Outsourcing vs. Integration in the Mutual Fund Industry: An Incomplete Contracting Perspective

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1. Introduction

The US mutual fund industry manages over $13 trillion in assets generating billions of dollars in management fees each year. A pervasive but less well known feature of the industry is that many fund families offer self-branded mutual fund products to investors but outsource the management of those funds to third parties, likely unbeknownst to the investors. From 1996 to 2011, the investment advisory responsibility for 32% of mutual funds offered by fund families have been sub-advised. In addition, 38% of fund families have been employed sub-advisors for at least one of their funds. In spite of the public debate about outsourcing, a wave of studies on outsourcing and its complement vertical integration,[1] and in spite of the growing interest in understanding how firms "slice the value chain," these stylized facts have received relatively little notice in finance and in other fields.[2]

In this paper, we investigate empirically when and why mutual fund families outsource funds and relinquish control of the management of those funds to non-affiliated entities. Alternatively, we study when and why they decide to integrate the management of a new fund in their own operations. Focusing on the period of 1996 to 2011, and making use of both the publicly available and comprehensive Morningstar database and a proprietary database of annual fund N-SAR filings from the SEC, we identify a fund family's expertise as a central factor in its outsourcing/integration decision. Moreover, we explicitly relate this decision to outsource to the dynamic environment of the mutual fund industry. We also compare various performance measures of the funds fund families manage themselves vs. the ones that are sub-advised and address the puzzle of the

[1] For empirical evidence of the importance of outsourcing in an international context, see Feenstra and Hanson (1996), Campa and Goldberg (1997) Hummels , Ishii and Yi (2001) and Yeats (2001). For domestic outsourcing, see *The Economist* (1991), Bamford (1994), and Abraham and Taylor (1996)

[2] Notable exceptions are Chen, Hong, Jiang and Kubik (2013), Del Guercio et al (2010), Cashman and Deli (2009) and Kuhnen (2009).

consistently lower returns for sub-advised funds. We find that while there are consistent differences in return between those funds, these are, to a large extent, to be attributed to a selection bias of the sample that does not properly account for the fund family's decision to outsource on or not, a decision in which expertise plays a key role. Note that in order to study outsourcing and vertical integration, we consciously chose to focus on the mutual fund industry, because we can utilize its very rich product-level data. This data includes measures of product quality (i.e. fund performance), payment to the sub-advised firm (i.e. fund size and sub-advisory fees) and time-series, intra- and inter-firm (i.e. the fund family) variation in the outsourcing decision. The mutual fund data offers a unique level of detail that lets us explicitly extend the empirical analysis into the context of the multi-product firm and study which particular products are being outsourced and which ones are not, or alternatively, which funds are being managed internally and which one are not.[3] From this angle, the analysis of the mutual fund industry is relevant for our broader understanding of outsourcing/integration decisions, beyond the mutual fund industry itself. Finally, the rich fund-level data that we have allow us to view the fund family's outsourcing/integration decision from the perspective of the growing literature on incomplete contracts and to specifically document evidence in support of a few key tenets of the theories of incomplete contracts.

Human capital is at the heart of mutual fund management. Our empirical analysis indicates that fund families are more likely to outsource the management of their funds, the more managing such funds requires expertise that is further removed from their own core competence. Conversely, funds closer to their core expertise, are more likely to be managed in-house. This finding is in line

[3] Our empirical study falls in between two extremes of the empirical literature: Our analysis with product-level data has more detail than recent empirical work of outsourcing and integration in international trade that is often operates at the sectoral or firm level. At the same time, our analysis is more generalizable than the very detailed industry-level studies, see Hubbard (2008)

with predictions of theories about the boundaries of the firm that, following Grossman and Hart (1986) and Hart and Morre (1990), focus on incomplete contracts, especially when these theories are applied to mutual funds and the interaction of the fund family and the (independently) managed fund.[4]

At the heart of this incomplete contracting perspective is the notion that it is hard for fund families and sub-advisors to contract over the two essential elements of their cooperation: the fund performance, which is a metric to evaluate how well the sub-advisor fulfills his responsibility of managing the fund, and the size of the fund or the success in attracting investor assets, which is the purview of the fund family and reveals its commitment to the particular fund. It is a basic tenet of incomplete contracts that ownership should go to the party whose marginal investment is more productive.[5] The further removed the fund category of the new fund is from the fund family's base expertise, the more critical the contribution of the sub-advisor's expertise will be, and hence, the more likely the fund will be managed independently. Conversely, the closer the fund is to the core expertise of the fund family, the more likely it will be advised in-house by managers and analysts from the fund family, since the fund family's contribution will be more critical to the overall success of the fund. We argue that this finding is intimately related to the very dynamic nature of the mutual fund industry with many new and/or growing investment categories and a constant flow of funds in and out of given investment objectives. Needless to say, this dynamic environment stretches the expertise of family of funds and forces them to go beyond their own expertise in order to attract sufficient funds. It is in this setting that, from the fund family's perspective, sub-advising can emerge as an attractive alternative.

[4] See Antras (2003, 2013), Antras and Helpman (2004)
[5] Aghion and Holden (2011)

We also relate our analysis to the performance differential between sub-advised and own funds. The pervasiveness of sub-advising is somewhat puzzling at first. Indeed, especially given the subpar performance metrics of sub-advised funds that have sometimes been associated with adverse selection of arms' length relationships, see Chen et al (2013), one may wonder why fund families would continue to sub-advise. On the one hand, our evidence confirms previous findings as we see that standard assessments of the return of sub-advised funds reveal a return that is lower than that for funds that are managed in-house. At the same time, we find also that the size of sub-advised funds tends to be smaller than the size of funds under the fund family's own management. Both these findings are consistent with the theory of incomplete contracting. Because of the nature of the contract, fund families *as well as* fund management do not get the full marginal return from their fund raising or investment efforts, which is why insufficient funds are attracted and fund performance is not optimal.

Further analysis of the mutual fund industry, however, also reveals that it is rational for fund families to keep setting up sub-advised funds, even though their performance is subpar. In particular, our empirical results reveals that the observed returns differential between sub-advised and in-house managed funds is to a large extent the result of an apparent selection bias that does not take into account the decision of fund families. To relate returns to the decision to integrate or outsource a new fund correcting for the selection bias of the fund family choosing to outsource in the first place, we apply an augmented inverse probability weighting framework (AIPW). Econometric approaches to correcting a selection bias range broadly from those that model the outcome variable (i.e. fund performance) separately for the treated and control groups, to those that model directly the treatment probability (i.e. sub-advising a fund). AIPW incorporates both approaches and consequently exhibits "double-robustness". If either the outcome model or the

treatment model is properly specified, the estimates are consistent, even if the other model is misspecified (Tan (2010); Woolridge (2010)). Using AIPW to correct for the selection bias associated with the sub-advising decision, we find that once the sources of incompleteness as far as they are related to, among others, expertise are accounted for, there is virtually no discernible difference in return between sub-advised and own funds. In sum, while returns of the sub-advised funds may in general be below those of fund families' own funds, fund families are not able to generate better returns in the funds they choose to sub-advise.

The structure of the paper is as follows: Section 2 describes the theoretical background that motivates the tests of the paper; Section 3 describes the data; Section 4 describes the empirical frameworks used and the results produced from those analyses; and Section 5 concludes.

2. Theoretical background

One of the key organizational decisions that firms have to make is to decide the extent to which they want to control all aspects of their operations. In our case, why do some fund families decide to keep some fund activities in-house, whereas others choose to manage comparable funds at arms' length? To study which funds are managed in-house and which ones are outsourced is a laboratory in which to investigate broader questions about the borders of the firm. Since Coase (1937) first raised the question, the topic has attracted much attention in the academic literature. To investigate outsourcing versus integration in the context of mutual funds, we draw on the property rights theories of Grossman and Hart (1986), Hart and Moore (1990), and their extensions in the work of Antras (2003,2013), Helpman and Antras (2004), and Grossman and Helpman (2002) who

stylized the approach and applied it in an international context.[6] Those theories all argue that the optimal ownership decisions will hinge upon the contracting environment. The nature of the incomplete contracts will determine when it is most profitable to manage a new fund within the fund family, as opposed to sub-advising the management services for it to a third-party outside the fund family.

The basic logic of incomplete contracts is well understood. As Aghion and Holden (2011) summarize, incomplete contracts emerge wherever it is hard to write ex ante a *complete* contract that covers all contingencies between two or more parties involved in a project or transaction. This incomplete nature of the contract has an adverse effect on the incentives of the participating parties, especially when the common project requires ex ante some cost/investment that is specific to the particular project and that has to be sunk, irrespective of whether the joint undertaking will be successful or not. The latter gives rise to a hold-up problem and a tendency on all sides to underinvest in the project. A way out of the dilemma that alleviates some of the incentive problems is to determine the ownership structure ex ante. The central tenet of the incomplete contracting approach is that ownership (and residual rights) go to the party whose initial investment or contribution to the project is most critical to the project. At the same time, a common feature of incomplete contracting is that the parties involved will not get the full marginal products of their efforts when they cooperate for example through outsourcing, which is why both parties will tend to underperform.

Applied to the mutual fund industry, the two relevant parties to set up a successful fund are the fund family and the management of a specific fund in a particular investment category. The fund family is the primary fund raiser who is talented in marketing and reaches out to investors. The

[6] Our discussion follows especially Antras (2013) overview of the literature. Aghion and Holden (2011) also provide an insightful survey.

fund family generates income by attracting investor's money and by charging fees to investors as their money is invested. The ability to attract investors or the marketing prowess of a fund family will vary by the different fund categories at stake and will be based on family's overall track record and overall objectives. The second component is the management of a specific fund that is set up in a particular investment category. It involves hiring and employing competent managers and analysts to manage the specific fund. Since setting up a new fund requires new analysts and managers, which are expensive, in the absence of any incomplete markets friction, it would seem optimal for fund families to only sub-advise funds out, rather than to start these new funds themselves. What limits the proliferation of sub-advising, however, is the incomplete nature of contracting over funds.

It is not possible to fully contract over all aspects that involve running a fund. The quality of commitment and the investments of fund family and fund managers that are necessary to bring a fund to investors cannot be independently verified and thus enforced in front of a court of law is not possible. While one can, for example, objectively determine the return obtained for the fund or the amount of funds raised by a fund family, there is room to dispute what is responsible for it: was it lack of effort, excessive risk taking, etc. Because of the lack of enforceability and the impossibility to contract over all contingencies ex ante, this will give way to suboptimal relationship-specific investments by all parties. There will be a tendency on the part of the family to not raise enough funds, in the same way that there will be a tendency for managers to underinvest in effort to effectively manage the fund, and the relationship will be subject to renegotiations. The ownership structure emerges to address some of those adverse incentives.

We predict that fund families will decide to integrate and perform the management of funds in-house for funds in those fund objectives that are closest to fund family's track record and overall

expertise, since these will the funds where the family's contribution (and fund raising prowess) will be highest. Moreover, doing so will also enable the fund family to salvage some of the fund in case the cooperation between the fund and the family breaks down. In particular, when management services are taking place inside the fund family, the fund family has finer tools for monitoring and managing fund managers and analysts as it can directly tailor their incentives and, in case of underperformance fire them. As far as monitoring the performance of third party services are concerned, few other option but terminating the third party management contract are left at the fund family's disposal. Now, as far as funds in other investment objectives that are further off from the family's core business are concerned, we expect a proliferation of sub-advising, since the fund family's expertise will be less of a contributing factor to the success of the fund. Needless to say, the further away one is from the family's core expertise, the harder monitoring also gets.

The incomplete contracting setup thus triggers a few testable implications: 1) Is it the case that the extent to which the fund's activities are in line with the family's overall expertise plays a role in determining whether a fund will be integrated within the family or outsourced? In other words, do fund families run funds in-house in investment objectives close to their own expertise and outsource for more peripheral funds? 2) Is there evidence of underinvestment on the side of both family and fund in the case of outsourcing? One way in which the lack of fund raising effort might materialize is in smaller funds. Similarly, the lack of commitment on the part of the external fund managers might result in lower returns of the sub-advised funds.

3. Data and Methodology

We create our sample by merging two databases: the Morningstar database of open-end mutual funds and a proprietary database of annual N-SAR fund filings from the SEC.[7] The sample period runs from January 1996 through December 2011 and below we describe these two databases and the variables used in our analysis.

3.1. Morningstar Data

Widely used in the academic literature (e.g. Chevalier and Ellison (1999), Elton, Gruber and Blake (2001), and Evans and Fahlenbrach (2012)), the Morningstar database consists of share-class level mutual fund information including monthly fund returns, total net assets (TNA), expense ratios, portfolio turnover, fund investment objective categories and many other variables. To avoid double-counting, we aggregate all share classes for a given fund and remove observations that are missing return, TNA, expense, turnover or other relevant data. Because we focus our analysis on actively managed funds, we remove both index funds and those funds classified as belonging to the "Target Date" investment objective category. In an effort to ensure a reasonable fit with our performance measurement models, we also remove funds in those investment objectives that are not easily characterized as either equity, fixed income or a combination of both.[8] After applying these filters and merging the Morningstar database with the N-SAR database described below, the sample consists of 4,674 unique funds belonging to 41 different investment objectives.[9]

[7]Studies that combine N-SAR with CRSP or Morningstar data include Reuter (2006), Edelen, Evans and Kadlec (2012) and Christoffersen, Evans and Musto (2013).

[8] We remove those funds with any of the following Morningstar investment objectives: "US OE Bear Market", "US OE Commodities Broad Basket", "US OE Convertibles", "US OE Global Real Estate", "US OE Managed Futures", "US OE Natural Res", "US OE Real Estate", "US OE Muni", or "US OE Currency".

[9] The remaining investment objectives include: US OE Allocation, US OE Bond, US OE China Region, US OE Communications, US OE Consumer, US OE Diversified Emerging Mkts, US OE Diversified Pacific/Asia, US OE Emerging Markets Bond, US OE Equity Energy, US OE Equity Precious Metals, US OE Europe Stock, US OE Financial, US OE Foreign Large Blend, US OE Foreign Large Growth, US OE Foreign Large Value, US OE

While many of the Morningstar variables that we employ in the analysis are commonly used in the literature, we construct two novel variables to aid in our exploration of sub-advising. In their relative performance analysis of mutual fund managers, Cohen, Coval, and Pastor (2005) use the similarity in the holdings of different managers to assess their performance. Similar to their approach, we use portfolio allocation data of in-house managed funds to compare the similarity of a fund family's investments or expertise to that of the investment objective in which they are opening a new fund. Specifically, we calculate the TNA-weighted aggregate portfolio allocation of all in-house advised funds in a fund family (i.e. sub-advised funds are removed) for two separate dimensions: region/country[10] and industry[11]. We then calculate the TNA-weighted aggregate portfolio country/region weights for all funds in a given Morningstar investment objective. An end-of-December annual snapshot of the fund-level region and sector allocation data is taken from the Morningstar database to generate these aggregate measures. As a measure of a fund family's experience or expertise in managing a particular style of investment, we calculate the sum of the squared differences in the family's region/country weight relative to the investment objective's region/country weights:

$$RegionExpertise_t^{Family,InvObj} = \sum_{r=1}^{10} \left(w_{r,t}^{Family} - w_{r,t}^{InvObj} \right)^2$$

Foreign Small/Mid Growth, US OE Foreign Small/Mid Value, US OE Health, US OE Industrials, US OE Japan Stock, US OE Large Blend, US OE Large Growth, US OE Large Value, US OE Latin America Stock, US OE Long/Short Equity, US OE Market Neutral, US OE Mid-Cap Blend, US OE Mid-Cap Growth, US OE Mid-Cap Value, US OE Miscellaneous Sector, US OE Multialternative, US OE Pacific/Asia ex-Japan Stk, US OE Retirement Income, US OE Small Blend, US OE Small Growth, US OE Small Value, US OE Technology, US OE Utilities, US OE World Allocation, US OE World Bond and US OE World Stock.

[10] The region/country allocation is divided among ten areas: Africa/Middle East, Developed Asia, Emerging Asia, Australia, Latin America, North America, Eastern Europe, Western Europe, Japan, North America, and United Kingdom.

[11] The sector/industry allocation is divided into twelve sectors: business services, consumer goods, consumer services, energy, financials, hardware, health care, industrials/materials, media, software, telecommunications and utilities.

For a given time *t*, fund family and investment objective, the squared differences are summed over the 10 regions *r*, discussed above. A large value of this measure suggests that the family's current in-house managed investments have little or no regional overlap with the investment objective of interest. We also calculate this measure using the fund family and investment objective sector/industry weights.

3.2. N-SAR Data

In addition to the Morningstar data, we use SEC filings to designate each fund as advised or sub-advised. Mutual funds are required by the Investment Company Act of 1940 to file semi-annual N-SAR reports with the SEC. These filings contain 133 numbered questions, the responses of which give detailed information on a wide variety of fund characteristics.[12] Question 8 of the form requires each fund to list the name, address and file number[13] for the investment advisers employed by the fund. In part B of question 8, it also requires the fund to designate each investment adviser as an adviser or a sub-adviser.

The Morningstar and N-SAR databases are merged by hand-matching names in Morningstar and in the N-SAR filings. After merging the databases, we assign any fund that designates all investment advisers as advisers as an advised fund. For some funds, however, the sub-advisor may be affiliated with the advisor and given our focus on the possible incompleteness in the contract between the fund family and the investment advisor, we want to assign these funds as advised as well. To ascertain whether or not a sub-advisor is affiliated with the fund family or

[12] A list of the questions and sub-questions can be found at http://www.sec.gov/info/edgar/forms/N-SARdoc.htm. In the description of the variables below we identify the N-SAR question and sub-question (e.g., 72.X is the Xth sub-question under question 72) from which the data is collected in parentheses.

[13] The file number is an internal identifier assigned to each entity named in the filing when that entity registers with the S.E.C.

management company, we examine the S.E.C.'s form ADV filings.[14] Specifically, in Item 10 of part II of the form ADV, each registered investment advisor is required to disclose control persons, which for an affiliated sub-advisor would include the management company or fund family that controls the sub-advisor. Using this information, we designate any affiliated sub-advisors as advisors.

3.3. Performance Measurement

Fund performance is an important variable in our analysis, but our sample includes a wide variety of fund types ranging from domestic fixed income to international equity and much in between. To estimate the risk-adjusted performance of these funds we employ the same performance methodology employed by Chen, Hong, Jiang and Kubik (2013). Specifically, we assign each fund in each month to one of 20 portfolios. Funds are first divided into advised and sub-advised groups. Second, each of these two groups is further separated into equity and fixed income funds. Third, each of these four groups is further separated into five separate size portfolios, where funds are ranked by their TNA into five separate size portfolios. This creates a monthly time series for 20 different portfolios and we use this time series of returns to estimate the factor-loadings for each fund assigned to one of those 20 groups.

With the portfolio returns in hand, we estimate factor loadings for 1-, 4-, 6-, and 10-factor performance model. The 1-factor model (Jensen (1968)) uses the excess market return as the sole factor and the 4-factor model expands on this by adding size, value and momentum factors (Carhart

[14] Unfortunately, Part II of the form ADVs is not readily available for the entire time period. We have snapshots of this data from November of 2004, December of 2005, and October of 2006, 2007, 2008, 2009 and 2010. For each filing, we assume the information is accurate from the filing date until the date of the next filing. For the sample period before November of 2004, we assume that the November 2004 information is correct for all earlier periods in our sample.

(1997)). The return data for these two models comes from Ken French's website. We also use the 6-factor and 10-factor models proposed by Chen et al. (2013) and Elton, Gruber and Blake (1993) respectively to estimate risk-adjusted fund performance. The 6-factor model augments the 4-factor model by including a fixed income factor (the Barclays US Aggregate Bond index) and an international factor (the Morgan Stanley MSCI EAFE index return) both in excess of the 1-month Treasury bill return. The 10-factor model augments the 4-factor model by including six different fixed income factors proxied for by six Barclays fixed income indices, each in excess of the 1-month Treasury bill return: the Barclays GNMA Index, US Corporate High Yield Index, US Corporate Investment Grade Index, and the US Short, Intermediate and Long Treasury Bills Indices. In each examination of performance we will show the results for these four different performance models in addition to a simple investment objective alpha where we subtract the TNA-weighted return of all other funds in a given investment objective.

3.4. Sample Fund Characteristics

Panel A of Table 1 provides descriptive statistics for the sample of advised and sub-advised fund-year observations. Comparing the two, we see that advised funds are larger on average, come from larger fund families, higher turnover and are younger. We also see that sub-advised funds have higher expense ratios than advised funds. To ensure that the observed differences in expense ratios are not driving the performance results tautologically, we deviate from much of the prior literature in our use of gross returns for all performance calculations. Even when estimating the performance measures using gross returns, the summary statistics show, consistent with the results of Del Guercio et al (2010) and Chen et al (2013), that advised funds have higher average annualized gross risk-adjusted alphas than sub-advised funds. While the observed smaller fund

size, which would translate to a lower payment to sub-advisors, and the lower sub-advised fund performance are consistent with the prior literature, these two empirical observations are perhaps surprising if not considered in light of the other factors that contribute to the sub-advisory decision.

Panel B of Table 1 breaks down the fund-year observations by Morningstar investment objective. While there are fund-year observations from 41 different objectives, the allocation, bond and standard US domestic large/mid/small and growth/blend/value categories account for the majority of observations. Given the wide variety of fund investment objective types and the potential for the various factor models to poorly measure performance for some of the more esoteric investment objectives, we provide two robustness checks throughout our performance analyses. First, in addition to the factor models, we also calculate an investment objective alpha, which is simply the difference between the fund's performance and the value-weighted performance of all other funds in the same investment objective. We also repeat our performance analyses using the 4-factor model for a subset of funds consisting of the standard US domestic equity fund sample (i.e. Large/Mid/Small Growth/Blend/Value) widely employed in the literature.

4. Results

Before turning to our multivariate analyses, Figures 1 and 2 provide a useful picture of the prevalence and importance of sub-advising in the US mutual fund industry. Panel A and B of Figure 1 show the percentage of funds and TNA that is sub-advised from January of 1996 to December of 2011. Approximately 30% of funds and 23% of TNA are sub-advised over that time period, with little systematic variation.

In Figure 2, we repeat that same analysis, but for a subset of funds. Specifically, for each fund family, the investment objectives in which they had never managed a fund before 1996 are identified. We then examine the prevalence of sub-advising for funds in investment objectives that are new to the fund family. For this subset of funds, we find that approximately 47% of funds and 51% of TNA is managed by sub-advisors. This greater prevalence of sub-advising in investment objectives for which the fund family does not have prior experience suggests indeed that expertise may play a role in the sub-advisory decision. Panel A of Figure 2 also displays an interesting temporal pattern. A high percentage of sub-advised funds seems to decline steadily over the sample period. Because the subset is defined as only those funds in investment objectives where the fund family have never invested prior to 1996, this decline is consistent with fund families initiating their foray into an investment objective via a sub-advisory relationship, but after learning from that experience, continuing their foray by opening in-house advised funds.

4.1 The Determinants of the Sub-advisory Decision

To examine the determinants of the sub-advisory decision, we look to the issue of new fund creation. Table 2 gives the regression estimates for a Heckman selection model of the determinants of sub-advising. The selection model (whether or not a fund family creates a new fund in a given investment objective each Year) and the regression model (whether that new fund is advised or sub-advised) are jointly estimated via maximum likelihood. The selection model examines the decision of whether or not a fund family creates a new fund in each investment objective each year so the dependent variable has the units of fund family-year-investment objective, where the set of investment objectives considered in a given year is

determined by the set of investment objectives listed in the Morningstar database that year. For those fund families that create a new fund in a given investment objective in a given year, the decision of whether or not to use internal managers to advise the fund or to outsource the advisory services to a sub-advisor is analyzed. If a family opens multiple funds in a given investment objective in a given year, each observation is included separately in the analysis.

We follow Khorana and Servaes (1999) in our choice of the independent variables for the new fund creation selection equation are all lagged one year and include the natural log of the total assets managed in the investment objective (Log Inv Obj Size), by the fund family (Log Family Size) and by the family in the investment objective of interest (Log Fam-Obj Size). Net flows as a percentage of TNA are also included for the investment objective, the family overall and family's assets in the investment objective of interest. The previous year's value-weighted return for all funds in the investment objective is included as are the percentage of the fund family's assets that are distributed via brokers (as measured by the presence of a front or rear load) and the natural log of the total number of new funds created by the fund family in the previous year are also included.

Looking at the determinants of sub-advising, after accounting for the family's selection of whether or not to create a new fund, the important of expertise, or the lack thereof, begins to become clear. The positive coefficient on the percentage of the fund family's TNA in all investment objectives other than the one of interest (Fam Expert (% Family TNA outside Inv Obj) shows that the probability of hiring a sub-advisor to run the fund increases when you manage less assets in the same investment objective. The positive coefficient on the Region distance measure for the full sample and the Industry distance measure for the domestic equity fund sample shows that the more the fund's core competency differs from other funds in the

investment objective of interest either in terms of their geographic or industry expertise, the family is more likely to sub-advise as well. We also see that families with a diversified product offering strategy as measured by a lower family investment objective Herfindahl, are more likely to sub-advise and families that have previously sub-advised are more to sub-advise again.

4.2 Sub-advising and Fund Performance

We turn from the determinants of sub-advising to our performance analysis. In Table 3, we revisit the prior literature on sub-advised fund underperformance in a simple OLS regression with clustered standard errors. Although the time period covered and the sample composition differs somewhat from these previous studies, we confirm the previous result that sub-advised funds underperform.[15]

In Table 4, we model the outcome variable, performance, as in Table 3, but controlling for the selection bias we identify in our sub-advisory determinants analysis. Specifically, Table 4 gives the regression estimates for the regression of annual fund performance on lagged fund characteristics, including whether or not a fund is sub-advised. In contrast to the OLS performance regression in Table 3, the sub-advised treatment effect is estimated via doubly-robust augmented inverse propensity weighting (AIPW) model (Tan (2010); Woolridge (2010)). AIPW jointly estimates both an outcome model (i.e. the determinants of fund performance) and a treatment model (i.e. the determinants of the sub-advisory decision) to estimate the average treatment effect of sub-advising on fund performance. The output from the AIPW estimation include separate coefficients from the performance or outcome regression for advised and sub-advised funds as well as the probit estimates from the sub-advisory or treatment regression. A

[15] In unreported results we repeat this analysis in a Fama-Macbeth framework and using monthly fund returns with investment objective X time fixed effects with similar results. These estimates are available upon request.

particular advantage of AIPW over a regression adjustment, Heckman model or other selection method is the double-robustness property. Specifically, if the outcome regression model is properly specified but the treatment model is not, we obtain consistent estimates. Similarly, if the treatment model is correctly specified, but the outcome model is not, we still obtain consistent estimates.

Once we control for the treatment effect, we see no statistically significant difference between sub-advised funds or advised funds. Put another way, while sub-advised funds underperform other advised funds, if we take into account the lack of expertise which contributes to the fund family's decision to hire a sub-advisor in the first place, the fund family could not have obtained better performance if they managed the fund in-house.

5. Conclusion

There are at least two different ways in which one can interpret the findings of this paper about integration and outsourcing in the mutual fund industry.

On the one hand, our analysis addresses a few key questions, and in some instances even a few puzzles that are specific to the mutual fund industry. For one, we explain why it is the case that one should not be surprised that sub-advising has been such a pervasive phenomenon among mutual funds over time and also across investment categories. As we have documented, the mutual fund industry is dynamic in nature, with, on the one hand, plenty of new investment categories arising over time and, on the other hand, quite a bit of variation in the flows of funds into or out of the existing investment objectives. If a fund family wants to maintain a steady income stream, that is, if it wants to continue to attract investors and their assets to its funds, thereby generating fees, it will find its expertise constantly stretched by investor's demands for

investment opportunities that are, strictly speaking, outside its competence or expertise. Not surprisingly, then, sub-advising provides an answer. Sub-advising provides a way for a fund family to attract investor funds outside the range of its own expertise. And indeed, our empirical analysis indicates that the decision to outsource the management of a fund is very much a function of the particular expertise of the fund family. Those funds that are relatively far removed from a fund family's expertise, a fund family will decide to outsource them. On the other hand, funds that are closer to the fund family's own competence will be managed inside the fund family.

A second central question that is specific to mutual funds is the puzzle of the poor performance of sub-advised funds when compared to the returns of fund families' in-house managed funds. Why would fund families continue to offer sub-advised funds if they underperform? A careful econometric analysis accounting for treatment effects indicates that the stylized observation about returns is to a large extent a function of selection bias that ignores the particular factors (including expertise) that are driving the decision to outsource a fund in the first place.

There is, however, a complementary way to interpret our findings. There is a growing interest in understanding the particular organizational structure of the firm and its boundaries, and also the changing organization of firms --One need only think about the vivid public discussion about outsourcing. In this paper we exploit the detailed mutual fund industry data to study outsourcing vs. integration at the product level. More in particular, in the paper we provide empirical support for a few key tenets of the theories of incomplete contracting that have been developed by Grossman and Hart and that are directly applicable to the human-capital intensive mutual fund industry whose outcomes (returns, performance) are hard to write enforceable

contracts over. Those theories of incomplete contracts shed light on the changing organization of firms, and the results here illuminates some of those broader questions.

For one, the ownership structure that coincides with managing funds that are close to one's own expertise, while outsourcing those that are far removed from it, is consistent with a key insight of incomplete contract theories. The entity whose contribution is more critical to the outcome of the project will own the project. Not surprisingly, expert knowledge or expertise inside the fund family therefore coincides with the in-house management of those funds that might benefit most from that knowledge.

In addition, in an environment of incomplete contracts, it is very hard to write a contract over the efforts and investments of the contracting parties (the fund management and the fund family). Because of this, there will be a tendency on all parts of the collaborators to underinvest in relationship-specific investment. The observed underperformance of sub-advised funds to some extent is consistent with this observation, as well as the on average smaller size of the funds.

Finally, our results indicate that from the perspective of individual fund families who have to decide on whether to outsource or to integrate, it may be rational to continue to attract low-performing sub-advised funds (that are essential to attract investor funds). Indeed, our findings indicate that those fund families would not be able to generate any better returns themselves.

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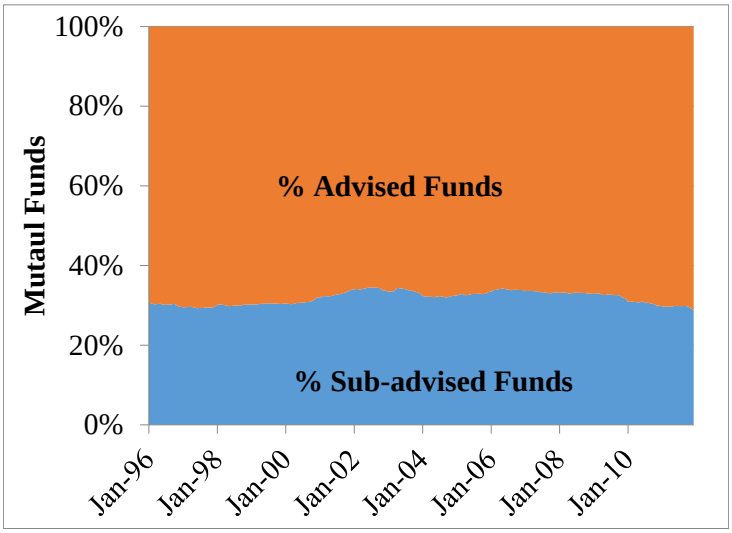
Figure 1 – Sub-advising Over Time

Figure 1 shows percentage of funds and assets managed by sub-advisors over time for the broader sample.

Panel A. The Percentage of Mutual Funds Advised and Sub-advised Over Time



Panel B. The Percentage of Fund TNA Advised and Sub-advised Over Time

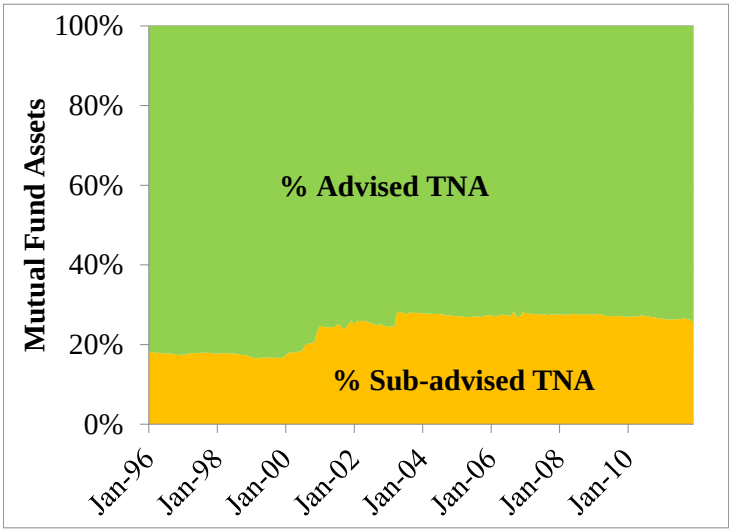
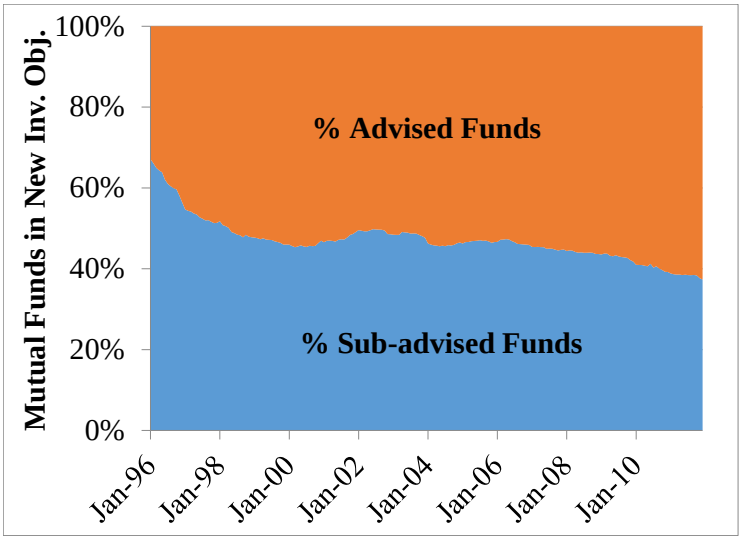


Figure 2 – Sub-advising Over Time in New Investment Objectives

Figure 2 shows percentage of funds and assets managed by sub-advisors over time in new investment objectives. For each fund family, the investment objectives in which they had currently or previously managed a fund before 1996 are identified. The figure depicts advising and sub-advising patterns for all funds created after 1996 in an investment objective in which a given fund family had never managed a fund before.

Panel A. The Percentage of Mutual Funds Advised and Sub-advised Over Time



Panel B. The Percentage of Fund TNA Advised and Sub-advised Over Time

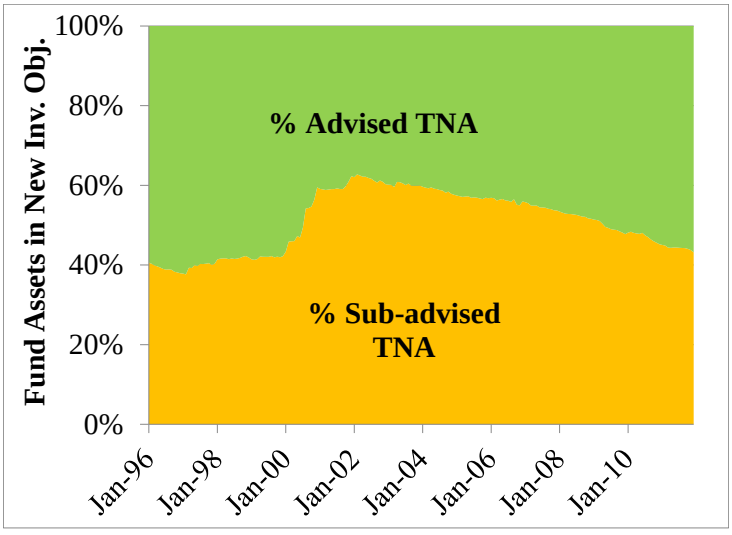


Table 1 – Sample Descriptive Statistics

Table 1 presents descriptive statistics (mean, median and standard deviation) for the sample of mutual funds from Morningstar with matched N-SAR filings and non-missing values of all variables in the analysis over the period January 1996 through December 2011 (27,573 fund-year observations). The sample is divided into advised and sub-advised fund samples. The variables fund TNA ($millions), family TNA ($billions), annual expense ratio, annual turnover (the minimum of fund purchases and sales divided by TNA), fund age in years, annual net fund flows as a percentage of fund TNA, the percentage of funds sold by brokers as indicated by the existence of either a front or back load. The table also includes annualized performance estimates calculated from gross fund returns including an investment objective alpha calculated by subtracting the value-weighted average gross return of all funds in the same Morningstar investment objective from the fund's return over the same time period and annualized 1-, 4-, 6-, and 10-factor alphas calculated using the performance measurement methodology described in Chen et al (2013). Panel B reports the number of fund-year observations by Morningstar's investment objective.

Panel A. Univariate Statistics

		Advised Funds (21,063 Fund-Year Obs.)			Sub-advised Funds (6,510 Fund-Year Obs.)		
	Variable	Mean	Median	Std. Dev.	Mean	Median	Std. Dev.
	Fund Size ($ Millions)	$1,501	$253	$5,777	$784	$219	$4,512
	Family Size ($ Billions)	$110	$23	$223	$51	$19	$93
	Expense Ratio (% TNA)	1.16%	1.15%	0.51%	1.24%	1.17%	0.53%
	Fund Turnover (% TNA)	107%	65%	194%	120%	77%	200%
	Fund Age (Years)	12.9	10.0	12.2	9.3	7.5	7.8
	Annual Net Fund Flows (% TNA)	6.2%	-0.8%	47.2%	8.7%	0.6%	50.0%
	Broker-Sold (=Yes)	53.9%	-	-	55.8%	-	-
Annualized Gross Returns	Inv. Obj. Alpha	3.75%	-2.64%	101.93%	2.42%	-3.11%	94.71%
	1-Factor Alpha	2.10%	1.56%	12.59%	1.65%	1.45%	12.53%
	4-Factor Alpha	1.54%	1.26%	12.56%	1.33%	1.32%	12.44%
	6-Factor Alpha	0.80%	0.07%	11.99%	0.63%	0.25%	11.82%
	10-Factor Alpha	1.69%	1.10%	12.03%	1.57%	1.20%	11.82%

Table 1 – Sample Descriptive Statistics (Continued)

Panel B. Investment Objective Frequency

Morningstar Inv. Obj.	Fund-Year Obs.	% Sample	Morningstar Inv. Obj.	Fund-Year Obs.	% Sample
US OE Allocation	2,730	9.9%	US OE Large Growth	2,837	10.3%
US OE Bond	4,942	17.9%	US OE Large Value	1,889	6.9%
US OE China Region	103	0.4%	US OE Latin America Stock	37	0.1%
US OE Communications	109	0.4%	US OE Long/Short Equity	124	0.5%
US OE Consumer	82	0.3%	US OE Market Neutral	80	0.3%
US OE Diversified Emerging Mkts	471	1.7%	US OE Mid-Cap Blend	658	2.4%
US OE Diversified Pacific/Asia	85	0.3%	US OE Mid-Cap Growth	1,464	5.3%
US OE Emerging Markets Bond	105	0.4%	US OE Mid-Cap Value	533	1.9%
US OE Equity Energy	113	0.4%	US OE Miscellaneous Sector	51	0.2%
US OE Equity Precious Metals	175	0.6%	US OE Multialternative	47	0.2%
US OE Europe Stock	189	0.7%	US OE Pacific/Asia ex-Japan Stk	145	0.5%
US OE Financial	251	0.9%	US OE Retirement Income	131	0.5%
US OE Foreign Large Blend	1,010	3.7%	US OE Small Blend	935	3.4%
US OE Foreign Large Growth	388	1.4%	US OE Small Growth	1,347	4.9%
US OE Foreign Large Value	442	1.6%	US OE Small Value	529	1.9%
US OE Foreign Small/Mid Growth	201	0.7%	US OE Technology	491	1.8%
US OE Foreign Small/Mid Value	146	0.5%	US OE Utilities	149	0.5%
US OE Health	357	1.3%	US OE World Allocation	256	0.9%
US OE Industrials	69	0.3%	US OE World Bond	330	1.2%
US OE Japan Stock	97	0.4%	US OE World Stock	977	3.5%
US OE Large Blend	2,498	9.1%			
			Total	**27,573**	**100%**

Table 2 – Determinants of Sub-advising

Table 2 gives the regression estimates for a Heckman selection model of the determinants of sub-advising. The selection model (whether or not a fund family creates a new fund in a given investment objective each year) and the regression model (whether that new fund is advised or sub-advised) are jointly estimated via maximum likelihood. The selection model examines the decision of whether or not a fund family creates a new fund in each investment objective each year so the dependent variable has the units of fund family-year-investment objective, where the set of investment objectives considered in a given year is determined by the set of investment objectives listed in the Morningstar database that year. For those fund families that create a new fund in a given investment objective in a given year, the decision of whether or not to use internal managers to advise the fund or to outsource the advisory services to a sub-advisor is analyzed. If a family opens multiple funds in a given investment objective in a given year, each observation is included separately in the analysis. The independent variables for the new fund creation selection equation are all lagged one year and include the natural log of the total assets managed in the investment objective (Log Inv Obj Size), by the fund family (Log Family Size) and by the family in the investment objective of interest (Log Fam-Obj Size). Net flows as a percentage of TNA are also included for the investment objective, the family overall and family's assets in the investment objective of interest. The previous year's value-weighted return for all funds in the investment objective is included as are the percentage of the fund family's assets that are distributed via brokers (as measured by the presence of a front or rear load) and the natural log of the total number of new funds created by the fund family in the previous year are also included. The independent variables include the percentage of the family's assets that were sub-advised in the previous year as well as an investment objective Herfindahl, a measure of the families concentration of total net assets (TNA) managed across all Morningstar investment objective, in addition to three different measures of family expertise, or the lack thereof: the percentage of the fund family's TNA in all investment objective other than the one of interest, and distance measures of the family's region/country and sector/industry asset allocation relative to the aggregate of all funds in a given investment objective. The standard errors are clustered by fund family.

	All Funds				**Domestic Equity Funds**			
	(1)		**(2)**		**(3)**		**(4)**	
Variables	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**
Selection Model - Determinants of Fund Creation								
Log Inv Obj Size	0.145	(18.25)	0.140	(15.73)	0.095	(8.31)	0.079	(5.70)
Log Family Size	0.036	(5.48)	0.061	(8.50)	0.024	(2.69)	0.039	(4.26)
Log Fam-Obj Size	0.051	(28.84)	0.046	(24.82)	0.046	(20.41)	0.048	(19.76)
Annual Inv Obj Flows	3.933	(17.36)	4.280	(19.19)	20.088	(10.55)	24.012	(11.87)
Annual Family Flows	1.720	(4.69)	2.175	(4.82)	1.532	(3.45)	2.167	(4.25)
Annual Fam-Obj Flows	1.095	(3.27)	1.471	(3.70)	0.815	(1.90)	0.594	(1.20)
Annual Inv Obj Return	0.009	(1.60)	-0.004	(-0.55)	0.012	(1.33)	-0.001	(-0.08)
% Family Broker-Sold	0.083	(2.74)	0.081	(2.56)	0.063	(1.67)	0.065	(1.61)
Log Family New Funds	0.368	(16.46)	0.312	(13.62)	0.407	(12.2)	0.328	(9.72)
Constant	-7.177	(-28.33)	-7.619	(-26.02)	-5.616	(-15.09)	-5.653	(-13.13)
Regression Model - Determinants of Sub-advising								
Fam Expert(% Family TNA outside Inv Obj)	0.300	(7.01)			0.310	(5.91)		
Fam Expert(Region)			1.527	(4.07)				
Fam Expert(Industry)							4.201	(1.80)
Family Inv Obj Herfindahl	-0.077	(-1.29)	-0.249	(-4.09)	-0.143	(-1.94)	-0.410	(-6.48)
% Family Subadvised	0.492	(9.84)	0.503	(8.99)	0.491	(8.89)	0.485	(8.22)
Constant	-0.037	(-0.88)	0.183	(3.46)	0.073	(1.05)	0.236	(3.05)
Observations	444,853		443,025		80,444		79,827	

Table 3 – Annual Performance Regression without Treatment Effects

Table 3 gives the regression estimates for an OLS regression of annual fund performance on lagged fund characteristics, including whether or not a fund is sub-advised. The performance measures used include a 1-, 4-, 6-, and 10-factor alphas calculated using the methodology proposed by Chen et al (2013) and an investment objective alpha calculated as the difference between the fund's return and the value-weighted average gross return of all funds in the same Morningstar investment objective over the same time period. All performance measures are calculated from gross fund returns and are in units of month performance, even though they are measured over an annual period. Specification 6 repeats the analysis but using a 4-factor alpha for the subset of funds from the following US domestic equity investment objectives: Large/Mid/Small Growth/Blend/Value. The lagged independent variables include the natural log of fund and family size, the annual net fund flow, fund age in years, the expense ratio, fund turnover, an indicator variable of whether or not a fund was distributed through the broker channel (as indicated by the presence of either a front or back load) and an indicator variable for whether or not the fund was sub-advised. Standard errors are clustered by fund.

	1-Factor Alpha (1)		**4-Factor Alpha (2)**		**6-Factor Alpha (3)**		**10-Factor Alpha (4)**		**Inv. Obj. Alpha (5)**		**4-Factor Alpha (US Eq. Funds) (6)**	
	Coef.	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**
Subadvised (=Yes)	-0.048	(-3.21)	-0.02672	(-1.79)	-0.02502	(-1.76)	-0.027	(-1.87)	-0.002	(-1.83)	-0.043	(-2.48)
Log Family Size	0.021	(6.66)	0.02112	(6.62)	0.02211	(7.28)	0.026	(8.63)	0.002	(6.74)	0.020	(5.29)
Log Fund Size	-0.028	(-6.30)	-0.02408	(-5.49)	-0.02266	(-5.43)	-0.023	(-5.49)	-0.002	(-4.96)	-0.027	(-5.18)
Annual Net Fund Flows (% TNA)	-0.513	(-3.20)	-0.3358	(-2.10)	-0.3213	(-2.11)	-0.158	(-1.03)	-0.021	(-1.61)	-0.264	(-1.43)
Fund Age (Years)	0.001	(1.07)	0.000744	(1.21)	0.000536	(0.92)	0.000	(0.02)	0.000	(-1.10)	0.000	(0.34)
Expense Ratio	0.136	(9.92)	0.126	(9.23)	0.1683	(12.96)	0.218	(16.75)	0.011	(9.72)	0.110	(5.64)
Fund Turnover	0.000	(0.65)	9.84E-06	(0.30)	-5.7E-05	(-1.87)	0.000	(-3.84)	0.000	(-2.02)	0.000	(1.29)
Broker-Sold (=Yes)	-0.074	(-5.35)	-0.0797	(-5.78)	-0.09445	(-7.19)	-0.109	(-8.28)	-0.008	(-7.67)	-0.087	(-5.14)
Constant	0.087	(1.00)	-0.01202	(-0.14)	-0.1562	(-1.89)	-0.209	(-2.53)	-0.010	(-1.41)	0.045	(0.44)
Observations	27,614		27,614		27,614		27,614		27,573		12,713	

Table 4 – Annual Performance Regression with Treatment Effects

Table 4 gives the regression estimates for the regression of annual fund performance on lagged fund characteristics, including whether or not a fund is sub-advised. In contrast to the OLS performance regression in Table 3, the sub-advised treatment effect is estimated via doubly-robust augmented inverse propensity weighting (AIPW) model. AIPW jointly estimates both an outcome model (i.e. the determinants of fund performance) and a treatment model (i.e. the determinants of the sub-advisory decision) to estimate the average treatment effect of sub-advising on fund performance. The output from the AIPW estimation include separate coefficients from the performance or outcome regression for advised and sub-advised funds as well as the probit estimates from the sub-advisory or treatment regression. As in Table 3, the performance measures include a 1-, 4-, 6-, and 10-factor alphas calculated using the methodology proposed by Chen et al (2013) and an investment objective alpha calculated as the difference between the fund's return and the value-weighted average gross return of all funds in the same Morningstar investment objective over the same time period. All performance measures are calculated from gross fund returns and are in units of month performance, even though they are measured over an annual period. Specification 6 repeats the analysis but using a 4-factor alpha for the subset of funds from the following US domestic equity investment objectives: Large/Mid/Small Growth/Blend/Value. In the performance/outcome models, the lagged independent variables include the natural log of fund and family size, the annual net fund flow, fund age in years, the expense ratio, fund turnover, an indicator variable of whether or not a fund was distributed through the broker channel (as indicated by the presence of either a front or back load) and an indicator variable for whether or not the fund was sub-advised. For the sub-advisory/treatment model, the independent variables include the full set of variables from the selection and regression models in Table 2.

	1-Factor Alpha (1)		4-Factor Alpha (2)		6-Factor Alpha (3)		10-Factor Alpha (4)		Inv. Obj. Alpha (5)		4-Factor Alpha (US Eq. Funds) (6)	
	Coef.	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**
Subadvised (=Yes)	-0.001	(-0.53)	-0.006	(-0.28)	0.009	(0.43)	0.009	(0.42)	0.014	(0.63)	0.000	(0.00)
Outcome Regression (Advised Funds)												
Log Family Size	0.002	(4.92)	0.022	(5.88)	0.021	(5.89)	0.025	(7.00)	0.021	(5.61)	0.019	(4.44)
Log Fund Size	-0.002	(-3.49)	-0.024	(-4.96)	-0.018	(-4.00)	-0.017	(-3.69)	-0.020	(-4.11)	-0.025	(-4.53)
Annual Net Fund Flows (% TNA)	-0.010	(-0.62)	-0.505	(-2.56)	-0.309	(-1.64)	-0.206	(-1.08)	-0.341	(-1.73)	-0.164	(-0.71)
Fund Age (Years)	0.000	(-0.95)	0.000	(0.64)	0.000	(0.53)	0.000	(-0.38)	0.000	(0.72)	0.000	(-0.40)
Expense Ratio	0.013	(8.13)	0.156	(7.87)	0.184	(9.66)	0.233	(12.16)	0.141	(7.21)	0.118	(4.29)
Fund Turnover	0.000	(-0.94)	0.000	(0.05)	0.000	(-2.00)	0.000	(-3.82)	0.000	(-0.22)	0.000	(0.34)
Broker-Sold (=Yes)	-0.010	(-7.30)	-0.088	(-5.25)	-0.102	(-6.44)	-0.121	(-7.61)	-0.090	(-5.43)	-0.089	(-4.44)
Constant	-0.013	(-1.63)	-0.010	(-0.11)	-0.222	(-2.45)	-0.302	(-3.30)	-0.093	(-0.99)	0.057	(0.5)
Outcome Regression (Sub-advised Funds)												
Log Family Size	0.003	(3.85)	0.021	(2.60)	0.029	(3.77)	0.034	(4.29)	0.025	(3.04)	0.034	(3.91)
Log Fund Size	-0.003	(-3.52)	-0.046	(-4.55)	-0.043	(-4.43)	-0.049	(-5.06)	-0.044	(-4.41)	-0.035	(-3.08)
Annual Net Fund Flows (% TNA)	-0.055	(-2.30)	-0.555	(-1.63)	-0.378	(-1.15)	-0.078	(-0.24)	-0.339	(-1.02)	-0.430	(-1.41)
Fund Age (Years)	0.000	(-0.80)	0.002	(1.55)	0.002	(1.36)	0.001	(0.59)	0.003	(1.74)	0.004	(2.81)
Expense Ratio	0.004	(1.31)	0.068	(1.87)	0.115	(3.31)	0.164	(4.70)	0.075	(2.10)	0.086	(1.93)
Fund Turnover	0.000	(-1.09)	0.000	(0.67)	0.000	(-0.08)	0.000	(-0.81)	0.000	(0.62)	0.000	(0.91)
Broker-Sold (=Yes)	-0.004	(-1.62)	-0.029	(-0.99)	-0.066	(-2.38)	-0.070	(-2.54)	-0.045	(-1.55)	-0.068	(-2.10)
Constant	-0.007	(-0.44)	0.426	(1.95)	0.067	(0.32)	0.125	(0.59)	0.284	(1.31)	-0.189	(-0.76)

Table 4 – Annual Performance Regression with Treatment Effects (Continued)

	1-Factor Alpha (1)		4-Factor Alpha (2)		6-Factor Alpha (3)		10-Factor Alpha (4)		Inv. Obj. Alpha (5)		4-Factor Alpha (US Eq. Funds) (6)	
	Coef.	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**	**Coef.**	**t-Stat.**
Treatment Regression												
Log Inv Obj Size	-0.012	(-1.29)	-0.013	(-1.31)	-0.013	(-1.31)	-0.013	(-1.31)	-0.013	(-1.31)	-0.007	(-0.36)
Log Family Size	0.018	(1.26)	0.017	(1.20)	0.017	(1.20)	0.017	(1.20)	0.017	(1.20)	0.025	(1.01)
Log Fam-Obj Size	-0.054	(-3.78)	-0.053	(-3.75)	-0.053	(-3.75)	-0.053	(-3.75)	-0.053	(-3.75)	-0.051	(-2.12)
Annual Inv Obj Flows	0.451	(0.30)	0.317	(0.21)	0.317	(0.21)	0.317	(0.21)	0.317	(0.21)	5.415	(1.44)
Annual Family Flows	-1.517	(-1.75)	-1.501	(-1.73)	-1.501	(-1.73)	-1.501	(-1.73)	-1.501	(-1.73)	-1.013	(-0.80)
Annual Fam-Obj Flows	0.073	(0.15)	0.089	(0.19)	0.089	(0.19)	0.089	(0.19)	0.089	(0.19)	1.881	(2.99)
Annual Inv Obj Return	0.008	(0.98)	0.009	(1.07)	0.009	(1.07)	0.009	(1.07)	0.009	(1.07)	-0.007	(-0.54)
% Family Broker-Sold	0.092	(3.22)	0.089	(3.15)	0.089	(3.15)	0.089	(3.15)	0.089	(3.15)	0.088	(2.00)
Log Family New Funds	0.044	(2.90)	0.044	(2.92)	0.044	(2.92)	0.044	(2.92)	0.044	(2.92)	0.015	(0.64)
Fam Expert(% Fam TNA in Inv Obj)	-0.577	(-5.14)	-0.583	(-5.21)	-0.583	(-5.21)	-0.583	(-5.21)	-0.583	(-5.21)	-0.689	(-3.49)
Fam Expert(Region)	3.978	(9.52)	3.985	(9.54)	3.985	(9.54)	3.985	(9.54)	3.985	(9.54)		
Fam Expert(Industry)											3.360	(0.71)
Family Inv Obj Herfindahl	-0.077	(-0.79)	-0.077	(-0.80)	-0.077	(-0.80)	-0.077	(-0.80)	-0.077	(-0.80)	-0.482	(-2.78)
% Family Subadvised	4.098	(101.42)	4.101	(101.46)	4.101	(101.46)	4.101	(101.46)	4.101	(101.46)	4.316	(66.08)
Constant	-1.037	(-3.36)	-1.019	(-3.30)	-1.019	(-3.30)	-1.019	(-3.30)	-1.019	(-3.30)	-1.233	(-2.01)
Observations	27,614		27,614		27,614		27,614		27,573		12,713	