

What's the Inside Word?

Director-Affiliated Stocks in Mutual Funds*

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Abstract

We document that equity mutual funds own stocks of firms whose senior officers also serve as independent fund directors. Funds invest relatively more in their “director-affiliated” stocks, and exhibit superior timing ability in the liquidations of such stocks. Specifically, funds liquidate director-affiliated stocks in advance of declining return performance, and post-liquidation return declines are significantly worse than those for unaffiliated stocks that funds liquidate during the same quarter, a result not explained by stock characteristics. Funds that trade in director-affiliated stock appear to successfully exploit an information advantage over other investors, which may warrant further investigation about full compliance with securities regulations.

JEL classification: *G23, G28*

Keywords: *Mutual funds, institutional trading, securities regulations*

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Abstract

We document that equity mutual funds own stocks of firms whose senior officers also serve as independent fund directors. Funds invest relatively more in their “director-affiliated” stocks, and exhibit superior timing ability in the liquidations of such stocks. Specifically, funds liquidate director-affiliated stocks in advance of declining return performance, and post-liquidation return declines are significantly worse than those for unaffiliated stocks that funds liquidate during the same quarter, a result not explained by stock characteristics. Funds that trade in director-affiliated stock appear to successfully exploit an information advantage over other investors, which may warrant further investigation about full compliance with securities regulations.

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Certain institutional investors appear to successfully exploit their superior access to information. For example, Cohen, Frazzini and Malloy (2008) find that mutual fund managers place larger and more profitable bets on firms when they share university alma maters with the firm’s senior officers. They attribute this result to fund managers exploiting social connections to gain an information advantage.

We examine a more directly observable information channel—that which exists when mutual funds own stocks of firms whose senior officers or directors serve as independent fund directors. For 1,865 actively-managed equity mutual funds managed by the top thirty mutual fund families during 2004, we use fund holdings data and hand-collected data on board structure to identify a sample of 228 funds (more than 12%) that own stock affiliated with their independent directors. We document that these funds are more likely to invest in their director-affiliated stocks than other stocks actively-managed funds own. Moreover, these funds tilt their portfolio holdings more strongly towards the director-affiliated stocks in which they invest compared to other stocks they own.

To examine whether funds successfully trade in director-affiliated stock, we track quarterly portfolio holdings over the subsequent year and identify 67 funds that liquidate at least one of their director-affiliated stocks. For each of these 67 funds, we form three portfolios based on the liquidation quarter. The first is a portfolio of director-affiliated stocks the fund liquidates. The second is a portfolio of non-affiliated stocks the fund liquidates during the same quarter, and the third is a portfolio of stocks the fund retains. On average, the returns for both groups of liquidated stocks deteriorate after the liquidation quarter both in absolute terms and relative to retained stocks. A key finding, however, is that the performance decline is significantly more pronounced for the liquidated director-affiliated stocks. This result indicates that funds more successfully time the liquidations of director-affiliated stocks compared to those of unaffiliated stocks.

It is theoretically possible that funds more successfully liquidate director-affiliated stocks without the benefit of their interactions with fund directors. For example, there

may be some sort of selection bias in the types of firms with senior officers or directors who are invited onto mutual fund boards. Perhaps such firms have more transparent information environments, more effective investor outreach, or other characteristics that make it easier for fund managers to make informed sell trades.

To investigate this possibility, we turn to the trading behavior of funds not in our sample, limiting the analysis to non-sample funds that own the stocks our sample funds liquidate (the liquidated director-affiliated stocks, the liquidated unaffiliated stocks, or both). We find that during the quarter in which sample funds liquidate stocks, on average, non-sample funds decrease their holdings in the unaffiliated stocks but *increase* their holdings in the director-affiliated stocks. Moreover, the percent of funds that completely liquidate their holdings is higher for the unaffiliated stocks. Hence, trading behavior by non-sample funds refutes the notion that it is easier for mutual funds (in general) to time liquidations of the director-affiliated stocks in our sample. The collective evidence is more consistent with the sample funds successfully exploiting their access to firm officers who also serve as fund directors.

These findings raise potential questions about the interactions between fund managers and board directors and the information fund managers obtain in order to benefit their trading, even to the point of potential violations of Regulation Fair Disclosure (Regulation FD) and insider trading laws. Our data cannot directly answer such questions because we can neither observe overly precise timing of trades nor the nature of information communicated between fund managers and their boards. Therefore, although violations in securities laws are certainly possible, we should also allow for more benign interpretations of the evidence.

For example, perhaps fund managers are simply skilled at reading the body language of fund directors when more general discussions of industry prospects take place, or perhaps directors help fund managers interpret stock-specific information that is already widely available. Presumably such possibilities would not violate securities laws, and may be reasonably likely considering that directors may not have

sufficiently strong financial incentives to risk legal jeopardy.¹ Even under these more benign interpretations of our findings, however, policy makers interested in a level playing field should consider the wisdom of allowing mutual funds (and indeed any institutional investors) to trade in the shares of stocks that are associated with their nominally independent directors.²

Our work contributes to two fields of ongoing research in financial economics. First, we are not the first to study the information channels that institutional investors exploit. Most related to our work is the previously noted finding in Cohen, Frazzini and Malloy (2008) that mutual funds earn superior returns on stocks that are connected due to fund managers and firm executives sharing educational backgrounds. Our results add to theirs by implying that mutual fund managers successfully exploit superior access to information when making liquidation decisions. In a follow-up study to Cohen, et al., Butler and Gurun (2009) argue there are (perhaps implicit) quid-pro-quo arrangements in which fund managers favor firm executives when shareholder-initiated votes on curbing executive education are held. These two papers follow others in an emerging literature on social or geographic connections in the investment environment such as Coval and Moskowitz (1999), Coval and Moskowitz (2001) and Hong, Kubik and Stein (2004).³

A second area of related research concerns the extent to which the regulatory environment and enforcement mechanisms achieve the level investment playing field that policy makers profess to promote. In particular, there is a well developed literature on insider trading (see Jaffe (1974), Seyhun (1986), Leland (1992), Meulbroek

¹ Although many directors do own shares in the funds for which they serve (often at the encouragement of fund management), not all do and those that do may not own large stakes. However, non-pecuniary factors may also be at play. Directors often have social connections with fund managers or other fund personnel and may wish to be as cooperative as possible. Moreover, they may view providing as much information as legally allowed as ultimately benefiting the fund's investors and also themselves by being associated with a more successful fund.

² A separate concern is whether a fund's ownership of stock affiliated with a nominally independent director may corrupt the director's ability to serve as an effective watchdog on behalf of the fund's retail investors. See Cohen, Frazzini and Malloy (2010) for a recent study of how directors who are technically independent from a regulatory perspective may not be independent in spirit.

³ Another paper exploring business connections by mutual funds in particular is Kuhnen (2009), who finds that funds and investment advisory firms are more likely to hire each other when they have a prior business relationship, but that fund performance is not significantly impacted.

(1992), Seyhun (1992), Bettis, Coles and Lemmon (2000), and Bhattacharya and Daouk (2002), among many others). A more recent line of inquiry investigates the consequences of Regulation FD on information disclosure and institutional trading, with mixed results (see Francis, Nanda and Wang (2006) and Ke, Petroni and Yu (2008) for reviews). As we have discussed, our findings at least suggest the possibility that allowing institutional investors to own stocks affiliated with their boards of directors may facilitate violations in such securities laws.

1 Sample Selection and Data Description

Our analysis requires hand-collected information on directors, so to make the data collection task manageable, we begin with all equity funds in the CRSP mutual fund database managed by the largest 30 fund complexes according to assets under management in 2004. After combining share classes and excluding index funds, for the remaining 1,865 actively-managed equity funds we search 2004 SEC filings of 485 APOS and 485 BPOS to obtain information on each fund's board of directors. For each independent board member, we record the names of companies for which they serve as either a top executive or board member at the latest available date on or before December 2004. We also use these filings to code each fund's board size and its number of independent directors.

Next we match the list of director-affiliated companies with CRSP (stocks that are not publicly traded or otherwise not in CRSP are not considered in our study). We then use the Thomson Reuters CDA/Spectrum Mutual Funds Holdings Database to determine whether the funds own director-affiliated stock at the quarter-end closest to when the board information is disclosed.⁴ In total, we identify 228 funds that own publicly traded stock affiliated with one or more of their fund directors.

⁴The majority of funds report holdings on a quarterly basis (using fiscal quarters) but all report at least semiannually. We use the first holdings data closest to the date of the board information data.

Table I reports summary statistics for the sample funds. All fund characteristics except the number of stocks held are from the CRSP mutual fund database at the end of 2004. We define the fund attributes we report as follows. *Fund size* is assets under management in millions, and *Family size* is the sum of fund size for all funds in the family. We report annual expense ratios both on a raw basis, *Expenses*, and on an objective-adjusted basis where *Objective-adjusted expenses* subtracts the median expense ratio for all funds with the same objective. *Total load* is the fund's load (front-end plus back-end, if any). *Turnover* is the fund's reported turnover during 2004, and *Stocks held* is the number of stocks held in the fund's portfolio. Panel A shows that on average, the sample funds have \$4.7 billion under management, charge a mean expense ratio of 1.2% and a mean load of 2.7%, and hold a mean of 164 stocks in their portfolio. The mean turnover ratio of 88.2% is comparable to the 95% rate reported in Cremers and Petajisto (2009).

Funds may own multiple affiliated stocks due to having more than one director affiliated with publicly traded stock. As Panel B of Table I reports, of the 228 funds in the sample, 134 own one affiliated stock, 39 own two and 55 own three or more. For each fund group based on the number of affiliated stocks owned, we also report the mean number of directors affiliated with publicly traded stock (irrespective of fund ownership of the stock) as well as the mean number of directors with affiliated stock that funds own. Note that funds are selective in their ownership of director-affiliated stocks. Those owning only one director-affiliated stock could (on average) potentially own stocks associated with more than six of their directors. For the entire sample, funds have an average 6.8 directors affiliated with publicly traded stock, but only own stocks associated with 1.7 of these directors.

In Table II we report characteristics of the stocks in our sample on the basis of whether they are director-affiliated with at least one fund. We report mean and median market capitalization, return performance (prior one-year returns), and market-to-book ratios, as well as p-values for tests of equality in means and medians across groups. The first significant finding is that director-affiliated stocks have substantially

larger mean and median market capitalizations compared to unaffiliated stocks. This suggests that officers of larger firms are more likely to be drafted onto mutual fund boards, perhaps due to their greater prominence. The second finding is that prior return performance for stocks that funds own is stronger for unaffiliated stocks than for director-affiliated stocks. The difference in medians, however, is not economically large, with director-affiliated stocks having a median return performance of 0.39% versus 0.47% for unaffiliated stocks. Market-to-book ratios are not statistically different in the two groups.

Below, we address two key questions. The first is whether funds are more likely to own stocks with which their independent directors are affiliated than other stocks owned by mutual funds more generally. The second is, conditional on a stock being owned, whether funds invest larger portions of their portfolios in affiliated stock. The results in table II emphasize the need to control for market capitalization and prior return performance in such an analysis.

2 Holdings in Affiliated Stock

In Table III we investigate fund ownership of affiliated stock. The first three models are unconditional logistic regressions that explore whether a fund's decision to own a stock is affected by whether the stock is affiliated with a fund director. For each sample fund, we use only the first quarter in which the fund owned affiliated stock as uncovered in the sample construction process, and throw out subsequent quarters. Some funds thus appear in the sample for the first quarter, others for the second, and so on, and no fund appears in more than one quarter. Then, separately for each of the four quarters in the sample, we identify the universe of stocks that are either owned by at least one of the funds in the quarter, or are not owned by any sample fund but are affiliated with at least one fund's board. For all fund-stock observations that appear in a particular quarter, we code an indicator variable, *Own*, which is set to one if the fund owns the stock at the beginning of the quarter (and zero otherwise). Each

fund-stock observation in the quarter is also coded according to whether the stock is affiliated with a director for that particular fund. Hence, typically each fund will have four types of observations: affiliated stock(s) that it owns ($Own = 1$, $Affiliated = 1$), affiliated stock(s) that it does not own ($Own = 0$, $Affiliated = 1$), unaffiliated stocks that it owns ($Own = 1$, $Affiliated = 0$), and unaffiliated stocks that it does not own ($Own = 0$, $Affiliated = 0$). The latter observations are added to each fund by virtue of the stocks being owned by some other fund during the same quarter.⁵

We code such data for all funds that appear in the sample during the first quarter of 2004. Then, we perform a similar coding for funds that appear in the sample for the second quarter of 2004, and so on, until all funds are coded (as noted earlier, by construction each fund appears in only one quarter).⁶ We then estimate logistic models (1) through (3) to explain Own , i.e., to determine which factors make a stock more likely to be held. In addition to $Affiliated$, our variable of interest, some or all of the models also include market capitalization, the stock's return over the prior year, the firm's market-to-book ratio, the percent of the fund's portfolio invested in the same industry (calculated according to the industry classifications in the holdings database and after removing the effect of ownership of the stock in question), and the square of the percent owned in the same industry.

The coefficient on our variable of interest, $Affiliated$, is positive and highly significant (p-value < 0.001) in all three models. In the first model, the odds ratio (not reported in the table) for $Affiliated$ is 2.626, indicating that director-affiliated stocks are over two and one half times as likely to be held than unaffiliated stocks. The odds ratios for $Affiliated$ in the second and third models are 1.544 and 1.614, respec-

⁵To illustrate the sample construction and data coding, suppose a quarter consists of only two funds A and B. Further, suppose Fund A owns stocks 1, 2 and 3, that stock 1 is affiliated with one of the fund's directors, and there is a stock 4 that the fund does not own but for which the stock is affiliated with a fund director. Suppose Fund B owns stocks 2, 4, 5 and 6, that only stock 6 is affiliated with one of fund B's directors, and that there are no stocks affiliated with a director that the fund does not own. In this scenario each fund will have six observations, A1-A6 and B1-B6, with (Own , $Affiliated$) coded as follows: A1(1,1), A2(1,0), A3(1,0), A4(0,1), A5(0,0), A6(0,0), B1(0,0), B2(1,0), B3(0,0), B4(1,0), B5(1,0) and B6(1,1).

⁶There are a total of 117 funds in in the first quarter, and a total of 3,334 stocks in which they either invest or are director-affiliated but not owned. Hence, the first quarter has $117 \times 3,334 = 390,078$ observations. In the second quarter there are $69 \times 3,130 = 215,970$ observations, in the third quarter there are $25 \times 1,304 = 32,600$ observations, and in the fourth quarter there are $17 \times 1,685$ observations for a total across all four quarters of 667,293 observations.

tively. Model (3) differs from model (2) in that we include only one fund (chosen at random) per management team. This alleviates the concern that significance levels in the logistic results are inflated by clustering at the fund manager level.

Models (4) and (5) are ordinary least squares regressions that explain *Pctown*, the percent of fund holdings in each stock owned. The general approach we take is modeled after regressions in Cohen, Frazzini and Malloy (2008), and these regressions are conditional in that we only include nonzero stock ownership observations. Because the same fund managers may manage more than one fund in the sample, we calculate p-values that are clustered at the management team level. The goal of these regressions is to investigate whether, conditional on a stock being held, ownership levels are higher for director-affiliated stocks. The positive significance of *Affiliated* in both models indicates that this is the case. In terms of economic significance, the coefficient of 0.195 in model (5) implies that the average percent ownership increases from 0.583% (the sample mean of *Pctown* in the regression) to 0.778%, a 33.4% increase in relative terms, when a stock is affiliated with an independent director. Despite greater ownership in director-affiliated stock, it is perhaps not surprising that funds nevertheless somewhat limit their investments in such stocks (the mean for *Pctown* for affiliated stocks that are owned is 0.97%). Doing otherwise may raise a red flag and attract unwanted scrutiny.

3 Do Funds Successfully Exploit Fund-Director Information Channels?

3.1 Performance of director-affiliated versus unaffiliated stocks

Our hand-collected board data do not include year-by-year board structure, and hence we are unable to examine stock return performance immediately after funds first purchase director-affiliated stock (hence our focus on liquidation decisions). However, for completeness, in untabulated results we examine the performance of director-affiliated and unaffiliated stocks (while held) on a quarterly basis during 2004 (stocks that are

liquidated during a quarter are not included in that quarter's portfolio). Depending on whether raw returns or industry-adjusted returns are used, director-affiliated stocks outperform unaffiliated stocks in some quarters and underperform in others—the results are mixed and, we argue, not particularly informative. It could be the case that returns between director-affiliated and unaffiliated stocks differ substantially after the stocks are first purchased, even if not in a later time period. We now turn our attention to liquidation decisions in order to examine performance immediately before and after known trades in known director-affiliated stocks.

Specifically, we track holdings in affiliated stock through the subsequent four quarters and identify 67 funds that liquidate one or more of the affiliated stocks they own. To investigate whether these liquidation decisions are well-timed, we identify the first quarter during which each fund first liquidates one or more of the director-affiliated stocks it owns (the "liquidation quarter"). We then form three equally-weighted portfolios for each fund. The first consists of director-affiliated stock (or stocks) that the fund liquidates during the liquidation quarter ("liquidated-affiliated"), the second consists of unaffiliated stocks the fund liquidates during the same quarter ("liquidated-unaffiliated"), and the third consists of retained stocks ("retained") that the fund owns at both the beginning and end of the liquidation quarter. We then construct equally-weighted average portfolio returns for each fund, compiled over various quarterly return windows around the liquidation quarter and converted to a quarterly periodic average return (i.e., the quarterly geometric mean return is calculated for windows with multiple quarters). Each fund thus has three portfolio returns for a given window, and in Panel A of Table IV we report the means of the fund-level quarterly portfolio returns for each window.

We investigate three return predictions that would collectively support the notion that funds make superior liquidation decisions for director-affiliated stocks. Prediction (1) is that for director-affiliated stocks, returns should be lower after the liquidation quarter than beforehand. Prediction (2) is that the post-liquidation performance of affiliated stocks should be lower than the performance of retained stocks over

the same time period. This prediction is important to establish that any support of prediction (1) is not simply due to a coincidence in which all of the fund’s stocks suffer lower returns after the liquidation quarter, regardless of their liquidation status. Prediction (3) is that the post-liquidation return decline for liquidated-affiliated stocks (if any) should be lower than any return decline for liquidated-unaffiliated stocks. If prediction (1) is supported by the data but prediction (3) is not, then it is possible that liquidation decisions are successful in general but that liquidations of director-affiliated stocks are not more successfully timed than those of other stocks. This would in turn cast doubt on whether managers are able to make more informed liquidation decisions for director-affiliated stocks.

The data are consistent with all three predictions. First, as shown in Panel A of Table IV, the return performance of director-affiliated stocks declines after liquidation. For example, the mean portfolio return over quarterly windows $[-2, -1]$, $[0]$, and $[+1, +2]$ are 2.23%, 1.38%, and 0.23%, respectively. The decline is both economically and statistically significant, as a simple t-test indicates that pre- and post-liquidation quarter average returns are significantly different at the 0.001 level (two-tailed). Return performance also declines for liquidated-unaffiliated stocks and retained stocks, however, so predictions (2) and (3) become important.

In Panel B we report the mean differences between pre- and post-liquidation returns and test whether the return declines are more severe for liquidated-affiliated stocks. The mean difference between the $[-2, -1]$ and $[+1, +2]$ window returns for liquidated-affiliated stocks is -1.9995%, more than double that for liquidated-unaffiliated stocks (-0.7248%) and retained stocks (-0.7590%). The row beneath the mean differences reports p-values that test whether the return differences (i.e., changes in returns from the pre- to the post-liquidation windows) are non-zero, and this is the case for all three groups of stocks. The far right columns report pairwise tests (Hotelling T-squared tests) indicating that, on a fund by fund basis, the pre- to post-liquidation quarter return declines are statistically different between liquidated-affiliated stocks and liquidated-unaffiliated stocks (p-value = 0.048), and also between

liquidated-affiliated stocks and retained stocks (p-value = 0.053). We find similar results (although statistically weaker) for differences between each group's [-3, -1] to [+1, +3] return declines. Overall, the results in Panel B are consistent with predictions (2) and (3), in that return declines are significantly worse for liquidated-affiliated stocks compared with those of the other groups of stocks.

3.2 Trading activity in liquidated stocks by non-sample funds

The evidence so far indicates that funds owning director-affiliated stocks are able to make superior liquidation decisions for such stocks. It is possible, however, that these stocks differ from other stocks in ways that beneficially inform liquidation decisions. For example, perhaps firms that are more likely to have senior officers and directors invited onto mutual fund boards are also firms with more transparent disclosure or more effective investor outreach. Or, by coincidence during the time period we study, perhaps the director-affiliated stocks that funds liquidate simply have stronger pre-liquidation sell signals (compared to the liquidated unaffiliated stocks), consistent with their poorer future returns. If this is the case, then the apparent superior liquidation timing ability for such stocks may have little to do with the interactions between fund managers and their board members.

Although such characteristics and signals are difficult to measure directly, it is straightforward to observe the trading behavior in the same stocks, during the same time period, by actively-managed funds that are *not* in our sample. If non-sample funds sell the group of liquidated director-affiliated stocks more aggressively than they sell the group of liquidated-unaffiliated stocks, this would cast doubt on the notion that the fund-director information channel plays a key role in the results observed in Table IV.

For each liquidated director-affiliated stock, we identify all actively-managed equity mutual funds that are not in our broader sample of 228 and that also own the

stock at the beginning of the liquidation quarter.⁷ We then examine holdings data one quarter later to track the average change in holdings as well as the portion of non-sample funds that completely liquidate each stock. We perform the same exercise for each unaffiliated stock that the 67 funds liquidate. Note that the stocks for which we track changes in holdings by non-sample funds, whether director-affiliated or unaffiliated, are the same as those examined in Table IV.

Table V reports the results. For the liquidated director-affiliated stocks, an average of 13.73% of non-sample funds that own the stocks completely liquidate them during the liquidation quarter (as discussed above, the liquidation quarter is defined based on when the 67 sample funds liquidate). This compares with an average 18.90% liquidation rate by non-sample funds in the unaffiliated liquidated stocks. Hence, it is not the case that liquidations by non-sample funds are more prevalent for the director-affiliated stocks versus the unaffiliated stocks that our sample funds also liquidate. The table also reports the mean change in holdings, which we observe is slightly positive (0.013%) for liquidated affiliated stocks, and slightly negative (-0.072%) for liquidated unaffiliated stocks. Here too, the evidence is inconsistent with the notion that non-sample funds are able to make more prescient trades in the director-affiliated stocks (keeping in mind the poorer subsequent performance for these stocks compared with that for unaffiliated stocks). The overall evidence is more consistent with funds that own director-affiliated stock being able to more successfully time liquidations of such stock, presumably due to fund managers having direct access to the corporate officers and directors that serve as independent fund directors.

4 Conclusion

This paper examines fund holdings and trades in director-affiliated stock, which we define as stock connected to a fund director because the director also serves as a senior officer or director for the stock's firm. We document that funds selectively invest in a

⁷By excluding the 228 sample funds, we limit the focus to funds that do not own *any* director-affiliated stock as of the sample construction date.

subset of their affiliated stocks and that they successfully time the liquidations of such stock. The return performance of director-affiliated stock deteriorates after liquidation, and the decline is significantly worse than that for unaffiliated stock liquidated during the same quarter. These results are consistent with funds making superior liquidation decisions based on their board-derived access to corporate executives and directors.

We also rule out an alternative possibility, namely, that the director-affiliated stocks in our sample have stronger pre-liquidation sell signals or differ in other ways that make it easier for funds (in general) to make informed liquidation decisions. At odds with this alternative, non-sample funds are net buyers in director-affiliated stocks, yet are net sellers in unaffiliated stocks, during the quarter in which the sample funds liquidate both of them. Furthermore, a higher portion of non-sample funds completely liquidate the unaffiliated stocks compared to the director-affiliated stocks. These results are inconsistent with the non-sample funds being able to predict the subsequent poorer performance of director-affiliated stocks (compared to unaffiliated stocks), and hence help to corroborate the notion that the *sample funds* are able to successfully exploit their access to corporate officers and directors when making liquidation decisions.

Our work contributes to a growing literature on how institutional investors exploit an assortment of information channels. The findings in our study also raise questions about compliance with securities regulations, although the nature of our data does not allow us to confirm or refute potential violations and there may be more benign ways in which fund managers exploit their boards. Regardless, our findings suggest that policy makers should consider whether allowing institutional investors to trade in stocks affiliated with their independent directors is consistent with promoting a level investor playing field.

References

- Bettis, Carr, Jeff Coles and Michael Lemmon, 2000, Corporate policies restricting trading by insiders, *Journal of Financial Economics* 57, 191-220.
- Bhattacharya, Uptal and Hazem Daouk, 2002, The world price of insider trading, *Journal of Finance* 57, 75-108.
- Butler, Alex and Umit Gurun, 2009, Connected companies compensation, Working paper, Rice University.
- Carhart, Mark M., 1997, On persistence in mutual fund performance, *Journal of Finance* 52, 57-82.
- Cohen, Lauren, Andrea Frazzini, and Christopher Malloy, C., 2008, The small world of investing: board connections and mutual fund returns, *Journal of Political Economy* 116, 951-979.
- Cohen, Lauren, Andrea Frazzini, and Christopher Malloy, C., 2010, Hiring cheerleaders: Board appointments of "independent" directors, Working paper, Harvard Business School.
- Coval, Joshua and Tobias Moskowitz, 1999, Home bias at home: local equity preference in domestic portfolios, *Journal of Finance* 54, 2045-2073.
- Coval, Joshua and Tobias Moskowitz, 2001, The geography of investment: informed trading and asset prices, *Journal of Political Economy* 109, 811-841.
- Cremers, K.J. Martijn and Antti Petajisto, 2009, How active is your fund manager? A new measure that predicts performance, *The Review of Financial Studies* 22:9, 3329-3365.
- Francis, Jennifer, Dhananjay Nanda, and Xin Wang, 2006, Re-examining the effects of regulation fair disclosure using foreign listed firms to control for concurrent shocks, *Journal of Accounting and Economics* 41, 271-292.
- Hong Harrison, Jeffrey Kubik, and Jeremy Stein, 2004, Social interaction and stock-market participation, *Journal of Finance* 59, 137-163.
- Jaffe, Jeffrey, 1974, Special information and insider trading, *Journal of Business* 47, 410-428.
- Ke, Bin, Kathy Petroni, and Yong Yu, 2008, The effect of regulation FD on transient institutional investors' trading behavior, Working paper, Pennsylvania State University.
- Kuhnen, Camelia M., 2009, Business networks, corporate governance and contracting in the mutual fund industry, *Journal of Finance*, 64, 2185-2220.
- Leland, Hayne , 1992, Insider trading: should it be prohibited, *Journal of Political Economy* 100, 859-887.
- Meulbroek, Lisa, 1992, A comparison of forward and future prices of an interest rate-sensitive financial asset, *Journal of Finance* 47, 381-396.
- Seyhun, Nejat, 1986, Insiders' profits, costs of trading, and market efficiency, *Journal of Financial Economics* 16, 189-212.

Seyhun, Nejat, 1992, The effectiveness of insider-trading sanctions, *Journal of Law and Economics* 35, 149-182.

Table I
Fund Characteristics

Panel A reports 2004 fiscal-year-end fund characteristics for the sample of 228 funds that own director-affiliated stock and have available holdings data one year after sample construction. *Fund size* and *Family size* are in millions of dollars. *Expenses* refers to the fund's annual expense ratio, and *Objective-adjusted expenses* refers to the expense ratio of the fund less the median expense ratio of funds with the same investment objective. *Total load* is the sum of the fund's front- and back-end loads, and *Turnover* is the annual turnover ratio. *Stocks held* is the number of stocks the fund owns as of the data construction date. Panel B reports the distribution of the number of affiliated stocks owned. *Mean number of directors affiliated with publicly-traded stock* is the mean number of fund directors who are affiliated with publicly traded companies irrespective of whether the fund owns the stock or not. *Mean number of directors whose affiliated stock the fund owns* is the mean number of directors for which the fund owns stock affiliated with the director.

Panel A. Complete sample										
	Fund size	Family size	Expenses	Objective-adjusted expenses	Total load	Turnover	Stocks held			
N	228	228	225	225	228	225	228			
Mean	4,717	474,054	0.012	-0.001	0.027	0.882	171			
Median	819	139,266	0.012	-0.001	0.022	0.710	115			

Panel B. Distribution of funds based on number of affiliated stocks owned										
No. affiliated stocks owned	1	2	3	4	5	6	7	8	9	All
Count of funds (total 228)	134	39	17	13	9	8	4	3	1	228
Mean # of directors affiliated with publicly-traded stock	6.2	6.5	8.0	8.2	8.6	9.0	8.0	9.0	9.0	6.8
Mean # of directors whose affiliated stock the fund owns	1.0	1.8	2.4	2.9	3.9	3.8	5.0	5.3	7.0	1.7

Table II
Characteristics of Director-Affiliated and Unaffiliated Stocks

This table reports various characteristics of director-affiliated and unaffiliated stocks held by the 228 funds in the sample. The two groups are mutually exclusive in that if a stock is director-affiliated for at least one stock, it is not included in the unaffiliated stock group. *Market capitalization* is the market capitalization measured at the latest quarter-end prior to the quarter of the fund's observation. *Return performance* is the stock's cumulative return over the prior year. *Market-to-book ratio* is the ratio of the stock's market value (total assets minus book value of equity plus market value of equity) to the book value of assets, measured at the latest possible date prior to the quarterly holdings. P-values for differences in means and medians are two-tailed t-tests and Wilcoxon signed-rank tests, respectively.

		<u>Market capitalization</u> (\$b)	<u>Return performance</u> (%)	<u>Market-to-book ratio</u>
Director-affiliated stock	Observations	99	97	88
	Mean	16.99	0.42	3.81
	Median	4.63	0.39	2.52
Unaffiliated stock	Observations	3,472	3,366	3,245
	Mean	3.69	0.79	3.60
	Median`	0.73	0.47	2.32
P-value for difference	Mean	< 0.001	< 0.001	0.822
	Median	< 0.001	0.002	0.591

Table III
Regressions Explaining Fund Holdings in Director-Affiliated Stocks

This table reports regressions explaining the fund ownership in director-affiliated stocks, where observations are at the fund-stock level. Models 1-3 are unconditional logistic regressions explaining *Own*, an indicator variable set to one if the fund has positive ownership in the stock. For each fund, *Own* is coded for the universe of all stocks held by at least one sample fund during the quarter, so that each fund has an equal number of stock-level observations. In model three, observations are limited to one (randomly chosen) fund per fund management team. Models 4 and 5 are conditional OLS results with management-team level clustered p-values that explain *Pctown*, the portion of the fund's portfolio invested in each stock in which the fund has positive ownership (i.e., observations from models 1-3 with *Pctowned* = 0 are excluded in models 4-5). In all five models, we use one quarter of data for each fund, specifically, the first during 2004 for which we have the fund's holdings data. *Affiliated* is an indicator variable set to one if the stock is affiliated with one of the fund's independent directors. *Log of market cap* is the log of the stock's market capitalization measured at the latest quarter-end prior to the quarter of the fund's observation. *Stock performance* is the stock's cumulative return over the prior year. *Market-to-book ratio* is the ratio of the stock's market value (total assets minus book value of equity plus market value of equity) to the book value of assets, measured at the latest possible date prior to the quarterly holdings. *Pct.own in same industry* is the portion of the fund's portfolio invested in other stocks from the same industry, where industry classification is based on the mutual fund holdings database. Coefficients appear above p-values, which are in parentheses.

	Unconditional logistic regressions			Conditional OLS	
	Dep. Variable = Own			Dep. Variable = Pctowned	
	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	-2.7838 (< 0.001)	-11.4880 (< 0.001)	-11.1397 (< 0.001)	0.5793 (< 0.001)	-2.1701 (< 0.001)
Affiliated	0.9653 (< 0.001)	0.4341 (< 0.001)	0.4788 (< 0.001)	0.3863 (< 0.001)	0.1954 (0.003)
Log of market cap		0.5828 (< 0.001)	0.5616 (< 0.001)		0.1761 (< 0.001)
Stock performance		-0.0885 (< 0.001)	-0.1324 (< 0.001)		-0.0923 (< 0.001)
Market-to-book ratio		0.0327 (< 0.001)	0.0326 (< 0.001)		0.0083 (0.080)
Pct. own in same industry		0.0561 (< 0.001)	0.0528 (< 0.001)		0.0155 (< 0.001)
(Pct. own in same industry) ²		-0.0004 (< 0.001)	-0.0004 (< 0.001)		0.0001 (0.913)
Number of observations	667,293	667,293	487,608	39,080	39,080
Chi-squared p-value	< 0.001	< 0.001	< 0.001		
R-squared				0.002	0.156

Table IV
Pre- and Post-Liquidation-Quarter Stock Performance

This table reports the mean portfolio performance for three fund-level portfolios constructed for each of the 67 funds in the sample that liquidate at least one director-affiliated stock. For each fund, we identify the “liquidation quarter” as the first quarter during which the fund liquidates one or more affiliated stocks. Unaffiliated stocks that are liquidated during the fund’s liquidation quarter are grouped into the fund’s “unaffiliated liquidated” portfolio, and stocks the fund owns at both the beginning and end of the liquidation quarter are grouped into the fund’s “retained” portfolio. Equally-weighted returns are then calculated on a quarterly basis for each portfolio during each pre- and post-liquidation quarter, and then portfolio returns for multiple-quarter windows are constructed by compounding quarterly returns. Windows are inclusive of the quarter numbers. For example, [+1,+2] is a 6-month (two-quarter) window that begins after the liquidation quarter.

Panel A. Mean quarterly returns around liquidation quarter (%)				
		Liquidated stocks		Retained stocks
		Affiliated	Unaffiliated	
Liquidation quarter	[-3, -1]	3.1969	2.7197	2.7465
	[-2, -1]	2.2344	1.6558	1.9010
	[0]	1.3788	1.2443	1.8070
	[+1, +2]	0.2348	0.9310	1.1420
	[+1, +3]	0.6526	1.2094	1.3036
	<u>T-test for equal means (p-values shown)</u>			
	[+1, +2] vs. [-2, -1]	0.001	0.010	0.004
	[+1, +3] vs. [-3, -1]	< 0.001	< 0.001	< 0.001

Panel B. Tests for post-liquidation performance declines					
	(a) Liquidated stocks		(c) Retained stocks	Pairwise p-values for equal means	
	Affiliated	Unaffiliated		(a) vs. (b)	(a) vs. (c)
<u>[+1, +2] - [-2, -1]</u>					
Mean difference (%)	-1.9995	-0.7248	-0.7590	0.048	0.053
Non-zero mean p-value	0.001	0.008	0.002		
<u>[+1, +3] - [-3, -1]</u>					
Mean difference (%)	-2.5444	-1.5103	-1.4428	0.098	0.066
Non-zero mean p-value	< 0.001	< 0.001	< 0.001		

Table V
Trading Activity in Affiliated- and Unaffiliated-Liquidated Stocks by Mutual Fund Universe

This table summarizes the trading activity by the universe of actively-managed equity mutual funds (excluding the 228 in the study's sample) in the affiliated-liquidated and unaffiliated-liquidated stocks identified in Table III. For each stock, we collect the funds that own the stock at the beginning quarter during which a sample fund liquidates the stock, then track whether the fund liquidates the stock or otherwise changes the number of shares it owns (adjusted for stock splits, stock dividends, etc.). *Portion of funds liquidating holdings* is the percent of funds that reduce their holdings to zero during the liquidation quarter. *Mean percentage change in holdings* is the mean percent change of shares held, where we first construct the mean change in holdings across funds for each stock, and then construct the mean across stocks.

	Director-affiliated liquidated stocks	Unaffiliated liquidated stocks
Portion of funds liquidating holdings	13.73%	18.90%
Mean percentage change in holdings	0.013%	-0.072%