15	West	0.31	TRP	-0.50	Conslt	-0.96	VLine	1.16	Fido	0.30	Frank	-0.11
16	Vang	0.30	VLine	-0.63	AmCt	-0.97	West	1.14	Victry	0.25	Conslt	-0.19
17	V Idx	0.27	West	-0.83	Neub	-1.12	AlBer	1.00	VLine	0.03	WM	-0.30
18	TRP	0.17	Victry	-0.84	Victry	-1.13	Vang	0.82	AlBer	0.02	Target	-0.39
19	VanK	-0.06	Conslt	-0.96	Feder	-1.44	Wilsh	0.80	West	0.00	Marsh	-0.63
20	Conslt	-0.09	Smith	-0.96	Marsh	-1.53	Gold	0.75	Gold	-0.01	Fido	-0.89
21	Smith	-0.17	Morg	-1.05	Target	-1.68	OneG	0.74	Conslt	-0.19	Wilsh	-0.90
22	Neub	-0.22	BkRk	-1.11	VanK	-1.94	Conslt	0.68	OneG	-0.23	State	-1.08
23	Morg	-0.24	Neub	-1.12	Morg	-2.07	Marsh	0.66	Wilsh	-0.24	Gold	-1.16
24	Marsh	-0.24	Oppen	-1.19	AVG	-2.13	Target	0.54	Smith	-0.27	AlBer	-1.22
25	Oppen	-0.25	VanK	-1.21	State	-2.20	Smith	0.52	Target	-0.39	OneG	-1.22
26	BkRk	-0.29	AVG	-1.24	BkRk	-2.33	V Idx	0.50	Scudr	-0.47	AVG	-1.32
27	Colum	-0.32	Colum	-1.27	Oppen	-2.35	Alger	0.48	AVG	-0.49	VanK	-1.59
28	AVG	-0.36	Scudr	-1.27	Colum	-2.37	AVG	0.44	Oppen	-0.60	Alger	-1.61
29	Alger	-0.37	Gold	-1.28	Smith	-2.43	Oppen	0.34	Marsh	-0.63	Morg	-1.69
30	Fido	-0.44	Fido	-1.31	Gold	-2.43	Scudr	0.32	Alger	-0.66	Scudr	-1.72
31	Dela	-0.47	Dela	-1.48	USAA	-2.44	State	0.30	Morg	-0.67	Smith	-1.74
32	Scudr	-0.48	Alger	-1.51	Alger	-2.46	VanK	0.29	Colum	-0.75	Oppen	-1.76
33	Gold	-0.52	Marsh	-1.53	Fido	-2.50	Colum	0.20	State	-0.78	Janus	-1.83
34	OneG	-0.57	OneG	-1.54	Janus	-2.51	Morg	0.14	VanK	-0.86	Colum	-1.86
35	Target	-0.75	Target	-1.68	Scudr	-2.52	Dela	-0.05	Dela	-1.06	Dela	-2.22
36	State	-0.82	State	-1.90	OneG	-2.53	BkRk	-0.37	BkRk	-1.19	USAA	-2.28
37	Wilsh	-1.02	Putnm	-2.05	Dela	-2.63	Dryfs	-0.52	Dryfs	-1.29	BkRk	-2.41
38	AlBer	-1.14	Wilsh	-2.06	Wilsh	-2.72	Pionr	-0.56	Putnm	-1.46	Putnm	-2.47
39	Putnm	-1.21	AlBer	-2.12	Putnm	-3.06	Strong	-0.61	Pionr	-1.46	Strong	-2.57
40	AIM	-1.32	AIM	-2.16	AlBer	-3.35	Putnm	-0.62	Strong	-1.54	Fifth	-2.71
41	USAA	-1.44	Dryfs	-2.29	AIM	-3.44	Fifth	-0.69	AIM	-1.56	Pionr	-2.73
42	Dryfs	-1.52	USAA	-2.44	Fifth	-3.66	AIM	-0.72	Fifth	-1.71	AIM	-2.85
43	Pionr	-1.60	Pionr	-2.50	MFS	-3.76	Phnx	-0.85	Amer	-2.10	Amer	-2.91
44	First	-1.62	Princ	-2.63	Pionr	-3.77	AXP	-1.14	Feder	-2.11	AXP	-3.01
45	Fifth	-1.64	Fifth	-2.66	Strong	-3.84	Everg	-1.15	MFS	-2.12	Dryfs	-3.08
46	MFS	-1.82	MFS	-2.75	First	-3.96	Feder	-1.15	Everg	-2.18	Phnx	-3.10
47	Everg	-1.84	Strong	-2.81	Everg	-3.98	MFS	-1.19	AXP	-2.24	MFS	-3.13
48	Strong	-1.88	JohnH	-2.87	Princ	-4.00	First	-1.25	USAA	-2.28	Feder	-3.24
49	JohnH	-1.92	Everg	-2.87	Dryfs	-4.08	USAA	-1.28	Phnx	-2.29	Everg	-3.28
50	Phnx	-1.92	First	-3.27	JohnH	-4.18	Amer	-1.41	JohnH	-2.59	First	-3.59
51	Princ	-1.92	Phnx	-3.36	Phnx	-4.18	JohnH	-1.64	Princ	-2.63	JohnH	-3.90
52	AXP	-2.31	AXP	-3.41	AXP	-4.19	Princ	-1.92	First	-2.91	Princ	-4.00
53	Selig	-2.59	Selig	-3.77	Selig	-4.99	Selig	-2.09	Selig	-3.27	Selig	-4.49

Table 5 Ranking families by return differential, equal weight portfolio, risk adjusted (%age points/year)

Rank	Return differential wrt tracking index SA						Return differential wrt Wilshire 5000 NSA					
	Gross		Min exp class		Max exp class		Gross		Min expense class		Max exp class	
1	Royce	3.71	Royce	2.67	Royce	2.23	Royce	5.49	Royce	4.45	Royce	4.01
2	Frank	1.80	DFA	1.12	DFA	1.12	Lord	3.14	GMO	2.46	GMO	2.46
3	Lord	1.79	GMO	1.10	GMO	1.10	GMO	2.85	DFA	2.37	DFA	2.37
4	DFA	1.55	Frank	0.99	V Idx	0.24	DFA	2.80	Lord	2.33	TRP	1.41
5	GMO	1.49	Lord	0.98	Frank	0.06	Merrill	2.77	Merrill	1.83	Lord	1.33
6	Amer	1.48	Amer	0.79	Amer	-0.02	PIMCO	2.56	PIMC	1.81	Merrill	0.85
7	PIMC	1.43	PIMC	0.68	Lord	-0.02	TRP	2.39	TRP	1.72	AmCt	0.82
8	Merrill	1.29	V Idx	0.37	Vang	-0.03	AmCnt	2.20	AmCt	1.40	PIMC	0.66
9	Fido	0.87	Merrill	0.35	TRP	-0.14	Victory	1.86	Frank	0.98	V Idx	0.39
10	TRP	0.84	Vang	0.25	PIMC	-0.46	Frank	1.79	Victry	0.64	Victry	0.35
11	AmCt	0.81	TRP	0.17	VLine	-0.53	Gold	1.32	Gold	0.56	Vang	0.25
12	Feder	0.73	AmCt	0.01	AmCt	-0.57	AlBern	1.26	Vang	0.53	Frank	0.05
13	WM	0.70	Fido	0.00	Merrill	-0.63	Wilshire	1.25	V Idx	0.52	Neub	-0.08
14	Victry	0.62	Feder	-0.23	Victry	-0.89	Fido	1.04	AlBer	0.28	Marsh	-0.25
15	VLine	0.60	WM	-0.53	West	-0.93	Marsh	1.04	Wilsh	0.21	West	-0.36
16	Vang	0.48	VLine	-0.53	Conslt	-1.16	OneGrp	0.95	Fido	0.17	Wilsh	-0.45
17	V Idx	0.44	Victry	-0.60	Marsh	-1.16	Scuddr	0.86	Scudr	0.07	Conslt	-0.56
18	Oppen	0.32	Oppen	-0.62	Fido	-1.19	Oppen	0.83	Smith	0.02	Gold	-0.59
19	West	0.21	Smith	-0.77	Feder	-1.36	Neuberg	0.82	OneG	-0.02	VLine	-0.66
20	Marsh	0.13	Gold	-0.87	Neub	-1.48	Smith	0.81	Neub	-0.08	Target	-0.68
21	VanK	0.04	Scudr	-0.90	WM	-1.55	West	0.78	Oppen	-0.11	AlBer	-0.95
22	Smith	0.02	West	-0.93	Oppen	-1.78	Vang	0.76	Marsh	-0.25	Fido	-1.02
23	Scudr	-0.11	BkRk	-1.06	Target	-1.81	WM	0.65	West	-0.36	OneG	-1.02
24	Gold	-0.11	VanK	-1.11	VanK	-1.84	V Idx	0.59	AVG	-0.52	Scudr	-1.18
25	Colum	-0.21	Conslt	-1.16	AVG	-2.01	VLine	0.47	Conslt	-0.56	State	-1.21
26	BkRk	-0.24	Colum	-1.16	Gold	-2.02	AVG	0.41	WM	-0.58	Oppen	-1.28
27	AVG	-0.25	Marsh	-1.16	Scudr	-2.15	Conslt	0.31	VLine	-0.66	AVG	-1.35
28	OneG	-0.25	AVG	-1.18	OneG	-2.21	Target	0.25	Target	-0.68	Smith	-1.44
29	Conslt	-0.29	OneG	-1.22	Smith	-2.24	State	0.17	Colum	-0.91	WM	-1.61
30	Janus	-0.36	Janus	-1.26	Colum	-2.26	VanK	0.14	State	-0.91	VanK	-1.74
31	Morg	-0.49	Morg	-1.30	BkRk	-2.28	Colum	0.04	Janus	-0.96	Colum	-2.01
32	Dela	-0.49	Neub	-1.48	Wilsh	-2.30	Janus	-0.06	VanK	-1.01	Strong	-2.10
33	Neub	-0.58	Dela	-1.50	Morg	-2.32	Strong	-0.14	Strong	-1.07	Morg	-2.25
34	Wilsh	-0.60	Wilsh	-1.64	State	-2.35	Dela	-0.32	Dryfs	-1.23	Alger	-2.41
35	Alger	-0.75	Princ	-1.72	USAA	-2.51	Alger	-0.32	Morg	-1.23	USAA	-2.45
36	Target	-0.88	Target	-1.81	Dela	-2.66	Pionr	-0.37	Pionr	-1.27	Dela	-2.48
37	State	-0.97	Alger	-1.89	Alger	-2.84	Morgan	-0.42	BkRk	-1.29	BkRk	-2.51
38	Princ	-1.01	State	-2.05	Princ	-3.08	Dryfs	-0.46	Dela	-1.33	Pionr	-2.54
39	First	-1.28	AIM	-2.29	Putnm	-3.36	BkRk	-0.47	Alger	-1.46	Feder	-2.63
40	Everg	-1.36	Dryfs	-2.30	Everg	-3.49	Everg	-0.54	Feder	-1.50	Everg	-2.67
41	AIM	-1.46	Putnm	-2.36	Janus	-3.52	Feder	-0.54	Everg	-1.57	Fifth	-2.98
42	AlBer	-1.47	Everg	-2.39	Strong	-3.56	Fifth	-0.96	Princ	-1.72	Dryfs	-3.02
43	USAA	-1.51	Pionr	-2.41	AIM	-3.58	Princ	-1.01	AIM	-1.96	Amer	-3.06
44	Pionr	-1.51	AlBer	-2.45	First	-3.62	AIM	-1.12	Fifth	-1.98	Putnm	-3.07
45	Putnm	-1.52	USAA	-2.51	Pionr	-3.68	First	-1.12	Putnm	-2.06	Princ	-3.08
46	Dryfs	-1.53	Strong	-2.53	AlBer	-3.69	Putnam	-1.22	Amer	-2.25	Janus	-3.22
47	Strong	-1.60	Fifth	-2.85	Fifth	-3.85	USAA	-1.45	USAA	-2.45	AIM	-3.24
48	Fifth	-1.83	JohnH	-2.88	MFS	-3.95	AXP	-1.47	MFS	-2.51	AXP	-3.35
49	JohnH	-1.93	MFS	-2.94	Dryfs	-4.09	Phnx	-1.54	AXP	-2.57	First	-3.46
50	MFS	-2.01	First	-2.94	JohnH	-4.19	Amer	-1.56	JohnH	-2.69	MFS	-3.52
51	Phnx	-2.31	AXP	-3.51	AXP	-4.28	MFS	-1.58	First	-2.78	Phnx	-3.79
52	AXP	-2.41	Phnx	-3.75	Phnx	-4.57	JohnH	-1.74	Phnx	-2.98	JohnH	-4.00
53	Selig	-2.62	Selig	-3.80	Selig	-5.02	Selig	-2.20	Selig	-3.38	Selig	-4.59

Table 6 Ranking families by historical return differential wrt Wilshire 5000 (%age points/year)

Rank	Return differential wrt Wilshire 5000 NRA						Return differential wrt Wilshire 5000 RA					
	Gross		Min exp class		Max exp class		Gross		Min expense class		Max exp class	
1	DFA	4.03	DFA	3.60	DFA	3.60	Royce	5.83	Royce	4.79	Royce	4.35
2	Royce	3.64	Royce	2.60	Royce	2.16	DFA	4.52	DFA	4.09	DFA	4.09
3	GMO	2.13	GMO	1.74	GMO	1.74	Lord	3.30	Lord	2.49	GMO	2.14
4	Lord	2.02	Lord	1.21	V Idx	0.49	Amer	2.73	GMO	2.14	Lord	1.50
5	Amer	1.68	Amer	0.99	Lord	0.21	Merrill	2.68	Amer	2.04	TRP	1.40
6	WM	1.57	V Idx	0.62	Amer	0.18	GMO	2.53	Merrill	1.74	Amer	1.23
7	Victry	1.43	Merrill	0.46	TRP	0.10	TRP	2.38	TRP	1.71	Victry	0.79
8	Merrill	1.40	TRP	0.41	Victry	-0.08	Victry	2.30	Victry	1.08	Merrill	0.76
9	TRP	1.08	WM	0.34	Vang	-0.14	WM	1.69	Vang	0.66	V Idx	0.45
10	V Idx	0.69	Victry	0.21	West	-0.48	Smith	1.18	V Idx	0.58	Vang	0.38
11	West	0.66	Vang	0.14	Merrill	-0.52	Fido	0.92	WM	0.46	West	-0.35
12	Smith	0.42	Smith	-0.37	WM	-0.69	Vang	0.89	Smith	0.39	Target	-0.52
13	Vang	0.37	West	-0.48	Target	-0.88	West	0.79	Fido	0.05	WM	-0.57
14	Frank	0.25	Frank	-0.56	Conslt	-0.88	V Idx	0.65	West	-0.35	Conslt	-0.84
15	VanK	0.06	Target	-0.88	VLine	-1.31	Target	0.41	Target	-0.52	Smith	-1.08
16	Target	0.05	Conslt	-0.88	Frank	-1.49	Dela	0.33	Dela	-0.68	Fido	-1.14
17	Conslt	-0.01	Fido	-1.08	VanK	-1.82	AXP	0.15	Conslt	-0.84	Marsh	-1.39
18	AXP	-0.12	VanK	-1.09	Smith	-1.84	Conslt	0.03	AXP	-0.94	VLine	-1.43
19	VLine	-0.18	AXP	-1.22	Neub	-1.90	Marsh	-0.10	Colum	-1.09	Neub	-1.71
20	Fido	-0.21	Feder	-1.30	AXP	-2.00	Feder	-0.13	Feder	-1.09	AXP	-1.72
21	Feder	-0.34	VLine	-1.31	Fido	-2.27	Colum	-0.14	Oppen	-1.22	Dela	-1.83
22	Dela	-0.43	Colum	-1.43	Marsh	-2.30	VanK	-0.26	Princ	-1.22	VanK	-2.14
23	Colum	-0.48	Dela	-1.44	Feder	-2.43	Oppen	-0.28	Gold	-1.24	Colum	-2.19
24	Janus	-0.62	Janus	-1.52	AVG	-2.52	OneG	-0.30	OneG	-1.26	AVG	-2.19
25	AVG	-0.75	AVG	-1.68	Colum	-2.53	VLine	-0.30	AVG	-1.36	Feder	-2.22
26	First	-0.84	PIMC	-1.77	AmCt	-2.54	AVG	-0.43	Marsh	-1.39	OneG	-2.26
27	OneG	-0.96	Gold	-1.86	Dela	-2.59	First	-0.47	VanK	-1.41	Oppen	-2.38
28	Neub	-1.00	Neub	-1.90	PIMC	-2.92	Gold	-0.48	VLine	-1.43	Gold	-2.39
29	Marsh	-1.01	OneG	-1.92	OneG	-2.92	Princ	-0.51	Pionr	-1.59	Princ	-2.59
30	Oppen	-1.02	AmCt	-1.96	Gold	-3.01	Pionr	-0.69	Frank	-1.70	Frank	-2.63
31	PIMC	-1.02	Oppen	-1.96	Oppen	-3.12	Neub	-0.81	Neub	-1.71	AmCt	-2.67
32	Gold	-1.10	Princ	-2.11	First	-3.18	Frank	-0.89	PIMC	-1.84	First	-2.81
33	AmCt	-1.16	BkRk	-2.27	Morg	-3.34	Everg	-0.97	Morg	-1.90	Pionr	-2.86
34	Fifth	-1.38	Marsh	-2.30	Putnm	-3.38	PIMC	-1.09	Everg	-2.00	Morg	-2.92
35	Princ	-1.40	Morg	-2.31	Fifth	-3.40	Morg	-1.09	AmCt	-2.09	PIMC	-2.98
36	Everg	-1.42	Putnm	-2.37	Princ	-3.47	AmCt	-1.29	First	-2.13	USAA	-3.04
37	BkRk	-1.45	Fifth	-2.40	BkRk	-3.49	Dryfs	-1.43	Dryfs	-2.20	Everg	-3.10
38	Morg	-1.50	Everg	-2.45	USAA	-3.53	Fifth	-1.48	BkRk	-2.41	Wilsh	-3.41
39	Putnm	-1.53	First	-2.50	Everg	-3.55	Janus	-1.52	Janus	-2.42	Fifth	-3.50
40	Alger	-1.88	Pionr	-2.91	Wilsh	-3.58	BkRk	-1.59	Fifth	-2.50	BkRk	-3.63
41	Wilsh	-1.88	Wilsh	-2.92	Janus	-3.78	Wilsh	-1.71	Putnm	-2.65	Putnm	-3.65
42	Pionr	-2.01	Alger	-3.02	Alger	-3.97	Putnm	-1.81	Wilsh	-2.75	State	-3.67
43	AlBer	-2.25	MFS	-3.22	State	-4.05	Alger	-1.96	USAA	-3.04	Dryfs	-3.99
44	MFS	-2.29	AIM	-3.23	Pionr	-4.18	USAA	-2.04	JohnH	-3.10	Alger	-4.05
45	AIM	-2.39	AlBer	-3.23	MFS	-4.23	JohnH	-2.15	Alger	-3.10	MFS	-4.22
46	Dryfs	-2.49	Dryfs	-3.26	AlBer	-4.46	MFS	-2.28	MFS	-3.21	JohnH	-4.40
47	USAA	-2.53	USAA	-3.53	AIM	-4.51	State	-2.29	AIM	-3.35	AIM	-4.63
48	JohnH	-2.62	JohnH	-3.57	JohnH	-4.88	AIM	-2.51	State	-3.37	Janus	-4.68
49	JohnH	-2.67	State	-3.75	Dryfs	-5.05	Scudr	-3.08	Scudr	-3.87	Scudr	-5.12
50	MFS	-3.28	Scudr	-4.07	Scudr	-5.32	Phnx	-3.92	Strong	-5.25	Phnx	-6.17
51	Phnx	-4.21	Strong	-5.60	Phnx	-6.47	Strong	-4.32	Phnx	-5.36	Strong	-6.28
52	AXP	-4.67	Phnx	-5.65	Strong	-6.63	Selig	-4.69	Selig	-5.87	Selig	-7.09
53	Selig	-4.85	Selig	-6.03	Selig	-7.24	AlBer	-5.83	AlBer	-6.81	AlBer	-8.04

Table 7 Explaining R_{family}, the family gross return differential, equally weighted, style adjusted, not risk adjusted, continuously compounded: The Categories (%/year)			
	Expense ratio	Turnover < 80%	Turnover ≥ 80%
No loads	<1	0.38	0.19
	≥1	0.18	-0.24
Loads	<1	0.00	-0.65
	≥1	-0.62	-1.16

Table 8 Explaining R_{family}, Family equally weighted, style adjusted, gross return differential continuously compounded: The Regression					
Variable	Coefficient (t & P in parentheses)	Min Value (%)	Max value (%)	Difference	Change in return (%/year)
Constant	2.05 (2.9, 0.006)				
Front end load	-.0306 (-2.05, 0.045)	0.000	5.75	5.75	-0.176
Deferred load	-.0815 (-0.403, 0.69)	0.000	5.50	5.50	-0.448
E_{family}	-1.56 ((-2.06, 0.045)	.230	1.66	1.43	-1.977
T_{family}	-.00815 (-1.19, 0.24)	22.2	199.9	177.8	-1.244
Total					-3.844
R^2=0.23; Adjusted R^2 = 0.16; Observations = 51; F=3.4; $F_{significance}$ =0.016.					