

Fund of Funds Selection of Mutual Funds

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ABSTRACT

Managers of Fund of Funds have access to information not available to the general public in evaluating funds from their own family. However, they may have family or self-serving motives that can hurt shareholder performance. By examining a history of individual transactions of Funds of Funds, we show that managers of Fund of Funds despite access to non-public information select individual funds that underperform random selection. Much of this underperformance is shown to be explained by managers satisfying a specific set of family and management goals. Fund of Funds that invest exclusively outside their fund family do not face these family and management goals and they outperform funds of funds that invest inside the family.

Keywords: Fund of Funds, Performance, Conflict of interest

JEL Codes: G11, G29, G34

1. Introduction

There is a vast literature in Finance that shows that actively managed mutual funds post expenses underperform index funds. Thus fund investors that select active mutual funds on average underperform index funds.¹ This doesn't imply that some category of investors can't have superior selection ability. However, the Financial Economics literature has yet to identify this category while finding many examples of types of investors underperforming index funds.²

There is one type of professional investor that should be able to show superior selection ability, managers of Funds of Funds. Unlike individuals these managers devote their full professional effort to this task. Many Fund of Funds have multiple managers and staffs to assist in selecting funds. Furthermore, since most of the Fund of Funds invest in funds within their own fund family, they have access to information not available to the general public. This can be knowledge about manager skills learned from informal interaction with the portfolio managers of individual funds and from discussions at fund family meetings. This should mean these managers should be able to select the better funds from those offered by the family to which they belong. However, selecting funds from the family to which a Fund of Funds belongs introduces a potential for conflicts of interest. Fund of Funds managers may make decisions based on fund family objectives or their personal objectives rather than maximizing shareholder objectives. These conflicts could arise because of the managers' desire to increase expenses collected by the fund family, their desire to help new funds survive, their desire to help funds that are small and

¹ Carhart (1997), Daniel, Titman and Wermers (1997), Elton, Gruber, Das and Hiavka (1993), Fama and French (2010), and Pastor and Stambaugh (2002)

² These include: poor decisions on selection of index funds. (Elton, Gruber and Busse (2004), poor allocation decisions in 401 K Plans (Agnew, Balduzzi, and Sunden (2003), Benartzi and Thaler (2001), Huberman and Wei (2006), Elton, Gruber and Blake (2007), Liang and Weisbenner (2006)), and poor decisions by plan administrators (Elton, Gruber and Blake (2006)

non-economical or their desire to invest in other funds they manage to increase their own compensation.

This paper examines the following alternatives

1. Do Fund of Funds managers given their superior access to information select better performing mutual funds?
2. Do Funds of Funds managers select funds primarily to satisfy family and manager objectives and therefore select poorer performing funds?

We find that Fund of Funds that are part of a fund family select mutual funds that significantly underperform random selection. In contrast, Fund of Funds that are not part of a Fund family do much better. We also examine fund family and manager objectives that could account for this underperformance, and show that Fund of Funds that are a part of a family invest to satisfy these objectives and that this accounts for much of their underperformance.

This paper is important for two reasons. First, a number of paper have shown that individual investors make poor investment decisions (see footnote 2). In response to this, advisors and plan sponsors have been encouraging investors to hold funds of funds where the asset allocation decision is made for them. This has resulted in a rapid growth in the assets under management of Fund of Funds. Funds of Funds held 11% of the assets held by all mutual funds in 2015. Thus, it's important to understand how well Fund of Funds do in selecting the individual funds they hold.

Second, Fund of Funds are an ideal vehicle for studying the conflict between satisfying investor's goals and satisfying managers or family goals. Mutual funds always face an agency problem: balancing investor goals with fund family and manager goals. As discussed earlier,

Fund of Funds have access to non-public information. Does access to non-public information about internal funds outweigh agency problems? Fund of Funds are a particularly appropriate vehicle for studying the subject because of the detailed information available about all of their investment decisions and because the potential conflict between shareholders and managers of Fund of Funds is clear. We find that agency problems are more important than the differential information that a manager of Fund of Funds may have in determining Fund of Funds performance. Selecting funds managed by the same manager who manages the Fund of Funds and selecting high expense funds is particularly important in explaining the differential underperformance across Fund of Funds.

This paper is divided into seven sections. Section 2 is a review of the literature. Section 3 discusses our sample, Section 4 examines the composition of Funds of Funds. Section 5 discusses Funds of Funds selections of passive funds. Section 6 examines selection of active funds. Section 7 examines the importance of agency issues. The last section contains our conclusions.

2. Literature Review

There are a number of papers that are related to this paper. Three papers provide support that access to information not generally available to all investors leads to superior investment performance. Massa and Rehman (2008) study mutual funds offered by banks. They show that bank mutual funds place more money than expected in stocks to which the bank lent money and these stocks have superior returns. This is especially true for banks where portfolio managers and lending officers are in close proximity. This is consistent with the sharing of non-public information through informal channels within an organization.

Cohen, Frazzini and Mallory (2010) show how personal relationships can lead to superior investment research. They show that in cases where analysts have education links to senior officers of corporations, their recommendations outperform recommendations where educational ties do not exist.

Lee (2014) studies purchases and sales by Funds of Funds of mutual funds within the fund family, to which a Fund of Fund belongs. Funds of Funds are divided into groups according to whether the manager of the underlying funds have connections (either shared educational backgrounds or professional experience) or they do not. He finds Fund of Funds which select funds whose managers have connections with the Fund of Funds management invest more in those funds and earn higher risk adjusted returns than occurs for funds with no connections. He concludes that there is information sharing within Fund Families and that this information leads to higher returns.

Our paper differs from Lee's in that we evaluate risk adjusted returns on purchases and holdings relative to alternative mutual funds which could have been held. In addition, we use a methodology that takes into consideration the diversity of the types of mutual funds that Fund of Funds hold; e.g., Japanese stocks, and emerging market bonds, rather than employ one general regression to estimate alpha across all types of funds. Finally, we examine and estimate the size of several potential conflicts of interest that mitigate information advantages.

On the other hand, there are several articles that have found that mutual fund managers make investment decisions that hurt individual mutual fund performance but help fund family objectives. Cohen and Schmidt (2009) find that fund managers overweight a firm when the fund family is a trustee of that firm's 401 (k) plan and increase their holdings in these firms when

other mutual funds are decreasing their holdings. Davis and Kim (2007) show that mutual funds are not acting in their shareholders' best interest in the votes they make when their fund families are doing substantial pension fund business with the firm. Bhattacharya, Lee and Pool (2013) show that Fund of Funds increase their investment in individual funds in their fund family when the individual funds have large outflows. Gaspar, Massa and Matos (2006) and Cassavecchia and Tiwari (2011) show how intra-family trading benefits fund families at a cost to individual funds. Evans (2010) shows how fund families pursue their own objectives in setting fees and increasing fund offerings.

The two studies that are closest to this paper are Sandhya (2001) and Elton, Gruber, de Souza, and Blake (2014). Sandhya (2001) examines the performance of two groups of target date funds. She finds that target date funds with the greatest potential for conflict of interest have the poorest performances. She speculates, but provides no direct evidence, that the poor performance is likely caused by adding higher cost funds or poor performing funds with high cash outflow. This paper differs from Sandhya (2001) in that we have data on the quarterly holdings of individual Fund of Funds, and therefore, we can analyze hypotheses concerning management behavior by examining their actions directly rather than inferring their actions from overall returns. In addition, this study includes all types of Funds of Funds not just Target Date Funds.

Elton, Gruber, de Souza, and Blake (2014) in a paper on Target Date Funds did some preliminary exploration of stockholder objectives vs. family objectives. This paper differs from Elton, Gruber, de Souza and Blake in several ways. First, we do not restrict our analysis to one type of Fund of Funds but rather examine a much broader sample of Fund of Funds. Second, we investigate and empirically estimate the impact of more potential areas of conflicts of interest between fund family managers and investors. Third, we compare the performance of Fund of

Funds that choose all of their holdings from the Fund Family to which they belong with Fund of Funds that hold none of their holdings in the family to which they belong. This provides a natural experiment between funds of funds that have inside knowledge but potential conflicts of interest with those that have neither. Fourth, we show quantitatively the effect of family and managerial objectives and find they explain as much as 82% of the underperformance of Fund of Funds. Finally, we use multivariate techniques to determine which of the potential conflicts best explain cross-sectional differential alpha.

3. Sample

Our initial sample includes all funds that were identified by Morningstar as a Fund of Funds and were sold in the United States over the period 2002 to 2015³. We then used CRSP to add funds that CRSP classified as Fund of Funds but were not so classified by Morningstar. This gave us an initial sample of 1612 Fund of Funds with 6529 share classes. The total asset value of these funds was about 1.72 trillion dollars in 2015. This represented 11% of the total assets in all mutual funds. In addition, the five year growth rate in assets under management was 13.4 % per year compared to a growth rate of 5.7% for all mutual funds

We eliminated any funds whose returns ended before the end of 2002 (27) or that started within twelve months of the end of our sample period (210). For the remaining 1375 Fund of Funds we collected holdings data (generally quarterly) from Morningstar for each held fund. Since many of the funds offered multiple share classes, and since the holdings of alternative share classes were the same, we only collected holding data for the longest lived share class. Based on holdings, we eliminated Fund of Funds which held only index funds and/or exchange

³ 2002 was only used to get holdings for the start of 2003.

traded funds. We then examined for each fund family all of the Funds of Funds it offered. If a family had funds with many common holdings all but one of the funds with common holdings were eliminated. For example, in general, fund families which offer target date funds offer multiple target date funds with different dates but which have the same portfolio manager and held essentially the same securities but in different proportions. In this case only one target date fund was kept in the sample (the 2035 fund if available, otherwise the 2030 fund). The same procedure was followed for Target Risk Funds. Finally, some fund families offered more than one set of Fund of Funds which had totally different names but which held essentially the same portfolio. In this case the oldest Fund of Funds was kept. For our final sample 51% of the families only had one fund of funds in our sample. For funds that remained in our sample, the average percentage of assets in common for families with two or more Fund of Funds is 18%. Only five observations were above 65% at any point in time and for many periods, the number for these funds was much lower.

These steps were taken to avoid counting duplicate Funds of Funds multiple times when we examine investment decisions. After following the procedure described above, our final sample consisted of 219 Funds of Funds offered by 115 fund families. Eliminating multiple target date funds and target risk funds with the same holdings accounted for the vast majority of the reduction in our sample.

4. Internal and External Holdings

Fund of Funds are offered by two different types of fund families; those that offer many mutual funds in addition to the fund of funds and those that only offer fund of funds. This latter group is usually independent investment advisors. As shown below, Funds of Funds offered by

traditional mutual fund families primarily invest in funds in the family to which they belong. Independent investment advisors usually do not offer funds other than Funds of Funds and so invest in funds offered by other organizations. In this section we will examine the choices of managers of Fund of Funds with respect to internal and external investment.

(Insert Table 1 here)

Table 1 divides Funds of Funds into two categories depending on whether they hold no funds offered by the family sponsoring the Fund of Funds (all outside) or principally invest in funds offered by the fund family to which the fund of funds belongs. We call this latter group principally inside fund of funds and recognize that it also consists of two types of funds: those that only invest in funds in the fund family (all inside) and those that for the most part invest in the fund family but hold some funds offered by other fund families (mixed fund of funds).

Examining Table 1 shows that the largest category of funds is the all inside category accounting for more than 50% of funds of funds in each year. For most of our analysis we will analyze Funds of Funds that invest principally inside. This accounts for more than 70% of the sample in each year. The percentage of Funds of Funds that are in the mixed category has grown in recent years reaching a peak of 29% in 2014. However, in most years they account for less than 1/3 of the amount of funds in the principally inside category and they choose internal funds on average more than 65% of the time. The percent of Funds of Funds who invest outside when there is an internal alternative is between 6.6% and 15.5%. Thus 84% or more of the Funds of Funds invest in outside funds only when they do not have an internal option.

Restricting investment to funds in the family to which the Fund of Funds belongs has real consequences for the risk to investors in the Fund of Funds. Elton, Gruber and Green (2007)

show that funds in the same mutual fund family have an overlap in the individual securities they hold. They show that this overlap means funds in the same family have higher covariance than would be true if a fund of the same type was selected from another family and this increases the risk of Funds of Funds that invest internally. Elton, Gruber and Green (2007) estimate that a portfolio of funds from the same family would need to have 4 basis points per month higher return to obtain the same Sharpe ratio as a fund that invests in many families. These findings will be revisited when we examine the selection ability of managers of Funds of Funds.

It is worth discussing the decision of mixed funds, one category of principally inside funds. These funds invest outside the family that sponsors them as well as within the family but they only invest outside 35% of the time. They pick active funds about as often as they select passive funds when they invest outside of their fund family. In addition they select an active fund outside the family a large fraction of the time (e.g. 41% in 2014) when they could have selected an active fund in the same category offered by their fund family.

The number of times Funds of Funds choose passive funds as well as the number of times they choose active outside funds when there is an internal option is surprising. Managers of a Fund of Funds should have the ability to select the best active fund from its fund family because they have non-public information about these funds. The fact that they go outside for active funds in a category where they have inside funds that could be selected suggests that either the manager of the Fund of Funds lacks faith in the ability of internal funds to perform satisfactorily, or it is looking for funds that are less correlated with the funds held within the fund family. Likewise, the high percent of investments in passive funds (20 % in recent years) when there are active options in the same Morningstar category shows that often the manager of the Fund of

Funds believes that he or she cannot select an active outside fund that can outperform a passive alternative.

(Insert Table 2 here)

Table 2 presents the breakdown for Funds of Funds that only hold funds managed by other fund families “all outside”. The number of fund families held by all outside Fund of Funds is a high percentage of the number of funds held, meaning that in most cases only one fund is selected from any one fund family. The Funds of Funds that only invest outside invest primarily in active funds. In recent years “all outside” Funds of Funds invest in passive funds only 20% to 30% of the time.

As shown in this section, most Funds of Funds that are part of a mutual fund family almost always select funds that are in that family and when they invest outside it’s primarily because they don’t have an internal option. On average all Funds of Funds that select funds outside the family “mixed” and “all outside” select a large number of passive funds.

5. How well do Funds of Funds do in Selecting Passive Funds

In this section we examine how well Funds of Funds have performed in selecting passive funds. Selecting among index funds or ETF’s should be among the easiest investment decision a manager can make. Passive funds which have the same benchmark should have very similar risk characteristics and the Fund of Funds manager in selecting among them should be primarily concerned with return differences. For both ETFs and index funds, difference in expenses are the dominant influence determining differences in returns within any category and differences in expense ratios are very constant over time. This makes selecting a passive portfolio on past expense ratio an attractive and easily implemented strategy. Our primary metric for judging the

choice of a passive fund by a Fund of Funds is to compare next year's return earned by the passive fund selected with the return of the lowest expense alternative in the same Morningstar category and designating the same prospectus benchmark (differential return). However, we also compare passive choices with the return of the average passive alternative in the same Morningstar category with the same prospectus benchmark. The latter represents the return that a completely uninformed investor would earn.

Passive funds can be either index funds or ETFs. We examine both how well Funds of Funds do overall in selecting passive funds, and how well they do in those cases where the passive fund selected belongs to the same family offering the Fund of Funds. We then compare the selection of passive funds by Funds of Funds which only hold outside funds with those that principally hold funds inside their fund family.

(Insert Table 3 here)

Table 3 shows the differential monthly return between the passive funds selected by the Funds of Funds and the lowest cost passive fund in the same Morningstar category and with the same prospectus benchmark. The numbers in the table under equal weight are obtained by first averaging differential return across all passive holdings for each Fund of Funds in each year, then averaging across all years for each Fund of Funds. Finally we average across all Funds of Funds. The numbers under holding weighted are obtained in a similar way except in calculating each year's average performance for a Fund of Funds each differential return is multiplied by the fraction invested by the Fund of Funds in that passive fund at the beginning of the year. This measures the average impact of the Fund of Funds selection of passive funds on the Fund of Funds average monthly return.

Panel A shows the average differential return for all passive funds held by Funds of Funds. Examining Panel A under equally weighted we see that on average the passive choice selected by a Fund of Funds had a return 2.24 b.p. a month (27 b.p. a year) lower than the passive fund with the lowest expense ratio in the same Morningstar category and with the same prospectus benchmark. Although higher expenses explains part of the negative differential, the differential return is larger than the difference in expenses. The differential returns are quite large, and are close to statistically significant at the .05 level.

Examining the performance in selecting index funds and ETF's separately we again find lower returns relative to the low cost fund. While the negative differential return holds for both index funds and ETF's only the differential return on index funds is statistically significant different from zero and it is significant at the 1% level.

While management seems to be making poor decisions with respect to selecting passive funds; perhaps it is doing so only in cases where there is almost no investment in passive portfolios. This is addressed in the columns under holding weighted. The results while smaller in magnitude are consistent with poor choice, even when the importance of the decision is considered. For example, examining all funds we saw that the poor choice has an average differential of 2.24 b.p. per month and we know that it impacted the average fund of fund's return by .39 b.p. per month⁴.

Panel B of Table 3 shows what happens when a Fund of Funds selects a passive portfolio offered by the fund family to which it belongs, compared to all other passive options in the same Morningstar category and with the same prospectus benchmark. We only report results for index

⁴ The numbers for holding weighted are much smaller because of the small fraction of total investment held by Funds of Funds in passive investments.

funds since there is only one instance where there is more than one ETF in the same Morningstar category. Again the Funds of Funds on average select a fund worse than the low expense fund and the results are significant at the 1% level. The differential performance is about the same whether they select passive funds from within the family or outside the family.

When the average outside fund is used to compute differential return, rather than the outside fund with the lowest expense ratio, the results are similar. When all passive funds selected by Funds of Funds are compared to the average performance of passive funds, they still show negative performance. However, the difference is small and not statistically significant.

Funds of Funds that select all the funds they hold from outside their fund families “all outside” might do better at selecting passive funds for they are concerned with selecting funds from the universe of all funds rather than being primarily concerned with funds in their family. This is indeed the case. Funds of Funds that hold no internal funds select passive funds that are inferior to the least costly passive funds, with an average difference of 1.38 basis points per month compared to 2.24 basis points for all Funds of Funds. The passive funds selected by “all outside” Funds of Funds do better by .86 basis points per month compared to the passive funds selected by all Funds of Funds. While the differences are not statistically different, it is an indication that outside funds do better when selecting passive funds.

6. How well do FOFs perform in selective active funds?

In this section of the paper we examine the ability of Fund of Funds to select good options from among those active funds that they could hold. This section has two parts. The first part describes methodology. The second part discusses the results.

6.1. Methodology

Throughout this part we will be comparing the performance of the active holdings of a Fund of Funds with alternative active mutual funds they could have held. While the alternatives will always be funds in the same Morningstar classification, the composition of the alternative will differ according to the issue being examined. The composition of the alternatives will be defined in the individual parts which follow.

When we examined passive funds we only considered the average return and expense ratios. When we examine active funds we examine expenses and a risk adjusted measure of return, alpha. A risk adjusted measure is used to capture the fact that within any Morningstar classification managers may employ different strategies that affect risk and returns. Alpha is determined for each fund by a standard performance model of the form.

$$R_i - R_F = \alpha_i + \sum_j B_{ij} I_j + e_i \quad (1)$$

R_i = the return on fund i

R_F = the riskless rate of interest

I_j = the j^{th} index that is appropriate for fund i given its Morningstar classification

B_{ij} = the sensitivity of fund i to index j

e_i = the return not explained by the model

The I_j 's will differ for each Morningstar category but they are always defined in excess return form. The appendix contains the Morningstar categories for which a performance model

is estimated, describes the set of indexes used for each category and the number of funds held by Funds of Funds in our sample in that category.⁵

Equation (1) is estimated using one year's monthly returns for each year from 2003 to 2014. In the tables that follow, we report the average differential expense ratio and the average differential alpha calculated in two ways (as explained below). For each Fund of Funds for every year and for each active fund held we compute the difference in both alpha and expenses between the active fund selected and the average alternative in the Morningstar classification to which the fund belongs.⁶ When more than one share class is available for benchmark funds we select the one with the lowest cost. We use the lowest cost share class because the amount invested in each fund is sufficiently large that the Fund of Funds should be eligible to purchase any share class offered by a particular mutual fund.

We average this data in two ways. First, for each Fund of Funds and for each year that the Fund of Funds has data, we compute an average differential alpha across all active funds held by the Fund of Funds. The yearly difference is then averaged across all years for each Fund of Funds and then averaged across all Funds of Funds. This will be referred to as an equally weighted average.

The second averaging examines the impact on the Funds of Funds performance because of their selection of a particular active fund. In this case for any Fund of Funds in every year we multiply the fraction of the Fund of Funds portfolio at the beginning of the year in each active

⁵ Some categories were not examined like leveraged equity because there were few funds held in that category and they differ in strategy so that no single performance model is appropriate. Also, fund types not selected by Fund of Funds such as tax advantaged funds, green funds, long short funds, and funds misclassified were eliminated from each Morningstar category.

⁶ The reason we compute differential alpha (alpha on the holding minus the average alpha on funds in the same Morningstar category) is to minimize the impact of any missing factor affecting a particular Morningstar category.

fund times the differential performance of that active fund. This is the one year difference in performance of the Fund of Funds do to their active selections. This is then averaged over the life of the fund to get the average monthly difference in performance and then averaged across all Fund of Funds. This will be referred to as value weighted average. The implication of these measures can be quite different if for example a Fund of Funds devotes more effort to selecting funds that represent a larger fraction of its portfolio.

6.2. Results

In this part we will discuss how well Fund of Funds do in selecting active funds. There are two issues to examine: how well do they do on all active funds chosen, and how well do they do when they hold active funds offered by the family to which the Fund of Funds belongs.

6.2.1. Comparison of all active funds held with all alternatives

We first examine how well Funds of Funds do in selecting active funds compared to funds they could have selected. The results are shown Table 4.⁷

(Insert Table 4 here)

From Table 4, we see that for all Funds of Funds the average holding weighted alpha sacrificed by not holding the average fund is 1.66 basis points per month or 19.9 basis points per year. This implies that the average Fund of Funds forfeited almost 20 basis points in alpha per year by not selecting at random funds in the same Morningstar classification. This difference is statistically significant at the 5% level and is clearly economically significant.⁸ Examining the

⁷ Note that in most cases the numbers for holding value weighted and equally weighted are closer in size than the use of passive funds because the vast majority of the holdings of Funds of Funds are in active funds.

⁸ Many researchers have not found significance alphas on individual mutual funds for alpha of this magnitude. Recall that we are examining Funds of Funds. Funds of Funds are portfolios of funds. The standard deviation of

expense column shows that this underperformance is not caused by selecting funds with higher expense ratios rather, the expense ratio is .45 basis points per month or 5.4 basis points per year less than the average alternative. Note that the difference in performance cannot be accounted for by expenses but must be due to some other influences.⁹

The analyst thus far treats each Fund of Funds in our sample as an observation. It is useful to examine year to year differences since the number of Fund of Funds in each year will be different and there may be year effects. To examine this we used two techniques. First we repeated our analysis for each year. Examining differences each year, we find the differential alpha of the funds selected compared to those that could have been selected is negative in three-fourths of the years using equally weighted alpha and two-thirds of the years using value weighted alphas.

As a further check on our results, we used the Fama French procedure on yearly alphas. The dependent variable was alpha for all the Fund of Funds in our sample and every benchmark. The benchmarks are passive portfolios of mutual funds. They encompass all of the sectors held by our Fund of Funds and serve as a useful comparison group. We added three control variables that might affect alpha. First it's well documented that expense ratios effect the return of mutual funds. This is our first control variable. Second turnover increases transaction costs and should affect alpha. Finally, Berk and Green (2004) argue there are diseconomies of scale and so we

alpha across portfolio of funds is much smaller than the standard deviation of alpha across the individual funds that are held by the Fund of Funds. In this case the standard deviation across all Funds of Funds is 28% of the standard deviation of alpha computed across the individual funds they hold.

⁹ While our paper does not suffer from survivorship bias, there may be a potential for reverse survivorship bias (Linnainmaa (2013)). We believe if it occurs any bias is so small as to not affect our results. Note that any bias affects both the holdings and the benchmark. Any bias in the benchmark works against our hypotheses and the same benchmark is used multiple times. Even if we ignore the canceling caused by examining the differential alpha the effect is small. Only 3% of the funds held by Funds of Funds are liquidated or merged and in these cases only an average of two months of data are not included in the computation of alpha.

included log of fund size to capture this effect. We included two dummy variables. The first is one for all funds that invest “principally inside”. The second is one for “all outside funds”. These variables capture the differential alpha compared to our passive portfolios. When we performed the Fama French procedure we obtained a negative coefficient for “principally inside” of $-.0164$ which had a T of -2.03 . The coefficient of “all outside” was $.0008$ which was positive but insignificant. The significant negative alpha for principally inside and insignificant positive alpha for all-outside is consistent with the Results shown in Table 4. The size of the coefficients differ for those shown in Table 4 both because of the different weighting given to each fund and the inclusion of control variables: expense ratio, size and turnover. The control variables were not included in our earlier analysis because we will examine their influence below to see the extent they explain the poor choices made by Funds of Funds.

There are two possible explanations for the negative differential alpha found for mostly inside funds. One explanation is that fund families that offer Fund of Funds have funds that are on average worse than the average fund in the population and generally select funds from their own family. The alternative explanation is that Fund of Funds managers select funds in part to satisfy family goals rather than shareholder goals. Since our sample of fund families that offer Fund of Funds contains a large portion of all funds available, this latter explanation is more likely. This will be explored below and throughout the remainder of the paper.

We can get further insight into which of these explanations is more likely by comparing the performance of those funds of funds that are principally investing in funds from the family to which they belong with those that only invest outside their family. Examining the differential alpha for funds that invest principally within the family versus those that invest only outside the family, shows that funds that invest exclusively outside the family have better performance. In

the case of equally weighted alpha, funds that invest outside have a better performance of 3.7 b.p. per month or 40 bp per year which is statistically significant at the 5% level. In the case of holding weighted alpha, “all outside” have better performance of 1.4 b.p. per month but this is not statistically significant. This is further evidence of a difference in behavior between these two types of funds. It’s clear from Table 4 that the difference in differential expense of 0.1 b.p. per month does not explain the difference in performance. Fund of Funds that only hold funds not offered by their fund family outperform funds of funds that invest primarily within their family and the differences are not accounted for by expenses.

Earlier we discussed Elton, Gruber and Green’s (2007) evidence that funds within any family have higher covariance than funds in the same Morningstar categories but selected from different families. We also saw from Table 2 that “all outside” funds select most of their funds from several different families. Thus “all outside” Fund of Funds should have lower covariance between their holdings than a Fund of Funds selecting funds from the same Morningstar categories but all from the same fund family. “All outside” Fund of Funds perform better than other Fund of Funds in generating alpha for both passive and active funds. If risk is considered, differences of “all outside” from Funds of Funds that select primarily within the family would be even larger.

6.2.2 Comparison of all active funds held by Fund of Funds with alternatives offered by the same Fund of Funds family.

We now examine how well Funds of Funds perform when they select an active fund compared to the choices each Fund of Funds could have made within its family in the same Morningstar category. This comparison can provide further evidence of a conflict of interest

between investor's goals and family goals. There are two parts to this analysis: how well do Funds of Funds do in selecting active funds from their own family and how well do they do when they select active funds both inside or outside their family compared to other funds in the family. Since "all outside" Fund of Funds do not hold any funds within their family, they are excluded from the analysis.

6.2.2.1. Selection of active funds within a fund family compared to all active funds within the family.

We now examine if Funds of Funds select superior funds when they select funds from the family to which they belong. For example, a large growth fund held by a Fidelity Fund of Funds will be compared to all other large growth funds offered by Fidelity. Selecting a fund from among those offered by the same family is the case where the Fund of Fund's manager should have the greatest specialized knowledge. He or she is likely to know the managers of potential funds, have been in firm meetings with them where strategy was discussed, and have observed their response to the firm's security analysts' suggestions. This is also the decision that has the greatest potential for conflict between fund family and manager goals compared to shareholder goals.

(Insert Table 5 here)

Row 1 of Table 5 shows the results when a Fund of Funds manager selects an active fund offered by the family to which the Fund of Fund belongs compared to all active funds offered by the same family in the same Morningstar category. The average alpha on the fund selected is 2.8 b.p. per month or 34bp per year less than the average fund offered by the fund family in the same Morningstar category. Taking into account the amount invested in each fund held by the Fund of

Funds, the average negative impact on the Fund of Funds overall alpha is 1.4 b.p. per month or 17 b.p. per year. All of these results are significant at the 1% or 5% level. These results suggest that either managers of Fund of Funds are using some family or manager goals in selecting the particular funds to include or that their selection criteria are perverse since they are doing worse than random selection from the same Morningstar category within the fund family. Since there are hundreds of funds in our sample, it's hard to believe that there are a sufficient number of managers that have a decision rule not based on conflict of interest that selects below average funds to produce these results.

What is the difference in expenses between the funds selected and the average fund offered by the family in the same Morningstar category? The average fund selected has .4 b.p. per month or 5 b.p. per year higher expenses than the average fund in the family. Examining holdings weighted shows that the impact of the expense differences on the alpha of the Fund of Funds is 2 b.p. per year. Thus, Fund of Funds are selecting slightly higher expense funds than the average fund of the same type offered by the family. Only a small fraction of the difference in alpha is explained by the difference in expenses.

6.2.2.2. Selection of all active funds compared to active funds within the family

The second row of Table 5 examines the selection of all active funds whether selected from the family or outside the family held by a Fund of Funds compared to the average fund offered by the family in the same Morningstar category. When we examine the selection of all active funds, whether inside or outside the family, we still find a significant negative differential alpha, whether we examine the simple average or the impact on fund performance (weighted alpha).

All of the evidence presented above on comparative performance suggests that pressure to meet fund family goals supersedes the benefit from private information in determining the choice of funds by Fund of Funds. First we found that Fund of Funds choose active funds that perform worse than a random selection from all funds of the same type. Furthermore, “all outside” funds have almost no way to benefit the family by their choices and they have the best performance. When we examine choices from the same family compared to other funds of the same type in the same family, we again find inferior performance. Fund of Funds would be better off picking a fund of the same type in the same family at random rather than holding the funds they selected.

All of this suggests that while there may be some advantages to private information, decisions are dominated by fund family or manager goals. In the next section of this paper, we provide further evidence that choices by Fund of Funds in their family are being made in a way consistent with fund family and manager objectives. In addition, we also show that this behavior leads to a large part of the inferior performance we observed earlier.

7. Shareholder Objectives, Family Objectives, or Management Objectives

Decisions on the holdings of a Fund of Funds can be made in a way that benefits either the managers of a Fund of Funds or the fund family to which it belongs and this may be to the detriment of investors. In this section of the paper, we examine evidence on whether Fund of Funds actually make decisions that produce results inconsistent with investor goals. We first examine family objectives and then we examine management objectives. What makes our analysis different from the vast majority of the literature reviewed earlier is that we have holding

data on each Fund of Funds and thus can examine their actions directly rather than inferring them from return data on the Fund of Funds.

7.1. Family Objectives

We now examine three variables that might satisfy fund family objectives but not necessarily objectives of the fund shareholders.¹⁰

1. Start date- the family might want to help startup funds
2. Expenses- Higher expense funds bring in more money to the family.
3. Total net assets- management might select funds to include which are smaller than the alternatives to help these funds reach a scale where they are profitable.

We will examine each of these hypotheses. Our analysis only examines active funds.

7.1.1. Startup Funds

If a manager of a Fund of Funds was interested in pursuing family objectives rather than investor objectives we would expect the manager to over select funds that had been in existence for a short period of time. Investing in newly started funds will help these funds reach critical size and benefit from economies of scale. The first question we examine is do Fund of Funds invest more frequently in newly formed funds in their family. The second question is if they do so do they hurt investor performance.

Our sample for this part of the study is the 739 cases where a Fund of Fund added a fund to its portfolio for the first time and where the Fund of Funds had a choice of at least one short lived fund and one long lived fund in the same Fund Family in the same Morningstar category.

¹⁰ We examined one other potential fund family objective, investing in funds with large outflows. Although the differential alpha would support that Fund of Funds overinvest in funds with large outflows, the results were not close to statistically significant.

Fund of Funds in general have a rich choice of options when they add a new fund from their family. When a Fund of Fund adds a new fund from its family to its portfolio it has at least one other option in the same Morningstar category 60% of the time. In these cases, 68% of the Fund of Funds had two or more options in addition to the one selected. The average number of options given that an option existed was 3.45 for all Funds of Funds.

(Insert Table 6 here)

The last column of Table 6A shows the probability of randomly selecting a short lived fund from among the possibilities in the same family in the same Morningstar category. This was calculated by computing the odds each time a Fund of Funds had a choice of at least one short lived option (where short lived is defined in column 1) and one long lived option and then averaging across funds. As can be seen from Table 6 the probability of Funds of Funds randomly selecting funds that had been in existence for a short period of time is about one-third. From the table we see that Fund of Funds actually selected a short lived fund 94% of the time when it existed less than three months and 79% of the time when it existed less than a year. The number of times short lived funds were selected far exceeds the number of times that should happen by chance. This difference is significant at the 1% level.

Selecting funds which are very young should help with family objectives but does it harm investors? This question is answered in Table 6B where we examine both the differential return and differential three year alpha on the young funds selected compared to the long-lived funds from the same family in the same Morningstar category which could have been selected.¹¹ All of the entries show that by selecting young funds, Fund of Funds are sacrificing return and alpha

¹¹ Throughout the remainder of this paper, differential alpha is computed using the models shown in appendix A using monthly data for the three years after the fund is added or the longest time available but never less than one year.

and when examining principally inside funds these differences with the exception of three month periods are statistically significant at either the 1% or the 5% level. For example, looking at all funds added which have been in existence less than 6 months the Fund of Funds on average sacrificed 5.6 b.p. per month in return and 5.4 b.p. per month in alpha by not randomly selecting a representative fund.

7.1.2. High Expenses

If a fund is pursuing family objectives rather than shareholder objectives it would benefit the fund to add high expense funds from their family. Table 7 examines the cost of this.

(Insert Table 7 here)

The table shows the differential alpha and return when the Fund of Funds add a high expense fund from the alternatives within the family with the same Morningstar objective. All funds added by all Fund of Funds are ranked from low to high on the basis of the difference between the expense ratio on the fund selected and the average expense ratio on alternatives in the same family in the same Morningstar category.¹² Table 7 shows results for the highest 10% and 15% on the basis of differential expenses. The results are shown only for funds selected from the family to which the Fund of Funds belongs. The category “principally inside” has a negative differential alpha of 8.5 b.p. per month for the highest 15% of differential expenses compared to the average alternative. This is significant at the 5% level. Some Fund of Funds are adding high expense funds that help the family but hurt the performance of the shareholders.¹³

¹² On average Fund of Funds add higher expense funds. The difference from the average fund they could have chosen is .37 basis points per month or 4.68 basis points per year which is significant at the 1% level.

¹³ The difference in alpha for high expense funds is only partially explained by the differential expenses. High expense funds do worse than low expense funds even when alphas are computed on pre-expense returns.

7.1.3. Small Funds

If some managers were selecting funds to help their fund family, we would expect them to select small funds and if these funds did not help but rather harmed investors we would expect to observe negative differential alphas. Table 8 shows the return and alpha sacrificed by selecting funds with assets under several specified sizes.

(Insert Table 8 here)

When management selected small funds they sacrificed return and alpha. For example, when management selected funds which had under 60 million dollars in net asset value they gave up 9.3 basis points per month in return (112 basis points per year) compared to selecting larger funds in the same Morningstar category. When we examine alpha the difference was 7.2 basis points a month or 86 basis points per year. These differences are clearly economically significant and they are statistically significant at the 5% level. We selected 60 million dollars to represent a small fund because this is the size below which funds are not expected to be profitable.

We examined two other cutoffs for size: 100 million and 150 million dollars. Selecting funds smaller than any of these cutoffs hurt performance. We also found that management selected more small funds than would arise by chance though the difference is not statistically significant.

While it is clear that selecting small funds hurts performance, small size is likely to be associated with young funds and we need to account for this. To see if size itself had an affect beyond age we repeated the analysis above eliminating all funds younger than 1 year. When we do so we get similar results. All of the signs on differential return and alpha are the same as those

shown in Table 8 but the magnitude is smaller and the results less statistically significant. The differential alpha on all size categories is cut by about half when young funds are excluded.

7.2. Management objectives

Managers of Fund of Funds may have an objective that helps them but can hurt shareholder performance. They may manage funds other than the Fund of Funds and include them in the Fund of Funds holdings not because they are expected to perform well but because they increase the size of the underlying fund held by the Fund of Funds and therefore the fees the underlying fund earns and potentially their own compensation.

We examine whether the fund managers of Funds of Funds add or hold funds they manage and if they do so what is their performance compared to other options in their family in the same Morningstar category. We examined all cases where the manager of a Fund of Funds selected a fund from the same family as the Fund of Funds and where there was at least one fund the manager managed and at least one fund he or she did not manage in the same Morningstar classification.

We find that managers select funds they manage slightly more times than would occur by chance. To examine the impact on performance, we compute differential performance on two metrics: alpha and return. Differential performance e.g. Alpha is computed by taking the alpha of the fund selected which has the same manager as the Fund of Funds manager and subtracting the alpha on all funds in the same Morningstar classification offered by the fund family but not managed by the same manager. When we examine alpha as a performance criteria we find a differential alpha of -7.5 b.p. per month or - 90 basis points per year. This difference is statistically significant from zero at the 1% level. For return we get a differential of -10 b.p. per

month once again statistically significant at the 1% level. Clearly performance is hurt by a manager of a Fund of Funds selecting individual funds he or she manages.¹⁴

7.3 Overall performance and family and manager goals

We have just shown that manager selection of funds that satisfy fund family goals and manager goals hurts shareholder performance. Not all fund managers select funds using family or manager goals. The purpose of this section is to 1) identify Fund of Funds that select funds using in part their own or family goals and to see if this explains the underperformance shown earlier and 2) examine which of these variables explain the differential return across Fund of Funds. The four family and manager goals identified earlier are

- (1) Select new funds
- (2) Select high expense funds
- (3) Select small funds
- (4) Select a fund the manager of the Fund of Funds manages

In identifying managers that are pursuing their own or family goals we used the following criteria. Managers are potentially pursuing family or manager goals if a fund selected has expenses in the top 15%, a fund selected is in business less than a year, a fund selected is less than 100 million in size and in business over one year, or a fund selected is managed by the manager of the Fund of Funds. We first excluded all Funds of Funds that over their life had one or less occurrence of a selection consistent with a family or manager objective. We then ranked the remaining Funds of Funds from least likely to be following family or manager objectives to most likely. In computing this ranking for each Fund of Funds and each objective we divided the

¹⁴ The poor performance is not caused by differential expenses. The differential expenses are actually lower on the funds selected by 1 basis points per month.

number of times they selected a fund meeting that objective above by the number of times they could have selected a fund with that objective. After scaling we then added together the four numbers to compute an overall measure.

We then divided the ranked Fund of Funds in half by the ranking. These groups were a group we were most confident were making some selection decisions to advance their own or family goals and the group where we were less confident. The average differential alpha for the top group was -5.71 basis points per month equally weighted and -5.53 basis points per month value weighted. Both of these numbers are significantly different from the group less likely to be using family or manager goals at the 1% level.

The underperformance of the group most likely to be pursuing family or manager objectives explains 55% of the equally weighted underperformance and 55% of the value weighted performance using numbers reported in Table 4.

We also found a large negative performance when funds selected funds from their own family. This is the selection decision where family and manager objectives are most likely to conflict with investor objectives. It is also the choice situation where a manager is most likely to have non-public information. If we examine holdings weighted 82% of the negative alpha shown in Table 4 is explained by the negative alpha on the funds most likely to be pursuing manager or family goals.¹⁵

(Insert Table 9 here)

Managers following fund family or manager goals explain a large part of the underperformance of managers selecting within their family and a substantial amount of the

¹⁵ Equally weighted it is 43%

underperformance compared to selecting randomly across all funds available in the same Morningstar category. The extra information managers may have about funds within their family is more than out weighted by family and manager goals.

We now examine which of these four variables studied above are significant in explaining differential alpha across Fund of Funds. To do so, we ran a cross sectional multiple regression of each Fund of Funds differential alpha against the four variables discussed above. Two variables were significant in explaining the cross sectional differential return on the Fund of Funds. The results are shown in Table 9. These variables were adding funds in the top 15% in expenses and adding funds managed by the manager of the Fund of Funds. Each has the hypothesized sign and each has a p value smaller than .02. The adjusted R^2 for the two variable regressions was .12 and the F test for goodness of fit was significant at the .01 level. When the variables for Funds in business less than one year and for funds less than 100 million in size but in business more than one year were added to the regression neither approached significance (T values of .4 and .8)¹⁶

There is a direct link between the extent to which certain management and family objectives are pursued and poor performance by a Fund of Funds. In particular, when a manager of Fund of Funds adds funds he or she manages and where he or she adds funds with higher expenses the Fund of Funds performs poorly, relative to funds which do not do so.

8. Conclusion

Managers of Fund of Funds selecting funds in their fund family should have a real advantage in terms of access to information not available to the general investor. On the other

¹⁶ Furthermore, including these variables lowered the overall level of significance of the regression and decreased the adjusted R^2 .

hand, this may be offset by the desire to satisfy fund family or manager goals at the expense of the investor. This is the first paper to examine the tradeoff of these alternative influences on a large sample of different types of Funds of Funds using data not just on return but on all transactions of each Fund of Funds.

We show that over our sample period between 51% and 77% of Funds of Funds only invest in funds within the family to which they belong, while between 14% and 27% invest only outside their family. The remainder (9%- 29%) invest both inside and outside their family. We find that more than 85% of all Funds of Funds invest outside their family only when they do not have an internal option and in recent years when this occurs they ordinarily invest in passive funds.

Fund of Funds selecting passive funds select passive funds that underperform the simple selection rule of picking the lowest expense passive fund following the same index. This is true whether the alternative is in the same family or outside the family.

Funds of Funds selecting active funds within their own family have alphas economically and statistically lower than they would have achieved by randomly selecting funds in the same Morningstar category. When comparing the active funds held by Funds of Funds with active funds which could have been selected in the same Morningstar category, the underperformance of the Funds of Funds is 19.9 b.p. per year (holding weighted alpha). When we compare the active funds selected within a fund family with all other funds which could have been selected in the same Morningstar category and in the same fund family they still do worse by 33.7 b.p. per year.

Clearly Funds of Funds are hurting investors when they select funds in general and when they select funds from their own family. While managers of Fund of Funds may have access to special information any benefit from this appears to be outweighed by fund family or manager objectives.

We examine whether the manager of a Fund of Funds appears to be following any one of several fund family or manager objectives rather than selecting funds to meet investor objectives. The fund family or manager objectives we examine are:

- (1) Selecting new funds
- (2) Selecting high expense funds
- (3) Selecting small funds
- (4) Selecting funds managed by the Fund of Funds manager

In general, Fund of Funds select funds that have these objectives more often than could arise by chance and this leads to alphas which are more negative than alternatives. The differences are economically and statistically significant.

When we examine funds that are most likely to be using fund family and manager objectives, we find that this accounts for 82% of the holdings weighted underperformance found when a Fund of Funds manager selects funds within his fund family.

Finally, we examine which of our four objectives account for the cross sectional difference in Fund of Funds alpha. We find that two of the criteria (being in the top 15% of expenses and being managed by the same manager as the Fund of Funds) account in part for cross-sectional differences in Fund of Fund performance and the relationship is statistically significant at the .01 level.

For Fund of Funds selecting funds in their own family the pursuit of fund family and manager goals far exceed any value of insider information and account for the vast majority of the underperformance.

When we examine Funds of Funds which can only invest outside the fund family we find that “all outside” Funds of Funds outperform Funds of Funds that invest principally within the fund family. These Funds of Funds cannot benefit from special access to information nor do they have an incentive to meet family goals. The fact that they outperform other funds which should benefit from special information but are hurt by pursuing family goals is further evidence that the negative impact of family goals outweighs any benefit from access to special information.

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Table 1**Holding Pattern of Fund of Funds**

1	2	3	4	5	6
Year	Number	Principally Inside		All Outside	Percentage of Fund of Funds that invest outside when there is an internal alternative
		All Inside	Mixed		
2003	45	62.22%	11.11%	26.67%	11.11%
2004	59	66.10%	10.17%	23.73%	10.17%
2005	75	68.00%	13.33%	18.67%	9.33%
2006	107	76.64%	9.35%	14.02%	6.55%
2007	137	70.07%	13.87%	16.06%	7.30%
2008	154	62.34%	20.13%	17.53%	10.39%
2009	160	58.13%	23.75%	18.13%	9.37%
2010	159	58.49%	23.90%	17.61%	10.69%
2011	159	54.09%	27.67%	18.24%	13.21%
2012	166	53.61%	25.30%	21.08%	13.85%
2013	158	54.43%	25.32%	20.25%	12.66%
2014	149	51.01%	28.86%	20.13%	15.44%

Description:

This Table shows the percentage of funds of funds in our Sample that fall into various categories. A Fund of Funds is considered an “all inside” fund when all funds it holds belongs to the same fund family as the Fund of Funds. A Fund of Funds is considered an “all outside” fund when none of the funds it holds belong to the family of the Fund of Funds. A Fund of Funds is considered “mixed” if it holds some funds in the same fund family as the Fund of Funds and some in other families.

Interpretation:

Fund of Funds that are part of a family primarily invest in funds managed by the fund family to which they belong. About 20% of Fund of Funds most of which are not part of a family invest exclusively outside.

Table 2**Composition of Funds Held by Fund of Funds Which Hold Only Outside Funds**

1	2	3	4	5
year	average number of families held	average number of funds held	active	passive
2003	11.50	15.92	79.06%	20.94%
2004	13.64	19.71	84.78%	15.22%
2005	13.36	18.71	84.35%	15.65%
2006	17.87	27.00	78.77%	21.23%
2007	13.73	22.68	67.54%	32.46%
2008	12.74	19.85	68.84%	31.16%
2009	10.48	17.72	64.01%	35.99%
2010	11.21	17.14	67.92%	32.08%
2011	11.79	17.38	71.23%	28.77%
2012	11.03	16.66	70.15%	29.85%
2013	11.63	16.59	79.10%	20.90%
2014	12.27	16.53	78.83%	21.17%

Description:

This Table shows data for Funds of Funds that only hold funds outside the family managing the Fund of Funds. Columns 4 and 5 show the percentage of funds held that are active and passive.

Interpretation:

Funds that invest only outside the family to which the Fund of Funds belongs hold funds from a large number of families and invest in passive funds about 25% of the time.

Table 3

Index fund or ETF held by the Fund of Funds compared to low expense option in the same Morningstar Category with the same Prospectus Benchmark

Part A**All Index funds or ETFs held by Funds of Funds**

	Number	Equally Weighted		Holdings Weighted	
		Differential Return	Differential Expense	Differential Return	Differential Expense
All Funds	79	-.0224 (-1.93)	.0134 (5.05)	-.0039 (-3.24)	.0024 (3.77)
ETFs	36	-.0283 (-1.14)	.0007 (0.54)	-.0052 (-2.51)	.0002 (1.80)
Index Funds	43	-.0174 (-3.27)	.0241 (5.86)	-.0029 (-2.04)	.0043 (3.90)

Part B**All Index funds or ETFs held in the same family as the Fund of Funds**

	Number	Equally Weighted		Holdings Weighted	
		Differential Return	Differential Expense	Differential Return	Differential Expense
Index Funds	35	-.0173 (-3.11)	.0246 (6.37)	-.0029 (-1.72)	.0046 (3.53)

Description:

This Table shows the differential monthly performance (in percent) of the average ETF or index fund chosen by the Fund of Funds compared to the low cost ETF or index fund in the same Morningstar category with the same prospectus benchmark. A negative number for return indicates the average passive fund chosen by the Fund of Funds had a lower return than the lowest cost fund in the same Morningstar category and with the same prospectus benchmark. A positive expense ratio indicates how much more the Fund of Funds paid on average in percent each month than they would have paid if they selected the lowest cost with the same prospectus benchmark. Number is the number of Fund of Funds

Interpretation:

Fund of Funds select passive funds that perform worse than a simple selection rule.

Table 4

Comparison of Active Funds Held by Fund of Funds with all Active Funds in Same Morningstar Category

	Number Entries	Equally Weighted		Holdings Weighted	
		Alpha	Expense	Alpha	Expense
All Fund of Funds	214	-.0165 (-2.20)	-.0046 (-3.90)	-.0166 (-2.40)	-.0045 (-4.45)
Principally Inside	176	-.0232 (-2.70)	-.0045 (-3.34)	-.0191 (-2.34)	-.0043 (-3.74)
All Outside	38	.0142 (1.02)	-.0055 (-2.07)	-.0049 (-0.55)	-.0057 (-2.60)
All Outside minus Principally Inside		.0374 (2.29)	-.0010 (-0.37)	.0142 (1.18)	-.0014 (-0.55)

Description:

This Table shows for active funds the differential alpha and expense ratio in percent per month between the funds held by a Fund of Funds and all other funds in the same Morningstar category. The differentials are averaged each year and then across all years for each Fund of Funds. The Numbers are then averaged across all Fund of Funds. Equally weighted treats each differential in any one year the same. Holding weighted computes each year differential by multiplying each differential within the year by the percent the holding represents of the total holdings and then summing. Holding percentages are computed using the most recent report prior to the year in question. The last row shows how much higher the differential alpha is for all outside compared to principally inside.

Interpretation:

Fund of Funds that principally invest inside the family do worse than random selection of funds of the same type. Fund of Funds that invest principally inside do worse in selecting funds than funds that only invest outside of the family offering the Fund of Funds.

Table 5
Comparison of Active Funds Held with Options Available in the Fund of Funds Family

All Active funds selected from among those offered by the Fund of Funds family compared to all internal options in the same family

	Number	Equally Weighted		Holdings Weighted	
		Alpha	Expense	Alpha	Expense
Only funds in the family	164	-.0281 (-2.10)	.0040 (3.27)	-.0142 (-2.92)	.0016 (3.01)
All funds	166	-.0263 (-2.39)	.0029 (2.42)	-.0157 (-3.27)	.0016 (2.98)

Description:

This Table shows for active funds the differential alpha and the expense ratio in percent per month between the fund selected and the alternatives in the Fund of Funds family in the same Morningstar category. Row 1 restricts the comparison to only funds selected from within the family. Row 2 shows the results for all funds selected whether they were selected from within the family or from outside the family.

The differentials are averaged each year and then across all years for any one Fund of Funds. The differentials are then averaged across all Funds of Funds. Equally weighted treats each observation equally. Holding weighted computes each year's differential by multiplying each differential by the percent the holding represents of total holdings and then summing. Holding percentages are computed using the most recent report prior to the year in question.

Interpretation:

Fund of Funds that select active funds within the family to which they belong do worse than randomly selecting other active funds of the same type within the same family.

Table 6**Choices of Young Funds****Part A- Number of Times a Young Fund is Selected**

Age of Fund	Possibilities	Percentage Picked	Probability by chance
3 months	145	94	.322
6 months	192	88	.329
12 months	248	79	.347

Part B- Differential Performance

	Alpha			Return		
	3mo	6mo	12mo	3mo	6mo	12mo
Principally Inside	-.014 (-0.68)	-.054 (-2.33)	-.065 (-2.75)	-.047 (-2.02)	-.056 (-2.24)	-.071 (-2.97)

Description:

This table shows the probability of a selection and the differential performance of funds that existed less than 3, 6, or 12 months when the Fund of Funds had 1 or more options that existed for a longer time in the same Morningstar category and in the same family. Part A shows the number of times the manager had a choice between a fund in existence 3, 6, or 12 months or less and a longer lived fund and chose the short lived fund. It also shows the probability of selection of a short lived fund by chance. Part B shows the differential return and differential alpha when the Fund of Funds selected a short lived option compared to longer lived options in the same Morningstar Classification in the same family. Alphas are calculated over the three years subsequent to the selection if returns existed or until the fund ceased to exist but never less than one year. The models used to compute alpha are in the appendix.

Interpretation:

Fund of Funds select funds that have been in existence for a short period of time much more than they should by chance and this hurts their performance.

Table 7
Choice of High Expense Funds
By Principally Inside Funds

	Alpha	Return
Top 10%	-.071 (-1.59)	-.011 (-0.26)
Top 15%	-.085 (-2.45)	-.030 (-0.88)

Description:

This Table shows the average differential alpha and return in percent when the Fund of Funds selects a high expense fund minus the average alternative within the family in the same Morningstar category. The significance is calculated by comparing the differential alpha or return on the high expense choice with the average differential alpha or return on the funds that were not chosen. The significance is calculated using the standard deviation of the individual observation when a high expense fund is chosen.

Interpretation:

Fund of Funds hurt performance when they select funds with high expense within the family compared to non-selected funds of the same type in the family.

Table 8
Choice of Small Funds
By Principally Inside Funds

Less than (millions)	Alpha	Return
60	-.072 (2.44)	-.093 (3.29)
100	-.067 (2.63)	-.091 (3.77)
150	-.070 (2.88)	-.090 (4.08)

Description:

This Table shows the differential return and alpha in percent when a Fund of Funds selects a small fund compared to alternatives within the family in the same Morningstar category. The significance is calculated by comparing the differential alpha and return on small funds with the average differential alpha and return on the funds that were not chosen.

Interpretation:

Fund of Funds hurt performance by selecting small funds within a family compared to selecting larger funds within the family.

Table 9
Differential Alpha

	intercept	Top 15% in expenses	Manager selects from funds	Adjusted R^2
Coefficient	0.0034	-0.168	-0.058	.124
T Value	0.16	-2.25	-2.39	

Description:

This Table shows the results of a cross sectional regression of a Fund of Funds differential alpha on two variables. The first variable is proportion of times a particular Fund of Funds selected a fund in the Top 15% of expenses. The second variable is proportion of times a fund was selected that was managed by the manager of the Fund of Funds where the manager had a chance to choose a fund they didn't manage in the same Morningstar category.

Interpretation:

Fund of Funds decrease performance by selecting individual funds with high expenses and funds that have the same portfolio manager as the Fund of Funds.

Indexes used for computing alpha on individual mutual funds

Appendix A

number	category	indexes used all in U.S. Dollars
527	U.S. bonds (1)	Barclays US Govt/Corp , Barclays US MBS , Credit Suisse HY Corporate
49	Emerging Markets Bond	Credit Suisse Emerging Markets
51	World Bond	BofAML Global Broad Market
111	Diversified Emerging Mkts	MSCI EM
24	Europe Stock	MSCI Europe
14	Pacific/Asia ex-Japan Stk	MSCI AC Asia Pac Ex JPN
7	Diversified Pacific/Asia	MSCI AC Asia Pacific
4	Latin America Stock	MSCI EM Latin America
11	Japan Stock	MSCI Japan
8	China Region	MSCI China
3	India Equity	MSCI India
103	World Stock	MSCI World
329	Foreign stock (2)	MSCI EAFE , MSCI EAFE Growth minus Value , MSCI EAFE Large minus Small Cap
63	Real Estate	Cohen&Steers US Realty MajorPort
53	Global Real Estate	Cohen&Steers Glb Realty MajorPort
1438	U.S. Stock (3)	Fama French Three factor plus momentum
21	Health	S&P 500 Sec/Health Care
38	Natural Resources	S&P 500 Ind/Metals&Mining , S&P 500 Ind/Paper&Forest Prods
20	Technology	DJ US TSM Technology
13	Equity Energy	S&P 500 Sec/Energy
14	Financial	S&P 500 Sec/Financials
14	Equity Precious Metals	S&P GSCI Precious Metal
11	Utilities	S&P 500 Sec/Utilities
4	Industrials	S&P 500 Sec/Industrials
5	Communications	S&P 500 Ig/Media , S&P 500 Sec/Telecom Services

The Notes indicate the Morningstar Categories that are included in the general categories footnoted above.

1. Bank Loan, Corporate Bond, High Yield Bond, Intermediate Government, Intermediate-Term Bond, Long Government, Long-Term Bond, Multisector Bond, Short Government, Short-Term Bond

2. Foreign Large Blend, Foreign Large Growth, Foreign Large Value, Foreign Small/Mid Blend, Foreign Small/Mid Growth, Foreign Small/Mid Value

3. Large Blend, Large Growth, Large Value, Mid-Cap Blend, Mid-Cap Growth, Mid-Cap Value, Small Blend, Small Growth, Small Value