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Shikha Jaiswal

Essays in Financial Economics

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in Business

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Essays in Financial Economics

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An abstract of
A Dissertation submitted to the Faculty of the
James T. Laney School of Graduate Studies of Emory University
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2017

Abstract

Essays in Financial Economics

By Shikha Jaiswal

This dissertation focuses on conflicts of interest in investment management, disclosures and role of ties. The first essay (titled: Connections and Conflicts of Interest: Investment Consultants Recommendations) studies the effect of connections between investment consultants and managers on manager hiring decisions. Plan sponsors rely on investment consultants' recommendations for hiring money managers to manage their plan funds. Often these investment consultants have their own investment management firms, or have business connections with investment managers, creating a conflict of interest. I find strong evidence that consultants bias hiring decisions towards their connected managers: a direct connection to a consultant increases a manager's odds of being hired by 637%, while an indirect connection increases the odds by 301%. The hiring decisions are less sensitive to past performance and management fee when connected managers are hired. I further find that, post hiring, the funds managed by the connected managers underperform significantly relative to the funds managed by the unconnected managers. The second essay (Titled: Do Funds Mask Distribution Fees as Brokerage Commissions?) studies conflicts of interest faced by investment advisers. Investment advisers may have an informal agreement with their selling brokers under which selling brokers put more effort to sell the fund and in return the advisor rewards the selling broker by directing its portfolio transactions to them and allows the broker to charge higher commissions. In 2004, although SEC prohibited the use of brokerage commissions to finance fund distribution, the regulation does not seem to be effective in resolving the agency conflict here. Focusing on the period from 2005 to 2014, I find strong evidence of investment advisers allying with their selling brokers. Funds pay 25bp higher brokerage commissions to their trading brokers who are also fund distributors, thus paying them more than double the commissions paid on average to non-selling brokers. Most investment advisors also have their own brokerage business. I find that funds pay 15bp higher brokerage commissions to their affiliated brokers when they use them for portfolio transactions. Hence on average, the affiliated brokers are paid 1.5 times the brokerage commission paid to non-affiliated brokers.

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Connections and Conflicts of Interest: Investment Consultants' Recommendations

Shikha Jaiswal[1]

Abstract

Plan sponsors rely on investment consultants' recommendations for hiring money managers to manage their plan funds. Often these investment consultants have their own investment management firms, or have business connections with investment managers, creating a conflict of interest. I find strong evidence that consultants bias hiring decisions towards their connected managers: a direct connection to a consultant increases a manager's odds of being hired by 637%, while an indirect connection increases the odds by 301%. The hiring decisions are less sensitive to past performance and management fee when connected managers are hired. I further find that, post hiring, the funds managed by the connected managers underperform significantly relative to the funds managed by the unconnected managers.

JEL classification: G11, G23

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1. Introduction

In the recent past, there has been a significant increase in the number of plan sponsors and total assets under these plans. These plans include pension plans, endowments, foundations, etc. At the end of 2015, the assets held by US pension plans alone totaled $24 trillion.[1] Past studies have suggested that these plans perform poorly, and various reasons have been offered to explain the underperformance of these funds (Lakonishok, Shleifer, Thaler, and Vishny [1991], Lakonishok, Shleifer, Vishny, Hart, and Perry [1992], Stewart, Neumann, Knittel, and Heisler [2009]). Lakonishok, Shleifer, Thaler, and Vishny [1991] find evidence of window dressing by pension fund managers. Lakonishok, Shleifer, Vishny, Hart, and Perry [1992] find underperformance of pension plans and attribute it to agency issues. Stewart, Neumann, Knittel, and Heisler [2009] find underperformance in the products to which sponsors allocate money. Prior researchers have focused on manager skill and agency issues to explain plan underperformance. To the best of my knowledge, prior researchers have not studied agency issues in manager selection which might affect plan performance. In this paper, I study whether investment consultants, hired by plan sponsors for impartial advice on selection of managers for these plans, bias hiring decisions to favor their connected managers and whether this leads to underperformance in these plans.[2]

There has been limited research on the manager selection process. Parwada and Faff [2005] find that managers are selected from the top-quartile 5-year performance group and that the fees charged by managers negatively affect hiring probability. Consistent with these results, Goyal and Wahal [2008] also find that plan sponsors chase returns. Managers are hired after good performance, but they do not perform well post hiring. The authors also study termination decisions and do not find significant difference in returns for the new

[1] Investment Company Institute 2016 factbook

[2] I use the term "manager" to denote investment management firm in this paper.

manager compared to the fired manager, had the plans stayed with the fired manager. My paper adds a new dimension to this area of research: bias in the selection process of managers due to connections.

The process of investment begins with the formation of an investment committee that has the responsibility to invest the plan money efficiently and profitably. The committee decides on the objectives of the plan and the investment strategy to be followed and hires investment managers to manage the fund in accordance with the objectives of the plan. Most committees rely on the expertise of investment consultants not only in forming the objectives and investment strategies of the plan, but also in hiring investment managers to pursue those strategies. Around 83% of public plans and 66% of corporate plans rely on consultants when hiring plan managers.[3] Plan sponsors employ consultants for their expertise in the investment industry as well as to avoid being blamed in case the plan underperforms in the future. Goyal and Wahal [2008] find that headline risk sensitive sponsors are more likely to use consultants.

These investment consultants may be standalone consultants or may have other lines of business such as money management, brokerage and so on. According to the SEC [2005] report, many consultants serve on both sides of the business. For example, an investment consultant who serves a plan sponsor may also have a brokerage business which deals with money managers. Many investment consultants have affiliated broker dealers and hence earn brokerage commissions from money managers. These affiliations and business connections with money managers create a conflict of interest for consultants. Further, the SEC found that consultants rarely disclose their affiliations to their client plan sponsors. Although consultants have a fiduciary responsibility towards their clients and are supposed to work in their clients' best interests, their business connections and affiliations may bias their recommendations to the clients. Instead of recommending the best manager, the consultant

[3]Based on iiSearches data for period 1995-2014.

may have a strong incentive to recommend managers with whom they have a strong business connection.

This paper focuses on consultant recommendations if the consultants themselves or their parent companies have other lines of business that can create a potential conflict of interest. I study manager hiring decisions to investigate whether these decisions were biased in favor of managers who had business connections with the focal consultant. I also study the impact of hiring connected managers on fund performance and disentangle two potential reasons why consultants may bias hiring decisions: (a) having better information about connected managers or (b) favoring connected managers to keep their ongoing business relationships.

With the multitude of services provided by consultant companies to managers, there could be many sources of business ties between a consultant and a manger. I test my hypothesis with two broad connection types: direct connection and indirect connection.[4] I consider a consultant and a manager to be directly connected if they have the same parent company. I consider two types of indirect connections: sub-advisor connection and broker connection.[5] If a consultant has an affiliated manager who is hired by an outside manager as a sub-advisor, then the consultant and the outside manager have a sub-advisor connection. If a consultant has an affiliated brokerage firm that receives brokerage commissions from an outside manager, then the consultant and the outside manager have broker connection. We do not observe the actual recommendations by the consultants to their client plan sponsors, but we do observe the final hiring decisions. Assuming that the hiring decisions are strongly influenced by consultant recommendations, I use hiring decisions as a proxy for consultant recommendations to study whether connections between consultants and managers bias consultant recommendations.

I use the random utility model (by McFadden [1974]) to estimate the influence of business

[4]Detailed explanation of these connection measures is provided in the next section under Business Connection Measures heading.

[5]Figure 1 explains the three connection measures graphically.

connections on hiring decisions when a plan sponsor chooses one manager from multiple candidate choices. I find that business connections strongly positively influence hiring decisions. Further, the probability of being hired is either insensitive or less sensitive to the managers' past performance and to the fee charged by these managers when the managers connected to consultants are hired, relative to the probability of being hired when the unconnected managers are hired. To mitigate the agency issues, the SEC implemented Chief Compliance Officer rule in Oct. 2004 that requires advisors to designate a Chief Compliance Officer and to adopt and maintain policies and procedures that assure compliance to Advisers Act.[6] The Advisers Act requires advisors to disclose all material facts to their clients and provide disinterested advice. Hence, I check whether the SECs Chief Compliance Officer rule was able to deter the consultants from favoring their connected managers. I find that business connections have a strong influence on hiring decisions even during the period 2005-2014. Consultants continue to favor connected managers despite SEC's efforts.

After establishing the influence of connections on hiring decisions, I test the performance of these connected hires relative to the unconnected hires. Connected hires may be beneficial to the plan if the hiring was based on private information about managers' skills, while they are detrimental to the plan if the hiring was based on reciprocity. If the consultants bias hiring decisions to favor their connected managers because they have private information about managers' skills, then the connected hires should outperform the unconnected hires. However, if the influence of connections on hiring decisions is based on reciprocity, then the connected hires should underperform relative to the unconnected hires. I find significant underperformance of connected hirings relative to unconnected hirings, suggesting that consultants compromise on plan performance to favor their connected managers.

Jenkinson, Jones, and Martinez [2015] show that consultant recommendations are mostly

[6]Rule 206(4)-7 under the Advisers Act: "Investment adviser means any person who, for compensation, engages in the business of advising others, either directly or through publications or writings, as to the value of securities or as to the advisability of investing in, purchasing, or selling securities, or who, for compensation and as part of a regular business, issues or promulgates analyses or reports concerning securities."

driven by soft factors and do attract flows for managers, but they fail to find outperformance of the recommended managers compared to the others. My paper provides an explanation as to why the consultant-recommended managers may not outperform the non-recommended managers. I provide evidence that consultant recommendations are biased towards favoring their connected managers. I show that relying solely on investment consultants may not be beneficial since the investment consultants may not have the best interest of investors in mind while making their recommendations for managers.

Since most of the plan sponsors rely on investment consultants, my paper also provides a possible alternative explanation for the poor performance of plans documented by prior studies such as Lakonishok, Shleifer, Vishny, Hart, and Perry [1992] and Stewart, Neumann, Knittel, and Heisler [2009].

My paper also adds to the literature on connections. Prior researchers studying connections find different results for the influence of connections on decisions in different contexts. Many studies find that connections affect decisions. Reuter [2006] studies underwriter-fund ties and finds evidence of preferential IPO allocations. Cohen and Schmidt [2009] find evidence of overweighting 401(k) client firms stocks. Kuhnen [2009] studies sub-advisor and director appointments and finds evidence of preferential hiring based on the intensity of past interactions. Cohen, Frazzini, and Malloy [2008] study social connections and find evidence of information transfer. In contrast to these studies, Davis and Kim [2007] do not find evidence of the dependence of proxy votings on ties when they study the effect of ties between corporations and funds that manage their corporate benefit plans on proxy voting by the funds. I show that connections strongly positively influence hiring decisions and also reduce the sensitivity of hiring probability to important attributes like past performance and fee.

The remainder of this paper is organized as follows: Section 2 explains the connection measures and methodology used to test the bias in hiring decisions. Section 3 details the data sources used and the sample construction. Section 4 discusses the results for bias in

hiring decisions and the impact of connected hiring on post hiring plan performance. Section 5 provides robustness tests and section 6 concludes the paper.

2. Connection Measures and Methodology

2.1. Business Connection Measures

Consultants may be connected to investment managers either directly as affiliates or indirectly through their other lines of business, such as brokerage. Although there could be many sources of business ties between a consultant and a manager, I use three types of connections to test my hypotheses: direct connection, sub-advisor connection and broker connection.[7] Sub-advisor and broker connections, are indirect connections.

An investment consultant may also have a money management firm as its subsidiary or it may be a part of a bigger organization that also has a money management business. For example, Graystone Consulting is a part of Morgan Stanley. Thus, Graystone Consulting and Morgan Stanley Investment Management are connected. I call this type of connection when the consultant and manager belong to the same organization a direct connection. I hypothesize that an investment consultant would recommend a directly connected manager more favorably than other managers, and hence the directly connected manager would have a higher chance of being hired. For example, when Graystone Consulting was working as a consultant to the Boyce Thompson Institute for their plant research plan, it hired Morgan Stanley Investment Management for their Private Equity mandate.

Sub-advisory contracts are profitable for investment managers as they increase the managers' total asset under management and the fee earned, and hence investment managers compete for sub-advisory contracts. An investment manager who receives a sub-advisory

[7]Figure 1 explains the three measures graphically.

contract from another manager might want to return the favor to keep the ongoing relationship. Similar to the direct connection, the second type of connection between a consultant and a manager comes into effect when the consultant or its parent company also have a money management firm. I call this money management firm the consultant's affiliate manager. When an investment consultant *IC*'s affiliated money management firm *AM* is a sub-advisor to funds managed by an outside money management firm *OM*, I call the consultant *IC* and outside manager *OM* to be indirectly sub-advisor connected. A consultant connected to an investment manager through a sub-advisory contract may try to return the favor to the manager by helping the manager get hired for a mandate. Consultant *IC* is sub-advisor connected to a manager *OM* if *IC*'s affiliate manager *AM* is sub-advisor to *OM*'s mutual funds within six months of the mandate search date.

When the consultant or its parent company has a brokerage firm and that brokerage firm earns a commission from an investment manager, the consultant has an incentive to help the manager win a mandate to keep the brokerage relationship ongoing. I recognize this as a second type of indirect connection between the consultant and the manager and name this connection as broker connected. Consultant *IC* is broker connected to a manager *OM* if *IC*'s affiliated broker firm *AB* is one of the highest paid brokers for *OM*'s mutual funds within a six month period of the mandate search date.

2.2. Manager Hiring Decisions

Plan sponsors have investment committees chaired by a Chief Investment Officer who is responsible for investing the plan funds. The investment committee drafts an investment policy for the plan that describes the objectives of the plan sponsor, the asset classes in which it plans to invest and the amount of money to be invested in each asset category. Once the plan policy is created, the plan sponsor places a request for proposals (RFPs) for hiring investment managers. These events of hiring investment managers are usually called

searches. The investment committee shortlists the managers based on their past performance and other attributes. They interview the shortlisted managers and make the final decision on the manger to be hired for the plan. Most of the plan sponsors follow the advice of investment consultants not only in drafting the investment policy but also in the manager hiring process.

Manager hiring decisions involve choosing a manger from a pool of candidate managers based on their performance and other attributes. Hence, I use the random utility model in McFadden [1974] to model the hiring decisions. Specifically, if the plan sponsor i has M_i managers to choose from, the utility that the plan sponsor obtains from choosing manager j is given by

$$y_{ij}^{*} = \alpha + x_{ij}^{'}\beta + \epsilon_{ij} \tag{1}$$

where x_{ij} are the attributes that affect sponsors' utility. y_i is the manager choice that maximizes the sponsors' utility. The probability of choosing manager j is given by

$$P(y_i = j \mid x) = p_{ij} = \frac{exp(x_{ij}^{'}\beta)}{\sum_{q=0}^{M} exp(x_{ij}^{'}\beta)} \tag{2}$$

To estimate the choice model, I match each hiring decision with all the managers the plan sponsor could have hired. For each hiring decision, the list of potential choices includes all the managers that offer a product in the same asset style as the mandate and have at least 15 months of returns during the previous 3 years.[8] Independent variables include manager related variables and consultant manager connection variables.

[8]I require at least 15 non-missing monthly returns for pre-hiring 3-year alpha estimation.

3. Data

For testing my hypotheses, I require information on (a) mandates, (b) the consultant involved in the hiring process, (c) the set of potential candidate managers and their performance and other attributes, (d) measures of connection between consultant involved and candidate managers, and (e) the manager hired for the mandate and their post hiring performance. Since there is no single database that tracks all this information, I use data from multiple sources. Some of these sources are standard while some require manual data collection. I describe these different data sources, collection process, and sample construction below. In this paper I focus on the US active equity mandates.

3.1. Manager Hiring and Consultant data

I obtain mandate and hiring information from iiSearches database for mandates between 1995 to 2014. iiSearches tracks the RFPs for mandates and maintains a database that contains most of the mandates since 1995 by different types of plan sponsors such as pension plans, endowments etc. This database contains information about the plan sponsor, fund size, asset category for the mandate, size of the mandate, consultant used in the hiring process, and the manager hired. It contains the name, address, phone number, and website for both the consultants involved as well as the managers hired. I use this information to match across different data sources. This database has 28,166 completed hiring decisions between 1995 to 2014, out of which 24,641 hiring decisions involved consultants. Of these, 5,808 are for actively managed US equity mandates that involved an investment consultant in the manager search process.

3.2. Connections data

Identifying connections between consultants and managers requires information on the organizational structures of their firms. Data on organization structure comes from multiple sources. For each consultant and manager in the iiSearches database, I hand collected organization structures from Factset and augmented it with other sources: Form ADV from the SEC and broker reports from the Financial Industry Regulatory Authority(FINRA). Investment consultants and managers are required to file form ADV with the SEC. This form contains information on the firm's direct and indirect owners as well as the filer's SEC number, address, phone number, and website. The latest form ADVs filed by consultants and managers are available on the SEC's Investment Adviser Public Disclosure (IAPD) website. I downloaded these form ADVs for all the consultants and managers from the IAPD and parsed them to collect their ownership information and also their address, phone number, and website. FINRA provides broker reports that also contain the direct and indirect owners of the broker and also the broker's address, phone number, and website. The information in these reports comes from the filings by brokers and their registration process with FINRA. I downloaded these broker reports from FINRA's BrokerCheck website and parsed them to collect brokers' ownership information along with their address, phone number, and website. I combine the ownership and identifying information (name, address, phone number, and website) from the three sources to create final organizational structure data. I use this organizational structure data to identify directly connected consultant manager pairs. A consultant is directly connected to a manager if both belong to the same organization. I combine the organizational structure data with sub-advisory and brokerage data, described below, to identify sub-advisor and broker connections between consultants and managers. I use name, address, phone number, and website to match this ownership data with the data from other sources.

Mutual funds are required to file form NSAR with the SEC on semi-annual basis. These

form NSARs, along with other fund related information, also contain information on sub-advisors for the fund and list the ten brokers who received the highest brokerage commissions from the fund during the filing period. The SEC's electronic disclosure system, EDGAR, provides access to electronic filings by firms and funds. I downloaded form NSARs for all of the funds from EDGAR and parsed them to collect sub-advisor and brokerage data. These forms contain fund advisor information, the sub-advisor's name and SEC number, names and IRS numbers for the ten highest paid brokers for the fund, and the brokerage commission paid to each. I combine this data with the organization structure data created above to identify sub-advisor and broker connections.

All the ownership data sources that I used - Factset, Form ADV, and FINRA's broker reports - provide only the latest ownership information. Hence, my organizational structure data does not account for mergers and acquisitions. Using the latest organizational structure may lead to misclassification of connections in cases where a consultant and a manager may appear to be connected now but were probably not connected at the time of hiring or vice versa. Such mis-classifications of connection may only lead to weaker effects of connection in the data. Hence, the actual impact of connections on the hiring decisions may be higher than my data indicates.

3.3. Manager data

I obtain manager related information from eVestment. The eVestment database provides firm and product level information for investment managers and is widely used by investment consultants and plan sponsors for screening managers. For each product offered by a manager, the eVestment database provides firm and product inception date, monthly composite returns, monthly asset under management, etc. It contains data on 23,405 products offered by 2,958 investment management firms. This database does not provide information on the historical fee for the products, but it does provide the latest pro forma fee for each product

for different levels of investment. Jenkinson, Jones, and Martinez [2015] and Busse, Goyal, and Wahal [2010] find very little time series variation in fee using the Informa Investment Solutions database, which provides historical fee. This suggests that the latest product fee can be used as a proxy for the historical fee. These data are self-reported by managers. The database also contains manager address, phone number, and website. I use manager name, address, phone number, and website to match across different data sources. Actual returns earned by plans are not available, as they are proprietary. Hence, as a proxy for the post hiring returns earned by the managers for the mandate they were hired to manage, I use managers' composite returns for the product in the same asset class, size capitalization, and style as the mandate. These composite returns should be very close to the actual plan returns earned by the manager for the mandate and would differ only when the managers were restricted to invest in certain stocks by mandates.

3.4. Sample Construction

For each mandate, we only observe the final hiring decision, and not the plan sponsors' consideration set. To the best of my knowledge, there is no database that tracks the manager hiring process and captures the list of considered or recommended managers. Hence, to model the hiring decision, I assume that all the managers that have a product in the same asset style as the mandate during the hiring period are in the consideration set for the plan sponsor.[9] Hence, in the final data for estimating choice model for hiring decisions, each hiring decision is matched to a list of potential choices, that includes all the managers who offer a product in the same asset style as the mandate and have at least 15 months of returns during the previous 3 years. The hired dummy is the dependent variable for the hiring decision model. It is set to 1 for the manager that was hired and 0 for all the other potential choices.

Some mandates state a very broad asset category, such as US equity, while some are more

[9]By same asset style, I mean same asset class, capitalization, and style.

specific, such as US small cap equity. When the asset class is broader than the manager product classes, I use the sum of assets under management and equal weighted average of returns and fee.[10] For example, if the mandate is US equity and manager returns are available for US equity small cap, US equity mid cap, and US equity large cap products, I use the sum of assets under management and equal weighted average of returns and fees.

Organizational structure data constructed from Factset, form ADV, and FINRA's broker reports helps identify direct connections. I combine the organizational structure data with sub-advisory and brokerage data to identify sub-advisor and broker connections. A consultant manager pair is directly connected if they belong to the same organization. The direct connection dummy is set to 1 for the managers directly connected to the consultant involved in the hiring process and 0 for others. The sub-advisor connection dummy is set to 1 if a consultant's affiliate manager served as a sub-advisor to the candidate manager's funds within six months before or after the mandate date, or else it is set to 0. The broker connection dummy is set to 1 if the consultant's affiliate brokerage firm was one of the highest paid brokers for the candidate manager's funds within six months before or after the mandate date, or else it is set to 0. For the main tests, I use two connection dummies: direct connection and indirect connection. Indirect connection combines sub-advisor connection and broker connection. It equals 1 when either the sub-advisor connection or the broker connection is 1, or else it equals 0. Table 1 provides a description of all the variables used.

3.5. Descriptive Statistics

Table 2 provides summary statistics for the data used. Panel A provides the summary of completed hiring decisions present in the iiSearches database. It contains 28,166 hiring decisions completed between 1995 to 2014. 87% of these hirings involved consultants. 7,684 hiring decisions are for US equity mandates. Panel B provides the summary statistics for plan

[10] I obtain similar results if I use value weighting instead of equal weighting.

sponsors. Overall, 68% of the plan sponsors took advice from investment consultants when selecting the investment management firm for their mandates. 83% public plans while 66% corporate plans involved investment consultants. Panel C provides the summary statistics for US equity active management mandates that involved investment consultants in the manager selection process. 5,808 mandates are for domestic equity active management. The average fund size for decisions involving consultants is $3.17 billion while the median size is $297 million. Panel D provides summary statistics for the main data used for most of the tests. This is the final data obtained after combining mandates data with manager and connections data. Out of 5,808 US equity mandates that involved consultants, I was able to find the hired manager in the eVestment database for 4,103 mandates. These 4,103 mandates account for 79% of the total mandate asset in the sample and hence they should be representative of the population. Hired managers tend to have more assets under management and have higher pre-hiring alpha compared to the ones not hired. On average, each hiring decision has 201 managers to choose from. For 15.5% of the mandates, a manager connected to the consultant was hired, with 3% being directly connected and 12% being indirectly connected. In 4% of the decisions, a sub-advisor connected manger was hired, while in 8% of the decisions the manager had broker connection with the consultant. Before SEC's Chief Compliance Officer rule (i.e., in the period 1995 to 2004), 18% of the hired managers were connected to the consultant. After the Chief Compliance Officer rule, the connected hiring rate did reduce to 13.4%.

4. Results

4.1. Manager Hiring Decision

I model the hiring decision by estimating a conditional logit model with a hired dummy as the dependent variable and manager attributes as independent variables. I start with

a univariate analysis to understand how different manager attributes affect hiring decision and if the effect of these attributes on hiring decision differs between the decisions where a connected manager was hired compared to the decisions where an unconnected manager was hired. Results are presented in Table **??**. First column presents the results for mandates where an unconnected manager was hired. Second column presents results for mandates where directly connected manager was hired. Third column presents results for mandates where indirectly connected manager was hired. Each row represents the result from a conditional logit with a hired dummy as the dependent variable and the manager attribute in the row as independent variable. As expected hiring decisions are positively related to past performance, firm size (asset under management), their expertise in the mandate asset category (percentage of asset under management in the mandate asset category) while the decision is negatively related to the management fees. Hiring decisions are either insensitive or less sensitive to past performance and firm's expertise in the mandate asset category when connected managers are hired.

Next, I model the hiring decision by estimating a conditional logit model with a hired dummy as the dependent variable and manager attributes and consultant-manager connection measures as independent variables. I test five different model specifications.[11] Refer to Table 3 for the results.

Model 1 is the base model for estimating the probability of a manager being hired. Independent variables include manager attributes: last three year four-factor alpha, fee, one year return standard deviation, log of firm asset under management (AUM), percentage of AUM in the mandate asset category, and firm age.[12] In the later specifications, I add my variables of interest (connection variables). As we would expect, the probability of being hired is positively related to past performance and negatively related to manager fee. High

[11] In all the specifications, standard errors are corrected for clustering by plan sponsor

[12] I thank Ken French for providing the factors on his website. Similar results using Fama French 3 factor risk adjustment.

volatility of past returns also reduces the probability of being hired. Larger firms have a higher chance of winning the mandate, and having a greater fraction of the AUM in the mandate asset category also increases the probability of being hired. Also, younger firms have higher chance of being hired.

In model 2, I add a connection dummy which equals 1 if the consultant and candidate manager are connected either directly or indirectly, or else it is 0. This connection dummy is strongly positively related to the probability of being hired, suggesting that being connected to the consultant significantly increases the chances of being hired. Having a connection to the consultant increases a managers' odds of being hired by 375%.

In model 3, I test if the sensitivity of hiring decision to past performance and fee differs for the mandates where a connected manager is hired. I add interactions between the connection dummy and alpha, and between connection dummy and fee. The interaction term between the connection dummy and alpha is negative and significant, suggesting that the hiring decisions are less sensitive to managers' past performance when a manager is connected to the consultant.

In model 4, I split the connection dummy into two dummies, a direct connection dummy and an indirect connection dummy, to separately identify the effects of direct and indirect consultant-manager connections on hiring decisions. As we observe, both the connection dummies are positive and significant. A direct (indirect) connection to the consultant increases a manager's odds of being hired by 637% (301%).

In model 5, I add interaction terms between connection dummies (both direct and indirect) and alpha and fee. Results suggest that the hiring decision is less sensitive to past performance when a manager is either directly or indirectly connected to the consultant. We further observe that the sensitivity is lower for direct connections compared to indirect connections.

To investigate the differences in the sensitivity of hiring decisions to past performance and fee when a connected manager was hired compared to when an unconnected manager was hired, I test the base model 1 separately on the decisions when connected managers were hired. The results are provided in Table 4. The first column provides the sensitivities for decisions when unconnected managers were hired. As we observed earlier, the probability of being hired is strongly positively related to alpha and negatively related to fee. The second column provides results for decisions when directly connected managers were hired. Here, we observe that both alpha and fee do not have any significant impact on the probability of being hired, suggesting that consultants do not consider past performance and fee when recommending sponsors to hire directly connected managers. The third column provides the sensitivities for decisions where indirectly connected managers were hired. The hiring probability is less sensitive to alpha and fee compared to the unconnected hiring decisions. Hence, when indirectly connected managers are hired, fee and past performance are not given as much importance as they are when hiring unconnected managers.

Hence, we observe that connections strongly positively influence hiring decisions and that when connected managers are hired, hiring decisions are either insensitive or less sensitive to past performance and fee.

4.2. Post Hiring Performance

After establishing the bias in hiring decisions by consultants to favor connected managers, I test for the performance of these connected managers post-hiring. Connected hires may be beneficial for the plan if they are information driven. If the consultants bias hiring decisions in favor of their connected managers because they have private information about their skills, the connected hires should outperform the unconnected hires. However, if the influence of connections on hiring decisions is due to reciprocity, hiring connected managers may be detrimental to the plan because connected hires may underperform relative to unconnected

hires.

To compare the performance of connected hires to unconnected hires, I regress post hiring four-factor alpha on connection dummies and other independent variables.[13] The results are provided in Table 5.[14] Model 1 is the base model. Post-hiring performance is positively related to managers' AUM, suggesting economies of scale. It is also positively related to manager expertise in the mandate asset class, measured by the percentage of manager AUM in the mandate asset class. In Model 2, I add the connection dummy (which includes both direct and indirect connections) to test the impact of connection on post hiring performance. The connection dummy is significantly negatively related to performance, suggesting connected hires underperform relative to unconnected hires. In Model 3, I split the connection dummy into two separate dummies for direct and indirect connections. We observe that post-hiring, indirectly connected managers underperform relative to unconnected managers. Indirectly connected hires earn 0.57% lower alpha compared to unconnected hires. However, hiring directly connected managers does not lead to underperformance, possibly because the consultants hired their direct connections only when they were at least as good as the unconnected options. They may do so to avoid raising questions of favoring their own managers in case of future underperformance by the connected hires and thus risking their credibility. Consultants' direct connections can be easily traced and there is also a good chance that the sponsor might be aware of these connections. The underperformance of indirectly connected hires suggest that consultants bias their decisions to favor connected managers to the keep business relationships ongoing.

Table 6 provides the results for alternative performance measures - 3 year post hiring cumulative excess return and information ratios. Connected managers earn 1.71% lower cumulative excess return compared to the unconnected hires. They also have significantly

[13]Post-hiring alpha is estimated using monthly returns over three years period after hiring.

[14]All the model specifications control for year fixed effects and standard errors are corrected for clustering in observations when a manager is hired for a madate in the same asset class. I get the same results when standard errors are corrected for clustering in observations for the same manager.

lower information compared to unconnected hires. These results suggest that the bias in hiring decisions are more reciprocity driven than information driven.

4.3. The Effect of Chief Compliance Rule

The SEC implemented Chief Compliance Officer rule in Oct 2004 that requires advisors to designate a Chief Compliance Officer and to adopt and maintain policies and procedures that assure compliance to the Advisers Act. The Advisers Act requires advisors to disclose all material facts to their clients and provide disinterested advice. I verify if biases in hiring decisions still exist after 2004. I redo the tests in Tables 3, 4, 5, and 6 for the sample period 2005 to 2014. The results are provided in Tables 7, 8, 9, and 10. The results are similar to what I obtained for the full sample in Tables 3, 4, 5, and 6. Again, the results suggest that connections strongly positively influence hiring decisions and that when a connected manager is hired, the hiring decision is either insensitive or less sensitive to past performance and fee. Also, indirectly connected hires significantly underperform relative to unconnected hires, with the four-factor alpha being lower by 0.83%. Hence, the manager hiring decisions are still biased and detrimental for plans even after the Chief Compliance Officer rule.

4.4. Hiring Decision and Post Hiring Performance: By Indirect Connection Types

A direct connection between a consultant and a manager is easier to identify compared to an indirect connection, and hence it likely deters consultants from recommending directly connected managers whom they do not expect to perform well in the future. In this sub-section, I separate the indirect connections into sub-advisor and broker connections to see how these different types of connections impact hiring decisions. The results are presented in Table 11. In Model 2, all three connection dummies are positive and strongly significant.

While a direct or sub-advisor connection to the consultant increases a manager's odds of being hired by 629%, having a broker connection to the consultant increases the odds by 182%. Direct and sub-advisor connections have a much stronger effect than broker connections.

In model 3, I add the interaction terms between connection dummies (direct, sub-advisor and broker) and alpha and fee. Results suggest that for all the three connection types the hiring decision is less sensitive to past performance when a manager has business connections with the consultant involved, the sensitivity being lowest for direct connections. Also, for broker connected managers, the hiring decision is insensitive to the fee.

Table 12 provides the results for post-hiring performance. I regress post hiring four-factor alpha on connection dummies and other independent variables. Connected hires underperform significantly and most of this underperformance comes from the sub-advisor connected hires. Broker connected hires also underperform, but the performance difference relative to unconnected hires is insignificant. Sub-advisor connected hires earn 0.84% lower alpha compared to the unconnected hires.

5. Robustness Test

5.1. Hiring Decision

For my main test, to estimate the bias in hiring decisions caused by consultant-manager connections, I allow plan sponsors to choose from all the managers that have a product in the mandate asset category and have at least 15 months of non-missing returns during the 3 year period prior to the hire. This results in a large number of potential choices for the sponsor, sometimes as many as 2000 managers. This likely includes some managers who were not considered for the position, thereby increasing the total number of observations and reducing standard errors. As a robustness test, I restrict the number of managers that

the plan sponsor chooses from, to 30. I create propensity scores for all the managers in the original dataset based on the base model 1 in Table 3. For each hiring decision, I pick up to 30 managers with a propensity score closest to the hired manager. With this new data, I redo the tests in Tables 3 and 4. The results are provided in Tables 13 and 14. As we can see, these results are very similar to Tables 3 and 4. A connection to the consultant considerably increases a manager's probability of being hired. Connections also reduce the sensitivity of hiring decision to past performance and fee.

5.2. Post Hiring Performance

To ensure that the underperformance for connected hires is not driven by consultant specific attributes, for each connected hiring I consider the unconnected hiring by same consultant within a 30-day period and compare the average performance measure for connected hires with unconnected hires. Results presented in table 15 suggest that the connected hirings underperform relative to unconnected hirings by same consultant.

6. Conclusion

Plan sponsors have the responsibility to invest plan funds efficiently. They draft fund objectives and investment strategy and hire investment managers to manage these funds. Most of the plans rely on investment consultants' expertise while selecting the manager to manage plan funds. Although these investment consultants are expected to work in the best interest of the plan, helping to devise an efficient investment strategy, and recommending the best manager to execute that strategy, the consultants may have other hidden interests. Often, investment consultants have their own investment management firms, or have business connections with other investment managers, creating a conflict of interest. Such consultants who are connected to managers have a strong incentive to bias the hiring decision to favor

their related manager. I study the hiring decisions from 1995-2014 and find strong positive influence of connections on hiring decisions. A direct connection to the consultant increases the odds of a manager being hired by more than 600%. Also, when connected managers are hired, the hiring decisions are either insensitive or less sensitive to past performance and fee. Post-hiring, I also find that indirectly connected hires underperform compared to unconnected hires, with a 0.83% lower four-factor alpha annually, suggesting that these biases in hiring decisions are reciprocity driven and detrimental to the plan. Even after SEC's Chief Compliance Officer ruling in 2004, although the percentage of connected hires reduced from 18% to 13%, I still find strong results that consultants favor connected managers, compromising fund performance and suggesting potential conflicts of interest for consultants.

Do Funds Mask Distribution Fees as Brokerage Commissions?

Shikha Jaiswal[15]

Abstract

SEC's prohibition of the use of brokerage commissions to finance fund distribution does not seem to be effective in resolving the conflicts of interest of investment advisors. Focusing on the period after the prohibition, I find strong evidence of investment advisers allying with their selling brokers: selling brokers exert greater effort to sell the fund and, in return, advisors reward these brokers by directing funds' portfolio transactions to them and by paying them higher brokerage commissions. Funds pay 25 bp higher brokerage commissions to their trading brokers who are also fund distributors, thus rewarding them with more than double the commissions paid on average to non-selling brokers. When a selling broker is also used for trade execution, fund flows are insensitive to low performance, but the flows are sensitive for funds that do not use selling brokers for trade execution. I find that selling brokers charge lower 12b-1 fees for these funds. I further find that if investment advisors use their affiliated brokers for portfolio transactions, funds pay 15 bp higher brokerage commissions, which is an increase of 1.5 times over the average brokerage commission paid to non-affiliated brokers.

JEL classification: G11, G23

Keywords: Investment advisors; Brokers; Brokerage Commissions; Conflict of Interest; Disclosure; Connections

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7. Introduction

Every year, mutual funds pay enormous amount of money as brokerage commissions. In 2013 alone, domestic equity funds paid around $6.3 billion in brokerage commissions.[16] Table 16 provides estimates of brokerage commissions paid by US equity and non US equity mutual funds each year from 1996 to 2013. Although mutual funds have been paying billions in brokerage commissions every year, there is very little research to investigate how these commissions are structured and whether mutual fund investors are getting value commensurate with the amount paid. Livingston and O'Neal [1996] use brokerage commission data for 240 mutual funds and find that the average brokerage commissions paid by funds is higher than the average execution-only commissions paid by large institutional traders. They suggest that fund brokerage commissions include soft dollar payments for research. Goldstein, Irvine, Kandel, and Wiener [2009] use a proprietary dataset of institutional trades and find that past commissions predict future commissions better than trade characteristics. They suggest that the execution cost is not negotiated trade by trade and that the commissions paid are bundled payments for trade execution and other services. They conjecture that brokers and their institutional clients enter into long-term agreements about the services to be provided by the broker and the total payment for those services. These payments are made by sending an amount of trade sufficient to meet the negotiated payment to the brokers.

In 1981, the SEC allowed funds to consider fund sale as a factor in broker selection, but only subject to the best execution. Funds were allowed to use their selling brokers for trade execution as long as they followed a disclosed policy about it. However, at that time, the SEC did not explicitly prohibit the use of brokerage commissions to pay for fund distribution. This changed with an amendment in 2004, which prohibited this practice. This amendment prohibits funds from compensating a broker for fund sale by directing

[16] I calculate from NSAR data that in 2013, domestic equity funds paid 0.13% total net asset (TNA) as brokerage commission. I calculate from Morningstar data that total asset invested in 2013 in US equity funds was 4.8 Trillion.

funds' brokerage transaction to the broker. The SEC still allows funds to use their selling brokers for trade execution, but only if the funds have policies approved by the board of directors in place to ensure that the fund distribution did not affect which broker was chosen for the transaction.[17]

Investors usually know about fund loads and expense ratios, but not about the brokerage commissions that the funds pay from their assets. Investors trust that their investment advisors would choose brokers who provide the best trade execution. The SEC too requires investment advisors to use brokers who provide the best execution. The SEC notes that fund brokerage is an asset of the fund and it must be used for the fund's benefit.[18] The question that I ask here is: Do investment advisors always act in the best interest of fund investors and choose the broker that provides best trade execution?

Investment advisors can use brokerage commissions to reward their selling brokers for an aggressive selling effort. However, in this situation, the investment advisors and brokers may benefit at the investor's expense. Fund investment advisors prioritize flows while brokers prioritize commissions (including distribution fee). Brokers who put more effort in selling the fund increase fund inflows, thereby benefiting the fund's advisor. If the advisor then uses the investor's money to compensate the selling brokers for their efforts, it is beneficial for both advisors and brokers - but not for investors. Having a high brokerage commission from funds provides a strong incentive for brokers to sell funds more aggressively. As suggested by Bergstresser, Chalmers, and Tufano [2009] and Christoffersen, Evans, and Musto [2013], higher efforts from selling brokers lead to higher inflows. Both studies find higher inflows for funds with higher distribution fees, where distribution fees are proxies for sales effort. Brokers could directly charge a higher distribution fee for a more aggressive selling effort, but a higher distribution fee would discourage investors from investing. An easier and an

[17]The next section provides more details on the SEC's rules regarding the use of selling brokers.

[18]"Fund brokerage is a valuable fund asset and thus should be used in the manner that most benefits the fund and its shareholders." See SEC17CFR-Part270 [2004]

indirect channel could be to use brokerage commissions since most selling brokers also have a trade execution business. Brokers can put more effort to attract more inflows, and advisors can offer the brokers trade execution for the fund, thereby allowing the brokers to charge higher than usual commissions.

Most investment advisors also have other lines of business, such as brokerage. The SEC allows mutual funds to use their affiliated brokers for trade execution as long as the broker's commission does not exceed the usual brokerage commission. However, the imprecision inherent in determining appropriate brokerage fees means that funds are able to choose their affiliated broker instead of the broker that provides best trade execution. Although 99% of the funds state that they considered the broker that provided the best trade execution, more than 20% of funds also report broker affiliation as a consideration while selecting the broker.[19]

Funds report brokerage commissions to the SEC on a semi-annual basis on form NSARs, but these commissions are aggregated for all the funds registered under same the registrant or trust. Form NSARs ask for the top ten brokers that received the highest brokerage commission from the registrant during the reporting period and the total commission paid to each of them. Even though they report the total sales and purchases for each fund during the reporting period, they do not report the amount of trade that went through each broker. Lack of information and aggregated data make it hard to check if a fund over-payed a broker.

Although data on individual transactions is not available, I use the information reported on form NSAR and additional data on broker affiliates to test if funds, on average, pay a higher brokerage commission when they use affiliated brokers or their selling brokers for trade execution. I find that funds pay around 15bp higher brokerage commission(as percentage of fund total net asset) when their affiliate broker executes trades, and they pay 25bp higher brokerage commission when their selling broker executes trades compared to the bro-

[19]The next section provides more details on the SEC's rules regarding the use of affiliated brokers.

kerage commission paid to non-affiliated and non-selling brokers. Also, funds that employ their selling broker for trade execution have a significantly lower 12b-1 fee, but the overall marketing and distribution fee does not differ significantly between the funds that use their selling brokers for trade execution and the funds that do not.[20] When the selling broker is also given the trade execution business, fund flows are insensitive to low performance i.e., flows increase with high performance but do not decrease with low performance.

These results suggest that investment advisors have an informal agreement with their selling brokers. Selling brokers sell the fund more aggressively by making it insensitive to low performance, and the fund advisors reward these brokers by giving them the fund's trade execution business and by paying them a higher brokerage commission. Surprisingly, funds have continued to pay high brokerage commissions to their selling brokers even after the SEC's prohibition on the use of brokerage commissions to finance fund distribution. The SEC's ruling that the board of directors must approve policies and procedures around the selection of selling brokers may not be effective because of the ties between investment advisors and fund directors. As shown by Kuhnen [2009], investment advisors and fund directors hire each other preferentially based on the intensity of their past relationship. This suggests that members of the board of directors, including so-called independent directors, may not actually be independent.

My paper is closely related to literature on brokerage commissions, broker sold funds, and ties and agency conflicts. In relation to brokerage commissions, Edelen, Evans, and Kadlec [2012] study the effect of commission bundling on fund returns and find that these opaque payments affect fund returns more negatively than expensed payments. Edelen, Evans, and Kadlec [2007] find evidence that fund trading costs are the primary source of diseconomies to scale. My paper provides evidence that investment advisors pay higher brokerage commissions to their affiliated brokers and also to their selling brokers. I also

[20]Marketing and distribution fee is defined as sum of 12b-1 fee and one seventh of the front-end load fee, assuming a seven years holding period for the fund.

find evidence of aggressive fund sale efforts by selling brokers when the advisors direct fund brokerage transactions to them. These two results together suggest that the fund advisors may be compensating the selling brokers through brokerage commissions.

The literature on broker-sold funds indicates that selling brokers have a conflict of interest since the brokers get paid for selling funds and, hence, have an incentive to sell those funds that pay them more, as opposed to funds which are beneficial to the investors (O'Neal [1999], Bergstresser, Chalmers, and Tufano [2009], Anagol, Cole, and Sarkar [2012] and Christoffersen, Evans, and Musto [2013]). My study additionally shows how payments from investment advisors in the form of higher brokerage commissions may bias the selling brokers' recommendations to investors.

My paper also contributes to the literature on ties, favoritism and agency conflicts. Some previous research finds evidence that ties influence important decisions, while others do not find any such evidence. Reuter [2006] studies underwriter-fund ties and finds evidence of preferential IPO allocations. Cohen and Schmidt [2009] find evidence of overweighting 401(k) client firms' stocks. Kuhnen [2009] studies subadvisor and director appointments and finds evidence of preferential hiring based on the intensity of past interactions. Cohen, Frazzini, and Malloy [2008] study social connections and find evidence of information transfer. Davis and Kim [2007] study the effect of ties between corporations and funds that manage their corporate benefit plans on proxy votings by the funds and do not find evidence that proxy votings are influenced by ties. I study the ties between investment advisors and brokers and find that funds pay their affiliated brokers 1.5 times and their selling brokers twice the brokerage commission paid on average to non-affiliated and non-selling brokers. Selling brokers, in return, seem to sell these funds more aggressively. Funds lose 15bp to 25bp per year in these commissions.

The remainder of this paper is organized as follows: Section 2 provides information on related the SEC Regulations. Section 3 details the data sources used and the sample

construction. Section 4 discusses the results. Section 5 provides robustness tests and Section 6 concludes the paper.

8. The SEC Regulations

8.1. The Use of Affiliated Broker for Portfolio Transactions

Section 17 of the Investment Company Act 1940 allows investment advisors to use their affiliated brokers as long as the commission does not exceed the usual brokerage commission charged, or 2% of the sale price if the sale was effected on secondary distribution, or 1% of the purchase or sale price otherwise.[21]

8.2. The Use of Selling Broker for Portfolio Transactions

Until 1975, brokerage commission rates were fixed. Although brokers received discounts for high trade volumes, they could not pass on this discount to funds. Since funds could not negotiate for cheaper commissions, they gave the trade execution business to their selling brokers to compensate for the sale effort. This practice led to the beginning of directed brokerage: even though the selling broker does not execute the trade, the fund could direct the executing broker to share the brokerage commission with the selling broker. Until 1980, Section 12(b) prohibited the use of fund assets to pay for fund distribution. However, in

[21]The relevant section of the Act is as follows: "Nothing contained in this subsection shall be deemed to preclude any affiliated person from acting as manager of any underwriting syndicate or other group in which such registered or controlled company is a participant and receiving compensation therefor. It shall be unlawful for any affiliated person of a registered investment company, or any affiliated person of such person acting as broker, in connection with the sale of securities to or by such registered company or any controlled company thereof, to receive from any source a commission, fee, or other remuneration for effecting such transaction which exceeds (A) the usual and customary brokers commission if the sale is effected on a securities exchange, or (B) 2 per centum of the sales price if the sale is effected in connection with a secondary distribution of such securities, or (C) 1 per centum of the purchase or sale price of such securities if the sale is otherwise effected unless the Commission shall, by rules and regulations or order in the public interest and consistent with the protection of investors, permit a larger commission."

1980, the SEC adopted Rule 12b-1, which created an exemption under Section 12(b) that allowed funds to pay for their sale if the board of directors approves.

In 1981, the SEC further noted that it was not inappropriate for investment advisors to promote the sale of their fund through placement of brokerage without incurring any additional expense. Hence, the SEC permitted fund advisors to consider fund distribution as a factor when selecting brokers for portfolio transactions, but subject to best execution. At the same time, NASD also amended its Conduct Rule 2830(k) (Anti-Reciprocal rule) to allow NASD members (brokers and dealers) to sell shares of the funds that follow a disclosed policy of considering fund distribution as a factor when selecting brokers for trade execution, subject to best execution. This reversed part of the NASD Anti-Reciprocal rule, which had previously prohibited NASD members from making fund selling efforts conditional on the receipt of brokerage commissions from the fund.

In Oct 2004, the SEC adopted amendments to 12b-1 prohibiting the use of brokerage commission to finance fund distribution. The amendment, Rule 12b-1(h)(1), prohibits funds from trading brokerage commissions for fund distribution.[22] But Rule 12b-1(h)(2) permits funds to use their selling broker to execute portfolio transactions if the fund's advisor has implemented policies and procedures to ensure that the fund distribution did not affect the consideration of broker for effecting the transaction.[23] The compliance date for this

[22]"Rule 12b1(h)(1) prohibits funds from compensating a broker-dealer for promoting or selling fund shares by directing brokerage transactions to that broker. The prohibition applies both to directing transactions to selling brokers, and to indirectly compensating selling brokers by participation in stepout and similar arrangements in which the selling broker receives a portion of the commission. The ban extends to any payment, including any commission, mark-up, mark-down, or other fee (or portion of another fee) received or to be received from the funds portfolio transactions effected through any broker or dealer." See FederalRegister / Vol. 69 [2004]

[23]"Rule 12b1(h)(2) permits a fund to use its selling broker to execute transactions in portfolio securities only if the fund or its adviser has implemented policies and procedures designed to ensure that its selection of selling brokers for portfolio securities transactions is not influenced by considerations about the sale of fund shares. These procedures must be approved by the funds board of directors, including a majority of the independent directors, and must be reasonably designed to prevent: (i) The persons responsible for selecting broker-dealers to effect transactions in fund portfolio securities transactions (e.g., trading desk personnel) from taking into account, in making those decisions, broker-dealers promotional or sales efforts, and (ii) the fund, its adviser and principal underwriter from entering into any agreement or other understanding under which the fund directs brokerage transactions or revenue generated by those transactions to a broker-dealer

amendment was Dec 2004. At this time, the SEC approved an additional amendment to NASD Rule 2830(k) by eliminating the provision in the Anti-Reciprocal Rule that allows its members to sell shares of the funds that follow a disclosed policy of considering fund distribution as a factor when selecting brokers for trade execution. The SEC also prohibited NASD members from selling shares or acting as underwriters for investment advisors who may have an agreement that would direct brokerage execution to dealers in consideration of their fund distribution efforts. In 2016, the SEC adopted this as FINRA Rule 2341.

9. Data

The data for this study is collected from multiple sources: Form NSAR from the SEC's EDGAR, Broker reports from Financial Industry Regulatory Authority (FINRA), and Morningstar

9.1. NSAR

I gather principal underwriter, affiliated broker-dealers, fee, trades, broker and brokerage related information from form NSARs. The SEC requires mutual funds to file form NSAR on a semi-annual basis. On these forms, along with other fund related information, funds are required to report their principal underwriters, loads they charged, 12b-1 fee collected, dollar amount of trades, and also the list of the top ten brokers who received the highest commissions from the fund during the reporting period. Usually, funds are organized under trusts, and these trusts are registered with the SEC and are identified by a unique CIK number. A trust may have one or more funds. Generally, funds with similar objectives are grouped together under the same CIK. Form NSAR is filed by these trusts, and each trust has one or more series. Each series represents a fund. Most filings with the SEC, including

to pay for distribution of the fund shares."FederalRegister / Vol. 69 [2004]

form NSARs, are done under these CIKs.

Principal underwriters are fund distributors who have the responsibility to sell fund shares. They sell funds to the public either themselves or through affiliated brokers and dealers. Item 8 on form NSAR identifies the principal underwriter for each fund within the trust. It provides the name and the SEC number for each principal underwriter for the fund. Item 14 asks funds to list the broker-dealers affiliated with them. For each fund and filing, I match this list of affiliated broker-dealers with the fund's principal underwriter and the top ten executing brokers to identify funds with affiliated principal underwriters and funds that used their affiliate broker for trade execution. Around 66% of the funds use affiliated underwriters and 13% use their affiliate broker for trade execution. To identify if a fund used its selling broker for trade execution, I match the list of the principal underwriter's affiliates with the fund's trading brokers[24]. To separate the effect of using an affiliate broker from using a selling broker that is not affiliated, I set the Selling Broker Use indicator to 0 if the principal underwriter is affiliated to the fund. The Selling Broker Use indicator is 1 only if the principal underwriter is not affiliated to the fund but is affiliated to fund's trading broker. Around 15% of the funds that use unaffiliated principal underwriters use selling brokers who are affiliated to their principal underwriters for trade execution.

NSAR item 28 requires funds to report monthly new sales and total sales that charged front-end load. In item 30, funds report the front end load collected along with the minimum and maximum loads. Item 71 gives the dollar value of purchases and sales for each fund. Item 20 requires the funds to report the names, IRS numbers, and brokerage commissions received by the top ten brokers who received the highest commissions from all of the funds within the trust. As previously noted, this information is reported at the CIK level instead of at the fund level. I allocate the total brokerage between the funds in a trust based on the trades for each fund. Ideally, I would want to test my hypotheses at broker level, but,

[24]I search for broker reports for each principal underwriter from FINRA and parse it to obtain the list of its affiliates

for broker level analysis, I would need the amount of trade that went through each broker. Unfortunately, funds do not report this information. Hence most of my tests are at the fund level. This would understate the effect of affiliated and selling broker use on brokerage commissions. Hence, to estimate the extra brokerage commission paid to an affiliated or selling broker, I consider a sample of funds that employed only one broker for the reporting period. I download form NSARs from the SEC's EDGAR for the period of Jan-1996 to June-2014 and parse them to collect all this information.

9.2. FINRA Broker Reports

I obtain principal underwriter, affiliated broker, and executing broker information for funds from their form NSARs and use affiliates information from FINRA's broker reports to check if each fund's principal underwriter is affiliated to any of the top ten brokers that received brokerage commissions from the fund. FINRA provides broker reports that contain the list of firms affiliated to the broker along with other broker related information. The information in these reports comes from brokers' registration process with FINRA, and also from other broker filings. I download these broker reports from FINRA's BrokerCheck website and parse them to collect the list of firms with which each broker is affiliated. FINRA's Broker reports provide only the latest affiliation information. The affiliation information does not account for mergers and acquisitions. Using the latest affiliate list may lead to misclassification of connection between the selling broker and the broker that executes trades for the fund in cases where an underwriter (selling broker) and a broker that executes trades for the fund (trading broker) may appear to be affiliated to each other now, but were probably not affiliated at the time of filing or vice versa. Such mis-classifications of affiliation may only lead to weaker connection effects in the data. Hence, if I find significant impact of connections, I might actually be understating the actual impact of connections due to mis-classifications.

9.3. Morningstar

I use data on fund objectives, investment style, Total Net Asset (TNA), and returns from the Morningstar database. I consider all US equity funds from 1996 to 2014 that have a TNA of more than 2M.

9.4. Sample Construction

The SEC's electronic disclosure system, EDGAR, provides access to firm and fund filings. After an initial trial phase, companies began filing electronically using EDGAR beginning in 1995. EDGAR has form NSARs available for all funds from 1996. Hence, the sample period for the study is Jan-1996 to Jun-2014. Since mutual funds are required to file form NSAR semi-annually, I have the broker, underwriter, brokerage commission, and other NSAR variables at semi-annual frequency. Therefore, for most of the tests, I structure the data at a 6 month frequency. Starting with 125,097 semi-annual filings[25], I match the brokers in NSAR data to the broker affiliates data from FINRA using broker name, SEC file number and IRS number. I classify funds as using selling brokers for trade execution if the principal underwriter is an affiliate of any of the top ten brokers whom the fund listed in the form NSAR as receiving brokerage commission for the filing period.

Other fund related variables, such as fund objectives, TNA, date of inception, percentage of institutional ownership, etc., are available in the Morningstar data. I match the data from NSAR with the Morningstar data on CUSIP, Ticker, monthly flows and name. For 12,452 of the funds from NSAR, including 4,801 US equity funds, I was able to match Morningstar data, leaving me with 253,613 semiannual observations.

I create two measures for brokerage commissions: brokerage commission as percentage of trade volume and brokerage commission as percentage of TNA. The second measure is

[25] 432,895 semiannual observations for 27,314 funds. Each filing has one or more funds

more relevant to investors since it is comparable to expense ratios and other fees. Trade volume is defined as the sum of dollar volume of purchases and sales executed for the fund during the reporting period. Following Edelen, Evans, and Kadlec [2012], I define broker Herfindahl as the sum of the square of the proportion of the total brokerage commission paid to each broker during the reporting period. I identify the primary broker for a fund during the reporting period as the broker receiving the highest brokerage commission from the fund during that period. Broker size is defined as the dollar amount of brokerage commission a broker received during the period. In the final sample, I exclude funds with TNA less than $2MM, brokerage commission more than 1% of trade or more than 3% of fund TNA, and funds with trading volume more than 2000% of their TNA. This leaves me with 72,423 semiannual observations for 4,508 funds.

9.5. Descriptive Statistics

Table 17 Panels A and B provide the characteristics of the final sample. The mean (median) semi-annual brokerage commission is 9bp (8bp) measured as percentage of trade volume and 12bp (7bp) measured as percentage of fund TNA. Around 13% of the funds use their affiliated brokers for trade execution. Around 15% of the funds whose principal underwriter is not affiliated use their selling broker for trade execution. 13% of funds charge either load or 12b-1 fee.

Panel C, for the period Jan 2005 to Jun 2014, compares the sample characteristics for funds that employ affiliated or selling broker for trade execution with funds that do not employ affiliated or selling broker for trade execution. Funds that use their selling broker for trade execution are on average smaller than the funds that do not. The average brokerage commission paid by funds that use affiliated broker for trade execution is slightly higher than the funds that do not. However, if we consider only single broker funds, we observe that these funds pay their affiliated brokers almost double the average rate. Since most funds

use multiple brokers, the actual brokerage commission rates that affiliated or selling brokers charge may be much higher than the average brokerage commission paid by the fund (the average brokerage commission paid by a fund aggregates all the brokers that a fund employs). Hence, funds that employ only one broker give a better estimate of brokerage commissions charged by affiliated or selling brokers. Funds that used their selling brokers to execute trades paid 2bp (5b) higher semi-annual brokerage commissions measured as percentage of trade (TNA) compared to the funds that did not. The results from funds that employ a single broker suggest that the selling brokers charge more than double the commission charged by other brokers. Overall, this suggests that affiliated and selling brokers charge much higher brokerage commissions than others. I test this hypothesis in the next section.

10. Results

Descriptive statistics suggest that funds that use affiliated brokers as well as those using selling broker for trade execution pay higher brokerage commissions, both as percentage of trade and as percentage of TNA. To test the effect of affiliate broker use on brokerage commissions, I regress brokerage commission rates on the factors that affect brokerage commissions and an indicator variable for affiliate broker use. Similarly, to test the effect of brokerage commissions on selling broker use, I separately regress brokerage commission rates on the factors that affect brokerage commissions and an indicator variable for selling broker use. Specifically, I estimate the following regression:

$$BrokerageCommission_{it} = \alpha + \beta * BrokerTypeIndicator_{it} + \gamma * Controls + \epsilon_{it} \qquad (3)$$

Controls include fund investment style, trade volume, broker Herfindahl, primary broker size, fund size, fund family size, indicator variable for load/12b-1 fee, index fund indicator,

and institutional percentage of TNA. I use both brokerage commission as percentage of trade and brokerage commission as a percentage of TNA as measures for brokerage commission rates.

10.1. Brokerage Commission - Affiliated Broker Use

Investment advisors may direct some of the fund portfolio transactions to their affiliated brokers and charge higher brokerage commissions. To test this hypothesis, I estimate regression (1) with an affiliated broker use dummy and controls. Table 18 provides the results for this regression. Funds that use investment advisors' affiliated brokers pay significantly higher brokerage commissions. They pay 0.7bp (1bp) higher in brokerage commissions (semi-annual) when measured as percentage of trade volume (TNA). Also, consistent with the findings of Livingston and O'Neal [1996] and Edelen, Evans, and Kadlec [2012], brokerage commissions are negatively related to fund TNA and fund family TNA. Brokerage commission as percentage of trade is negatively related to trade, suggesting economies of scale, while brokerage commission as percentage of TNA is positively related to trade. Index funds pay lower commissions. Concentrating the trades to fewer brokers leads to lower commissions. Standard errors are clustered by funds.

For these regressions, I use fund level measures of brokerage commissions that aggregate commissions across all the brokers employed by the fund. Hence the results provide estimates of the extra commission paid by the funds that use affiliated brokers along with other non-affiliated brokers, and not the extra commission charged by affiliated brokers. The amount of extra brokerage commission charged by affiliated brokers may be higher than this. Getting an estimate of the extra commission charged by affiliated brokers would require broker level commission rates. There are 1,513 fund filings in my sample that used only one broker for the reporting period. I use this sample to estimate the difference in brokerage commissions charged by affiliated brokers and brokerage commissions charged by non-affiliated brokers.

Table 19 provides the results for the regression of brokerage commissions on the Affiliated Broker Use indicator and other controls for single broker funds. Unaffiliated brokers on average charge 8bp (10bp) semi-annually measured as percentage of trade (TNA), while affiliated brokers charge 6bp (6.3bp) higher brokerage commission (semi-annual) measured as percentage of trade (TNA). Hence, affiliated brokers charge more than 1.5 times the commissions charged by unaffiliated brokers.

10.2. Brokerage Commission -Selling Broker Use

In this section, I study whether the selling brokers charge higher brokerage commissions when they effect portfolio transactions. I estimate regression (1) with a selling broker use dummy along with other control variables. As mentioned in the data description, to separate the effect of selling broker use from affiliated broker use, the selling broker use dummy is set to 0 if the fund's principal underwriter is affiliated to the fund. The results are presented in Table 20 for both the full sample period (Jan-1996 to Jun-2014) as well as in the period after the SEC prohibition on the use of brokerage commission to finance distribution (Jan-2005 to Jun-2014). Standard errors are clustered by funds.

For both the sample periods, funds that employ selling brokers for trade execution pay a higher brokerage commission both as a percentage of trade volume and as a percentage of their TNA. Even after the SEC's ban on the use of brokerage commissions to finance distribution, funds paid 1.15bp (1.43bp) higher semi-annual brokerage commissions as percentage of trade volume (TNA) when the selling broker is one of the executing brokers.

These are the estimates of extra brokerage commission relative to trade volume and TNA that a fund pays when it employs its selling broker for trade execution along with other brokers. The amount of extra brokerage commission charged by selling brokers may be higher than this. To get an estimate of the extra brokerage commission charged by

selling brokers, I use the sample of funds that used a single broker during the reporting period. The results presented in Table 21 are striking. Selling brokers charge 9.9bp (11.6bp) higher brokerage commissions as percentage of trade volume (TNA) compared to the other brokers. Given that on average a non-affiliated non-selling broker charges 8bp relative to trade volume (10bp relative to TNA, semi-annually), the selling brokers charge more than double the non-selling and non-affiliated brokers. This provides strong evidence of usage of brokerage commissions by investment advisors to reward selling brokers. In the next section, I provide evidence of aggressive fund sale efforts by selling brokers if these brokers also execute the portfolio transactions for the fund.

After showing the effect of using affiliated and selling brokers in independent tests, I test the effects by using the dummies for both affiliated and selling brokers in the same regression. Tables 22 and 23 provide results for all funds and for funds with a single broker during the reporting period, respectively. The results are very similar to what I found in previous tests.

10.3. Fund Returns - Selling/Affiliated Broker Use

Funds may pay higher brokerage commission for better trade execution. If the funds pay higher brokerage commission to their selling brokers to compensate them for aggressive selling efforts and not for better trade execution, we would expect the high brokerage commission to affect the fund performance negatively. I regress the gross semi-annual returns for funds on the selling broker use, affiliated broker use, and controls to test for this. Table 24 provides the results. Funds that use their selling or affiliated broker to effect portfolio transactions do underperform erlative the funds that use unaffiliated and non-selling brokers, but this underperformance is statistically insignificant. This suggests that funds that use their selling or affiliated broker for trade execution may not be receiving better trade execution. Focusing on funds that give substantial proportion of their brokerage commission to their selling or affiliated brokers may provide stronger support to this.

10.4. Fund Distribution Fee - Selling Broker Use

Results in the previous section suggest that selling brokers charge higher brokerage commissions when investment advisors use them for trade execution as well. This suggests that fund advisors may be rewarding the selling brokers for their aggressive selling efforts through trade execution business and allowing the brokers to charge higher commissions, even though the advisors should be selecting the broker that provides best execution for the trades.

One way the selling broker can attract fund flows would be by agreeing to lower distribution fee. In this section I test if the funds that employ selling broker for trade execution charge lower front-end loads and 12b-1 fee compared to the funds that do not. To test this I regress the measures of distribution fee on fund related variables and selling broker use indicator. Specifically, I estimate the following regression in three specifications using three measures of distribution cost: Front-end Loads, 12b-1 fee rate, and marketing and distribution fee defined as the sum of 12b-1 fee and one seventh of the front end load (assuming average holding period for a mutual fund is seven years):

$$DistributionFee_{it} = \alpha + \beta * SellingBrokerUse_{it} + \gamma * Controls + \epsilon_{it} \tag{4}$$

Controls include fund investment style, fund size, fund family size, fund age, index fund indicator, and institutional percentage of TNA.

Results are presented in Table 25. The first column suggests that funds that use selling brokers for trade execution charge significantly lower 12b-1 fee compared to those that do not. The second column suggests that funds that use selling brokers for trade execution charge loads similar to the funds that do not. The overall marketing and distribution fee for funds that use selling broker for trade execution does not differ significantly from the ones that do not.

Consistent with the findings in Tufano and Sevick [1997] and Gil-Bazo and Ruiz-Verd [2009], larger funds have smaller marketing and distribution fee while funds from bigger fund families have higher marketing and distribution fee. Index funds and funds with higher institutional ownership have lower fee. Also, marketing and distribution fees are negatively related to past fund performance, better performing funds have lower distribution fee.

10.5. Fund Flows

To test if the selling brokers sell a fund more aggressively when the fund advisors offer them trade execution as well, I investigate whether the flow sensitivity to performance differs for funds that use selling brokers for trade execution. If the selling brokers sell funds more aggressively, we would expect the flows to be less sensitive to performance when the fund under-performs. I regress flows on Low, Mid and High performance measures, which are created as in Sirri and Tufano [1998], the interaction of selling broker use indicator with these performance measures, and other control variables. Table 26 provides the results. As expected, fund flows are positively related to performance. Flows increase with high performance and decrease if funds perform poorly. Interaction between the Low performance measure and selling broker use indicator is significantly negative and similar in magnitude to the coefficient on Low performance measure, making the flow for funds that use their selling brokers for trade execution insensitive to performance when the fund under-performs. This provides the evidence that, when selling brokers are offered portfolio transactions as well, they put more effort in selling the fund by making the fund's flows insensitive to low performance.

10.6. Economic impact

Table 27 gives an estimate of money lost in brokerage commissions when funds use affiliated or selling brokers for trade execution. Funds with single brokers lose 13bp to 15bp a year when they use affiliated brokers and 23bp to 25bp when they use their selling brokers for trade execution.

11. Robustness

11.1. Selling Brokers

One might argue that a principal underwriter may not sell the fund itself or through its affiliate brokers, but may sell it only through unaffiliated brokers. Even in those cases, principal underwriters can influence the selling brokers to put more effort, but if we assume that they cannot do so, I would need information on retail selling brokers to test my hypothesis. Hence for robustness, I use the data on retail selling brokers for mutual funds. Morningstar provides a list of selling brokers for each fund. This database only provides a snapshot of the latest list of brokers that sell the fund. I use this information with the assumption that selling brokers did not change over last 4 years. I combine this selling broker info with form NSAR data between 2012 to 2014 and identify the funds that used selling brokers for trade execution. I regress brokerage commission rates on the new selling broker use indicator and other controls. Results presented in Table 28 are very similar to those presented in Tables 20 and 21.

11.2. Fund Size

Smaller funds place smaller trades and have lower bargaining power with brokers. Hence, one may expect smaller funds to pay higher brokerage commissions. We saw in Table 18 that fund size is negatively related to brokerage commissions. To make sure that single broker funds that use affiliated brokers or selling brokers for trade execution are not paying a higher brokerage commission just because they are smaller than other funds, I split the sample of single broker funds into small, medium and large funds. Within each group, I investigate how the brokerage commission rates differ for funds that use affiliated broker or selling broker for trade execution from the ones that did not use affiliated broker or selling broker for trade execution. Table 29 provides the mean brokerage commission for each group and shows that for all fund size groups, funds that use affiliated brokers or selling brokers paid much higher brokerage commissions than the funds that did not use affiliated or selling broker. Hence the higher brokerage commissions paid by funds that used their affiliated broker or their selling broker cannot be attributed to fund size.

12. Conclusion

Mutual fund advisors have the responsibility to choose brokers that provide best execution for fund's portfolio transactions. These advisors face a conflict of interest when choosing brokers to effect portfolio transactions: they may favor their affiliated brokers and also the brokers that help them with greater inflows.

Investment advisers may have an informal agreement with their selling brokers under which selling brokers exert more effort to sell the fund and, in return, the advisor rewards the selling brokers by directing the funds' portfolio transactions to the broker and by allowing them to charge higher commissions. Although the SEC prohibited the use of brokerage commissions to finance fund distribution in 2004, the regulation does not seem to be effective

in resolving the agency conflict here. Focusing on the period from 2005 to 2014, I find strong evidence of investment advisers allying with their selling brokers. I find that funds pay 23bp to 25bp higher brokerage commissions to their selling brokers when they use them for trade execution. This is more than double the commissions paid on average to non-selling brokers. When the selling broker is used for trade execution, fund flows are insensitive to low performance while they are sensitive for funds that do not use selling broker for trade execution, suggesting a higher selling effort by the selling broker. I also find lower 12b-1 fee for these funds but the overall marketing and distribution fee is not very different from the funds that do not use their selling broker for trade execution.

Examining the brokerage commissions paid to affiliated I find that funds pay 13bp to 15bp higher brokerage commissions to their affiliated brokers when they also use them to conduct their portfolio transactions. Thus, paying their affiliated brokers 1.5 times the average commission a fund pays a non-affiliated broker.

Requiring funds to disclose trade and brokerage commission details to the SEC when they use affiliated or selling broker for trade execution might help mitigate this conflict.

Figure 1: Connection Measures

This figure explains the three measures of Connection used: Direct Connection, Sub-advisor Connection and Broker Connection. Investment consultant *IC* is Directly Connected to it's affiliated money management firm *AM*. Investment consultant *IC* is Sub-advisor Connected to an outside money management firm *OM* if *IC*'s affiliated money management firm *AM* is a sub-advisor to funds managed *OM*. Investment consultant *IC* is Broker Connected to an outside money management firm *OM* if *IC*'s affiliated brokerage firm *AB* earns brokerage commission from the funds managed *OM*.

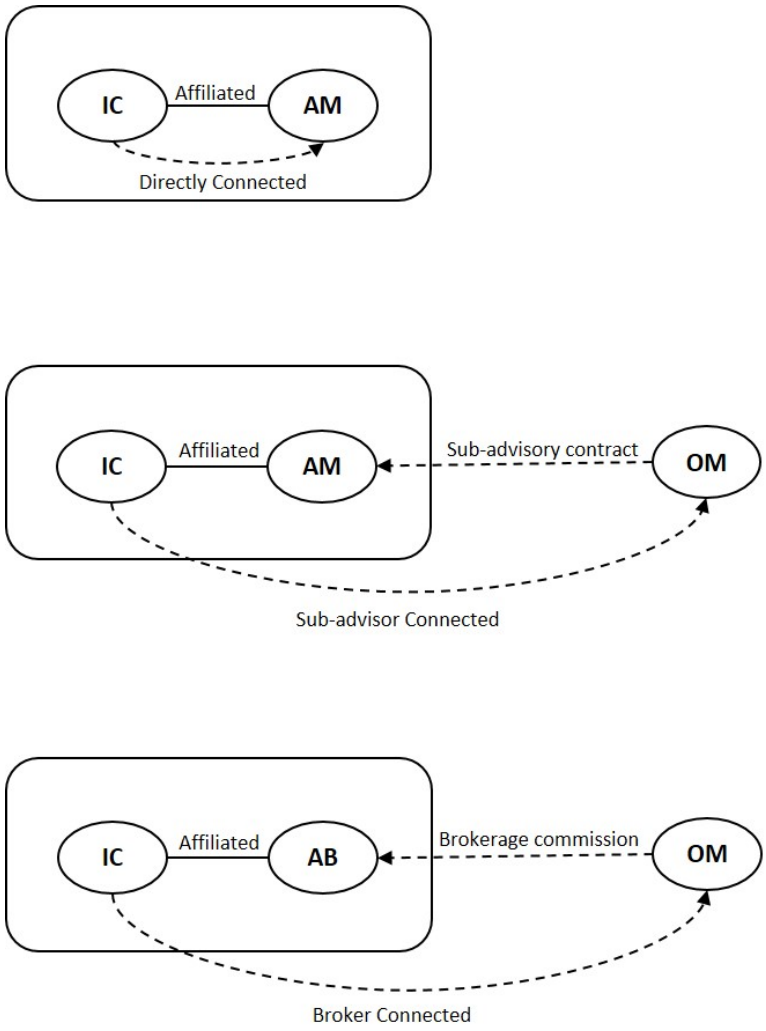

Table 1: **Variable Description**

Variable	Description
Alpha (t-1)	3-year Four-factor alpha (using monthly returns)
Fee($100M)	Manager Proforma fee for $100M investment level
Return std 1yr (t-1)	1-year standard deviation (using monthly returns)
Log Firm Size	Log of firm asset under management
%AUM in Mandate Asset style	Percent of manager asset under management in the same asset style as mandate
Manager age	Years since inception of Investment management firm
Direct Connection	Equals 1 if consultant-manager pair is directly connected, else 0. A consultant and manager pair is directly connected if they belong to the same organization.
Sub-advisor Connection	Equals 1 if consultant-manager pair is sub-advisor connected, else 0. If the consultant has an affiliated manager, who is hired by an outside manager as a sub-advisor within 6 months before or after the mandate date, then the consultant and the outside manager have sub-advisor connection.
Broker Connection	Equals 1 if consultant-manager pair is broker connected, else 0. If the consultant has an affiliated brokerage firm that received high brokerage commissions from an outside manager within 6 months before or after the mandate date then the consultant and the outside manager have broker connection.
Indirect Connection	Equals 1 when consultant-manager pair is either sub-advisor or broker connected, else 0.
Connection	Equals 1 when consultant-manager pair is either directly or sub-advisor or broker connected, else 0.

Table 2: **Descriptive Statistics**

Panel A and B: Based on iiSearches database 1995-2014. Total number of hiring decisions, hiring decisions that used consultant, average mandate size and average fund size. Panel C: Each active US equity mandate hiring decision from iiSearches matched to all managers with a product in the mandate asset style available in eVestment.

Panel A: All Mandates

Mandate Region	Asset Class	Hiring Decision	Used Consultant	Mean Mandate size($M)	Median Mandate size($M)
US	Alternatives	4,186	3,954	139	50
US	Balanced/Multi-Asset	1,797	1,329	185	40
US	Equity	7,684	6,509	114	29
US	Fixed Income	3,407	2,798	229	50
US	Hedge Funds	1,419	1,325	137	50
US	Real Estate	2,564	2,450	107	45
International	Alternatives	1,503	1,379	137	60
International	Balanced/Multi-Asset	504	396	409	73
International	Equity	3,629	3,145	208	60
International	Fixed Income	634	567	245	75
International	Hedge Funds	439	406	154	75
International	Real Estate	400	383	114	60

Panel B: Plan Sponsors

Plan Type	# Plan Sponsor	Used Consultant	Hiring Decisions	Mean Fund size($M)	Median Fund size($M)
Corporate Plans	1,080	712	2,525	2,127	297
Endowments and Foundations	915	702	3,366	701	169
Public Plans	865	720	18,796	5,540	233
Unions	536	423	1,176	851	196
Others	721	246	2,303	11,424	415

Panel C: US Equity Active Mandates that Involved Consultants

Hiring Decisions	Mean Mandate size($M)	Median Mandate size($M)	Mean Fund size($M)	Median Fund size($M)
5,808	98	27	3,170	297

Panel D: Mandate-Manager Matched data

	Hired		Not Hired	
Variable	Mean	Std dev	Mean	Std dev
Consultant - Manager connection	0.154	0.361	0.051	0.220
Direct Connection	0.034	0.177	0.004	0.065
Indirect Connection	0.122	0.327	0.047	0.211
Sub-advisor Connection	0.042	0.202	0.008	0.089
Broker Connection	0.079	0.270	0.039	0.193
Manager AUM ($M)	73,584	154,003	48,900	131,571
% AUM in mandate asset class	36%	33%	38%	37%
Alpha - 3 year pre hiring	0.27%	0.44%	0.13%	0.42%
Standard deviation of returns	0.05	0.02	0.05	0.02
Manager age - years since inception	28.79	22.50	23.32	21.49
Manager Fee - $100M (BP)	66.45	18.76	67.71	20.19
Candidates for hiring			201	

Table 3: **Manager Hiring Decision**

Conditional logit model to estimate the effect of connections on hiring decisions. Each active US equity mandate hiring decision from iiSearches matched to all managers with a product in the mandate asset style available in eVestment. Time period: 1995-2014. Standard errors are corrected for clustering in observations for the same fund. t-statistics in parentheses. *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level.

	Model 1	Model 2	Model 3	Model 4	Model 5
Alpha(t-1)	0.8913***	0.8966***	0.9853***	0.8979***	0.9856***
	(15.36)	(15.36)	(18.58)	(15.42)	(18.64)
Fee($100M)	-0.0098***	-0.0104***	-0.0106***	-0.0103***	-0.0107***
	(-6.34)	(-6.63)	(-6.54)	(-6.59)	(-6.58)
Return std 1yr(t-1)	-8.6641***	-8.5861***	-8.7402***	-8.7262***	-8.8387***
	(-4.71)	(-4.55)	(-4.78)	(-4.62)	(-4.83)
Log Firm Size	0.2941***	0.2739***	0.2749***	0.2735***	0.2748***
	(25.78)	(24.05)	(24.17)	(23.97)	(24.07)
%AUM in Mandate Asset Class	1.7266***	1.7285***	1.7280***	1.7325***	1.7323***
	(26.42)	(26.21)	(26.16)	(26.21)	(26.16)
Manager Firm Age	-0.0037***	-0.0040***	-0.0040***	-0.0039***	-0.0039***
	(-3.68)	(-3.85)	(-3.87)	(-3.81)	(-3.84)
Connection		1.5584***	1.6208***		
		(13.30)	(6.02)		
Connection*Alpha(t-1)			-0.5293***		
			(-3.56)		
Connection*Fee($100M)			0.0010		
			(0.29)		
Direct Connection				1.9976***	2.2706***
				(13.80)	(4.46)
Indirect Connection				1.3879***	1.3565***
				(10.36)	(4.38)
Direct Connection*Alpha(t-1)					-0.5950***
					(-3.03)
Indirect Connection*Alpha(t-1)					-0.5040***
					(-3.01)
Direct Connection*Fee($100M)					-0.0022
					(-0.27)
Indirect Connection*Fee($100M)					0.0024
					(0.60)
Observations	615,255	615,255	615,255	615,255	615,255
Pseudo R^2	0.049	0.059	0.060	0.060	0.060

Table 4: **Drivers of Hiring Decision when Connected Managers are Hired**

Conditional logit model to estimate the drivers of hiring decisions. Each active US equity mandate hiring decision from iiSearches matched to all managers with a product in the mandate asset style available in eVestment. First column presents the results for mandates where unconnected manager was hired. Second column presents results for mandates where directly connected manager was hired. Third column presents results for mandates where indirectly connected manager was hired. Time period: 1995-2014. Standard errors are corrected for clustering in observations for the same fund. t-statistics in parentheses. *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level.

	Hired Unconnected	Hired Direct Connection	Hired Indirect Connection
Alpha(t-1)	1.0001***	0.1553	0.4215**
	(18.23)	(0.61)	(2.52)
Fee($100M)	-0.0105***	-0.0011	-0.0080*
	(-6.37)	(-0.17)	(-1.94)
Return Std 1yr(t-1)	-9.4503***	-1.8044	-4.9524
	(-4.79)	(-0.19)	(-0.93)
Log Firm Size	0.2887***	0.3866***	0.3286***
	(23.94)	(6.76)	(10.32)
%AUM in Mandate Asset Class	1.7368***	0.8519**	1.8901***
	(24.98)	(2.40)	(10.23)
Manager Firm Age	-0.0049***	-0.0095**	0.0046*
	(-4.25)	(-2.17)	(1.91)
Observations	534,136	16,201	64,918
Pseudo R^2	0.050	0.056	0.058

Table 5: **Post Hiring Performance**

OLS regression of 3 year post hiring alpha on connection dummies and other controls to test the difference in performance of connected hirings compared to unconnected. Time period: 1995-2011. Standard errors are corrected for clustering in observations when a manager is hired for same asset style mandate. t-statistics in parentheses. *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level.

	Model 1	Model 2	Model 3
Log Firm AUM	0.0223***	0.0227***	0.0224***
	(3.78)	(3.83)	(3.79)
%AUM in Mandate Asset Class	0.1378***	0.1366***	0.1378***
	(3.99)	(3.94)	(3.99)
Fee($100M)	0.0008	0.0008	0.0008
	(1.10)	(1.20)	(1.19)
Manager Firm Age	0.0002	0.0002	0.0003
	(0.41)	(0.64)	(0.66)
Log Fund Size	-0.0015	-0.0017	-0.0018
	(-0.36)	(-0.43)	(-0.45)
Log Mandate amount	-0.0015	-0.0021	-0.0019
	(-0.24)	(-0.34)	(-0.31)
Connection		-0.0494***	
		(-3.10)	
Direct Connection			0.0036
			(0.11)
Indirect Connection			-0.0479***
			(-2.76)
Corporate Plan Indicator	-0.0218	-0.0220	-0.0221
	(-1.13)	(-1.14)	(-1.15)
Public Plan Indicator	-0.0153	-0.0149	-0.0148
	(-0.99)	(-0.96)	(-0.96)
Constant	-0.3371***	-0.3391***	-0.3375***
	(-3.19)	(-3.21)	(-3.20)
Observations	3,154	3,154	3,154
R^2	0.116	0.119	0.119

Table 6: **Post Hiring Performance (Other measures of Performance)**

OLS regression of 3-year post hiring cumulative excess return, alpha and information ratio on connection dummies and other controls to test the difference in performance of connected hirings compared to unconnected. Time period: 1995-2011. Standard errors are corrected for clustering in observations when a manager is hired for same asset style mandate. t-statistics in parentheses. *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level.

	Cumulative Excess Return	Four Factor Alpha	Information Ratio
Log Firm AUM	0.0086***	0.0227***	0.0172***
	(4.12)	(3.83)	(4.80)
%AUM in Mandate Asset Class	0.0709***	0.1366***	0.1159***
	(5.55)	(3.94)	(6.08)
Fee($100M)	0.0002	0.0008	-0.0001
	(0.75)	(1.20)	(-0.13)
Years since Manager Inception	0.0001	0.0002	-0.0001
	(0.66)	(0.64)	(-0.21)
Log Fund Size	0.0022	-0.0017	0.0043*
	(1.26)	(-0.43)	(1.66)
Log Mandate amount	-0.0057**	-0.0021	-0.0096**
	(-2.17)	(-0.34)	(-2.20)
Connection	-0.0171**	-0.0494***	-0.0258**
	(-2.30)	(-3.10)	(-2.44)
Corporate Plan Indicator	0.0012	-0.0220	0.0017
	(0.15)	(-1.14)	(0.14)
Public Plan Indicator	0.0016	-0.0149	-0.0009
	(0.24)	(-0.96)	(-0.08)
Constant	-0.1023***	-0.3391***	-0.1779***
	(-3.13)	(-3.21)	(-3.19)
Observations	3,154	3,154	3,154
R^2	0.126	0.119	0.129

Table 7: **Manager Hiring Decision - After Chief Compliance Officer rule**

Conditional logit model to estimate the effect of connections on hiring decisions. Each active US equity mandate hiring decision from iiSearches matched to all managers with a product in the mandate asset style available in eVestment. Time period: 2005-2014. Standard errors are corrected for clustering in observations for the same fund. t-statistics in parentheses. *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level.

	Model 1	Model 2	Model 3	Model 4	Model 5
Alpha(t-1)	1.5189***	1.5097***	1.5860***	1.5158***	1.5870***
	(15.49)	(15.41)	(16.15)	(15.41)	(16.15)
Fee($100M)	-0.0111***	-0.0117***	-0.0122***	-0.0116***	-0.0121***
	(-5.40)	(-5.63)	(-5.69)	(-5.58)	(-5.64)
Return std 1yr(t-1)	-6.6592**	-6.8824**	-6.9899**	-6.9190**	-7.0311**
	(-2.02)	(-2.07)	(-2.10)	(-2.08)	(-2.12)
Log Firm Size	0.3193***	0.3026***	0.3032***	0.3022***	0.3028***
	(20.12)	(19.28)	(19.36)	(19.23)	(19.33)
%AUM in Mandate Asset Class	1.8254***	1.8194***	1.8224***	1.8200***	1.8224***
	(19.28)	(19.22)	(19.24)	(19.17)	(19.21)
Manager Firm Age	-0.0053***	-0.0055***	-0.0056***	-0.0055***	-0.0055***
	(-3.53)	(-3.70)	(-3.72)	(-3.66)	(-3.64)
Connection		1.6348***	1.3812***		
		(7.83)	(3.08)		
Connection*Alpha(t-1)			-0.8544**		
			(-2.45)		
Connection*Fee($100M)			0.0054		
			(0.89)		
Direct Connection				2.2216***	1.3972*
				(10.39)	(1.72)
Indirect Connection				1.4051***	1.2663***
				(6.00)	(2.59)
Direct Connection*Alpha(t-1)					-1.2136
					(-1.56)
Indirect Connection*Alpha(t-1)					-0.7276*
					(-1.85)
Direct Connection*Fee($100M)					0.0144
					(1.17)
Indirect Connection*Fee($100M)					0.0033
					(0.49)
Observations	452,811	452,811	452,811	452,811	452,811
Pseudo R^2	0.056	0.064	0.064	0.065	0.065

Table 8: **Drivers of Hiring Decision when Connected Managers are Hired - After Chief Compliance Officer rule**

Conditional logit model to estimate the drivers of hiring decisions. Each active US equity mandate hiring decision from iiSearches matched to all managers with a product in the mandate asset style available in eVestment. First column presents the results for mandates where unconnected manager was hired. Second column presents results for mandates where directly connected manager was hired. Third column presents results for mandates where indirectly connected manager was hired. Time period: 2005-2014. Standard errors are corrected for clustering in observations for the same fund. t-statistics in parentheses. *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level.

	Hired Unconnected	Hired Direct Connection	Hired Indirect Connection
Alpha(t-1)	1.6114***	0.0081	0.8982**
	(16.38)	(0.01)	(2.31)
Fee($100M)	-0.0118***	0.0010	-0.0076
	(-5.49)	(0.09)	(-1.14)
Return Std 1yr(t-1)	-7.7385**	-1.0044	-0.8409
	(-2.18)	(-0.04)	(-0.08)
Log Firm Size	0.3119***	0.4057***	0.3850***
	(18.77)	(5.57)	(7.55)
%AUM in Mandate Asset Class	1.8333***	1.5389***	1.8891***
	(17.97)	(2.89)	(6.40)
Manager Firm Age	-0.0057***	-0.0247***	0.0017
	(-3.50)	(-2.91)	(0.50)
Observations	398,100	11,537	43,174
Pseudo R^2	0.057	0.055	0.064

Table 9: **Post Hiring Performance - After Chief Compliance Officer rule**

OLS regression of 3 year post hiring alpha on connection dummies and other controls to test the difference in performance of connected hirings compared to unconnected. Time period: 2005-2011. Standard errors are corrected for clustering in observations when a manager is hired for same asset style mandate. t-statistics in parentheses. *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level.

	Model 1	Model 2	Model 3
Log Firm AUM	0.0146***	0.0149***	0.0152***
	(2.66)	(2.72)	(2.83)
%AUM in Mandate Asset Class	0.0893**	0.0875**	0.0902**
	(2.49)	(2.44)	(2.54)
Fee($100M)	0.0016**	0.0018**	0.0018**
	(1.97)	(2.09)	(2.12)
Manager Firm age	-0.0002	-0.0001	-0.0000
	(-0.41)	(-0.23)	(-0.11)
Log Fund Size	0.0058	0.0055	0.0052
	(1.06)	(1.01)	(0.94)
Log Mandate amount	-0.0139*	-0.0150*	-0.0146*
	(-1.68)	(-1.77)	(-1.75)
Connection		-0.0531*	
		(-1.77)	
Direct Connection			0.0262
			(0.58)
Indirect Connection			-0.0690**
			(-2.03)
Corporate Plan Indicator	-0.0173	-0.0223	-0.0228
	(-0.62)	(-0.80)	(-0.83)
Public Plan Indicator	-0.0185	-0.0206	-0.0198
	(-0.91)	(-1.01)	(-1.01)
Constant	-0.3614***	-0.3601***	-0.3644***
	(-3.93)	(-3.94)	(-4.06)
Observations	1,154	1,154	1,154
R^2	0.092	0.097	0.099

Table 10: **Post Hiring Performance (Other measures of Performance) - After Chief Compliance Officer rule**

OLS regression of 3-year post hiring cumulative excess return, alpha and information ratio on connection dummies and other controls to test the difference in performance of connected hirings compared to unconnected. Time period: 1995-2011. Standard errors are corrected for clustering in observations when a manager is hired for same asset style mandate. t-statistics in parentheses. *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level.

	Cumulative Excess Return	Four Factor Alpha	Information Ratio
Log Firm AUM	0.0086***	0.0149***	0.0145***
	(4.24)	(2.72)	(3.17)
%AUM in Mandate Asset Class	0.0382***	0.0875**	0.0685***
	(3.08)	(2.44)	(2.90)
Fee($100M)	0.0011***	0.0018**	0.0024***
	(3.12)	(2.09)	(4.36)
Years since Firm Inception	-0.0001	-0.0001	-0.0002
	(-1.07)	(-0.23)	(-0.49)
Log Fund Size	0.0029	0.0055	0.0062*
	(1.51)	(1.01)	(1.71)
Log Mandate amount	-0.0086***	-0.0150*	-0.0175**
	(-2.78)	(-1.77)	(-2.50)
Connection	-0.0336**	-0.0531*	-0.0601***
	(-2.44)	(-1.77)	(-3.09)
Corporate Plan Indicator	-0.0001	-0.0223	0.0187
	(-0.01)	(-0.80)	(0.82)
Public Plan Indicator	-0.0084	-0.0206	-0.0191
	(-1.05)	(-1.01)	(-1.18)
Constant	-0.1681***	-0.3601***	-0.3254***
	(-5.12)	(-3.94)	(-5.35)
Observations	1,154	1,154	1,154
R^2	0.133	0.097	0.139

Table 11: **Manager Hiring Decision - By Indirect Connection types**

Conditional logit model to estimate the effect of connections on hiring decisions. Each active US equity mandate hiring decision from iiSearches matched to all managers with a product in the mandate asset style available in eVestment. Time period: 1995-2014. Standard errors are corrected for clustering in observations for the same fund. t-statistics in parentheses. *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level.

	Model 1	Model 2	Model 3
Alpha(t-1)	0.8913***	0.8969***	0.9783***
	(15.36)	(15.47)	(18.60)
Fee($100M)	-0.0098***	-0.0102***	-0.0107***
	(-6.34)	(-6.52)	(-6.61)
Return std 1yr(t-1)	-8.6641***	-8.6127***	-8.7753***
	(-4.71)	(-4.57)	(-4.81)
Log Firm Size	0.2941***	0.2709***	0.2722***
	(25.78)	(23.68)	(23.81)
%AUM in Mandate Asset Class	1.7266***	1.7347***	1.7340***
	(26.42)	(26.19)	(26.11)
Manager Firm Age	-0.0037***	-0.0040***	-0.0040***
	(-3.68)	(-3.91)	(-3.92)
Direct Connection		1.9784***	2.1833***
		(13.78)	(4.36)
Subadvisor Connection		1.9863***	2.4045***
		(11.78)	(6.28)
Broker Connection		1.0374***	0.6031*
		(8.06)	(1.67)
Direct Connection*Alpha(t-1)			-0.5777***
			(-2.97)
Subadvisor Connection*Alpha(t-1)			-0.6122*
			(-1.72)
Broker Connection*Alpha(t-1)			-0.4324**
			(-2.29)
Direct Connection*Fee($100M)			-0.0012
			(-0.15)
Subadvisor Connection*Fee($100M)			-0.0048
			(-0.79)
Broker Connection*Fee($100M)			0.0084*
			(1.74)
Observations	615,255	615,255	615,255
Pseudo R^2	0.049	0.061	0.062

Table 12: **Post Hiring Performance - By Indirect Connection types**

OLS regression of 3 year post hiring alpha on connection dummies and other controls to test the difference in performance of connected hirings compared to unconnected. Time period: 1995-2011. Standard errors are corrected for clustering in observations when a manager is hired for same asset style mandate. t-statistics in parentheses. *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level.

	Model 1	Model 2
Log Firm AUM	0.0227***	0.0228***
	(3.83)	(3.85)
%AUM in Mandate Asset Class	0.1366***	0.1385***
	(3.94)	(4.01)
Fee($100M)	0.0008	0.0008
	(1.20)	(1.19)
Manager Firm Age	0.0002	0.0002
	(0.64)	(0.63)
Log Fund Size	-0.0017	-0.0017
	(-0.43)	(-0.42)
Log Mandate amount	-0.0021	-0.0019
	(-0.34)	(-0.30)
Connection	-0.0494***	
	(-3.10)	
Direct Connection		-0.0090
		(-0.26)
Subadvisor Connection		-0.0700**
		(-2.40)
Broker Connection		-0.0182
		(-0.87)
Corporate Plan Indicator	-0.0220	-0.0227
	(-1.14)	(-1.18)
Public Plan Indicator	-0.0149	-0.0160
	(-0.96)	(-1.03)
Constant	-0.3391***	-0.3405***
	(-3.21)	(-3.24)
Observations	3,154	3,154
R^2	0.119	0.119

Table 13: **Manager Hiring Decision - Restricting the number of Candidates**

Conditional logit model to estimate the effect of connections on hiring decisions. Each active US equity mandate hiring decision from iiSearches matched to all managers with a product in the mandate asset style available in eVestment. With this data I generate propensity scores for managers based on Model 1 in table 3 and for each mandate I keep only up to 30 managers having propensity score closest to the hired manager. Time period: 1995-2014. Standard errors are corrected for clustering in observations for the same fund. t-statistics in parentheses. *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level.

	Model 1	Model 2	Model 3	Model 4	Model 5
Alpha(t-1)	1.6346***	1.6358***	1.7168***	1.6444***	1.7210***
	(10.28)	(10.17)	(12.53)	(10.20)	(12.66)
Fee($100M)	-0.0173***	-0.0177***	-0.0180***	-0.0178***	-0.0181***
	(-8.29)	(-8.42)	(-8.71)	(-8.42)	(-8.79)
Return std 1yr(t-1)	-15.0729***	-14.7959***	-14.9686***	-14.9962***	-15.1694***
	(-6.10)	(-5.88)	(-6.12)	(-5.97)	(-6.27)
Log Firm Size	0.4845***	0.4626***	0.4663***	0.4632***	0.4666***
	(11.93)	(11.27)	(11.85)	(11.28)	(11.92)
%AUM in Mandate Asset Class	2.8931***	2.8817***	2.9011***	2.8892***	2.9080***
	(12.66)	(12.43)	(12.99)	(12.45)	(13.10)
Manager Firm age	-0.0065***	-0.0067***	-0.0067***	-0.0066***	-0.0067***
	(-5.75)	(-5.82)	(-5.88)	(-5.76)	(-5.82)
Connection		1.5291***	1.6375***		
		(13.29)	(5.98)		
Connection*Alpha(t-1)			-0.5549*		
			(-1.80)		
Connection*Fee($100M)			0.0001		
			(0.03)		
Direct Connection				2.0568***	2.3335***
				(14.45)	(4.63)
Indirect Connection				1.3414***	1.3868***
				(10.32)	(4.50)
Direct Connection*Alpha(t-1)					-0.2854
					(-0.78)
Hired Indirect Connection*Alpha(t-1)					-0.5778
					(-1.64)
Direct Connection*Fee($100M)					-0.0036
					(-0.46)
Indirect Connection*Fee($100M)					0.0013
					(0.31)
Observations	84,721	84,721	84,721	84,721	84,721
Pseudo R^2	0.029	0.043	0.044	0.044	0.045

Table 14: **Drivers of Hiring Decision when Connected Managers are Hired - Restricting the number of Candidates**

Conditional logit model to estimate the effect of connections on hiring decisions. Each active US equity mandate hiring decision from iiSearches matched to all managers with a product in the mandate asset style available in eVestment. With this data I generate propensity scores for managers based on Model 1 in table 3 and for each mandate I keep only up to 30 managers having propensity score closest to the hired manager. First column presents the results for mandates where unconnected manager was hired. Second column presents results for mandates where directly connected manager was hired. Third column presents results for mandates where indirectly connected manager was hired. Time period: 1995-2014. Standard errors are corrected for clustering in observations for the same fund. t-statistics in parentheses. *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level.

	Hired Unconnected	Hired Direct Connection	Hired Indirect Connection
Alpha(t-1)	1.8147***	0.7019	0.7749*
	(13.44)	(0.84)	(1.73)
Fee($100M)	-0.0186***	-0.0058	-0.0127**
	(-8.72)	(-0.66)	(-2.45)
Return std 1yr(t-1)	-16.5445***	-5.7249	-8.9715
	(-6.66)	(-0.51)	(-1.21)
Log Firm Size	0.4983***	0.5741***	0.4425***
	(13.00)	(3.31)	(4.39)
%AUM in Mandate Asset Class	3.0008***	2.2117**	2.6702***
	(13.72)	(2.06)	(4.97)
Manager Firm Age	-0.0078***	-0.0137***	0.0026
	(-6.13)	(-2.88)	(0.96)
Observations	72,450	2,540	9,731
Pseudo R^2	0.031	0.050	0.039

Table 15: **Consultants Hiring Both Connected and Unconnected Managers within 30 days**

Performance comparison for connected and unconnected hirings by the same consultant within a 30-day period. *** indicates significance at 1% level, ** indicates significance at 5% level, * indicates significance at 10% level.

Performance Measure	Connected Hires	Unconnected Hires	Difference
Cumulative Excess Return	-0.3832	1.716	-2.0992***
			(-4.40)
Four Factor Alpha	0.0329	0.059	-0.0263*
			(-1.88)
Information Ratio	-0.0267	0.0402	-0.0669***
			(-5.58)

Table 16: **Brokerage Commissions Paid Each Year**

Average brokerage commission rates computed for US Equity and Non US Equity mutual funds using commission data from form NSAR. Total Assets invested in US Equity and Non US Equity mutual funds for each year computed based on Morningstar data. Estimates of brokerage commission rates multiplied with the computed total assets to arrive at the estimates of brokerage commission paid each year.

Year	Brokerage commission for US Equity Funds	Brokerage commission for Non US Equity Funds
1996	2,938,771,000	3,426,189,520
1997	3,870,910,420	4,245,906,210
1998	5,591,799,390	5,185,678,120
1999	6,847,407,190	5,083,771,900
2000	7,271,231,630	5,981,393,400
2001	7,587,018,920	6,256,125,290
2002	8,717,563,830	7,684,514,100
2003	8,656,879,110	7,033,134,790
2004	9,339,436,970	7,214,258,260
2005	8,399,141,900	7,386,364,850
2006	9,011,034,310	8,158,326,500
2007	8,901,414,520	10,035,106,110
2008	8,890,340,060	10,656,696,670
2009	7,707,480,760	9,734,274,770
2010	6,768,174,540	10,558,738,190
2011	6,724,966,140	11,791,198,770
2012	6,358,543,870	11,691,326,470
2013	6,327,650,420	11,319,546,920

Table 17: **Descriptive Statistics**

For a sample of 72,423 semi-annual fund filings. All the measures except 12b-1 fee are semi-annual. 12b-1 Fee rate gives an annual measure.

Panel A: Sample Characteristics - 1996 to 2014

Variable	Mean	Median	Standard Deviation
Fund TNA ($MM)	928.65	203.89	1,914.12
Fund Family TNA ($MM)	77,161.21	14,106.27	204,612.09
Institutional % of TNA	24.77	0.00	37.39
Four factor alpha - 2years	-0.04	-0.06	0.43
Load charged (%)	2.84	2.88	2.01
12b -1 Fee rate (%)	0.19	0.14	0.18
Turnover (%)	58.99	41	56.44
Trade as % of TNA	132.92	92.82	133.77
Brokerage Commission as % of Dollar trade	0.09	0.08	0.06
Brokerage Commission as % of TNA	0.12	0.07	0.16
Brokerage Commission as % of Dollar trade - Single Broker Funds	0.10	0.06	0.10
Brokerage Commission as % of TNA - Single Broker Funds	0.10	0.03	0.19
Broker Herfindahl	0.20	0.13	0.18
Primary Broker Size ($MM earned)	129.13	43.46	185.27

Panel B: Indicator Variables - 1996 to 2014

Variable	Percent
Affiliated broker executed trades	12.59
Selling broker executed trades	15.28
Load/12b-1 fee charged	74.28
Index fund	6.62

Panel C: Sample Characteristics - 2005 to 2014

	Non Affiliated Non Selling brokers used	Affiliated broker used	Selling broker used
Variable	Mean	Mean	Mean
Fund TNA ($MM)	1073.54	848.50	453.16
Fund Family TNA ($MM)	105933.62	75551.24	12078.70
Institutional % of TNA	27.68	25.12	31.73
Four factor alpha - 2years	-0.06	-0.05	-0.07
Load charged (%)	2.69	2.65	3.48
12b -1 Fee rate (%)	0.16	0.16	0.12
Turnover (%)	54.27	57.26	57.91
Trade as % of TNA	127.12	128.49	142.02
Brokerage Commission as % of Dollar trade	0.08	0.08	0.10
Brokerage Commission as % of TNA	0.10	0.11	0.15
Brokerage Commission as % of Dollar trade - Single Broker Fund	0.06	0.13	0.19
Brokerage Commission as % of TNA - Single Broker Fund	0.07	0.12	0.19
Broker Herfindahl	0.02	0.21	0.20
Primary Broker Size ($MM earned)	127.85	133.53	105.34

Table 18: **Impact of Using Affiliated Brokers on Brokerage Commissions (1996 to 2014)**

Results for semi-annual regression of brokerage commission rates on affiliated broker use dummy and other control variables. Standard errors clustered by funds. t statistics in parentheses. $* p < 0.10$, $** p < 0.05$, $*** p < 0.01$

	Brokerage commission as % of trade	Brokerage commission as % of TNA
Affiliated Broker use	0.00678***	0.00992***
	(3.65)	(3.56)
Value	0.00434**	0.000151
	(2.12)	(0.06)
Blend	0.000450	-0.00291
	(0.26)	(-1.03)
Large Cap	-0.0185***	-0.0225***
	(-8.53)	(-7.23)
Mid Cap	-0.00743***	-0.00610
	(-2.77)	(-1.48)
Log Fund TNA	-0.00122***	-0.00183***
	(-2.91)	(-3.12)
Log Fund Family TNA	-0.00447***	-0.00599***
	(-12.17)	(-10.13)
Trade as % of TNA	-0.0000241***	0.000863***
	(-6.33)	(59.76)
Index fund	-0.0351***	-0.0216***
	(-16.78)	(-6.29)
Load/12b-1 fee charged	0.00463***	0.00667**
	(2.67)	(2.55)
Broker Herfindahl	-0.0162***	-0.0237***
	(-3.18)	(-2.99)
Institutional % of TNA	-0.0197***	-0.0226***
	(-11.15)	(-8.13)
Log Primary Broker Size	-0.00111***	-0.000798***
	(-6.89)	(-3.13)
Constant	0.211***	0.156***
	(32.20)	(15.90)
Observations	72,423	72,423
R^2	0.105	0.544

Table 19: **Impact of Using Affiliated Brokers on Brokerage Commissions (1996 to 2014) - Single Broker Funds**

Results for semi-annual regression of brokerage commission rates on affiliated broker use dummy and other control variables for the sample of funds that used only one broker during the corresponding NSAR reporting period. Standard errors clustered by funds. t statistics in parentheses. $* \ p < 0.10$, $** \ p < 0.05$, $*** \ p < 0.01$

	Brokerage commission as % of trade	Brokerage commission as % of TNA
Affiliated Broker use	0.0608***	0.0629**
	(4.26)	(2.58)
Value	0.0196	0.0278
	(1.14)	(1.06)
Blend	0.00856	0.0367*
	(0.82)	(1.68)
Large Cap	-0.0586***	-0.0810*
	(-2.71)	(-1.84)
Mid Cap	-0.0281	-0.0138
	(-1.09)	(-0.26)
Log Fund TNA	-0.0115***	-0.0126**
	(-3.21)	(-2.31)
Log Fund Family TNA	0.000876	0.00204
	(0.35)	(0.54)
Trade as % of TNA	-0.0000622**	0.000655***
	(-2.12)	(5.79)
Index fund	-0.0218	-0.0694***
	(-1.44)	(-2.61)
Load/12b-1 fee charged	0.0163	0.00690
	(1.53)	(0.33)
Institutional % of TNA	-0.0147	-0.0485
	(-0.59)	(-1.09)
Log Primary Broker Size	-0.00155	-0.00154
	(-1.20)	(-0.61)
Constant	0.234***	0.165**
	(6.01)	(2.17)
Observations	1,513	1,513
R^2	0.235	0.386

Table 20: **Impact of Using Selling Brokers on Brokerage Commissions**

Results for semi-annual regression of brokerage commission rates on selling broker use dummy and other control variables. Standard errors clustered by funds. t statistics in parentheses. $* p < 0.10$, $** p < 0.05$, $*** p < 0.01$

	1996-2014		2005-2014	
	Brokerage commission		Brokerage commission	
	as % of trade	as % of TNA	as % of trade	as % of TNA
Selling Broker use	0.00461	0.0127***	0.0115***	0.0143***
	(1.54)	(2.60)	(2.95)	(2.60)
Value	0.00446**	0.000272	-0.00139	-0.00712***
	(2.18)	(0.10)	(-0.65)	(-2.61)
Blend	0.000433	-0.00290	-0.00135	-0.00726**
	(0.25)	(-1.03)	(-0.69)	(-2.30)
Large Cap	-0.0185***	-0.0224***	-0.0190***	-0.0256***
	(-8.49)	(-7.18)	(-7.98)	(-7.30)
Mid Cap	-0.00737***	-0.00595	-0.00823***	-0.0124***
	(-2.75)	(-1.44)	(-2.82)	(-2.80)
Log Fund TNA	-0.00121***	-0.00183***	-0.000112	-0.000121
	(-2.88)	(-3.11)	(-0.24)	(-0.18)
Log Fund Family TNA	-0.00443***	-0.00589***	-0.00487***	-0.00620***
	(-11.98)	(-9.97)	(-11.62)	(-9.26)
Trade as % of TNA	-0.0000238***	0.000863***	-0.0000173***	0.000759***
	(-6.23)	(59.82)	(-3.59)	(43.57)
Index fund	-0.0351***	-0.0216***	-0.0305***	-0.0183***
	(-16.67)	(-6.28)	(-13.45)	(-5.03)
Load/12b-1 fee charged	0.00494***	0.00714***	0.00610***	0.00681**
	(2.83)	(2.72)	(3.28)	(2.51)
Broker Herfindahl	-0.0152***	-0.0220***	-0.0298***	-0.0337***
	(-2.93)	(-2.73)	(-5.10)	(-4.21)
Institutional % of TNA	-0.0200***	-0.0231***	-0.0155***	-0.0167***
	(-11.33)	(-8.31)	(-7.74)	(-5.16)
Log Primary Broker Size	-0.00110***	-0.000780***	-0.00177***	-0.00153***
	(-6.82)	(-3.07)	(-8.15)	(-4.71)
Constant	0.210***	0.155***	0.202***	0.154***
	(31.86)	(15.62)	(25.42)	(13.29)
Observations	72,423	72,423	40,016	40,016
R^2	0.104	0.544	0.131	0.539

Table 21: **Impact of Using Selling Brokers on Brokerage Commissions - Single Broker Funds**

Results for semi-annual regression of brokerage commission rates on selling broker use dummy and other control variables for the sample of funds that used only one broker during the corresponding NSAR reporting period. Standard errors clustered by funds. t statistics in parentheses. $* \ p < 0.10$, $** \ p < 0.05$, $*** \ p < 0.01$

	1996-2014		2005-2014	
	Brokerage commission as % of trade	as % of TNA	Brokerage commission as % of trade	as % of TNA
Selling Broker use	0.0695***	0.0970	0.0987***	0.116*
	(2.99)	(1.02)	(6.43)	(1.81)
Value	0.0209	0.0291	0.0101	0.00694
	(1.16)	(1.07)	(0.72)	(0.35)
Blend	0.00916	0.0365*	0.00830	0.0318
	(0.89)	(1.81)	(0.75)	(1.58)
Large Cap	-0.0640***	-0.0867*	-0.0424	-0.0823*
	(-2.65)	(-1.86)	(-1.63)	(-1.88)
Mid Cap	-0.0401	-0.0271	-0.0123	-0.0330
	(-1.50)	(-0.51)	(-0.43)	(-0.66)
Log Fund TNA	-0.0125***	-0.0137**	-0.00590*	-0.00679
	(-3.50)	(-2.50)	(-1.84)	(-1.39)
Log Fund Family TNA	0.00209	0.00341	-0.00139	0.000668
	(0.78)	(0.85)	(-0.69)	(0.27)
Trade as % of TNA	-0.0000607**	0.000656***	0.00000901	0.000752***
	(-2.25)	(5.89)	(0.23)	(6.52)
Index fund	-0.0261*	-0.0730***	-0.0173	-0.103**
	(-1.69)	(-2.92)	(-0.69)	(-2.12)
Load/12b-1 fee charged	0.0266**	0.0168	0.00346	-0.00445
	(2.44)	(0.82)	(0.32)	(-0.23)
Institutional % of TNA	-0.00955	-0.0453	-0.0131	-0.0896**
	(-0.37)	(-1.00)	(-0.60)	(-2.36)
Log Primary Broker Size	-0.00395***	-0.00397	-0.00160	-0.00134
	(-3.11)	(-1.61)	(-1.05)	(-0.54)
Constant	0.254***	0.185**	0.179***	0.126*
	(6.25)	(2.26)	(4.73)	(1.90)
Observations	1,513	1,513	930	930
R^2	0.200	0.378	0.199	0.488

Table 22: **Impact of Using Affiliated and Selling Brokers on Brokerage Commissions**

Results for semi-annual regression of brokerage commission rates on affiliated broker use dummy and selling broker use dummy and other control variables. Standard errors clustered by funds. t statistics in parentheses. $* p < 0.10$, $** p < 0.05$, $*** p < 0.01$

	1996-2014		2005-2014	
	Brokerage commission		Brokerage commission	
	as % of trade	as % of TNA	as % of trade	as % of TNA
Selling Broker Use	0.00462	0.0127***	0.0116***	0.0144***
	(1.56)	(2.61)	(2.96)	(2.60)
Affiliated Broker Use	0.00679***	0.00992***	0.00218	0.00189
	(3.65)	(3.57)	(0.99)	(0.69)
Value	0.00429**	0.0000347	-0.00146	-0.00718***
	(2.10)	(0.01)	(-0.69)	(-2.62)
Blend	0.000474	-0.00284	-0.00135	-0.00726**
	(0.27)	(-1.01)	(-0.69)	(-2.30)
Large Cap	-0.0185***	-0.0224***	-0.0190***	-0.0255***
	(-8.50)	(-7.19)	(-7.96)	(-7.29)
Mid Cap	-0.00738***	-0.00597	-0.00824***	-0.0124***
	(-2.75)	(-1.45)	(-2.82)	(-2.80)
Log Fund TNA	-0.00123***	-0.00185***	-0.000110	-0.000119
	(-2.93)	(-3.16)	(-0.23)	(-0.18)
Log Fund Family TNA	-0.00444***	-0.00591***	-0.00487***	-0.00620***
	(-12.05)	(-10.02)	(-11.64)	(-9.27)
Trade as % of TNA	-0.0000242***	0.000863***	-0.0000173***	0.000759***
	(-6.34)	(59.81)	(-3.60)	(43.56)
Index fund	-0.0350***	-0.0215***	-0.0306***	-0.0183***
	(-16.78)	(-6.29)	(-13.46)	(-5.04)
Load/12b-1 fee charged	0.00464***	0.00670**	0.00604***	0.00676**
	(2.67)	(2.56)	(3.26)	(2.50)
Broker Herfindahl	-0.0160***	-0.0231***	-0.0299***	-0.0338***
	(-3.14)	(-2.92)	(-5.17)	(-4.24)
Institutional % of TNA	-0.0198***	-0.0229***	-0.0154***	-0.0167***
	(-11.22)	(-8.21)	(-7.70)	(-5.14)
Log Primary Broker Size	-0.00111***	-0.000790***	-0.00177***	-0.00153***
	(-6.87)	(-3.10)	(-8.18)	(-4.72)
Constant	0.211***	0.155***	0.202***	0.154***
	(31.94)	(15.65)	(25.40)	(13.29)
Observations	72423	72423	40016	40016
R^2	0.105	0.544	0.131	0.539

Table 23: **Impact of Using Affiliated and Selling Brokers on Brokerage Commissions - Single Broker**

Results for semi-annual regression of brokerage commission rates on affiliated broker Use dummy and selling broker use dummy and other control variables for the sample of funds that used only one broker during the corresponding NSAR reporting period. Standard errors clustered by funds. t statistics in parentheses. $* \ p < 0.10$, $** \ p < 0.05$, $*** \ p < 0.01$

	1996-2014		2005-2014	
	Brokerage commission		Brokerage commission	
	as % of trade	as % of TNA	as % of trade	as % of TNA
Selling Broker Use	0.0722***	0.0998	0.0924***	0.111
	(2.80)	(0.98)	(6.03)	(1.56)
Affiliated Broker Use	0.0614***	0.0637***	0.0530***	0.0420*
	(4.36)	(2.65)	(3.89)	(1.76)
Value	0.0193	0.0275	0.00853	0.00572
	(1.14)	(1.06)	(0.61)	(0.29)
Blend	0.00625	0.0335*	0.00648	0.0304
	(0.62)	(1.69)	(0.59)	(1.53)
Large Cap	-0.0591***	-0.0816*	-0.0401	-0.0805*
	(-2.75)	(-1.85)	(-1.60)	(-1.88)
Mid Cap	-0.0307	-0.0174	-0.00551	-0.0276
	(-1.23)	(-0.35)	(-0.20)	(-0.57)
Log Fund TNA	-0.0116***	-0.0128**	-0.00562*	-0.00657
	(-3.26)	(-2.35)	(-1.71)	(-1.31)
Log Fund Family TNA	0.00119	0.00247	-0.00207	0.000134
	(0.47)	(0.65)	(-1.06)	(0.05)
Trade as % of TNA	-0.0000635**	0.000653***	0.00000180	0.000746***
	(-2.27)	(5.85)	(0.05)	(6.43)
Index fund	-0.0193	-0.0660***	-0.0149	-0.101**
	(-1.31)	(-2.61)	(-0.61)	(-2.07)
Load/12b-1 fee charged	0.0140	0.00376	-0.00329	-0.00980
	(1.34)	(0.20)	(-0.31)	(-0.53)
Institutional % of TNA	-0.0211	-0.0572	-0.0250	-0.0990**
	(-0.90)	(-1.23)	(-1.13)	(-2.42)
Log Primary Broker Size	-0.00138	-0.00131	0.000113	0.0000191
	(-1.09)	(-0.54)	(0.07)	(0.01)
Constant	0.233***	0.163**	0.170***	0.119*
	(6.02)	(2.14)	(4.60)	(1.85)
Observations	1,513	1,513	930	930
R^2	0.246	0.392	0.241	0.494

Table 24: **Impact of Using Affiliated and Selling Brokers on Fund Returns**

Results for regression of Fund semi-annual gross returns on affiliated broker Use dummy and selling broker use dummy and other control variables. Standard errors clustered by funds. t statistics in parentheses. $* \ p < 0.10$, $** \ p < 0.05$, $*** \ p < 0.01$

	Gross Returns (6-months)	
	Model 1	Model 2
Affiliated Broker Use	-0.0017	
	(-0.48)	
Selling Broker Use		-0.0082
		(-1.31)
Mid Cap	0.0042	0.0041
	(0.73)	(0.71)
Large Cap	-0.0090	-0.0091
	(-1.45)	(-1.45)
Value	0.0073	0.0073
	(0.71)	(0.71)
Blend	0.0043	0.0043
	(0.70)	(0.69)
Log Fund Family TNA	-0.0003	-0.0004
	(-0.39)	(-0.45)
Log Fund TNA	0.0051	0.0051
	(1.52)	(1.51)
Institutional % of TNA	0.0047	0.0048
	(1.36)	(1.42)
Expense ratio	0.0013	0.0013
	(0.16)	(0.15)
Index fund	-0.0004	-0.0005
	(-0.10)	(-0.11)
Log Fund age	-0.0029	-0.0029
	(-0.53)	(-0.53)
Constant	-0.0090	-0.0081
	(-0.24)	(-0.22)
Observations	70,544	70,544
R^2	0.005	0.005

Table 25: **Distribution Fee (2005 to 2014)**

Results for annual regression of 12b-1 fee, front-end load, and marketing and distribution Fee on selling broker use dummy and other control variables. Marketing and distribution fee defined as the sum of 12b-1 fee and one seventh of the front end load, assuming average holding period for a mutual fund is seven years. Standard errors clustered by funds. t statistics in parentheses. $* p < 0.10$, $** p < 0.05$, $*** p < 0.01$

	12b1 Fee	Front-end Load	Marketing and Distribution Fee
Selling Broker Use	-0.0282**	0.0332	-0.0219
	(-2.53)	(0.17)	(-0.60)
Value	-0.00409	0.101	0.0114
	(-0.65)	(1.23)	(0.76)
Blend	-0.00569	0.0319	-0.000720
	(-0.98)	(0.43)	(-0.05)
Large Cap	0.0159***	0.164**	0.0390***
	(2.76)	(2.20)	(2.84)
Mid Cap	0.0164**	0.123	0.0340**
	(2.40)	(1.35)	(2.03)
Log Fund TNA	-0.00672***	-0.0465**	-0.0133***
	(-4.30)	(-2.47)	(-3.65)
Log Fund Family TNA	0.00719***	0.106***	0.0229***
	(6.55)	(7.39)	(8.44)
Index fund	-0.0452***	-0.646***	-0.137***
	(-5.65)	(-6.67)	(-7.12)
Institutional % of TNA	-0.0940***	-0.149**	-0.116***
	(-20.37)	(-2.06)	(-9.17)
Four factor alpha - 2years	-2.911***	-18.35***	-5.576***
	(-6.29)	(-3.43)	(-5.54)
fundage	-0.000232	0.00694**	0.000744
	(-1.11)	(2.32)	(1.37)
Constant	0.0930***	-0.279	0.0407
	(5.52)	(-1.29)	(0.98)
Observations	20,405	20,163	20,446
R^2	0.079	0.032	0.056

Table 26: **Flow Performance Sensitivity**

Results for Fama-MacBeth regressions of semi-annual fund flows on semi-annual performance measures created following Sirri and Tufano [1998] and other control variables. t statistics in parentheses. $*$ $p < 0.10$, $**$ $p < 0.05$, $***$ $p < 0.01$

	Fund Flow
Intercept	0.495***
	5.61
LOWPERF	0.207**
	2.74
MIDPERF	0.115***
	6.26
TOPPERF	0.702***
	8.39
SellingBrokerUse*LOWPERF (t-1)	-0.332***
	-3.81
SellingBrokerUse*MIDPERF (t-1)	0.001
	0.02
SellingBrokerUse*TOPPERF (t-1)	0.111
	0.71
Log TNA (t-1)	-0.026***
	-5.24
Objective category flow	0.725***
	7.4
Fund return volatility (t-1)	-1.15*
	-2.1
Observations	31,073

Table 27: **Economic impact**

Estimates of money lost annually as percentage of TNA, based on the coffecient estimates from tables 18, 19, 20 and 21.

Panel A: Affiliated Brokers - Jan-1996 to Jun-2014

	All Funds		Funds with Single Broker	
	Brokerage commission as % of trade	as % of TNA	Brokerage commission as % of trade	as % of TNA
Avg Semi-annual Trade as % of TNA	133.950		125.810	
Semi-annual loss in brokerage (%)	0.007	0.010	0.061	0.064
Lost in Brokerage Annually (as % of TNA)	0.018	0.020	0.154	0.127

Panel B: Selling Brokers - Jan-2005 to Jun-2014

	All Funds		Funds with Single Broker	
	Brokerage commission as % of trade	as % of TNA	Brokerage commission as % of trade	as % of TNA
Avg Semi-annual Trade as % of TNA	133.950		125.810	
Semi-annual loss in brokerage (%)	0.012	0.014	0.099	0.116
Lost in Brokerage Annually (as % of TNA)	0.031	0.029	0.248	0.232

Table 28: **Impact of Using Selling Brokers on Brokerage Commissions - Selling Brokers from Morningstar**

Results for semi-annual regression of Brokerage commission rates on selling broker use dummy and other control variables. Using fund filings from Jan-2012 to Jun-2014 and the latest selling brokers from the Morningstar database, assuming the selling brokers did not change since 2012. Standard errors clustered by funds. t statistics in parentheses. $* p < 0.10$, $** p < 0.05$, $*** p < 0.01$

	All Funds		Single Broker Funds	
	Brokerage commission		Brokerage commission	
	as % of trade	as % of TNA	as % of trade	as % of TNA
Selling Broker Use	0.00569***	0.00633**	0.0479**	0.0459
	(2.81)	(2.56)	(2.09)	(1.42)
Value	0.00268	-0.00234	0.00905	-0.00926
	(1.10)	(-0.88)	(0.49)	(-0.40)
Blend	0.00267	0.000526	0.0154	0.0177
	(1.18)	(0.18)	(1.22)	(1.09)
Large Cap	-0.0181***	-0.0168***	-0.0525*	-0.0898**
	(-6.66)	(-5.20)	(-1.94)	(-2.18)
Mid Cap	-0.00790**	-0.0108***	-0.0414	-0.0827*
	(-2.40)	(-2.82)	(-1.45)	(-1.93)
Log Fund TNA	0.000235	0.000205	-0.00410	0.000421
	(0.39)	(0.28)	(-0.94)	(0.08)
Log Fund Family TNA	-0.00483***	-0.00538***	-0.00367	-0.00723
	(-9.73)	(-8.21)	(-0.90)	(-1.36)
Trade as % of TNA	-0.00000691	0.000594***	0.0000474	0.000692***
	(-0.80)	(28.62)	(0.74)	(6.67)
Index fund	-0.0247***	-0.0214***	-0.123***	-0.243***
	(-9.02)	(-5.06)	(-4.34)	(-5.43)
Load/12b-1 fee charged	0.00567***	0.00246	-0.0114	-0.00873
	(2.82)	(1.04)	(-0.95)	(-0.54)
Broker Herfindahl	-0.0259***	-0.0315***		
	(-3.57)	(-3.91)		
Institutional % of TNA	-0.00993***	-0.00717**	0.0730***	0.00971
	(-4.03)	(-2.33)	(3.19)	(0.30)
Log Primary Broker Size	-0.00221***	-0.00142***	0.00460*	0.00667**
	(-7.05)	(-3.84)	(1.86)	(2.05)
Constant	0.178***	0.123***	0.141***	0.103*
	(17.19)	(10.39)	(3.39)	(1.80)
Observations	9,092	9,092	254	254
R^2	0.148	0.512	0.330	0.620

Table 29: **Brokerage Commissions for Single Broker Funds - By Fund Size**

Compares the brokerage commission rates for funds that used affiliated or selling broker with the funds that did not, in the sample of funds that used only one broker during the reporting period. Funds split into four size categories based on TNA and average brokerage commission rates for funds in each category reported.

	Non Affiliated Non Selling Brokers		Affiliated or Selling Brokers	
	Brokerage commission		Brokerage commission	
Fund Size	as % of trade	as % of TNA	as % of trade	as % of TNA
Less than 25M	0.092	0.100	0.173	0.199
25M to 50M	0.066	0.067	0.133	0.119
50M to 100M	0.055	0.043	0.144	0.140
Greater than 100M	0.041	0.024	0.166	0.097

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