

Mutual Funds' Soft Dollar Arrangements: Determinants, Impact on Shareholder Wealth, and Relation to Governance

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Abstract Mutual fund advisers either expense the cost of research and other services or pay for them with soft dollars. This study is the first to use actual soft dollar and total brokerage commission figures for a large number of funds and to examine how soft dollars are linked to mutual fund governance. Employing a survivorship bias-free sample of actively managed US mutual funds, we find that higher soft dollar and total brokerage commissions are associated with higher advisory fees but not with higher risk-adjusted fund returns. These findings suggest that mutual fund shareholders, on average, do not benefit from the research and the information supplied by third parties such as brokers. We also find that larger and more highly compensated boards are associated with lower advisory fees. Larger boards are also associated with slightly lower turnover. The median tenure of board directors is negatively correlated with soft dollar commissions and turnover, but not correlated with total brokerage commissions or the cost of turning over a portfolio. Higher proportions of directors with a finance background are associated with higher advisory fees, brokerage commissions, and turnover costs. These associations might indicate greater agency costs.

Keywords Mutual funds · Soft dollars · Mutual fund fees · Mutual fund performance · Mutual fund governance

JEL classification G20 · G23 · G34

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1 Introduction

Investing in financial assets via intermediaries such as mutual funds can provide investors with the diversification they want. But, because the mutual fund shareholders are assessed an annual expense ratio for the professional management of their portfolios, this diversification can be costly. Further, funds can also charge separate sales or distribution charges (front- and back-end loads, 12b-1 fees). These costs are disclosed prominently in the funds' prospectuses and their reports to the shareholders. In addition, the shareholders pay the cost of brokerage commissions incurred by the fund; commissions are a major category of expenses but are not part of the reported expense ratio.¹

The legal fiduciary duty of the mutual funds' advisers as defined by the Securities and Exchange Commission (SEC) includes but is not limited to the requirement to seek the best transaction execution. In addition to execution, the brokers can provide other services to the funds' advisers, such as the sales of the funds' shares, investment research and statistical information, and administrative services. Funds can produce these services in-house or pay third parties outright, thus including their cost in the expense ratio. Alternatively, the funds can pay brokers for these services by bundling the costs with the execution commissions and then deducting these bundled commissions directly from the fund's assets, which bypasses the expense ratio. Section 28(e) of the Securities Exchange Act of 1934 allows a "safe harbor" that permits advisers to transfer a premium to brokers for these additional services. This section also requires advisers to disclose such arrangements. The disclosure of these bundled soft dollar commissions is more opaque than expensing the cost of non-execution services. Edelen et al. (2012) argue that the lack of visibility of soft dollar commissions can exacerbate agency conflicts and result in less efficient fund operations. They suggest that funds engage in the opaque disclosure of costs because such disclosures are associated with a less negative impact on their flows. The SEC's *Guidance Regarding Client Commission Practices under Section 28(e) of the Securities Exchange Act of 1934* (2006) states:

Use of client commissions to pay for research and brokerage services presents money managers with significant conflicts of interest, and may give incentives for managers to disregard their best execution obligations when directing orders to obtain client commission services as well as to trade client securities inappropriately in order to earn credits for client commission services.

The funds' managers can trade excessively to generate a target volume of commission payments that reduces the efficiency of operations (Edelen et al. 2012). The opaqueness of soft dollar arrangements makes them hard to monitor not only by the shareholders but also by the boards, which potentially leads to governance inefficiencies.

Purchasing additional services with soft dollars can result in two benefits to the fund's shareholders: (i) higher risk-adjusted returns on their portfolios as a result of the obtained research and information, and (ii) lower advisory fees because the cost of research and other additional services that otherwise would be part of the total expense ratio is part of the brokerage commissions. Not consistently achieving at least one of these benefits indicates that the soft dollar arrangements, on average, lead to a reduction in the shareholders' wealth.

¹ The Securities and Exchange Commission's *Report on mutual fund fees and expenses* (2000) explains it as the absence of a widely accepted approach to measure spread costs. Including trade commissions in the expense ratio can be misleading if brokers charging higher commissions have better execution that results in lower spread costs.

Numerous studies examine the performance of mutual funds (e.g., Carhart 1997; Chen et al. 2004; Daniel et al. 1997) and their expenses, fees, and contracts (e.g., Bergstresser et al. 2009; Deli 2002; Gao and Livingston 2008; Livingston and O’Neal 1996; Kuhnen 2009; Luo 2002). Relatively few studies directly examine the determinants and the use of soft dollars by mutual funds (e.g., Conrad et al. 2001; Edelen et al. 2012; Livingston and O’Neal 1996), probably due to lack of soft dollar data or the difficulty in retrieving such data.

We examine the relations between the use of soft dollar arrangements and (i) the fund, contract environment, and the brokers’ participation characteristics; (ii) the funds’ governance (characteristics of the funds’ boards); and (iii) the potential benefits to shareholders. We use hand-collected soft dollar and total brokerage commission data to create a survivorship bias-free sample of 391 actively managed US-based equity mutual funds from 1999 through 2003. To our knowledge, this study is the first one that uses actual (not estimated) soft dollar commission amounts at the fund level for a large number of mutual funds and that examines soft dollar use in the context of mutual fund governance.

We find that the use of soft dollars varies widely across funds. This variation implies that using actual soft dollar amounts is likely to increase the robustness of the results. We find that funds with higher soft dollar commissions do not have better risk-adjusted performance but charge higher advisory fees. Therefore, fund shareholders, on average, do not benefit from soft dollar arrangements. The funds with larger and more highly compensated boards tend to have lower advisory fees. The boards with a longer median tenure of directors are associated with lower soft dollar fees and slightly lower turnover. A proportion of directors with a finance background on the fund’s board is positively correlated with total brokerage commissions and the cost of turning over a portfolio.

This paper proceeds as follows. Section 2 highlights the use and disclosure of soft dollar arrangements by mutual funds. In Section 3, we discuss the potential impact of soft dollar arrangements on the shareholders’ wealth and the potential determinants of soft dollar use. In Section 4, we describe the data and methods. We report and discuss the empirical results in Section 5. Section 6 is the conclusion.

2 Soft dollar use and disclosure by mutual funds

The use of soft dollars is common if not an industry norm. Greenwich Associates reported in 1996 that 71 % of the total transaction executions involved some form of soft dollar arrangement (Wirth 1997). Livingston and O’Neal (1996) suggest that a substantial amount of brokerage commissions are payments for research services rather than for execution. Goldstein et al. (2009) suggest that the persistence of high per-share trade commissions in an era of increased competition from discount brokers reflects the bundling of premium services rather than specific characteristics of the trade. The SEC (1998) estimates that soft dollar commissions for research products add up to 30–50 % of the total brokerage expenses, reaching approximately \$1.4 billion in 1998. Conrad et al. (2001) estimate that an average proportion of the soft dollar commissions paid for research is 60 %. Our initial screening of equity mutual funds discloses that two thirds of the funds report the adoption of soft dollar arrangements.

Because a fund’s shareholders ultimately pay the brokerage fees, critics argue that soft dollars represent a breach of loyalty in which the fund’s advisers unjustly enrich themselves by shifting the research bill to investors. Practitioners (e.g., Ambachtsheer 1993; Blume 1993;

Bogle (2009) generally have a negative opinion of soft dollar practices. Bogle (2009) considers the use of soft dollars for marketing a waste of the shareholders' assets. Blume (1993) finds that soft dollar arrangements often lead institutional managers to use brokers that they ordinarily would not use. On the other hand, Horan and Johnsen (2008) hypothesize that by paying the adviser's research bill up-front, the broker posts a quality-assuring performance bond that efficiently subsidizes the adviser's investment research.² Also, Johnsen (2009) argues that soft dollars are an innovative and efficient form of economic organization that benefits the funds' investors.

The SEC requires mutual funds to supply investors with the fund's prospectus and on request, the Statement of Additional Information (SAI). The prospectus reports the total expense ratio (which does not include brokerage commissions), front-end and back-end loads, and 12b-1 fees (while they are part of the expense ratio, they also must be reported separately). The SAI reports brokerage commissions. The existence of soft dollar commissions, but not their amount, must be disclosed. There is no specific format for disclosure. When disclosed, a typical statement on the soft dollar commissions and related transactions reads as follows: "For the fiscal year ended June 30, 2002, the Funds directed the following amount of transactions and paid the following brokerage commissions to brokers who provided research services in connection with such transactions." For unsophisticated investors, the effect of brokerage commissions and turnover on the net asset value (NAV) and returns might not be clear. Barber et al. (2005) show that investors pay more attention to more "visible" or up-front fees such as front-end loads than to the funds' operating expenses. The SAI might be hard to obtain (Gao and Livingston 2008), and in most cases the information on soft dollar commissions is not disclosed clearly and prominently. The funds also supply N-SAR reports to the SEC on a semiannual basis. The format of the N-SAR reports, which contain large amounts of information, is not retail investor friendly. The Carlin (2009) model suggests that funds might have an incentive to decrease the transparency of payments and induce complexity because it prevents some retail consumers from obtaining knowledge about market prices. The SEC (1998) reports that many advisors do not provide sufficient information to enable investors to understand their soft dollar policies and practices.

Our sample period ends in 2003; it is fairly old. However, there appears to be little need for an update since not much has changed in the funds' brokerage expenses and soft dollar practices between then and now.³ A report by Woodbine Associates (2012) finds that the practice of bundling commissions remains deeply ingrained in the industry despite the investors' calls for transparency and cost savings. M. Samelson, the author of the report, is critical of the practice and states in his discussion of the report:

Abolishing soft dollar arrangements would lead to a far more efficient and transparent environment and remove many conflicts of interest between money managers and their clients. It would also likely lead to immediate changes in business practices and industry structure.

² This is because, according to Horan and Johnsen (2008), an institutional broker typically provides a fund's manager with credits up-front to pay a specific dollar amount of the manager's research bill to independent vendors. In exchange, the manager promises to send the broker a specific amount of future trades at premium commission rates.

³ Firms are rarely punished by regulators for abusing soft dollar practices. The most recent occurrence is an \$813,000 fine imposed by the SEC on a New York-based firm Instinet on December 26, 2013 for inappropriate use of soft dollars (SEC 2013).

3 Soft dollars: potential determinants and impact on shareholder wealth

3.1 Potential benefits of soft dollars to shareholders

If additional services and research help improve portfolio management, we should observe a positive relation between soft dollar commissions and the funds' performance. The information obtained through soft dollar arrangements is less likely to be embedded in the prices of traders that do not have that information. The informed investors might profit more from their information if less of it is incorporated into the prices by uninformed investors (Livne and Trueman 2002). Hence, the fund might be motivated to trade more. Moreover, Brennan and Chordia (1993) argue that high-quality information can also result in higher revenue to the broker as the seller of the information. However, the quality of research and other services obtained under soft dollar arrangements is not necessarily homogeneous, so the impact of soft dollar use is likely to vary across brokers. Brennan and Chordia (1993) suggest that the amount of trading done by the information purchaser could be a proxy for the quality of information. Thus, advisers that obtain what they believe is high quality information might engage in more transactions per dollar of soft commissions and achieve better gross performance. On the other hand, Edelen et al. (2012) suggest that funds might engage in excessive (superfluous) trading to generate the target level of commission payments, thus wasting shareholders' money. In this case, higher soft dollar commissions would be associated with higher turnover and poorer performance.

The second potential benefit of soft dollar arrangements to the shareholders is lower advisory fees because the cost of research is paid as part of the brokerage commissions instead. However, Livingston and O'Neal (1996) find no trade-off between aggregate brokerage commissions per trade and the total expense ratio and suggest that the funds' shareholders do not benefit from soft dollar arrangements through a reduction in advisory fees. Therefore, higher soft dollar commissions are not necessarily associated with lower advisory fees. A negative (positive or no) relation between soft dollar commissions and advisory fees would indicate that the shareholders do (do not) benefit from a decrease in advisory fees as the soft dollar commissions increase.

Deli (2002) finds that the advisory fee is directly related to the fund's turnover and inversely related to the fund's size and the adviser's size. In addition, to capture the effect of competition between different investment objectives, we control for the concentration of assets within each objective.

3.2 Potential determinants of soft dollar arrangements

3.2.1 Considerations for the broker's selection

The management of brokerage services starts with the determination of the broker's participation. If choosing brokers is a strategic decision, then the use of soft dollars should reflect the adviser's ex ante considerations on the participation. The mutual funds in the United States disclose which of the following services they consider when selecting brokers: (1) sales of the fund's shares, (2) receipt of investment research and statistical information, (3) receipt of quotations for portfolio valuations, (4) ability to execute portfolio transactions to obtain the best price and execution, and (5) receipt of telephone line and wire services.

These five services fall into four categories: (1) distribution, (2) research, (3 and 5) administrative, and (4) transaction execution. A broker's service that is selected mostly "to obtain the best price and execution" should be associated with lower brokerage commissions

and less soft dollar use. However, almost all of the funds in our sample report it as one of the considerations for the broker's participation. This finding is not surprising because obtaining the best execution for clients is part of the fiduciary duty of investment companies. We hypothesize that the soft dollar use should be higher if the "receipt of investment research and statistical information" is a consideration for the broker's selection. Further, the adviser might choose brokers based on their ability to market the fund's shares.⁴

3.2.2 *Brokers and contract environment characteristics*

Concentration of the brokers The fewer brokers the fund uses, the more concentrated the supply of brokerage services. Goldstein et al. (2009) show that brokerage commission patterns are consistent with long-term agreements between the funds' advisers and brokers, where an adviser directs a target level of order flow to a broker as payment for premium services such as research and share distribution. Thus, if the adviser chooses brokers for their premium services, a more concentrated supply of services would be associated with higher commissions. If, on the other hand, the adviser chooses brokers to minimize the cost of brokerage services, a more concentrated supply of services would be associated with lower total brokerage commissions.

Institutional relations with the brokers The general fiduciary duty is imposed on investment advisers by Section 206 of the Investment Adviser Act. An investment adviser should use an affiliated broker only if the broker can provide the best execution. In addition to the commissions for transaction executions and soft dollar arrangements, the funds can transfer rent to brokers as part of the sales loads and 12b-1 fees, especially if the broker is part of their sales force. If these rent transfers exist, the broker can provide transaction execution and additional services at lower costs. Christoffersen et al. (2013) find that a fund's future performance decreases as the brokers' payments from the load increase, especially for unaffiliated brokers. A reverse rent transfer takes place when the broker has an arrangement to return or credit part of the commissions or profits back to the fund's adviser. This reverse rent transfer might induce the adviser to use more soft dollars. We control in our tests for the broker's affiliation, the sales loads and 12b-1 fees received by the brokers, and the arrangements to credit part of the commissions or profits back to the adviser.

3.2.3 *Fund and board characteristics*

Size, turnover, and investment objectives First, larger funds obtain lower commissions as a percent of total assets because the fixed component of commissions is spread over a larger amount of assets. Second, higher turnover could be a sign of aggressive trading, possibly induced by the information paid for by the soft dollars. Third, the funds with certain investment objectives might be more likely to demand or rely on external research. For example, Livingston and O'Neal (1996) suggest that international funds have higher brokerage expenses because they invest in stocks that are relatively difficult to research. We use investment objective fixed effects in our regressions to control for these differences.

⁴ A SEC ruling in December 2004 prohibited the use of commission bundling to pay for distribution expenditures. Our sample ends in 2003. Funds are still allowed to charge 12b-1 fees for distribution. The 12b-1 fee is part of a fund's expense ratio but it is also reported separately.

Fund governance The decision to use soft dollar arrangements are made by the fund's adviser and are overseen by the board. Hypothetically, soft dollar arrangements should be evaluated by the fund's board based on two criteria. First, are they associated with improved risk-adjusted performance? Second, does the advisory fee decrease proportionally to the cost of the outsourced management services? Gil-Bazo and Ruiz-Verdu (2009) suggest that better governance might bring fees more in line with the performance. However, it is fairly common for advisers to supply poorly detailed information regarding the types of services obtained with soft dollars (SEC 1998). The opaqueness of soft dollar arrangements can increase the complexity of the board's task.

There is a great deal of literature that studies the relations between the mutual funds' expenses and governance. The evidence regarding the board's size and governance is mixed. Tufano and Sevick (1997) suggest that funds with larger boards have higher total fees. They also argue that more independent boards are better watchdogs. Baker and Gompers (2003) and Kuhnen (2009) suggest that larger boards have higher monitoring potential. Moreover, the characteristics of individual board members can affect the board's governing abilities. These characteristics (e.g., background, independence, outside directorships, or compensation) are not necessarily independent because new board members emerge from the pool of candidates nominated by current board members.

The relation between the board members' tenure and fund governance is not obvious a priori. On the one hand, the funds can benefit from the experience of members who have been on the board for a long time. On the other hand, the selection process could be influenced by the adviser. Xie et al. (2003) suggest that independent directors with finance backgrounds are better monitors of earnings management. Having an outside directorship could be interpreted as a signal of high quality in the directors (Booth and Deli 1999; Shivdasani and Yermack 1999). If a director collects income from other directorships, it might reduce the probability of aligning the director's and the adviser's interests through increased compensation. The literature provides mixed evidence about the effect of compensation on the oversight of independent directors. A positive relation between compensation and advisory fees could signal the superior abilities of directors that deserve higher compensation, but it also could be an attempt to create an incentive to align the independent directors' interests with the adviser's.⁵

4 Data and methodology

For the period from 1999 through 2003, we randomly select 432 actively managed equity, convertible, or balanced funds from the CRSP Survivor-Bias-Free US Mutual Fund Database that report using soft dollars in at least 1 year during the study period.^{6,7} After excluding Vanguard funds and apparent errors, the sample is reduced to 391 funds from 70 families that

⁵ See Tufano and Sevick (1997), Vafeas (1999), Perry (2000), Ryan and Wiggins (2004).

⁶ It is possible that the advisers who are more successful at using the services obtained through the soft dollar arrangements are more likely to disclose amounts of bundled commissions in addition to their existence. To determine whether the lack of uniform disclosure leads to selection bias, we conduct the Heckman sample selection bias test at the initial screening stage with 106 funds, 31 of which do not disclose the information. The test fails to reject the null of no selection bias and is robust to treating the funds that report zero soft dollar commissions as having no soft dollar arrangements. Including them into the sample under the assumption that they do not use soft dollar arrangements does not qualitatively affect the results.

⁷ When we exclude convertible and balanced funds from the analyses, the results are qualitatively the same.

are managed by over 120 different advisers.⁸ Many of these funds are very small. Accordingly, we run empirical tests on all of the funds in the sample as well as on the funds with total net assets in excess of \$50 million (304 funds).

This sample is representative of the US equity mutual fund universe during the study period. The CRSP database averaged around 4000 funds in the objectives that we are examining. The database averaged 542 families per year from 1999 to 2003, and the total net assets of all of the funds (non-index equity, convertible, and balanced funds) averaged \$6.06 trillion (\$2.76 trillion) per year in that period. Our sample covers around 10 % of both the funds and the net assets of the total funds.⁹ The average advisory fee of the total mutual funds was about 74 basis points, compared to 78 basis points in our sample. The proportions of funds in each investment objective and the proportion of dead funds in the sample match those in the CRSP Mutual Fund Database.

Some of the variables are reported at the share-class level (e.g., total net assets, loads and 12b-1 fees, returns) while others (e.g., advisory fee, commissions, and turnover) are at the fund level.¹⁰ Thus, we need to aggregate the former to the fund level. We do this aggregation by applying the shares' class weights based on each class's total net assets at the beginning of a year (a month for the variables reported monthly, such as returns and total net assets). The year 1999 was picked as the first year because less than a half of the randomly selected funds disclosed the amounts of soft dollar commissions prior to 1999. The sample includes 40 fund-years in which zero soft dollar commissions are explicitly reported.^{11,12}

The information about soft dollar commissions, total brokerage commissions, and board members is collected from the funds' SAIs. The rest of the data are collected from the funds' N-SARs.

Livingston and O'Neal (1996) note that sells are likely to be higher than buys at times of high redemptions. Likewise, buys are likely to exceed sells at times of asset inflows. Therefore, the net turnover reported in Form N-SAR understates the total assets traded. We calculate the turnover as the sum of the purchases and sales reported in the N-SAR divided by the fund's weighted average assets over a year.¹³

Advisers report the total amount of brokerage commissions as well as the amounts paid to the top ten brokers. We estimate the broker concentration by computing the non-normalized Herfindahl index of the brokerage commissions paid by the fund's management to the top ten brokers. Two major alternative rent transfers to brokers and dealers are front-end loads and

⁸ Vanguard funds did not use soft dollars for research and other services during the sample period.

⁹ The CRSP Mutual Fund Database tracked share classes but not funds before 2004. According to the 2013 Investment Company Institute Fact Book (2013), there were an average of 4471 actively managed equity funds per year from 1999 to 2003 (4966 including hybrid funds), with average net assets of \$791 million (\$788 million including hybrid funds). The average net assets per fund is \$724 million in our sample.

¹⁰ The advisory fee often has a "stacked" structure: e.g., the advisory fee may be 1 % for the first \$10mln of assets under management, 0.75 % for the next \$90mln in assets (between \$10 million and \$100 million), and 0.5 % for assets above \$100mln. In such cases we compute the advisory fee based on the total net assets at the beginning of the year. In this example, if these assets were \$200 million at the beginning of the year, the weighted advisory fee is $(10\text{mln} \times 0.01 + 90\text{mln} \times 0.0075 + \$100\text{mln} \times 0.005) / 200\text{mln}$, or 0.638 %.

¹¹ Excluding these 40 zero soft dollar fund-years from the sample does not change the results.

¹² Large fund families such as Fidelity are likely to appear more frequently in the sample set. However, because a fund's family with a higher weight in the industry is more likely to influence the industry norms, this characteristic of a sample is representative of the whole population of actively managed equity mutual funds.

¹³ Funds with high turnover also bear the market impact cost of transactions in addition to brokerage commissions. However, Berkowitz et al. (1988) argue that the market impact costs are small relative to commissions and conclude that there is no economic trade-off between the market impact costs and commissions. Chan and Lakonishok (1993) suggest no correlation between the market impact costs and brokerage commissions. Thus, following Livingston and O'Neal's (1996), we do not control for the market impact cost.

12b-1 fees. Not all front-end loads and 12b-1 fees are received by the brokers. We use the actual amounts paid to brokers. Further, we include the fund’s and the board’s characteristics that we discussed in the previous section to shed light on the role the funds’ boards play in soft dollar arrangements. The literature mostly suggests that larger boards and longer tenured members are better watchdogs.

We start by studying the link between the different measures of the investing costs and the fund’s performance by running the following unbalanced panel regression with White’s period standard errors and covariance and Wallace and Hussain’s estimator of component variances:

$$FFAR_{i,t} = \beta_0 + \beta_1 Cost_{i,t} + \beta_2 Ln(FundSize_{i,t-1}) + \varepsilon_{i,t} \tag{1}$$

The *FFAR* (the four-factor adjusted return) is the annualized alpha from the estimation of the Carhart (1997) four-factor model for each fund-year by using 12 monthly observations. The Carhart model captures the fund’s before-fees risk-adjusted return.¹⁴ The *Cost* is represented by one of the following variables that measure the trading costs of the investors:

- (i) soft dollar use (*SDU*) = soft dollar commissions divided by the total brokerage commissions for fund *i* in year *t*, in %;
- (ii) soft dollar fee (*SoftFee*) = soft dollar commissions divided by net weighted average assets of fund *i* in year *t*, in basis points;
- (iii) brokerage fee (*BrkFee*) = total brokerage commissions divided by net weighted average assets of the fund for fund *i* in year *t*, in basis points;
- (iv) turnover (*Turn*) computed as the sum of purchases and sales divided by net weighted average assets; or
- (v) brokerage commissions for turning over the fund portfolio once (*TurnCost*) computed as *BrkFee* divided by *Turn*, in basis points.

The *FundSize* is the average of the 12 monthly net asset figures in thousands of dollars. We include *TurnCost* following Carhart (1997). We lag the log of the fund’s size 1 year to avoid a spurious correlation. The objective and the year fixed effects are included.^{15,16}

To investigate whether shareholders benefit from a reduction in advisory fees when soft dollars or other direct or indirect investing costs increase, we use the following model:

$$AdvFee_{i,t} = \beta_0 + \beta_1 Cost_{i,t} + \beta_2 Ln(FundSize_{i,t}) + \beta_3 Ln(AdvSize_{i,t}) + \beta_4 Ln(Accts_{i,t}) + \beta_5 Reimb_{i,t} + \beta_6 ObjConc_{i,t} + \beta_7 Indep_{i,t} + \beta_8 Seats_{i,t} + \beta_9 MedTenure_{i,t} + \beta_{10} Fin_{i,t} + \beta_{11} OtherDir_{i,t} + \beta_{12} Compens_{i,t-1} + \varepsilon_{i,t} \tag{2}$$

¹⁴ If a fund has multiple share classes, a weighted average monthly return is computed based on the weights of different share classes at the beginning of each month.

¹⁵ We also ran the regression with the variable *SoftPerTr_{i,t}*, defined as the log of the ratio of the dollar amount of transactions involving soft dollars to the soft dollar commissions – a control for the quality of information suggested by Brennan and Chordia (1993). A higher ratio might be suggestive of better information. This variables’ estimated coefficient is not significant, and its inclusion does not affect the results qualitatively. However, including it results in “losing” 104 funds that do not report the amount of transactions involving soft dollars. Accordingly, we do not use this variable.

¹⁶ Including family fixed effects for all 70 families would dramatically reduce the regression’s power, especially given that we already use the objective and year fixed effects (some families are represented by one or very few funds in our sample). When we add dummy variables for the 11 most highly represented families (accounting for 191 funds, about a half of our sample), the results do not change notably. Therefore, we do not include family fixed effects in the final set of regressions.

Along with the variables defined previously, we add the following:

<i>AdvFee</i> _{<i>i,t</i>}	dollar amount of gross advisory fee paid by fund <i>i</i> in year <i>t</i> divided by the weighted average assets of fund <i>i</i> in year <i>t</i> , in basis points
<i>AdvSize</i> _{<i>i,t</i>}	adviser's size, measured as the total assets of funds in the CRSP database managed by the same adviser, in millions of dollars
<i>Accts</i> _{<i>i,t</i>}	number of shareholder accounts with the fund
<i>Reimb</i> _{<i>i,t</i>}	dollar amount of the (partial) reimbursement of expenses by the fund's adviser to shareholders divided by the fund's total size (total net assets), in basis points
<i>ObjConcntr</i> _{<i>i,t</i>}	normalized Herfindahl index of the fund's objective calculated following the Luo (2002) method ¹⁷
<i>Indep</i> _{<i>i,t</i>}	percentage of board directors considered independent
<i>Seats</i> _{<i>i,t</i>}	number of seats on the board of directors
<i>MedTenure</i> _{<i>i,t</i>}	median tenure of the board's directors
<i>Fin</i> _{<i>i,t</i>}	percentage of directors with finance backgrounds
<i>OtherDir</i> _{<i>i,t</i>}	percentage of directors with other directorships
<i>Compens</i> _{<i>i,t-1</i>}	average fund director compensation in the previous year, in thousands of dollars.

The model includes the standard fund-specific control variables of the adviser's and the fund's sizes, as well as the governance variables that the literature suggests are related to the advisory fees, such as the board's size and independence. We also control for (i) the number of accounts because the administrative cost is a significant portion of the advisory fee, (ii) the reimbursement rate because the ex post reimbursements might imply ex ante higher advisory fees, and (iii) the objective concentration as a proxy for competition within the fund's objective. We add the boards' characteristics to test if and how governance is related to the advisory fees.^{18,19} The year and objective fixed effects are included.

Further, we test the links between the costs of investing and the characteristics of the funds, the contracting environment, and the governance by estimating the following regression:

$$\begin{aligned}
 Cost_{i,t} = & \beta_0 + \beta_1 Research_{i,t} + \beta_2 Sales_{i,t} + \beta_3 AltComp_{i,t} + \beta_4 BrConcntr_{i,t} + \beta_5 Aff_{i,t} \\
 & + \beta_6 Cred_{i,t} + \beta_7 Ln(FundSize_{i,t}) + \beta_8 Ln(AdvSize_{i,t}) + \beta_9 Ln(Accts_{i,t}) \\
 & + \beta_{10} Reimb_{i,t} + \beta_{11} ObjConcntr_{i,t} + \beta_{12} Turn_{i,t} + \beta_{13} Indep_{i,t} + \beta_{14} Seats_{i,t} \\
 & + \beta_{15} MedTenure_{i,t} + \beta_{16} Fin_{i,t} + \beta_{17} OtherDir_{i,t} + \beta_{18} Compens_{i,t-1} + \varepsilon_{i,t}
 \end{aligned} \quad (3)$$

¹⁷ The normalized Herfindahl index characterizes the relative competitiveness in an investment objective to which the fund belongs compared to the case where net assets are equally distributed among all funds within the objective. We repeat the tests without normalizing the Herfindahl index; the results are qualitatively the same.

¹⁸ To be classified as a director with a finance background, one either must have had a finance occupation in the past or is currently occupied in the finance industry (the latter group constitutes the majority of such directors). Since directors often sit on the boards of many funds offered by the same sponsor, the variable *OtherDir* only considers directorships outside of the fund's sponsor (in our sample, all of them also happen to be outside of the mutual fund industry). The variable constructed in this manner captures the proportion of directors who do not depend only on one source of fees and potentially sends a signal about the board's quality.

¹⁹ Tufano and Sevick (1997) suggest measures of excess director compensation. When we use excess compensation (either per seat or per director, following Tufano and Sevick's (1997) Equations 1 and 2 on p.338 in their paper) in place of unadjusted compensation, it is not significant in the regressions. Perhaps directors are concerned more about the potential loss of income from the fund's sponsor (in case they oppose the fund's policies and lose their seat) than how this income compares to the fees paid by other funds or sponsors.

Along with the variables defined previously, we add the following:

$Research_{i,t}$	one if the receipt of investment research and statistical information is a consideration for the broker's participation
$Sales_{i,t}$	one if the sale of the fund's shares is a consideration for the broker's participation
$AltComp_{i,t}$	the proportion of total weighted assets received by the brokers or dealers as part of the total front-end load and 12b-1 fee, in basis points ²⁰
$BrConctr_{i,t}$	the fund's brokerage service concentration measured by the Herfindahl index
$Aff_{i,t}$	one if any broker or dealer is affiliated with the adviser
$Cred_{i,t}$	one if there is an arrangement to return or credit part of the total commissions or profits by at least one broker to the fund's adviser.

This model also includes the objective and year fixed effects. For the regressions analyses, we winsorize all of the non-indicator variables except *Fin* and *Reimb*, which do not have much variation in the tails, at the 1 and 99 % levels.

5 Empirical results

5.1 Univariate and bivariate analyses

Table 1 reports the descriptive statistics. On average, 45 % of the total brokerage commissions are paid under soft dollar arrangements. This figure is consistent with the SEC's (1998) estimate of soft dollar use. The total brokerage commissions are on average 41.9 basis points (0.42 %) of a fund's total assets of which 18.6 basis points are transferred as soft dollar commissions. For the subsample that excludes the smallest funds, the total and soft dollar commissions are 34.4 and 17.7 basis points respectively. Both soft dollar use and commissions vary widely around the means. Thus, a fund with the mean size of \$724 million in our sample transfers around \$1.35 million per year to its brokers under soft dollar arrangements (\$1.73 million for the subsample of the larger funds, or 0.177 % of \$979 million). The average advisory fee is 78 basis points. The average turnover is 313 % (244 %) for all of the funds (the larger funds). On average, 75 % of the board directors are considered independent, with the directors' median tenure at 6 years. About a quarter of the directors have finance backgrounds, and 60 % have at least one other directorship.

In 88.6 % of the fund-years in our sample, the funds report that the receipt of investment research and statistical information influences their choice of brokers. In 32.2 % of the fund-years, the funds consider the sales of their shares in determining the broker's participation. An affiliated broker or dealer is considered in 28.7 % of the fund-years. In 29.8 % of the fund-years, an arrangement with at least one broker to return part of the commissions to the adviser is considered.

Table 2 reports the correlations between the measure of performance (*FFAR* – the four-factor model alpha) and the variables that in one way or another measure the investing costs of mutual funds (total and soft dollar commissions, soft dollar use, advisory fees, turnover, and turnover costs). We observe that larger funds tend to perform better and have lower commissions: the turnover and the investing costs (*SoftFee*, *BrkFee*, *TurnCost*, *AdvFee*) are negatively

²⁰ Decomposing alternative rent transfers into loads and 12b-1 fees does not affect the results.

Table 1 Descriptive Statistics. This table provides descriptive statistics for the variables employed in the study. The sample represents annual data from 1999 through 2003 for a random selection of actively managed funds from the CRSP Survivor-Bias-Free US Mutual Fund Database. The unit of observation is a fund-year

Variable definition	Mnemonic				Funds with net assets over \$50mln (304 funds)			
	N	Mean	Median	St. Dev.	N	Mean	Median	St. Dev.
Four-factor Adjusted Return, %	1466	-0.98	-1.57	14.04	1070	-0.60	-1.42	13.88
Soft \$ / Total Brokerage, %	1571	44.9	33.4	36.8	1152	46.6	35.2	37.4
Soft \$ / TNA, bps	1571	18.6	6.8	33.9	1152	17.7	6.1	33.6
Brokerage Fee / TNA, bps	1571	41.9	22.8	57.6	1152	34.4	20.3	44.9
Turnover	1566	3.13	2.03	4.80	1150	2.44	1.87	2.38
Cost to turn over portfolio, bps	1566	16.1	12.7	22.1	1150	14.9	12.4	15.33
Advisory Fee / TNA, bps	1565	78.0	75.5	31.4	1147	76.3	73.0	32.1
Fund Size, \$ million	1571	72.4	166	1833	1152	979	313	2083
Adviser size, \$ million	1468	82,495	21,092	161,495	1088	86,020	24,847	174,246
Number of accounts	1537	60,216	7530	199,843	1123	81,693	16,327	230,116
Reimbursement, %	1562	19.2	1.2	70.2	1143	6.0	0.3	19.7
Objective Concentration	1556	21.9	22.1	7.9	1139	22.0	22.1	7.8
Number of board seats	1566	8.8	9.0	3.1	1149	8.9	9.0	3.1
% of independent directors	1566	75.2	75.0	12.7	1149	75.1	75.0	13.6
Median tenure of directors, yrs.	1566	6.3	6.0	4.1	1149	6.7	6.0	4.2
% of directors with finance background	1566	23.5	20.0	18.9	1149	22.6	18.0	19.6
% of directors with other directorships	1566	59.7	67.0	35.1	1149	61.7	67.0	34.6
Aggregate lagged director compensation, \$ '000 s	1543	100.6	70.1	87.1	1137	105.2	75.0	88.0
Front-end load +12b-1, bps	1521	15.9	0.0	50.3	1110	16.3	0.6	49.4
Brokerage Herfindahl, %	1543	11.7	8.2	11.1	1130	11.1	7.7	10.6
Research (dummy)	1550	0.886			1131	0.886		
Sales of fund shares (dummy)	1549	0.322			1131	0.349		
Affiliated broker (dummy)	1554	0.287			1136	0.289		
Arrangement to return commissions (dummy)	1549	0.298			1131	0.286		

Table 2 Correlations. This table presents correlations between key variables employed in the study. *FFAR* is the four-factor model alpha (stands for the four-factor adjusted return), in percent, *SoftFee* is the proportion of total net assets paid as bundled (soft dollar) commissions, in basis points, *BrkFee* is the proportion of total net assets paid as total brokerage commissions, in basis points, *SDU* is the ratio of soft dollar commissions to total brokerage commissions (*SoftFee/BrkFee*), in %, *Fund Size* is the fund’s total net assets in a given year (the average of the 12 monthly net asset figures), *Turn* is turnover (total sales and purchases divided by total net assets), in decimals, *AdvFee* is the gross advisory fee divided by total net assets, in basis points, and *TurnCost* is the cost of turning over the portfolio once (*BrkFee/Turn*), in basis points

	FFAR	SoftFee	BrkFee	SDU	Fund Size	Turn	AdvFee
Panel A: all funds							
FFAR							
SoftFee	-0.08***						
BrkFee	-0.14***	0.64***					
SDU	0.05*	0.47***	-0.00				
Fund Size	0.07**	-0.08***	-0.15***	0.09***			
Turn	-0.07**	0.24***	0.65***	-0.07***	-0.11***		
AdvFee	-0.06**	0.18***	0.26***	-0.06**	-0.19***	0.15***	
TurnCost	-0.08***	0.16***	0.25***	-0.05**	-0.08***	-0.08***	-0.01
Panel B: funds with net assets over \$50mln							
FFAR							
SoftFee	-0.12***						
BrkFee	-0.22***	0.77***					
SDU	0.05*	0.47***	0.09***				
Fund Size	0.07**	-0.09***	-0.15***	0.09***			
Turn	-0.09***	0.39***	0.62***	0.02	-0.12***		
AdvFee	-0.06**	0.20***	0.32***	-0.06**	-0.19***	0.22***	
TurnCost	-0.16***	0.24***	0.35***	-0.01	-0.10***	-0.05	-0.08***

***, **, * denote significance at the 1 %, 5 %, and 10 % level, respectively

correlated with size and performance but the proportion of soft dollars in the commission structure (*SDU*) is weakly and positively correlated with size and performance. These correlations suggest that mutual fund shareholders, on average, do not benefit from soft dollar arrangements in the form of higher returns or lower advisory fees.

Table 3 provides a more detailed look into the relations between the same seven variables by sorting the fund-years with respect to each variable one at a time and reporting the means of the highest and lowest deciles for each variable. There are few differences between Panels A and B, so we refer mostly to Panel A.

The first three rows inside the table compare the means for each variable corresponding to the fund-years in the bottom (first) and top (tenth) *FFAR* deciles. The fund-years in the bottom *FFAR* decile have a mean of -25.4 % versus 26.5 % for the top decile, with the difference being statistically significant at the 1 % level. Further, we observe that the fund-years in the lowest *FFAR* decile have the highest average *SoftFee* of 40.1 bps (the decile rank is ten), and the fund-years in the highest *FFAR* decile have the second highest average *SoftFee* of 26.7 bps (the decile rank is nine). The rest of the *FFAR* decile comparison shows that the fund-years with the best

Table 3 Decile Means. This table presents the means of key variables corresponding to the lowest and highest deciles of each of these variables. Decile ranks are in parentheses next to the means. The diagonal is bolded because it represents decile means for the variables themselves, thus the decile ranks are always 1 and 10 on the diagonal. For example, in the left upper corner the mean FFAR is -0.254 (-25.4%) for the lowest FFAR decile and 0.265 (26.5%) for the top decile. Moving to the right, the mean SoftFee for fund-years in the lowest FFAR decile is 40.1 basis points, which is the highest SoftFee mean across all FFAR deciles (the rank is 10); the mean SoftFee for fund-years in the highest FFAR decile is 26.7 basis points, which is the second highest across all FFAR deciles (the rank is 9). *FFAR* is the four-factor model alpha (stands for the four-factor adjusted return), in percent, *SoftFee* is the proportion of total net assets paid as bundled (soft dollar) commissions, in basis points, *BrkFee* is the proportion of total net assets paid as total brokerage commissions, in basis points, *SDU* is the ratio of soft dollar commissions to total brokerage commissions (SoftFee/BrkFee), in %, *TNA* is the total net assets, *Turn* is turnover (total sales and purchases divided by total net assets), in decimals, and *AdvFee* is the gross advisory fee divided by total net assets, in basis points

Decile Rank	FFAR	SoftFee, bps	BrkFee, bps	SDU, %	TNA, \$mln	Turn	AdvFee, bps
Panel A: all funds							
Low FFAR	-0.254 (1)	40.1 (10)	81.4 (10)	49.4 (9)	282 (1)	4.51 (10)	88.2 (10)
High FFAR	0.265 (10)	26.7 (9)	47.2 (8)	55.7 (10)	767 (5)	3.22 (7)	77.1 (6)
Difference	0.519***	-13.4 **	-34.2 ***	6.3	485***	-1.29 **	-11.1 ***
Low SoftFee	-0.007 (5)	0.2 (1)	19.6 (1)	3.4 (1)	897 (4)	1.79 (1)	73.7 (1)
High SoftFee	-0.044 (1)	94.4 (10)	119.5 (10)	84.2 (10)	305 (1)	6.00 (10)	93.5 (10)
Difference	-0.037 *	94.2***	99.9***	80.8***	-593 ***	4.21***	19.8***
Low BrkFee	0.030 (10)	1.7 (1)	4.3 (1)	37.7 (1)	1351 (2)	1.09 (1)	68.2 (1)
High BrkFee	-0.042 (2)	69.3 (10)	172.9 (10)	42.4 (3)	172 (10)	11.51 (10)	103.7 (10)
Difference	-0.072 ***	67.7***	168.6***	4.7	-1179 ***	10.42***	35.5***
Low SDU	-0.036 (1)	0.5 (1)	47.8 (8)	0.9 (1)	582 (2)	3.23 (6)	80.9 (8)
High SDU	-0.012 (4)	39.7 (9)	40.4 (6)	98.5 (10)	799 (8)	2.42 (2)	86.4 (10)
Difference	0.024	39.2	-7.4	97.6***	217	-0.80 **	5.5*
Low TNA	-0.035 (1)	15.1 (5)	42.6 (6)	36.0 (1)	8 (1)	2.80 (7)	81.2 (4)
High TNA	0.022 (10)	10.5 (1)	17.3 (1)	55.4 (10)	4934 (10)	1.89 (1)	59.6 (1)
Difference	0.058***	-4.6 *	-25.3 ***	19.4***	4926***	-0.91 **	-21.6 ***
Low Turn	-0.017 (4)	3.0 (1)	10.3 (1)	34.4 (1)	1175 (9)	0.48 (1)	68.6 (1)
High Turn	-0.029 (2)	54.2 (10)	139.1 (10)	40.2 (2)	351 (2)	13.07 (10)	96.1 (10)
Difference	-0.013	51.2***	128.8***	5.7	-824 ***	12.60***	27.5***
Low AdvFee	0.005 (9)	6.7 (2)	27.1 (2)	35.5 (4)	1918 (10)	1.62 (1)	39.6 (1)
High AdvFee	-0.021 (4)	38.2 (10)	79.2 (10)	42.2 (5)	177 (1)	3.43 (8)	135.2 (10)
Difference	-0.026	31.5***	52.1***	6.6	-1741 ***	1.80***	95.7***
Panel B: funds with net assets over \$50mln							
Low FFAR	-0.239 (1)	41.3 (10)	80.4 (10)	50.3 (8)	429 (1)	3.80 (10)	89.1 (10)
High FFAR	0.272 (10)	20.1 (9)	32.0 (7)	58.9 (10)	1056 (5)	2.68 (9)	75.2 (6)
Difference	0.511***	-21.2 ***	-48.4 ***	8.7	626***	-1.11 ***	-13.9 ***
Low SoftFee	0.009 (10)	0.1 (1)	18.1 (2)	3.3 (1)	959 (4)	1.67 (1)	69.6 (1)
High SoftFee	-0.051 (1)	92.2 (10)	111.7 (10)	87.2 (10)	417 (1)	4.77 (10)	93.6 (10)

Table 3 (continued)

Decile Rank	FFAR	SoftFee, bps	BrkFee, bps	SDU, %	TNA, \$mln	Turn	AdvFee, bps
Difference	-0.060***	92.1***	93.6***	83.8	-542***	3.09***	24.0***
Low BrkFee	0.026 (10)	1.4 (1)	3.7 (1)	37.4 (1)	1482 (8)	1.04 (1)	67.2 (1)
High BrkFee	-0.053 (2)	74.1 (10)	137.7 (10)	54.3 (10)	332 (1)	5.91 (10)	106.0 (10)
Difference	-0.079***	72.7***	134.0***	17.0***	-1150***	4.87***	38.8***
Low SDU	-0.039 (1)	0.4 (1)	38.4 (8)	0.8 (1)	786 (2)	2.79 (9)	73.9 (5)
High SDU	-0.009 (3)	39.3 (9)	39.9 (9)	98.5 (10)	1063 (7)	2.41 (5)	83.9 (10)
Difference	0.031	38.9***	1.6	97.7***	277	-0.37	10.0***
Low TNA	-0.035 (1)	26.4 (10)	54.7 (10)	46.3 (5)	61 (1)	3.53 (10)	89.1 (10)
High TNA	0.039 (10)	8.9 (1)	15.1 (1)	54.6 (9)	6002 (10)	1.79 (1)	58.6 (1)
Difference	0.073***	-17.5***	-39.6***	8.2	5941***	-1.74***	-30.5***
Low Turn	-0.022 (3)	2.7 (1)	8.3 (1)	35.3 (1)	1466 (10)	0.45 (1)	68.8 (1)
High Turn	-0.054 (1)	57.3 (10)	108.3 (10)	48.5 (7)	608 (2)	7.51 (10)	97.1 (10)
Difference	-0.032*	54.6***	100.0***	13.1**	-858***	7.05***	28.2***
Low AdvFee	0.001 (9)	5.7 (1)	17.6 (1)	38.0 (3)	2098 (10)	1.65 (1)	39.4 (1)
High AdvFee	-0.020 (4)	42.5 (10)	82.1 (10)	43.7 (5)	276 (1)	3.41 (10)	133.6 (10)
Difference	-0.021	36.8***	64.5***	5.6	-1822***	1.75***	94.3***

***, **, * denote significant difference between decile means at the 1 %, 5 %, and 10 % level, respectively (for a two-tailed t-test assuming equal variances)

risk-adjusted performance are associated with fairly high total brokerage fees (the decile rank is 8), highest *SDU* (10), average size (5), above average turnover (7), and advisory fees (6).

When we rank the fund-years by *SoftFee* (the second three rows in the table), we observe that the lowest *SoftFee* decile is associated with the best adjusted performance (*FFAR*). The *FFAR* difference from the highest *SoftFee* decile is significant at the 1 % level when the smallest funds are excluded (Panel B) but only marginally significant when all of the funds are retained (Panel A). The combination of the results reported in the first six rows of the table suggests that a minority of the funds in our sample are able to put soft dollars to good use and receive superior research from brokers or third parties (or simply have good luck in some years), while most funds with high soft dollar commissions perform poorly on a risk-adjusted basis.

In unreported tests, we reject the null hypothesis that the *SoftFee* does not Granger cause *AdvFee* (*FFAR*) at one, two, and three (one and two) lags.

5.2 Regression analysis

5.2.1 Soft dollars and fund performance

If services are acquired with soft dollars to improve the portfolio’s performance, the shareholders might benefit from higher risk-adjusted returns. Table 4 reports the output of Eq. (1)—

Table 4 Panel Regressions of Risk-adjusted Fund Returns. The dependent variable is the annualized alpha from the Carhart (1997) four-factor model (the four-factor adjusted return, FFAR), in percent. *SDU* is the ratio of soft dollar commissions to total brokerage commissions (SoftFee/BrkFee), in %, *SoftFee* is the proportion of total net assets paid as bundled (soft dollar) commissions, in basis points, *BrkFee* is the proportion of total net assets paid as total brokerage commissions, in basis points, *Turn* is turnover (total sales and purchases divided by total net assets), in decimals, *TurnCost* is the cost of turning over the portfolio once (BrkFee/Turn), in basis points, and *FundSize* is the average of 12 monthly total net assets figures, in thousands of dollars. Objective and year fixed effects are included. Fund and time subscripts are suppressed except for lagged variables. T-statistics are in square brackets below coefficients

Variable	Reg [1]	Reg [2]	Reg [3]	Reg [4]	Reg [5]	Reg [6]	Reg [7]
Panel A: all funds							
Intercept	1.51 [0.34]	2.06 [0.46]	5.64 [1.25]	1.58 [0.35]	8.45** [1.98]	2.17 [0.49]	9.64** [2.21]
SDU	0.02 [1.38]						
SoftFee		-0.06*** [-2.97]				-0.06*** [-2.95]	
BrkFee			-0.06*** [-5.28]				
Turn				-0.07 [-0.72]		-0.05 [-0.61]	-0.25*** [-2.76]
TurnCost					-0.33*** [-7.67]		-0.35*** [-7.96]
Ln(FundSize _{t-1})	0.11 [0.52]	0.08 [0.36]	-0.14 [-0.65]	0.12 [0.55]	-0.10 [-0.43]	0.07 [0.30]	-0.16 [-0.74]
<i>Obj. FE</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year FE</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	5.7 %	7.0 %	9.3 %	5.4 %	12.2 %	6.8 %	12.6 %
F-stat	5.24***	6.30***	8.23***	4.96***	10.72***	5.77***	10.45***
N (funds)	376	376	376	376	376	376	376
N (fund-yrs.)	1159	1159	1159	1156	1156	1156	1156
Panel B: funds with net assets over \$50mln							
Intercept	7.70 [0.97]	8.88 [1.14]	15.22* [1.89]	8.95 [1.08]	16.75*** [2.77]	9.89 [1.22]	18.64** [2.36]
SDU	0.02 [1.30]						
SoftFee		-0.06*** [-2.60]				-0.05*** [-2.82]	
BrkFee			-0.08*** [-5.95]				
Turn				-0.68* [-1.87]		-0.52* [-1.67]	-0.69** [-2.49]
TurnCost					-0.37*** [-6.76]		-0.37*** [-6.90]
Ln(FundSize _{t-1})	-0.36 [-0.94]	-0.44 [-1.17]	-0.81** [-2.20]	-0.36 [-0.96]	-0.68* [-1.86]	-0.46 [-1.24]	-0.75** [-2.04]
<i>Obj. FE</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4 (continued)

Variable	Reg [1]	Reg [2]	Reg [3]	Reg [4]	Reg [5]	Reg [6]	Reg [7]
<i>Year FE</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	8.0 %	9.3 %	13.4 %	8.2 %	14.9 %	9.3 %	15.6 %
<i>F</i> -stat	5.55***	6.34***	9.13***	5.68***	10.17***	6.01***	10.04***
<i>N</i> (funds)	284	284	284	284	284	284	284
<i>N</i> (fund-years)	865	864	864	864	864	864	864

***, **, * denote significance at the 1 %, 5 %, and 10 % level, respectively

the regressions of the alphas from the Carhart (1997) four-factor model on various measures of the investing costs of mutual funds and the control variables.²¹ The negative relation between *SoftFee* and the risk-adjusted performance suggests that the costs of the soft dollar arrangements exceed the benefits, and that the fund’s shareholders bear these incremental costs. The *SoftFee*’s estimated coefficient of -0.06 indicates that increasing the *SoftFee* by 0.01 % (1 basis point, because *SoftFee* is in basis points) of total assets is associated with a 0.06 % decline in the risk-adjusted performance. However, because the *SDU* is not significant and the *BrkFee* is, it appears that the bundling or unbundling of the commissions is not as important as the amount of commissions paid relative to the fund’s size, turnover, and the turnover costs. This finding supports the studies that suggest that aggressive trading costs the shareholders more than it benefits them (e.g., Livingston and O’Neal 1996).

Our results suggest that most funds do not achieve persistent positive performance by using the information obtained through soft dollar arrangements, which is consistent with Conrad et al. (2001) and inconsistent with Horan and Johnsen (2008), who find that premium commissions that are paid by private money managers are positively related to the risk-adjusted performance. The additional costs associated with high turnover and the resulting high commissions, both bundled and unbundled, are not, on average, offset by better investment returns.

When we use the CAPM’s alphas instead of the four-factor model’s alphas, the results are somewhat different. Among the key independent variables in the Table 4 regressions, the turnover is negative and significant for the regressions on the whole sample. The *TurnCost* is negative and significant for the sample of the larger funds, and the *BrkFee* is only marginally significant in both the entire sample and the subsample of the larger funds. Except for the size, all of the remaining coefficients are not significant. To test whether the bundled commissions are used more for advice on investing in securities loading up on the factors in the four-factor model, we examine the correlations between *SoftFee* and each of the factor betas. These correlations are low; the highest and the only statistically significant correlation coefficient is between *SoftFee* and the momentum beta at only 0.06, with a p-value of 0.035. Because the four-factor model remains the dominant one in the literature on the mutual funds’ performance, we retain the alpha of the four-factor model as the dependent variable in Eq. 1. Whether we use the four-factor’s or the market model’s alphas, the relation between the excess risk-adjusted return and the soft dollars (or other measures of investing costs) is not positive, which indicates that the mutual funds’ shareholders do not benefit from higher trade-related expenses.

²¹ Because we use the lag of the log of FundSize in Eq. (1) to avoid a spurious correlation, the number of fund-years is reduced.

Table 5 Panel Regressions of Advisory Fee. The dependent variable is *AdvFee*, the gross advisory fee divided by fund size, in basis points. *SDU* is the ratio of soft dollar commissions to total brokerage commissions (SoftFee/BrkFee), in %, *SoftFee* is the proportion of assets paid as soft dollar commission, in basis points, *BrkFee* is the proportion of total net assets paid as total brokerage commissions, in basis points, *Turn* is fund turnover in decimals, *TurnCost* is the cost of turning over the portfolio once (BrkFee/Turn), in basis points, *FundSize* is the average of 12 monthly total net assets figures, in thousands of dollars, *AdvSize* is the adviser size (assets under management in \$ million), *Accts* is the number of shareholder accounts with the adviser, in thousands, *Reimb* is the reimbursement from the fund to the shareholders divided by the total net assets, in basis points, *ObjConcntr* is concentration of funds in a given investment objective measured by the normalized Herfindahl index. The last five variables are related to fund governance: *Indep* is the percentage of independent directors on the board, *Seats* is the number of seats on the board, *MedTenure* is the median tenure of fund directors, in years, *Fin* is the percentage of fund directors with finance background, *OtherDir* is the percentage of the board directors who have at least one directorship outside of the fund family, and *Compens₋₁* is the average compensation of the fund directors lagged 1 year, in \$ thousand. Objective and year fixed effects are included. Fund and time subscripts are suppressed except for lagged variables. T-statistics are in square brackets below coefficients

Variable	Reg [1]	Reg [2]	Reg [3]	Reg [4]	Reg [5]	Reg [6]	Reg [7]
Panel A: all funds							
Intercept	108.95*** [8.95]	105.42*** [8.91]	101.22*** [8.73]	107.11*** [8.65]	119.96*** [10.53]	103.25*** [8.66]	116.87*** [10.12]
SDU	0.04* [1.87]						
SoftFee		0.11*** [5.14]				0.11*** [4.80]	
BrkFee			0.07*** [3.63]				
Turn				0.47*** [3.13]		0.35** [2.35]	0.38** [2.49]
TurnCost					-0.20** [-2.17]		-0.18** [-1.98]
Ln(FundSize)	-3.22*** [-4.36]	-2.86*** [-4.00]	-2.62*** [-3.67]	-3.12*** [-4.11]	-3.68*** [-5.17]	-2.75*** [-3.82]	-3.51*** [-4.89]
Ln(AdvSize)	-0.30 [-0.50]	-0.44 [-0.76]	-0.51 [-0.86]	-0.42 [-0.68]	-0.64 [-1.05]	-0.53 [-0.89]	-0.72 [-1.19]
Ln(Accounts)	0.80*** [3.03]	0.77*** [2.94]	0.81*** [3.17]	0.88*** [3.34]	0.97*** [3.58]	0.80*** [3.03]	1.00*** [3.69]
Reimb	0.01 [1.10]	0.01 [1.07]	0.02 [1.02]	0.02 [1.22]	0.02 [1.36]	0.01 [1.12]	0.02 [1.40]
ObjConcntr	0.12* [1.81]	0.11 [1.54]	0.14** [2.06]	0.15** [2.17]	0.13* [1.94]	0.12* [1.79]	0.15** [2.19]
Indep	0.08 [0.93]	0.09 [1.10]	0.07 [0.83]	0.06 [0.67]	0.06 [0.76]	0.08 [0.97]	0.05 [0.64]
Seats	-0.91*** [-3.63]	-0.83*** [-3.62]	-0.84*** [-3.73]	-0.74*** [-3.20]	-0.86*** [-3.56]	-0.77*** [-3.30]	-0.79*** [-3.23]
MedTenure	0.01 [0.11]	0.08 [0.67]	0.05 [0.37]	0.03 [0.26]	-0.04 [-0.27]	0.10 [0.76]	-0.02 [-0.12]
Fin	0.14** [1.97]	0.12* [1.71]	0.13* [1.79]	0.16** [2.17]	0.15** [2.09]	0.12* [1.81]	0.15** [2.17]
OtherDir	-0.03 [-1.09]	-0.02 [-0.74]	-0.02 [-0.42]	-0.02 [-0.53]	-0.03 [-0.83]	-0.01 [-0.33]	-0.01 [-0.35]

Table 5 (continued)

Variable	Reg [1]	Reg [2]	Reg [3]	Reg [4]	Reg [5]	Reg [6]	Reg [7]
Compens _{t-1}	-0.05*** [-2.67]	-0.05*** [-2.83]	-0.04** [-2.35]	-0.04** [-2.38]	-0.04** [-2.47]	-0.05** [-2.44]	-0.04** [-2.50]
Obj. fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	8.4 %	10.7 %	10.6 %	8.4 %	9.8 %	11.0 %	10.1 %
F-stat	6.02***	7.55***	7.49***	5.98***	6.91***	7.47***	6.88***
N (funds)	370	370	370	370	370	370	370
N (fund-yrs.)	1421	1421	1421	1418	1418	1418	1418
Panel B: funds with net assets over \$50mln							
Intercept	135.55*** [8.90]	128.58*** [8.80]	122.13*** [8.86]	131.46*** [8.83]	144.18*** [10.42]	125.04*** [8.62]	139.17*** [10.13]
SDU	0.01 [0.67]						
SoftFee		0.11*** [4.86]				0.11*** [4.66]	
BrkFee			0.11*** [4.96]				
Turn				0.78** [2.21]		0.68** [1.98]	0.79** [2.13]
TurnCost					-0.10 [-0.95]		-0.08 [-0.81]
Ln(FundSize)	-5.02*** [-5.41]	-4.41*** [-4.96]	-4.06*** [-4.67]	-4.76*** [-5.07]	-5.40*** [-6.00]	-4.20*** [-4.66]	-5.09*** [-5.56]
Ln(AdvSize)	-0.02 [-0.03]	-0.14 [-0.19]	-0.21 [-0.29]	-0.09 [-0.12]	-0.24 [-0.32]	-0.22 [-0.29]	-0.33 [-0.45]
Ln(Accounts)	1.12*** [3.05]	1.05*** [2.94]	1.08*** [3.11]	1.11*** [3.04]	1.23*** [3.34]	1.04*** [2.93]	1.22*** [3.32]
Reimb	0.02 [0.78]	0.01 [0.44]	0.01 [0.56]	0.02 [0.88]	0.02 [1.00]	0.01 [0.57]	0.03 [1.08]
ObjConcetr	0.04 [0.58]	0.02 [0.29]	0.04 [0.61]	0.05 [0.74]	0.04 [0.55]	0.03 [0.45]	0.05 [0.71]
Indep	0.01 [0.12]	0.03 [0.34]	0.02 [0.22]	0.00 [0.00]	0.00 [0.04]	0.02 [0.26]	0.00 [0.03]
Seats	-0.84*** [-3.42]	-0.86*** [-3.53]	-0.91*** [-3.82]	-0.77*** [-3.19]	-0.94*** [-3.68]	-0.81*** [-3.36]	-0.89*** [-3.50]
MedTenure	-0.01 [-0.05]	0.04 [0.33]	0.04 [0.30]	0.02 [0.12]	-0.04 [-0.29]	0.06 [0.45]	0.02 [0.13]
Fin	0.16** [2.25]	0.14** [2.08]	0.12* [1.81]	0.16** [2.28]	0.16** [2.27]	0.14** [2.12]	0.16** [2.30]
OtherDir	-0.01 [-0.34]	-0.01 [-0.18]	0.01 [0.19]	-0.00 [-0.06]	-0.01 [-0.16]	0.00 [0.07]	0.01 [0.16]
Compens _{t-1}	-0.05*** [-2.87]	-0.05*** [-3.13]	-0.05*** [-2.77]	-0.05*** [-2.81]	-0.05*** [-2.76]	-0.05*** [-3.09]	-0.05*** [-2.73]
Obj. fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 5 (continued)

Variable	Reg [1]	Reg [2]	Reg [3]	Reg [4]	Reg [5]	Reg [6]	Reg [7]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	9.3 %	12.0 %	14.1 %	9.6 %	10.6 %	12.3 %	11.2 %
F-stat	5.14***	6.55***	7.65***	5.29***	5.83***	6.51***	5.95***
N (funds)	294	294	294	294	294	294	294
N (fund-yrs.)	1057	1057	1057	1057	1057	1057	1057

***, **, * denote significance at the 1 %, 5 %, and 10 % level, respectively

5.2.2 Soft dollars and advisory fees

Table 5 shows the estimation outputs of Eq. 2. The key result is that the higher soft dollar commissions, total brokerage commissions, and turnover are all associated with higher advisory fees. A ten basis point increase in the soft dollar commissions is associated with an advisory fee increase of 1.1 basis points. This result runs contrary to the idea that the shareholders who surrender part of their wealth to soft dollar commissions should benefit from a reduction in the advisory fees.²² We cannot rule out that the information provided by the outside source could have higher quality. Nevertheless, our previous results suggest that the cost of this information tends to outweigh its benefits, and a high level of soft dollar commissions is in general not beneficial to the funds' shareholders. The larger funds have lower advisory fees, while the funds with more accounts have higher fees, which is consistent with higher administrative costs.

Three of the governance variables are significantly correlated with advisory fees. The association between the board's size and the advisory fee is negative, which supports the findings of Baker and Gompers (2003) and Kuhnen (2009) and suggests that larger boards are better monitors. The boards with higher proportions of directors with finance backgrounds are associated with higher advisory fees, while more highly compensated boards are associated with lower advisory fees.²³

5.3 Determinants of soft dollar fees and other measures of the investing costs of mutual funds

In this subsection, we analyze the output of the Eq. 3 estimations, that is, the potential determinants of soft dollar use (*SDU*), soft dollar fees (*SoftFee*), brokerage fees (*BrkFee*), turnover (*Turn*), and the turnover cost (*TurnCost*), reported in Table 6. As before, we focus on the results that hold consistently between Panel A (all funds) and Panel B (funds with net assets over \$50mln).

Among the variables for the broker's participation and contracting environment—research, sales, alternative compensation (loads and 12b-1 fees), concentration, affiliation, and credit—only the research dummy is significant in both panels in one of the regressions: it is associated with a lower turnover. The larger funds tend to have lower total brokerage fees, soft dollar commissions, and turnover costs, likely because of economies of scale (consistent with Livingston and O'Neal 1996).

²² The positive association between turnover and advisory fees is consistent with the findings of Deli (2002).

²³ Excluding the governance variables does not change the signs, magnitude, and significance of the remaining variables' coefficients.

Table 6 Panel Regressions of Cost of Investing Measures. The dependent variable is one of the following: *SDU* – the ratio of soft dollar commissions to total brokerage commissions (SoftFee/BrkFee), in %, *SoftFee* – the proportion of assets paid as soft dollar commission, in basis points, *BrkFee* – the proportion of total net assets paid as total brokerage commissions, in basis points, *Turn* – fund turnover in decimals, or *TurnCost* – the cost of turning over the portfolio once (BrkFee/Turn), in basis points. The independent variables which do not serve as dependent variables in different versions of the regression are: *Research* – a dummy variable equal to one if receipt of investment research and statistical information is a consideration for broker participation, *Sales* – a dummy variable equal to one if sales of fund’s shares is a consideration for broker participation, *AltComp* – the proportion of total net assets received by brokers or dealers as part of total front-end load and 12b-1 fee, in basis points, *BrConcntr* – the fund’s brokerage service concentration measured by Herfindahl index, *Aff* – a dummy variable equal to one if any broker or dealer is affiliated with the adviser, *Cred* – a dummy variable equal to one if there is an arrangement to return or credit part of total commissions or profits by at least one broker to the fund adviser, *FundSize* – the average of 12 monthly total net assets figures, in thousands of dollars, *AdvSize* is the adviser size (assets under management in \$ million), *Accts* is the number of shareholder accounts with the adviser, in thousands, *Reimb* is the reimbursement from the fund to the shareholders divided by the total net assets, in basis points, *ObjConcntr* is concentration of funds in a given investment objective measured by the normalized Herfindahl index. The last five independent variables are related to fund governance: *Indep* is the percentage of independent directors on the board, *Seats* is the number of seats on the board, *MedTenure* is the median tenure of fund directors, in years, *Fin* is the percentage of fund directors with finance background, *OtherDir* is the percentage of the board directors who have at least one directorship outside of the fund family, and *Compens_{t-1}* is the average compensation of the fund directors lagged 1 year, in thousands of dollars. Objective and year fixed effects are included. Fund and time subscripts are suppressed except for lagged variables. T-statistics are in square brackets below coefficients

Variable	SDU	SoftFee	BrkFee	Turn	TurnCost
Panel A: all funds					
Intercept	7.01 [0.76]	23.92 [1.33]	82.37*** [3.67]	5.40*** [4.83]	32.97*** [7.38]
Research	2.09 [0.75]	1.91 [0.67]	1.50 [0.62]	-2.01*** [-4.23]	-1.23 [-0.73]
Sales	3.90 [1.54]	-0.62 [-0.25]	2.62 [0.75]	0.23** [2.02]	-0.07 [-0.23]
AltComp	0.03 [0.86]	0.06* [1.91]	0.06* [1.82]	-0.00 [-0.22]	-0.00 [-0.46]
BrConcntr	0.07 [1.29]	-0.03 [-0.88]	-0.10** [-2.35]	0.00 [0.48]	-0.04 [-1.02]
Aff	1.13 [0.72]	1.09 [0.58]	-4.46 [-1.45]	-0.30 [-0.33]	-1.73* [-1.87]
Cred	0.58 [0.64]	-0.76 [-0.30]	6.77 [1.48]	-0.06 [-0.53]	-0.79 [-0.46]
Ln(FundSize)	-0.07 [-0.25]	-2.40*** [-2.67]	-6.16*** [-4.55]	-0.13 [-1.38]	-1.30*** [-6.04]
Ln(AdvSize)	-1.60* [-1.75]	0.29 [0.43]	-0.59 [-0.24]	-0.11* [-1.78]	-0.86*** [-2.92]
Ln(Accounts)	1.03*** [2.84]	1.03*** [2.66]	1.60 [1.35]	-0.08** [-1.98]	0.51*** [3.73]
Reimb	0.03* [1.76]	0.04* [1.82]	0.03** [2.09]	-0.00 [-0.79]	0.06 [0.70]
ObjConcntr	0.20* [1.84]	0.23* [1.86]	-0.00 [-0.18]	-0.00 [-0.47]	0.04 [1.56]
Turn	-0.80*** [-3.31]	0.99** [2.52]	6.68*** [9.57]		-0.50*** [-4.95]

Table 6 (continued)

Variable	SDU	SoftFee	BrkFee	Turn	TurnCost
Indep	-0.15* [-1.95]	-0.17* [-1.84]	-0.19 [-1.00]	0.01** [2.15]	-0.08*** [-2.84]
Seats	0.06 [0.18]	-0.31 [-0.87]	0.13 [0.72]	-0.10*** [-4.10]	-0.09 [-0.69]
MedTenure	-0.02 [-0.33]	-0.67*** [-3.58]	-0.28 [-1.11]	-0.06*** [-3.44]	-0.15** [2.44]
Fin	0.16** [2.30]	0.21*** [2.70]	0.34*** [2.86]	-0.08 [-1.55]	0.09*** [2.97]
OtherDir	0.08 [1.18]	0.01 [0.24]	-0.01 [-0.22]	-0.02*** [-3.59]	-0.00 [-0.51]
Compens _{t-1}	0.11*** [4.19]	0.05** [2.08]	-0.01 [-0.33]	-0.01*** [-3.28]	0.01 [0.30]
Obj. fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Adj. R ²	11.6 %	9.3 %	33.8 %	23.6 %	31.3 %
F-stat	6.52***	5.31***	22.53***	14.43***	20.24***
N (funds)	362	362	362	362	362
N (fund-years)	1349	1349	1349	1349	1349
Panel B: funds with net assets over \$50mln					
Intercept	57.76*** [3.98]	64.75*** [4.25]	98.13*** [3.92]	4.27*** [3.04]	36.74*** [6.56]
Research	1.34 [0.09]	1.32 [0.45]	3.42 [0.83]	-0.78** [-2.33]	-0.68 [-0.29]
Sales	5.64** [1.97]	-1.25 [-0.53]	-1.38 [-0.48]	0.05 [0.32]	-0.58 [-0.55]
AltComp	0.02 [0.29]	0.04 [0.29]	0.04 [0.75]	0.00 [0.15]	-0.00 [-1.23]
BrConcetr	-0.05 [-1.29]	-0.03 [-1.59]	-0.09 [-1.38]	0.02 [1.01]	-0.04 [-1.48]
Aff	-2.13 [-0.74]	-1.99 [-0.70]	-5.78* [-1.86]	-0.15 [-0.49]	-1.61 [-1.46]
Cred	3.31 [1.33]	0.01 [0.30]	7.13 [1.52]	0.08 [1.05]	-1.59 [-1.41]
Ln(FundSize)	-3.60* [-1.80]	-5.37*** [-5.67]	-7.27*** [-4.87]	-0.27* [-1.79]	-1.83*** [-5.65]
Ln(AdvSize)	-1.30 [-0.94]	-0.25 [-0.61]	-0.16 [-0.29]	0.08 [1.27]	-0.56*** [-2.62]
Ln(Accounts)	1.58*** [3.32]	1.26*** [3.14]	1.11 [1.23]	0.02 [0.90]	0.59*** [3.48]
Reimb	-0.02 [-0.54]	0.06* [1.91]	0.09* [1.77]	-0.01 [-1.32]	-0.00 [-0.35]
ObjConcetr	0.10 [0.46]	0.22 [1.52]	0.06 [0.45]	-0.00 [-1.24]	0.02 [0.91]
Turn	-1.07**	1.05	5.84***		-0.43**

Table 6 (continued)

Variable	SDU	SoftFee	BrkFee	Turn	TurnCost
	[-2.11]	[1.44]	[3.96]		[-1.99]
Indep	-0.26***	-0.21**	-0.20*	0.01	-0.07**
	[-2.90]	[-2.06]	[-1.80]	[1.55]	[-2.16]
Seats	0.01	-0.30	0.13	-0.05**	-0.17
	[0.05]	[-0.68]	[0.48]	[-2.17]	[-0.12]
MedTenure	-0.01	-0.51***	-0.30	-0.03**	-0.10
	[-0.17]	[-3.15]	[-1.26]	[-2.02]	[-1.47]
Fin	0.11	0.16**	0.33***	-0.00	0.08***
	[1.49]	[2.17]	[2.74]	[-0.05]	[2.70]
OtherDir	0.13**	0.03	-0.05	-0.01***	-0.00
	[2.28]	[0.75]	[-0.58]	[-2.74]	[-0.39]
Compens _{t-1}	0.08**	0.04*	0.00	-0.00**	0.01
	[2.19]	[1.80]	[0.68]	[-1.97]	[0.45]
Obj. fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Adj. R ²	13.0 %	12.0 %	25.3 %	7.1 %	32.7 %
F-stat	5.67***	5.25***	11.58***	3.47***	16.14***
N (funds)	286	286	286	286	286
N (fund-years)	1000	1000	1000	1000	1000

***, **, * denote significance at the 1 %, 5 %, and 10 % level, respectively

Higher turnover is associated with higher total and soft dollar commissions (*SoftFee* and *BrkFee*) but not a higher share of soft dollars in the commission structure (*SDU*).

When it comes to the fund's governance, the board's independence is associated with lower turnover costs and lower soft dollar commissions (marginally for the entire sample). The boards with higher median tenures of directors are associated with lower soft dollar commissions and turnover. Thus, the shareholders might benefit from the experience of the directors who have been on the fund's board for a longer period and are more familiar with the fund. The boards with a higher percentage of directors with finance backgrounds (*Fin*) are associated with higher cost measures (*SoftFee*, *BrkFee*, and *TurnCost*) but not with higher turnover. One possible explanation is that the presence of directors with finance backgrounds might exacerbate agency conflicts: the boards can have their interests aligned more with the interests of the managers than with the shareholders.²⁴ More highly compensated boards are associated with higher soft dollar use and slightly lower turnover.

Our governance results suggest that agency conflicts might be exacerbated and investors might be worse off when a significant proportion of the fund's directors have a finance background. Whether that is the case is a question we leave to future research.

²⁴ In a recent study, Fricke (2014) reports that more highly compensated fund boards and boards with lower fund holdings are associated with lower turnover of underperforming funds' managers, consistent with the agency costs explanation.

6 Conclusion

The bundling of services under soft dollar arrangements could possibly benefit mutual funds' shareholders if it results in better risk-adjusted returns and/or lower advisory fees. On the other hand, it is possible that the shareholder wealth is reduced through the use of soft dollar arrangements. The results of our study tend to support the latter conjecture.

Our study is the first one to use actual hand-collected soft dollar and total brokerage commission figures for a large number of actively managed mutual funds. Controlling for a variety of factors, we find that higher soft dollar and total brokerage commissions are associated with lower risk-adjusted returns based on the four-factor model and the higher advisory fees of mutual funds. The bundling or unbundling of commissions is not as important as the amount of commissions paid relative to the fund's size, turnover, and the turnover costs. While it is possible that research paid for by soft dollars is superior, its quality is likely not homogenous across providers, and its costs tend to outweigh its benefits to shareholders.

The second contribution of our study is in examining soft dollars and other measures of the investing costs of mutual funds in a governance context. The characteristics that the literature associates with higher quality boards do not seem to unambiguously benefit the mutual funds' shareholders. On the one hand, larger boards and more highly compensated boards are associated with lower advisory fees and brokerage commissions. In addition, boards with higher median tenure of directors are associated with lower soft dollar fees and turnover. On the other hand, more highly compensated boards are associated with higher soft dollar fees and boards with higher proportions of directors with finance backgrounds are associated with higher advisory fees, soft dollar commissions, and total brokerage commissions, as well as higher turnover costs for a portfolio. Therefore, it is possible that high proportions of directors with finance backgrounds on the funds' boards might exacerbate agency conflicts.

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