

Capital Gains Lock-In and Governance Choices^{*}

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ABSTRACT

Capital gains taxes create a disincentive for mutual funds to sell stocks that have accrued gains. Because of differences in the tax status of funds' investors and differences in accrued gains in a stock, capital gains "lock-in" will vary across funds even for the *same* stock. We find that funds are more likely to oppose management when they are locked-in to a position: for votes in which opposing management is value increasing, a fund's capital gains lock-in reduces the likelihood of selling the stock prior to the vote, but increases the likelihood of voting against management. Consistent with this tax lock-in motivation, these findings are concentrated among funds with few tax-deferred investors. Our results thus show one determinant of corporate governance by mutual funds.

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The Investment Company Act of 1940 gives U.S., open-end mutual funds a strong incentive to pass realized capital gains through to their investors.¹ Therefore, realized gains are costly for taxable investors because they trigger a tax liability. Prior research suggests that capital gains taxation affects mutual fund managers' trading decisions (Huddart and Narayanan (2002); Cici (2012); Sialm and Starks (2012)). These studies all document a "lock-in" effect: at least to some extent, a mutual fund is locked into a position with an unrealized capital gain if the fund has a largely taxable clientele. Further, Bergstresser and Poterba (2002) show that ignoring tax incentives is costly for fund managers, as tax-efficiency affects investment flows. Therefore, because of this lock-in effect, different mutual funds will have different liquidity in the *same* stock, depending on the tax status of their respective investors and the size of the accrued gain (or loss) in that stock.

Capital gains lock-in has direct implications for mutual funds' governance activities. Prior studies suggest that, upon sensing an imminent conflict with a company's management, a fund generally prefers to exit a position, rather than fight (i.e., directly oppose management).² There are clear economic incentives for this preference: voting against management may reduce the chances the mutual fund will be included in corporate defined contribution plans (Davis and Kim (2007)); Ashraf, Jayaraman, and Ryan (2012)), and reduces access to information from management (Butler and Gurun (2012)).³ Further, Roe (1990) argues that political and legal constraints encourage mutual funds to exit rather than directly oppose management.

¹ For a description of tax regulations faced by mutual funds, see the Investment Company Institute 2013 Fact Book.

² For related studies conducted on a broader set of institutional investors see, for example, Parrino, Sias, and Starks (2003) and McCahery, Sautner, and Starks (2011).

³ Illustrating that voting against management can be costly, as referenced by Matvos and Ostrovsky (2010), a mutual fund company stated to the SEC regarding vote disclosure rules that "... retaliation [from the firm] could be in the form of denial of access to company management in the course of our investment research on behalf of our shareholders." See <http://www.sec.gov/rules/proposed/s73602/rmason1.txt> for further details.

Therefore, mutual fund managers face a tradeoff. On the one hand, *ceteris paribus*, funds with taxable clientele prefer not to exit positions with accrued capital gains. On the other hand, *ceteris paribus*, funds prefer to exit rather than vote against management. For a position with an unrealized capital gain, mutual funds with taxable clientele must trade off these two countervailing forces.

In this paper, we study the relation between illiquidity caused by capital gains lock-in and opposition to management. Coffee (1991) and Bhide (1993) argue that illiquidity prompts investors to be more involved in governance because it is more costly to sell their investment rather than to intervene to improve the firm. Indeed, Bhide (1993, p.42) explicitly mentions capital gains tax lock-in as a factor that encourages active governance by reducing liquidity. Simply put, by making exit less attractive, illiquidity increases the likelihood that an investor will oppose management.

Empirically testing the relation between liquidity and governance is inherently difficult. Liquidity and governance are determined by similar factors, and each variable partially determines the other. Approaching this problem from the perspective of capital gains tax lock-in provides a unique opportunity to test whether, conditional that the stock is already held, tax lock-in induced illiquidity affects governance activities by mutual funds.

Our empirical setup is well-suited for these tests. We first confirm, consistent with the studies referenced above, that there indeed is a negative relation between the probability of a mutual fund selling a stock and the accrued capital gain⁴ of the stock holding (and that the relation is stronger for mutual funds with taxable investors). We then test how the accrued gain affects the decision regarding whether to provide

⁴ For expositional simplicity, we use the term “capital gains” to refer to the percent change in a stock holding’s price since the time of purchase), and thus “capital gains” refer to both gains and losses in a stock position.

governance (i.e., “fight” by voting against management) conditional on staying. For these tests, we must identify votes for which opposing management is likely value increasing. Accordingly, based on the results of Alexander, Chen, Seppi, and Spatt (2010), we define providing governance as the mutual fund voting against management’s recommendation on proposals for which the Institutional Shareholder Services (ISS) recommends that a vote against management is in the interests of shareholders.⁵

In these *Oppose Management* regressions, we obtain identification by including two sets of fixed effects: one set for each vote in our sample and one set for each mutual fund-quarter combination. First, for a given vote, the accrued capital gains since purchase (i.e., the holding-period return) varies across the different funds holding the company’s stock, as does the tax status of those funds’ investors. This variation allows us to include vote fixed effects in our specifications. These fixed effects eliminate many potential sources of confounding variation, including the issue voted on, as well as the company’s finance, governance, and past performance. For example, the past performance of the stock (whether over the past quarter, past year, past 5 years, etc.) certainly could affect whether a mutual fund supports or opposes management because shareholders may be more willing to support management following good performance. Our vote fixed effects control for any relation between opposition to management on a particular vote and past stock returns over any horizon because the stock return over a given past horizon is, of course, the same for all investors. We identify the effect of capital gains lock-in on governance by exploiting the differences across funds in their *holding-period return* in the same stock at a given time, as well as differences across funds

⁵ Alexander, Chen, Seppi, and Spatt (2010) examine the stock-price reactions to ISS announcements of voting recommendations that oppose management and show that ISS’s voting recommendations are generally value enhancing.

in the tax status of their investors. It is this holding-period return that should be relevant for tax-motivated decisions. This identification strategy is possible because, unlike more traditional measures of liquidity, capital gains tax lock-in varies across different funds *invested in the same stock at the same point in time*, and this allows us to eliminate the most obvious sources of omitted variables bias.

Second, for a fixed fund-quarter combination, the accrued capital gains vary across the different stocks held by the fund at that point in time. This variation allows us to include fund-quarter fixed effects in our specifications. These fixed effects eliminate many other potential sources of confounding variation, such as the fund's overall propensity to vote against management during that quarter, factors related to the fund's family, as well as flows into the fund and past performance of the fund.

The results show that mutual funds with higher accrued capital gains in a stock are more likely to oppose management.⁶ Our results further demonstrate that, consistent with a tax motivation, the relation between providing governance and accrued capital gains is stronger for funds with a high fraction of tax-sensitive investors. Also consistent with a tax motivation, we find that the relation between providing governance and accrued capital gains in a stock holding is stronger for funds that have a high level of gains elsewhere in their portfolio (as opposed to having losses, which could be used to offset the accrued capital gains in a particular stock holding for tax purposes).

For example, an increase in accrued capital gains from 0% to 100% implies an increase in the probability of opposing management (in a vote for which opposition is value increasing) of 1.1 percentage points for funds with a high level of tax-sensitive

⁶ Consistent with prior studies, such as Del Guercio, Seery, and Woidtke (2008) and Fischer, Gramlich, Miller, and White (2009), we define opposing management as the fund either voting against, or withholding its vote from, management's recommendation.

investors. In contrast, for mutual funds with a high proportion of tax-deferred retirement assets, there is no relation between accrued capital gains and providing governance. We also use a multinomial logit framework to model the exit/support/oppose decision faced by mutual funds when a vote against management is likely value-increasing for the firm and find further evidence that tax-induced illiquidity leads to funds providing more governance. For mutual funds with tax-sensitive investors, estimates from this model suggest that, as the accrued capital gain in the stock holding increases from -50% to 100%, the probability of continuing to hold the stock and opposing management increases from 46.2% to 59.4%. At the same time, the probability of selling the stock falls from 7.8% to 2.8% and the probability of continuing to hold the stock and supporting management falls from 46.0% to 37.9%.

Our study contributes to the literature that examines how liquidity affects the governance activities of blockholders. As Kahn and Winton (1998) highlight, the relation between governance and liquidity is complicated, with various theories predicting different relations between the two. For example, Coffee (1991) and Bhidé (1993) argue that liquidity discourages blockholders from actively engaging in governance: when exit is easy, blockholders do not engage in information acquisition or costly governance activities. Kyle and Vila (1991), Maug (1998), Faure-Grimaud and Gromb (2004), Edmans (2009), and Edmans and Manso (2011) argue that liquidity instead encourages blockholders to engage in governance because liquidity allows the investor to acquire a block or because liquidity allows the investor to profit from his intervention. Edmans (2009) further argues that, conditional on already owning a block, liquidity improves governance because it increases the credibility of the threat of exit, which constrains management.

Empirically, Edmans, Fang, and Zur (2013) find that liquidity increases the likelihood of block formation, but conditional on block formation, decreases the probability of “voice” (active intervention). Bharath, Jayaraman, and Nagar (2013) find that changes in a blockholder’s cost of exit are negatively associated with company value, which they interpret as evidence that liquidity improves governance. Norli, Ostergaard, and Schindele (2010) show that, following poor performance, liquidity increases the likelihood of shareholder activism. In contrast, Roosenboom, Schlingemann, and Vasconcelos (2012) examine takeovers, and conclude that liquidity reduces monitoring by institutional investors.

Although related to this literature, our study differs from it in several important ways. First, we consider a very different form of liquidity than the studies referenced above, which consider “traditional” measures of liquidity like bid-ask spreads or Amihud’s (2002) measure. These commonly-used measures of liquidity vary across firms, but not across investors within a firm, raising concerns that omitted firm-specific factors could drive any relation between governance activities and liquidity, thus making identification based on simple cross-sectional comparisons difficult. Some studies instead focus on identification from time-series changes in liquidity that affect all firms or a particular group of firms at the same time (e.g., a financial crisis that reduces liquidity or decimalization that increases liquidity). That approach assumes that only liquidity changes, and there are no other confounding changes that would similarly affect governance. By using capital gains tax lock-in as a measure of illiquidity, rather than a measure that is identical for all investors in a company, our identification is obtained by liquidity that varies *across investors in a given stock at a given time*.

Second, because our empirical design focuses on how the accrued gains of stocks *already held by the mutual fund* influence governance decisions, we do not test the

theories that focus on whether liquidity attracts investors to accumulate blocks of shares in the first place. Instead, we test whether, conditional that the stock is already held, tax lock-in induced illiquidity affects governance activities by mutual funds. Thus, building on the ideas of Coffee (1991) and Bhidé (1993), we empirically test whether the ease of exit affects the governance activities of mutual funds. Our finding that, *conditional on already owning the stock*, tax-induced illiquidity leads mutual funds to provide governance is consistent with the Edmans, Fang, and Zur (2013) result that conditional on an institution already owning a block of shares, liquidity decreases the probability of active intervention.

Finally, the prior literature is concerned with the governance activities of large, concentrated blockholders. In contrast, we consider mutual fund holdings. Although mutual funds, collectively, are the single largest category of equity owners in the U.S. (French (2008)), their ownership is more diffuse than that of traditional blockholders. Our study thus sheds light on the relation between governance and liquidity for a large, but less-studied class of investors.

Our study also contributes to a recent literature examining various motivations for mutual funds' voting decisions. Davis and Kim (2007), Butler and Gurun (2012), Ashraf, Jayaraman, and Ryan (2012), Matvos and Ostrovsky (2008), and Cvijanović, Dasgupta, and Zachariadis (2013) show that various conflicts of interest affect mutual funds' voting decisions, while Matvos and Ostrovsky (2010) consider peer effects in mutual fund voting. Morgan, Poulsen, Wolf, and Yang (2011) consider many fund-level characteristics that affect mutual funds' voting decisions, such as fund size, turnover ratios, and social responsibility objectives. In contrast with these papers, we focus on how capital gains lock-in affects mutual funds' voting decisions. As discussed above, there are many other factors that influence how mutual funds vote at annual

shareholder meetings. We employ a specification with many fixed effects at both the vote-level and the fund-level so as to subsume many of these other factors, and thus focus on identifying the effect of lock-in on governance.

Another contribution of this paper is that it documents another avenue through which capital gains taxation influences the behavior of institutional investors. Huddart and Narayanan (2002), Cici (2012), and Sialm and Starks (2012) show that capital gains taxation affects mutual funds' trading decisions. We further find that capital gains lock-in not only reduces the likelihood that a fund sells a stock, but also increases the likelihood that a locked-in fund will oppose a firm's management when it is value-increasing to do so.

As open-end mutual funds acquire an increasingly larger fraction of total U.S. equities (open-end mutual funds surpassed direct holding as the largest ownership channel of U.S. stock in 2004; Figure 1, based on French (2008, Table I)), it is all the more important to improve our understanding of mutual funds' decisions regarding whether to exit, stay and support, or stay and fight. Overall, mutual funds appear to be relatively activist shareholders, as they are more likely to oppose management than other categories of stockholders are, and mutual fund voting is a key determinant of whether a resolution passes (Morgan, Poulsen, Wolf, and Yang (2011)). Thus, this trend in U.S. stock ownership has important implications for corporate governance.

FIGURE 1 ABOUT HERE

The remainder of the paper is organized as follows. Section I reviews the data and variables. Section II shows that there is a relation between mutual funds' trading decisions and accrued capital gains. Section III shows that accrued capital gains predict

mutual funds' voting decisions. Section IV shows how capital gains affect the joint voting/trading decision. Section V concludes.

I. Data and Summary Statistics

We compiled the data for this study from multiple sources, including the CRSP Open-End Survival Bias Free Mutual Fund Database, Thompson-Reuters Mutual Fund Holding Database, *Pensions & Investments'* Survey of Defined Contribution Plans, ISS Voting Analytics Database, CRSP Stock File, and RiskMetrics Governance Database.

A. Data

A.1 Mutual Fund Data

Mutual fund data come from the CRSP Open-End Survival Bias Free Mutual Fund Database. We focus on actively-managed U.S. domestic equity mutual funds, and eliminate balanced, bond, international, money market, and sector funds. Moreover, we also remove funds that hold fewer than ten stocks or have less than two million dollars in total net assets at the end of the previous month. This corresponds closely to the screening criteria from Kacperczyk, Sialm, and Zheng (2008). Mutual fund stock holdings come from the Thompson-Reuters Mutual Fund Holdings Database. Funds are required to disclose their holding semiannually, but during our sample period many funds disclose their holdings quarterly. We match the CRSP Mutual Fund data to the holdings data using the MFLINKS file. Finally, for a subset of our analyses we use information on the tax status of the mutual funds' investors, obtained from *Pensions & Investments'* annual Survey of Defined Contribution Plans. Each year the trade publication *Pensions & Investments* asks mutual fund families to list the proportion of

assets held in defined contribution pension plans for the family's 12 largest mutual funds.⁷ We match the *Pensions & Investments* data, available only for a subset of our sample, with the CRSP Mutual Fund data using the funds' ticker symbols and names.

A.2 Stock Data

We obtain information on stock prices, trading volume, stock splits, market capitalization and share type from the CRSP (monthly and daily) stock database. We match mutual fund holdings to the CRSP stock database by CUSIP.

A.3 Mutual Fund Voting Data

As of July 2003, the SEC requires all mutual funds to disclose their voting records by filing Form N-PX. Institutional Shareholder Services (ISS) compiles the information from these filings to create the ISS Voting Analytics database. Our dataset includes fund voting records from 2003 through the end of 2008. For each fund-stock combination, we have one observation per proposal – the fund's voting decision.⁸ For each observation, we observe the issue voted upon (e.g., director election, compensation proposal, etc.), management's recommendation, ISS's recommendation, how the fund voted, and the overall vote outcome. We match the ISS Voting Analytics database to the CRSP Mutual Funds database by hand, using fund and fund family names. The sample of mutual funds included in Voting Analytics increases throughout the sample; in the earlier years

⁷ Sialm and Starks (2011) and Sialm, Starks, and Zhang (2012) provide a detailed description of this dataset.

⁸ If a fund lends shares to short-sellers and fails to recall the shares before the record date of the vote, the fund cannot vote its shares. In our data, we drop observations in which a fund holds the stock at the end of the quarter prior to the quarter of a vote, is not recorded voting or withholding its vote, but holds the stock at the end of the quarter (as these observations may reflect instances in which the fund did not sell the stock before the vote, but instead just lent out shares). As a practical matter, we find that at most 0.2% of fund-vote combinations are missing due to securities lending (i.e., are dropped due to our sample restriction), suggesting this issue is very unlikely to affect our results. This apparent negligible security-lending by mutual funds during votes in which ISS and management's recommendations disagree is very much consistent with a pair of SEC No-Action Letters to State Street Bank & Trust Company in 1972 that established that funds must recall shares prior to "material" votes. More generally, Aggarwal, Saffi, and Sturgess (2012) find that institutional investors frequently recall loaned shares prior to a vote.

Voting Analytics focused on the largest mutual funds. Consequently, we do not have voting data for all mutual funds.

B. Select Variables

B.1 Capital Gains

To conduct this study, we require the accrued capital gains imbedded in the individual stocks in each mutual fund's portfolio. Numerous prior papers impute stock-level capital gains using a variety of methods. These methods vary across two dimensions: (1) imputed transaction price; (2) assumed sales rules.

We observe holdings at the end of each quarter, and from this we infer transactions during the quarter. Prior studies impute transaction prices in four different ways: beginning of quarter prices, end of quarter prices, daily average prices, and daily transaction weighted prices. In this paper, we report results based on daily transaction weighted prices, likely the most accurate estimate of actual transaction prices.

Funds may accumulate and divest positions over several quarters, and thus a fund may have multiple tranches of shares, each with a different cost basis. To impute the overall capital gain for a position, we must assign partial sales to a specific tranche. Prior studies use four different rules: the share-weighted average price, last-in-first-out, first-in-first-out, and highest-in-first-out. In this paper, we report results based on the highest-in-first-out (HIFO) method, as Dickson, Shoven, and Sialm (2000) show this is the most tax efficient rule.⁹

⁹ As a robustness check, we compute all 16 possible imputed capital gains variables from the intersection of the four transaction price rules and four sales rules. All 16 methods give similar results. Prior studies, including Jin (2006) and Cici (2012), also find that different methods give similar results.

For each stock i held by fund f at time t , we compute the value weighted cost basis (VWCB) as:

$$VWCB_{f,i}^t = \frac{\sum_{n=0}^t S_{f,i}^{t,t-n} \cdot P_{f,i}^{t,t-n}}{\sum_{n=0}^t S_{f,i}^{t,t-n}}, \quad (1)$$

where $S_{f,i}^{t,t-n}$ is the number of shares of stock i purchased by fund f at date $t-n$, still held at time t . $P_{f,i}^{t,t-n}$ is the imputed price paid for these shares.

The accrued capital gains for fund-stock combination f, i at time t , is:

$$CapitalGain_{f,i}^t = \frac{P_{f,i}^t - VWCB_{f,i}^t}{VWCB_{f,i}^t} \quad (2)$$

B.2 Voting

By examining stock-price reactions to announcements of ISS voting recommendations that oppose management, Alexander, Chen, Seppi, and Spatt (2010) show that ISS's voting recommendations are generally value enhancing. Our aim is to focus on votes that likely represent a meaningful conflict between management and shareholders. Therefore, we limit our sample to votes for which ISS's recommendation, disseminated a few weeks before the vote occurs, differs from management's recommendation. This results in a final sample of 10,950 unique votes¹⁰ over the period from 2003 to 2008.

The dependent variable in our analyses of mutual fund voting is an indicator variable *OpposeManagement*. It is set to one if the mutual fund does not follow management's recommendation, either by voting against management or by withholding its vote, and is set to zero if the fund votes to support management. Specifically, a mutual fund does not follow management's recommendation when

¹⁰ Of these votes, 68% involve director elections, 13% involve compensation proposals, 8% involve non-director board issues (e.g., change the size of the board or eliminate cumulative voting), 7% involve governance issues (e.g., amend the articles or bylaws of the company), with the remaining 4% representing other issues (e.g., social issues).

management recommends voting “For” (“Against”), yet the fund either votes against (for) the proposal or withholds its vote. This definition is very natural and is consistent with recent literature (e.g., Del Guercio, Seery, and Woidtke (2008); Fischer, Gramlich, Miller, and White (2009)). As discussed by Fischer et al. (2009, p. 175), “Withhold” and “Against” are very often functionally equivalent, as the vote passage very often depends on the ratio of “For” votes to total votes (including withheld votes).

C. Summary Statistics

Table I presents summary statistics for the key variables over the 2003-2008 sample period for the merged mutual fund-holding Voting Analytics dataset. *Sell* is an indicator variable set to one if the fund sells its entire position in a stock during the subsequent quarter, and to zero otherwise. On average, 11% of stock positions are sold in any given quarter.¹¹ For the remaining variables, the sample is limited to the fund-vote combinations for which ISS’s recommendations do not equal management’s recommendations (this data forms the basis for our regressions in Tables V and VII). Particularly relevant for our analyses of voting patterns is the indicator variable *OpposeManagement*, which is one for 53% (0.53) of the fund-vote observations in our sample. Thus, funds support management for 47% of the fund-vote observations.

The table also displays summary statistics for capital gains (and losses) since purchase for mutual funds’ stock holdings. Our key independent variable is *CapitalGain*, defined as the percentage accrued capital gain or loss in natural units (e.g., 0.34 = 34% and -0.61 = -61%).¹² The average accrued capital gain of a mutual fund’s stock holding is

¹¹ The average likelihood of completely liquidating a stock holding any given quarter over the 2003-2008 period in the full mutual fund-holding dataset before merging it with the Voting Analytics data is also 11%.

¹² Although our vote sample begins in 2003, we begin tracking capital gains for mutual funds in 1984, when the mutual fund-holding data begin, assuming that all positions in the fund’s first filing were purchased in the prior

34%, with one-tenth of holdings having a capital gain of at least 109% and one-tenth of holdings having a capital gain of -17% or worse. We also calculate the standard deviation in *CapitalGain* for each vote. If all mutual funds bought a stock at the same time, the standard deviation of *CapitalGain* within a vote would be zero because all mutual funds would have the same holding-period return. This is definitely not the case; the average within company-vote standard deviation in accrued capital gains is quite large, 49% (0.49), with considerable variation across individual votes (the interquartile range is 0.23 to 0.71). Similarly, we calculate the standard deviation in *CapitalGain* for each fund-quarter combination. Once again, the average standard deviation in accrued capital gains across the portfolio of a given fund at a point in time is large, 51% (0.51), with considerable variation across funds (the interquartile range is 0.27 to 0.69). Thus, there is both substantial variation in the holding-period return across mutual funds for a given stock at a given time, as well as in the holding-period return across the stocks held by a given mutual fund at a given time, allowing us to employ specifications with both vote fixed effects and fund-quarter fixed effects.

In addition to exploiting variation in the accrued capital gain mutual funds have in a given stock, we also exploit differences across funds in the tax sensitivity of their investors. % *Defined Contribution Investors* is the percentage of the fund owned by defined-contribution retirement plans. For ease of interpretation, in some of our analyses we create an indicator variable, *HighDC*, indicating whether the proportion of fund assets held by retirement plans is above the median (which is 27.1% of assets across all fund-quarter observations in our sample). As an additional measure of a fund's tax sensitivity, we also calculate *FundOverhang*: the value-weighted capital gain

quarter. We then carry these imputed capital gains forward to the beginning of our voting sample in 2003. In our sample, only 0.2% of positions are purchased prior to 1984.

across all of the stocks held by the fund. Funds can reduce the tax liability they pass onto their taxable investors from realizing the capital gain of a stock by realizing capital losses elsewhere in their portfolio. Thus, funds with a lower *FundOverhang* are likely to be less tax sensitive. At the sample median, accrued capital gains are 17% of the fund's total value. For ease of interpretation, in some of our analyses we create an indicator variable, *LowFundOverhang*, which is set to one for funds with a below median level of total accrued capital gains across all of their holdings.

TABLE I ABOUT HERE

Table II compares the propensity of mutual funds to oppose management versus that of other shareholders. As shown in the first row, averaged across all fund-vote observations, mutual funds oppose management 53.4% of the instances in which the ISS recommendation does not equal management's recommendation (as reported in the Table 1 summary statistics). The second and third rows aggregate votes for a certain investor group for a particular proposal (i.e., value-weight by shares for a given vote, and then take an equal-weighted average of these vote shares across all the proposals in the sample). We do this for mutual funds (the second row) and all other voters (the third row). The percentage of votes that oppose management is larger by one-half among mutual funds than it is among other voters (47.0% versus 31.3%). Overall, in our sample, management recommendations are defeated in 10% of the votes.

TABLE II ABOUT HERE

Table III shows how often mutual fund votes changed the vote outcomes (for the sample of votes in which the recommendations of ISS and management differ). The first column of Table III shows how often the total votes cast by mutual funds exceed the

margin by which the vote passed or failed. For example, suppose there were 125 “For” and 75 “Against” votes. This vote passed by a margin of 50 votes. If mutual funds cast more than 50 votes then mutual funds had the potential to tip the outcome. The number of mutual fund votes exceeds the margin of victory for 13.3% of the votes, and for 51.0% of the votes that management loses. The second column of Table III shows how often the mutual fund vote *differential* exceeds the margin of victory. For example, suppose there were 80 total mutual fund votes: 70 “For” and 10 “Against”. Then the mutual fund vote differential is a net 60 “For” votes. In the example above, the vote passed and the margin of victory was 50 votes, thus mutual funds determined the outcome. Mutual funds determine the outcome in 7.4% of all votes, and in 42.2% of the votes that management loses. Thus, collectively, the votes of the mutual funds in our sample are a significant determinant of whether management loses a vote.¹³

The tabulations in Tables II and III highlight the importance of mutual funds in determining whether a value-decreasing recommendation by management is rejected – mutual funds are more likely to provide governance in this situation than other shareholders are. We next study whether, for a particular stock, capital gains lock-in influences a mutual fund’s decision whether to sell, stay and support, or stay and fight for votes in which management recommendations may be value destroying.

TABLE III ABOUT HERE

¹³ Votes withheld are included in the calculation of the total number of votes cast. Also, when calculating the mutual fund vote differential, votes withheld are counted as votes against management’s recommendation.

II. Sale Propensity and Accrued Capital Gains

In this section, we investigate how a mutual fund's decision to sell (or continue to hold) a stock is related to the holding period return of that stock. Specifically, because we have quarterly data on mutual fund holdings, we relate a fund's propensity to fully liquidate a position it holds during quarter q to the accrued capital gain (or loss) in that position as of the end of quarter $q-1$. We also explore the effects of the tax status of a mutual fund's clientele on the sales-propensity by interacting *CapitalGain* with an indicator variable for the presence of a large proportion of tax-deferred investors (*HighDC*). Because a mutual fund's likelihood of selling a stock next quarter falls with how long the stock has already been held,¹⁴ we follow Ivković, Poterba, and Weisbenner (2005) in using a Cox proportional hazards model. The Cox model allows for heterogeneity across both investors and time in the likelihood of selling stocks with different holding periods.

The baseline hazard rates of selling a stock in a given quarter are estimated non-parametrically for each possible prior holding period length (from 1 to 20 quarters), following Han and Hausman (1990). We allow separate baseline hazard rates of sale for each fund-quarter combination and, thus, the specification allows each fund's sale propensity to vary from quarter to quarter, at different calendar times t :

$$Sell_{f,i,t}(q) = \gamma_{f,t}(q) \cdot e^{(X_{f,i,t} \cdot \beta)}, \quad (3)$$

where $Sell_{f,i,t}(q)$ is an indicator variable set to one if fund f sells stock i at calendar-time t after holding the stock for the past $q-1$ quarters and $\gamma_{f,t}(q)$ is the non-parametric baseline rate of fund f selling a stock previously held for $q-1$ quarters at calendar-time t . Simply

¹⁴ For example, in untabulated results, we calculate that the unconditional probability of a mutual fund selling a stock during the next quarter is 19% if the stock has been held for only one quarter, but declines to 12% after 6 quarters, and to 8% after 12 quarters.

put, our specification allows each mutual fund to have a separate baseline probability of liquidating a stock given it has already held that stock for one quarter, two quarters, three quarters, and so on. We also allow this fund-specific baseline to vary across each calendar-time quarter in the sample (e.g., a mutual fund has a different baseline probability of selling a stock held three quarters during the 4th quarter of 2004 than it does during the 2nd quarter of 2007).

$X_{f,i,t}$ are the covariates that shift the baseline rate. *CapitalGain* is the accrued capital gain (or loss) in the stock since purchase. *HighDC* is an indicator variable set to one if the proportion of fund assets held by retirement plans is above the sample median, and to zero otherwise. To test for the presence of a tax-motivated capital gains lock-in, in some specifications we also include the interaction $CapitalGain \times HighDC$. In some specifications, we further include interactions with *LowFundOverhang*, an indicator variable set to one for funds whose level of total accrued capital gains across all holdings is below the median, and to zero otherwise. The significance tests are based on standard errors clustered by fund-quarter.

Because $HighDC_{f,t}$ does not vary across fund f 's holdings in calendar quarter t , it is absorbed in the estimation, resulting in a parsimonious specification:

$$X_{f,i,t} \cdot \beta = \beta_1 \cdot CapitalGain_{f,i,t-1} + \beta_2 \cdot CapitalGain_{f,i,t-1} \times HighDC_{f,t} + \varepsilon_{i,t} \quad (4)$$

Panel A of Table IV shows the results for the full sample of mutual fund holdings during the period from 2003 to 2008. Panel B shows results for the subsample of mutual fund holdings that are also included in the Voting Analytics data.¹⁵ The results are very

¹⁵ We lose observations in Table IV as we move from Panel A to Panel B because the Voting Analytics data do not include all mutual funds, especially for the first two years of the sample in which Voting Analytics focused on large mutual funds. The coverage is better for the defined contribution subsample, as *Pensions & Investments* also focuses on the largest mutual funds, so few observations are lost when the Voting Analytics database is merged with the data from *Pensions & Investments*.

similar in both samples, suggesting that behavior of mutual funds in the Voting Analytics data is representative of the full sample.

Columns (1) and (4) of Table IV show the results of the first specification, which includes accrued capital gains but not its interaction with *HighDC*. The coefficient estimates (-0.482 and -0.525, respectively, both statistically significant at the 1% level), show a strong negative relation between the propensity to sell and accrued capital gains in the stock holding. Certainly, there are several reasons for a fund to sell a stock, such as a fund generally having high turnover or having large redemptions this quarter. Factors such as these are removed by the varying baselines included in the specification (i.e., the “fixed effects”). Our focus is the relation between sale of a stock and its holding-period return – this result is driven by within-fund variation in the accrued capital gains of stocks at a particular point in time.

The magnitude of the effect is sizeable. For illustration, consider the standard deviation of accrued *CapitalGain* in our sample (0.68). According to the point estimate for the full sample (column (1) of Table IV), a one-standard-deviation change in the accrued *CapitalGain* implies a 28% decline in the sale probability, relative to the baseline ($e^{(0.68 \times (-0.482))} - 1 = -0.28$).¹⁶ This probability shift is large not only in relative terms, but also in absolute terms. For example, in untabulated results, we calculated that during the first four quarters, the baseline probability of sale during a quarter is 15-20 percentage points. Thus, a 28% decline relative to this baseline implies an absolute decline in sale probability of 4-6 percentage points.

We use the *Pensions & Investments* data to identify more precisely why accrued capital gains explain mutual funds’ decisions to liquidate stock holdings. If this relation

¹⁶ The estimate for the subsample covered by Voting Analytics is very similar. According to the point estimate for the Voting Analytics subsample (column (4) of Table IV), a one-standard-deviation shift in *CapitalGain* implies a 30% decline of sale probability relative to the baseline ($e^{(0.68 \times (-0.525))} - 1 = -0.30$).

is due to tax motivations, the negative relation between the sale propensity and capital gains should be weaker for funds with more tax-deferred retirement assets under management (as captured by *HighDC*; *HighDC* is one if retirement assets are more than 27.1% of total fund assets, the sample median, and is zero otherwise). This is precisely what the results in columns (2) and (5) of Table IV show. The interaction term $CapitalGain \times HighDC$ is positive and statistically significant at the 5% level (with point estimates of 0.128 and 0.107, respectively). This indicates that the lock-in effect on stock sales is indeed stronger (weaker) for funds with more (less) tax-sensitive investors.

Columns (3) and (6) show the results for our final specification, which includes interactions with *LowFundOverhang*. We expect that a low fund-level capital gains overhang (i.e., the fund has few accrued capital gains in its portfolio) should, at least partially, offset the negative relation between accrued capital gains in a stock and the sale of that stock, because tax laws allow funds to offset a realized capital gain with realized capital losses. The positive and significant coefficients on the interaction term $CapitalGain \times LowFundOverhang$ in columns (3) and (6) support our prediction: the capital gains lock-in effect is stronger if the fund has a high level of accrued capital gains in aggregate in its portfolio (i.e., $LowFundOverhang = 0$) and is weaker if the fund has a low level of accrued capital gains throughout its portfolio (i.e., $LowFundOverhang = 1$). Further, *LowFundOverhang* should mitigate the tax lock-in effect more for funds with less retirement account assets (i.e., $HighDC = 0$) than for funds with more retirement assets ($HighDC = 1$). This logic predicts a negative coefficient on the triple interaction term $CapitalGain \times HighDC \times LowFundOverhang$ – this is exactly what we find. Put differently, the negative and significant coefficient on the triple interaction term $CapitalGain \times HighDC \times LowFundOverhang$ implies that, if a fund has primarily

defined contribution plan investors, then the fund-level overhang is less important as the fund's tax-sensitivity is already low.

The results in Table IV confirm the findings of Huddart and Narayanan (2002), Cici (2012), and Sialm and Starks (2012). All of these studies also document a negative relation between the likelihood the fund sells a stock and accrued capital gains in the stock holding, which they attribute, at least in part, to tax motivations.¹⁷ We next consider whether the tax-induced illiquidity for certain stocks held by a mutual fund results in the fund providing more governance, given it will "stay around and not exit."

TABLE IV ABOUT HERE

III. Capital Gains Lock-in and the Propensity to Oppose Management

In this section, we examine the relation between the accrued capital gains on a mutual fund's stockholding and the fund's voting decisions at the shareholders meeting. As previously discussed, voting against management may be costly to the mutual fund (e.g., Davis and Kim (2007); Ashraf, Jayaraman, and Ryan (2012); Butler and Gurun (2012)). If the mutual fund disagrees with management, but does not want to directly vote against them, one solution is for the fund to vote with its feet - to sell the stock. The benefits of selling the stock, however, might be outweighed by the tax liability triggered by realizing an accrued capital gain; Bergstresser and Poterba (2002) highlight that simply exiting a holding with an accrued capital gain can be costly to the fund, as

¹⁷ In contrast to the studies referenced above, Frazzini (2006) finds that mutual fund managers seem to be subject to the disposition effect (a tendency to realize gains and hold onto losses that could result from prospect theory and loss aversion). In particular, Frazzini finds that, over the period 1980-2002, the aggregate proportion of gains realized (PGR) by mutual funds exceeds the aggregate proportion of losses realized (PLR). However, using the same data and methodology, Cici (2012) documents that, consistent with tax lock-in, PLR *exceeds* PGR for mutual funds over the period 1980-2009, as well as for each of the subperiods 1980-89, 1990-99, and 2000-09. While Frazzini uses a different methodology and a different sample than we do, in unreported results we have been able to replicate Cici's findings.

such tax inefficiency reduces future investment flows from tax-savvy investors. Thus, if a mutual fund is locked-in to a position for tax reasons it may decide to stay around and provide governance by voting against value-destroying recommendations by management. This consideration affects mutual fund investors' taxable accounts, but not tax-deferred ones. Thus, funds with a large proportion of tax-sensitive investors may feel more constrained to continue holding stocks with accrued capital gains.

A pragmatic alternative to sale, thus, is to increase the level of activism while continuing to hold the stock. As seen in Tables II and III, mutual fund votes can be, and often are, quite influential. For many votes, however, managements' recommendations are likely value maximizing and so there is no reason to expect a relation between accrued capital gains and opposition to management. Accordingly, we focus on votes for which the ISS and management recommendations differ. In doing so, we interpret this recommendation discrepancy as a proxy for management recommendations that, ex ante, likely are not value-maximizing, consistent with the findings of Alexander, Chen, Seppi, and Spatt (2010).

We estimate a linear probability model that relates the indicator variable *OpposeManagement* with accrued capital gains (*CapitalGain*) in the following panel regression:

$$\begin{aligned} OpposeManagment_{f,i,v,t} = & \beta \cdot CapitalGain_{f,i,t-1} + \delta_{i,v} \\ & + \theta_{f,t} + \sum_{q=1}^{20} (\gamma_q \cdot I_q) + \varepsilon_{i,f,v,t} \end{aligned} \quad (5)$$

where $\delta_{i,v}$ are vote fixed effects, $\theta_{f,t}$ are fund-quarter fixed effects, and I_q , $q = 1, \dots, 20$ are indicator variables set to one if fund f had held stock i for q quarters, and to zero otherwise. We report t-statistics based on standard errors clustered by fund-quarter. The vote effects remove all variation in the issue voted on, as well as any company-level

effects such as past performance, size, and governance. The fund-quarter fixed effects remove all variation at the fund-period level, such as past returns, overall voting tendencies that quarter, or flows into the fund. Thus, our identification comes from variation in accrued capital gains across different stocks held by the same fund, after conditioning out fund-level and vote-level differences. Finally, including length-of-holding indicator variables controls for the possibility that a funds' propensity to oppose management changes with the length of holding, independent of accrued capital gains, perhaps because of firm-specific learning by the fund.

To test whether the relation between capital gains and voting patterns differs for funds that have a high presence of retirement accounts, we also estimate a similar regression (once again, *HighDC* is absorbed by fund-quarter effects):

$$\begin{aligned}
 OpposeManagement_{f,i,v,t} = & \beta_1 \cdot CapitalGain_{f,i,t-1} \\
 & + \beta_2 \cdot (CapitalGain_{f,i,t-1} \times HighDC_{f,t}) \\
 & + \delta_{i,v} + \theta_{f,t} + \sum_{q=1}^{20} (\gamma_q \cdot I_q) + \varepsilon_{i,f,v,t}
 \end{aligned} \tag{6}$$

In some specifications, we also include interactions with *LowFundOverhang*, an indicator variable set to one for funds with a level of total accrued capital gains across all of their holdings that is below the median.

These regressions are estimated over the funds *holding the stock at the time of the shareholder meeting* – the decision for these funds at that time is whether to oppose or support management with their vote.¹⁸ Column (1) of Table V presents the first specification (Equation (5)), which includes only accrued capital gains. The estimates show a significant positive relation between opposing management and accrued capital gains in the stock holding. This result is consistent with our prediction – funds that are

¹⁸ In the next section, we will expand upon this analysis to model a fund's three-way choice of selling a stock right before the shareholder meeting, continuing to hold the stock and supporting management, or continuing to hold the stock and opposing management.

locked-in to a position because of capital gains taxes are more likely to oppose management than support it.

In the previous section, we established that mutual fund managers are subject to a lock-in effect when it comes to deciding whether to liquidate a stock investment – the holding period of a stock increases with its accrued gain. Here, we find that, conditional on holding the stock at the time of the vote, funds with larger accrued gains are more likely to oppose management in our sample of proposals in which the management recommendation is likely value-decreasing. This reflects a simple tradeoff. Opposing management may be costly for all funds for the reasons cited in the introduction and at the beginning of this section. However, funds with accrued gains in a stock have more to gain from opposing management in an attempt to boost the stock's price in the future than funds with losses in a stock because of funds' expected longer holding period in stocks with accrued gains, documented in Table IV. Thus, the positive relation between *OpposeManagement* and *CapitalGain*.

The result in column (1) does not differentiate by the tax status of fund investors – the lock-in effect on governance should be weaker for funds with more assets held by tax-deferred retirement accounts. To test this, in column (2) we present the second specification (Equation (6)), which includes both accrued capital gains and its interaction with *HighDC*. Consistent with the tax lock-in hypothesis, the coefficient on the interaction $CapitalGain \times HighDC$ is significant and negative, almost exactly offsetting the coefficient for *CapitalGain* (which, in this specification, represents the relation between opposing management and accrued capital gains for funds with taxable investors). Thus, the propensity to oppose management varies with the amount

of accrued capital gains for funds with few retirement accounts, but not for funds with high levels of retirement account assets.¹⁹

In column (3), we also include interaction terms with *LowFundOverhang*, an indicator variable set to one for funds whose total accrued capital gains across all of their fund holdings is below the median. As we discussed earlier, because funds can use capital losses elsewhere in their portfolio to offset a capital gain, the effect of tax lock-in should be weaker for funds with lower fund-level capital gains (i.e., $LowFundOverhang = 1$). This predicts a negative coefficient on $CapitalGain \times LowFundOverhang$. Further, *LowFundOverhang* should mitigate the lock-in effect more for funds with less retirement account assets (i.e., $HighDC = 0$) than for funds with more retirement assets ($HighDC = 1$). This predicts a positive coefficient on the triple interaction $CapitalGain \times HighDC \times LowFundOverhang$. This is precisely what we find. The positive effect of *CapitalGain* on *OpposeManagement* is almost fully offset for those funds with a low fund-level capital gains overhang. The positive and significant coefficient on the triple interaction, $CapitalGain \times HighDC \times LowFundOverhang$, shows that, for funds with many defined-contribution plan investors, the fund-level capital gains overhang does not influence the relation between *CapitalGain* and *OpposeManagement* as the tax sensitivity of these funds is already low.

The coefficient estimates from Table V can be used to highlight the economic magnitude of the governance lock-in effect. Estimated over all funds (column (1) of Table V), an increase in accrued capital gains in a stock holding from 0% to 100% implies a significant increase in the probability of opposing management (in a vote for

¹⁹ By definition, *HighDC* funds have both a higher fraction of investors that are not sensitive to taxes as well as more retirement plan business. So the lack of a relation between *CapitalGain* and *OpposeManagement* for *HighDC* funds could simply reflect that funds with a larger retirement-plan business are less willing to vote against management. The key point of our identification strategy is that for funds that have more taxable investors (i.e., $HighDC = 0$), while they may also care about alienating firm management by opposing them on a vote, they are more likely to do so if the stock holding has a gain than a loss because of the tax-induced lock-in effect.

which opposition is value increasing) of 0.3 percentage points. Among funds with a high level of tax-sensitive investors, this governance effect increases fourfold – to a highly significant 1.1 percentage-point increase in opposition to management. In contrast, for mutual funds with a high proportion of tax-deferred retirement assets, there is no relation between providing governance and accrued capital gains because an increase in accrued capital gains from 0% to 100% implies an insignificant increase in the probability of opposing management of only 0.2 percentage points (0.011 – 0.009).

TABLE V ABOUT HERE

IV. Support, Oppose, or Exit: A Multinomial Logit Approach

The dependent variable in the previous section was an indicator variable that contrasts two choices – *conditional upon holding the stock at the time of the vote*, the fund can either support or oppose management. An alternative specification, presented in this section, is to model the dependent variable as a choice between three alternatives: sell, stay and support management, or stay and oppose management. In this framework, the sample includes all fund holdings at the end of the quarter before a vote. We define sell (i.e., exit) as the complete liquidation of the stock before the vote (i.e., in the time period from the start of the quarter until the date of record for voting in the shareholder meeting). For those funds that continue to hold the stock until the vote, we measure whether the fund supports or opposes management (as in Section III).

We use a multinomial logit model to test the relation between accrued capital gains and these three choices. This approach thus unites the results presented in Section II (relating sale propensity and accrued capital gains) and in Section III (relating opposing management and accrued capital gains), and thus serves as a robustness

check of the conclusions drawn from those models. The covariates are the same as in Table V, and the specification includes both vote and fund-quarter fixed effects, as well as control variables for the number of quarters the fund has held the stock. We use the method of Chamberlain (1980) to control for the vote and fund-quarter fixed effects.²⁰

Table VI presents the multinomial logit results. In Panel A, the key independent variable is *CapitalGain*. In Panel B, we add the interaction term *CapitalGain* \times *HighDC*. In Panel C, we add further interactions with *LowFundOverhang*. For all three panels, the first column shows results for the *Sell* decision and the second column shows results for the *OpposeManagement* decision. Continuing to hold the stock and supporting management is the excluded category. The t-statistics are based on standard errors clustered by fund-quarter. Note that the number of observations increases relative to Table V, as the sample now includes fund-vote combinations for which the fund sells the stock before the vote. The unconditional probabilities of the three outcomes across all the fund-quarter observations are: 6% probability of a complete stock sale before the vote, 44% probability of continuing to hold the stock and support management, and 50% probability of continuing to hold the stock and oppose management (by either a vote against management or a withheld vote).²¹

The multinomial results displayed in Table VI confirm our results from Tables IV and V. Column (1) of Panel A shows that higher accrued capital gains in a stock holding are associated with a lower probability that the fund sells the stock (relative to the probability of supporting management). Column (2) shows that higher accrued capital

²⁰ Charbonneau (2013) provides details on implementing Chamberlain (1980) in a model with multiple fixed effects.

²¹ At first glance, the 6% probability of exiting a stock position before the vote seems low/inconsistent relative to the 11% probability of liquidating a stock holding over the subsequent quarter that was reported in Table I. However, across all the observations in the multinomial logit model, 32% of the votes are in the first month of a quarter, 52% of the votes are in the middle month of the quarter, and 16% of the votes are in the last month of the quarter. Thus, the timeframe over which a stock can be sold before a vote is often only one or two months (as opposed to a full quarter), thus explaining the difference between the 6% and 11% figures.

gains are associated with a higher probability that the fund opposes management (again, relative to the probability of supporting management). A common way to assess the economic magnitude of the results of the multinomial logit model is to convert the coefficients on accrued capital gains to relative risk ratios. A transformation of the coefficients in Panel A results in a relative risk ratio of selling the stock relative to holding the stock and supporting management of 0.77 and a relative risk ratio of holding the stock and opposing management relative to supporting management of 1.06 (both significantly different from 1.0). These relative risk ratios imply that as *CapitalGain* increases from 0% to 100%, the relative probability of selling the stock decreases by 23% while the relative probability of opposing management increases by 6% (both measured relative to the change in the probability of supporting management).

Panel B of Table VI includes an interaction term between accrued capital gains and an indicator variable for funds with a high proportion of defined contribution retirement plan assets (indicating less sensitivity to tax lock-in effects). The results show that, as the accrued capital gain increases: (1) the probability of sale decreases, but less so for the funds with higher defined contribution assets; and (2) the probability of opposing management increases, but not for the funds with a higher share of defined contribution assets.

For the group of funds with fewer tax-deferred investors, the economic magnitudes of these effects are quite large. In Panel B, the coefficients on *CapitalGain* represent the effects of accrued capital gains on the decision to exit/support/oppose management for funds with a low fraction of retirement account assets (i.e., *HighDC* = 0). For this group of tax-sensitive funds, a transformation of the coefficients in Panel B results in a relative risk ratio of selling the stock relative to holding the stock and supporting management of 0.57, while the relative risk ratio of holding the stock

and opposing management relative to supporting management is 1.35. These relative risk ratios imply that as *CapitalGain* increases from 0% to 100%, the relative probability of selling the stock decreases by 43%, while the relative probability of opposing management increases by 35% (both measured relative to the change in probability of supporting management).

In Panel C of Table VI, we report results of a multinomial logit model that includes further interactions with the indicator variable *LowFundOverhang*. The positive relation between accrued capital gains in a stock holding and the likelihood of a mutual fund voting against that firm's management is significantly weakened for funds with a low level of capital gains across all their fund holdings (i.e., *LowFundOverhang*=1). We also find, as predicted, that *LowFundOverhang* mitigates the lock-in effect on providing governance more for funds with less retirement account assets than for funds with more retirement assets (i.e., the triple interaction term *CapitalGain* × *HighDC* × *LowFundOverhang* has a negative and significant coefficient).

Figure 2 illustrates, using the coefficient estimates from Table VI on *CapitalGain*, how the probabilities of exit, support of management, and opposition to management change when the accrued gains in the stock increase from -50% to 100%.²² This is done for all funds (Panel A) and for the funds with more tax-sensitive investors (i.e., *HighDC* = 0; Panel B), and funds with more tax-sensitive investors and a high fund capital gains overhang (i.e., *HighDC* = 0 and *LowFundOverhang* = 0; Panel C). Panel A shows that, as the accrued capital gain in a stock holding increases, the probability of continuing to hold the stock and opposing management increases from 49.9% (with an

²² The figure is calculated as follows. For both all funds and funds with more tax-sensitive investors (i.e., *HighDC* = 0), we record the unconditional probabilities of the exit/support/oppose decision, as well as, the unconditional average accrued capital gain in a stock holding. From that baseline, we then extrapolate the probabilities of the exit/support/oppose decision for higher and lower accrued capital gains using the coefficients from Panel A/Panel B/Panel C of Table VI for Panel A/Panel B/Panel C of Figure 2.

accrued capital gain of -50%) to 53.3% (with an accrued capital gain of 100%). At the same time, the probability of selling the stock before the shareholder meeting and continuing to hold the stock and supporting management decline. Not surprisingly, given our tax lock-in hypothesis and our prior results, the effects are much stronger when we focus on funds with more tax-sensitive investors. As shown in Panel B, as the accrued capital gain in the stock holding increases from -50% to 100% for this group of funds, the probability of continuing to hold the stock and opposing management increases 13 percentage points (from 46.2% to 59.4%). At the same time the probability of selling the stock falls from 7.8% to 2.8%, and the probability of continuing to hold the stock and supporting management falls from 46.0% to 37.9%. Finally, as shown in Panel C and consistent with the tax lock-in hypothesis, the effects are further amplified when we examine the subset of funds with more tax-sensitive investors that also have large portfolio-wide capital gains (and thus a lack of losses available to offset realized gains for tax purposes). For this group of particularly tax-sensitive funds, as the accrued capital gain in the stock holding increases from -50% to 100%, the probability of continuing to hold the stock and opposing management increases almost 20 percentage points (from 51.9% to 70.3%).

In sum, the findings presented in this section are highly consistent with the results reported in Section II and Section III. Tax-induced lock-in not only affects the sale of stocks, but also affects the likelihood mutual funds with taxable investors will provide governance (by opposing the management recommendation when doing so is likely value-increasing for the firm).

TABLE VI ABOUT HERE

FIGURE 2 ABOUT HERE

V. Conclusion

In this paper, we study how mutual funds' governance and selling decisions relate to liquidity. There are theoretical arguments to support either a positive or a negative relation between investor governance activities and ease-of-trading (liquidity). Testing this relation empirically is challenging because liquidity, governance, and mutual fund investment decisions are all determined by similar factors, and each variable partially determines the others. Further, typical measures of liquidity like bid-ask spreads or Amihud's (2002) measure vary across firms, but not across investors within a firm, raising concerns that omitted firm-specific factors could drive any relation between governance activities and liquidity.

We approach this problem using illiquidity driven by capital gains tax lock-in. By using this measure of illiquidity, rather than a measure that is identical for all investors in a company, *our identification comes from variation across investors in a given stock at a given time*. To implement our identification strategy, we construct a rich data set that combines mutual fund holdings, their clientele (taxable and tax-deferred), governance characteristics of the companies, and detailed voting data.

Consistent with prior studies, we find that there is a negative relation between a mutual fund's propensity to sell a stock and accrued capital gains on the stock, and that this relation is stronger for funds with more taxable investors. Given this tax-induced illiquidity, we next examine whether funds with higher accrued capital gains in a stock of a company are more likely to oppose company management (in a sample of votes for which opposing management is likely to be value-increasing for the firm). Simply put, given these locked-in funds are likely to continue to hold the stock for a while, they

could potentially benefit from the improvement in the company following the provision of governance by the fund.

We find that funds with higher accrued capital gains in a stock are indeed more likely to oppose management (when opposing management is likely to be value-increasing). Our results further demonstrate that, consistent with a tax motivation, the relation between providing governance and accrued capital gains is stronger for funds with a high fraction of tax-sensitive investors.

Thus, this paper documents another avenue through which capital gains taxation influences the behavior of institutional investors. Huddart and Narayanan (2002), Cici (2012), and Sialm and Starks (2012) show that capital gains taxation affects mutual funds' trading decisions. We further find that capital gains lock-in not only reduces the likelihood that a fund will sell a stock, but also increases the likelihood that a locked-in fund will oppose the firm's management.

Overall, our results are consistent with the ideas of Coffee (1991) and Bhidé (1993), who argue that illiquidity prompts investors to be more involved in governance because it is costlier to sell the position than it is to intervene and thus improve the company. Our finding that, *conditional on already owning the stock*, tax-induced illiquidity leads mutual funds to provide governance is consistent with the Edmans, Fang, and Zur (2013) study on activist investors that finds, conditional on an institution already owning a block of shares, liquidity decreases the probability of active intervention. As open-end mutual funds continue to own an increasingly larger fraction of total U.S. equities, the trend over the last three decades, mutual funds' decisions regarding whether to exit, stay and support, or stay and fight a firm's management will be an increasingly important component of corporate governance.

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Table I
Summary Statistics

This table contains summary statistics for the merged fund-holding and Voting Analytics dataset over the sample period from 2003 to 2008. *Sell* is an indicator variable set to one if the fund sells a stock during the subsequent quarter (i.e., completely liquidates the holding), and to zero otherwise. The *Sell* variable is tabulated for all fund holdings in the merged fund-holding and Voting Analytics dataset. The remaining variables are summarized for the sample of votes in which the ISS recommendation does not equal the management recommendation. *OpposeManagement* is an indicator variable set equal to one if the mutual fund votes against the management recommendation or withholds its vote and is set to zero if the fund votes to support the management recommendation. *CapitalGain* is the percentage accrued capital gain or loss of a mutual fund in a given stock holding since purchase and is expressed in natural units (e.g., 0.34 = 34% and -0.61 = 61%). *CapitalGain - within Vote S.D.* is the standard deviation of *CapitalGain* across funds within each vote. *CapitalGain - within Fund-Quarter S.D.* is the standard deviation of *CapitalGain* across all stockholdings within each fund-quarter combination. *% Defined-Contribution Plan Investors* is the percentage of the fund owned by defined-contribution retirement plans. *FundOverhang* is the accrued capital gain averaged across all of the holdings of the fund (value-weighted).

	Mean	S.D.	1 st %	10 th %	25 th %	50 th %	75 th %	90 th %	99 th %
<i>Sell</i>	0.11	0.31	0	0	0	0	0	1	1
<i>OpposeManagement</i>	0.53	0.50	0	0	0	1	1	1	1
<i>CapitalGain</i>	0.34	0.68	-0.61	-0.17	-0.02	0.14	0.46	1.09	3.15
<i>CapitalGain - within Vote S.D.</i>	0.49	0.29	0.04	0.13	0.23	0.46	0.71	0.91	1.16
<i>CapitalGain - within Fund-Quarter S.D.</i>	0.51	0.31	0.01	0.16	0.27	0.45	0.69	0.95	1.33
<i>% Defined-Contribution Plan Investors</i>	29.1	20.7	0.9	5.6	10.3	27.1	40.6	61.4	80.8
<i>FundOverhang</i>	0.21	0.21	-0.13	0.00	0.09	0.17	0.29	0.43	1.03

Table II
Mutual Fund and Other Shareholder Voting Behavior
(for votes that ISS Recommendation \neq Management Recommendation)

This table shows the fraction of the votes that oppose management cast by mutual funds and other voters in our sample from 2003 to 2008. In the first row, opposition to management by mutual funds in our sample is tabulated as an equally-weighted average across all fund-vote observations. In the second row, opposition to management by mutual funds in our sample is tabulated by first value-weighting (by shares held) mutual funds votes for a given proposal and then taking an equally-weighted average across all the votes in the sample. In the third row, we repeat this calculation for the other voters (i.e., non-mutual fund shareholders) in our sample. The sample is restricted to all votes for which the ISS recommendation does not equal the management recommendation. Opposition to management is defined as either a vote against the management recommendation or a withheld vote.

	Opposition to Management (in percent)
<i>Mutual Funds in Our Sample</i> (equally-weighted average across fund-vote obs.)	53.4%
<i>Mutual Funds in Our Sample</i> (value weight mutual fund votes for a given vote, equally-weighted across votes)	47.0%
<i>Other Voters</i> (value weight other votes for a given vote, equally-weight across votes)	31.3%

Table III
Mutual Fund Voting Behavior and the Effect on the Outcome of the Vote
(for votes that ISS Recommendation \neq Management Recommendation)

This table shows how often mutual fund votes change the outcome of the vote in our sample from 2003 to 2008. The first column summarizes how often the number of votes cast by mutual funds in our sample is greater than the margin by which the vote passed or failed. The second column summarizes how often the vote differential of mutual funds in our sample is greater than the margin of victory. Votes withheld are included in the calculation of the total number of votes cast. Also, when calculating the mutual fund vote differential, votes withheld are counted as votes against the management recommendation.

	Mutual Fund Votes > Margin of Victory	Mutual Fund Vote Differential > Margin of Victory
Overall	13.3%	7.4%
<i>Outcome \neq MGMT Recommendation</i>	51.0%	42.2%

Table IV
Cox Proportional Hazards Model of Stock Sales

This table presents results of Cox proportional hazards models, described in Equation (3), in which we relate a mutual fund's propensity to sell a stock to the fund's accrued capital gain on that stock and the tax status of the fund's investors. The baseline hazard rates are estimated non-parametrically, following Han and Hausman (1990), with a separate baseline for each fund-quarter combination (i.e., each fund can have different sale propensities from quarter to quarter, at different calendar times t):

$$Sell_{f,i,t}(q) = \gamma_{f,t}(q) \cdot e^{(X_{f,i,t}\beta)}, \quad (3)$$

where $Sell_{f,i,t}(q)$ is the hazard rate of fund f selling stock i at time t (in quarter t in calendar time) after holding the stock for the past $q-1$ quarters, $\gamma_{f,t}(q)$ is the non-parametric (fund-specific, calendar quarter-specific) baseline rate of fund f selling a stock previously held for $q-1$ quarters at time t (in quarter t in calendar time), and X are covariates that shift the baseline rate: *CapitalGain*, accrued capital gains or losses since the purchase of the stock (i.e., the holding-period return); *HighDC*, an indicator variable set to one if the proportion of fund assets held by defined-contribution retirement plans is above the sample median, and to zero otherwise; *LowFundOverhang*, an indicator variable set to one for funds with a level of total accrued capital gains across all of their holdings that is below the median; and the interactions of *HighDC* and *LowFundOverhang* with *CapitalGain*. Panel A features the results of estimation over the full sample of observations in the period from 2003 to 2008. Panel B focuses on the observations with coverage in the Voting Analytics data. Finally, ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, and t -statistics are listed in square brackets below the point estimates (t -statistics are based on standard errors clustered at the fund level).

Table IV
Cox Proportional Hazards Model of Stock Sales, continued

	Panel A: All Observations (2003-2008)			Panel B: Observations with Data in Voting Analytics (2003-2008)		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>CapitalGain</i>	-0.482*** [26.13]	-0.500*** [14.80]	-0.600*** [13.14]	-0.525*** [24.79]	-0.511*** [14.08]	-0.601*** [12.57]
<i>CapitalGain</i> × <i>HighDC</i>		0.128*** [2.89]	0.187*** [3.18]		0.107** [2.29]	0.143** [2.31]
<i>CapitalGain</i> × <i>LowFundOverhang</i>			0.343*** [5.36]			0.334*** [4.86]
<i>CapitalGain</i> × <i>HighDC</i> × <i>LowFundOverhang</i>			-0.211** [2.51]			-0.168* [1.90]
Number of Observations	8,063,230	1,247,917	1,247,917	5,998,671	1,128,516	1,128,516

Table V**Propensity to Oppose Management, Accrued Capital Gains, and Tax Motivation**

This table presents results of the linear probability model, described by Equation (5), in which we relate a mutual fund's voting decision to either oppose or support a firm's management to the fund's holding-period return in the firm's stock:

$$\begin{aligned} \text{OpposeManagement}_{f,i,v,t} = & \beta \cdot \text{CapitalGain}_{f,i,t-1} + \delta_{i,v} \\ & + \theta_{f,t} + \sum_{q=1}^{20} (\gamma_q \cdot I_q) + \varepsilon_{i,f,v,t} \end{aligned} \quad (5)$$

where $\delta_{i,v}$ are vote fixed effects, $\theta_{f,t}$ are fund-quarter fixed effects, and I_q , $q = 1, \dots, 20$ are indicator variables set to one if fund f had held stock i for q quarters entering the quarter of the vote, and to zero otherwise. The dependent variable in this table is an indicator variable *OpposeManagement*. It is set to one if the mutual fund does not follow the management recommendation, either by voting against management or by withholding its vote; *OpposeManagement* is set to zero if the mutual fund votes to support the management recommendation. This regression is estimated for funds holding the stock at the time of the shareholder meeting. *CapitalGain* is the accrued capital gains or losses since purchase of the stock (i.e., the holding-period return). We also estimate a regression in column (2), described by Equation (6), to test for the effects of a high presence of defined-contribution retirement accounts in the fund. *HighDC* is an indicator variable set to one if the proportion of fund assets held by retirement plans is above the median:

$$\begin{aligned} \text{OpposeManagement}_{f,i,v,t} = & \beta_1 \cdot \text{CapitalGain}_{f,i,t-1} \\ & + \beta_2 \cdot (\text{CapitalGain}_{f,i,t-1} \times \text{HighDC}_{f,t}) + \delta_{i,v} + \theta_{f,t} + \sum_{q=1}^{20} (\gamma_q \cdot I_q) + \varepsilon_{i,f,v,t} \end{aligned} \quad (6)$$

In column (3), we estimate a regression that adds interactions with *LowFundOverhang* to the specification in Equation (6). *LowFundOverhang* is an indicator variable set to one for funds with a level of total accrued capital gains across all of their holdings that is below the median. (Note, the direct effects of *HighDC* and *LowFundOverhang* on *OpposeManagement* are absorbed by fund-quarter fixed effects.) The sample includes all observations in the merged mutual fund holding - Voting Analytics dataset, covering the period from 2003 to 2008, in which the ISS recommendation for a proposal does not equal the management recommendation. Finally, ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, and t -statistics are listed in square brackets below the point estimates (t -statistics are based on standard errors clustered at the fund-quarter level).

Table V
Propensity to Oppose Management, Accrued Capital Gains, and Tax Motivation,
continued

	(1)	(2)	(3)
<i>CapitalGain</i>	0.003** [2.01]	0.011*** [3.77]	0.013*** [4.21]
<i>CapitalGain</i> × <i>HighDC</i>		-0.009*** [2.63]	-0.012*** [3.27]
<i>CapitalGain</i> × <i>LowFundOverhang</i>			-0.011* [1.84]
<i>CapitalGain</i> × <i>HighDC</i> × <i>LowFundOverhang</i>			0.017** [1.99]
Number of Observations	366,644	107,377	107,377

Table VI
Multinomial Logit Analyses of Exit/Voting Decisions

This table presents results of multinomial logit models that relate the dependent variable, a choice with three alternatives—sell the stock, continue to hold the stock and support management, or continue to hold the stock and oppose management (hold the stock and vote in support of management is the excluded category) to the same set of covariates used in Table V. Hold and oppose management is defined as one if the fund continues to hold the stock and either votes against the management recommendation or withholds its vote. *CapitalGain* is the accrued capital gains or losses since purchase of the stock (i.e., the holding-period return). *HighDC* is an indicator variable set to one if the proportion of fund assets held by defined-contribution retirement plans is above the median, and to zero otherwise. *LowFundOverhang* is an indicator variable set to one for funds with a level of total accrued capital gains across all of their holdings that is below the median, and to zero otherwise. Estimates from a multinomial logit model without an interaction term are displayed in the first two columns, Panel A, estimates from a model with an interaction between *CapitalGain* and *HighDC* are displayed in columns (3) and (4), Panel (B), and estimates from a model with further interactions with *LowFundOverhang* are displayed in columns (5) and (6), Panel (C). Each specification includes vote fixed effects, fund-quarter fixed effects, and separate fixed effects for the number of quarters that the fund has held the stock. The sample includes all observations in the merged mutual fund holding – Voting Analytics dataset, covering the period from 2003 to 2008, in which the ISS recommendation for a proposal does not equal the management recommendation. Finally, ***, **, * denote significance at the 1%, 5%, and 10% levels, respectively, and *t*-statistics are listed in square brackets below the point estimates (*t*-statistics are based on standard errors clustered at the fund-quarter level).

	Panel A: Model with No interaction with <i>HighDC</i>		Panel B: Model with Interaction with <i>HighDC</i>		Panel C: Model with Interaction with <i>HighDC</i> and <i>LowFundOverhang</i>	
	Sell Stock	Hold & Oppose Management	Sell Stock	Hold & Oppose Management	Sell Stock	Hold & Oppose Management
	(1)	(2)	(3)	(4)	(3)	(4)
<i>CapitalGain</i>	-0.265***	0.062***	-0.563***	0.296***	-0.638***	0.469***
	[6.21]	[4.08]	[4.45]	[7.03]	[7.01]	[37.68]
<i>CapitalGain</i> × <i>HighDC</i>			0.154*	-0.437***	0.397***	-0.587***
			[1.75]	[6.74]	[4.18]	[38.09]
<i>CapitalGain</i> × <i>LowFundOverhang</i>					0.185	-0.428***
					[0.34]	[16.12]
<i>CapitalGain</i> × <i>HighDC</i> × <i>LowFundOverhang</i>					-1.909***	0.431***
					[7.61]	[10.69]
Number of Observations	391,040		112,027		112,027	

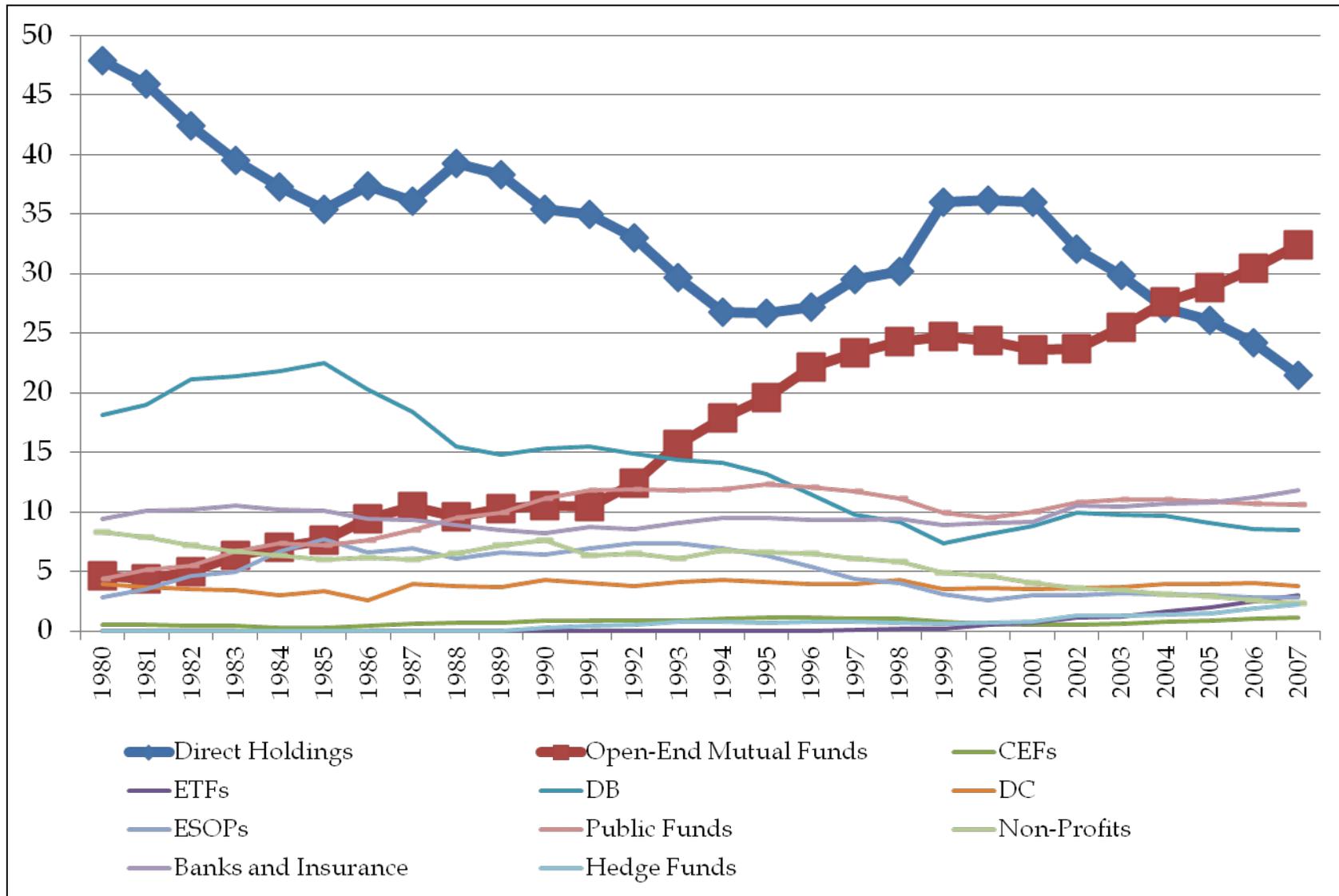


Figure 1: Rise in open-end mutual fund ownership in the U.S. (crimson line). Data come from French (2008), Table I.

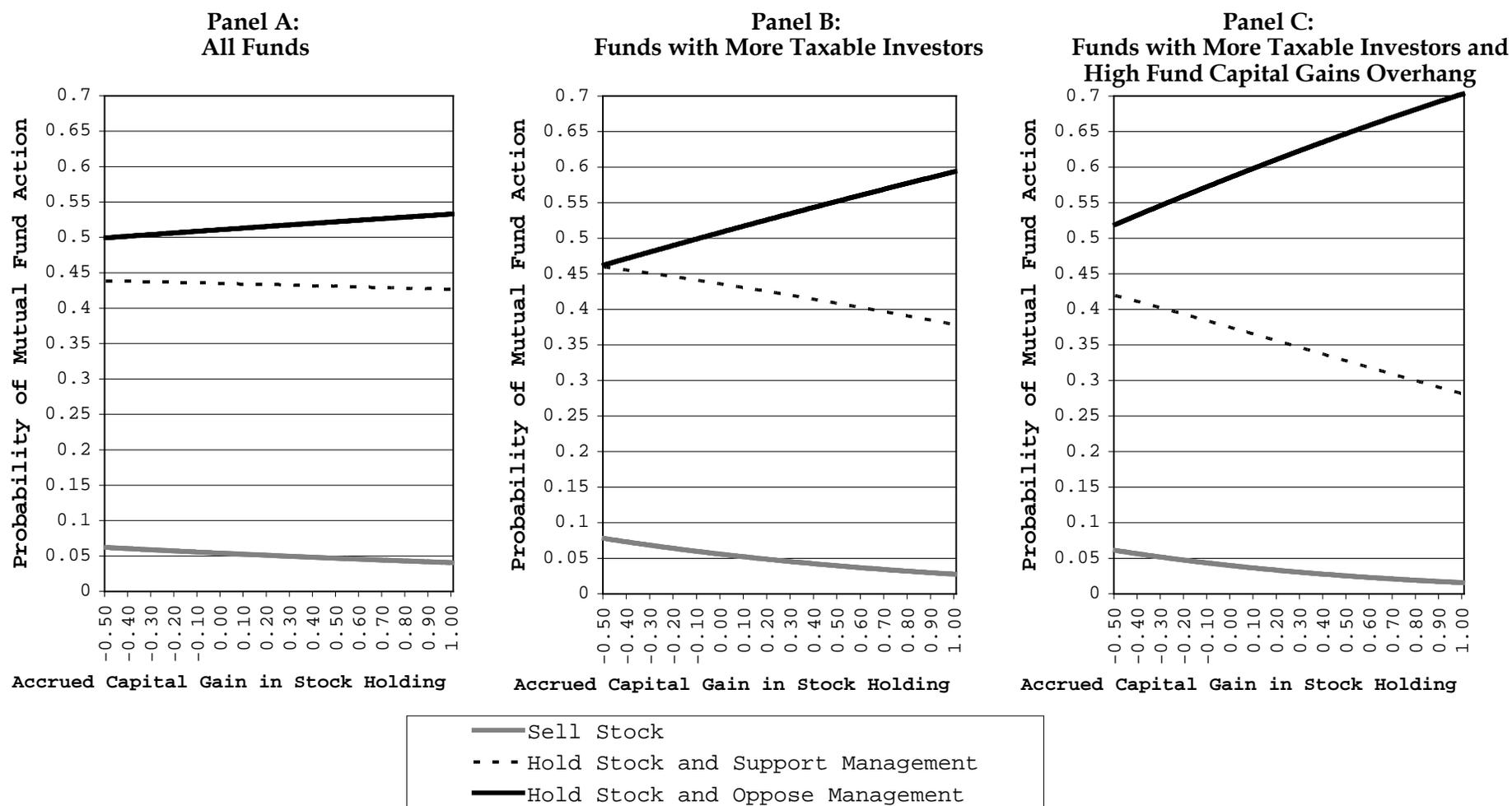


Figure 2: Relation between Exit/Voting Decisions of Mutual Fund and Accrued Capital Gains in Stock Holding

The sample includes all observations in the merged fund holding - Voting Analytics dataset, covering the period from 2003 to 2008, in which the ISS recommendation for a proposal does not equal the management recommendation. The decision facing the fund for a given proposal is to sell the stock before the shareholder meeting, continue to hold the stock and support management, or continue to hold the stock and oppose management. Separately for all funds, funds with more tax-sensitive investors (i.e., the fund's share of assets in retirement accounts is below the sample median), and funds with more tax-sensitive investors and a high fund capital gains overhang (i.e., the fund's portfolio-wide gains are above the sample median), we record the unconditional probabilities of the exit/support/oppose decision, as well as, the unconditional average accrued capital gain in a stock holding. From that baseline, we then extrapolate the probabilities of the exit/support/oppose decision for higher and lower accrued capital gains using the coefficients from Panel A/Panel B/Panel C of Table VI for Panel A/Panel B/Panel C of this figure.