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Board Overlaps in Mutual Fund Families

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Abstract

We examine a unique characteristic of mutual fund governance: a common set of directors serving simultaneously on the boards of multiple funds within a family. Using data on all domestic U.S. equity mutual funds listed in CRSP in 2007, we study board structure at 3,948 funds belonging to 328 fund families. 59% of the funds in our sample have unitary board structures where a single board oversees all funds within the complex. Among the fund families with non-unitary board structures, the directors of an individual fund oversee 74 percent of the funds within the family, on average. Investors obtain mixed benefits from overlapping boards: higher fund returns and better fund manager quality but also higher marketing and distribution fees. Fund families, on the other hand, seem to benefit from board overlaps. Strategic performance transfer and window dressing, which have been shown to serve family preferences for the creation of star funds, are more common. We conclude that overlapping boards are not fully compatible with investors' interests.

JEL classification: G23, G11, G34, G38

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Board Overlaps in Mutual Fund Families

1. Introduction

The majority of mutual funds in the U.S. are set up by mutual fund sponsors (such as Fidelity, Merrill Lynch, and Vanguard), which manage and sell multiple individual funds. When a fund is initially incepted, its board of directors is appointed by the fund sponsor that launches the fund. The board of a newly launched fund is often composed of the same directors that serve the existing funds in the fund family. Therefore, a dominant board structure in the U.S. mutual fund industry has emerged: a common set of directors serving simultaneously on the boards of multiple funds within the family. The Investment Company Institute (ICI) reports that the majority of the mutual funds in the U.S. possess a "unitary" board structure, where a single board governs all of the funds operating under the fund family's umbrella. The rest of the funds follow a "cluster" board model, where a few boards oversee a few clusters of multiple funds (e.g., equity funds and fixed income funds) within the family (ICI, 2009; ICI, 2012). Given the prevalence of overlapping boards in the mutual fund industry, we study its impact on fund outcomes from both investor and family perspectives.

The main rationale for director oversight of multiple funds is the presumption that it decreases the cost of operating the funds. The Independent Directors Council Task Force Report on Director Oversight of Multiple Funds (May 2005)[1] contends that "mutual funds within a fund family share the same investment adviser and other key service providers (such as legal counsel, auditing, bookkeeping) and, as a result, significant efficiencies are realized when a single or limited number of boards oversee all of the funds." It is also frequently mentioned that such overlapping boards drive down the costs due to the improved bargaining power when negotiating with the service providers for multiple funds (Kong and

[1] https://www.idc.org/pdf/ppr_idc_multiple_funds.pdf

Tang, 2008). Both the economies of scale and bargaining power arguments imply lower costs for mutual fund investors, providing justification for overlapping board structures within fund families.[2]

However, the simultaneous director oversight of multiple funds is also subject to sound criticisms. A significant concern is that director overlaps may exacerbate the conflicts between mutual fund investors and the fund management company. Among the main responsibilities of a mutual fund board are to monitor the mutual fund management company (i.e., the sponsor) and to negotiate the fees the sponsor charges to the fund's investors. Under Securities and Exchange Commission (SEC) regulations, each fund that operates under the umbrella of a mutual fund management company is a separate legal entity with its own set of investors. Since each fund may have different objectives and dissimilar investors, it may be difficult for a single board to serve simultaneously and effectively the interests of the investors of each fund within a family. More importantly, a single set of directors overseeing multiple funds may make it easier for mutual fund families to favor those funds that are more likely to increase overall family profits (Chevalier and Ellison, 1999; Nanda et al., 2004), for example by strategically subsidizing funds with high-fee structures (Gaspar et al., 2006). In fact, the SEC explicitly mandates that mutual fund boards must monitor to guard against such cross-subsidization.[3] This agency problem is exacerbated by the fact that the mutual fund directors, unlike corporate directors, do not stand for annual reelections by the funds' investors, but are reappointed and compensated by the fund management companies.

Another significant concern for overlapping boards is that busy boards may not be effective monitors (Fich and Shivdasani, 2006). Fich and Shivdasani (2006) define busy corporate directors as those who serve simultaneously on three or more corporate boards. Mutual fund directors are a lot busier, frequently serving on a far larger number of boards. Despite commonalities across different funds, the

[2] We use "director oversight of multiple funds," "director overlap," and "board overlap" interchangeably in the paper.

[3] The SEC rules can be viewed at https://www.sec.gov/rules/final/finend.txt.

workloads of mutual fund directors can be substantial because each fund still has its own lengthy prospectus, regulatory filings and compliance issues to review. John Bogle, the founder and retired CEO of Vanguard has stated, "The required reading underscores the challenge. Mutual fund directors are either not being paid nearly enough for what they should be doing – or far too much for what they actually do."[4] In keeping with such concerns, Ferris and Yan (2007) present evidence that director busyness is associated with higher mutual fund fees.

While director overlaps in mutual fund families have attracted occasional attention from the media as well as legal experts,[5] the academic research on the topic remains limited. In this paper, we fill this gap in the mutual fund governance literature by performing a comprehensive analysis of the impact of simultaneous director oversight of multiple mutual funds. We analyze the relationship between director overlap and mutual fund characteristics through two separate lenses. First, we view the board from the fund investors' perspective and examine visible characteristics of the fund such as fees and returns. Next, we adopt the perspective of the fund family. We thus look at whether the board overlap helps produce actions that benefit the family such as cross-fund subsidization and window dressing.

We construct a unique dataset on mutual fund boards, in which, for every fund in the sample we identify its ultimate fund sponsor and develop measures for the extent of director overlap with the rest of the funds that are sponsored by the same fund management company. Our dataset includes all domestic U.S. equity mutual funds listed in the CRSP mutual fund database in 2007, and contains information on 3,948 funds, which have 11,598 individual fund-classes and belong to 328 mutual fund families. 59 percent of the funds in our sample of equity funds belong to families that have a unitary board

[4] "Is Your Fund's Board Watching Out For You?," available at http://online.wsj.com/articles/SB10001424052702303753904577450243418998540.

[5] For example, see "On Board, at a Mutual Fund," Wall Street Journal, September 3, 2014, available at http://www.wsj.com/articles/on-board-at-a-mutual-fund-1409757187.

structure. In fund families with non-unitary board structures, the directors of an individual fund oversee 74 percent of the funds within the family, on average.

We start our analysis by investigating the relationship between director overlap and mutual fund fees since one of the foremost duties of mutual fund boards is to negotiate fees with service providers. If the overlapping board structure, as often cited, offers economies of scale and bargaining advantages with the fund servicers, and if these cost savings are passed on to the fund investors as a consequence of good governance, then there should be a negative relationship between measures of director overlap and fund fees. However, our findings do not support this view: expense ratios, management fees and total fees do not differ between funds with different magnitudes of director overlap. However, we find that a subcomponent of the fees, namely 12b-1 fees, are significantly higher for funds with greater degrees of director overlap.[6] These fees have been criticized as being the least transparent cost component for mutual fund investors (e.g., Bergstresser et al., 2009), and the SEC asked whether they result in "investors overpaying for services or paying for distribution services that they may not even know they are supposed to be getting."[7]

Next we investigate the relationship between mutual fund returns and board overlap. Mutual funds that have unmitigated conflicts between managers and investors should be more likely to have lower fund performance (Mahoney, 2004; Ding and Wermers, 2012), while funds with good corporate governance should be more likely to post higher returns (Cremers et al., 2009). Our findings indicate a positive relationship between gross returns (returns before fees) and director overlap. However, when we take into account the fees paid by mutual investors, we find that net returns (returns after fees) have

[6] 12b-1 fees include fees paid for marketing and selling fund shares, such as compensating brokers and others who sell fund shares, and paying for advertising, the printing and mailing of prospectuses to new investors, and the printing and mailing of sales literature. A detailed description of these fees can be found at http://www.sec.gov/answers/mffees.htm.

[7] On July 21, 2010, the SEC proposed "Measures to Improve Regulation of Fund Distribution Fees and Provide Better Disclosure for Investors." See http://www.sec.gov/news/press/2010/2010-126.htm

no significant relationship with board overlap. We also analyze risk-adjusted performance measures (fund alphas) and find no significant impact of board overlap on alphas.

Among the main duties of mutual fund boards are to hire the fund managers and monitor their performance. Therefore, higher gross returns earned by funds with greater director overlap may be a result of these funds attracting and retaining better quality portfolio managers and would be a result of good corporate governance. We estimate the "return gap" (Kacperczyk et al., 2008) to gain insight into whether the overlapping boards are able to help the funds employ better quality managers. Return gap is the difference between a fund's actual performance from the performance of the fund's previously disclosed portfolio and has been used as a proxy for managerial skill in the prior literature (e.g., Agarwal et al., 2014). Our results indicate a significant and positive relationship between the return gap and director overlap, and hence support the claim that overlapping boards help hire and retain more skilled managers.

We then switch perspectives to examine if the overlapping board structure benefits the fund management family.[8] First we use the Gaspar et al. (2006) approach, and show that fund families strategically transfer performance from low-fund fees to high-fund fees, and more so when board overlap is higher. Next, we use the Agarwal et al. (2014) measure of window dressing to identify funds that are window dressing, or strategically manipulating portfolio holdings to appear to hold more winners and fewer losers. We find that window dressing is more common when board overlap is higher. These results show that the fund family clearly benefits from the overlapping board structure.

As in any study on governance, our results might be subject to endogeneity concerns. For example, one may attribute the findings so far to director ability and argue that mutual fund directors

[8] While there is a large, related literature regarding the subcontracting of funds, we argue that is a separate phenomenon. Service advisors, such as fund administrators, are provided to a fund on a contractual basis that the board can renegotiate annually (Tufano and Sevick, 1997) although it is common for the fund family's parent or a subsidiary to serve in this role (ICI, 2012).

who are more skilled could be more likely to serve on a larger number of boards within a fund family. Their higher ability may manifest itself in hiring more skilled fund managers, which can also explain the higher before-fee performance of funds with greater board overlap. If that is the case, director overlap may be a sign of effective governance. However, this argument is refuted by our results on performance transfer and window dressing, which are both signs of ineffective governance. Moreover, boards rarely change in composition as director departures or additions are generally triggered by directors reaching a mandatory retirement age and not in response to fund characteristics. Accordingly, board characteristics may affect fund outcomes but not vice versa.

Our results thus indicate that an overlapping board structure is a mixed blessing. There are benefits to both investors and the fund management family although we also show that some investors, those in the low fee funds, may be unknowingly transferring performance to the investors in high fee funds through coordinated actions. These results show clearly that the board, as the agent, acts on behalf of two principals, fund investors and the management company, with conflicting objectives. So long as investors monitor lightly and mostly free ride, the board will prioritize its attentions on serving the goals of the active principal, the management company.

Our research contributes to the literature on the role of boards of directors in mutual fund governance. The focus in this literature has been on the board size (Khorana et al., 2007; Meschke, 2007), the independence of the board of directors (Khorana et al., 2007; Ferris and Yan, 2007; Meschke, 2007; Tufano and Sevick, 1997; Del Guercio et al., 2003; Ding and Wermers, 2012; Kuhnen, 2009), director ownership in funds (Chen et al., 2008; Cremers et al., 2009), and mutual fund boards' connections with the corporations (Cohen et al., 2008). We are aware of only three earlier studies that study the consequences of board overlap in mutual fund families, though for a limited number of fund outcomes: Kong and Tang (2008), Tufano and Sevick (1997), and Lai (2016). Kong and Tang (2008) study the impact of unitary boards (i.e., complete board overlap). They present evidence for a negative relationship

between fund expenses and unitary boards. Similarly, Tufano and Sevick (1997) find that overlapping boards are associated with lower fees, but do not study other fund characteristics. Our results differ from these two earlier studies, which we attribute to directly controlling for fund family heterogeneity through usage of a panel dataset and using continuous measures of board overlap (vs. a unitary board dummy). Lai (2016) is more similar to our paper but focuses on whether funds learn from one another within a fund family, with the board serving as a conduit of information for intra-family knowledge spillovers. However, we focus on a broader question: does the board serve simultaneously and effectively the interests of both principals, the investors and the management company?

Our research provides the first evidence in the literature for the drawbacks of board overlaps in the mutual fund industry. This prevalent governance structure seems to contribute to the presence of coordinated inter-family strategies such as performance transfer from low to high value funds, as well as window dressing. As such, this paper provides the most comprehensive analysis of the director oversight of multiple funds in the literature, examining both observable and unobservable fund actions.

2. Statement of the Two Principals-One Agent Problem

Mutual fund boards are usually analyzed as the agent of mutual fund investors. The main responsibility of fund boards, as per SEC regulations that date back to the passing of the Investment Company Act of 1940, is to ensure that the investments of funds' shareholders are safeguarded. We instead analyze boards as agents of two principals: the mutual fund investors whose interests are to be defended by the board, and the mutual fund sponsors who appoint and retain the board members. This switch from the one principal to two principals framework is motivated by the continued relationship between board members and the fund sponsor.

In the classic two principals - one agent framework, the extent to which the principals are able to coordinate their actions shapes the means and frequency of how the common agent will be monitored (Khalil et al., 2007). The agent may be subjected to excessive monitoring if the two principals make similar,

replicative monitoring efforts (Khalil et al., 2007) although both principals could benefit if the two principals acted cooperatively (Bernheim and Whinston, 1986b). However, we argue that in the mutual fund context the two principals act independently and non-cooperatively because the objectives of the principals, fund investors and sponsors, may be in conflict. As the investors and fund sponsor are unable to coordinate actions, there will be free riding (in our case, concentrated among investors) which leads to low levels of total monitoring for the board by the investors. For example, while mutual fund investors benefit from lower management fees, the reverse is true for the fund management company (sponsor). Another example is the strategic performance transfer from high fee to low fee funds within a fund family (Gaspar et al., 2006). Such intra-family strategies have been shown to benefit the fund families as a whole, but to be detrimental to the shareholders of the low-fee funds.

We argue that the fund investors are insufficiently incentivized and coordinated to be effective evaluators of the board's actions. To continue with our performance transfer example, the dispersed shareholders of the low-fee funds would rarely detect performance transfer that is occurring to their detriment and thus fire the board for not fulfilling their fiduciary duties. However, fund sponsors are more equipped to influence the actions of the board. As the directors are appointed to the board by the fund sponsor and serve on multiple boards within a family, the directors may be co-opted (Coles et al., 2014) and be particularly sensitive to the needs of the fund sponsor. In addition, the fund sponsor and independent directors are often connected through repeated business interactions (Kuhnen, 2009). As Tufano and Sevick (1997) point out, "Lawsuits have alleged that well-paid independent directors can become rubber stamps, approving higher fees for the sponsor and thereby failing to exercise their fiduciary duty."

As the fund sponsor is incentivized to monitor frequently and effectively, it can be construed as being an "economic influencer" (consistent with Bernheim and Whinston, 1986a). An economic influencer

exists when there are multiple principals and one is able to allocate rationed (or rationable) resources that the agent needs. In this instance, the economic influencer is the fund family which sponsors the new fund and appoints the initial board, and is the sole provider of materials (chiefly information) to the board. As such, we argue that the actions taken by the board constitute a second best outcome as they are not consistent with the preferences of all principals (Bernheim and Whinston, 1986b). We thus hypothesize that the existence of delegated common boards, particularly in the presence of one principal who is an economic influencer (fund sponsor) and a second principal who is a free-rider (fund investors), may be associated with a mixed set of outcomes whereby each party has some benefits. This is consistent with Maier and Ottaviani (2009) who show that private contracting between multiple principals and a common agent can be a dominant strategy when principals have different measures of the agent's output. In our framework, the sponsor, the first principal, has more informative signals regarding the separately observed output of the common agent than the dispersed investors, the second principal. We thus engage in an empirical analysis to ascertain how these benefits arise, and whether either principal is a consistent net beneficiary of this overlapping board structure.

3. Data

3.1. SAMPLE FORMATION

We construct our dataset using the Center for Research in Securities Prices (CRSP) survival-bias free Mutual Fund Database. The CRSP database covers U.S. open-end mutual funds and provides information on fund characteristics including returns, total net assets, fees, and investment objectives. First, since our focus is actively managed mutual funds, passively managed funds such as index funds (and ETFs) are excluded from the sample. For each individual fund, we manually identify its ultimate fund family.[9] We further restrict our dataset to equity mutual funds by identifying funds that have Lipper asset codes

[9] Kuhnen (2009) provides detailed description of the fund family structure, and we follow her methodology in identifying the ultimate fund families.

marked as "EQ". Finally, we obtain information about directors of each mutual fund from the SEC Edgar database by consulting mandatory filings made by each mutual fund. The SEC Edgar database contains all documents filed with the SEC by each mutual fund, including both routine mandatory filings such as quarterly and annual shareholder reports and optional filings such as Statements of Additional Information.

The final dataset contains information on 3,948 funds, which have 11,598 individual fund-classes and belong to 328 mutual fund families, and were included in the CRSP database in 2007. We analyze the financial characteristics of these funds over 2007-2010. Our dataset is larger than those used by peers (e.g., Kong and Tang (2008), Tufano and Sevick (1997), and Lai (2016)) because we have a broader focus – all actively managed equity mutual funds in the U.S., not just those belonging to the largest fund sponsors. We include young and small funds in our sample in order to avoid incubation bias (Evans, 2010) and to capture the full breadth of board overlap within each fund family.

We collect the board data at the fund-class level because the SEC explicitly mandates that the mutual fund directors have fiduciary responsibilities for shareholders at the fund-class level, not the fund itself.[10] While the SEC mandate would be consistent with the fund family appointing different boards for each fund class, it turns out that all funds in our sample have the same board representing all classes.

3.2. DATA ON MUTUAL FUND DIRECTORS

We use publicly available certified shareholder reports (N_CRS) and prospectuses (485BPOS) to build a unique database of directors for each fund-class in 2007. These reports are available at the SEC Edgar database. For each individual mutual fund, we record the names of directors, whether the director serves

[10] The SEC has stated that "Consistent with its oversight of the class system and its independent fiduciary obligations to each class, the board must monitor the use of waivers or reimbursements to guard against cross-subsidization between classes. In making its findings, the board should focus, among other things, on the relationship among the classes and examine potential conflicts of interest among classes regarding the allocation of fees, services, waivers and reimbursements of expenses, and voting rights." The complete text can be accessed at https://www.sec.gov/rules/final/finend.txt.

as the CEO of the fund, their independence status, the size of the board, and whether the chairman of the board is independent of the fund management company. We consider a director to be independent if the individual has not had a significant business relationship with the fund's adviser, distributor or affiliates for at least two years, and does not own any stock of the investment advisor or certain related entities. We present the variable names, definitions, and sources in Table 1.

3.3. MEASURES OF BOARD OVERLAP IN MUTUAL FUND FAMILIES

3.3.1 Unitary Board Indicator

The extreme case of director overlap, a "unitary board", occurs if all of the individual funds in a fund family are overseen by the same group of directors. Accordingly, we form an indicator variable, "unitary board," which is equal to one when all funds within a mutual fund family have the same board of directors and zero otherwise. This is the dichotomous measure that is employed in Kong and Tang (2008). 59 percent of the funds in our sample belong to a family that operates under a unitary board structure.[11] Because all of our regressions incorporate fund family fixed effects, we are not able to use this indicator variable in our main analyses (as the value of the indictor variable does not differ for funds within the same family). However, we use this variable to replicate the results in the prior literature (Kong and Tang, 2008; Tufano and Sevick, 1997), in order to show that the differences in our results are not due to different samples, but rather due to our controls for fund family fixed effects. These results are reported in the Appendix Table 1.

Fund families that do not operate under a unitary board structure still exhibit a significant director overlap with common directors serving on boards of multiple fund-classes within the family. This is because director departures from mutual fund boards occur very rarely.[12] Hence, we develop two

[11] While our unit of analysis is fund-class, from here on, we use "fund" and "fund-class" interchangeably.

[12] Through talking with practitioners in the industry, we have learned that a departure from the unitary board structure occurs randomly. For example, in some instances a fund may need additional expertise on its board that no other director possesses. Or, it may need someone to assume an additional leadership role (e.g., leading the audit committee) that no current board member is willing to undertake. In other instances, a board member

additional measures of the director overlap that quantify the degree of director overlap, which are our main measures. We now describe these measures in detail.

3.3.2. Count-Based Board Overlap Ratio

We first count the number of fund-classes in the fund family that each individual director oversees and then scale the sum by the total number of fund-classes in the family. We then obtain the average value across all directors in each mutual fund. Formally, for each fund-class with N individual directors, we calculate the Board Overlap Ratio as:

$$Board\ Overlap\ Ratio = \frac{1}{N}\sum_{i=1}^{N}\frac{Number\ of\ fund{-}classes\ that\ director\ i\ oversees}{Total\ number\ of\ fund{-}classes\ in\ the\ family} \quad [1]$$

This equal-weighted measure corresponds to the average percentage of funds in the family that the directors of an individual fund oversee. The mean value of Board Overlap Ratio in our sample is 0.74, meaning that the directors of a fund, on average, serve on 74% of all boards within their families.[13] We also note that for unitary boards, this measure would be 1.0.

3.3.3. Asset-Weighted Board Overlap Ratio

This measure focuses on the monetary value of the assets that are overseen by a director. We sum up the assets of funds in the fund family that each individual director oversees and scale it by the total assets of funds in the family, and then average the measure across all directors in each mutual fund. Formally, for each fund-class with N individual directors, the Asset Weighted Board Overlap Ratio is calculated as:

$$Asset - Weighted\ Board\ Overlap\ Ratio = \frac{1}{N}\sum_{i=1}^{N}\frac{\sum Total\ net\ assets\ that\ director\ i\ oversees}{Total\ net\ assets\ of\ the\ fund\ family} \quad [2]$$

This variable is estimated at the fund-class level and corresponds to the average percentage of assets in the family that the fund's directors oversee. This measure captures the importance of the funds that a director oversees within the fund family, since funds that attract more assets might be more

retires and is replaced by another director, but not all funds in the same family stand for election in that particular year.

[13] We calculate the summary statistics for board overlap ratios using the subsample of funds that do not have a unitary board structure.

valuable to the fund families. This measure is similar to Tufano and Sevick (1997)'s measure "board concentration". The mean (median) value of this variable is 75% (75%). Board Overlap Ratio and Asset-weighted Board Overlap Ratio are highly correlated with a correlation coefficient of 0.82.

3.3.4. Family Level Measures

We also form family-level board overlap measures by calculating the average values for Board Overlap Ratio and Asset-weighted Board Overlap Ratio for each fund family. This is accomplished by first calculating the board overlap ratios for individual fund classes in a family and then taking their averages. This family-level board overlap measure has an average value of 74%, and is highly correlated with the fund level board overlap ratio (correlation = 0.87). These measures are similar to Tufano and Sevick (1997)'s "sponsor concentration".

In the Appendix we describe how we formed the board overlap measures in more detail using actual examples. We present the summary statistics for board overlap measures in Table 2, Panel A.

3.4. FUND CHARACTERISTICS

We obtain data on fund characteristics from the CRSP Mutual Funds Database for 2007-2010. Since changes in mutual fund boards occur very rarely, we assume that the board characteristics for 2007 remain stable over this period. In Table 2, Panel B we provide the descriptive statistics for fund characteristics. Fund size is measured as the average monthly total net assets under management in a given year. Fund family size is the total net assets under management of all funds within a mutual fund complex. Both fund and fund family size capture possible economies (or diseconomies) of scale as fund families share common resources across all funds (e.g., research analysts) and yet the size of a fund may affect its ability to make purchases or sales with minimal impact on market price (Ferris and Yan, 2007). The mean (median) size of a mutual fund is $462 mn ($33 mn), and the mean (median) size of a fund family is $93,058 mn ($21,118 mn). In robustness tests we use the number of funds offered by a family in lieu of fund family size. The mean (median) fund family offers 169 (123) fund-classes. The extreme case

of board overlap is a unitary board and we show in Table 2 Panel C that funds with unitary boards are highly statistically significantly different from funds with non-unitary boards. For example, funds with unitary boards have fewer assets under management ($357mn vs. $613mn) and belong to smaller fund families ($39bn vs. $180bn) that offer fewer total fund classes (126 vs. 238).

Fund age is estimated as the number of years since a fund was first offered to investors. It is used as a control variable because fund characteristics have been found to vary predictably over the fund's lifecycle (Tufano and Sevick, 1997; Del Guercio et al., 2003; Ferris and Yan, 2007). The mean (median) fund age is 9.59 years old (8.0 years old).

We examine separately four types of fees: expense ratios, management fees, 12b-1 fees, and total fees. Expense ratio is the ratio of total operating expenses to assets under management and includes the management fees, 12b-1 fees, administrative fees, operating costs, and all other asset-based costs incurred by the fund. We find that the sample mean (median) expense ratio is 135.20 bp (130 bp). Management fees are the fees paid out of fund assets to the fund's investment adviser or its affiliates for managing the fund's portfolio. The sample mean (median) management fee is 49.63 bp (67.70bp). 12b-1 fees are charged to cover the marketing and distribution costs for a fund. The mean (median) 12b-1 fee is 58.92 bp (50.00 bp). Finally, to calculate the total fees faced by a representative investor in a mutual fund class, we add the annualized front and rear-end loads to the expense ratios. Following Sirri and Tufano (1998), we assume that the average investor remains invested in the fund for a period of seven years. The sample mean (median) total fees is 145.72 bp (144bp). Univariate statistics reveal that funds from families with unitary board structures charge significantly higher expense ratios (135.84 bp vs. 134.22 bp) and management fees (52.46 bp vs. 44.46 bp), yet have significantly lower 12b-1 fees (55.2 bp vs. 64315 bp). The net effect is that funds with unitary boards have insignificantly lower total fees (145.66 bp vs. 145.75 bp).

To calculate the net returns, we calculate fund performance in year t by compounding monthly returns from CRSP over the entire year. Net returns are net of all management expenses and 12b-1 fees, as well as front and rear load fees. The sample mean (median) fund generated returns of 297 bp (1,032 bp). Gross returns, which are defined as net returns plus total fees, have a mean (median) value of 443 bp (1,168 bp). Differences in means tests reveal that funds with unitary boards have similar gross and net returns. In addition, we also estimate funds' alphas. We use the three Fama and French (1992) factors – excess return on the CRSP value-weighted index, difference in returns between a small and large stock portfolio, and difference in returns between a high and low equity to book market portfolio – and the Carhart (1997) momentum factor. Thus, the estimated alpha is a measure of the annual abnormal return associated with each mutual fund. The mean (median) estimated value of our four factor alpha is 2.24 basis points (2.47 bp). Funds with unitary boards have significantly lower alphas (2.11 bp vs. 2.32 bp).

4. Empirical Methodology

Throughout our analyses, we relate fund outcomes to board overlap by estimating the following equation:

$$Fund\ Outcome_{i,t} = \alpha + \beta Board\ Overlap_{i.2007} + \gamma X_{it} + \tau_{family} + \delta_{style} + \eta_t + \varepsilon_{i,t} \quad [3]$$

where we regress various fund outcomes (such as fees, returns, unobserved managerial actions) on our board overlap measures and a set of control variables (X_{it}) that has been shown to be correlated with the outcomes in the prior literature. We estimate Equation 3 using weighted least squares (WLS) estimations, where the weights are the share of a fund family in the total number of observations in the sample.[14] All our estimations include fund family fixed effects (τ_{family}), fund style fixed effects (δ_{style}), and year fixed effects (η_t). Standard errors are clustered by fund family to control for possible correlation across observations belonging to the same fund family.

When analyzing policies or institutions such as boards of directors that are centrally organized or overseen by a mutual fund family, it is appropriate to include fixed effects that capture the mutual fund

[14] All results are robust to use of ordinary least squares (OLS).

family to mitigate the impact of otherwise unobserved heterogeneity in the dataset. We therefore stress the necessity of the inclusion of family fixed effects while estimating Equation 3 and motivate its use following the empirical model offered by Himmelberg et al. (1999). Lai (2016), Tufano and Sevick (1997), and Kong and Tang (2008), the three studies that are closest to ours, did not account for all three types of fixed effects that are present: year, fund style and family. In Appendix Table 1, we present the results without fund family fixed effects to better parallel the Tufano and Sevick (1997) and Kong and Tang (2008) results.

Another common endogeneity concern in the literature on board of directors is reverse causality (Hermalin and Weisbach, 2003; Adams et al., 2010). As emphasized earlier in footnote 12, boards of directors of mutual funds change rarely, and director departures and replacements are usually precipitated by events such as director retirement, which are not related to fund outcomes. Therefore, reverse causality between fund outcomes and board overlap is not a concern in the context of our study.

5. Investor perspectives on fund performance

Directors, particularly independent directors, "represent [these] investors in fund board rooms when crucial decisions are made that affect their investments," said SEC Chair Mary Jo White (White, 2016). If directors represent effectively these investors, then board overlap should be negatively (positively) associated with outcomes that are bad (good) for investors. For example, board overlap should be associated with lower fees and higher performance. We now examine if this is the case.

5.1. MUTUAL FUND FEES

One of the main responsibilities of the board is to negotiate fees. The unitary board structure is thought to be associated with lower fees due to economies of scale and increased bargaining power (ICI, 2009; Kong and Tang, 2008). Thus, we begin by examining the relationship between mutual fund fees charged to investors and the extent of board overlap in mutual fund families by estimating the following equation:

$$Fund\ Fees_{i,t} = \alpha + \beta Board\ Overlap_{i.2007} + \gamma X_{it} + \tau_{family} + \delta_{style} + \eta_t + \varepsilon_{i,t}. \quad [4]$$

We employ four separate measures for fund fees: expense ratios, management fees, 12-b1 fees, and total fees. Since it is possible that funds with overlapping boards have different costs despite being able to negotiate better fees, we control for fund and family level variables that are known to affect fees. Accordingly, the control variables include the size of the fund, the size of the fund family, age of the fund, age of the fund family, and three other board characteristics that have been show to affect mutual fund fees – board size, board independence, and CEO-chairman duality. Fund and family size control for possible economies of scale, and have been shown to be inversely related to fund fees (e.g. Khorana et al., 2008; Kuhnen, 2009). The fund's age is used to capture the lifecycle effect whereby the needs of a fund vary predictably according to its age (Tufano and Sevick, 1997; Del Guercio et al., 2003; Ferris and Yan, 2007). The coefficients on these control variables are as predicted by prior literature. All our estimations include fund family fixed effects (τ_{family}), fund style fixed effects (δ_{style}), and year fixed effects (η_t).

5.1.1. Expense Ratios

Expense ratio for a fund represents the percentage of assets deducted for expenses, which include the management fees, administrative fees, operating costs, 12-b1 fees, and all other asset-based costs incurred by the fund. Controlling for observable characteristics that correlate with how difficult it is to operate the fund (such as its size and investment objective), a higher expense ratio indicates that more of the rents are captured by the management, and less by fund investors (Kuhnen, 2009). We present the results for expense ratios in Table 3, Panel A, columns I-II. Our findings indicate that there is no significant difference between expense ratios of funds with differing magnitudes of director overlap.

5.1.2. Management Fees

One of the largest components of the expense ratio is the management fees, which are the fees paid out of fund assets to the fund's investment adviser or its affiliates for managing the fund's portfolio. By law, the board and fund management companies are required to renegotiate the management fee structure

every year. If the overlapping board structure does indeed possess the hypothesized bargaining advantages, then an overlapping board should be associated with lower management fees.

We present the results in columns III and IV of Table 3, Panel A. We obtain evidence that management fees may be lower in the presence of greater board overlap. The coefficient on the director overlap measure is -34.02 and is statistically significant at the 10 percent level. However, this does not hold when the board overlap measure is asset-weighted. This set of results suggests that the potential for economies of scale or bargaining advantages might exist when a fund family has overlapping boards, but that this is less likely to occur as the directors oversee more family assets.

5.1.3. Marketing and Distribution Costs (12-b1 fees)

Next, we analyze the relationship between board overlap and 12b-1 fees. 12b-1 fees include fees paid for marketing and selling fund shares, such as compensating brokers and others who sell fund shares, and paying for advertising, the printing and mailing of prospectuses to new investors. These fees have been criticized as being the least transparent cost component for mutual fund investors (Bergstresser et al., 2009), and the SEC asked whether they result in "investors overpaying for services or paying for distribution services that they may not even know they are supposed to be getting."[15] The effectiveness of the marketing costs is not very clear as it has been shown that mutual fund companies offer biased snapshots of their success by selectively advertising their higher performing funds (Koehler and Mercer, 2009). Furthermore, the marketing strategy is usually defined by the fund families, as Gallaher et al. (2015) illustrate that "fund family complexes typically budget their advertising expenditures and enter into advertising contracts on an annual complex-wide basis, making the decisions about when to advertise, and which funds to advertise, later in the fiscal year."

[15] On July 21, 2010, the SEC proposed "Measures to Improve Regulation of Fund Distribution Fees and Provide Better Disclosure for Investors." See http://www.sec.gov/news/press/2010/2010-126.htm

We present the results in Table 3, Panel B, columns I and II. We find that 12b-1 fees are significantly higher when there is higher director overlap – a one standard deviation increase in the director overlap measure would yield an increase in 12-b1 fees of 10.81*0.20 or 2.16bps. This corresponds to a 3.7% increase in comparison to the average 12b-1 fees in our sample (58.92 bps).

5.1.4. Total Fees

Last, we investigate the relationship between total fees – expense ratios plus total load fees – and board overlap. Similar to the expense ratio results, we identify no significant relationship between total fees and board structure. These results are reported in Table 3, Panel B, columns III-IV.

To summarize, after controlling for observed fund and fund family characteristics, and fund family fixed effects, we cannot conclude that board overlaps in mutual fund families help decrease the fund costs, as has been contended in earlier literature. Our results differ from the earlier literature (Kong and Tang, 2008; Tufano and Sevick, 1997), who find a negative relationship between fees and unitary boards. The difference stems from usage of panel data and the inclusion of the family fixed effects in our analyses.[16] Thus, the differences in our results can be attributed to our controls for unobserved family characteristics. The most plausible interpretation of why our results differ from the earlier literature is that the "between" relation between board overlap and fund fees is significantly negative while the "within" relation is unclear. In other words, in a cross section fund families with unitary boards have lower fees but funds do not lower fees when they increase their board overlap with other funds in the same family.

5.2. MUTUAL FUND PERFORMANCE

Overlapping boards do not seem to negotiate lower fees as we have shown in the previous section, yet they may be using their bargaining power to hire better quality managers. Additionally, directors also have

[16] We, too, find a negative relationship between board overlap and fund fees if we do not include family fixed effects in our analyses. See Appendix Table 1.

responsibilities to monitor the performance of various staff within the mutual fund family. For example, they need to check how well the traders are doing their jobs, and the traders are hired centrally by the fund family sponsor to support all constituent funds. Similarly, the fund family will hire a team of researchers whose work will support all funds within the family. Thus, there are reasons why the overlapping board structure is efficient, and could simultaneously benefit the family and individual funds. If that is the case, we would expect to see higher returns for funds with greater degrees of director overlap. Therefore, in this section we analyze the relationship between director overlap and fund performance. Specifically, we estimate the following regression equation:

$$Fund\ Performance_{i,t} = \alpha + \beta Board\ Overlap_{i.2007} + \gamma X_{it} + \tau_{family} + \delta_{style} + \eta_t + \varepsilon_{i,t} \quad [5]$$

We use three measures for fund performance: gross returns, net returns, and fund alphas. Gross and net returns capture the year-on-year changes in mutual fund value before and after consideration of fees paid by a representative investor. Fund alphas capture fund performance on a risk-adjusted basis and are calculated using Carhart's (1997) 4-factor model. We do not analyze style-adjusted fund returns in either specification as per Gormley and Matsa (2014). All our estimations include fund family fixed effects, fund style fixed effects, and year fixed effects.

We present the results in Table 4. We find a highly positive and significant relationship between board structure and gross returns. A one standard deviation increase in the director overlap measure (column I) is associated with a 134.2 bps increase in gross returns. Given that the average fund had gross returns of 443 bps, this would be a 30 percent increase. Similarly, a one standard deviation increase in the asset-weighted director overlap measure (column II) is associated with a 121.3 bps increase in gross returns. Our results indicate that there is no significant relationship between board overlap and net returns to investors (columns III, IV). Similarly, the relationship between board overlap and fund alphas are also insignificant (columns V, VI). These results suggest that while funds with greater director overlap

may be hiring better quality managers (as evidenced by higher gross returns), they may not be passing the higher returns on to their investors (as evidenced by similar net returns after fees).

5.3. FUND MANAGER ABILITY

Our results associating board overlap with higher gross fund returns indicate that such boards may be more effective in hiring and retaining better managers owing to their bargaining advantages as stressed by the Investment Company Institute (ICI). In this section, we analyze the relationship between board structure and fund manager ability using a measure of managerial skill suggested by Kacperczyk et al. (2008) – KSZ measure henceforth. For each fund in our sample, we calculate the return gap following Kacperczyk et al. (2008) as follows:

$$Return\ gap_{i,t} = Net\ return_{i,t} - Net\ holdings\ return_{i,t-1}, \qquad [6]$$

where Net Holdings Return captures the returns that would have been earned by the fund had it actually held the portfolio disclosed at date t-1 for the entire quarter.[17] The return gap is thus calculated as the difference between the actual returns and the hypothetical return if the beginning-of-quarter portfolio was held throughout the quarter. The KSZ measure is built on the argument that a fund's disclosed performance would correspond perfectly with the hypothetical performance that would have been generated if the fund had actually held the publicly disclosed portfolio holdings at the end of the previous quarter for the reporting period. A larger return gap implies that a manager's decisions to alter the portfolio since the last disclosure date has resulted in higher performance, and therefore suggests higher managerial skill. Agarwal et al. (2014) illustrate with a numerical example why a positive return gap signals managerial skill. Kacperczyk et al. (2008) find that the return gap is persistent and affects fund performance. The mean (median) value of the return gap in our sample is 1.06 basis points (0.55 bp), similar in magnitude to the statistics provided by Agarwal et al. (2014). This reflects the fact that the fund

[17] Mutual funds disclose the composition of their portfolios on a quarterly basis.

managers have the ability to trade repeatedly and alter the composition of their portfolios during the reporting period.

After we calculate the return gap, we estimate the following regression equation to relate the managerial skill (i.e., return gap) to director overlap:

$$Return\ gap_{i,t} = \alpha + \beta_1\ Board\ Overlap_{i.2007} + \gamma\ X_{it} + \delta_{style} + \tau_{family} + \eta_t + \varepsilon_{i,t}. \quad [7]$$

We present our findings in Table 5. We find a positive impact of board overlap on the return gap – the coefficients on both director overlap measures are positive and significant at the 1 percent level. The economic magnitude of this result is large: a one standard deviation increase in director overlap would cause an increase in the return gap of 15.09*0.18 or 2.716 bps (or, if using the asset-weighted measure of director overlap: 13.77*0.18 or 2.4786 bps). By comparison, the average estimated return gap is 1.06 bps. Together with our results on fund returns, we infer that overlapping boards contribute to recruiting more skilled managers.

6. Sponsor perspectives on board performance

We now switch perspectives to examine how well the board of directors serves the interests of the overarching fund family. That is, while the board's fiduciary responsibilities are towards investors in each fund, the board is initially appointed by the fund sponsor at time of inception and is routinely reappointed thereafter (see Meschke (2007) and Kuhnen (2009) for additional details). As the fund family sponsor tends to appoint directors of existing boards to the boards of newly incepted funds, it is possible that the directors prioritize fund family concerns in order to solidify their role as a director within the family. This is consistent with the earlier findings of Kuhnen (2009) that directors and the sponsor often have histories of repeated business interactions. Moreover, there is considerable evidence that mutual fund families follow strategies to maximize the returns to the family as a whole (Chaudhuri et al., 2012; Guedj and Papastaikoudi, 2004), even if at the expense of certain funds within the family.

6.1. STRATEGIC PERFORMANCE TRANSFER

Gaspar et al. (2006) show that mutual fund families boost the performance of the member funds that are more likely to increase overall family profits. For example, fund families have been shown to improve the performance of high-fee funds at the expense of low fee funds. Such strategic performance transfer has been shown to materialize through the fund family coordinating purchases and sales of investments made by particular funds to boost the performance of high fee funds (cross trading), and also when a fund family allocates hot initial public offering (IPO) stocks differentially to the high fee funds under its umbrella.

In this section we investigate whether such strategic performance transfer occurs more often in funds with higher director overlap. A well-functioning board should be effective in preventing such hidden actions which can redirect value away from the investors of certain funds in the family. We follow Gaspar et al. (2006) and test whether the observed differences in returns between high-fee funds and low-fee funds in a family systematically exceed the difference in returns of their investment styles. Specifically, we estimate the following regression equation:

$$Net\ Return_{i,t}^{High\ fee} - Net\ return_{j,t}^{Low\ fee} = \alpha + \beta_1\ SameFamily \quad + \gamma\ X_{it} + \delta_{style} + \eta_t + \varepsilon_{i,t} \qquad [8]$$

The dependent variable is the difference between the style-adjusted returns of high-fee funds and low-fee funds. A high (low) fee fund is defined as a fund with total fees in the highest (lowest) 25% of the distribution within the mutual fund family. We note that fees vary widely among the funds included in our dataset. While the mean (median) value of total fees is 145.72 bps (144.00 bps), the 25th percentile of the distribution is 99.00 bps and the 75th percentile of the distribution is 195.14 bps. Hence, we are essentially creating pairs of funds where the high fee fund charges fees that are at least double the fees charged by the low fee fund.

Following Gaspar at al. (2006), we construct two sets of return differences between high-fee and low-fee funds as follows: In the first set, each high fee fund is matched with all of the low-fee funds belonging to the same family (actual pairs). In the second set, each low-fee fund in every actual pair is replaced by a matching control fund taken from the remaining sample of funds (i.e., funds that belong to

a different fund family). To do so, we replace each low-value fund in an actual pair with a low-value fund from another family that has the same investment objective (matched pairs). For each fund we estimate the fund-specific net-of-style return, which is defined as the difference between the fund's monthly return and the average return for funds of the same style. We then calculate the difference between the net-of-style returns for the two funds in a pair. The dependent variable is defined as the difference between the net-of-style return of high fund i and the net-of-style return of low fund j.

We then stack both sets of pairs together in the same data set to form the dependent variable, $Net\ Return_{i,t}^{High\ fee} - Net\ return_{j,t}^{Low\ fee}$. "Same Family" is an indicator variable that takes the value one if the low-fee and high-fee fund pairs belong to the same mutual fund family (i.e., actual pairs). The indicator variable takes the value zero if the funds belong to different families (i.e., matched pairs). We include year, style and fund family fixed effects in the regressions. As in Gaspar et al. (2006), the control variables are size of the funds, age of the funds, size of the fund families, and an indicator variable if the high-fee and low-fee funds are of the same style.

Gaspar et al. (2006) show that the coefficient belonging to the same family indicator, β, is positive and significant, and infer from this result that fund families strategically transfer performance from high-fee funds to low-fee funds. Our estimation of the equation yields the same result as we too find a significant and positive coefficient on the "Same Family" indicator variable (Table 6, column I).

After confirming the occurrence of performance transfer from low-fee funds to high-fee funds within our study sample, we move on to investigate the effects of board overlap on performance transfer by estimating Equation 8 separately for funds that belong to families with high and low degrees of director overlap. To classify the families, we use our family-level director overlap measures, which were calculated by averaging the Board Overlap Ratio and Asset-weighted Board Overlap Ratio of each fund within a fund family.

We present the results in Table 6, columns II-V. First, in columns II and III we form the subsamples using the director overlap ratio and then in columns IV and V we form the subsamples using the asset-weighted director overlap ratio. We obtain a consistent story: director overlap is strongly associated with greater performance transfer among the high director overlap sample (columns II and IV) but there is no association among the low director overlap sample (columns III and V). A one standard deviation in director overlap (asset-weighted director overlap) causes an increase in performance transfer of 47.64*0.18 or 8.572 bps (48.44*0.18 or 8.7192 bps), which is a roughly 3% change from the average estimated net returns of a fund in our dataset of 297.3 bps.

6.2. WINDOW DRESSING

One of the main duties of fund directors is to monitor the portfolio managers on behalf of the funds' investors in order to reduce managers' ability to engage in actions that are not directly observable by the investors and not necessarily of benefit to them. In this section, we analyze a particular hidden action of fund managers - window dressing. Window dressing involves managers altering fund portfolios by disclosing disproportionately higher (lower) holdings in stocks that have done well (poorly) over a reporting period to mislead investors about their true ability (Agarwal et al., 2014). Popular consensus holds that window dressing is done in order to mislead investors regarding the true composition of a portfolio.[18] Russ Kimel, Morningstar's director of manager research at mutual funds, described window dressing as "managers are either hiding their mistakes or adding winners to make themselves look a little smarter".[19] Since investor inflows are particularly sensitive to recent performance of funds, window dressing is a strategy that could affect the sponsor.

Agarwal et al. (2014) develop a proxy for the extent of window dressing – the backward holding return gap, which is computed as the difference between the returns of the quarter-end portfolio (and

[18] See newspaper articles such as this Wall Street Journal column for market participant beliefs regarding window dressing: http://www.wsj.com/articles/what-is-window-dressing-for-mutual-funds-1418011555

[19] See http://www.eagledailyinvestor.com/20406/fund-managers-market/

assuming that the manager held this same portfolio at the beginning of the quarter) and the fund's actual quarterly return. The intuition is that a window-dressing manager will tilt portfolio holdings towards winner stocks and away from loser stocks to give investors a false impression of stock selection ability after having observed the winner and loser stocks towards the quarter end. Following Agarwal et al. (2014), we compute the backward holding return gap for each fund in our sample as follows:

$$Backward\ Holding\ Return\ Gap_{i,t} = Net\ holdings\ return_{i,t} - Actual\ net\ return_{i,t}. \quad [9]$$

The backward holding return is the returns of the quarter-end portfolio, while actual return is the returns reported by the fund for that quarter. The mean (median) value of the window dressing measure in our sample is 25.27 (15.01) basis points, comparable to the sample statistics in Agarwal et al. (2014).

We then estimate the relationship between this window dressing proxy and director overlap with the following regression equation:

$$Backward\ Holding\ Return\ Gap_{i,t} = \alpha + \beta_1\ Board\ Overlap_{i.2007} + \gamma\ X_{it} + \delta_{style} + \tau_{family} + \eta_t + \varepsilon_{i,t} \quad [10]$$

We present the results in Table 7. We find a positive and significant coefficient on the board overlap variable, implying that the funds with higher director overlap engage in more window dressing when compared to the funds in their families with lower degrees of director overlap. A one standard deviation in director overlap would generate an increase in the backward holding return gap of 49.10*0.18 or 8.838 bps (or, in the case of the asset-weighted director overlap measure of 34.08*0.18 or 6.134 bps).

7. Robustness Checks

7.1. NUMBER OF FUNDS

Earlier we proxied for family size using the total value of assets under management in all funds in the family. However, it is possible that the value of assets under management captures only some of the qualities associated with the broad concept of family size. Thus, we now use an alternative proxy of family size – the number of funds in a family. When we re-estimate all regressions, it is now necessary to exclude

our asset-based measure of family size, because the value of assets under management within a family is high correlated with the number of funds in the family. Our results are qualitatively similar whether we use the asset-based measure of family size or a count-of-funds-based measure of family size.

7.2. INTERACTIONS OF BOARD OVERLAP MEASURES WITH NUMBER OF FUNDS IN THE FAMILY

The costs and benefits of director overlap may be more pronounced in bigger families that market a larger number of funds. Therefore, we repeat our analyses by adding the interaction of director overlap and number of funds in a family to our list of explanatory variables. The coefficients on the interaction terms are consistently statistically insignificant and the coefficients on the director overlap measures are qualitatively and quantitatively similar to those shown in all tables.

7.3. NONLINEARITY

We also estimated alternative specifications of the regression equation that allow for a non-linearity in the relation between dependent variables and board overlap. Specifically, we used a quadratic function of board overlap in these models. Our results do not indicate the presence of such non-linearities as all of the quadratic terms are statistically insignificant.

8. Conclusion

In this paper, we show that the overlapping board structure is exceedingly common in the mutual fund industry. Our results clearly illustrate that investors in funds with overlapping boards do not unambiguously benefit from this structure as the economies of scale generated by overlapping board structures are not fully passed on to the investors. Moreover, window dressing and strategic performance transfer are more common at fund families with greater board overlap. Hence, we conclude that the overlapping board structure in the mutual fund industry is a mixed blessing and needs to be reevaluated by both mutual funds themselves and policy makers.

References

Adams, R., B. Hermalin, and M. Weisbach (2010). The Role of Boards of Directors in Corporate Governance: A Conceptual Framework and Survey, Journal of Economic Literature, 48(1), 58-107.

Agarwal, V., G. Gay, and L. Ling (2014). Window dressing in mutual funds, Review of Financial Studies, 27(11), 3133-3170.

Bergstresser, D., Chalmers, J. M., and P. Tufano (2009). Assessing the costs and benefits of brokers in the mutual fund industry. Review of Financial Studies, 22(10), 4129-4156.

Bernheim, B., and M. Whinston (1986a). Menu Auctions, Resource Allocation, and Economic Influence, Quarterly Journal of Economics, 101(1), 1-32.

Bernheim, B., and M. Whinston (1986b). Common Agency, Econometrica, 54(4), 923-942.

Carhart M. (1997). On persistence in mutual fund performance, Journal of Finance, 52(1), 57-82.

Chaudhuri, R., Z. Ivkovich, and C. Trzcinka (2012). Strategic Performance Allocation in Institutional Asset Management Firms: Behold the Power of Stars and Dominant Clients, unpublished working paper, AFA 2013 San Diego Meetings Paper.

Chen, Q., I. Goldstein, and W. Jiang (2008). Directors' ownership in the US mutual fund industry, Journal of Finance, 63(6), 2629-2677.

Chevalier, J., and G. Ellison (1999). Are Some Mutual Fund Managers Better Than Others? Cross-Sectional Patterns in Behavior and Performance, Journal of Finance, 54(3), 875-899.

Cohen, L., A. Frazzini, and C. Malloy (2008). The small world of investing: Board connections and mutual fund returns, Journal of Political Economy, 116(5), 951-979.

Coles, J., N. Daniel, and L. Naveen (2014). Co-opted boards, Review of Financial Studies, 27(6), 1751-1796.

Cremers, M., J. Driessen, P. Maenhout, and D. Weinbaum (2009). Does skin in the game matter? Director incentives and governance in the mutual fund industry, Journal of Financial and Quantitative Analysis, 44(6), 1345-1373.

Del Guercio, D., L. Dann, M. Partch (2003). Governance and boards of directors in closed-end investment companies, Journal of Financial Economics, 69, 111-152.

Ding, B., and R. Wermers (2012). Mutual fund performance and governance structure: The role of portfolio managers and boards of directors, unpublished working paper.

Evans, R. (2010). Mutual Fund Incubation, Journal of Finance, 65(4), 1581-1611.

Ferris, S., and X. Yan (2007). Do independent directors and chairmen matter? The role of boards of directors in mutual fund governance, Journal of Corporate Finance, 13(2-3), 392-420.

Fich, E., and A. Shivdasani (2006). Are busy boards effective monitors?, Journal of Finance, 61(2), 689-724.

Gallaher, S., R. Kaniel, and L. Starks (2015). Advertising and mutual funds: From families to individual funds, CEPR Discussion Paper No. DP10329.

Gaspar, J., M. Massa, and P. Matos (2006). Favoritism in mutual fund families? Evidence on strategic cross-fund subsidization, Journal of Finance, 61(1), 73-104.

Gormley, T., and D. Matsa (2014). Common errors: How to (and not to) control for unobserved heterogeneity, Review of Financial Studies, 27(2), 617-661.

Guedj, I., and J. Papastakaikoudi (2004). Can mutual funds families affect the performance of their funds?, unpublished MIT working paper.

Hermalin, B., and M. Weisbach (2003). Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature, Economic Policy Review, 9(1).

Himmelberg, C., R. Hubbard, and D. Palia (1999). Understanding the determinants of managerial ownership and the link between ownership and performance, Journal of Financial Economics, 53(3), 353-384.

Investment Company Institute (ICI) (2009). Overview of fund governance practices 1994-2008, http://www.ici.org/pdf/pub_09_fund_governance.pdf, accessed on January 14, 2012.

Investment Company Institute (ICI) (2012a). Frequently asked questions about mutual fund directors, https://www.ici.org/faqs/faq/mfs/ci.faq_fund_gov_idc.idc, accessed July 17, 2012.

Investment Company Institute (ICI) (2012b), website, http://www.ici.org, accessed on January 12, 2012.

Kacperczyk, M., C. Sialm, and L. Zheng (2008). Unobserved actions of mutual funds, Review of Financial Studies, 21(6), 2379-2416.

Khalil, F., D. Martimort, and B. Parigi (2007). Monitoring a common agent: Implications for financial contracting, Journal of Economic Theory, 135, 35-67.

Khorana, A., H. Servaes, and P. Tufano (2008). Mutual fund fees around the world, Review of Financial Studies, 22(3), 1279-1310.

Khorana, A., P. Tufano, and L. Wedge (2007). Board structure, mergers, and shareholder wealth: A study of the mutual fund industry, Journal of Financial Economics, 85(2), 571-598.

Koehler, J., and M. Mercer (2009). Selection neglect in mutual fund advertisements, Management Science, 55(7), 1107-1121.

Kong, S., and D. Tang (2008). Unitary boards and mutual fund governance, Journal of Financial Research, 31(3), 193-224.

Kuhnen, C (2009). Business networks, corporate governance, and contracting in the mutual fund industry, Journal of Finance, 64(5), 2185-2220.

Lai, C (2016). Independent directors and favoritism: When multiple board affiliations prevail in mutual fund families, Financial Management, forthcoming.

Mahoney, P. (2004). Manager-Investor Conflicts in Mutual Funds, Journal of Economic Perspectives, 18(2), 161-182.

Maier, N., and M.Ottaviani (2009). Information Sharing in Common Agency: When is Transparency Good?, Journal of the European Economic Association, 7(1), 162-187.

Meschke, F. (2007). An empirical examination of mutual fund boards, SSRN paper 676901.

Nanda, V., J. Wang, and L. Zheng (2004). Family values and the star phenomenon: Strategies of mutual fund families, Review of Financial Studies, 17(3), 667-698.

Sirri, E., and P. Tufano (1998). Costly search and mutual fund flows, Journal of Finance, 53(5), 1589-1622.

Tufano, P., and M. Sevick (1997). Board structure and fee-setting in the U.S. mutual fund industry, Journal of Financial Economics, 46, 321-355.

White, M. (2016). The Fund Director in 2016, SEC, https://www.sec.gov/news/speech/chair-white-mutual-fund-directors-forum-3-29-16.html.

Appendix 1: Construction of the Board Overlap Measures

To illustrate how the overlap measures are calculated, we provide three examples. The first example is AARP Fund family, which enters our sample with three equity funds: AARP Conservative Fund, AARP Moderate Fund and AARP Aggressive Fund. The board structure and assets under management (AUM) as of 2007 are as follows:

Director Name	Fund Family	Fund	Assets Under Management (AUM)
William L. Boyan	AARP	AARP Conservative Fund	20.57
Michael F. Holland	AARP	AARP Conservative Fund	20.57
Rina K. Spence	AARP	AARP Conservative Fund	20.57
Douglas T. Williams	AARP	AARP Conservative Fund	20.57
William L. Boyan	AARP	AARP Moderate Fund	11.25
Michael F. Holland	AARP	AARP Moderate Fund	11.25
Rina K. Spence	AARP	AARP Moderate Fund	11.25
Douglas T. Williams	AARP	AARP Moderate Fund	11.25
William L. Boyan	AARP	AARP Aggressive Fund	32.71
Michael F. Holland	AARP	AARP Aggressive Fund	32.71
Rina K. Spence	AARP	AARP Aggressive Fund	32.71
Douglas T. Williams	AARP	AARP Aggressive Fund	32.71

For this fund family, there is a complete overlap of the board members across all individual funds. Thus, for each of the funds, the Unitary Board variable would take the value one. "Board Overlap Ratio" and "Asset-weighted Board Overlap Ratio" would also each be equal to 1 for each individual fund.

The second fund family we use as an example is Barrett Fund Family, which enters our sample with Barrett Growth Fund and Barrett Opportunity Fund. The board structure and the AUM as of 2007 are as follows:

Director Name	Fund Family	Fund	AUM
Ronald E. Kfoury	Barrett	Barrett Growth Fund	21.61
Gerard E. Jones	Barrett	Barrett Growth Fund	21.61
Edward M. Mazze	Barrett	Barrett Growth Fund	21.61
Irving Brilliant	Barrett	Barrett Opportunity Fund, Inc	152.63
Barry Handel	Barrett	Barrett Opportunity Fund, Inc	152.63
Rosalind A. Kochman	Barrett	Barrett Opportunity Fund, Inc	152.63
William Morris, Jr.	Barrett	Barrett Opportunity Fund, Inc	152.63
Irving Sonnenschein	Barrett	Barrett Opportunity Fund, Inc	152.63

The two funds that operate under the umbrella of the Barrett fund family have completely separate boards. Thus, the funds under the Barret fund family have a value of zero for the unitary board dummy, and the board overlap ratios for these funds are also zero.

The third fund family we use as an example is FPA, which enters our dataset with four equity funds. The board structure and the AUM as of 2007 are as follows:

Director Name	Fund Family	Fund	AUM
Willard H. Altman, Jr.	FPA	FPA Capital Fund, Inc	2,177.43
Alfred E. Osborne, Jr.	FPA	FPA Capital Fund, Inc	2,177.43
A. Robert Pisano	FPA	FPA Capital Fund, Inc	2,177.43
Patrick B. Purcell	FPA	FPA Capital Fund, Inc	2,177.43
Robert L. Rodriguez	FPA	FPA Capital Fund, Inc	2,177.43
Lawrence J. Sheehan	FPA	FPA Capital Fund, Inc	2,177.43
Willard H. Altman, Jr.	FPA	FPA Crescent Fund	1,394.45
Alfred E. Osborne, Jr.	FPA	FPA Crescent Fund	1,394.45
A. Robert Pisano	FPA	FPA Crescent Fund	1,394.45
Patrick B. Purcell	FPA	FPA Crescent Fund	1,394.45
Steven T. Romick	FPA	FPA Crescent Fund	1,394.45
Lawrence J. Sheehan	FPA	FPA Crescent Fund	1,394.45
Willard H. Altman, Jr.	FPA	FPA Paramount Fund, Inc	467.08
Eric S. Ende	FPA	FPA Paramount Fund, Inc	467.08
A. Robert Pisano	FPA	FPA Paramount Fund, Inc	467.08
John H. Rubel	FPA	FPA Paramount Fund, Inc	467.08
Lawrence J. Sheehan	FPA	FPA Paramount Fund, Inc	467.08
John P. Shelton	FPA	FPA Paramount Fund, Inc	467.08

Willard H. Altman, Jr.	FPA	FPA Perennial Fund, Inc	467.43
Eric S. Ende	FPA	FPA Perennial Fund, Inc	467.43
A. Robert Pisano	FPA	FPA Perennial Fund, Inc	467.43
Lawrence J. Sheehan	FPA	FPA Perennial Fund, Inc	467.43

We will illustrate the calculations for one of the four funds operating under the FPA mutual fund family: FPA Capital Fund. This fund has six directors. Mr. Altman is on four boards within the family, Mr. Osborne is on two boards, Mr. Pisano is on four boards, Mr. Purcell is on two boards, Mr. Rodriguez is on one board, and, finally, Mr. Sheehan is on four boards. To calculate our count-based board overlap measure by equation 1 in the main text:

Board Overlap Ratio $= \frac{1}{N}\sum_{i=1}^{N} \frac{Number\ of\ funds\ that\ director\ i\ oversees}{Total\ number\ of\ funds\ in\ the\ family}$

$= \frac{1}{6} \times \left(\frac{4}{4} + \frac{2}{4} + \frac{4}{4} + \frac{2}{4} + \frac{1}{4} + \frac{4}{4}\right)$

$= 0.71$

To calculate the asset-weighted board overlap measure we use equation 2 in the main text. The total assets under management (in millions) for the fund family is:

$2177.33 + $1394.45 + $467.08 + $467.43 = $4506.39

Asset-weighted board overlap ratio $= \frac{1}{N}\sum_{i=1}^{N} \frac{Net\ asset\ value\ of\ funds\ that\ director\ i\ oversees}{Total\ net\ asset\ value\ of\ funds\ in\ the\ family}$

$$= \frac{1}{6} \times \left(\frac{\$4506.39}{\$4506.39} + \frac{\$2177.43+\$1394.45}{\$4506.39} + \frac{\$4506.39}{\$4506.39} + \right.$$

$$\left. \frac{\$2177.43+\$1394.45}{\$4506.39} + \frac{\$2177.43}{\$4506.39} + \frac{\$4506.39}{\$4506.39}\right)$$

$$= 0.85$$

Table 1. Variable Definitions and Sources

Variable	Definition	Source
Board of Directors		
Unitary Board	An indicator variable equal to one if all funds belonging a mutual fund family have the same board of directors, and zero otherwise.	N_CRS, 485BPOS
Board Overlap Ratio	The percentage of family funds overseen by directors of a mutual fund on average.	N_CRS, 485BPOS
Board Overlap Ratio (Family)	Board overlap averaged over all funds in a family.	N_CRS, 485BPOS
Asset-weighted Board Overlap Ratio	The percent of fund family assets overseen by directors of a mutual fund on average.	N_CRS, 485BPOS
Asset-weighted Board Overlap (Family)	Asset-weighted board overlap averaged over all funds in a family.	N_CRS, 485BPOS
Board Size	Number of directors serving on a fund's board.	N_CRS, 485BPOS
Board Independence	Percentage of independent directors serving on a fund's board.	N_CRS, 485BPOS
CEO-Chairman Duality	An indicator variable equal to one if the CEO of the mutual fund family is also the chair of the board of directors, and zero otherwise.	N_CRS, 485BPOS
Fund Characteristics		
Expense Ratio	Expense ratio of the fund in year t. Percentage of assets deducted for fund expenses, including 12b-1 fees, management fees, administrative fees, operating costs, and all other asset-based costs incurred by the fund. Portfolio transaction fees, or brokerage costs, as well as initial or deferred sales charges are not included in the expense ratio. Converted to basis points.	CRSP
Management Fee	Fees paid out of fund assets to the fund's investment adviser or its affiliates for managing the fund's portfolio.Converted to basis points.	CRSP
12 b1 Fees	Reported as the ratio of the total assets attributed to marketing and distribution costs. Represents the actual fee paid in the most recently completed fiscal year as reported in the Annual Report Statement of Operations. Converted to basis points.	CRSP
Total Fees	Annual fund expenses plus the front and rear-end loads.	CRSP
Load Indicator	An indicator variable equal to one if a fund charges front and/or rear load fees, zero otherwise.	CRSP
Turnover Ratio	Minimum (of aggregated sales or aggregated purchases of securities), divided by the average 12-month Total Net Assets of the fund.	CRSP
Net Return	Fund's net return (mret), computed by compounding the monthly net returns.	CRSP
Gross Return	Fund's gross return in year t, computed by adding total fees to the reported Net Return. Expressed in basis points.	CRSP
Alpha	Fund's alpha estimated using returns over 2007-2009 using the Fama-French 4 factor model.	CRSP
Fund Size	Total net assets (tna) of a fund at year-end in USD millions.	CRSP
Fund Age	Age of the mutual fund, measured as the current year minus the year at which it was first offered.	CRSP

Table 1. Variable Definitions (cont'd)

Variable	Definition	Source
Family Size	The sum of the total net assets held by every fund within the family. Expressed in USD millions.	CRSP
Return Gap	The gap between the reported return earned by a fund in a quarter and what the fund would have earned if it had held the previously disclosed portfolio for the quarter. Calculated folllowing Kacperczyk et al. (2007). Expressed in basis points.	Authors' calculations
Window Dressing	The gap between the reported return earned by a fund in a quarter and what the fund would have earned if it had held the contemporaneously disclosed portfolio for the quarter. Calculated folllowing Agarwal et al. (2014). Expressed in basis points.	Authors' calculations

Table 2. Summary Statistics

This table presents the summary statistics for board of directors characteristics and fund characteristics for the domestic U.S. equity mutual funds for 2007-2010 that are included in the sample. All variables and data sources are as defined in Table 1.

Panel A. Board of Directors Characteristics

	Mean	Std. Dev.	p10	p25	Median
Unitary Board	0.59	0.49	0.00	0.00	1.00
Board Overlap Ratio	0.74	0.24	0.36	0.65	0.82
Board Overlap Ratio (Family)	0.75	0.20	0.38	0.62	0.75
Asset-weighted Board Overlap Ratio	0.74	0.27	0.33	0.62	0.86
Asset-weighted Board Overlap Ratio (Family)	0.75	0.21	0.39	0.60	0.76
Board Size	8.61	2.62	5.00	7.00	8.00
Board Independence	0.82	0.10	0.70	0.75	0.83
Chairman-CEO Duality	0.20	0.40	0.00	0.00	0.00

Panel B. Fund Characteristics

	Mean	Std. Dev.	p25	Median	p75
Fund Size ($mn)	462	2,558	5	33	177
Family Size ($mn)	93,058	214,573	5,784	21,118	45,687
Number of fund-classes in family	168.87	155.85	47.00	123.00	237.00
Fund Age	9.59	7.80	5.00	8.00	12.00
Expense Ratio (BP)	135.20	61.23	95.00	130.00	181.00
Management Fees (BP)	49.63	88.56	36.30	67.70	86.50
12-b1 Fees (BP)	58.92	34.93	25.00	50.00	100.00
Total Fees (BP)	145.72	64.85	99.00	144.00	195.14
Load Indicator	0.35	0.48	0.00	0.00	1.00
Turnover Ratio	3.84	567.32	0.32	0.63	1.12
Net Return (BP)	297.30	2,825.99	-2,427.02	1,031.61	2,265.62
Gross Return (BP)	443.03	2,827.62	-2,299.51	1,168.20	2,417.17
Alpha (BP)	2.24	4.51	-0.07	2.47	4.67
Return Gap (BP)	1.06	51.35	-13.17	0.55	15.16
Window Dressing (BP)	25.27	103.32	-26.43	15.01	71.45

Table 2. Summary Statistics (cont'd)

Panel C. Comparison of Means for Fund Characteristics

	Unitary Board	Non-Unitary Board	P-value for differences in means
Fund Size ($mn)	356.89	612.59	0.000***
Family Size ($mn)	39156.26	180061.58	0.000***
Number of fund-classes in family	125.55	238.49	0.000***
Fund Age	9.22	9.59	0.000***
Expense Ratio (BP)	135.84	134.22	0.011**
Management Fees (BP)	52.46	44.46	0.000***
12-b1 Fees (BP)	55.20	64.15	0.000***
Total Fees (BP)	145.66	145.75	0.895
Load Indicator	0.32	0.37	0.000***
Turnover Ratio	5.84	0.86	0.399
Net Return (BP)	294.00	310.61	0.562
Gross Return (BP)	442.24	444.43	0.941
Alpha (BP)	2.11	2.32	0.000***
Return Gap (BP)	0.33	2.13	0.003***
Window Dressing (BP)	25.53	24.87	0.662

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

Table 3. Fund Fees
Panel A. Expense Ratios and Management Fees

This table presents the results from weighted least squares (WLS) estimation of Equation 1 in the paper. The dependent variables are the expense ratio and management fees. Year, ICDI investment objective (style) and fund family fixed effects are included. All variables are as defined in Table 1. Standard errors are adjusted for heteroskedasticity and correlation across observations belonging to the same fund family, and are presented in parantheses. * , ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

	Expense Ratios		**Management Fees**	
	(I)	(II)	(III)	(IV)
Board Overlap Ratio	-2.495		-34.02*	
	(13.63)		(19.08)	
Asset-weighted Board Overlap Ratio		-0.646		11.57
		(13.95)		(22.12)
Fund Age	15.03***	15.03***	25.46***	25.52***
	(3.883)	(3.901)	(8.417)	(8.257)
Fund Size	-6.826***	-6.824***	3.137***	3.138***
	(1.138)	(1.136)	(1.022)	(1.050)
Family Size	4.537*	4.524*	0.567	0.362
	(2.554)	(2.549)	(7.955)	(7.976)
Board Size	43.58***	43.47***	101.9***	96.82***
	(10.68)	(11.23)	(26.73)	(29.44)
CEO is the Chairman	-36.02***	-36.65***	-72.49***	-87.92***
	(12.83)	(13.11)	(21.84)	(27.87)
Board Independence	60.32**	60.61**	103.8	116.9
	(26.36)	(25.45)	(103.8)	(120.9)
Constant	-44.29	-45.56	-273.8***	-305.7***
	(50.10)	(48.21)	(79.60)	(96.01)
Year Fixed Effects	Yes	Yes	Yes	Yes
Style Fixed Effects	Yes	Yes	Yes	Yes
Family Fixed Effects	Yes	Yes	Yes	Yes
r2	0.403	0.403	0.295	0.294
r2_a	0.397	0.397	0.288	0.287
N	38134	38134	38134	38134

Table 3. Fund Fees
Panel B. 12b-1 Fees and Total Fees

This table presents the results from weighted least squares (WLS) estimation of Equation 1 in the paper. The dependent variables are the total fund fees and 12b-1 fees. Year, ICDI investment objective (style) and fund family fixed effects are included. All variables are as defined in Table 1. Standard errors are adjusted for heteroskedasticity and correlation across observations belonging to the same fund family, and are presented in parantheses. * , ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

	12b-1 Fees		Total Fees	
	(I)	(II)	(III)	(IV)
Director Overlap (Fund)	10.81**		-6.100	
	(4.909)		(15.50)	
Asset-weighted Director Overlap (Fund)		10.45***		-4.172
		(3.566)		(15.87)
Fund Age	6.932	6.960	14.52***	14.50***
	(4.694)	(4.712)	(5.013)	(5.042)
Fund Size	-4.205***	-4.216***	-5.705***	-5.697***
	(1.141)	(1.141)	(1.547)	(1.542)
Family Size	-0.870	-0.835	3.741	3.711
	(1.560)	(1.559)	(2.766)	(2.763)
Board Size	6.536**	5.741*	45.51***	45.66***
	(3.032)	(3.069)	(13.61)	(14.31)
CEO is the Chairman	-9.750*	-9.516	-31.13**	-31.80**
	(5.661)	(5.911)	(15.05)	(15.34)
Board Independence	0.147	1.888	61.27*	60.82*
	(15.03)	(14.76)	(34.69)	(33.56)
Constant	56.98**	57.48**	-29.77	-31.00
	(22.73)	(22.51)	(59.40)	(57.28)
Year Fixed Effects	Yes	Yes	Yes	Yes
Style Fixed Effects	Yes	Yes	Yes	Yes
Family Fixed Effects	Yes	Yes	Yes	Yes
r2	0.194	0.194	0.370	0.370
r2_a	0.184	0.184	0.363	0.363
N	24036	24036	38134	38134

Table 4. Fund Performance

This table presents the results from weighted least squares (WLS) estimation of Equation 2 in the paper. The dependent variables are net returns, gross returns and alphas. Year, ICDI investment objective (style) and family fixed effects are included. All variables are as defined in Table 1. Standard errors are adjusted for heteroskedasticity and correlation across observations belonging to the same fund family, and are presented in parantheses. * , ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

	Gross Returns		Returns Net of Fees		Alphas	
	(I)	(II)	(III)	(IV)	(V)	(VI)
Director Overlap (Fund)	134.2*		124.1		0.109	
	(68.24)		(88.39)		(0.487)	
Asset-weighted Director Overlap (Fund)		121.3**		108.2*		0.228
		(57.36)		(65.52)		(0.444)
Fund Age	20.15	20.58*	58.47***	58.96***	0.120	0.121
	(12.46)	(12.41)	(16.64)	(16.84)	(0.0904)	(0.0906)
Fund Size	1.420	1.206	8.761***	8.571***	0.0968***	0.0965***
	(2.942)	(2.949)	(3.269)	(3.270)	(0.0210)	(0.0209)
Family Size	-308.2**	-307.6**	-302.1**	-301.6**	-0.181	-0.181
	(129.0)	(129.1)	(125.3)	(125.4)	(0.597)	(0.598)
Board Size	168.0***	159.6***	85.20	78.50	0.790*	0.761*
	(52.79)	(51.32)	(61.31)	(58.32)	(0.433)	(0.435)
CEO is the Chairman	168.4	173.3*	217.5**	223.7**	0.941***	0.899***
	(103.7)	(102.1)	(106.2)	(100.5)	(0.359)	(0.334)
Board Independence	-178.4	-155.4	-173.3	-155.0	-1.919	-1.844
	(198.7)	(189.8)	(225.4)	(210.9)	(1.571)	(1.513)
Constant	5545.4***	5551.2***	5326.9***	5335.9***	7.073	6.988
	(1479.2)	(1477.0)	(1450.1)	(1449.5)	(7.323)	(7.312)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Style Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Family Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
r2	0.868	0.868	0.864	0.864	0.465	0.465
r2_a	0.866	0.866	0.863	0.863	0.460	0.460
N	38121	38121	39417	39417	39405	39405

Table 5. Managerial Skill

This table presents the results from weighted least squares (WLS) estimation of Equation 2 in the paper. The dependent variable is a fund's return gap, calculated using the procedure developed by Kacperczyk et al. (2007). Year, ICDI investment objective (style), and fund family fixed effects are included. All variables are as defined in Table 1. Standard errors are adjusted for heteroskedasticity and correlation across observations belonging to the same fund family, and are presented in parantheses. * , ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

	Return Gap	
	(I)	(II)
Director Overlap	15.09***	
	(5.240)	
Asset-weighted Director Overlap		13.77***
		(4.487)
Fund Age	0.824	0.897
	(1.506)	(1.530)
Fund Size	-0.245	-0.267
	(0.352)	(0.351)
Family Size	8.549*	8.734*
	(4.989)	(5.043)
Board Size	-3.944	-4.288
	(4.330)	(3.780)
CEO is the Chairman	-6.241	-6.277
	(4.691)	(4.409)
Board Independence	39.17**	42.80**
	(19.03)	(18.84)
Expense Ratio	0.00235	0.00270
	(0.0105)	(0.0104)
Turnover Ratio	0.858	0.894
	(2.849)	(2.837)
Load Indicator	1.226	1.255*
	(0.754)	(0.752)
Constant	-165.3**	-168.2**
	(71.78)	(70.84)
Style Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Family Fixed Effects	Yes	Yes
r2	0.109	0.109
r2_a	0.0958	0.0958
N	24898	24898

Table 6. Performance Transfer from Low-fee to High-fee Funds

This table presents the results of the estimation of Equation 8 (cross-fund subsidization) in the paper, following the methodology introduced6) by Gaspar et.al. (2007). The dependent variable is the difference between the style-adjusted returns of high-fee funds and low-fee funds. A high (low) fee fund is a fund with total fees in the highest (lowest) 25% of the distribution within the mutual fund family. For each fund in the pair, we calculate the Net-of-Style Return (defined as the fund's monthly return minus the return for its style) and subsequently the Difference in Net-of-Style Returns, the difference between the Net-of-Style Return of High fund i and Low fund j within each pair. Both sets of pairs are added together in the same data set to run our regressions. For each classification, the table shows the results of the following regression (equation 8) in the text:

$$Net\ Return_{i,t}^{High} - Net\ return_{j,t}^{Low} = \alpha + \beta_1\ SameFamily \quad + \gamma\ X_{i,t} + \delta_{style} + \eta_t + \varepsilon_{i,t}$$

Year, ICDI investment objective (style), and fund family fixed effects are included. Control variables are size of the funds, the age of the funds, the size of the fund familes and an indicator variable if the high-fee and low-fee funds are of the same style. All variables are defined in the Appendix Table. Standard errors are adjusted for heteroskedasticity and correlation across observations belonging to the same fund family, and are presented in parantheses. * , ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

		Director Overlap		Asset-weighted Director Overlap	
	Full Sample	High Director Overlap Sample	Low Director Overlap Sample	High Director Overlap Sample	Low Director Overlap Sample
	(I)	(II)	(III)	(IV)	(V)
Same Family	31.18***	47.64***	-6.714	48.44***	-9.493
	(6.290)	(7.599)	(11.14)	(7.580)	(11.21)
Controls	Yes	Yes	Yes	Yes	Yes
Style Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Family Fixed Effects	Yes	Yes	Yes	Yes	Yes
r2	0.0359	0.0425	0.0464	0.0428	0.0455
r2_a	0.0354	0.0419	0.0458	0.0422	0.0449
N	689301	506614	182687	507600	181701

Table 7. Window Dressing

This table presents the results from weighted least squares (WLS) estimation of Equation 10 in the paper. The dependent variable is the fund's backward holdings return gap (Agarwal et al., 2014), which serves as a proxy for window dressing . Year, ICDI investment objective (style), and fund family fixed effects are included. All variables are defined as in Table 1. Standard errors are adjusted for heteroskedasticity and correlation across observations belonging to the same fund family, and are presented in parantheses. * , ** and *** indicate significance at the 10%, 5% and 1% level, respectively.

	Window Dressing	
	(I)	(II)
Director Overlap	49.10***	
	(17.28)	
Asset-weighted Director Overlap		34.08*
		(19.94)
Fund Age	9.522***	9.645***
	(2.317)	(2.322)
Fund Size	-1.512**	-1.557**
	(0.631)	(0.641)
Family Size	18.82	19.11
	(13.41)	(13.53)
Board Size	12.43	12.33
	(14.10)	(14.48)
CEO is the Chairman	-27.56*	-22.97
	(15.08)	(15.53)
Board Independence	-216.1***	-213.4***
	(59.56)	(58.52)
Return Gap	-0.715***	-0.714***
	(0.0499)	(0.0499)
Alpha (4-factor)	-5.375***	-5.394***
	(1.625)	(1.627)
Expense Ratio	-0.0170	-0.0159
	(0.0298)	(0.0299)
Turnover Ratio	31.38***	31.50***
	(8.284)	(8.293)
Load Indicator	-1.401	-1.324
	(2.148)	(2.163)
Constant	-141.9	-135.2
	(167.1)	(166.8)
Style Fixed Effects	Yes	Yes
Year Fixed Effects	Yes	Yes
Family Fixed Effects	Yes	Yes
r2	0.363	0.363
r2_a	0.349	0.348
N	16087	16087

Appendix Table 1. Estimation Results without Family Fixed Effects

Panel A. Expense Ratios and Management Fees

	Expense Ratio			Management Fees		
	(I)	(II)	(III)	(IV)	(V)	(VI)
Unitary Board	-10.67			-2.467		
	(8.305)			(12.13)		
Director Overlap		-26.79*			-17.02	
		(14.00)			(13.90)	
Asset-weighted Director Overlap			-23.13*			-2.652
			(13.24)			(13.46)
Fund Age	18.04***	17.91***	17.86***	28.03***	27.81***	28.05***
	(4.239)	(4.256)	(4.316)	(8.661)	(8.470)	(8.491)
Fund Size	-7.210***	-7.328***	-7.284***	2.056**	2.025**	2.034**
	(1.237)	(1.229)	(1.234)	(0.877)	(0.938)	(0.937)
Family Size	-6.465***	-5.867***	-5.808***	-4.685***	-4.824**	-4.460**
	(2.224)	(1.926)	(1.954)	(1.649)	(2.013)	(2.043)
Board Size	19.50	22.08*	21.46*	18.81	22.03	18.58
	(12.37)	(12.46)	(12.56)	(16.56)	(18.79)	(18.80)
CEO is the Chairman	-1.533	3.108	2.773	-5.717	-3.685	-4.959
	(6.709)	(6.828)	(6.945)	(9.297)	(7.675)	(7.543)
Board Independence	-16.04	-13.35	-11.24	-13.87	-19.22	-11.28
	(31.88)	(28.11)	(27.75)	(71.86)	(57.85)	(58.41)
Constant	184.5***	189.0***	184.4***	30.39	42.56	27.70
	(37.68)	(38.34)	(37.75)	(103.7)	(83.97)	(86.20)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Style Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Family Fixed Effects	No	No	No	No	No	No
r2	0.314	0.315	0.314	0.180	0.181	0.180
r2_a	0.313	0.314	0.313	0.178	0.180	0.178
N	38134	38134	38134	38134	38134	38134

Appendix Table 1. Estimation Results without Family Fixed Effects
Panel B. 12b-1 Fees and Total Fees

	12b-1 Fees			Total Fees (Expense Ratio + Loads)		
	(I)	(II)	(III)	(IV)	(V)	(VI)
Unitary Board	-12.18**			-13.56		
	(6.113)			(9.480)		
Director Overlap		-10.45			-30.13*	
		(9.259)			(15.46)	
Asset-weighted Director Overlap			-8.268			-26.23*
			(8.351)			(14.53)
Fund Age	8.074*	7.867*	7.878*	17.98***	17.88***	17.83***
	(4.383)	(4.367)	(4.364)	(5.410)	(5.449)	(5.524)
Fund Size	-4.170***	-4.297***	-4.287***	-6.347***	-6.497***	-6.446***
	(1.140)	(1.216)	(1.216)	(1.589)	(1.578)	(1.580)
Family Size	-0.469	0.777	0.822	-7.797***	-6.936***	-6.877***
	(1.722)	(1.552)	(1.561)	(2.549)	(2.161)	(2.187)
Board Size	3.205	1.131	0.706	22.32	24.65*	24.01
	(9.274)	(11.33)	(11.36)	(14.22)	(14.59)	(14.71)
CEO is the Chairman	1.050	3.954	3.753	1.061	6.612	6.255
	(4.925)	(5.603)	(5.648)	(7.895)	(8.179)	(8.295)
Board Independence	7.745	24.32	25.86	-7.577	-2.004	0.258
	(27.89)	(30.96)	(30.85)	(37.28)	(32.93)	(32.46)
Constant	60.76**	43.96*	41.17*	195.4***	197.1***	192.2***
	(24.54)	(24.59)	(23.61)	(40.43)	(39.64)	(38.66)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Style Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Family Fixed Effects	No	No	No	No	No	No
r2	0.0958	0.0788	0.0780	0.268	0.268	0.267
r2_a	0.0935	0.0765	0.0757	0.267	0.267	0.266
N	24036	24036	24036	38134	38134	38134

Appendix Table 1. Estimation Results without Family Fixed Effects
Panel C. Fund Net Returns and Gross Returns

	Returns Net of Fees			Gross Returns		
	(I)	(II)	(III)	(IV)	(V)	(VI)
Unitary Board	7.719			1.630		
	(28.68)			(36.78)		
Director Overlap (Fund)		70.82			57.35	
		(54.11)			(64.36)	
Asset-weighted Director Overlap (Fund)			71.97			65.76
			(53.07)			(62.35)
Fund Age	58.96***	59.88***	60.27***	25.91**	26.86**	27.31**
	(15.75)	(15.81)	(15.94)	(12.70)	(12.84)	(12.86)
Fund Size	9.215***	9.338***	9.210***	0.425	0.460	0.339
	(3.021)	(2.989)	(2.991)	(3.221)	(3.367)	(3.391)
Family Size	10.33	11.24	11.37	9.460	10.73	11.05
	(8.695)	(7.852)	(7.862)	(9.812)	(8.356)	(8.328)
Board Size	-1.630	-16.04	-17.14	-1.002	-14.31	-17.11
	(62.11)	(65.57)	(65.83)	(74.71)	(79.45)	(79.39)
CEO is the Chairman	60.23**	52.22	52.08	91.52**	86.10**	85.38**
	(28.78)	(32.97)	(32.82)	(37.24)	(40.07)	(39.94)
Board Independence	81.41	107.7	107.9	96.42	125.4	129.7
	(175.4)	(185.3)	(185.5)	(200.2)	(209.9)	(210.6)
Constant	1905.2***	1849.3***	1850.6***	2226.5***	2171.1***	2164.7***
	(157.4)	(161.8)	(162.6)	(166.9)	(166.1)	(166.0)
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Style Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Family Fixed Effects	No	No	No	No	No	No
r2	0.863	0.863	0.863	0.866	0.866	0.866
r2_a	0.862	0.862	0.862	0.866	0.866	0.866
N	39417	39417	39417	38121	38121	38121

Appendix Table 1. Estimation Results without Family Fixed Effects
Panel D. Fund Alphas

	Fund Alphas		
	(I)	(II)	(III)
Unitary Board	-0.0711		
	(0.229)		
Director Overlap (Fund)		0.300	
		(0.395)	
Director Overlap (Family)			0.319
			(0.377)
Fund Age	0.122	0.130	0.132
	(0.0936)	(0.0926)	(0.0930)
Fund Size $_{-1}$	0.104***	0.103***	0.103***
	(0.0225)	(0.0225)	(0.0225)
Family Size$_{-1}$	0.118**	0.135***	0.136***
	(0.0517)	(0.0432)	(0.0430)
Board Size	-0.108	-0.206	-0.215
	(0.453)	(0.480)	(0.483)
CEO is the Chairman	0.564***	0.551***	0.549***
	(0.176)	(0.196)	(0.195)
Board Independence	-0.781	-0.503	-0.494
	(1.233)	(1.235)	(1.230)
Expense Ratio $_{-1}$			
Fund Return $_{-1}$			
Constant	4.917***	4.453***	4.444***
	(1.524)	(1.444)	(1.423)
Year Fixed Effects	Yes	Yes	Yes
Style Fixed Effects	Yes	Yes	Yes
Family Fixed Effects	No	No	No
r2_a	0.444	0.444	0.444
N	39405	39405	39405