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THREE ESSAYS ON CORPORATE FINANCE

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Nanyang Business School

A thesis submitted to Nanyang Technological University
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy

2019

Statement of Originality

I hereby certify that the work embodied in this thesis is the result of original research, is free of plagiarised materials, and has not been submitted for a higher degree to any other University or Institution.

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I have reviewed the content and presentation style of this thesis and declare it is free of plagiarism and of sufficient grammatical clarity to be examined. To the best of my knowledge, the research and writing are those of the candidate with amendments, changes and improvements as suggested by me as the Supervisor. I confirm that the investigations were conducted in accord with the ethics policies and integrity standards of Nanyang Technological University and that the research data are presented honestly and without prejudice.

15 Feb 2019
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Authorship Attribution Statement

This thesis **does not** contain any materials from papers published in peer-reviewed journals or from papers accepted at conferences in which I am listed as an author.

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Summary

My thesis mainly focuses on two issues in corporate finance. The first one is the mechanisms that institutional investors participate in corporate governance, I study it through mutual funds voting. The second one is the shareholder-bondholder conflicts on firm policies, particularly the compensation policies and corporate social responsibility policies.

In chapter 1, I study mutual funds' exit decisions after voting at shareholder meetings. The results show that funds winning contentious votes at the meeting are more likely to exit the firm. The results mainly come from the cases when mutual funds vote against management and when their holdings as proportion of the company's total equity are large. This is consistent with that mutual funds seek to improve firm value by opposing management at the meeting, and then realize their gains and exit after winning.

Chapter 2 studies the conflicts between equity holders and bond holders on managerial incentives. I find that firms with dual holders (institutional investors who simultaneously hold equity and bond of the firm) implement compensation policies with lower CEO vega than firms with pure equity holders. The effect is stronger when the aggregate equity/bond holdings by dual holders are larger. This suggests dual holders partially represent the benefits of bond holders and seek less risk-encouraging compensation policies than pure equity holders. Furthermore, we use mergers between financial institutions as identification strategy and a difference-in-difference setting to address the endogeneity concern. I finally show that voting is the channel through which pure equity holders and dual holders affect firm compensation policies.

Chapter 3 studies shareholder-bondholder conflicts on corporate social responsibility (CSR). I find that firms with dual holders have higher CSR ratings, and the effect is stronger when the dual holders' equity/bond holdings on the firm are larger. Separate investigation shows that the

existence of dual holders leads to an increase in the strengths of CSR and a decrease in the weakness of CSR. Overall, the results suggest that bond holders prefer CSR more than equity holders and affect firm policies in this direction.

Chapter 1: Do mutual funds exit when they win contentious votes at shareholder meetings?

Abstract

In this paper I study mutual funds' exit decisions after voting at shareholder meetings. The results show that funds winning contentious votes at the meeting are more likely to exit the firm. The results mainly come from the cases when mutual funds vote against management and when their holdings as proportion of the company's total equity are large. This is consistent with that mutual funds seek to improve firm value by opposing management at the meeting, and then realize their gains and exit after winning.

JEL Classification: G23, G34, G38

Keywords: Shareholder votes, shareholder activism, institutional investors, corporate governance

I. Introduction

Institutional investors collectively hold two-thirds of total equity in the U.S. stock market. Due to their large stakes in firms, they have been expected to help to solve the free rider problem and contribute to improving firm's corporate governance (Kahn and Winton (1998)). In practice, we do see examples where the institutional investors take such role, like CalPERS, Putnam Management, or J.P. Morgan, which try to remove CEOs with poor performance and improve firm value. Other institutional investors may take relatively soft activism to seek change in firms. This includes communicating with firm executives, launching a public campaign, or running a proxy fight.

An important tool through which institutional investors can influence firm policies is the voting right attached to their equity holdings. Compared to other kinds of activism like takeover or proxy fight, it is less costly for institutional investors to voice their opinions by voting at shareholder meetings. Yet the effect is still remarkable. Cuñat, Gine, and Guadalupe (2012) find that passing a contentious shareholder governance proposal leads to immediate positive stock price reaction, implying that a change is expected by the market. Cai, Garner, and Walking (2009) find that the results of director elections may affect subsequent CEO turnover and change of governance policy. These are evidence of investors changing firm policies by shareholder meetings. Institutional investors can play a major role in this as they hold large stakes of firms and they are relatively more informed than individual investors.

In this paper, I focus on an important type of institutional investors - mutual funds. Though they may be not as active as some other types of institutional investors like hedge funds, the large magnitude of their holdings makes them a key player in the market. If they ever make contribution to corporate governance, the influence of the mutual fund industry as whole would be substantial.

Specifically, I look at mutual funds' votes at shareholder meetings and investigate how the voting results affect their exit decisions thereafter. Whether the proposals pass or not does not always affect mutual funds' exit decisions in the same way, as funds may support some of them and oppose some others. I therefore look at whether mutual funds win the proposal. That is, whether their supported proposals pass or their opposed proposals fail. This reflects whether mutual funds' activism through the shareholder meeting are successful.

As the voting results of many proposals are expected before shareholder meeting, the voting outcomes do not carry additional information and hence may not change funds' decisions. I therefore look at contentious votes, which means shareholders have different opinions on the proposals. There are almost equally numbers of shareholders who support them and who oppose them. It is uncertain whether the proposals would pass or fail before the meeting. Thus the voting result is a shock to mutual funds. The exact selection criteria for contentious votes are described in Section IV.

By focusing on contentious votes, I find that funds winning all contentious votes at meeting are more likely to exit their position in that firm. Moreover, the effect only exists for the situations when funds vote against management and when funds hold relatively large stakes of the firms. The results are consistent with that mutual funds seek to improve firm governance by voting at shareholder meeting, and when they win they realize their gains and exit. This does not mean that voting at the shareholder meeting is the sole purpose of mutual funds holding the stock. They may take many other activities which they think will be value increasing to seek changes in the firm. Winning votes at the shareholder meeting is one sort of success for them. As they have uncovered the hidden value of the firm and achieved their goal by succeeding at shareholder meeting, they may be more likely to exit the firm.

There are two main implications of my results. First, it provides indirect evidence that mutual funds try to get profit by improving firm's corporate governance and firm value. We

have observed general evidence on mutual funds voting against management in the data. This is a kind of soft activism. However, this is not the full story, what happens when mutual funds win or fail the activism, do they continue to hold the stock when they win, and do they seek short term or long term benefit? Our results show that mutual funds do not continue to hold the stock after they have achieved their goal.

The other implication is that it shows the substitute effect of voice and exit mechanisms that are widely discussed in literatures. The voice (or intervention) mechanism refers to the case that mutual funds seek changes in firms by voice their opinions to the management. The exit mechanism refers to that mutual funds exiting (or the threat to exit) the firms put pressure on managers to make them behave in the best interest of shareholders, as it would push down stock price which the managers have interest in. This paper shows that when mutual funds take the voice mechanism through voting, they would exit when they win. This is conflicting with the exit mechanism, where managers try to agree with mutual funds' opinions to avoid them exiting. If agreeing with them makes funds more likely to exit, the incentive to do so is weakened. Thus my results reveal that taking voice channel can weaken the exit mechanism in some case.

The rest of the paper is organized as following. Section II discusses the related literatures and develops my hypotheses. Section III introduces the data and sample. Section IV discusses the research design for this paper. The main results are shown in Section V. Section VI does further tests. Section VII discusses the mechanisms. Finally Section VIII concludes the paper.

II. Literature review and hypothesis

A. Literature on voting

There have been growing literatures on shareholder meeting. Some papers study the economic determinants of voting results and the impact of them. Cai, Garner, and Walking (2009) analyze directors election using the voting data from 2003 to 2005. They find that director performance and firm performance have little effect on the votes directors receive,

while directors' board meeting attendance rate and ISS recommendation have significant effect. On the other hand, the votes directors receive in election have significant impact on subsequent abnormal CEO compensation, CEO turnover, and removal of poison pills and classified boards. Interestingly, it has little impact on firm performance or directors' reputation. Malenko and Shen (2016) focus on 2010-2011 say-on-pay proposals of firm level voting data to study the impact of ISS recommendation on firm voting outcomes. They find that a negative ISS recommendation on a say-on-pay proposal leads to a 25 percentage point reduction in voting support, revealing the significant impact of ISS recommendation.

Cuñat, Gine, and Guadalupe (2012) use 1997-2007 voting data to do an interesting analysis about governance-related shareholder proposals. They compare the (-1, +1) period CARs between such proposals that pass and that fail with 'for' rate near to 50%, they find that firms with such proposals pass have higher CARs than firms with such proposals fail. The trick is that such proposals are extremely contentious ex-ante, and hence the effects are not incorporated into stock prices yet before the meeting. Therefore, relatively high CAR of passing such proposals implies these governance related shareholder proposals are value increasing for shareholders.

Dimitrov and Jain (2011) use 1996-2005 voting data and find positive cumulative abnormal return during the 40 days before the annual meeting date. They explain it as firms bring forward good news and delay bad news until after the meeting. It's taken as evidence for it that poor performance firms exhibit higher CARs. They also analyze the abnormal returns of earning announcements and management forecast announcement, they show that the abnormal returns are higher when they happen within 40 days before annual meeting.

Other papers study the voting behaviors of institutional investors, particularly about mutual funds due to data availability. Aggarwal, Saffi, and Sturgess (2015) explore the securities lending market using the 2007-2009 firm level voting data. They document that lendable

supply decreases, borrow demand and borrow fees increase around the record day of shareholder meeting. They also find that share recall is associated with less support for management and more support for shareholder proposals in the subsequent vote. Their results show that institutional investors value voting right and use proxy process to affect corporate governance.

Matvos and Ostrovsky (2010) use the 2003-2005 mutual fund level voting data about director election and find systematic heterogeneity and peer effects in mutual funds voting. Specifically, they find that mutual funds which are management friendly in the past are more likely to support management in the current vote; mutual funds are more likely to oppose management in the vote where management is opposed by other mutual funds.

Dimmock et al. (2018) use the same dataset as this project and find relation between mutual fund voting and accumulated capital gains. Particularly, they find that when mutual fund has higher capital gains lock-in on the stock, it's more likely to vote against management and less likely to exit for contentious votes. Thus management of stock hold by funds with high aggregate capital gains on it is more likely to lose a vote.

Duan and Jiao (2016) also use the 2003-2012 mutual fund voting data and firm level vote results, but they focus on governance-related proposals. They investigate mutual fund's choice among voting for management, against management, and exiting. Their essential argument is that mutual funds are more likely to vote against management or exit rather than vote for management when the votes are contentious. They also find that mutual funds are more likely to vote against management rather than exit in this case.

B. Literature on corporate governance activities of mutual funds

The corporate governance role of institutional investors has long been discussed in literatures. Shleifer and Vishny (1986) model the free-rider problem in corporate governance by investors. They point out three possible ways of solving the problem by institutional

investors, e.g., they may launch a takeover bid, or change board of directors through proxy fight, or informally negotiate with firm management. Maug (1998) talks about the incentive for large investors to monitor firms. Other papers like Kahn and Winton (1998), Bolton and von Thadden (1998), Noe (2002), Aghion, Bolton, and Tirole (2004), and Faure-Grimaud and Gromb (2004)) also discuss about shareholders intervention to improve firm value.

This direct intervention is referred as “voice” mechanism in literatures. Another widely recognized channel that shareholders can participate in governance is the “exit” mechanism. The essential idea for “exit” mechanism is that investors who are unsatisfied with firm management may just follow the “Wall Street rule” and sell out their shares at the firm. This puts pressure on the stock price of the firm. Managers having equity incentives in the stock would be disciplined if they don’t behave accountably. Thus the exit behavior or the threat to exit would align stock price to firm fundamental value and encourages managers to improve firm performance. This is intensively discussed in the theoretical papers including Admati and Pfleiderer (2009), Edmans (2009), and Edmans and Manso (2011). As the effect of exit or threat to exit is generally hard to observe empirically, Bharath, Jayaraman, and Nagar (2013) use liquidity shock to study the impact of threat to exit. They find that lower liquidity decreases the power of exit threats and hence firm value.

Some papers talk about the relations between the two mechanisms. Kahn and Winton (1998) point out that the incentives of institutional investors to speculate (exit mechanism) or intervene may be conflicting, and thus argue that the ability to speculate may increase or decrease institutional intervention. Back, Li, and Ljungqvist (2013) take this view and argue that liquidity increases exit and decrease intervention, thus it is harmful for governance. Duan and Jiao (2016) also posit on this and discuss the alternative choices between intervention and exit. This stream of literatures generally views the two mechanisms as alternatives and discusses the conditions that lead to the choice of one to the other.

Other papers regard them as complementary. Dasgupta and Piacentino (2015) argue that there exists a class of firms for which exit and voice are complementary using their model. Levit (2017) refers the combination of the two mechanisms as soft shareholder activism and talk about the complementarity of them. Though we have not seen many empirical studies to this support this view, McCahery, Sautner, and Starks (2016) do give survey results which reveals exit may be used to enhance the intervention.

We can see that the theory papers have discussed both substitute and complementarity effects of the two mechanisms. However, the empirical results on the relations are rather scarce. My paper differs from the existing literatures by providing empirical evidence and directly investigating the effect of taking one mechanism (voice) on the other (exit).

C. Hypotheses for this paper

Papers about exit theory generally assume that firm executives worry about funds exit which may push down stock price, therefore they may be more willing to agree with funds' requirement on firm policies (Admati and Pfleiderer (2009), Edmans (2009), and Edmans and Manso (2011)). An implicit argument is that when funds are unsatisfied with firm policies, they will exit. The rationale for this argument is that funds that are unsatisfied with firm policies may think the firm is currently overvalued and would like to exit before stock price decreases. From the survey of McCahery, Sautner, and Starks (2016) on large institutional investors, exit is considered a viable strategy to discipline management by investors. Moreover, it shows that investors may exit a firm because of dissatisfaction with performance (governance) and intervention usually occurs prior to a potential exit.

The situation when mutual funds fail votes at shareholder meeting can be referred as that they are unsatisfied with firm policies. In such cases they are more likely to exit. If we rephrase our words by considering the counter-situation, e.g., the situation when mutual funds win votes at shareholder meetings, it leads to the following hypothesis.

H1A: Mutual funds are less likely to exit a firm when they win contentious votes at the firm's shareholder meeting.

As argued before, the results of non-contentious votes contain little additional information, they are unlikely to change funds' exit decision. Therefore I only study the effect of contentious votes in this paper.

However, this is not the only story. From the view of shareholders intervention, mutual funds may take activities on the firm to improve firm governance and uncover hidden value of the firm. When they achieve their goal of improving the firm value, they may cash out and realize their gains. Voting at shareholder meeting is a channel of such activism. Thus when funds win the votes, they may choose to exit. This gives my alternative hypothesis.

H1B: Mutual funds are more likely to exit a firm when they win contentious votes at the firm's shareholder meeting.

The above hypotheses assume there is significant difference in the likelihood of exit between situations when funds win contentious votes at shareholder meetings and when they do not. This needs not be the real situation. It may appear that whether winning contentious votes at shareholder meetings or not has no effect on the likelihood of exit at all. Thus we have the following null hypothesis.

H1: Winning contentious votes at a firm's shareholder meeting has no effect on the likelihood that mutual funds exit the firm.

Therefore, I develop three alternative hypotheses for our tests. At the moment, I don't take particular position. I leave them to the empirical results.

III. Data and sample

The primary data used in this paper is the ISS Voting Analytics dataset. There are two parts of it. The first part includes the firm level voting results for every proposal of the Russell 3000 Index companies from 2003 to 2012. It records the firm name, ticker and CUISIP of the firm, meeting date, proposal sponsor, proposal content, ISS recommendation and management recommendation for the vote, and voting results (pass, fail, withdrawn, pending) of each proposal at each meeting. The second part includes the mutual fund level voting data for each vote of each firm it holds positions. This includes the mutual fund name, mutual fund family name, the meeting company name, proposal content, and particularly the mutual fund's vote toward the proposal. Mutual fund's votes at shareholder meetings are required to be disclosed to the SEC since 2003. The ISS gives unique meetingid and voteid to each meeting and each vote in both the firm level data and mutual fund level data, through which I can match the two datasets. Now I get each mutual fund's vote toward every vote of the firm it holds positions and the voting result of it.

I get mutual fund holdings data from Thomson Reuters CDA/Spectrum. The mutual fund voting data and Thomson Reuters holdings data are merged by mutual fund and firm. As the mutual fund identifiers for the two datasets are different, I match them through CRSP Mutual Fund database. This is done by two steps. First, I match the mutual fund in the voting data and CRSP Mutual Fund database manually. To do that I first match mutual fund family, and then match mutual fund within each fund family. I only match domestic equity funds in CRSP Mutual Fund database, as these are the funds I need for the analysis. The screening criteria for domestic equity funds are from Kacperczyk, Sialm and Zheng (2008). I get to match 329 fund families and 4,366 funds out of the 429 fund families and 11,757 funds in the voting data. Second, I match the CRSP Mutual Fund database and Thomson Reuters holdings data through MFLINK, which is provided by Wharton Research Data Services. Note that CRSP Mutual

Fund database information is at share class level. I aggregate the share class level variables from CRSP Mutual Fund to fund level variables, using the Total Net Asset of each share class as weight.

Finally, I am able to merge the voting data, Thomson Reuters holding data, CRSP Mutual Fund characteristics data together. That is, I have one observation for each mutual fund's vote towards each proposal, with other information like voting result for the proposal, the firm characteristics, fund characteristics, and fund's holding shares of the firm. I also exclude index funds and ETFs from my sample. This gives me 9,647,514 fund-proposal pairs.

For each proposal, the voting dataset specifies the vote base and vote requirement. Vote base is the base used to compute the percentage of "for" vote in voting results, which could be the total number of "for" vote and "against" vote, or the total number of "for" vote and "against" vote and "withhold" vote, or the total number of outstanding shares. Vote requirement is the required percentage of "for" vote for the proposal to pass. In my final sample I only use votes that are contentious. This is defined by three criteria: (1) vote requirement is 50%; (2) percentage of "for" rate is between 40% and 60%; (3) ISS recommendation is different from management recommendation. This reduces the fund-proposal pairs to 159,528. I aggregate these fund-proposal pairs to fund-meeting level observations, I then exclude cases where the fund has no holding record of the firm on Thomson Reuters Spectrum before the meeting. After excluding cases where the fund always sells out the voting firm's equity or never selling out the voting firm's equity in this data, it finally gives us 61,901 fund-meeting level observations. This consists of my ultimate sample for the main tests.

In this study, I also need firm accounting data and stock return data. These are from COMPUSTAT and CRSP as usual. The Fama-French library is the source where I get monthly factors and risk free rate.

The dependent variable is the “Fund exit” dummy, which indicates that mutual fund exits its position in the firm within three months after the meeting. I first screen the sample as cases that the fund has holding record of the firm in Thomson Reuters Spectrum within three months before the meeting. Then “Fund exit” is identified as the case that the fund does not have holding record of the firm in its first report after the meeting while it has holding record for some other firm. I require the fund to have record for some other firm to address the problem that the fund does not report at all within the investigating period after the meeting.

IV. Research design

In this study I focus on an important corporate event - shareholder meeting. I am particularly interested in mutual funds’ reaction to the voting results. As mutual funds may support some proposals while oppose some others, the voting results need to be combined with mutual funds’ opinion to each proposal to give meaningful information. That is, whether mutual fund wins the vote.

Mutual fund may react by increasing or decreasing their holdings on the firm. However, this would be affected by cash flow to the fund and capital market conditions. I thus use a very conservative yet clean measure to capture fund’s reaction. I look at the abnormal fund exit after the meeting. The cases that mutual funds completely exit a position would be less affected by cash flow, it is more due to the fund’s portfolio holding strategy.

I use conditional logit regression for the analysis, as shown in the following equation.

$$Fund\ exit_{i,j} = a + b_1 * Fund\ win_{i,j} + X' * Controls + \delta * Fund_i + \epsilon_{i,j}$$

The observations are at fund-meeting level. $Fund\ win_{i,j}$ indicates whether fund “ i ” wins all contentious votes at meeting “ j ”, this will be explained in more details later. $Fund\ exit_{i,j}$ indicates whether fund “ i ” exits its position in the firm within three months after meeting “ j ”. Other control variables include fund level characteristics like fund size, turnover ratio, expense ratio, fund abnormal alpha, number of fund’s holding stocks; firm level characteristics like firm

size, book to market ratio, leverage, ROA, firm past performance, and fund-firm relation variables like fund's holding of the firm stock as percentage of the firm's total equity, fund's holding of the firm's stock as percentage of the fund's total net asset.

The endogeneity issue is always a main concern to empirical studies. In my paper the endogeneity mainly comes from two sources. First, it can come from the predictability of voting results. If voting results are already expected by shareholders, then mutual funds' exiting decisions before the meeting have already incorporated the voting outcomes. Specifically, for funds disagreeing with the voting outcomes, e.g., either some policies pass or fail; they may have already left the firm before the meeting if they eventually want to leave. Those who haven't left the firm at the time of meeting may have decided to stay with firm though they disagree with the voting outcomes. It means they will fail the vote and stay with the firm. This induces a negative relation between failing votes and exit, or a positive relation between winning votes and exit.

This would be the most serious problem to the study. As voting outcomes as well as funds winning/failing results are already known to everyone before the meeting, the results at the meeting either do not carry useful information or just deliver spurious information. This is because mutual funds can manipulate their votes if they know the results. Then the final exhibited relations we observe would also be just spurious.

One way to address it is to break the predictability of voting outcomes. If the voting results are not predictable, they certainly carry useful information, and they would be shocks to shareholders. The funds' exit decisions before the meeting would not have incorporated this information, while the exit decisions after the meeting would. This is exactly what I want. Moreover, funds unknowing the voting results can not intentionally choose to win or fail the vote, because they do not know what the results would be.

I achieve this goal by selecting a special group of votes, the criteria are (1) passing requirement is 50%; (2) “for” rate in voting results is close to 50%; (3) ISS recommendation is different from management recommendation. I call these votes as contentious votes and the voted proposals as contentious proposals. This is the sample I use to do tests in the paper. Thereafter when I say proposals they refer to the proposals in this sample, they are all contentious.

The trick is that proposals with final “for” rate close to 50% are extremely contentious. Ex-ante people cannot tell whether the proposals would be pass or fail. The results would only be resolved after the voting. Thus it can be regarded as a shock to shareholders. Many papers (Dimmock, Gerken, Ivković, and Weisbenner (2016), Iliev and Lowry (2015), Alexander, Chen, Seppi, and Spatt (2010)) use the criteria that ISS recommendation is different from management recommendation to identify contentious proposals. I admit that when ISS recommendation is the same as management recommendation, it could be a signal of how welcome the proposal is and may bias the likelihood of it passing. Therefore I also exclude proposals with same ISS recommendation and management recommendation in my sample.

These selection criteria significantly reduce the sample, as it excludes proposals where voting results are expected. However, I think this is necessary. Because proposals with voting outcomes expected carry no additional information and hypothetically would not change funds’ exit decisions. Moreover, they pollute the sample and induce endogeneity problem. Taking these into consideration, I choose to impose such selection criteria and get a small but clean sample.

The second source is the unobservable fund characteristics. For example, some funds may concern more about firm governance, therefore they vote more responsibly and be more likely to exit their positions in firms. They may put more effort to dig out information for the vote and then be more likely to win. As such, it will induce a positive relation between fund wining

the vote and fund exit. I address this concern by using fund fixed effect regression in my analysis. So I am comparing the same fund's votes at different meetings, to investigate how it reacts differently given different voting outcomes.

V. Main results

In my main tests, I use votes with the criteria described in the Section IV, particularly the final “for” rates for the votes are between 40% and 60%. This is to guarantee there are sufficient observations. However, I have also done the analysis with tighter “for” rate deviation in the Section VI.

A. Sample statistics

The final sample contains 1,602 contentious proposals. The detailed description of the proposals are presented in Appendix. As we can see, 688 of them are management sponsored proposals while 914 are sponsored by shareholders. Among the management proposals, the majority of them (496) are about compensation issues. And among the shareholder proposals, the majorities are about governance issues (463) and compensation issues (274).

Mutual fund is said to fail a vote if the fund votes “for” but voting result is “fail”, or the fund votes “against” but voting results is “pass”. This is specifically to indicate the case when the voting result is against mutual fund's opinion. Similarly, mutual fund is said to win a proposal if the fund votes “for” and voting result is “pass”, or the fund votes “against” and voting results is “fail”. There are other cases too, like the fund votes “abstain”, or the voting result is unclear. I exclude such cases from my sample as I want clear attitude about the proposal from mutual fund and clear result that whether the fund wins or fails the vote.

The initial data is at fund-proposal level, each observation gives a fund's vote towards a proposal. However, there may be multiple proposals voted at the same meeting in my final same. Here I need to aggregate them to fund-meeting level data, as the dependent variable

“Fund exit” is at fund-meeting level. Therefore, I define a dummy variable “Fund win”, which equals 1 when mutual fund wins all proposals at the meeting and equals 0 otherwise. As mentioned before, here proposals refer to the proposals in my sample, which are all contentious. Failing one such contentious vote at the meeting may have larger impact on mutual fund’s exit decision than winning one such contentious vote. Thus I compare the case that mutual fund fails at least one contentious vote at the meeting (Fund win = 0) to the case that it wins all contentious votes at the meeting (Fund win = 1).

For each mutual fund voting at a meeting, “Fund win” variable is defined in the way described above. Finally, I get 61,901 values for it. Table 1 tabulates the percentage of “Fund win” (Fund win = 1) and “Fund fail” (Fund win = 0) by year. From the table we can see that the numbers of observations on different years are quite similar except for the first three years. Furthermore, the percentage of “Fund win” is around 40%. This is consistent with my sample selection criteria that the “for” rate for each proposal is close to 50%. As the meeting level “Fund win” is defined to be that fund wins all proposals at the meeting, thus its value would be slightly lower than 50%.

Except for “Fund win”, whether mutual fund votes against management is also important here. Mutual fund is said to vote against management when management recommends “for” while the mutual fund votes “against” or management recommends “against” while the mutual fund votes “for”. I then define a dummy variable “Against management” at fund-meeting level, which equals 1 when mutual fund votes against management for at least one proposal at the meeting and equals 0 otherwise. There are cases that mutual fund votes “withhold” and can have equivalent effect as “Against”, especially for “electing directors.” However, I want clear attitude from the mutual fund, therefore I don’t consider this case in my definition of “Fund fail” and “Against management.” Nevertheless, my results are not affected by the inclusion of such cases.

Among my sample, there are totally 1,374 meetings, 1,191 (87%) of them have only one contentious proposal, 183 (13%) of them have multiple contentious proposals. This means most meetings have only one proposal. Also, the number of contentious proposals at the meeting is small if it does not equal 1, as will be shown in Table 4. Given this statistics, defining “Fund win” and “Against management” at meeting level in my manner would not wash out the effect of each single proposal.

As explained, all the regression variables are at fund-meeting level finally. It is therefore meaningful to consider fund characteristics which may affect its exiting behavior, like fund size, fund turnover rate, fund expense ratio, number of fund holdings, and fund alpha. Following Iliev and Lowry (2015), fund alpha is computed as the alpha of regressing each fund’s monthly returns on the Carhart four factors over the 36 months before the meeting. The firm level characteristics like firm size, book to market ratio, leverage, ROA, and firm past performance are also included. Moreover, I also consider the fund-firm relation variables, “Investment as % of firm equity” and “Investment as % of fund TNA.” The former captures the percentage of the fund’s holding shares of the firm as of the total number of shares of the firm, the later captures the percentage of the fund’s holding equity of the firm as of the total net asset of the fund. Both variables are multiplied by 100 for better displaying.

Table 2 shows the summary statistics for these variables. From the table we can see that mutual funds win all contentious votes at 42.59% of all meetings and they vote against management for at least one contentious proposal at 63.71% of all meetings. A typical fund in our sample has turnover ratio 84.74%, expense ratio 1.05%, and abnormal alpha 0.02%. In average, it holds about 280 stocks at the time of meeting, its holding shares of the voting firm account 0.11% of the firm’s total equity, and its holding value of the voting firm accounts 1.12% of the fund’s total net asset. As we can see these holding percentages are quite small, either compared to the total equity of the voting firm or compared to the total asset of the fund.

As our observations are fund-meeting pairs. It may be interesting to summarize the details of this relation. I have done this in Table 3. Specifically, I show that there are totally 1,357 funds in my sample. Each fund votes at 45 meeting in average, the median of this number is 28. On the other hand, there are totally 1,374 meetings, in average 45 mutual funds vote at it. The median is 27. It also shows percentiles of number of proposals at a meeting. Most meetings have only one proposal in my final sample.

B. Baseline results

In the main regression, I use conditional logit regression because the dependent variable is a dummy indicating whether the fund exits its position in the firm after the meeting. I also use fund fixed effect to control for unobservable fund characteristics that may endogenously affect its voting decision. So I am comparing the same fund's reactions between situations when it wins all contentious proposals at a meeting and when it fails at least one such proposal. On the other hand, the voting proposals are also specifically chosen to be extremely contentious in my sample. These two settings help to reduce endogeneity and establish a causal relation.

Table 4 shows the main regression results. As we can see, the key explanatory variable "Fund win" is significantly positive in all specifications. This implies a fund that wins all the contentious votes at the meeting of a firm is more likely to exit its position in that firm. As funds seek to increase firm value by improving governance and other firm policies, they would cash out when they succeed.

This does not necessarily mean funds are myopia in firm governance and only seek short term financial benefit. Actually my results show that they leave when they have succeeded in making change of the firm. In other words, they make their contribution to firm governance by changing firm policies in the way that they think is the best for firm value. It may be arguable whether each single mutual fund's opinion on each practice is right or not. But collectively, if

we trust the market, we may expect institutional investors can help firms to take good practice and do the right thing.

Column (1) in Table 4 shows the univariate regressions results. Column (2) controls for the “Against management” variable. Although by my special choice of proposals, funds cannot manipulate their votes based the expected outcomes, they may still manipulate them based on management recommendations. This can be particularly true for funds which want to stay with the firm. They may choose not to vote against management to avoid having trouble with management. The regression results are consistent with this argument. Those funds voting against management are indeed more likely to exit.

Voting against management can influence the likelihood of fund winning a proposal. Thus the observed relation between “Fund win” and exit can be just a representation of the effect of voting against management if the influence is positive. If the influence is negative, the relation between “Fund win” and exit may be canceled. It is therefore important to isolate the effect of voting against management in analyzing the effect of “Fund win.” I address it by two ways. First, I control the “Against management” variable in the regressions. Second, I do the whole analysis using only the sample when mutual funds vote against management, as presented in Section VI. Indeed, the empirical results show the effect of “Fund win” is partially canceled by voting against management, as the effects are much more significant when I do either of the addressment.

Column (3) controls for the fund-firm relation variables additionally. The mutual fund’s holding shares of the firm should certainly affect its exit decision. Funds may be less likely to sell out stocks which they hold a lot. Of course we have to take into account the different total outstanding shares by each firm and the different total asset by different funds. Thus I scale the fund’s holding by each of them and create two measures, the fund’s holding as percentage of the firm’s total equity and the fund’s holding as percentage of the fund’s total net asset. The

regression shows funds are less likely to exit firms where they hold large stake, either as percentage of the firm's equity or as percentage of fund asset. This is expected because funds may replace stocks which they hold less more often. I also use another simple measure, which is the total number of different stocks the fund holds. It appears to have negative effect but the statistics is not significant.

Fund characteristics variables are controlled additionally in equation (4). It's mechanical that fund with high turnover ratio is more likely to exit a position. Small funds are sometimes found to be more likely to exit too. However, the expense ratio has no effect from the results. I also control for the funds' past performance. This is computed by regressing the fund's monthly returns on the Carhart four factors over 36 months before the meeting, following Iliev and Lowry (2015). It appears that funds with worse past performance are more likely to exit.

Equation (5) controls for fund-firm relation variables and firm characteristics. It shows that funds are more likely to exit firms with small size, high book to market ratio, high leverage. These firms are riskier in general, it's rational for funds to replace them more frequently. The firm's past performance is the 12 month compounded return before the meeting in excess of market return. It also appears that funds are more likely to exit firms with worse performance.

Equation (6) is the full model. We can see that the regression results are quite consistent with different model specifications.

The economic magnitude is considerable. For example, the coefficient of "Fund win" in regression (6) is 0.077. This implies that, compared to fund fail case, the odds of fund exit increases by 8% when the fund win the vote. Here odds of fund exit is defined as the probability that the fund exit divided by the probability of fund not exit.

C. Votes with 5% "for" rate deviation

The key trick to break the predictability of voting outcomes is to select proposals with final "for" rate close to 50%, such that people cannot tell whether the proposals will pass or fail.

This is essential to reduce endogeneity concern that voting outcomes are expected and funds' exit decisions have incorporated that. I thus use proposals with final "for" rate in voting results between 40% and 60% for analysis in my main results. I choose 10% "for" rate deviation to maintain a reasonable sample size yet at the same time ensure that the proposals are contentious enough. Indeed, a proposal with final "for" rate 40% or 60% is still quite hard to be estimated for voting outcomes ex-ante. This is particularly true if we take into account the fact that many investors do not cast their votes for the proposals. As I use fund fixed effect models, it is necessary to make sure that in our final sample there are sufficient number of different meetings that each fund votes at. Therefore I cannot make the sample size too small.

However, to reduce the concern that the proposals are still not contentious enough in the above setting, I have also done the analysis using proposals with final "for" rate between 45% and 55%. This reduces my sample to 28,971 observations. "Fund win" and "Against management" are defined at fund-meeting level as before, as well as all other variables.

Table 5 shows the regression results. "Fund win" still have significant positive effect on fund exit. The coefficients are similar to the main results. The significance is slightly weaker than the main tests but they are all still significant at 5% level. This is due to large decrease in the sample size. The effect of "Against management" is also weaker due to the same reason. The effects of the other control variables are generally similar to the main tests.

VI. Further analysis

A. The effect of voting against management

As discussed before, the effect of voting against management on the likelihood of mutual fund winning the vote may affect my investigation of the effect of "Fund win." I address it by controlling for the variable in the regressions before. However, it may be more convincing to do a subsample analysis. Especially, the "Against management" dummy at meeting level is

defined to indicate that mutual fund votes against management for at least one proposal in the meeting. This may introduce noise to the regression given that the fund failing a meeting (Fund win = 1) is already defined in this way. The following analysis eliminates this problem and further enhances the results.

First I select only the fund-proposal pairs that the fund votes against management. Next, I define “Fund win” at fund-meeting level as before. Finally, I get all variables at fund-meeting level and run the conditional logit regressions. Now I am comparing mutual fund’s reactions to cases when it wins all contentious votes at a meeting and when it fails at least one such vote at a meeting, given that it votes against management for all the proposals within this sample.

I then do exactly the same analysis using only the fund-proposal pairs that fund votes with management. Table 6 shows the empirical results. As we can see, when funds vote against management, winning contentious votes at the meeting makes them much more likely to exit the firm.

The significant results on the subsample of voting against management proves that, even completely ruling out the effect of voting against management, the effect of “Fund win” is still there. Actually it’s more significant in magnitude and statistics than the full sample, although we have a smaller sample size and may expect less significant results. This confirms the previous established relation with the voting against management concern completely addressed.

Moreover, Table 6 also shows that the subsample of voting with management has no results. This means the previous found relation that fund winning contentious votes is more likely to exit the firm completely comes from the case when fund votes against management. When they vote with management, they have no such bias when winning votes. This is reasonable as mutual funds create value for the firm mainly by opposing management. When they oppose management and win, in their opinion they have successfully improved the firm value.

Therefore they would realize their gains and exit. When they vote with management, even if they win the vote, the proposed practice by the voting results is already what the management is currently doing or is planning to do. It does not create additional value for the firm. So the subsample analysis results reveal that mutual funds oppose management to improve firm value, and they would exit after winning.

D. The effect of mutual fund's holding on the firm

In my argument, mutual fund's holding on the firm would certainly affect its incentive to create value for the firm by opposing management at the meeting. Therefore holding would also affect the fund's willingness to exit after winning the vote. To the extreme case, if fund's holding on the firm is low, it may not bother to do the governance at all, therefore it would not exhibit the previously discovered behavior.

I analyze that by subsamples based on the fund's holding as percentage of the voting firm's total equity. That is, I divide the observations into two groups, depending on whether the value of this variable is above or below the sample median. Then as before, I use conditional logit regression with fund fixed effect to do the tests.

The results are shown in Table 7. The high holding subsample has very significant results. The coefficients and significance are all larger than the full sample case despite smaller sample size. While the low holding subsample has no results. This is exact what we expect. Funds oppose management and create value for firms, and they exit after winning. This happens when funds' holding on the firm is high. When the holding is low, they do not bother to do so as the benefit is low.

In tables that are unreported here, I have also done the tests using the other measures of holding, e.g., holding as percentage of the fund's total net asset, total number of stocks held by the fund. I don't find similar results. This means that only fund's holding as percentage of

firm's equity makes difference, fund is more concerned about the stock when its holding weights high on the firm, rather than on its own asset.

VII. Evidence on Mechanisms

We have found clear evidence that mutual funds are more likely to exit when they contentious votes than when they fail. The reason behind is that when mutual funds win the contentious votes, they are more likely to have improved the firm value. Then they will realize their gain on the firm and cash out.

Directly investigating the stock price reaction between the cases that mutual funds win and fail is not helpful. This is because there will always be some mutual funds that win and some mutual funds that fail for the same vote. However, Cuñat, Gine, and Guadalupe (2012) find that passing governance-related shareholder proposals leads to positive stock price reactions while failing such proposals leads to negative stock price reaction. Note that if we only focus on cases that mutual funds vote against management, then passing the proposals means mutual funds winning the vote, because management always opposes such proposals. This is consistent with our argument.

Another way to validate the argument is to compare the effect between the cases that the voting results really increase firm value and that the voting results decrease firm value. If mutual funds exit because of realizing gains, then it only works when the voting results increase firm value. That means we should only observe difference in probability of exit between mutual funds winning and failing when the voting results increase firm value. Therefore, I also do the subsample study based on the CAR from day -1 to day +1 of the meeting day. Observations are subsampled depending on whether the CAR is positive or negative.

The results are presented in Table 8. As we can see, the effect that mutual funds are more likely to exit the firm when they win than when they fail only exists on the subsample that the voting results really increase firm value. When the voting results decrease firm value, there is

no difference. This implies it matters that whether the voting results increase firm value. This can be taken as indirect evidence that mutual funds exit because of realizing gains and cashing out.

VIII. Conclusion

This paper investigates the effect of winning contentious votes at shareholder meeting on mutual funds' likelihood of exiting the firm. The results show that funds are more likely to exit the firm when they win the contentious votes at the meeting. In the subsample analysis, I find that the results only exist for the cases when mutual funds vote against management and when mutual funds' holdings on the firm are high. This is consistent with that mutual funds seek to improve firm value by voting at shareholder meeting, and they choose to realize their gain and exit the firm after winning. These results shed light on mutual funds' activism through shareholder meeting. Moreover, it contributes to the growing literatures on the "voice" and "exit" mechanisms that shareholders use to involve in firm governance. It reveals that taking "voice" channel can weaken "exit" mechanism in reality.

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Table 1: Tabulation of “Fund win” by year

This table shows the number and percentage of “Fund win” (Fund win = 1) and “Fund fail” (Fund win = 0) for fund-meeting level observations each year from 2003 to 2012. “Fund win” indicates the case that mutual fund wins all contentious votes at the meeting. While “Fund fail” indicates the case that mutual fund fails at least one contentious vote at the meeting. The sample uses proposals that (1) passing requirement is 50%; (2) “for” rate in voting results is between 40% and 60%; (3) ISS recommendation is different from management recommendation. Each observation is fund-meeting level value. Observations with no variation in “Fund exit” variable for the same mutual fund are excluded.

	Fund win	Fund fail	Total
2003	25 (42.4)	34 (57.6)	59 (100.0)
2004	516 (50.2)	511 (49.8)	1027 (100.0)
2005	1431 (48.5)	1522 (51.5)	2953 (100.0)
2006	3391 (43.2)	4457 (56.8)	7848 (100.0)
2007	2417 (37.9)	3953 (62.1)	6370 (100.0)
2008	2918 (44.0)	3715 (56.0)	6633 (100.0)
2009	4632 (39.1)	7217 (60.9)	11849 (100.0)
2010	3384 (38.6)	5390 (61.4)	8774 (100.0)
2011	3855 (45.8)	4553 (54.2)	8408 (100.0)
2012	3794 (47.5)	4186 (52.5)	7980 (100.0)
Total	26363 (42.6)	35538 (57.4)	61901 (100.0)

Table 2: Summary of variables

This table summarizes the data used in our main results. The sample uses proposals that (1) passing requirement is 50%; (2) “for” rate in voting results is between 40% and 60%; (3) ISS recommendation is different from management recommendation. Each observation is fund-meeting level value. Observations with no variation in “Fund exit” variable for the same mutual fund are excluded. “Fund win” is a dummy to indicate that mutual fund wins all proposals at the meeting. “Against management” is a dummy to indicate that mutual fund votes against management for at least one proposal at the meeting. “Investment as % of firm equity” is the percentage of the mutual fund’s holding on the firm as of the firm’s total equity, multiplied by 100; while “Investment as % of fund TNA” is the percentage of the mutual fund’s holding on the firm as of the fund’s total net asset, multiplied by 100. Number of fund holdings is the number of different stocks held by the mutual fund at the time of meeting. Fund alpha is the alpha from regressing the fund’s monthly returns on Carhart four factors over the 36 months before the meeting. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. Variables are winsorized at 1%.

	Mean	Min	Max	25% percentile	50% percentile	75% percentile
Fund win	0.4259	0.0000	1.0000	0.0000	0.0000	1.0000
Against management	0.6371	0.0000	1.0000	0.0000	1.0000	1.0000
Log(fund TNA)	20.0346	15.7176	24.1874	18.7536	20.0780	21.2525
Fund turnover rate	0.8474	0.0500	3.5200	0.4000	0.7000	1.1400
Fund expense ratio	0.0105	0.0020	0.0202	0.0082	0.0105	0.0130
Fund alpha	0.0002	-0.0067	0.0078	-0.0012	0.0001	0.0015
Investment as % of firm equity	0.1148	0.0001	2.1664	0.0031	0.0147	0.0694
Investment as % of fund TNA	1.1232	0.0054	5.4257	0.3006	0.8065	1.5707
Number of fund holdings	280.4775	30.0000	3269.0000	74.0000	115.0000	241.0000
Log(firm total asset)	10.1319	5.1459	14.5926	8.9763	10.2563	11.1861
Firm book to market ratio	0.5426	0.0688	1.9725	0.2652	0.4521	0.7219
Firm leverage	0.2569	0.0000	0.9240	0.0796	0.1836	0.3742
Firm return on asset	0.0595	-0.2305	0.2229	0.0174	0.0542	0.1049
Firm past performance	0.0595	-0.5365	1.4272	-0.1182	0.0294	0.1904
<i>N</i>	61901					

Table 3: Statistics of the fund-meeting relations

This table summarizes the fund-meeting relations for the sample used in our main results. The sample uses proposals that (1) passing requirement is 50%; (2) “for” rate in voting results is between 40% and 60%; (3) ISS recommendation is different from management recommendation. Each observation is fund-meeting level value. Observations with no variation in “Fund exit” variable for the same mutual fund are excluded. I compute the total number of funds, total number of meetings, the number of meetings each fund votes at, the number of funds voting at the same meeting, and the number of proposals in the same meeting. The statistics of last three variables are shown in the table.

	N	Mean	Min	25% percentile	50% percentile	75% percentile	90% percentile	Max
# of meetings the same fund votes at	1357	45.62	2	14	28	59	106	530
# of funds voting at the same meeting	1374	45.05	1	11	27	60	115	261
# of proposals at the same meeting	1374	1.17	1	1	1	1	2	6
# of total funds	1357							
# of total meetings	1374							

Table 4: Conditional logit regression of Fund exit

The sample uses proposals that (1) passing requirement is 50%; (2) “for” rate in voting results is between 40% and 60%; (3) ISS recommendation is different from management recommendation. Each observation is fund-meeting level value. The dependent variable is a dummy to indicate that mutual fund exits its position in the firm within 3 months after the meeting. “Fund win” is a dummy to indicate that mutual fund wins all proposals at the meeting. “Against management” is a dummy indicating that mutual fund votes against management for at least one proposal at the meeting. “Investment as % of firm equity” is the percentage of the mutual fund’s holding on the firm as of the firm’s total equity, multiplied by 100; while “Investment as % of fund TNA” is the percentage of the mutual fund’s holding on the firm as of the fund’s total net asset, multiplied by 100. Number of fund holdings is the number of different stocks held by the mutual fund at the meeting time. Fund alpha is the alpha from regressing the fund’s monthly returns on Carhart four factors over the 36 months before the meeting. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. The other independent variables are fund level or firm level controls. Independent variables are winsorized at 1%. Standard errors are clustered at mutual fund level for all regressions. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Fund exit	Fund exit	Fund exit	Fund exit	Fund exit	Fund exit
Fund win	0.046 [*] (1.70)	0.100 ^{***} (3.49)	0.083 ^{***} (2.84)	0.084 ^{***} (2.87)	0.075 ^{***} (2.58)	0.077 ^{***} (2.63)
Against management		0.179 ^{***} (4.56)	0.149 ^{***} (3.72)	0.142 ^{***} (3.54)	0.133 ^{***} (3.36)	0.128 ^{***} (3.24)
Log(fund TNA)				-0.126 ^{**} (-2.51)		-0.084 [*] (-1.66)
Fund turnover rate				0.130 ^{**} (2.34)		0.138 ^{**} (2.51)
Fund expense ratio				-10.188 (-0.48)		-1.449 (-0.07)
Fund alpha				-22.497 ^{**} (-2.07)		-19.195 [*] (-1.76)
Investment as % of firm equity			-0.621 ^{***} (-7.07)	-0.579 ^{***} (-6.56)	-0.991 ^{***} (-9.50)	-0.949 ^{***} (-9.07)
Investment as % of fund TNA			-1.200 ^{***} (-25.64)	-1.204 ^{***} (-25.85)	-1.061 ^{***} (-23.34)	-1.068 ^{***} (-23.64)
Number of fund holdings			-0.000 (-1.23)	-0.001 (-1.35)	-0.001 (-1.61)	-0.001 [*] (-1.70)
Log(firm total asset)					-0.136 ^{***} (-9.38)	-0.132 ^{***} (-9.04)
Firm book to market ratio					0.211 ^{***} (4.32)	0.192 ^{***} (3.89)
Firm leverage					0.482 ^{***} (5.06)	0.471 ^{***} (4.92)
Firm return on asset					0.167 (0.75)	0.180 (0.80)
Firm past performance					-0.419 ^{***} (-7.35)	-0.426 ^{***} (-7.44)
Fund fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	61901	61901	61901	61901	61901	61901

Table 5: Sample with 5% “for” rate deviation

The sample uses proposals that (1) passing requirement is 50%; (2) “for” rate in voting results is between 45% and 55%; (3) ISS recommendation is different from management recommendation. Each observation is fund-meeting level. The dependent variable is a dummy to indicate that mutual fund exits its position on the firm within 3 months after the meeting. “Fund win” is a dummy to indicate that mutual fund wins all proposals at the meeting. “Against management” is a dummy indicating that mutual fund votes against management for at least one proposal at the meeting. “Investment as % of firm equity” is the percentage of the mutual fund’s holding on the firm as of the firm’s total equity, multiplied by 100; while “Investment as % of fund TNA” is the percentage of the mutual fund’s holding on the firm as of the fund’s total net asset, multiplied by 100. Number of fund holdings is the number of different stocks held by the mutual fund at the meeting time. Fund alpha is the alpha from regressing the fund’s monthly returns on Carhart four factors over the 36 months before the meeting. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. The other independent variables are fund level or firm level controls. Independent variables are winsorized at 1%. Standard errors are clustered at mutual fund level for all regressions. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
	Fund exit	Fund exit	Fund exit	Fund exit	Fund exit	Fund exit
Fund win	0.064 [*] (1.82)	0.084 ^{**} (2.31)	0.085 ^{**} (2.23)	0.084 ^{**} (2.23)	0.097 ^{**} (2.56)	0.097 ^{**} (2.56)
Against management		0.124 ^{**} (2.56)	0.105 ^{**} (2.11)	0.097 [*] (1.95)	0.072 (1.45)	0.066 (1.34)
Log(fund TNA)				-0.098 (-1.58)		-0.049 (-0.79)
Fund turnover rate				0.131 [*] (1.88)		0.141 ^{**} (2.06)
Fund expense ratio				0.097 (0.00)		4.597 (0.17)
Fund alpha				-33.891 ^{**} (-2.33)		-30.615 ^{**} (-2.11)
Investment as % of firm equity			-0.484 ^{***} (-3.82)	-0.454 ^{***} (-3.54)	-0.969 ^{***} (-6.66)	-0.947 ^{***} (-6.45)
Investment as % of fund TNA			-1.200 ^{***} (-19.50)	-1.205 ^{***} (-19.63)	-1.035 ^{***} (-17.14)	-1.040 ^{***} (-17.28)
Number of fund holdings			-0.001 [*] (-1.86)	-0.001 [*] (-1.96)	-0.001 ^{**} (-2.27)	-0.001 ^{**} (-2.35)
Log(firm total asset)					-0.189 ^{***} (-10.21)	-0.188 ^{***} (-10.10)
Firm book to market ratio					0.311 ^{***} (4.89)	0.294 ^{***} (4.56)
Firm leverage					0.603 ^{***} (4.52)	0.600 ^{***} (4.48)
Firm return on asset					0.616 ^{**} (2.18)	0.632 ^{**} (2.22)
Firm past performance					-0.291 ^{***} (-3.69)	-0.299 ^{***} (-3.77)
Fund fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	28971	28971	28971	28971	28971	28971

Table 6: Subsample analysis by whether fund votes against management

The sample uses proposals that (1) passing requirement is 50%; (2) “for” rate in voting results is between 40% and 60%; (3) ISS recommendation is different from management recommendation. We then further divide them into two subsamples depending on whether mutual fund votes against management. The “Against management subsample” uses only the fund-proposal level observations where mutual fund votes against management. Then “Fund win” dummy is defined at the fund-meeting level to indicate fund wins all proposals at the meeting. The “With management subsample” uses only the observations where fund votes with management, and then process similarly. The dependent variable is a dummy to indicate that mutual fund exits its position on the firm within 3 months after the meeting. “Investment as % of firm equity” is the percentage of the mutual fund’s holding on the firm as of the firm’s total equity, multiplied by 100; while “Investment as % of fund TNA” is the percentage of the mutual fund’s holding on the firm as of the fund’s total net asset, multiplied by 100. Number of fund holdings is the number of different stocks held by the mutual fund at the meeting time. Fund alpha is the alpha from regressing the fund’s monthly returns on Carhart four factors over the 36 months before the meeting. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. The other independent variables are fund level or firm level controls. Independent variables are winsorized at 1%. Standard errors are clustered at mutual fund level for all regressions. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	Against management subsample			With management subsample		
	(1) Fund exit	(2) Fund exit	(3) Fund exit	(4) Fund exit	(5) Fund exit	(6) Fund exit
Fund win	0.131*** (3.55)	0.133*** (3.59)	0.114*** (3.04)	-0.015 (-0.33)	-0.016 (-0.36)	0.012 (0.26)
Log(fund TNA)		-0.129** (-2.38)	-0.091* (-1.71)		-0.140 (-1.57)	-0.093 (-1.02)
Fund turnover rate		0.118* (1.81)	0.142** (2.16)		0.129 (1.31)	0.124 (1.28)
Fund expense ratio		-4.525 (-0.19)	0.560 (0.02)		-48.044 (-1.46)	-33.764 (-1.04)
Fund alpha		-12.234 (-0.92)	-8.098 (-0.61)		-40.970*** (-2.67)	-37.904** (-2.45)
Investment as % of firm equity	-0.674*** (-6.02)	-0.619*** (-5.52)	-1.097*** (-7.98)	-0.675*** (-5.54)	-0.636*** (-5.23)	-0.877*** (-5.93)
Investment as % of fund TNA	-1.169*** (-22.29)	-1.175*** (-22.50)	-1.023*** (-19.93)	-1.316*** (-17.47)	-1.320*** (-17.42)	-1.216*** (-16.14)
Number of fund holdings	-0.000 (-0.99)	-0.000 (-1.17)	-0.001 (-1.58)	-0.001* (-1.78)	-0.001* (-1.69)	-0.001* (-1.87)
Log(firm total asset)			-0.156*** (-9.32)			-0.089*** (-4.01)
Firm book to market ratio			0.161*** (2.83)			0.275*** (3.45)
Firm leverage			0.535*** (4.56)			0.384** (2.50)
Firm return on asset			0.285 (1.03)			0.267 (0.71)
Firm past performance			-0.513*** (-7.47)			-0.255*** (-2.92)
Fund fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	38260	38260	38260	23772	23772	23772

Table 7: Subsample analysis by fund's holding of firm equity

The sample uses proposals that (1) passing requirement is 50%; (2) “for” rate in voting results is between 40% and 60%; (3) ISS recommendation is different from management recommendation. It's then divided into two subsamples depending on mutual fund's holding on the voting firm. The “High holding subsample” includes the group with holdings as percentage of firm's total equity above median value and the “Low holding subsample” indicates the group with holdings as percentage of firm's total equity below median value. Each observation is fund-meeting level value. The dependent variable is a dummy to indicate that mutual fund exits its position on the firm within 3 months after the meeting. “Fund win” is a dummy to indicate that mutual fund wins all proposals at the meeting. “Against management” is a dummy to indicate that mutual fund votes against management for at least one proposal at the meeting. “Investment as % of firm equity” is the percentage of the mutual fund's holding on the firm as of the firm's total equity, multiplied by 100; while “Investment as % of fund TNA” is the percentage of the mutual fund's holding on the firm as of the fund's total net asset, multiplied by 100. Number of fund holdings is the number of different stocks held by the mutual fund at the meeting time. Fund alpha is the alpha from regressing the fund's monthly returns on Carhart four factors over the 36 months before the meeting. Firm past performance is the firm's previous 12 month compounded return adjusted by market return. The other independent variables are fund level or firm level controls. Independent variables are winsorized at 1%. Standard errors are clustered at mutual fund level for all regressions. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	High holding subsample			Low holding subsample		
	(1) Fund exit	(2) Fund exit	(3) Fund exit	(4) Fund exit	(5) Fund exit	(6) Fund exit
Fund win	0.139*** (3.14)	0.139*** (3.13)	0.138*** (3.11)	0.026 (0.62)	0.027 (0.63)	0.016 (0.37)
Against management	0.190*** (3.70)	0.181*** (3.52)	0.163*** (3.18)	0.098 (1.57)	0.089 (1.43)	0.086 (1.36)
Log(fund TNA)		-0.165** (-2.44)	-0.067 (-1.01)		-0.112 (-1.50)	0.053 (0.65)
Fund turnover rate		0.249*** (3.02)	0.260*** (3.16)		0.071 (1.05)	0.088 (1.30)
Fund expense ratio		20.807 (0.75)	34.850 (1.24)		-41.087 (-1.35)	-36.816 (-1.22)
Fund alpha		-22.457* (-1.80)	-18.535 (-1.49)		-26.619 (-1.45)	-23.223 (-1.26)
Investment as % of firm equity	-0.471*** (-6.26)	-0.433*** (-5.72)	-0.704*** (-7.29)	-9.702 (-1.43)	-6.826 (-1.00)	-60.137*** (-6.63)
Investment as % of fund TNA	-1.275*** (-19.21)	-1.282*** (-19.33)	-1.109*** (-15.75)	-1.140*** (-18.35)	-1.149*** (-18.71)	-0.835*** (-15.16)
Number of fund holdings	-0.001 (-1.55)	-0.001* (-1.94)	-0.001** (-2.40)	-0.000 (-0.66)	-0.000 (-0.58)	-0.001 (-1.09)
Log(firm total asset)			-0.134*** (-5.37)			-0.283*** (-9.83)
Firm book to market ratio			0.220*** (2.98)			0.276*** (3.96)
Firm leverage			0.529*** (3.75)			0.817*** (5.61)
Firm return on asset			-0.021 (-0.07)			-0.118 (-0.30)
Firm past performance			-0.362*** (-4.96)			-0.621*** (-6.85)
Fund fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	29292	29292	29292	29909	29909	29909

Table 8: Subsample analysis by CAR(-1,1)

The sample uses proposals that (1) passing requirement is 50%; (2) “for” rate in voting results is between 40% and 60%; (3) ISS recommendation is different from management recommendation. It’s then divided into two subsamples depending on the firm’s CAR day -1 to day +1 around the meeting day. The “CAR(-1,1) > 0 subsample” includes the group where the CAR(-1,1) is positive and “CAR(-1,1) < 0 subsample” includes the group where CAR(-1,1) is negative. Each observation is fund-meeting level value. The dependent variable is a dummy to indicate that mutual fund exits its position on the firm within 3 months after the meeting. “Fund win” is a dummy to indicate that mutual fund wins all proposals at the meeting. “Against management” is a dummy to indicate that mutual fund votes against management for at least one proposal at the meeting. “Investment as % of firm equity” is the percentage of the mutual fund’s holding on the firm as of the firm’s total equity, multiplied by 100; while “Investment as % of fund TNA” is the percentage of the mutual fund’s holding on the firm as of the fund’s total net asset, multiplied by 100. Number of fund holdings is the number of different stocks held by the mutual fund at the meeting time. Fund alpha is the alpha from regressing the fund’s monthly returns on Carhart four factors over the 36 months before the meeting. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. The other independent variables are fund level or firm level controls. Independent variables are winsorized at 1%. Standard errors are clustered at mutual fund level for all regressions. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	CAR(-1,1) > 0			CAR(-1,1) < 0		
	(1) Fund exit	(2) Fund exit	(3) Fund exit	(4) Fund exit	(5) Fund exit	(6) Fund exit
Fund win	0.179*** (4.20)	0.181*** (4.26)	0.167*** (3.92)	-0.014 (-0.35)	-0.016 (-0.40)	-0.018 (-0.44)
Against management	0.174*** (3.39)	0.169*** (3.29)	0.140*** (2.75)	0.101* (1.81)	0.090 (1.62)	0.088 (1.60)
Log(fund TNA)		-0.119** (-1.98)	-0.068 (-1.12)		-0.133** (-2.22)	-0.102* (-1.67)
Fund turnover rate		0.120** (1.96)	0.120** (1.98)		0.162** (2.17)	0.170** (2.28)
Fund expense ratio		-7.681 (-0.31)	2.756 (0.12)		-13.564 (-0.51)	-6.007 (-0.23)
Fund alpha		-10.550 (-0.77)	-7.736 (-0.57)		-34.076*** (-2.60)	-30.825** (-2.33)
Investment as % of firm equity	-0.685*** (-5.99)	-0.651*** (-5.69)	-1.100*** (-7.84)	-0.496*** (-4.07)	-0.446*** (-3.63)	-0.717*** (-4.96)
Investment as % of fund TNA	-1.196*** (-21.62)	-1.201*** (-21.72)	-1.048*** (-19.08)	-1.218*** (-19.69)	-1.223*** (-19.83)	-1.096*** (-18.10)
Number of fund holdings	-0.000 (-1.15)	-0.000 (-1.28)	-0.001* (-1.82)	-0.001 (-1.12)	-0.001 (-1.23)	-0.001 (-1.38)
Log(firm total asset)			-0.162*** (-8.33)			-0.106*** (-5.69)
Firm book to market ratio			0.209*** (3.14)			0.146** (2.08)
Firm leverage			0.484*** (3.74)			0.464*** (3.56)
Firm return on asset			-0.029 (-0.09)			0.381 (1.22)
Firm past performance			-0.295*** (-3.97)			-0.639*** (-8.39)
Fund fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	29112	29112	29112	28430	28430	28430

Appendix: Description of sample proposals

Type	Proposal description	# of proposals
<u>Overall</u>		1602
<u>Management proposals</u>		688
Auditor issues		6
	Appoint or ratify auditor	6
Board issues		56
	Adopt majority voting for uncontested election of trustees	2
	Adopt/amend Nomination Procedures for the board	1
	Change range for size of the board	1
	Elect director	52
Capital issues		46
	Authorize new class of preferred shares	8
	Conversion of securities	2
	Eliminate class of preferred stock	1
	Increase authorized preferred stock and common stock	32
	Issuance of warrants/options/rights/convertible debentures	1
	Stock split	2
Compensation issues		496
	Deferred stock plan	1
	Director stock option plan	31
	Employee stock purchase plan	4
	Executive compensation	137
	Executive incentive bonus plan	2
	Golden parachutes	2
	Omnibus stock plan	94
	Option exchange program	19
	Restricted stock plan	5
	Stock awards	2
	Stock incentive plan	199
Governance issues		39
	Act by written consent	2
	Adjourn meeting	20
	Authorize board to issue shares	1
	Classify the board of directors	3
	Eliminate cumulative voting	1
	NOL pill	1
	Poison pill	7
	Right to call special meetings	1
	Stock ownership limitations	2
	Supermajority vote requirement for amendments	1
Others		45
	Adopt the jurisdiction of incorporation as the exclusive forum	5
	Amend bylaws	8
	Approve/change country of incorporation	5
	Reimburse proxy contest expenses	1
	Others	26

<u>Shareholder proposals</u>	914
Board issues	70
Board diversity	1
Establish a compensation committee	1
Require independent board chairman	62
Require majority of independent directors on board	1
Require two-thirds of independent directors on board	5
Compensation issues	274
Adopt anti gross-up policy	7
Adopt policy on succession planning	1
Advisory vote to ratify named executive' compensation	150
Clawback of payments under restatement	6
Death benefit payments to senior executives	7
Director compensation	1
Disclose information on compensation consultant	4
Establish supplemental executive retirement plan policy	1
Executive compensation	7
Expense stock options	23
Increase disclosure of executive compensation	4
limit/review executive compensation	4
Pay for superior performance	7
Performance-based awards	37
Pro-rata vesting of equity plans	8
Submit supplemental executive retirement plans to shareholder	7
Governance issues	463
Adopt simple majority vote	9
Amend bylaws - call special meetings	94
Cumulative voting	30
Declassify the board of directors	79
Eliminate or restrict severance agreement (change in control)	38
Poison pill	22
Proxy access	2
Remove antitakeover provisions	2
Require majority vote for director election	176
Supermajority vote requirement	11
Social and environmental issues	48
Climate change	1
Engagement process to shareholder proposals	10
Environment	6
Global warming	1
Increase safety	2
Political non-partisanship	8
Sex discrimination	13
Sustainability	7
Others	59
Internet policies	1
Provide early disclosure of shareholder proposal voting results	6
Reimburse proxy contest expenses	3

Reincorporate in another state	3
Retention ratio for executives	1
Right to act by written consent	45

Chapter 2: Dual Ownership and managerial compensation incentives

Abstract

This paper studies the conflicts between equity holders and bond holders on managerial incentives. We find that firms with dual holders (institutional investors who simultaneously hold equity and bond of the firm) implement compensation policies with lower CEO vega than firms with pure equity holders. The effect is stronger when the aggregate equity/bond holdings by dual holders are larger. This suggests dual holders partially represent the benefits of bond holders and seek less risk-encouraging compensation policies than pure equity holders. Furthermore, we use mergers between financial institutions as identification strategy and a difference-in-difference setting to address the endogeneity concern. We finally show that voting is the channel through which pure equity holders and dual holders affect firm compensation policies.

I. Introduction

Equity holders and bond holders have different preferences about firm risk (Jensen and Meckling 1976; Smith and Warner 1979; Black 1976; Gilje 2016)). Since the upside of increasing firm risk is enjoyed by shareholders and bond holders only bear the cost, an increase in firm risk leads to the transfer of wealth from bond holders to shareholders (John and John 1993). The concerns over risk-shifting and asset substitution *ex ante* reduce firm value (Jensen and Meckling 1976; Myers 1977).

Modern financial institutions, however, blur the line between shareholders and debtholders. Many equity investors and debt investors belong to the same financial conglomerate, and the decision-making power is often times centralized.¹ It means that, for equity holders who also hold debt of the same firm, their objective should be the maximization of their total (equity and debt) holding value. A burgeoning empirical literature show that the presence of such “dual holders” curbs corporate risk-shifting by reducing equity payouts (Chu 2017), increasing the probability of corporate mergers (Bodnaruk and Rossi 2016), and cutting back corporate innovation (Yang 2017).

A question facing this nascent literature is how dual holders implement their risk-reducing policies. After all, not all corporate decisions are put on ballot for shareholders to vote; many are under the discretion of corporate management. In this paper, we answer the question by establishing a causal relation between the presence of dual holders and the executive compensation structure. We show that dual holders reduce executive compensation’s exposure to stock price volatility (“vega”).

The sensitivity of managers’ wealth to stock volatility, or vega, is used in literatures to measure how much the compensation policies encourage risk taking (Guay 1999; Cohen et al. 2000). The empirical results show that higher vega correlates to higher firm risk (Agrawal and

Mandelker 1987; Defusco, Johnson, and Zorn 1990; Tufano 1996; Schrand and Unal 1998; Guay 1999; Rajpopal and Shevlin 2002; Coles, Daniel, and Naveen 2006; Low 2009; Armstrong, Vashishtha 2012). In theory, decreasing vega in managers' compensation should align the incentives of corporate executives towards debt holders and attenuate managers' risk-seeking behavior.

Following Bodnaruk and Rossi (2016), we classify financial institutions at the financial conglomerate level. Financial conglomerates are the ultimate parent firms that the institutions belong to. When the financial conglomerate holds both equities and bonds of the same firm through different sub-groups or divisions, it is identified as dual holder of the firm. We require dual holders to hold at least 0.5% of the firm's equity and at least 0.5% of the firm's bond (Our results are robust to alternative threshold levels), e.g. significant dual holders thereafter.

Mutual funds are the financial investors we study in the paper. They are classified into different financial conglomerates. The same financial conglomerate may have mutual funds that hold stocks of firm and mutual funds that hold bonds of the firm. Then the financial conglomerate is identified as dual holder of the firm. We posit that different mutual funds of the same financial conglomerate may coordinate with each other and behave in the way to maximize the benefit of the financial conglomerate.

Our baseline results show that the presence of one more significant dual holder decreases CEO vega by 0.13 percentage of total compensation, and decreases option value granted to CEO by 0.77 percent of total compensation. Moreover, the impact of dual holders is be proportional to the amount of equity and debt they hold, reflecting their stronger voting power (in the case of equity holding) or stronger risk-reducing motives (in the case of debt holding).

To address the endogeneity concern that dual holders select into companies with low CEO vega, we exploit variations in a firm's ownership structure induced by mergers of financial

institutions. Consider a financial conglomerate which holds a substantial percentage of stocks of the firm but no bond of the firm: If the conglomerate acquires another financial firm or division which holds a substantial percentage of bonds of the firm, the conglomerate becomes significant dual holder of the firm after the merger. The decision of such mergers should be exogenous to the fundamentals of the portfolio companies. If we find such mergers change the compensation structure of those companies, we can attribute the executive compensation to the influence of dual holders.

We identify all mergers and acquisitions between financial institutions that the acquirer and target holds equities and bonds separately of the same firm. We require the post-merger holdings of equity and debt are both at least 0.5%. The affected firms are identified as treatment firm. We follow a procedure similar to Chu (2017) and Hong and Kacperczyk (2010) to get the matching firms. A difference-in-differences reveal that firms whose institutional investors change from pure equity or bond holders to dual holders after mergers experience a significant decrease in CEO vega after the mergers, compared to firms without such change in institutional investors. Moreover, the results are mainly caused by the decrease in CEO vega of treatment firms rather than control firms.

After establishing the causality of dual ownership on executive compensation, we shed light on the channel through which dual holders affect the compensation schedule. In particular, we examine the voting record of dual-holding mutual funds, especially on proposals related to executive compensation. Mutual funds are required to disclose their votes on proposals at shareholder meetings since 2003, offering us the opportunity to directly observe whether they vote to affect compensation policies. Depending on whether the proposal increases or decreases CEO vega ex post, we classify each mutual fund's vote as to increase CEO vega or to decrease

CEO vega. Our empirical strategy compares votes between mutual funds who are dual holders of the voting firm and mutual funds who are pure equity holders of the voting firm.

We find that mutual funds who are dual holders of the voting firm are more likely to vote for proposals that decrease CEO vega and vote against proposals that increase CEO vega, compared to mutual funds who are pure equity holders of the firm. This suggests that dual holders wield their voting power when setting the compensation structure of executives. Our findings thus provide a more complete picture of how dual holders influence corporate policies: Instead of meddling with day-to-day operation of a firm, dual holders align the incentives of executives by voting on executive compensation, and then largely leave executive on their own device.

There are three important contributions of this paper. First, it reveals the conflicts between shareholders and bond holders about managerial compensation policies. The conflicts between shareholders and bond holders about firm risk have long been realized (e.g., Jensen and Meckling 1976; Black 1976). More recently, Jiang, Li, and Shao (2010) analyze dual holders that simultaneously hold equity and debt claims of the same firm and find that firms such dual holders have lower loan yield spreads. Bodnaruk and Rossi (2016) find that dual holders are more likely to support M&A than pure equity holders when the firm is an M&A target. Chu (2017) finds that shareholder-creditor conflict induces firms to pay out more at the expense of creditors. However, to the best our knowledge, no paper has specifically look at the effect in managerial compensation policie .

The paper also contributes to the executive compensation literature. Coles, Daniel, and Naveen (2006) point out the different effects vega and delta have on firm risk. In this paper we show that equity holders and bond holders have different preferences, and the final vega of the firm's

compensation policies are also affected by the interaction between equity holders and bond holders.

Thirdly, the paper also contributes to voting literature. Many papers have analyzed the determinants and patterns of mutual funds voting (Cai, Garner, and Walking (2009); Duan, Ying and Yawen Jiao, 2016; Cuñat, Gine, and Guadalupe (2012); Dimitrov and Jain (2011); Matvos and Ostrovsky (2010); Dimmock et al. (2018)), but they usually treat all mutual funds holding equity of the firm as same type of shareholders. This study reveals that mutual funds who are dual holders of the firm have different preferences in their voting behaviors compared to pure equity holders. This is particularly obvious on compensation related proposals. Moreover, our analysis also shows that voting is an important channel that shareholders affect firm policies, as pure equity holders and dual holders vote differently and that leads compensation policies to vary according to the percentage of dual ownership.

The rest of the paper is organized as following. Section II develops our hypotheses. Section III describes the data and sample. Section IV shows the baseline results of the paper. The identification strategy is implemented in Section V. Section VI analyzes the channel. Finally Section VII concludes the paper.

II. Hypotheses

Corporate executives can change firm risks in various ways. For example, managers can increase R&D expenditures, or engage in risky M&A, both of which may expose the firm to higher risk. They may also forgo positive NPV projects which they think are risky, or diversify the firm's businesses to reduce risks. While managers are often assumed to be risk-averse, convex payoffs are often used to encourage managers to take more risk (Smith and Stulz 1985; Guay 1999). They can increase the diversification of the firm's activities to reduce the risk. Risk-averse and undiversified managers tend to decrease firm risk to protect their own wealth.

Particularly, the value of options granted to managers increases with firm risks, and can thus encourage managers' risk-taking. The sensitivity of executive compensation with respect to stock price volatility, termed as vega, is used to measure how much the compensation policies can encourage managers to take risk. Studies like Coles, Daniel and Naveen (2006) and Low (2009) have shown that higher CEO vega induces higher firm risk.

Equity holders and bond holders have different preferences about firm risk. Equity holders can deprive the benefit of bond holders by increasing the risk level of firm policies. The benefit of increased firm risk is shared only by equity holders, while bond holders have to bear the cost. Therefore, conflicts between equity holders and bond holders about managerial incentive policies appear. Specifically, bond holders prefer compensation policies inducing lower CEO vega compared to equity holders. Such compensation policies discourage CEO to increase firm risk.

Directly observing this conflict can be hard. However, an interesting fact is that many institutional investors simultaneously hold the same firm's equity and bond, which are called dual holders. Compared to pure equity holders, dual holders also represent the benefits of bond holders. Therefore conflicts between equity holders and bond holders about managerial compensation policies will be partially reflected on the conflicts between equity holders and dual holders. Moreover, dual holders can also affect firm policies through the voting right attached to their equity. Therefore firms' managerial compensation policies will be affected by the dynamic interaction between pure equity holders and dual holders. In theory, we expect that firms with dual holders are more likely to adopt managerial compensation policies that encourage less risk taking.

However, dual holders with large holding on the firm's equity and small holding on the firm's bond may have less incentive to protect the value of bonds. On the other hand, dual holders

with small holding on the firm's equity and large holding on the firm's bond have the incentives to protect the value of bonds, but they have less influence on the firm. Therefore, we expect dual holders with large holdings on the both the firm's equity and bond can better represent the benefits of bond holders and have more resource to protect the benefits of bond holders. These dual holders are called significant dual holders. Empirically, the conflicts between pure equity holders and significant dual holders are more likely to generate observable difference in managerial compensation incentives.

The significant dual holders partially represent the benefits of bond holders and have different desired compensation policies than the equity holders. When the aggregate bond holding on the firm by significant dual holders is larger, there are more incentives these dual holders will have to protect the value of bonds. Also, when the aggregate equity holding on the firm by significant dual holders is larger, these dual holders can affect firm policies more. In either case, the interaction results among pure equity holders and dual holders will shift towards the benefits of bond holders, e.g., lower CEO vega. Therefore we have the following hypothesis.

H1. Firms with significant dual holders have compensation policies that encourage less risk-taking. Moreover, when the percentages of equity/bond held by dual holders are larger, the firm's compensation policies will encourage less risk-taking.

For the same firm, when the number of its significant dual holders increases, the managerial compensation policies will reflect more the benefit of bond holders. This leads to the second hypothesis

H2. When a firm has a financial institution that changes from pure equity or bond holder to significant dual holder, the firm's management compensation policies will become to encourage more risk-taking.

If pure equity holders and dual holder have conflicts in the managerial compensation policies, it can be more directly reflected through their voting. Specifically, if the compensation related proposal increases CEO vega, dual holders are more likely to vote against it compared to pure equity holders; if the compensation related proposal decreases CEO vega, dual holders are more likely to vote for it. Overall, dual holders are more likely to vote to decrease CEO vega.

H3. Mutual funds whose financial conglomerates are significant dual holders of the firm are more likely to vote for proposals that discourage risk-taking and vote against proposals that encourage risk-taking.

III. Data and sample

1. Firm universe

The sample construction starts with the CEO compensation data from ExecuComp. CEO vega and delta are computed following Coles, Daniel and Naveen (2006). We focus on the period from year 2006 to year 2016. This gives us 21,285 firm-year observations for 2,533 distinct firms. These 2,533 firms with CEO vega data available will be our firm universe for all the following analysis.

2. Identify dual holding firms

We define dual holders of a firm as financial conglomerates that simultaneously hold stocks and bonds of the firm. Financial conglomerates are defined similarly as Bodnaruk and Rossi (2016), which are the ultimate parent firms of the financial institutions. The financial institutions that we mainly study in this paper are mutual funds. We get the data of mutual funds' stock holdings on public firms from Thomson Reuters Spectrum/CDA. The bond holdings information is from Thomson Lipper eMAXX. We manually identify the financial conglomerate that each mutual fund family in Thomson Reuters Spectrum/CDA or Thomson

Lipper eMAXX belongs to. The mutual funds from the same family share the same financial conglomerate. The manual identification process involves searching the firm's information online through directory of investment advisers (www.adviserinfo.sec.gov), Morningstar's directory of mutual fund family (www.advisor.morningstar.com). Due to mergers and acquisitions between financial firms, their financial conglomerates may change from time to time. Therefore we also rely on SDC to get the M&A information.

The same financial conglomerate generally have many funds that hold stocks of the same firm, we aggregate them to get the conglomerate's stocking holding on the firm for each quarter. Similarly, we get the conglomerate's bond holding on the same firm for each quarter by aggregating the bond holdings on the firm of all the funds belonging to this financial conglomerate. Finally, we identify financial conglomerate that have both stock and bond holding on the firm as dual holder. When both the stock holding in percentage of the firm's total outstanding shares and bond holding in percentage of the firm's total outstanding bonds are not less than 0.5%, we call the conglomerate significant dual holders. We choose 0.5% to guarantee there are sufficient observations for our analysis in the Identification Section. However, we have also used 1% as cutoff to do our analysis in the baseline results.

Mutual funds are just a subset of divisions or groups that the financial conglomerate may own. In an ideal world, the total equity and bond holdings of the conglomerate on the firm should be the sum of stock or bond holdings on the firm by any division of the financial conglomerate. However, in reality we do not have complete holding information for a given financial conglomerate, and the computed holdings would be lower than the actual dual ownership. Nevertheless, this should induce noise in our measurements and bias us against finding results. Therefore, although our choice of using only mutual funds' holdings may bias the ownership

downwards, it still provides reasonable measure for the part of stock ownership that may affect firm policies.

3. Final sample

For each fiscal year, we identify whether the firm has significant dual holders at the end of previous fiscal year. Then “# of significant dual holders” is used to indicate the number of significant dual holders of the firm, and it’s defined to be 0 when the firm has no significant dual holders. When the firm has significant dual holders, we aggregate all such significant dual holders’ equity holding in percentage of total equity outstanding and bond holding in percentage of total bond outstanding on the firm, as “total dual equity ownership” and “total dual bond ownership”.

Not all firms are covered by both Thomson Reuters Spectrum/CDA and Thomson Lipper eMAXX, we delete the uncovered firms as we do not have data to identify their dual holders. This reduces our sample to 9,764 observations. We also exclude financial firms and utility firms following literatures.

Finally, the firm characteristics variables are from Compustat. Stock returns data are from CRSP. After deleting observations that miss the necessary control variables, we get 6,653 firm-year observations with 1,090 distinct firms.

IV. Baseline results

1. Summary statistics

We scale CEO vega and CEO delta by CEO total compensation to measure the incentives for CEO risk taking. Even if CEO vega is large, when her total compensation is extreme large, the incentive provided by the vega may not be significant for her. Only when the CEO vega in compared to her total compensation is large, this incentive effect will be strong.

Panel A of Table 1 shows the summary statistics for the full sample. The CEO vega/Total compensation and CEO delta/Total compensation data are presented in percentage values in the table. We can see that on average, CEO vega is about 2.7% of her total compensation, with the median value being 1.5%. Also CEO delta is about 9.9% of her total compensation on average, and 4.5% in median. On the other hand, CEO vega is about 19.1% of her total compensation, and the median value being 15.7%.

Overall, about 39.5% of the firms have significant dual holders. The average number of significant dual holders is 1.2. When the firm has significant dual holders, the aggregate equity holding by significant dual holders is 6.6% on average, while the aggregate bond holding by significant dual holder is 13.0% on average, as presented in Panel B.

2. Main results

In this part we test hypothesis 1, which is whether dual ownership affects firm's managerial incentive. Specifically, we want to investigate whether the firm's CEO vega is significantly associated with its dual ownership. Therefore, we construct the following model:

$$\frac{Y}{total\ compensation}_{i,t} = \alpha_0 + \beta_1 \times dual_{i,t} + \theta \times Z_{i,t} + \varepsilon_{i,t}$$

where “Y” refers to CEO vega or granted option value. We also use granted option value. $dual_{i,t}$ refers to three alternatives of the explanatory variables: number of significant dual holders, total equity ownership and total bond ownership. $Z_{i,t}$ includes other firm level control variables, including firm size, book-to-market ratio, leverage, return on asset, R&D expenditure scaled, sales, PPE, firm's past performance, stock volatility. Industry fixed effect and year fixed effect are used in the regressions.

The results are shown in Table 2. The first 3 regressions use granted option value as percentage of total compensation as dependent variable, the last 3 regressions use CEO vega as percentage of total compensation as dependent variable. Consistent with our predictions, firms with more significant dual holders have lower CEO vega and granted option value in percentage of total compensation, meaning less risk-encouraging compensation policies. Also, when the aggregate equity holding on the firm by significant dual holders is larger, the CEO vega/granted option value in percentage of total compensation is lower. When the aggregate bond holding on the firm by significant dual holders is larger, the CEO vega/granted option value in percentage of total compensation is lower.

The fact that firms with more significant dual holders and higher equity and bond ownership held by significant dual holders have managerial compensation policies which less encourage risk-taking reveals the conflicts between equity holders and bond holders in compensation policies. The results suggest conflicts between shareholders and bond holders are reflected in firm compensation policies.

The economic significance is considerable. On average, firms with more significant dual holders grant a smaller fraction of their total compensation in form of option grants, controlling for a host of firm characteristics. An increase of one significant dual holder reduces option grant awarded next year by 0.772 percentage point. An increase of one significant dual holder is associated with a decrease in CEO vega by 0.125 percentage point.

Moreover, we can see that the effects of other variables on compensation policies are consistent with literature. For example, larger firms have more risk-encouraging compensation incentives. Firms with lower book-to-market ratio, e.g. growth firms, have higher CEO vega. Also, CEO vega is positively correlated with R&D expenditure, and negatively correlated with Property,

Plant and Equipment asset, consistent with the risk encouraging effect of CEO vega, consisting with the results found in Coles, Daniel, and Naveen (2006).

The conflict between shareholders and creditors are more acute when a firm is closer to financial distress. Therefore, it is potentially more important for dual holders in distressed firms to align the interest of managers by reducing the risk-taking incentives in managerial control contracts. We conjecture that the negative relation between dual ownership and CEO vega is more pronounced for firms that are more likely in financial distress. This is what we find in Table 3. Here we sort firms into high-leverage group and low-leverage group by comparing their book leverage ratio with the cross-sectional median. Consistent with our conjecture, the relation between managerial risk-taking incentives and dual ownership is negative and significant for firm in high-leverage group but insignificant for low-leverage firms.

We also study the effect of dual ownership on CEO delta and granted stock value, the results are shown in Table 4. We do not find significant correlation between the CEO delta and dual ownership. This may indicate that bond holders and equity holders do not have significant conflicts in compensation policies in the dimension of CEO delta.

3. Alternative definition of significant dual holders

Jiang, Li and Shao (2010) use 1% percent as cutoff for significant dual holders, whereas their dual holders are institutions that simultaneously hold the firm's equity and loan. There are two reasons why we choose 0.5% percent as our cutoff. First, in our next section we will need to identify firms with financial institutions change from pure equity or bond holders to significant dual holders due to mergers between financial firms. As such mergers are quite rare, use 1% as cutoff for the definition of significant dual holders cannot identify enough treatment firms.

Second, only 27.4% firms have significant dual holders when using 1% as cutoff. Table 5 shows the summary statistics for dual ownership variables in this case. We can see that the average number of significant dual holders is 0.67 now. And average total dual equity holding among all firms is 2.6% now, the average total dual bond holding among all firms is 4.8%. However, this means 72.6% of firms have 0 in total dual equity holding and total dual bond holding. The variation of total equity/bond holding is only among a small fraction of firms, it makes the regression results less informative.

Therefore, we use 0.5% cutoff for our main analysis and provide the results using 1% as robustness test. Table 6 shows the regression results. We can see that the results are consistent with before. The significances on the key explanatory variables drop a bit because fewer observations have nonzero dual, total dual equity holding, and total dual bond holdings.

V. Identification strategy

The relation between firm's dual ownership and its managerial compensation policies suggest the conflicts between pure equity holders and dual holders about these policies. However, the results suffer from endogenous problem. It can be that firms with managerial compensation policies that encourage less risk taking may attract its existing shareholders to also its bonds. Then the firm may appear to have more dual holders and higher equity and bond ownership by dual holders.

Famous firms may have their equity and bonds exposed to more investors, and hence induce more dual holders. Such firms may take compensation policies that encourage less risk taking because they are already very successful and there is no need to take risk. This can also lead to correlation between firm's dual ownership and its managerial compensation policies as we find.

To address these concerns, we take mergers between financial institutions as an exogenous shock. Financial institutions hold large percentages of firms' equity and bonds. On the other

hand, financial institutions merge with each other due to different reasons. For example, Wachovia was the fourth-largest bank holding company in United States, which had large holdings on equity and bonds for many different firms. Due to the subprime mortgage crisis, the firms experienced heavy losses and was acquired by Wells Fargo and Company in Dec 31, 2008. If Wachovia and Wells Fargo held the same firm's equity and bonds separately before the acquisition, then Wells Fargo became the firm's dual holder after the acquisition.

This example illustrates how our identification works. To take advantage of such kind of mergers and acquisitions, we first extract M&A between financial firms from SDC from 2006 to 2016. Then we identify M&As where the mutual fund families in Thomson Reuters or their parent firms are acquired by other financial firms. We take note of the financial conglomerates of the acquiring financial firms. We also identify M&As where the financial conglomerates of the mutual fund families in Thomson Reuters acquire other financial firms. The combination constitutes the M&As that we use for our sample.

From the identified M&As, we identify firms that the target and acquiring financial conglomerate hold equities and bonds separately. We only keep cases when the holdings on equities and bonds are both at least 0.5%. We also exclude cases where the financial conglomerate is already a dual holder of the firm before the M&A. This generates 323 treated firms. We then exclude firms in the financial and utility industries, and firms without CEO compensation data. We also delete MAs happening in the first year and the last year as there are no data for comparison. There are 163 treated firms left.

Table 7 tabulates the distributions of MAs and treatment firms from 2006 to 2015. We can see that there are totally 13 MAs that are quite evenly distributed among these years. The financial institutions involving in an M&A can have equity or bond holdings in many firms, but we require that their holdings on the same firm's equity or bond should be at least 0.5%, and they

acquire should not be dual holder before the MA. This reduces the number of firms affected by such M&A to be small, which is 7.5 on average.

Next, we use a similar procedure as Chu (2017) to find the matching firms. Specifically, we first rank all the firms into quintiles based on size, book-to-market ratio, and past performance. We require the control firms to be in the same quintiles as treatment firm. We then compute the ranks of differences between the control firms and treatment firms in size, book-to-market ratio, and past performance, and take sum of them. We keep at most 2 control firms based on the total ranks.

We use the following model as specification:

$$\frac{Y}{total\ compensation}_{i,t} = \alpha_0 + \beta_1 \times treat_i + \beta_2 \times post_{i,t} + \beta_2 \times treat_i \times post_{i,t} + \theta \times Z_{i,t} + \varepsilon_{i,t}$$

where “Y” indicates CEO vega or granted option value. “ $treat_i$ ” is a dummy which equals 1 if it is treatment firm and 0 otherwise; “ $post_{i,t}$ ” is a dummy which equals 1 if the year is after the fiscal year in which the M&A happens, and 0 if the year is before the fiscal year in which the M&A happens. The matching firms share the M&A year of their treated firms.

Hypothesis 2 predicts that when the firm’s institutional investor changes from pure equity or bond holder to significant dual holder, the firm’s compensation policies are more likely to shift towards the benefit of bond holders. This is what we find in Table 8. Compared to control firms, firms that have institutional investor changes from pure equity or bond holder to significant dual holder experience larger decrease in CEO vega and granted option value. Moreover, the CEO vega after M&A is not systematically different from CEO vega before M&A for control

firms after controlling year fixed effect. This implies our results are mainly drawn by the decrease in CEO vega of the treatment firms.

Regressions (1) and (3) control industry fixed effect and year fixed effect, regressions (2) and (4) control firm fixed effect and year fixed effect. The results are similar. They also support hypothesis 2 and suggest when firm has more significant dual holders, its CEO compensation policies become less risk-encouraging.

VI. Channel

In the previous sections, we have shown the correlation between firms' dual ownership and CEO compensation policies. They suggest the preferences of pure equity holders and dual holders are transmitted to firm policies. In this Section we discuss the channel through which this may happen.

Shareholders are the ultimate owners of firms, but due to the separation of ownership and control, firms' control is delegated to professional managers. Shareholders' rights on the firms are maintained by their voting rights. They can affect firm policies in two ways. First, firm directors are all elected by shareholders. Therefore, the directors should represent the benefits of shareholders in an ideal world, this implies the policy preferences of shareholders should be represented by directors. If directors fail to take the consideration of the shareholders' benefit, they will be removed from the board. However, in reality there are frictions. For example, under the plurality voting system, directors can get elected by just 1 vote of support, and the directors are usually nominated by management. Also, board classification allows each director to seek election every three years rather than every one year. This impedes the unwelcome directors to be removed from the board.

Another way that shareholders affect firm policies is to directly vote on the issue. Firm's audit policies, compensation policies, M&A activities all need approval from shareholders at the

shareholder meetings. Therefore, shareholders can affect firm compensation policies most directly by just voting on the compensation proposals at shareholder meeting.

Unlike bond holders, dual holders have voting rights attached to their equity holdings. They can also vote at the shareholder meetings, and affect the compensation policies in this instance. As dual holders will also take into consideration of the value of bonds they hold on the firm, we expect them to vote differently from pure equity holders on managerial compensation policies.

Our focus is the voting behaviors of mutual funds. Although individual mutual funds supposedly have fiduciary duty to their own investors, past studies have documented ample evidence that funds within a family cross-subsidize to maximize the value of the whole group (e.g., Gaspar, Massa, and Matos (2005); Bhattacharya, Lee, and Pool (2013)). In addition, many asset managers, for example Blackrock, Vanguard, State street have centralized corporate governance team at the investment company-level, dedicated to handling voting and other corporate governance matters (“BlackRock, Vanguard and State Street bulk up governance staff”, January 29, 2017, Financial Times).

Our voting data is from ISS voting analytics. There are two parts of it. The first part includes the firm level voting results for every proposal of the Russell 3000 Index companies from 2006 to 2015. It records the firm name, ticker and CUISIP of the firm, meeting date, proposal sponsor, proposal content, ISS classified proposal type, ISS recommendation and management recommendation for the vote, and voting results (pass, fail, withdrawn, pending) of each proposal at each meeting. The second part includes the mutual fund level voting data for each vote of each firm it holds positions. This includes the mutual fund name, mutual fund family name, the meeting company name, proposal content, and particularly the mutual fund’s vote toward the proposal. The ISS gives unique meetingid and voteid to each meeting and each vote

in both the firm level data and mutual fund level data, through which we can match the two datasets. Then we get each mutual fund's vote toward every vote of the firm it holds positions and the voting results of it.

For this study, we focus on management compensation proposals, especially proposals related to awarding or amending equity-based compensations. Therefore we look at proposals classified by ISS as "M0522", "M0524", and "M0535". There are 3,353 such proposals in the database. It is hard to directly determine whether the proposal increases or decreases the CEO vega from the content as the proposal is generally offering a compensation package. We thus directly compare the CEO vega/total compensation before and after the fiscal year in which the vote takes place. We restrict ourselves to proposals that are passed at the vote, as we have no clue how the CEO vega will be for proposals that fail because they are not implemented. We create a dummy "increase_vega" which equals 1 if this value increases after the vote and 0 if this value decreases after the vote. Thus the dummy serves as a measure to indicate whether the proposal increases or decreases CEO vega. To reduce the concern that other factors may also affect the CEO vega, we have tried a more conservative definition of "increase_vega" which equals 1 if the CEO vega/total compensation increases at least 20% after the vote and 0 if the value decreases at least 20% after the vote.

We then look at mutual funds' vote toward each of the proposals. A mutual fund is classified as dual holder of the firm if the mutual fund belongs to a financial conglomerate that simultaneously holds equities and bonds of the firm. As a proposal can either increase or decrease CEO vega and mutual fund can either support it or oppose it, we need a measure to capture the idea that dual holding mutual funds prefer to decrease CEO vega. To that end, we define a dummy "pro_vega" which equals 1 if "increase_vega" is 1 and the mutual fund votes for the proposal or "increase_vega" is 0 and mutual fund votes against the proposal, and 0 if

“increase_vega” is 1 and mutual fund votes for the proposal or “increase_vega” is 0 and mutual fund votes against the proposal. Over our sample, the mean value of “pro_vega” is 46.5%.

We use the following model for our analysis.

$$pro_vega_{i,j} = \alpha_0 + \beta_1 \times dual_holder_{i,j} + \theta \times Z_{i,j} + \varepsilon_{i,j}$$

The empirical results are presented in Table 9. Equations (1)-(3) use fund fixed effect to study the effect of dual ownership on mutual funds vote. We can see that mutual funds that are dual holders of the firm are significantly more likely to vote to decrease CEO vega. Specifically, they are more likely to oppose proposals that increase CEO vega and support proposals the decrease CEO vega. This is consistent with prediction in Hypothesis 3. If we look at the variation of votes among dual holding mutual funds, they are more likely to vote to decrease CEO vega when their bond holding on the firm is higher. The reason is that dual holding mutual funds that have higher bond holding on the firm have more incentives to protect the value of bonds. Note that firm level variables are not controlled in these regressions because there is no variation on them for the same vote.

Equations (4)-(6) use proposal fixed effect and fund fixed effect. This is to compare how different mutual funds vote on the same proposal depending on their dual ownership on the firm. The variation purely comes from the fund level characteristics. The fund fixed effect further controls the unobservable fund preferences that may affect its vote. Therefore the results are less subject to endogenous concerns.

In Table 10, we use the more conservative definition of “increase_vega”. The results are similar to Table 8, but the economic significance and statistical significance are larger. This is because the alternative measure better reduces noise and captures the idea the mutual funds vote to decrease CEO vega.

The results in Table 9 and Table 10 suggest that mutual funds' votes are largely affected by their dual ownership on the firm. As dual holders systematically vote differently from pure equity holders of the firm on compensation issues, they can collectively affect the firm policies. Thus firms with higher dual equity ownership exhibit to have compensation policies that encourage less risk-taking, as we have found.

VII. Conclusion

In this paper, we study the conflicts between equity holders and bond holders about managerial compensation policies. In general, bond holders prefer compensation policies that encourage less risk taking than equity holders. We use dual holders as the object to study the effect. As dual holders partially represent the benefits of bond holders, their preferred compensation policies will encourage less risk taking. These conflicts are empirically observed. We further find that when the aggregate equity/bond holdings on the firm by dual holders are larger, the firm will have compensation policies that encourage less risk taking. To address the endogeneity concern, we take advantage of mergers between financial institutions as identification strategy. Such mergers can change the firm's pure equity holders or bond holders to dual holders. So we identify such firms, and construct the matching firms to implement a difference-in-difference study. The results show that when the firm's pure equity or bond holders change to dual holders, the firm's managerial compensation policies will become encouraging less risk taking.

Finally, we identify voting as the channel through which the conflicts between pure equity holders and dual holders are transmitted to firm policies. Dual holders will take into consideration of the value of the bonds when they vote on compensation related proposals. It appears that dual holders are more likely to vote to decrease CEO vega.

Overall, our study suggests that equity holders and bond holders have different preferences on managerial compensation policies and that conflicts can be transmitted into firm policies. It contributes to our understanding on both the shareholder-bond holder conflicts and managerial compensation structures. Moreover, it reveals that voting is the channel through which such conflicts are transmitted to firm policies.

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Table 1. Summary statistics

“Granted option value/Total compensation”, “CEO vega/Total compensation” and “CEO delta/Total compensation” are in % value. “# of significant dual holders” indicate the number of significant dual holders of the firm. Significant dual holders are institutional investors which hold at least 0.5% of the firm’s total outstanding equity and at least 0.5% of the firm’s total outstanding bonds. “Total dual equity/bond holding” is the aggregate equity/bond holdings by significant dual holders as percentage of the firm’s total equity/bond outstanding. Firm leverage is defined as the sum of long term debt and short term debt divided by total asset. Firm return on asset is operating income before depreciation divided by total asset. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. Stock volatility is the standard deviation of the firm’s monthly return over the past 3 years. Panel A presents the summary statistics for all variables in the full sample, panel B presents the summary statistics for dual ownership for firms with significant dual holders. Variables are winsorized at 1%.

Panel A

	Mean	Std	Min	Max	p25	p50	p75	N
Granted option value/Total compensation	19.092	20.471	0.000	76.354	0.000	15.675	30.870	6653
CEO vega/Total compensation	2.735	3.712	0.000	21.894	0.355	1.486	3.617	6653
CEO delta/Total compensation	9.919	20.248	0.072	156.112	2.254	4.533	8.935	6653
# of significant dual holders	1.217	1.445	0.000	10.000	0.000	1.000	2.000	6653
Total dual equity holding (in %)	3.597	4.609	0.000	17.675	0.000	1.048	6.468	6653
Total dual bond holding (in %)	7.128	11.115	0.000	63.838	0.000	2.340	10.460	6653
Log(firm total asset)	22.232	1.372	19.433	25.950	21.221	22.115	23.107	6653
Book-to-market ratio	0.586	0.451	0.031	2.730	0.290	0.468	0.748	6653
Firm leverage	0.292	0.149	0.000	0.869	0.186	0.273	0.381	6653
Firm return on asset	0.100	0.063	-0.106	0.294	0.064	0.097	0.133	6653
R&D/Total asset	0.023	0.040	0.000	0.217	0.000	0.003	0.026	6653
Sales/Total asset	0.988	0.660	0.154	3.607	0.545	0.823	1.223	6653
PPE/Total asset	0.285	0.239	0.010	0.900	0.103	0.202	0.411	6653
Firm past performance	0.032	0.348	-0.752	1.537	-0.173	-0.000	0.180	6653
Stock volatility	0.103	0.052	0.037	0.320	0.067	0.090	0.125	6653
Total institutional ownership (in %)	80.669	19.240	0.733	100.000	73.722	84.745	93.568	6653
Total institutional bond ownership (in %)	55.437	30.881	0.016	100.000	32.205	51.278	84.822	6653

Panel B

	Mean	Std	Min	Max	p25	p50	p75	N
# of significant dual holders	2.218	1.258	1.000	10.000	1.000	2.000	3.000	3656
Total dual equity holding	6.556	4.394	0.501	17.675	2.959	5.947	9.141	3656
Total dual bond holding	12.994	12.210	0.484	63.838	4.943	9.435	16.389	3656

Table 2. Baseline results

Dependent variable is Granted option value/CEO vega divided by CEO total compensation (in % value). Dual ownership is at the beginning of the fiscal year. “Number of significant dual holders” indicate the number of significant dual holders of the firm. Significant dual holder is defined as that the investor holds at least 0.5% of the firm’s total outstanding equity and at least 0.5% of the firm’s total outstanding bonds. “Total dual equity/bond holding” is the aggregate equity/bond holdings of significant dual holders as percentage of the firm’s total equity/bond outstanding. Firm leverage is defined as the sum of long term debt and short term debt divided by total asset. Firm return on asset is operating income before depreciation divided by total asset. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. Stock volatility is the standard deviation of the firm’s monthly return over the past 3 years. Variables are winsorized at 1%. Industry fixed effect is by 2-digit-SIC. Standard errors are clustered at firm level. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	Granted option value/Total compensation			CEO vega/Total compensation		
	(1)	(2)	(3)	(4)	(5)	(6)
# of significant dual holders	-0.772*** (-2.71)			-0.125*** (-2.81)		
Total dual equity holding		-0.199** (-2.13)			-0.030** (-2.20)	
Total dual bond holding			-0.092*** (-2.85)			-0.019*** (-4.33)
Log(firm total asset)	1.755*** (3.81)	1.694*** (3.68)	1.534*** (3.45)	0.392*** (5.44)	0.380*** (5.36)	0.360*** (5.26)
Book-to-market ratio	-5.551*** (-5.55)	-5.539*** (-5.51)	-5.527*** (-5.50)	-0.740*** (-4.29)	-0.737*** (-4.25)	-0.738*** (-4.31)
Firm leverage	-4.579 (-1.29)	-4.860 (-1.38)	-5.072 (-1.44)	-0.247 (-0.45)	-0.298 (-0.54)	-0.310 (-0.57)
Firm return on asset	5.661 (0.86)	5.972 (0.90)	6.132 (0.92)	-1.092 (-1.06)	-1.038 (-1.00)	-1.024 (-1.00)
R&D/Total asset	43.006** (2.40)	42.825** (2.41)	43.351** (2.42)	5.303** (2.24)	5.269** (2.23)	5.401** (2.28)
Sales/Total asset	-2.345** (-2.37)	-2.331** (-2.36)	-2.409** (-2.45)	-0.430*** (-2.89)	-0.428*** (-2.88)	-0.442*** (-2.97)
PPE/Total asset	-6.398* (-1.90)	-6.452* (-1.92)	-6.404* (-1.91)	-0.942* (-1.86)	-0.952* (-1.88)	-0.939* (-1.86)
Firm past performance	-3.254*** (-4.27)	-3.253*** (-4.28)	-3.240*** (-4.25)	-1.035*** (-8.17)	-1.036*** (-8.19)	-1.031*** (-8.16)
Stock volatility	6.273 (0.61)	6.918 (0.67)	8.061 (0.79)	-7.399*** (-5.08)	-7.298*** (-5.00)	-7.051*** (-4.87)
Total institutional ownership	0.050** (2.38)	0.047** (2.24)	0.047** (2.27)	0.001 (0.31)	0.000 (0.15)	0.001 (0.29)
Total institutional bond ownership	0.020 (1.30)	0.021 (1.32)	0.015 (0.94)	0.001 (0.52)	0.001 (0.55)	-0.000 (-0.04)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	6653	6653	6653	6653	6653	6653

Table 3. Dual ownership and risk-taking incentives in managerial compensation: cross-sectional variations

This table shows how the relation between dual ownership and the compensation vega varies with book leverage of arm. The dependent variable is the vega (Core and Guay (2002)) divided by total compensation. Each year, firms are sorted into two group (Low and High) based on their book leverage. Dual ownership is at the beginning of the fiscal year. “Number of significant dual holders” indicate the number of significant dual holders of the firm. Significant dual holder is defined as that the investor holds at least 0.5% of the firm’s total outstanding equity and at least 0.5% of the firm’s total outstanding bonds. “Total dual equity/bond holding” is the aggregate equity/bond holdings of significant dual holders as percentage of the firm’s total equity/bond outstanding. Firm leverage is defined as the sum of long term debt and short term debt divided by total asset. Firm return on asset is operating income before depreciation divided by total asset. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. Stock volatility is the standard deviation of the firm’s monthly return over the past 3 years. Variables are winsorized at 1%. Industry fixed effect is by 2-digit-SIC. Standard errors are clustered at firm level. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

Dependent variable: Vega/Total compensation						
Leverage	Low (1)	High (2)	Low (3)	High (4)	Low (5)	High (6)
# of significant dual holders	-0.051 (-0.84)	-0.199*** (-3.19)				
Total dual equity holding			-0.007 (-0.37)	-0.049** (-2.54)		
Total dual bond holding					-0.017 (-1.00)	-0.019*** (-2.95)
Log(firm total asset)	0.395*** (3.61)	0.299*** (3.27)	0.382*** (3.55)	0.282*** (3.16)	0.392*** (3.73)	0.237*** (2.78)
Book-to-market ratio	-0.648*** (-3.25)	-0.867*** (-2.67)	-0.645*** (-3.22)	-0.858*** (-2.64)	-0.655*** (-3.31)	-0.852*** (-2.63)
Firm leverage	-0.907 (-1.03)	0.436 (0.31)	-0.920 (-1.05)	0.282 (0.20)	-0.933 (-1.07)	0.153 (0.11)
Firm return on asset	0.428 (0.33)	-2.919* (-1.81)	0.480 (0.37)	-2.905* (-1.80)	0.410 (0.31)	-2.808* (-1.75)
R&D/Total asset	2.584 (0.78)	7.502** (2.54)	2.550 (0.77)	7.527** (2.56)	2.729 (0.83)	7.475** (2.52)
Sales/Total asset	-0.563** (-2.36)	-0.409** (-2.22)	-0.567** (-2.37)	-0.402** (-2.18)	-0.564** (-2.36)	-0.438** (-2.38)
PPE/Total asset	-0.977 (-1.50)	-0.544 (-0.75)	-0.984 (-1.52)	-0.546 (-0.76)	-0.948 (-1.46)	-0.534 (-0.74)
Firm past performance	-0.744*** (-4.44)	-1.408*** (-7.30)	-0.745*** (-4.43)	-1.402*** (-7.30)	-0.757*** (-4.52)	-1.386*** (-7.18)
Stock volatility	-4.759*** (-2.62)	-10.754*** (-4.57)	-4.686** (-2.55)	-10.805*** (-4.60)	-4.463** (-2.46)	-10.504*** (-4.45)
Total institutional ownership	0.006* (1.65)	-0.008 (-1.50)	0.005 (1.51)	-0.009 (-1.64)	0.007* (1.95)	-0.009* (-1.72)
Total institutional bond ownership	0.003 (1.02)	0.000 (0.10)	0.003 (1.04)	0.000 (0.16)	0.002 (0.64)	-0.001 (-0.24)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	3323	3321	3323	3321	3323	3321

Table 4. Effect of dual ownership on CEO delta

Dependent variable is Granted stock value /CEO delta divided by CEO total compensation (in % value). Dual ownership is at the beginning of the fiscal year. “Number of significant dual holders” indicate the number of significant dual holders of the firm. Significant dual holder is defined as that the investor holds at least 0.5% of the firm’s total outstanding equity and at least 0.5% of the firm’s total outstanding bonds. “Total dual equity/bond holding” is the aggregate equity/bond holdings of significant dual holders as percentage of the firm’s total equity/bond outstanding. Firm leverage is defined as the sum of long term debt and short term debt divided by total asset. Firm return on asset is operating income before depreciation divided by total asset. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. Stock volatility is the standard deviation of the firm’s monthly return over the past 3 years. Variables are winsorized at 1%. Industry fixed effect is by 2-digit-SIC. Standard errors are clustered at firm level. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	Granted stock value/Total compensation			CEO delta/Total compensation		
	(1)	(2)	(3)	(4)	(5)	(6)
# of significant dual holders	0.123 (0.36)			0.076 (0.31)		
Total dual equity holding		0.018 (0.16)			-0.054 (-0.62)	
Total dual bond holding			-0.018 (-0.45)			0.005 (0.23)
Log(firm total asset)	2.864*** (5.57)	2.890*** (5.61)	2.929*** (5.88)	0.309 (0.60)	0.405 (0.79)	0.335 (0.70)
Book-to-market ratio	0.429 (0.31)	0.423 (0.30)	0.406 (0.29)	-3.693*** (-3.20)	-3.719*** (-3.22)	-3.697*** (-3.22)
Firm leverage	7.703* (1.87)	7.788* (1.89)	7.916* (1.93)	-9.283*** (-2.86)	-9.036*** (-2.79)	-9.218*** (-2.85)
Firm return on asset	-33.884*** (-4.48)	-33.957*** (-4.48)	-34.027*** (-4.49)	10.463 (1.48)	10.301 (1.46)	10.408 (1.48)
R&D/Total asset	45.014** (2.45)	45.075** (2.45)	45.315** (2.46)	8.686 (0.72)	8.880 (0.74)	8.696 (0.72)
Sales/Total asset	0.830 (0.74)	0.831 (0.74)	0.828 (0.73)	-3.218*** (-3.16)	-3.202*** (-3.15)	-3.213*** (-3.15)
PPE/Total asset	11.527*** (2.69)	11.540*** (2.69)	11.567*** (2.70)	1.051 (0.34)	1.079 (0.34)	1.057 (0.34)
Firm past performance	-5.870*** (-6.29)	-5.868*** (-6.29)	-5.855*** (-6.27)	-0.482 (-0.68)	-0.468 (-0.66)	-0.481 (-0.68)
Stock volatility	-9.211 (-0.75)	-9.294 (-0.76)	-8.988 (-0.73)	-0.604 (-0.08)	-0.564 (-0.07)	-0.718 (-0.09)
Total institutional ownership	0.047* (1.75)	0.048* (1.79)	0.051* (1.92)	-0.078*** (-3.76)	-0.074*** (-3.54)	-0.077*** (-3.78)
Total institutional bond ownership	-0.010 (-0.56)	-0.010 (-0.57)	-0.012 (-0.66)	0.006 (0.58)	0.006 (0.51)	0.007 (0.59)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	6653	6653	6653	6653	6653	6653

Table 5. Summary statistics for dual ownership for the alternative sample

“Dual” is dummy which equals 1 if the firm has at least one significant dual holder. Significant dual holder is defined as that the investor holds at least 1% of the firm’s total outstanding equity and at least 1% of the firm’s total outstanding bonds. “Total dual equity/bond holding” is the aggregate equity/bond holdings of significant dual holders as percentage of the firm’s total equity/bond outstanding. This table shows the summary statistics for these dual ownership variables for all firms in the sample.

	Mean	Std	Min	Max	p25	p50	p75	N
# of significant dual holders	0.669	0.926	0.000	7.000	0.000	0.000	1.000	6653
Total dual equity holding (in %)	2.642	3.936	0.000	15.700	0.000	0.000	4.780	6653
Total dual bond holding (in %)	4.810	8.983	0.000	54.824	0.000	0.000	6.675	6653

Table 6. Results using 1% as dual holder cutoff

Dependent variable is CEO vega divided by CEO total compensation (in % value). Dual ownership is at the beginning of the fiscal year. “Dual” is dummy which equals 1 if the firm has at least one significant dual holder. Significant dual holder is defined as that the investor holds at least 1% of the firm’s total outstanding equity and at least 1% of the firm’s total outstanding bonds. “Total dual equity/bond holding” is the aggregate equity/bond holdings of significant dual holders as percentage of the firm’s total equity/bond outstanding. Firm leverage is defined as the sum of long term debt and short term debt divided by total asset. Firm return on asset is operating income before depreciation divided by total asset. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. Stock volatility is the standard deviation of the firm’s monthly return over the past 3 years. Variables are winsorized at 1%. Industry fixed effect is by 2-digit-SIC. Standard errors are clustered at firm level. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	Granted option value/Total compensation			CEO vega/Total compensation		
	(1)	(2)	(3)	(4)	(5)	(6)
# of significant dual holders	-0.975** (-2.29)			-0.116* (-1.83)		
Total dual equity holding		-0.199** (-1.96)			-0.021* (-1.67)	
Total dual bond holding			-0.094** (-2.49)			-0.016*** (-3.00)
Log(firm total asset)	1.690*** (3.67)	1.643*** (3.62)	1.528*** (3.43)	0.372*** (5.30)	0.364*** (8.91)	0.356*** (5.19)
Book-to-market ratio	-5.518*** (-5.50)	-5.527*** (-5.49)	-5.503*** (-5.49)	-0.732*** (-4.25)	-0.733*** (-5.46)	-0.732*** (-4.27)
Firm leverage	-4.903 (-1.39)	-5.044 (-1.43)	-5.095 (-1.44)	-0.322 (-0.59)	-0.344 (-0.98)	-0.327 (-0.59)
Firm return on asset	5.943 (0.90)	6.127 (0.92)	6.251 (0.94)	-1.030 (-1.00)	-1.006 (-1.41)	-0.997 (-0.97)
R&D/Total asset	42.931** (2.40)	42.802** (2.40)	42.926** (2.40)	5.266** (2.22)	5.245*** (3.74)	5.294** (2.23)
Sales/Total asset	-2.355** (-2.39)	-2.337** (-2.37)	-2.371** (-2.41)	-0.433*** (-2.91)	-0.431*** (-4.22)	-0.434*** (-2.92)
PPE/Total asset	-6.516* (-1.94)	-6.501* (-1.93)	-6.452* (-1.92)	-0.961* (-1.90)	-0.960*** (-2.89)	-0.951* (-1.88)
Firm past performance	-3.276*** (-4.30)	-3.282*** (-4.30)	-3.265*** (-4.28)	-1.040*** (-8.19)	-1.040*** (-7.46)	-1.037*** (-8.19)
Stock volatility	7.020 (0.68)	7.240 (0.70)	8.145 (0.80)	-7.295*** (-5.00)	-7.277*** (-5.92)	-7.086*** (-4.87)
Total institutional ownership	0.046** (2.20)	0.045** (2.14)	0.044** (2.12)	-0.000 (-0.00)	-0.000 (-0.10)	0.000 (0.02)
Total institutional bond ownership	0.022 (1.38)	0.022 (1.37)	0.018 (1.12)	0.001 (0.63)	0.001 (0.82)	0.001 (0.31)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	6653	6653	6653	6653	6653	6653

Table 7. Distribution of MAs and treat firms

This table shows the total numbers of MAs and treatment firms in the final sample used for the Difference-in-Difference study. The MAs are mergers and acquisitions between financial institutions that change a financial institution from pure equity holder or bond holder to significant dual holder of a firm. The affected firms are our treatment firms. Significant dual holder is defined as that the institutional investor holds at least 0.5% of the firm's total outstanding equity and at least 0.5% of the firm's total outstanding bonds.

Year	No. of MAs	No. of treatment firms
2006	2	13
2007	2	8
2008	1	2
2009	2	77
2010	3	47
2011	1	1
2012	2	7
2014	2	9
Total	13	164

Table 8. Difference-in-difference regression results

Dependent variable is Granted option value/CEO vega divided by CEO total compensation (in % value). Treat is a dummy, which equals 1 when it is treatment firm, and 0 when it is control firm. Post is a dummy, which equals 1 when the year is after the M&A, and 0 when the year is before the M&A. The other control variables are defined same as before. Variables are winsorized at 1%. Standard errors are clustered at firm level for all regressions. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	Granted option value/Total compensation		CEO vega/Total compensation	
	(1)	(2)	(3)	(4)
Treat x Post	-4.532*** (-3.07)	-3.175** (-2.33)	-0.899*** (-4.12)	-0.804*** (-3.85)
Treat	0.255 (0.15)		0.383 (1.46)	
Post	1.927 (1.34)	0.108 (0.10)	0.518 (1.23)	0.207 (1.13)
Log(firm total asset)	1.390** (2.37)	0.110 (0.09)	0.226*** (2.84)	0.040 (0.27)
Book-to-market ratio	-2.647* (-1.95)	-2.623** (-2.47)	-0.414** (-2.08)	-0.450*** (-2.83)
Firm leverage	-3.556 (-0.78)	-3.876 (-0.98)	-0.175 (-0.30)	0.030 (0.05)
Firm return on asset	-7.226 (-0.91)	1.195 (0.17)	-2.784*** (-2.71)	-1.825* (-1.76)
Sales/Total asset	-2.125 (-1.58)	-1.642 (-0.83)	-0.154 (-0.95)	-0.251 (-1.22)
R&D/Total asset	45.401** (2.50)	36.255 (1.41)	5.879** (2.30)	5.955 (1.07)
PPE/Total asset	-0.683 (-0.14)	-6.179 (-0.99)	0.258 (0.41)	1.135 (1.46)
Firm past performance	-2.219*** (-2.67)	-2.644*** (-4.12)	-0.778*** (-5.85)	-0.716*** (-5.81)
Stock volatility	2.981 (0.21)	2.052 (0.20)	-6.618*** (-3.06)	-1.501 (-1.01)
Total institutional ownership	1.378 (0.51)	-2.068 (-0.84)	-0.252 (-0.69)	-0.331 (-1.24)
Total institutional bond ownership	0.129** (2.10)	0.007 (0.22)	0.002 (0.15)	-0.016*** (-3.81)
Industry fixed effect	Yes	No	Yes	No
Firm fixed effect	No	Yes	No	Yes
Year fixed effect	Yes	Yes	Yes	Yes
N	4356	4356	4356	4356

Table 9. Mutual funds vote toward compensation proposals

Dependent variable is a dummy to indicate mutual funds vote to increase vega. Dual holder is a dummy to indicate the mutual fund's financial conglomerate is a dual holder of the firm. Dual ownership is the percentage of the mutual fund's financial conglomerate's equity holding on the firm when it's dual holder, and 0 otherwise. Fund alpha is the alpha from regressing the fund's monthly returns on Carhart four factors over the 36 months before the meeting. Firm past performance is the firm's previous 12 month compounded return adjusted by market return. Stock volatility is the standard deviation of the firm's monthly stock return over the past 3 years. Variables are winsorized at 1%. Standard errors are clustered at mutual fund level for all regressions. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Dual holder	-0.006*** (-3.07)			-0.007*** (-3.32)		
Dual ownership		-0.102 (-1.48)			-0.202*** (-2.89)	
Dual bond ownership			-0.046* (-1.67)			-0.075** (-2.56)
Log(fund TNA)	-0.000 (-0.30)	-0.000 (-0.28)	-0.000 (-0.36)	-0.002 (-1.08)	-0.002 (-1.09)	-0.002 (-1.08)
Fund turnover rate	0.001 (0.83)	0.001 (0.83)	0.001 (0.82)	-0.005 (-1.53)	-0.005 (-1.52)	-0.005 (-1.53)
Fund expense ratio	0.109 (0.50)	0.104 (0.47)	0.114 (0.52)	-2.115* (-1.90)	-2.119* (-1.90)	-2.114* (-1.90)
Fund alpha	0.347 (0.75)	0.332 (0.72)	0.345 (0.75)	0.245 (0.45)	0.241 (0.45)	0.245 (0.45)
Fund fixed effect	No	No	No	Yes	Yes	Yes
Proposal fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	265111	265111	265111	265111	265111	265111

Table 10. Mutual funds vote toward compensation proposals, alternative dependent variable

Dependent variable is a dummy to indicate mutual funds vote to increase vega. Dual holder is a dummy to indicate the mutual fund's financial conglomerate is a dual holder of the firm. Dual ownership is the percentage of the mutual fund's financial conglomerate's equity holding on the firm when it's dual holder, and 0 otherwise. Fund alpha is the alpha from regressing the fund's monthly returns on Carhart four factors over the 36 months before the meeting. Firm past performance is the firm's previous 12 month compounded return adjusted by market return. Stock volatility is the standard deviation of the firm's monthly stock return over the past 3 years. Variables are winsorized at 1%. Standard errors are clustered at mutual fund level for all regressions. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Dual holder	-0.007*** (-3.12)			-0.008*** (-3.36)		
Dual ownership		-0.318*** (-4.21)			-0.454*** (-5.70)	
Dual bond ownership			-0.049* (-1.69)			-0.073* (-1.72)
Log(fund TNA)	-0.000 (-0.30)	-0.000 (-0.03)	-0.000 (-0.37)	-0.003 (-1.32)	-0.003 (-1.30)	-0.003 (-1.32)
Fund turnover rate	0.000 (0.25)	0.001 (0.30)	0.000 (0.23)	-0.006* (-1.76)	-0.006* (-1.73)	-0.006* (-1.76)
Fund expense ratio	0.115 (0.47)	0.081 (0.33)	0.120 (0.49)	-1.496 (-1.18)	-1.502 (-1.19)	-1.495 (-1.18)
Fund alpha	0.117 (0.24)	0.100 (0.21)	0.114 (0.23)	-0.032 (-0.06)	-0.045 (-0.08)	-0.029 (-0.05)
Fund fixed effect	No	No	No	Yes	Yes	Yes
Proposal fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	224213	224213	224213	224213	224213	224213

Chapter 3: Dual Ownership and corporate social responsibility

Abstract

We study shareholder-bondholder conflicts on corporate social responsibility (CSR). We find that firms with dual holders have higher CSR ratings, and the effect is stronger when the dual holders' equity/bond holdings on the firm are larger. Separate investigation shows that the existence of dual holders leads to an increase in the strengths of CSR and a decrease in the weakness of CSR. We also use mergers between financial institutions as the identification strategy and a difference-in-difference setting to address the endogeneity concern. Overall, the results suggest that bond holders prefer CSR more than equity holders and affect firm policies in this direction.

I. Introduction

Corporate social responsibility (CSR) has become more and more important in the business practice of US companies (Starks 2009). According to a survey by UN Global Compact Acceture CEO Study in 2010, 93% of CEOs think sustainability affect their firm's future success. Moreover, the total assets of the socially responsible investing is \$316.1 billion in 2010 (Oikonomou, Brooks, & Pavelin 2014). These figures reveal the consensus of business practitioners on the value of CSR.

The academia have also paid much attention to this subject. Many researchers try to add insights to a main question: whether CSR really increases firm value? This has been controversial since the concept of CSR was come up. The opponents think CSR is somehow a waste of firm resource, and it only generates benefit for the management but not shareholders. The advocates think CSR increases the trust between the firm and its stakeholders and thus increases stakeholders' commitment to the firm, which will finally increases firm value.

Another important aspect of CSR is the effect of CSR on firm risk. Evidences on this question are much less divergent. Though there are some opposite opinions, most studies find that CSR reduces firm risk (McGuire, Sundgren, and Schneeweis 1988; Orlitzky and Benjamin 2001; Sharfman and Fernando 2008; Salama, Anderson, & Toms 2011). There are potentially two reasons for it. The first one takes CSR as commitments to stakeholders of the firm. The stakeholders all provide some kinds of resources for the firm's operation and are thus important to the firm's business. However, the lack of explicit contracts between stakeholders and the firm makes both of them voluntary to the suspension of cooperation of the counterparty. This induces risks for both parties. Firm CSR activities are commitments to stakeholders, they increase stakeholders' trust on the firm. Such stakeholders will also have more commitment to the firm and have more stability in providing resource for the firm's business operation. So

CSR reduces firm risk by reducing the uncertainty from stakeholders. The other reason can be that CSR provides some “insurance-like” benefit to the firm. This is because CSR activities improve stakeholders’ impression on the firm. Then when the firm experiences a negative shock, such as legal /regulatory issues, stakeholders will have more tolerance on the firm because of goodwill. This helps the firm to go through hard period and reduces firm risk.

On the other hand, shareholder-bondholder conflicts on firm risk have long been recognized (Jensen and Meckling 1976; Smith and Warner 1979; Black 1976; Gilje 2016)). As shareholders can enjoy the benefit of increasing firm risk but bondholders have to bear the cost, the increase in firm risk generally means a transfer of wealth from bondholders to shareholders (John and John 1993). So bondholders prefer lower firm risk level than shareholders.

As CSR can reduce firm risk, we can expect that bondholders will prefer CSR more than shareholders. Regardless of whether CSR really increases firm value, the benefits of CSR are disproportionally enjoyed by bondholders. This is because reducing firm risk benefits bondholders more than shareholders. This reveals the conflicts between shareholders and bondholders on CSR policies.

Though bondholders prefer CSR more than shareholders, the firm CSR policies cannot be directly influenced by bondholders, so as other firm policies. In this paper we look at dual holders, which are financial conglomerates that simultaneously hold equities and bonds of the same firm. The concepts of dual ownership or similar have been used in papers like Bodnaruk & Rossi (2016); Chu (2017); Hong and Kacperczyk (2010); Jiang, Li, & Shao (2010). The goal of dual holders is to maximize the sum of values of equities and bonds they hold on the firm. The optimal risk level for dual holders is thus lower than that of pure equity holders. This means dual holders and pure equity holders are also conflicted on firm CSR policies. Moreover, if dual holders prefer CSR more than pure equity holders, it also implies that bondholders prefer

CSR more than shareholders. In other words, the shareholder-bondholder conflicts on CSR are partially represented by dual holder-pure equity holder conflicts on CSR.

Unlike pure bondholders, dual holders can influence firm policies due to their stock holdings on the firm. So the conflicts between pure equity holders and dual holders on CSR will be reflected on firm policies. More specifically, firms with higher percentage of dual holders have better CSR performance.

There are two benefits of studying dual holders. First, it transfers the shareholder-bondholder conflicts on CSR to firm policies. So we can observe how the firm CSR performance is affected by the percentage of dual holders on firm. Second, the different CSR performance between firms with and without dual holders also implies the shareholder-bondholder conflicts on CSR. Overall, it provides us an indicative prediction on the firm CSR and also a testable argument on shareholder-bondholder conflicts.

Ideally we expect dual holders have different incentives on CSR policies as long as they simultaneously hold stocks and bonds of the same firm. However, if their equity or bond holding is too small, the effect may not be observed in reality. Therefore, when conducting the empirical analysis, we require the dual holders to hold sufficient percentage of both equities and bonds of the firm. We call such dual holders as significant dual holders.

Using the KLD data as measures of CSR, we find that firms with significant dual holders have better CSR performance. This is consistent with that significant dual holders partially represent the benefit of bondholders and therefore prefer CSR more than pure equity holders. Moreover, when the significant dual holders' aggregate equity/bond holdings on the firm are larger, the effect is stronger. This is because the significant dual holders have more influence on the firm or they value the bond benefits more in such cases.

Separate investigation on the positive side of CSR and negative side of CSR shows that, the existence of dual holders induces the firm to both conduct more good deed and less bad deed. The effect of dual holders in reducing the bad deed of CSR is most robust.

To address the endogeneity concern, we use mergers between financial institutions as identification strategy. When a firm's equity holder (bondholder) acquires its bondholder (equity holder), the acquirer can become a dual holder of the firm. As the acquisition can be regarded as exogenous to the firm, the change in the firm's CSR can be attributed to the change in dual ownership due to the acquisition. We use a difference-in-difference setting to demonstrate this effect. The empirical results show that, compared to control firms, firms with equity holder and bond holder becoming dual holder due to the acquisition experience a larger increase in CSR performance.

Overall, our results suggest dual holders can affect firm CSR performance. Specifically, firms with higher dual ownership have better CSR performance. The results also reveal the shareholder-bondholder conflicts on CSR.

The contributions of the paper are threefold. First, it contributes to CSR literature by showing that CSR is affected by firm's capital structure. The CSR literature have found many determinants of firm CSR performance but not capital structure. In this paper we show that the percentage of dual holders can affect CSR as dual holders deviate from pure shareholders on CSR preference.

Second, it adds insights to the shareholder-bondholder conflicts. Though shareholder-bondholder conflicts on firm risk level have been discussed a lot, its specific implication on CSR is never discovered. In this paper, we specifically investigate its effect on CSR and find significance influence.

Third, it shows the significant effect of dual holders in shaping firm policies. Dual holders have different object functions from pure shareholders in many firm policies. Such policies may be influenced by dual holders. So it provides an additional dimension for researchers to understand the determinants of firm policies. Though theoretical arguments can give a lot of insights on the direction of possible influence of dual holders, whether such effect exists in reality and to what extent it affects firm policies are left to empirics.

The rest of the paper is organized as following. Section II summarizes literature and develops our hypotheses. Section III describes the data and sample. Section IV shows the empirical results. Finally Section V concludes the paper.

II. Literature and hypotheses

With its prevalence in business practice, corporate social responsibility has been extensively studied in literature.

There has been large debates on whether CSR really increases firm value. The shareholder expense view thinks that CSR devotes firm resources to activities that do not directly generate benefit for firm profit but only benefit management, and hence they are deviation from the shareholder value maximization (Pagano and Volpin, 2005, Surroca and Tribo, 2008). The stakeholder value maximization view takes CSR as commitments to stakeholders. Stakeholders' support then help the firm to operate better and get more profit (Cornell and Shapiro 1987, Hill and Jones 1992). Deng, Kang, and Low (2013) investigate the effect of CSR on mergers and show that CSR creates value for acquiring firms. They find that high CSR acquirers experience higher announcement returns during mergers and higher long-term stock returns. Their results support the stakeholder value maximization view.

Though whether CSR really increases firm value is controversial, most studies find negative correlation between CSR and firm risk. This is consistent with the stakeholder value maximization view. In this theory, the firm is regarded as nexus of contracts between different organizations. And each stakeholder provides some resource for the firm's operation and thus contributes to the firm's profit. Some contracts are explicit while some are implicit. The implicit contracts are nonbinding and thus each organization has to rely on its trust of other parties. CSR can be regarded as commitment to other stakeholders. Thus stakeholders of high CSR firm have more trust on the firm and thus supply the resources with more stability. Therefore, high CSR firms have lower risk.

The empirical evidences are extensive. McGuire, Sundgren, and Schneeweis (1988) show that CSR is positively related to firm's financial performance and negatively related to firm's systematic risk. Orlitzky and Benjamin (2001) use meta-analysis of previous studies and show that the true CSR and firm risk are negatively correlated. Sharfman and Fernando (2008) look at the environmental dimension of CSR. They show that environmental risk management lowers firm's equity capital cost through lowering systematic risk. Salama, Anderson, & Toms (2011) find that community and environmental responsibility (two important dimensions of corporate social responsibility) reduces firm risk.

Another reason is that engaging in corporate social responsibility activities allow the firm to maintain good relationship with its customers, employees, government, community and other stakeholders. This reduces the stakeholders' negative judgments and sanctions toward the firm when it suffers a negative event. As such, the firm may have larger chance to survive hard time. In other words, CSR provides the firm "insurance-like" protection. Godfrey, Merrill, and Hansen (2009) investigate 178 negative legal/regulatory actions against firms, and find that

CSR activities that aimed at a firm's secondary stakeholder or society at large provide the "insurance-like" benefit for the firm.

In either cases, CSR helps to reduce firm risk.

On the other hand, equity holders and bond holders have different preferences about firm risk level. As an increase in firm risk generally means a transfer of wealth from bond holders to equity holders, bond holders generally prefer lower risk level than equity holders. These conflicts of interest between shareholders and bond holders on firm risk can be extended to different firm policies. In the context of this paper, as CSR reduces firm risk, bond holders will prefer CSR more than equity holders. This is because increasing CSR benefits bond holders more than equity holders.

The shareholder-bondholder conflicts on CSR reveal the divergence in their incentives. As bond holders can not affect firm policies directly, the conflicts cannot be directly observed. So in this paper we look at dual holders. Dual holders hold both stocks and bonds on the firm, they take into consideration of the value of both equities and bonds. Compared to pure equity holders, dual holders prefer lower firm risk level. As such, dual holders prefer CSR more than pure equity holders, this is driven by dual holders' concern on the value of bonds. Note that the reverse of the argument is also valid. That is, if dual holders prefer CSR more than pure equity holders, this implies that bond holders prefer CSR more than equity holders.

The benefit of studying dual holders is that they can directly affect firm policies, as dual holders also hold stocks of the firm and they have voting rights. This enable them to directly vote on CSR policies. Also, they can withhold their votes toward directors in the director election if the CSR policies do not meet their expectations. As both pure equity holders and dual holders can affect firm policies, and they have different preference on CSR, we may expect the firm's

CSR be affected by the relative ratio of pure equity holders and dual holders. More specifically, firms with higher percentages of dual holders will have better CSR performance.

III. Data and sample

1. Measures of CSR

The CSR data is from KLD Database, following Deng, Kang, and Low (2013), Jiao (2010), Chen, Dong, and Lin (2018). The KLD Database provides CSR ratings for Russell 3000 firms since 2003. It evaluates firms' social responsible activities in seven dimensions: community, diversity, corporate governance, employee relations, environment, human rights, and product quality and safety. In our analysis we exclude the corporate governance and human rights dimensions. This is because the corporate governance effect has been investigated separately by other papers, and the human rights dimensions data are missing for the majority of firms.

There are five dimensions remaining. They expand to different categories. For each category, when the firm conducts a good (bad) deed, it gets 1 score in the strength (concern). The summation of strength (concern) scores among all categories of the dimension gives the firm's CSR strength (concern) score on the dimension.

In this study we use three measures for the firm CSR performance. We sum up the firm's CSR strength scores among the five dimensions as the "CSR strength", sum up the firm's CSR concern scores among the five dimensions as the "CSR concern". Then we compute the firm's CSR as "CSR strength" minus "CSR concern". The computed CSR score will be our main measure of firm's CSR performance, but we also look at the "CSR strength" and "CSR concern" measure.

2. Identifying dual holders

Our definition of dual holders stand on the concept of financial conglomerate. Financial conglomerates are ultimate parent firms for financial institutions. This is because the activities of financial institutions can be coordinated by their ultimate parent firms to maximize the final benefits. Thus a firm's equity holdings and bond holdings by institutions of the same financial conglomerate can be coordinated to maximize the total value of these holdings.

In this paper we mainly focus on mutual funds. We obtain the mutual funds' equity holdings data from Thomson Reuters Spectrum/CDA. Then we manually identify the financial conglomerate that each mutual fund family belongs to. This information sources includes CapitalIQ, director of investment advisers (www.adviserinfo.sec.gov), Morningstar's directory of mutual fund family (www.advisor.morningstar.com), and the companies' websites.

The mutual funds' bond holding data is from eMAXX. It records the bond holdings on public firms by each account of each financial institution. We also manually identify the financial conglomerate for each institution, through the same process as the equity case.

Finally, financial conglomerate with institutions holding equities of the firm and institutions holding bonds of the firm (the equity holding institutions and bond holding institutions can be same or different) is identified as a dual holder of the firm. We aggregate equity holdings on the firm by all institutions or sub-divisions of the financial conglomerate as the financial conglomerate's equity holdings on the firm. Similarly the aggregated bond holdings on the firm by all institutions or sub-divisions of the financial conglomerate are taken as the financial conglomerate's bond holdings on the firm.

Although we expect financial conglomerate holding both equities and bonds of the same firm (dual holder) will consider the values of equities and bonds at the same time, and thus represent the benefit of both shareholders and bondholders, it may not work if the financial conglomerate's equity or bond holding on the firm is too small. For example, if the financial

conglomerate holds a large percentage of stocks on the firm but the bond holding is very small, it may have very little incentive to take into consideration the value of the bond and influence firm policies in that way. On the other hand, if the financial conglomerate holds a large percentage of bonds on the firm but the equity holding is very small, though it cares about the value of bonds, it can have very little influence on the firm. Therefore, we require the dual holder's equity and bond holdings to be both at least 0.5% of the firm's total equity/bond outstanding, we call such dual holders as significant dual holders. We choose 0.5% as cutoffs to make sure that there are sufficient number of significant dual holders for our analysis. We have also used other cutoffs in our tests.

3. Construct independent variables and sample

We start with the Russell 3000 firms from KLD Database. The sample period is from 2003 to 2012. At the beginning of each year, we identify the dual holders for each firm, as well as the dual holders' equity and bond holdings on the firm. We construct three measures for the firm's dual holding. The first measure is "dual" dummy, which equals 1 when the firm has at least one significant dual holders and 0 otherwise. The second measure is "dual ownership", which is the aggregate equity holdings by all significant dual holders of the firm. The third measure is "dual bond ownership", which is the aggregate bond holdings by all significant dual holders of the firm.

We delete firms that are not covered by both Thomson Reuters Spectrum and eMAXX, as we can't identify their dual holders. Also firms from financial and utility industries are excluded following literature.

Finally, the stock price information is from CRSP, and accounting information is from Compustat. After deleting observations that miss the necessary control variables, we get 7,887 firm-year observations with 1,241 distinct firms.

IV. Research design

The main empirical test is to investigate the relation between firm's dual ownership and CSR.

We use the following models to estimate the effect.

$$CSR_{i,t} = \alpha_0 + \beta_1 \times Dual_{i,t} + \theta \times Z_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$CSR_{i,t} = \alpha_0 + \beta_1 \times Total\ dual\ equity\ holding_{i,t} + \theta \times Z_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$CSR_{i,t} = \alpha_0 + \beta_1 \times Total\ dual\ bond\ holding_{i,t} + \theta \times Z_{i,t} + \varepsilon_{i,t} \quad (3)$$

Equation (1) uses “Dual” dummy as explanatory variable. As significant dual holders prefer CSR more than pure equity holders and affect CSR policies in this way, we expect firms with significant dual holders and firms without significant dual holders have different CSR performance. This does not mean all firms with significant dual holders should have higher CSR than firms without significant dual holders, but means that on average firms with significant dual holders tend to have better CSR performance. This measure mainly captures whether significant dual holders really affect firm CSR and to which direction.

Equation (2) uses “Total dual equity holding” as explanatory variable. The results of total dual equity holding provide more information because it captures the influence of significant dual holders on the firm. Though we expect significant dual holders prefer higher CSR, but the influence of significant dual holders on the firm depends on their stock holdings on the firm. There are two cases that may lead to large total dual equity holding. The first case is that the number of significant dual holders is large. In this case, more significant dual holders seek to influence CSR policies, so aggregately they can drive the CSR policies more to the direction they like. The second case is that the number of significant dual holders is not large but each significant dual holder's equity holding on the firm is large. Larger equity holding means more

influence on the firm through voting or other channel. Thus in this case, significant dual holders can also affect the firm CSR policies more. Overall, the total dual equity holding captures the aggregate influence of significant dual holders on firm policies and thus provides additional insights.

Equation (3) uses “Total dual bond holding” as explanatory variable. Total dual bond holding matters because it measures the significant dual holders’ commitment to bond value. When this value is large, it means significant dual holders put more weights on the bonds aggregately. Then their preferred CSR level will be shifted towards bond holder more, e.g., better CSR performance. So among firms with significant dual holders, those that have high total dual bond holding have additional incentive to improve CSR.

V. Empirical results

1. Summary statistics

Our main sample uses 0.5% as cutoffs for identifying significant dual holders. Table 1 shows the summary statistics for the sample. “Dual” dummy is defined to be 1 when the firm has at least one significant dual holder. “Total dual equity holding” is the aggregate equity holding on the firm by its all significant dual holders, and it is defined to be 0 when the firm has no significant dual holder. “Total dual bond holding” is the aggregate bond holding on the firm by its all significant dual holders, and it is defined to be 0 when the firm has no significant dual holder. As we can see, 41% of firms have at least one significant dual holder in our sample. On average, significant dual holders’ equity holding on the firm is 2.5%, and significant dual holders’ bond holding on the firm is 5.8%. These numbers are rather small, because they are averaged among all firms and the majority of firms (59%) have 0 in “Total dual equity holding” and “Total dual bond holding”. If we only look at firms with significant dual holders, the

average “Total dual equity holding” is 6% and the average “Total dual bond holding” is 14.1%. Panel B of Table 1 tabulates the data. These magnitudes are considerable and thus help to justify our analysis and regression.

The other variables are defined following literature tradition. We use the nature log of firm total asset as measure of firm size. The average value is 21.8 and media is 21.6. Book-to-market ratio is computed as book value of total equity divided by market value of total equity, with average value of 0.58. The firm leverage is the sum of short term debt and long term debt scaled by total asset. The R&D/Total asset is small with mean 0.024, this is because the majority of firms report no R&D expenditures and have 0 in value. Finally, the firm past performance is the firm’s past year stock return in excess of its Corhart Four Factors benchmark. And stock volatility is the standard deviation of the firm’s past 36 months stock returns.

2. Baseline results

Table 2 shows the baseline results. The dependent variable is the firm’s CSR performance. This value is computed as the total score of CSR strength minus the total score of CSR concern. We control firm fixed effect and year fixed in all regressions.

The first two columns use the “Dual” dummy as key independent variable. We can see that having significant dual holders has remarkable positive influence on the firm’s CSR performance. This suggests overall significant dual holders seek to improve CSR. Moreover, it implies that bond holders prefer CSR more than equity holders. So the results not only show the influence of dual holders on CSR but also reveal the shareholder-bondholder conflicts on CSR. The first column controls firm size, book-to-market ratio, firm past performance, and stock volatility. The second column controls the additional firm characteristics. The results are similar.

Column (3) and column (4) regress on the “Total dual equity holding” variable. The results show that firms with higher percentage of equities held by significant dual holders have better CSR performance. This is because significant dual holders aggregately have more influence on such firms and thus they drive the firm CSR policies more.

Column (5) and column (6) regress on the “Total dual bond holding” variable. The results show that firms with higher percentage of bonds held by significant dual holders have better CSR performance. In such case significant dual holders care more about the value of bonds and they prefer the CSR even more.

Though the three measures try to provide information on different aspects of effects of significant dual holders on CSR, they are also highly correlated. One underlying logic is that if significant dual holders really improve CSR, then when their equity holding/bond holding is larger, they should improve CSR more. In other words, the sign of the three measures should be the same, e.g., all positive. These are indeed our results. The consistence in the results of the three measures make our arguments more convincing.

The empirical results mainly show that the presence of significant dual holders improves firm’s CSR, and the effect is stronger when the significant dual holders’ equity/bond holdings on the firm are larger. We further analyze the results with two arguments. First, hypothecated on that bondholders prefer CSR more than shareholders, we can deduce that dual holders prefer CSR more than pure equity holders. Then given that dual holders can affect firm policies, we can predict that firms with significant dual holders have better CSR performance. Our empirical results are consistent with the predictions. This argument gives the explanation of results we find. Second, the results build strong positive relationship between CSR and the existence of significant dual holders. This suggests dual holders prefer CSR more than pure equity holders. By comparing the structure of dual holders and pure equity holders, we can deduce that bond

holders prefer CSR more than equity holders. Thus they reveal the shareholder-bondholder conflicts on CSR. Such nice implications of the results come from the special design of the research, more precisely, the use of dual holders.

3. Separate investigation on strength and concerns of CSR

Our CSR measure comes from the KLD database. It evaluates firm's CSR performance on the positive side (strength) and negative side (concern). When the firm exercise more practice on the positive side and less practice on the negative side, its overall CSR performance is better. It is therefore unclear whether the correlation between CSR and dual ownership comes from the positive side or negative side. More specifically, it is unclear that whether the fact that dual holders increase the positive side of CSR drives our results or the fact that dual holders decrease the negative side of CSR drives our results, or both. In this section, we try to provide answer to this question.

There are substantial difference on the implications of different situations. If dual holders increase the positive side of CSR, it means dual holders mainly seek to reduce firm risk by provide goodwill to stakeholders. It may suggest the "insure-like" benefit channel works more in reducing firm risk. If the dual holders decrease the negative side of CSR, it means dual holders mainly seek to reduce firm risk by reducing its reputation damage on stakeholders. It may suggest the "stakeholder commitment" channel works more in reducing firm risk. This classification is not absolute, but still it is suggestive on the channels of how CSR reduces firm risk.

Table 3 provides the results using CSR strength as dependent variable, whereas CSR strength is computed as summation of the firm's scores on categories of strength. From the table we can see that "Dual" dummy and "Total dual equity holding" still have positive significant effect on CSR, but "Total dual bond holding" is no longer significant. This may suggest significant dual

holders still seek to improve CSR strength, but the additional bond holdings do not provide additional incentive to further improve it.

Table 4 shows the results using CSR concern as dependent variable, whereas CSR concern is computed as summation of the firm's scores on categories of concern. All the three measures on dual ownership show significant negative effect on CSR concern. This provides quite clear evidence that dual holders seek to reduce the negative side CSR. In other words, dual holders want to reduce the image damage on stakeholders through conducting less bad deed.

Overall, the results in Table 3 and Table 4 suggest dual holders both improve the positive side of CSR and reduce the negative side of CSR. But the results on CSR concern are more robust. Such results are more supportive of the "stakeholder commitment" channel through which CSR reduces firm risk.

4. Effects on different dimensions of CSR

Our definition of CSR includes five dimensions: community, diversity, employee relations, environment, and product quality and safety. The results above show the effect of dual ownership on the overall CSR scores. However, it is unclear which dimension this effect comes from. Therefore, we conduct the analysis separately on each of the five dimensions, with CSR on the dimension is defined as the subtraction of strength minus concern. So it ranges from -1 to 1.

It appears that the effects of dual ownership on the dimensions of environment and employee relation are robustly significant on our different models. Table 5 shows the regression results, where panel A shows the effect on environment and panel B shows the effect on employee relation. These results may suggest that CSR on environment and employee relation are more

significantly related to firm risk, and shareholders and bondholders have most conflicts on these two dimensions.

5. Robustness test

In our baseline analysis, we use 0.5% as cutoff for identifying significant dual holders. This cutoff is chosen to make sure that the significant dual holders have sufficient equity/bond holdings on the firm and also there are sufficient number of significant dual holders for our analysis. Here we also provide results using 1% as cutoff.

Table 6 demonstrates the summary statistics of the three dual ownership measures. Other variables have the same summary statistics as Table 1. As we can see, when using 1% as cutoff there are 31.1% of firms that have at least one significant dual holders. However, the average “Total dual equity holding” is only 1.8% and the average “Total dual bond holding” is only 3.8%. These values are too small for our analysis when using them as key explanatory variables. This is the reason why we use 0.5% as cutoff in our main analysis. Nevertheless, we still provide the results using 1% as cutoff as robustness check.

The empirical results are qualitatively similar to our baseline results, as shown in Table 7. We still find that firms with significant dual holders have better CSR performance, and the effect is stronger when the aggregate equity/bond holdings by significant dual holders are larger. This means our results are robust to different criteria in identifying significant dual holders.

VI. Identification strategy

To address the endogeneity concern, we use mergers between financial institutions as the identification strategy. Specifically, when the firm’s equity holder acquires its bond holder, or the other way, then the acquirer will become a significant dual holder of the firm, provided the equity and bond holdings both exceed 0.5% before the acquisition. Such change in capital

structure may lead to change to CSR policies, given that dual holders can affect firm policies. We expect an increase in CSR for such firms. However, the other firms without experiencing such events may also change their CSR. Therefore, we need to compare the CSR change of the firms with mergers between equity holders and bondholders and the firms without such mergers. So it is a difference-in-difference setting.

To implement this idea, we first extract M&A between financial firms from SDC from 2003 to 2012. We identify cases when target and acquirer do not belong to the same financial conglomerate. Then we look at the equity holdings of the acquirer's financial conglomerate and the bond holdings of the target, when the equity and bond are issued by the same firm, the firm is then identified. We further require the equity holding and bond holding to be at least 0.5%. We also look at the bond holdings of the acquirer's financial conglomerate and equity holdings of the target, and then identify treatment firms in the same way. The union of such treatment firms consist our initial sample. We then exclude firms in the financial and utility industries, and firms without CSR data. We also delete MAs happening in the first year and the last year as there are no data for comparison. Finally, we have 113 such treatment firms, with 18 M&As.

Next, we match the control firms following a similar procedure as Chu (2017). Specifically, we first rank all the firms into quintiles based on size, book-to-market ratio, and past performance. Then we find the two firms that are in the same quintiles as the treatment firm and are most close to the treatment firm in ranks of size, book-to-market ratio, and past performance. This is done by comparing the total difference in ranks of size, book-to-market ratio, and past performance between the firm and the treatment firm. We keep at most 2 control firms for each treatment firm.

Our model for the difference-in-difference regression is:

$$CSR_{i,t} = \alpha_0 + \beta_1 \times treat_i + \beta_2 \times post_{i,t} + \beta_2 \times treat_i \times post_{i,t} + \theta \times Z_{i,t} + \varepsilon_{i,t}$$

where “ $treat_i$ ” is a dummy which equals 1 if it is treatment firm and 0 otherwise; “ $post_{i,t}$ ” is a dummy which equals 1 if the year is after the fiscal year in which the M&A happens, and 0 if the year is before the fiscal year in which the M&A happens. The dependent variable $CSR_{i,t}$ is the final CSR measure (the difference between CSR strength and CSR concern). We are interested in the interaction term, which captures the difference in CSR change between treatment firms and control firms.

Table 8 shows the regression results. Since we use firm fixed effect here, the coefficients on the “ $treat$ ” dummy are absorbed. From the table we can see that the interaction term has significantly positive effect on CSR. This suggests that compared to control firms, firms with merger between equity holder and bond holder experience a large increase in CSR performance after the M&A. This is consistent with our prediction.

VI. Conclusion

In this paper we study the shareholder-bondholder conflicts on CSR. CSR reduces firm risk though providing “insurance-like” benefit or improving “stakeholder commitment”. Due to lower risk preference, bondholders prefer CSR more than equity holders. This conflicts persist when comparing pure equity holders and dual holders. As both of them can affect firm policies, the firm CSR performance would be influenced by the relative ratio of dual holders and pure equity holders. So firms with higher dual ownership have better CSR performance. The empirical results are consist with this prediction. We further use mergers between financial institutions as identification strategy and find that firms with equity holder and bond holder becoming significant dual holder due to M&A experience a large increase in CSR. Our results

not only discover capital structure as a determinant of firm CSR, but also reveal CSR as a dimension of shareholder-bondholder conflicts.

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Table 1. Summary statistics

“Dual” is dummy which equals 1 if the firm has at least one significant dual holder. Significant dual holders are institutional investors which hold at least 0.5% of the firm’s total outstanding equity and at least 0.5% of the firm’s total outstanding bonds. “Total dual equity/bond holding” is the aggregate equity/bond holdings by significant dual holders as percentage of the firm’s total equity/bond outstanding. Firm leverage is defined as the sum of long term debt and short term debt divided by total asset. Firm return on asset is operating income before depreciation divided by total asset. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. Stock volatility is the standard deviation of the firm’s monthly return over the past 3 years. Panel A presents the summary statistics for all variables in the full sample, panel B presents the summary statistics for dual ownership for firms with significant dual holders. Variables are winsorized at 1%.

Panel A

	Mean	Std	Min	Max	p25	p50	p75	N
Dual	0.410	0.492	0.000	1.000	0.000	0.000	1.000	7887
Total dual equity holding	0.025	0.040	0.000	0.169	0.000	0.000	0.040	7887
Total dual bond holding	0.058	0.106	0.000	0.499	0.000	0.000	0.077	7887
Log(firm total asset)	21.819	1.395	18.971	25.611	20.785	21.636	22.730	7887
Book-to-market ratio	0.576	0.395	0.029	2.209	0.305	0.485	0.741	7887
Firm leverage	0.297	0.157	0.008	0.905	0.186	0.273	0.384	7887
Firm return on asset	0.126	0.086	-0.299	0.376	0.089	0.127	0.169	7887
R&D/Total asset	0.024	0.047	0.000	0.297	0.000	0.000	0.025	7887
Sales/Total asset	0.995	0.689	0.073	3.746	0.523	0.844	1.241	7887
PPE/Total asset	0.299	0.243	0.010	0.905	0.109	0.218	0.443	7887
Firm past performance	0.083	0.445	-0.665	2.416	-0.172	0.011	0.230	7887
Stock volatility	0.118	0.061	0.039	0.382	0.076	0.102	0.142	7887

Panel B

	Mean	Std	Min	Max	p25	p50	p75	N
Total dual equity holding	0.060	0.043	0.005	0.169	0.025	0.053	0.084	3231
Total dual bond holding	0.141	0.126	0.004	0.499	0.049	0.100	0.184	3231

Table 2. Baseline results

Dependent variable is firm CSR scores. “Dual” is dummy which equals 1 if the firm has at least one significant dual holder. Significant dual holder is defined as that the investor holds at least 0.5% of the firm’s total outstanding equity and at least 0.5% of the firm’s total outstanding bonds. “Total dual equity/bond holding” is the aggregate equity/bond holdings of significant dual holders as percentage of the firm’s total equity/bond outstanding. Firm leverage is defined as the sum of long term debt and short term debt divided by total asset. Firm return on asset is operating income before depreciation divided by total asset. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. Stock volatility is the standard deviation of the firm’s monthly return over the past 3 years. Variables are winsorized at 1%. Standard errors are clustered at firm level. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Dual	0.301*** (4.57)	0.297*** (4.53)				
Total dual equity holding			4.685*** (5.55)	4.744*** (5.59)		
Total dual bond holding					0.535** (2.15)	0.535** (2.15)
Log(firm total asset)	-0.116 (-1.10)	-0.077 (-0.63)	-0.133 (-1.28)	-0.093 (-0.78)	-0.080 (-0.77)	-0.043 (-0.36)
Book-to-market ratio	-0.282*** (-2.90)	-0.253** (-2.53)	-0.293*** (-3.04)	-0.260*** (-2.61)	-0.300*** (-3.09)	-0.267*** (-2.67)
Firm past performance	-0.058 (-1.27)	-0.051 (-1.11)	-0.062 (-1.36)	-0.056 (-1.22)	-0.064 (-1.39)	-0.056 (-1.22)
Stock volatility	-4.255*** (-5.46)	-4.366*** (-5.59)	-4.300*** (-5.55)	-4.366*** (-5.60)	-4.280*** (-5.48)	-4.426*** (-5.64)
Firm leverage		0.304 (1.05)		0.235 (0.82)		0.393 (1.35)
Firm return on asset		0.540 (0.99)		0.677 (1.25)		0.562 (1.03)
R&D/Total asset		-1.443 (-0.94)		-1.396 (-0.92)		-1.487 (-0.96)
Sales/Total asset		0.202 (1.11)		0.200 (1.10)		0.202 (1.11)
PPE/Total asset		0.615 (1.05)		0.637 (1.10)		0.596 (1.02)
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	7887	7887	7887	7887	7887	7887

Table 3. CSR strength

Dependent variable is firm's CSR strength. "Dual" is dummy which equals 1 if the firm has at least one significant dual holder. Significant dual holder is defined as that the investor holds at least 0.5% of the firm's total outstanding equity and at least 0.5% of the firm's total outstanding bonds. "Total dual equity/bond holding" is the aggregate equity/bond holdings of significant dual holders as percentage of the firm's total equity/bond outstanding. Firm leverage is defined as the sum of long term debt and short term debt divided by total asset. Firm return on asset is operating income before depreciation divided by total asset. Firm past performance is the firm's previous 12 month compounded return adjusted by market return. Stock volatility is the standard deviation of the firm's monthly return over the past 3 years. Variables are winsorized at 1%. Standard errors are clustered at firm level. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Dual	0.217*** (4.11)	0.211*** (3.99)				
Total dual equity holding			3.478*** (5.18)	3.460*** (5.16)		
Total dual bond holding					0.116 (0.59)	0.110 (0.55)
Log(firm total asset)	0.192** (2.38)	0.246*** (2.69)	0.179** (2.24)	0.233** (2.58)	0.223*** (2.78)	0.275*** (3.02)
Book-to-market ratio	-0.232*** (-3.12)	-0.208*** (-2.66)	-0.241*** (-3.24)	-0.212*** (-2.73)	-0.250*** (-3.35)	-0.222*** (-2.83)
Firm past performance	-0.089** (-2.33)	-0.082** (-2.15)	-0.092** (-2.42)	-0.085** (-2.25)	-0.094** (-2.47)	-0.086** (-2.28)
Stock volatility	-3.146*** (-4.43)	-3.294*** (-4.60)	-3.181*** (-4.48)	-3.294*** (-4.59)	-3.129*** (-4.39)	-3.306*** (-4.61)
Firm leverage		0.408* (1.76)		0.355 (1.56)		0.481** (2.07)
Firm return on asset		0.146 (0.34)		0.245 (0.58)		0.159 (0.37)
R&D/Total asset		-0.631 (-0.51)		-0.596 (-0.48)		-0.686 (-0.55)
Sales/Total asset		0.273** (1.97)		0.272** (1.96)		0.272* (1.96)
PPE/Total asset		0.191 (0.42)		0.208 (0.47)		0.170 (0.38)
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	7887	7887	7887	7887	7887	7887

Table 4. CSR concern

Dependent variable is CSR concern. “Dual” is dummy which equals 1 if the firm has at least one significant dual holder. Significant dual holder is defined as that the investor holds at least 0.5% of the firm’s total outstanding equity and at least 0.5% of the firm’s total outstanding bonds. “Total dual equity/bond holding” is the aggregate equity/bond holdings of significant dual holders as percentage of the firm’s total equity/bond outstanding. Firm leverage is defined as the sum of long term debt and short term debt divided by total asset. Firm return on asset is operating income before depreciation divided by total asset. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. Stock volatility is the standard deviation of the firm’s monthly return over the past 3 years. Variables are winsorized at 1%. Standard errors are clustered at firm level. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Dual	-0.083** (-2.06)	-0.086** (-2.12)				
Total dual equity holding			-1.208** (-2.43)	-1.283** (-2.56)		
Total dual bond holding					-0.419*** (-2.72)	-0.426*** (-2.76)
Log(firm total asset)	0.308*** (4.76)	0.323*** (4.33)	0.312*** (4.83)	0.327*** (4.40)	0.304*** (4.74)	0.318*** (4.30)
Book-to-market ratio	0.049 (0.76)	0.045 (0.69)	0.053 (0.81)	0.047 (0.72)	0.051 (0.77)	0.046 (0.70)
Firm past performance	-0.030 (-1.00)	-0.031 (-1.01)	-0.029 (-0.96)	-0.029 (-0.96)	-0.030 (-0.98)	-0.030 (-1.00)
Stock volatility	1.108** (2.39)	1.072** (2.27)	1.119** (2.42)	1.072** (2.28)	1.151** (2.48)	1.119** (2.37)
Firm leverage		0.103 (0.57)		0.120 (0.67)		0.089 (0.49)
Firm return on asset		-0.395 (-1.17)		-0.432 (-1.28)		-0.404 (-1.19)
R&D/Total asset		0.811 (0.92)		0.800 (0.91)		0.801 (0.90)
Sales/Total asset		0.071 (0.67)		0.072 (0.67)		0.070 (0.66)
PPE/Total asset		-0.424 (-1.06)		-0.429 (-1.07)		-0.426 (-1.07)
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	7887	7887	7887	7887	7887	7887

Table 5. Dimensions of CSR: Environment, employee relation

Dependent variable is firm CSR scores. “Dual” is dummy which equals 1 if the firm has at least one significant dual holder. Significant dual holder is defined as that the investor holds at least 0.5% of the firm’s total outstanding equity and at least 0.5% of the firm’s total outstanding bonds. “Total dual equity/bond holding” is the aggregate equity/bond holdings of significant dual holders as percentage of the firm’s total equity/bond outstanding. Firm leverage is defined as the sum of long term debt and short term debt divided by total asset. Firm return on asset is operating income before depreciation divided by total asset. Firm past performance is the firm’s previous 12 month compounded return adjusted by market return. Stock volatility is the standard deviation of the firm’s monthly return over the past 3 years. Variables are winsorized at 1%. Standard errors are clustered at firm level. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

Panel A: Environment

	(1)	(2)	(3)	(4)	(5)	(6)
Dual	0.092*** (3.36)	0.089*** (3.26)				
Total dual equity holding			1.540*** (4.10)	1.519*** (4.05)		
Total dual bond holding					0.256*** (2.59)	0.244** (2.50)
Log(firm total asset)	-0.131*** (-2.67)	-0.169*** (-3.01)	-0.138*** (-2.82)	-0.175*** (-3.14)	-0.122** (-2.50)	-0.160*** (-2.87)
Book-to-market ratio	-0.049 (-1.17)	-0.036 (-0.83)	-0.052 (-1.25)	-0.038 (-0.87)	-0.053 (-1.27)	-0.039 (-0.90)
Firm past performance	0.001 (0.06)	-0.005 (-0.25)	0.000 (0.00)	-0.006 (-0.32)	-0.000 (-0.00)	-0.006 (-0.31)
Stock volatility	-1.305*** (-3.79)	-1.256*** (-3.66)	-1.321*** (-3.86)	-1.256*** (-3.67)	-1.324*** (-3.83)	-1.284*** (-3.71)
Firm leverage		-0.003 (-0.02)		-0.027 (-0.21)		0.020 (0.15)
Firm return on asset		0.076 (0.31)		0.119 (0.48)		0.083 (0.34)
R&D/Total asset		-1.207** (-2.01)		-1.191** (-2.01)		-1.213** (-2.01)
Sales/Total asset		-0.073 (-0.88)		-0.073 (-0.89)		-0.072 (-0.87)
PPE/Total asset		-0.629** (-2.29)		-0.621** (-2.27)		-0.633** (-2.31)
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	7887	7887	7887	7887	7887	7887

Panel B: employee relation

	(1)	(2)	(3)	(4)	(5)	(6)
Dual	0.054* (1.72)	0.058* (1.74)				
Total dual equity holding			0.937** (2.13)	1.074** (2.44)		
Total dual bond holding					0.384*** (3.03)	0.399*** (3.15)
Log(firm total asset)	0.016 (0.33)	0.044 (0.80)	0.012 (0.24)	0.039 (0.71)	0.017 (0.35)	0.046 (0.84)
Book-to-market ratio	-0.051 (-0.97)	-0.022 (-0.41)	-0.053 (-1.00)	-0.022 (-0.43)	-0.050 (-0.95)	-0.020 (-0.39)
Firm past performance	0.023 (0.95)	0.026 (1.04)	0.023 (0.92)	0.025 (1.01)	0.023 (0.95)	0.026 (1.05)
Stock volatility	-1.053*** (-2.90)	-0.966*** (-2.64)	-1.063*** (-2.94)	-0.966*** (-2.65)	-1.095*** (-3.02)	-1.011*** (-2.77)
Firm leverage		-0.056 (-0.35)		-0.075 (-0.47)		-0.051 (-0.32)
Firm return on asset		0.698** (2.33)		0.728** (2.44)		0.705** (2.36)
R&D/Total asset		-0.882 (-1.02)		-0.869 (-1.00)		-0.865 (-1.00)
Sales/Total asset		0.127 (1.25)		0.126 (1.24)		0.128 (1.26)
PPE/Total asset		0.396 (1.37)		0.402 (1.39)		0.400 (1.40)
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	7887	7887	7887	7887	7887	7887

Table 6. Summary statistics for dual ownership for the alternative sample

“Dual” is dummy which equals 1 if the firm has at least one significant dual holder. Significant dual holder is defined as that the investor holds at least 1% of the firm’s total outstanding equity and at least 1% of the firm’s total outstanding bonds. “Total dual equity/bond holding” is the aggregate equity/bond holdings of significant dual holders as percentage of the firm’s total equity/bond outstanding. This table shows the summary statistics for these dual ownership variables for all firms in the sample.

	Mean	Std	Min	Max	p25	p50	p75	N
Dual	0.311	0.463	0.000	1.000	0.000	0.000	1.000	7887
Total dual equity holding	0.018	0.034	0.000	0.150	0.000	0.000	0.022	7887
Total dual bond holding	0.038	0.083	0.000	0.404	0.000	0.000	0.038	7887

Table 7. Results using 1% as dual holder cutoff

Dependent variable is firm's CSR score. "Dual" is dummy which equals 1 if the firm has at least one significant dual holder. Significant dual holder is defined as that the investor holds at least 1% of the firm's total outstanding equity and at least 1% of the firm's total outstanding bonds. "Total dual equity/bond holding" is the aggregate equity/bond holdings of significant dual holders as percentage of the firm's total equity/bond outstanding. Firm leverage is defined as the sum of long term debt and short term debt divided by total asset. Firm return on asset is operating income before depreciation divided by total asset. Firm past performance is the firm's previous 12 month compounded return adjusted by market return. Stock volatility is the standard deviation of the firm's monthly return over the past 3 years. Variables are winsorized at 1%. Standard errors are clustered at firm level. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Dual	0.323*** (4.68)	0.324*** (4.71)				
Total dual equity holding			5.533*** (5.50)	5.611*** (5.55)		
Total dual bond holding					0.649** (2.04)	0.647** (2.03)
Log(firm total asset)	-0.112 (-1.07)	-0.074 (-0.62)	-0.120 (-1.15)	-0.078 (-0.66)	-0.078 (-0.75)	-0.041 (-0.35)
Book-to-market ratio	-0.285*** (-2.96)	-0.255** (-2.58)	-0.304*** (-3.16)	-0.271*** (-2.75)	-0.304*** (-3.14)	-0.272*** (-2.72)
Firm past performance	-0.059 (-1.28)	-0.051 (-1.12)	-0.065 (-1.41)	-0.058 (-1.26)	-0.064 (-1.41)	-0.057 (-1.24)
Stock volatility	-4.248*** (-5.45)	-4.357*** (-5.57)	-4.334*** (-5.58)	-4.407*** (-5.65)	-4.291*** (-5.48)	-4.438*** (-5.65)
Firm leverage		0.292 (1.01)		0.238 (0.83)		0.388 (1.33)
Firm return on asset		0.566 (1.05)		0.647 (1.20)		0.552 (1.01)
R&D/Total asset		-1.616 (-1.05)		-1.484 (-0.98)		-1.567 (-1.02)
Sales/Total asset		0.201 (1.11)		0.209 (1.15)		0.202 (1.11)
PPE/Total asset		0.651 (1.12)		0.658 (1.13)		0.596 (1.02)
Firm fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
N	7887	7887	7887	7887	7887	7887

Table 8. Difference-in-Difference results

Dependent variable is CSR score. Treat is a dummy, which equals 1 when it is treatment firm, and 0 when it is control firm. Post is a dummy, which equals 1 when the year is after the M&A, and 0 when the year is before the M&A. The other control variables are defined same as before. Variables are winsorized at 1%. Standard errors are clustered at firm level for all regressions. ***, **, and * represent result significant at 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)
Post	-0.265 (-1.40)	-0.247 (-1.32)	-0.270 (-1.43)
Treat x Post	0.805*** (4.33)	0.781*** (4.39)	0.795*** (4.55)
Log(firm total asset)		-0.196 (-1.44)	-0.280* (-1.90)
Book-to-market ratio		-0.123 (-0.93)	-0.010 (-0.07)
Firm past performance		-0.045 (-0.60)	-0.055 (-0.75)
Stock volatility		-2.167*** (-2.76)	-2.044** (-2.49)
Firm leverage			0.987** (2.49)
Firm return on asset			2.537*** (2.79)
Sales/Total asset			-0.085 (-0.47)
R&D/Total asset			-0.626 (-0.26)
PPE/Total asset			0.052 (0.08)
Firm fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
N	2823	2823	2823