Three Essays on Corporate Finance and Institutional Investors

by

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Abstract

In chapter 1, we investigate the effects of activist investors on firms' mergers and acquisitions. Using a comprehensive data set, we find that 138 out of 1,301 acquirers have activist investors comprising both hedge fund activists and entrepreneurial activists (venture capital funds, private equity funds and individual investors). For completed deals, acquirers with activist investors experience significantly higher announcement cumulative abnormal returns compared to acquirers without activist investors. In addition, acquirers with activist investors are more likely to withdraw from value-destroying transactions, defined as those with negative acquisition announcement returns. Further, the market reacts more favorably when these value-destroying transactions are withdrawn to acquirers with activists than to those without activists. Our results highlight the role of activist investors in aligning managers' and shareholders' interests in acquisition decisions.

In chapter 2, using political corruption as a measure of misconduct culture, we find that institutional investors are more local biased and their trading on local stocks can better predict future local stock returns, particularly for high information asymmetry stocks, in high corruption areas. More importantly, local institutional investors' trading is also positively related to local stocks' future earnings surprises in high corruption areas, which suggests that local institutions in high corruption areas possess private information that is useful in predicting future returns. These results together suggest that the inappropriate sharing of information is a potential channel from which institutional investors gain informational advantages.

In chapter 3, I study the role of CEO work experience on firm tax policies. Empirical results show that CEOs who used to work for low-tax firms pursue more tax avoidance than other CEOs and the results are robust after controlling for other manager characteristics, firm characteristics and various fixed effects. In addition, while other CEO common characteristics such as age, tenure, gender, and educational background are unable to explain the variation in firms' tax policies, the CEO low-tax experience is significantly negatively correlated with firm's tax avoidance. My findings highlight the roles of manager characteristics, especially the roles of work experience, on firms' tax planning strategies.

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List of Abbreviations

CAR	Cumulative Abnormal Return
CEO	Chief Executive Officer
CFO	Chief Financial Officer
ETRs	Effective Tax Rates
HFA	Hedge Fund Activist
M&A	Merger and Acquisition
OLS	Ordinary Least Squares
SEC	U.S. Security and Exchange Commission
UTBs	Unrecognized Tax Benefits

Chapter 1

The Effects of Activist Investors on Firms' Mergers and Acquisitions

1.1 Introduction

Activist investors have received considerable academic attention in recent years. One criticism about activist investors is that they are short-sighted. They increase firm profitability in the short term but destroy the value of long-term shareholders. In recent papers on activist investors, however, researchers consistently find positive effects of activist investors on their firms. Activist investors not only show positive effects on their firms' stock returns (Brav, Jiang, Partnoy and Thomas (2008) and Klein and Zur (2009)), but they have significant real effects on the firm. For example, Brav, Jiang, and Kim (2015) focus on hedge fund activists (HFAs) and find that HFAs enhance firm productivity and increase firm focus. In Brav, Jiang, Ma and Tian (2016), HFAs increase innovation efficiency. Additionally, Bebchuk, Brav and Jiang (2015) find no evidence that HFAs reduce firm operating performance in the long term.

In this paper, we focus on the effect of activist investors on mergers and acquisitions. Acquisitions frequently account for a large proportion of a firm's total capital expenditures and researchers have widely documented that managers do not always make value-maximizing decisions. Jensen (1986) proposes a free cash flow hypothesis which argues that managers are more likely to undertake value-destroying acquisitions in firms with large free cash flows. Morck, Shleifer and Vishny (1990) find that acquisitions that benefit managers destroy shareholder value at the same time. Fortunately, this conflict of interest between managers and shareholders can be mitigated by corporate control mechanisms. Masulis, Wang and Xie (2007) investigate the role of antitakeover provisions on the acquirer's stock returns and find that managers of firms with more antitakeover provisions are more likely to make value-destroying acquisitions. Another monitoring mechanism could be the presence of activist investors who are able to influence a firm's business strategy (Brav, Jiang, Partnoy and Thomas (2008)). Accordingly, our first area of focus is the effect of activist investors on the acquirer's stock returns around the acquisition announcement. Specifically, we examine whether acquirers with activist investors experience higher abnormal stock returns during the announcement period. Our second area of focus is the likelihood of withdrawing from acquisitions that, ex post, are value-destroying transactions. Stock price reactions around acquisition announcement dates provide direct feedback of how the market perceives the quality of a bid (Paul, 2007). We, therefore, consider acquisitions where the acquirer's 3-day cumulative abnormal returns around the announcement date are less than 0 as value-destroying acquisitions and examine the extent to which activist investors are associated with a firm's decisions to withdraw the deal.

Our paper contributes to the literature in two ways. First, our paper examines the real effects of activists on their firms, especially on a firm's asset allocation decision. Brav, Jiang and Kim (2015) show that activist investors increase firm spin-offs. However, we are not aware of any papers to date that have shown direct evidence on the effect of activist investors on acquisition decisions. Second, most of the previous studies focus only on hedge fund activists. However, other entrepreneurial activists, as defined by Klein and Zur (2009) to include venture capital funds, private equity funds, and individual investors, may be important as well. For example, Gamco Assset Management Inc. (formally Gabelli Assets Management), a publicly traded fund, engaged in 474 activist campaigns between 1995 and 2015 either by acquiring at least five percent of a firm's stock or otherwise publicly influencing firms' management (according to Factset). By including hedge funds, as well as private equity funds, venture capital funds and private investors, we present a more inclusive picture of how activists affect their firms' acquisitions.

Using comprehensive data on activist investors including both hedge fund and other entrepreneurial activists (venture capital funds, private equity funds and individual investors), we find that 138 out of 1,301 acquirers have activist investors between 1996 and 2015. We consider an acquirer to have an activist investor if an investor purchases at least five percent of the acquirer's stock within the preceding 5 years of the acquisition announcement date, and the 13D filing states an intention to change firm policies or discuss firm operations with managers. Our main findings are summarized as follows: First, for completed deals, acquirers with activist investors experience significantly higher announcement cumulative abnormal returns compared to acquirers without activist investors. Second, acquirers with activist investors are more likely to withdraw from value-destroying transactions, defined as those with negative acquisition announcement returns. Further, the market reacts more favorably when these value-destroying transactions are withdrawn to acquirers with activists than to those without activists. The results suggest that activists enhance a firm's value by convincing the board to rescind a bad acquisition offer rather than from preventing the offer in the first place.

This paper is organized as follows. The next section provides a literature review. Section two describes the data and variable constructions. Section three examines the impact of activists on acquisition announcement returns. Section four analyzes the role of activists on acquisition withdrawals and section five measures the market reaction to those withdrawals. Section six further tests the robustness of our results and section seven concludes the paper.

1.2 Literature review

Our research is related to two strands of literature. The first is a growing branch of research on activist investors. Brav, Jiang, Partnoy, and Thomas (2008) investigate the effect of hedge fund activists on their firm's stock prices and show that the market positively reacts to activist events. They then attribute these positive returns to the HFA's ability to bring changes to the firm. These changes include rejecting an existing acquisition offer, nominating new directors, and increasing the firm's focus. Consistent with Brav et al (2008), Greenwood and Schor (2009) also find favorable market reactions to hedge fund activist events. They show that these favorable reactions are the result of hedge fund activists guiding their firms to be taken over later. Klein and Zur (2009) compare firms with hedge fund activists and firms with other entrepreneurial activists. They find both groups earn positive abnormal stock returns around the filing of the schedule 13D, though magnitudes for firms with entrepreneurial activists are smaller.

Researchers also consider how activists change their firm's operations. Most papers focus on HFAs and agree that they have significant real effects on firms in production efficiency, asset allocation, innovation and takeover outcomes. For instance, Brav, Jiang and Kim (2015) find that firms experience an improvement in production efficiency in the three years after activist events. Aslan and Kumar (2016) show that while HFAs improve production efficiency, their industry rivals also experience these improvements. Brav, Jiang, Ma and Tian (2016) investigate the effects of HFAs on a firm's innovation. They show that firms increase innovation efficiency during the five years after the activism event. Greenwood and Schor (2009) provide evidence that announcement returns around activist events are high if firms are ultimately acquired. Boyson, Gantchev and Shivdasani (2017) show that firms are more likely to receive takeover offers after activist interventions.

The second strand of literature examines mergers and acquisitions (M&A). Several papers, including Luo (2005) and Chen, Harford, and Li (2007), report that stock returns around acquisition announcements are negatively correlated with the probability that the acquisitions are withdrawn. Paul (2007) investigates the role of board composition in the likelihood of completing bad acquisitions, which he defines as those that have the lowest quintile of cumulative abnormal returns around the deal announcement date. He finds that independent boards decrease the likelihood of completing bad acquisitions. Kau, Linck and Rubin (2008) report that acquisition transactions are more likely to be completed if acquisitions are friendly and made with a tender offer. Kau, Linck and Rubin (2008) and Masulis, Wang and Xie (2009) suggest that acquisitions are more likely to be withdrawn if there are competing deals.

While there are a number of papers investigating the effects of activist investors on firms, none provide direct evidence that activist investors affect their firm's acquisition decisions, especially, the potential roles of activist investors on M&A withdrawals. Our paper fills this gap by carefully examining the relationship between activist investors and acquisition outcomes.

1.3. Data and descriptive statistics

The merger and acquisition data comes from the SDC-Thompson Reuters. We include only acquisitions that are classified as merger, acquisition, or acquisition of a majority of interest. To be included in the sample:

(1) The acquirer must own less than 50% of the target firm's shares and seek to own 100% of the target firm's shares after the acquisition.

(2) The acquisition value must be at least $100.0 million.

(3) The acquirer must not be in the financial service industry (SIC codes 6000-6999) nor be a public utility (SIC codes 4900-4999).

(4) The acquisition must be classified as "completed" or "withdrawn".

(5) Both the acquirer and target are publicly traded US firms.

Our data contains 1,301 acquisitions announced between January 1996 and December 2015 that meet the above criteria.

For each acquirer in our sample, we collect all Schedule 13D filings related to the acquirer for the five years prior to the acquisition's announcement date. Investors are required to file a Schedule 13D within ten days of ownership exceeding five percent of a firm's stock. From the Schedule 13D, we collect information on the filing investor, the filing date, the number and the percentage of shares held, and the purpose of the transaction. We then classify each Schedule 13D filer as an activist investor if the following two conditions are met:

(1) The filing entity is a hedge fund, a private equity fund, a venture capital fund or an individual investor (as in Klein and Zur (2009)).

(2) The filers propose changes to the firms' policies. These changes include, but are not limited to, seeking seats on the board of directors, proposing strategic alternatives, or replacing the CEO (as in Klein and Zur, 2009). Alternatively, the filing entity may reserve the right to discuss with managers any matters regarding the firm's operations.

This procedure classifies 138 of our 1,301 acquirers as activist investors.

Table 1.1 reports the distribution of acquisitions across years. The number of acquisitions is highest in 1999 when there are 129 events accounting for 9.9% of the total sample. Of 1,301 acquisitions, 1,106 (85.0%) are completed, and 195 (15.0%) are withdrawn.

[Please insert table 1.1 here]

Table 1.2 shows the distribution of acquiring firms across the 12 Fama-French industry categories. The industry with the most acquisition offers is business equipment (29.4%), followed by manufacturing (14.6%), other (13.8%), and health care (12.6%). The oil, gas and coal industry experiences the lowest withdrawal rate (8.9%), while the highest rate of withdrawals is in the telephone and television industry (17.5%).

[Please insert table 1.2 here]

The sample summary statistics for acquisitions appear in table 1.3. As seen in panel A, acquirers tend to be large firms with average total asset of $13.1 billion. Acquirers that complete their acquisitions are larger than those who withdraw their acquisitions. The average size of acquirers that complete the acquisitions is $13.9 billion, while the average size of firms that withdraw their acquisitions is only $8.6 billion. With respect to relative size, the transaction value is 49.36% of the acquiring firm's market capitalization for the average firm, 41.43% for completed transactions, but 94.30% for withdrawn deals.

Panel B of table 1.3 reports transaction characteristics. There are two striking differences between completed and withdrawn deals. First, for completed transactions, only 3.16% have a competing offer during the time that the transaction is pending, while 23.08% of withdrawn deals have a competing bid. Second, 97.73% of completed deals are classified as friendly, while only 56.92% of withdrawn offers are classified as friendly.

[Please insert table 1.3 here]

1.4 The effect of activists on acquirers' cumulative abnormal returns.

Our first testable hypothesis considers whether the market reacts differently between mergers and acquisitions made by firms with activist investors and those without activists. To calculate the market reaction to the announcement, we employ standard event study methodology as in Brown and Warner (1985) to calculate the acquirers' 3-day cumulative abnormal return (day -1 to day +1). The estimation period for the market model is from day -200 to day -20. We require that each stock has at least 30 non-missing returns to be included in our calculation. The results are reported in table 1.4.

[Please insert table 1.4 here]

Generally, we find that acquirers experience negative CARs around the M&A announcement date. As shown in Panel A, the acquirer CAR has a mean of -1.55% and is significant at the 1 percent level. Several researchers document a negative reaction including Masulis et al. (2007) and Ishii and Xuan (2014). We then split our sample into completed deals and withdrawn deals. Completed deals experience less negative announcement CARs relative to withdrawn deals, -1.21% and -3.48% respectively. Focusing on the impact of activist investors, we document a significant difference for completed deals. Acquirers with activist investors experience significantly higher announcement CARs compared to acquirers without activist investors. The difference is 2.23% and is significant at the 5% level. However, deals that are ultimately withdrawn experience more negative announcement CARs in the presence of an activist than without, albeit not statistically significant. This leads us to turn our attention to the information an activist might possess at the time of the announcement.

An activist investor (or any investor) who does not also serve on the board of directors of the acquiring firm would not have any private information about an M&A deal until the public announcement is made. To provide greater insight into this distinction, we further separate activist investors in Panel B into those who are directors and those who are not. From these results, we observe that announcement CARs for firms with activists are larger when the activist serves on the board, consistent with his/her ability to actively monitor the deal prior to the public announcement.

Next, we run OLS regressions to examine whether activist investors have a significant impact on acquisition announcement CARs when controlling for factors that have been shown in prior research to affect acquirers' announcement CARs. These results are presented in table 1.5.

[Please insert table 1.5 here]

Consistent with the univariate results, the coefficient for our activist indicator variable is insignificant for the overall sample, but for completed deals, the coefficient for *activist* is positive and statistically significant (p-value=0.02). This implies that acquirers with activist investors experience higher announcement CARs compared to acquirers without activist investors. This relation is not significant for those deals that are ultimately withdrawn. As for control variables, acquirers' leverage is significant and positively correlated with acquirers' announcement CARs. Acquirers' announcement CARs are also higher if the deals are financed with 100% cash. On the other hand, CARs are lower when acquirers finance with 100% stock. Finally, the announcement CARs are significant and inversely related to the relative deal size.

1.5 Activist investors and the likelihood of withdrawing value-destroying acquisitions

Our evidence thus far is that the market reaction to acquisition announcements is not significantly different overall between firms with activists and those without. However, when separating completed and withdrawn deals, the market reacts more favorably to the announcement of deals by firms with activists for those deals that are ultimately completed. If, as our results suggest, most activists are not board members at the time of the initial offer, the value of the activist arises only after the target firm is in play. Thus, another channel by which activists can affect firm investment policy and value is through their influence to withdraw an offer. In this section, we study the effect of activist investors on the probability of withdrawing from an acquisition. We define an acquisition as value-destroying, at least from the market's point-of-view, if the acquisition announcement's CAR is less than 0. Table 1.6 reports the frequency of withdrawal from an acquisition by acquirers with activist investors and acquirers without activist investors.

[Please insert table 1.6 here]

Recall from table 1.1 that 14.99% of our overall sample deals result in withdrawals. Table 1.6 shows that acquirers with activist investors are more likely to withdraw from an acquisition than acquirers without activist investors. For the full sample, 35.51% of acquirers with activist investors withdraw from deals, compared to 12.55% of acquirers without activist investors. Moreover, the magnitude of this difference is greater for those deals with negative announcement returns. When acquisition announcement CARs are negative, 43.24% of acquirers with activist investors withdraw their offer versus 13.55% of acquirers without activist investors. These results suggest that acquirers with activist investors have a higher propensity to withdraw from acquisitions, and they are even more likely to withdraw from deals the market perceives as value-destroying.

Next, we perform multivariate analyses that control for factors that have been previously shown to affect deal outcomes. We use probit models to test whether acquirers with activist investors are more likely to withdraw from acquisitions. Specifically, we test the following model:

Prob (Withdrawn) = α + β Activist + γ Control variables + δ Year dummies + θ Industry dummies + ε, (1)

Where: Prob (Withdrawn) is a dummy that takes a value of 1 if the deal is withdrawn and 0 otherwise. Activist is our main independent variable of interest. The control variables include the bidder's size (Assets), Tobin's q, leverage of the acquirer, and the relative deal size. Additionally, Luo (2005) and Chen et al. (2007) suggest that bidders are more likely to withdraw from a deal if the market reacts less favorably around the announcement date. We, therefore, control for the bidder's CAR around the announcement period. We further control for whether the deal has a competing bid (Compete dummy) as suggested by Kau, Linck and Rubin (2008) and Masulis, Wang and Xie (2009). Kau, Linck and Rubin (2008) report that the deals are more likely to be completed if the deals are friendly (Friendly dummy) and if the deals include tender offers (Tender Dummy). On the other hand, deals are more likely to be withdrawn if acquirers use their stock for the entire payment (Stock dummy).

The probit results appear in table 1.7. The reported results are all marginal effects. The first column reports the model for the full sample. The coefficient for *activist* is positive and statistically significant (p-value=0.00), which implies that acquirers with activist investors are more likely to withdraw from acquisitions, ceteris paribus. These results are driven by value-destroying acquisitions. As shown in column 2 for the deals with negative announcement CARs, the coefficient for *activist* is still positive and statistically significant (p-value=0.00). However, the coefficient of *activist* is insignificantly different from zero for deals with positive announcement CARs (column 3).

Our control variables have the expected signs suggested by previous researchers. The acquirer's CAR and the log of the acquirer's assets are negative and significant. The transactions are less likely to be withdrawn if they are tender offer deals, friendly deals, and related deals. On the other hand, the deals are more likely to be withdrawn in the presence of competing bidders.

[Please insert table 1.7 here]

The results in table 1.7 suggest that, while the presence of activist investors increases the likelihood of withdraw for the overall sample, activist investors play the most significant role in the termination of acquisitions with unfavorable market reactions at their announcements.

To further investigate the role of different types of activists on the likelihood of withdrawal, we divide our sample of activists into hedge fund activists and other entrepreneurial activists. The results are reported in table 1.8. Overall, the presence of both hedge fund and entrepreneurial activists significantly increases the likelihood of withdrawal for our full sample, as well as our sample of negative announcement CAR transactions. The results suggest that entrepreneurial activists play a role similar to hedge fund activists, significantly influencing firm decisions when it comes to unfavorable M&A activity.

[Please insert table 1.8 here]

1.6 Market reaction to deal withdrawals

Results in previous sections show that the presence of activist investors increases the likelihood of withdrawing from value-destroying acquisition. We now examine the market's reaction to the decision to withdraw. To address this, we calculate the three-day cumulative abnormal returns of the acquirer around the announcement date to withdraw using the market model. The estimation period is from day -200 to day -20. We require that each stock has at least 30 non-missing returns to be included in our calculation. The results are reported in table 1.9.

[Please insert table 1.9 here]

Panel A presents data for the full sample. While acquirers experience significantly negative acquisition announcement CARs (mean = -3.48%), these are partly reversed with significantly positive CARs at the announcement of a withdrawal. The acquirer's CAR around the withdrawal announcement has a mean of 1.59% and is significant at the 1 percent level (p-value = 0.01). The positive withdrawal announcement CARs are more notable when comparing acquirers with activist investors and those without. Acquirers with activist investors experience higher withdrawal announcement CARs (mean = 3.41%) compared to those without activist investors (mean = 1.01%), and the difference is significant at the 10 percent level (p-value = 0.10).

These results are similar when examining the subset of firms that are perceived to be engaging in value-destroying acquisitions (panel B). Acquirers experience positive abnormal stock returns around the withdrawn announcement date (mean = 2.87%). Acquirers with activist investors experience significantly higher withdrawal announcement CARs than acquirers without activists (mean = 5.08% and 2.14%, respectively)

Finally, we see for transactions with announcement CAR greater than 0 (Panel C), the withdrawal announcement CARs are notably different from panels A and B. Announcing a withdrawal from initially perceived value-creating deals is not met with a positive market reaction. For the full sample of abandonments and for the subset with activist investors, the market response to the withdrawal announcement is not statistically different from zero. For those firms without activist investors, the withdrawal announcement is significantly negative.

Collectively, our evidence is consistent with activist investors impacting the acquisition process of firms. For deals that are ultimately completed, acquisition announcement CARs are higher when there has been an activist investor within the prior five years in both univariate and multivariate analysis. The presence of an activist investor is also associated with a higher probability of withdrawal, but this is driven by the subset of firms that the market perceives to be value-destroying at the time of the acquisition announcement. When firms do withdraw from deals, the announcement is met with a positive abnormal announcement return. That positive response is highest among firms with activist investors and, specifically, firms with activist investors and negative acquisition announcement returns.

1.7 Robustness checks

We first address the concern of selectivity bias. Specifically, we explore whether it is the presence of the activist investor or the actual activism of the investor. To do so, we examine only those firms in which our activists invest, comparing their holdings in firms in which they invest as activists and firms in which they invest passively. To do this, we match our sample of activists to the institutional holdings data required in the SEC's 13F filing as reported in Thompson Reuters' database. Thirty-two of our activists have available 13F data. Then, conditioned on the firm being held by the same investor, we compare the probability of deal withdrawal for firms actively held and firms passively held to see whether there is a difference.

[Please insert table 1.10 here]

We report the results in table 1.10. The table reports the probit estimation of the probability of withdrawing from the deal. The activist variable is an indicator variable that takes a value of 1 if the activist investor holds an active position in the firm and 0 if the activist investor holds a passive position in the firm anytime between the M&A announcement date and M&A completion/withdraw date. For both the full sample and for those firms with negative announcement CARs, an activist position significantly increases the probability of withdrawal. This supports our previous findings and suggests that it is activism itself rather than the investor that helps determine the resolution of the acquisition offer.[1]

In previous sections, we identified acquirers with activist investors if one activist purchases at least five percent of the acquirer's stocks within five years prior to the acquisition's announcement date. A potential problem with this identification is that, while there was an initial holding of at least 5 percent, the activist may have decreased their holdings thereby diminishing their influence at the time of the acquisition announcement.

We address this in two ways. First, despite allowing for a five year window, we note that 77 of our 138 activist investor acquisition announcements occur within two years of the activist acquiring 5%. When we rerun model 1 in table 1.7 with just those 77 observations, our results are qualitatively the same and the coefficient on Activist remains significant at the 1% level. It is,

[1] A second method to address endogeneity is to compare the probability of a withdrawn deal before and after a given investor switches from a passive position (Schedule 13G) to an active position (Schedule 13D). In our sample, we are able to collect data on only 9 observations in which the investor switches from passive to active in a single firm during our sample period. Of those, 5 are firms with negative announcement CARs and 4 are firms with positive announcement CARs. Given the small number of observations, it is not possible to draw statistical inferences from them. However, we note that 3 of the 5 negative CAR observations are withdrawn, while only 1 of the 4 positive CAR observations is withdrawn. This is consistent with our other results that the presence of an activist increases the probability of withdrawal in deals with negative announcement CARs.

in fact, these firms that drive our results, as the Activist coefficient is insignificant if the acquisition announcement is between years three and five.

Second, we re-categorize as firms with activist investors only those for which the activist investor still maintains holdings of at least 1% at the time the acquisitions are announced. We use two different sources to identify activist holdings on the acquisition's announcement date. First, we use quarterly institutional holdings data from the Thomson Financial database. When such information is not available, we search for the last Schedule 13D/A filing prior to the acquisition announcement. When activist holdings drop below the 5% threshold, they are required to file a Schedule 13 D/A. This procedure reduces the number of acquirers with activist investors from 138 to 96.

We replicate table 1.5 to re-examine the impact of activist investors on acquisition announcement CARs using this more restrictive definition of activist investor firms. The results are qualitatively the same as reported in table 1.5. Though not presented here, the only difference is that the p-value for Activist goes from 0.022 to 0.058 for completed deals (model 2).

Our results in table 1.6 regarding the withdrawal rates for acquiring firms with and without activists compares our activist investor firms to a relatively large pool of non-activist acquirers. To verify our previous result, we match each firm with an activist investor to a comparable firm without an activist. To do so, we calculate a propensity score based on Fama-French industry and size. We successfully match 134 of our 138 firms with activists, and the differences in the frequency of withdrawal are still notably higher for activist firms (17.17 for the full sample, 24.85 for CAR < 0 transactions, and 7.87 for CAR > 0 acquisitions).[2]

[2] To further investigate the impact of activist holdings at the time of withdrawal, we retrieve data from the investor's final Schedule 13D/A and 13F filings. we divide acquirers with activists in into 2 subgroups: Group 1 includes acquirers in which the activist still holds at least 1 percent of their shares at the time the acquisitions are withdrawn/completed (88 observations). Group 2 includes acquirers in which the activist holds less than 1 percent of their shares at the time the acquisitions are withdrawn/completed (22 observations). Activist investors

Moving to our results estimating the probability of withdrawal, we rerun equation 1 from table 1.7. The results appear in table 1.11 and generally confirm our previous findings in table 1.7. The *activist* coefficient is still positive and statistically significant at the 1% level. This is consistent with our prior evidence that acquirers with activist investors are more likely to withdraw from transactions, especially for those deals that the market perceives as value-destroying.

[Please insert table 1.11 here]

Another possible criticism is the relatively large size of our sample firms. While the $100 million cutoff is consistent with previous samples of mergers and acquisitions, such as Kau, Linck, and Rubin (2008) and Liu and McConnell (2013), we re-examine our results from table 1.7, separating the sample by the median of total assets. Replicating table 1.7 results in qualitatively similar results, though not reported here. For both below-median and above-median firms, the coefficient on Activist is positive and significant at the 1% level for the overall sample and those with negative acquisition announcement CARs. The coefficients remain insignificant for firms with positive acquisition announcement CARs.

1.8 Conclusion

Though a considerable number of papers investigate the effects of activist investors on firm operating strategies, very few have investigated the effects of activist investors on firms' asset allocation decisions. This paper tries to fill that gap by focusing on the effects of activist investors on the outcomes of merger and acquisition transactions. Our results consider transactions involving publicly listed targets. We have chosen not to include private targets for multiple reasons. First, focusing our analysis on public targets is consistent with prior research.

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significantly increase the likelihood of withdrawal for the full sample, as well as the sample of negative announcement CAR transactions when activists still own at least 1 percent acquirers' shares. Our results are still significant at the 10% level when activists' ownership drops below 1 percent.

The majority of the papers we cite that examine the probability of withdrawal from a deal also require the targets to be public. Second, incorporating private targets raises a number of additional factors and/or potential biases regarding activism and M&A activity. For example, the analysis contributes further selectivity bias to the acquisition, as firms also choose whether to acquire a public versus a private target.

We document that activist investors are associated with higher acquisition announcement cumulative abnormal returns for deals that are ultimately completed. Further, we show that acquirers with activist investors are more likely to withdraw from deals, especially, when these acquisitions are viewed by the market as value-destroying transactions at the time of the announcement.

While acquirers generally experience negative abnormal returns around the acquisition's announcement date, we document that these negative announcement returns are partly reversed when the offer is withdrawn. More notably, acquirers with activist investors experience higher withdrawal announcement returns than acquirers without activist investors. These results together suggest that activist investors help firms prevent bad acquisitions from being completed and the market reacts favorably when a bad acquisition is withdrawn. Thus, value creation from activists is primarily the result of reversing bad decisions and not from preventing them.

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Table 1.1: Distribution of acquisitions across years.

This table reports the distribution of acquisitions across years for our sample of 1,301 acquisitions announced from January 1, 1996 to December 31, 2015. The data are drawn from the Thomson Financial SDC Mergers and Acquisitions database.

Distribution of acquisitions across years					
Year	Completed	Withdrawn	Total	% of total	% Withdrawn
1996	77	15	78	6.0%	19.2%
1997	94	17	101	7.8%	16.8%
1998	98	11	105	8.1%	10.5%
1999	111	21	129	9.9%	16.3%
2000	103	18	115	8.8%	15.7%
2001	56	11	66	5.1%	16.7%
2002	43	4	47	3.6%	8.5%
2003	39	6	43	3.3%	14.0%
2004	50	6	53	4.1%	11.3%
2005	62	6	67	5.1%	9.0%
2006	67	11	75	5.8%	14.7%
2007	63	8	69	5.3%	11.6%
2008	38	17	52	4.0%	32.7%
2009	15	5	20	1.5%	25.0%
2010	50	6	53	4.1%	11.3%
2011	27	9	33	2.5%	27.3%
2012	45	5	45	3.5%	11.1%
2013	40	3	39	3.0%	7.7%
2014	51	6	49	3.8%	12.2%
2015	63	10	62	4.8%	16.1%
Total	1106	195	1301		
% of Total	85.0%	15.0%	100%	100%	

Table 1.2: Distribution of acquiring firms across industries.

This table reports the distribution of acquiring firms by industry for the sample of 1,301 acquisitions announced from January 1, 1996 to December 31, 2015. Acquirers are assigned to one of the Fama-French 12-industry categories based on their SIC code. We exclude utility and financial service industries.

Fama-French industry	N	% of Acquisitions	% Withdrawn
Consumer nondurables	44	3.4%	13.6%
Consumer durables	46	3.5%	10.9%
Manufacturing	190	14.6%	14.7%
Oil, gas and coal	79	6.1%	8.9%
Chemical products	35	2.7%	11.4%
Business equipment	383	29.4%	14.6%
Telephone and television	63	4.8%	17.5%
Wholesale and retail	118	9.1%	16.9%
Health care	164	12.6%	14.0%
Other	179	13.8%	19.6%
Total	1301	100%	

Table 1.3: Summary statistics.

This table describes summary statistics for the 1,301 acquisitions in our sample. Numbers for the full sample are presented first, followed by completed acquisitions and withdrawn acquisitions. Size is the book value of the acquirer's total assets (Compustat item 6). Tobin's q is the market value of assets over book value of assets [(item 6-item 60+item 25*item 199)/item 6). Leverage is the book value of debt (item 34 + item 9) over book value of assets (item 6). Board independence is the percentage of independent directors on the acquirer's board. Relative deal value is calculated as deal value divided by the acquirer's market capitalization on the 11th trading day prior to the announcement date. Compete dummy is equal to 1 if there is an emergence of another bidder while the deal is pending. Friendly dummy is equal to 1 if the attitude of the target toward to acquisition deals is classified as "Friendly" as reported by SDC. Tender dummy is equal to 1 if the deal is a tender offer. All stock dummy is equal to 1 if the attempt is financed with 100% stock. All cash dummy is equal to 1 if the attempt is financed with 100% cash. Related deal dummy is equal to 1 if the acquirer and the target have the same two-digit SIC code.

	Full sample (N=1301)		Completed (N=1106)		Withdrawn (N=195)	
	Mean	Median	Mean	Median	Mean	Median
Panel A: Acquirer and deal characteristics						
Size ($millions)	13,121.5	2,395.7	13,909.9	2,722.1	8,649.7	1,160.0
Tobin's q	2.98	1.95	3.08	1.98	2.49	1.78
Leverage (%)	12.82	8.69	12.33	8.44	15.57	11.86
Deal value ($millions)	2,345.3	577.3	2105.1	590.3	3,707.3	492.8
Board independence (%)	71.81	75.00	72.11	75.00	70.08	72.73
Relative deal value (%)	49.36	22.73	41.43	18.84	94.30	56.71
Panel B: Percentage of deals with the following features (%)						
Compete dummy	6.15		3.16		23.08	
Friendly dummy	91.62		97.73		56.92	
Tender dummy	22.67		23.78		16.41	
All stock dummy	26.36		26.40		26.15	
All cash dummy	35.51		36.35		30.77	
Related deal dummy	64.79		64.56		66.15	

Table 1.4: Univariate analyses: The effect of activists on acquirers' cumulative abnormal return (CAR).

The table shows the acquirer's 3 day cumulative return (CAR) from day -1 to day +1 around the announcement of acquisitions using the market model. The estimation period is from day -200 to day -20. We require that each stock has at least 30 non-missing returns to be included in our calculation. In panel A, the announcement CARs of the full sample are reported in column 1. Column 2 reports the announcement CARs of acquirers in which there is at least one activist investor who purchases at least five percent of the acquirer's stock within five years prior to the acquisition announcement date. The announcement CARs of acquirers without an activist investor are reported in column 3. Panel B categorizes Activist firms by whether or not the activist sits on the board of directors. P-values are in brackets. Asterisks denote statistical significance at 1% (***), 5% (**) and 10% (*) levels.

Panel A

	Mean	Activist	Non-activist	Differences
Full sample	-1.55*** [0.00] N=1,301	-1.42*** [0.00] N=138	-1.57*** [0.00] N=1163	-0.15 [0.71]
Completed deals	-1.21*** [0.00] N=1106	0.84 [0.41] N=89	-1.39*** [0.00] N=1017	2.23** [0.02]
Withdrawn deals	-3.48*** [0.00] N=195	-5.41*** [0.00] N=49	-2.79*** [0.00] N=146	-2.62 [0.13]

Panel B

	Activist director	Activist non-director	Differences
Full sample	-0.65 [0.66] N=28	-1.78** [0.05] N=110	1.13 [0.62]
Completed deals	1.32 [0.51] N=17	0.55 [0.63] N=72	0.77 [0.76]
Withdrawn deals	-3.70* [0.07] N=11	-6.21*** [0.00] N=38	2.51 [0.53]

Table 1.5: Multivariate analyses: The effect of activists on acquirers' cumulative abnormal return (CAR).

The table presents multivariate analyses of the effect of activists on acquirers' announcement CARs. The dependent variable is the acquirers' announcement CAR. The main independent variable is *activist*, which equals 1 if there is at least one activist who purchases at least five percent of the acquirer's stock within five years prior to the acquisition announcement date, and 0 otherwise. Control variables include CAR, log(size), Tobin's q, leverage of the acquirer, relative deal size, and dummy variables indicating whether the acquisition is financed with 100% stock (all stock dummy), whether the acquisition is financed with 100% cash (all cash dummy), whether the acquisition is a tender offer (tender dummy), whether the acquisition is a competed deal (compete dummy), whether the attitude of the target toward to attempt is classified as "friendly" (friendly dummy), and whether the bidder and the target share the same two-digit SIC code (related deal dummy). P-values are in brackets. Asterisks denote statistical significance at 1% (***), 5% (**) and 10% (*) levels.

	Full Sample (1)	Completed Deals (2)	Withdrawn Deals (3)
Activist	0.006	0.020**	- 0.010
	[0.42]	[0.02]	[0.59]
Log(size)	-0.000	-0.000	- 0.003
	[0.78]	[0.94]	[0.53]
Tobin's q	0.000	0.000	- 0.000
	[0.83]	[0.79]	[0.90]
Leverage	0.052***	0.067***	0.024
	[0.00]	[0.00]	[0.69]
Relative deal size	-0.013***	-0.006**	-0.024***
	[0.00]	[0.03]	[0.00]
All Stock dummy	-0.015**	-0.013**	- 0.003
	[0.02]	[0.04]	[0.86]
All Cash dummy	0.028***	0.030***	0.012
	[0.00]	[0.00]	[0.57]
Tender dummy	0.001	-0.003	0.011
	[0.96]	[0.57]	[0.58]
Compete dummy	0.008	0.008	0.023
	[0.41]	[0.53]	[0.23]
Friendly dummy	-0.004	0.001	-0.033**
	[0.63]	[0.91]	[0.05]
Related deals	0.009*	0.002	0.040**
	[0.06]	[0.59]	[0.05]
Independent board	-0.014	-0.000	- 0.093*
	[0.40]	[0.98]	[0.09]
Intercept	0.018	- 0.005	0.102
	[0.45]	[0.84]	[0.16]
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Number of obs	1301	1106	195
Adjusted R^2	12.82%	12.73%	31.99%

Table 1.6: Frequency of withdrawal from an acquisition by acquirers with and without activists.

The table reports the frequency of withdrawal from an acquisition by acquirers with activist investors and acquirers without activist investors. Acquirers with activist investors are acquirers in which there is at least one activist investor who purchases at least five percent of the acquirer's stock within five years prior to the acquisition announcement date.

	Activist	Non-Activist	Difference
Full sample			
Frequency of withdrawing (%)	35.51	12.55	22.96
CAR < 0			
Frequency of withdrawing (%)	43.24	13.55	29.69
CAR > 0			
Frequency of withdrawing (%)	26.56	11.22	15.34

Table 1.7: The effect of activists on acquisition withdrawal.

The table presents probit analysis of the effect of activists on acquisition withdrawal. The dependent variable is a dummy variable which takes a value of 1 if the acquisition is withdrawn and 0 otherwise. The main independent variable is *activist*, which equals 1 if there is at least one activist who purchases at least five percent of the acquirer's stock within five years prior to the acquisition announcement date, and 0 otherwise. Control variables includes CAR, log(size), Tobin's q, leverage of the acquirer, relative deal size, and dummy variables indicating whether the acquisition is financed with 100% stock (all stock dummy), whether the acquisition is financed with 100% cash (all cash dummy), whether the acquisition is a tender offer (tender dummy), whether the acquisition is a competed deal (compete dummy), whether the attitude of the target toward the attempt is classified as "friendly" (friendly dummy), and whether the bidder and the target share the same two-digit SIC code (related deal dummy). P-values are in brackets. Asterisks denote statistical significance at 1% (***), 5% (**) and 10% (*) levels.

	Marginal effect Full Sample (1)	Marginal effect CAR<0 (2)	Marginal effect CAR>=0 (3)
Activist	0.102***	0.153***	0.050
	[0.00]	[0.00]	[0.21]
CAR	-0.307***	-0.320**	-0.084
	[0.00]	[0.05]	[0.68]
Premium	-0.029	-0.034	-0.024
	[0.24]	[0.30]	[0.56]
Log(size)	-0.015***	-0.013*	-0.023***
	[0.00]	[0.10]	[0.01]
Tobin's q	-0.002	-0.002	-0.004
	[0.34]	[0.51]	[0.59]
Leverage	0.092	0.104	0.086
	[0.17]	[0.32]	[0.32]
Relative deal size	0.013	0.021	0.005
	[0.15]	[0.21]	[0.62]
All Stock dummy	-0.006	-0.009	-0.007
	[0.79]	[0.79]	[0.85]
All Cash dummy	0.008	0.021	0.021
	[0.73]	[0.54]	[0.46]
Tender dummy	-0.063***	-0.129***	-0.013
	[0.00]	[0.00]	[0.64]
Compete dummy	0.170***	0.191***	0.140***
	[0.00]	[0.00]	[0.00]
Friendly dummy	-0.285***	-0.285***	-0.274***
	[0.00]	[0.00]	[0.00]
Related deal dummy	-0.031*	-0.054**	-0.016
	[0.09]	[0.05]	[0.51]
Independent board	-0.027	0.033	-0.063
	[0.64]	[0.68]	[0.42]
Intercept	0.147***	0.160***	0.132***
	[0.00]	[0.00]	[0.00]
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Number of obs	1301	738	563
Adjusted R^2	39.31%	36.52%	49.66%

Table 1.8: The effect of hedge fund and other entrepreneurial activists on acquisition withdrawal.

The table presents probit analysis of the effect of activists on acquisition withdrawal. The dependent variable is a dummy variable which takes a value of 1 if the acquisition is withdrawn and 0 otherwise. The main independent variable is *activist*, which equals 1 if there is at least one activist who purchases at least five percent of the acquirer's stock within five years prior to the acquisition announcement date, and 0 otherwise. . Control variables includes CAR, log(size), Tobin's q, leverage of the acquirer, relative deal size, and dummy variables indicating whether the acquisition is financed with 100% stock (all stock dummy), whether the acquisition is financed with 100% cash (all cash dummy), whether the acquisition is a tender offer (tender dummy), whether the acquisition is a competed deal (compete dummy), whether the attitude of the target toward the attempt is classified as "friendly" (friendly dummy), and whether the bidder and the target share the same two-digit SIC code (related deal dummy). P-values are in brackets. Asterisks denote statistical significance at 1% (***), 5% (**) and 10% (*) levels.

	Full sample		Car < 0		Car>=0	
	Hedge funds	Other entrepreneurial activists	Hedge funds	Other entrepreneurial activists	Hedge funds	Other entrepreneurial activists
Activist	0.108***	0.089***	0.163***	0.136***	0.019	0.057
	[0.00]	[0.00]	[0.00]	[0.00]	[0.68]	[0.12]
CAR	-0.254***	-0.249***	-0.293*	-0.268*	-0.044	-0.023
	[0.00]	[0.00]	[0.08]	[0.010]	[0.84]	[0.91]
Premium	-0.029	-0.024	-0.035	-0.040	-0.033	0.005
	[0.23]	[0.33]	[0.31]	[0.26]	[0.44]	[0.90]
Log(size)	-0.016***	-0.015***	-0.012	-0.015*	-0.024***	-0.018**
	[0.00]	[0.00]	[0.14]	[0.06]	[0.00]	[0.05]
Tobin's q	-0.001	-0.002	0.001	-0.001	-0.002	-0.008
	[0.56]	[0.32]	[0.87]	[0.54]	[0.64]	[0.37]
Leverage	0.115*	0.120*	0.109	0.172*	0.142	0.102
	[0.10]	[0.09]	[0.31]	[0.10]	[0.12]	[0.25]
Relative deal size	0.010	0.008	0.023	0.022	0.003	-0.003
	[0.26]	[0.39]	[0.19]	[0.18]	[0.78]	[0.81]
All Stock dummy	-0.007	0.001	-0.008	0.007	-0.006	0.003
	[0.75]	[0.97]	[0.81]	[0.84]	[0.77]	[0.93]
All Cash dummy	0.005	0.020	0.018	0.056	0.011	0.028
	[0.83]	[0.37]	[0.61]	[0.13]	[0.77]	[0.35]
Tender dummy	-0.049**	-0.076***	-0.106***	-0.160***	0.001	-0.013
	[0.03]	[0.00]	[0.00]	[0.00]	[0.98]	[0.65]
Compete dummy	0.163***	0.162***	0.189***	0.180***	0.134***	0.134***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Friendly dummy	-0.266***	-0.279***	-0.259***	-0.279***	-0.252***	-0.278***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Related deal dummy	-0.031*	-0.031*	-0.053**	-0.057**	-0.015	-0.026
	[0.09]	[0.08]	[0.05]	[0.04]	[0.55]	[0.31]
Independent board	-0.025	0.033	0.029	0.055	-0.060	-0.103
	[0.66]	[0.58]	[0.72]	[0.51]	[0.57]	[0.21]
Intercept	0.134***	0.138***	0.149***	0.155***	0.121***	0.123***
	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]	[0.00]
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of obs	1220	1244	696	706	524	538
Adjusted R^2	36.46%	37.24%	33.11%	35.72%	52.66%	49.98%

Table 1.9: Comparison of acquisition announcement CAR to abandonment announcement CAR for withdrawn deals.

The table presents the 3-day cumulative abnormal return (CAR) of the acquirers around the withdrawal date. Panel A is for the full sample. Panel B reports the results for value-destroying acquisitions (CAR<0). And the results for acquisitions with announcement CARs greater than or equal to zero are reported in Panel C. P-values are in brackets. Asterisks denote statistical significance at 1% (***), 5% (**) and 10% (*) levels.

	All abandonments	Abandonments with activists	Abandonments without activists	Differences
Panel A: Full sample				
N	195	49	146	
Acquisition CAR	-3.48%***	-5.41%***	-2.79%***	-2.62%
	[0.00]	[0.00]	[0.00]	[0.14]
Abandonment CAR	1.59%***	3.41%**	1.01%*	2.40%*
	[0.01]	[0.04]	[0.07]	[0.07]
Panel B : CAR < 0				
N	122	32	90	
Acquisition CAR	-8.61%***	-10.67%***	-8.38%***	-2.29%
	[0.00]	[0.00]	[0.00]	[0.16]
Abandonment CAR	2.87%***	5.08%**	2.14%***	2.94%*
	[0.00]	[0.03]	[0.00]	[0.10]
Panel C: CAR >= 0				
N	73	17	56	
Acquisition CAR	5.01%***	4.22%***	5.25%***	-1.03%
	[0.00]	[0.00]	[0.00]	[0.21]
Abandonment CAR	-0.57%	0.41%	-0.87%*	1.28%
	[0.22]	[0.86]	[0.10]	[0.23]

Table 1.10: Active and passive holdings by activist investors.

The table presents probit analysis of the effect of activists on acquisition withdrawal. The dependent variable is a dummy variable which takes the value of 1 if the acquisition is withdrawn and 0 otherwise. The main independent variable is *activist activestake*, which equals 1 if the activist has activist intentions (reported in a Schedule 13D), and 0 otherwise. Control variables include CAR, log(size), Tobin's q, leverage of the acquirer, relative deal size, and dummy variables indicating whether the acquisition is financed with 100% stock (all stock dummy), whether the acquisition is financed with 100% cash (all cash dummy), whether the acquisition is a tender offer (tender dummy), whether there is competition for acquiring the target (compete dummy), whether the attitude of the target toward the attempt is classified as "friendly" (friendly dummy), and whether the bidder and the target share the same two-digit SIC code (related deal dummy). P-values are in brackets. Asterisks denote statistical significance at 1% (***), 5% (**) and 10% (*) levels.

	Full sample (1)	CAR < 0 (2)	CAR >= 0 (3)
Activist activestake	0.388***	0.440***	0.170
	[0.00]	[0.00]	[0.15]
CAR	-0.448	-0.409	-0.251
	[0.16]	[0.54]	[0.65]
Premium	-0.094	-0.054	-0.033
	[0.54]	[0.27]	[0.35]
Log(size)	-0.133***	-0.244***	-0.078
	[0.00]	[0.00]	[0.16]
Tobin's q	0.061**	0.018	-0.143
	[0.02]	[0.39]	[0.84]
Leverage	0.145	-0.012	-0.143
	[0.65]	[0.98]	[0.83]
Relative deal size	-0.012	-0.008	0.061
	[0.75]	[0.81]	[0.63]
All Stock dummy	-0.404*	-0.376**	0.009
	[0.09]	[0.04]	[0.96]
All Cash dummy	-0.070	-0.353	0.019
	[0.0.52]	[0.13]	[0.87]
Tender dummy	0.320**	-0.111	0.057
	[0.05]	[0.48]	[0.64]
Compete dummy	0.259*	0.338*	0.365***
	[0.10]	[0.06]	[0.01]
Friendly dummy	-0.240***	-0.528***	-0.272**
	[0.00]	[0.01]	[0.02]
Related deals	-0.135	-0.281*	0.055
	[0.023]	[0.07]	[0.68]
Ind board percentage	-0.236	-0.534**	-0.453
	[0.20]	[0.04]	[0.30]
Intercept	0.247***	0.253***	0.232***
	[0.00]	[0.00]	[0.00]
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Number of obs	155	92	63
Adjusted R^2	35.13%	54.25%	55.19%

Table 1.11: Activist investors' stock holding on the acquisition's announcement date.

The table presents probit analysis of the effect of activists on acquisition withdrawals. The dependent variable is a dummy variable which takes the value of 1 if the acquisition is withdrawn and 0 otherwise. The main independent variable is *activist*, which equals 1 if an activist still holds at least 1% of the acquirer's outstanding shares at the time the acquisition is announced and 0 otherwise. Control variables includes CAR, log(size), Tobin's q, leverage of the acquirer, relative deal size, and dummy variables indicating whether the acquisition is financed with 100% stock (all stock dummy), whether the acquisition is financed with 100% cash (all cash dummy), whether the acquisition is a tender offer (tender dummy), whether there is competition for acquiring the target (compete dummy), whether the attitude of the target toward the attempt is classified as "friendly" (friendly dummy), and whether the bidder and the target share the same two-digit SIC code (related deal dummy). P-values are in brackets. Asterisks denote statistical significance at 1% (***), 5% (**) and 10% (*) levels.

	Marginal effect Full Sample (1)	Marginal effect CAR<0 (2)	Marginal effect CAR>=0 (3)
Activist	0.130***	0.162***	0.068*
	[0.00]	[0.00]	[0.06]
CAR	-0.308***	-0.365**	-0.134
	[0.00]	[0.02]	[0.52]
Premium	-0.034	-0.040	-0.023
	[0.16]	[0.22]	[0.56]
Log(size)	-0.017***	-0.013*	-0.026***
	[0.00]	[0.09]	[0.00]
Tobin's q	-0.003	-0.002	-0.006
	[0.27]	[0.41]	[0.56]
Leverage	0.097	0.084	0.116
	[0.14]	[0.41]	[0.18]
Relative deal size	0.010	0.020	0.006
	[0.27]	[0.22]	[0.54]
All Stock dummy	-0.011	-0.012	-0.015
	[0.62]	[0.69]	[0.44]
All Cash dummy	0.009	0.014	0.027
	[0.62]	[0.68]	[0.54]
Tender dummy	-0.062***	-0.107***	-0.024
	[0.00]	[0.00]	[0.18]
Compete dummy	0.173***	0.199***	0.148***
	[0.00]	[0.00]	[0.00]
Friendly dummy	-0.282***	-0.287***	-0.262***
	[0.00]	[0.00]	[0.00]
Related deal dummy	-0.028	-0.051**	0.001***
	[0.11]	[0.04]	[0.00]
Independent board	-0.020	0.046	-0.046
	[0.72]	[0.57]	[0.52]
Intercept	0.149***	0.164***	0.129***
	[0.00]	[0.00]	[0.00]
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Number of obs	1301	738	563
Adjusted R^2	38.47%	36.23%	51.56%

Chapter 2

Living in the Sin City: Local Corruption and Institutional Trading

2.1 Introduction

Researchers have long been interested in understanding whether institutional investors have informational advantages and the extent to which such advantages affects their stock portfolio returns. Even though a large body of literature has examined these issues exclusively, the results so far are not conclusive. Gompers and Metrick (2001) find that institutional ownership is a strong and positive predictor for future returns, but the change in institutional ownership is not. They interpret these results as evidence that the return forecasting power of institutional investors comes from demand shocks rather than institutions' informational advantage. Similarly, Cai and Zheng (2004) find that institutional trading has negative predictive ability for next quarter's stock returns. In contrast, other studies find that some specific institutional investors have informational advantages. Yan and Zhang (2009) classify institutional investors into short- and long-term investors based on investors' past portfolio turnover and provide evidence of the positive association between short-term institutional trading and future returns. Baik, Kang, and Kim (2010) focus on geographic proximity between the institutional investors and firm headquarters, and find that local institutional trading is positively correlated with future local stock returns.

Even though specific institutional investors have informational advantages, it remains unclear how these investors gain the information. One potential channel from which institutional investors gain informational advantages is the inappropriate sharing of information. Even though Securities and Exchange Commission (SEC) law prohibit individuals from tipping material nonpublic information about the security, the law is far from eliminating this misbehavior. For example, Ahern (2017) identifies 183 illegal insider trading networks from all of the insider trading cases filed by the SEC and the Department of Justice between 2009 and 2013. In these networks, there are 1,139 insider tips shared by 622 inside traders who made an aggregated $928 million in illegal profits.

The inappropriate sharing of information is hard to document and quantify. However, prior studies suggest that this misbehavior is related to the regional culture. Individual behaviors are likely to conform to the norms in local culture via social interaction during which people reinforce preferences and experience so that they share the same identity with each other. This phenomenon is well documented by a large psychology literature (Tajfel (1978) and Hogg and Abrams (1988)). Consistent with this literature, Glaeser, Sacerdote, and Scheinkman (1996) find that while regional economic conditions can account little for the differences in crime rates, social factors – culture – play an important role on a person's decision to break rules, or to respect them. Parsons, Sulaeman, and Titman (2018) quantify the importance of misbehavior culture in white collar crimes. More specifically, they find that firm financial misconduct rates are clustered at the city level and are strongly related to other unethical behaviors, such as, political corruption, spousal infidelity, and misbehaviors by local physicians. One important aspect of misconduct behaviors is the inappropriate sharing of information. If individual behaviors are conform to local culture, the inappropriate sharing of information should be more prevalent in high misconduct culture areas. If that is true, local institutional investors should have more private information in these areas. As a result, we predict that local institutional investors are more local biased and their trading has more predictive power on local stocks in these high misconduct areas.

We follow Parsons, Sulaeman, and Titman (2018) to use the political corruption to measure the misbehavior culture of local areas. The political corruption is related to the corruption-related activities of local elected officials. The types of activities include electoral fraud, conflict of interest, campaign violations and obstructions of justice. We collect the number of corruption convictions by each federal judicial district (this term and “district”, and “court district” are used interchangeably) from 1995 to 2014. These data are available from the U.S. Department of Justice’s Public Integrity Section Reports. We then scale the number of corruption convictions for each district by the number of district population to get conviction rate per 1,000,000 inhabitants. The average of our district-level corruption measure is 3.10.

We use court district identifiers as a measure of locality. Local institutional investors are those investors who located within the same district as the firm’s headquarters. Local institutional ownership is defined as the number of shares held by local institutional investors divided by the number of shares outstanding. At the beginning of the year, we divide local areas into high corruption areas (top 30) and low corruption areas (bottom 30) based on the previous year’s level of corruption of each local area. The mean of the corruption measure of low and high corruption areas is 0.82 and 6.29, respectively, and the difference is significant at 1% level.

We first investigate the extent of local bias by institutional investors in high and low corruption areas. Each quarter, we follow Seasholes and Zhu (2010) and Sinclair (2011) to calculate the extent of local bias of each institution as the ratio of the weight of local firms in the institution investor portfolio divided by the weight of local firms in the market portfolio minus one. Then, we aggregate the extent of local bias across institutions, using the dollar assets of each institutions in the previous quarter as weights. We find that local institutional investors are more local biased in high corruption areas. The mean local bias by institutional investors in high and low corruption areas is 73% and 54%, respectively, and the difference is statistically significant at 5% level.

Next, we examine whether local institutions' trading can predict future local stock returns. To do so, we divide the local institutional ownership into the lagged local institutional ownership and the change in local institutional ownership. We find that the change in local institutional ownership can predict one-month-ahead local stock returns if they are located in high corruption areas. Since our results are obtained after controlling for various stock characteristics including size, book-to-market, and past returns, they cannot be explained by local institutional investors following certain investment styles that have been shown to explain cross-sectional stock returns. The predictive power of local institutions' trading is thus evidence that local institutional investors in high corruption areas are informed. More importantly, we find that the predictive power of local institutions' trading is concentrated in high information asymmetric firms (small, growth, high R&D, and high volatility firms), which tend to be more difficult to value. In contrast to the results for high corruption areas, we find no evidence that the change in local institutional ownership is significantly related to future stock returns in low corruption areas.

To provide a trading strategy on our previous findings of the effect of informed local institutions' trading on future returns in different corruption areas, we use a portfolio approach. This approach also allows us to control for known predictors of future stock returns such as size, book-to-market, and past return. A zero-investment strategy that long in the portfolio of stocks with the largest increase in local institutional holding and short in the portfolio of stocks with the largest decrease in local institutional holding generate 0.45% (after adjusting for Daniel, Grinblatt, Titman, and Werners (1997) benchmark returns) per quarter in high corruption areas, and is significant at the 5% level. In contrast, the difference in risk-adjusted returns between the highest and lowest quintile of the change in local institutional ownership is only 0.07%, and is not statistically significant in low corruption areas.

To provide more direct evidence that local institutions possess private information that is useful in predicting future returns in high corruption areas, we examine whether institutions' trading is related to future earnings news. We document that the trading of local institutions is related to future earnings news in high corruption areas. In these areas, stocks for which local institutional ownership increases the most experience 0.037% higher earnings surprises than those stocks for which local institutional ownership decreases the most. By contrast, in low corruption areas, we find no evidence that stocks that local institutions buy or sell exhibit significantly different earnings surprises in the next quarter.

Finally, Ahern (2017) finds that insider information flows through strong social ties, therefore, we expect that the inappropriate sharing of information is stronger between local institutional investors and their social connected local firms. We use mutual fund data to divide local stocks into local connected stocks and local non-connected stocks. Local connected (non-connected) stocks as those where the firm headquarters are located in the same federal court district with the mutual fund headquarters and where fund managers and firm executives attended the same (different) school. We find that mutual fund managers in high corruption areas are more biased toward local connected stocks compared to those in low corruption areas. Furthermore, portfolio tests show that mutual fund trading is able to predict one-quarter-ahead returns for local connected stocks in high corruption areas. For local non-connected stocks, we do not find significant differences in the extent of bias on these stocks in different corruption areas. Also, we find little evidence that the mutual fund trading is related to future returns of local non-connected stocks in different corruption areas.

Our paper contributes to the literature as follows. First, our paper contributes to the controversy surrounding whether institutional investors have informational advantages. While many papers document that specific institutional investors have informational advantages, these papers, however, do not show how these investors gain information. Our paper expands this literature by suggesting that the inappropriate sharing of information is a channel from which institutional investors gain informational advantages. Second, our paper contributes to misconduct culture literature. Previous research documents that misconduct culture has significant effect on firm misconduct behaviors such as earnings management, accounting fraud, option backdating, and opportunistic insider trading (Biggerstaff, Cicero, and Puckett (2015), Liu (2016)). However, none of these studies show how misconduct culture may affect institutional investors' informational advantages. Our paper suggests that firm misconduct culture is also related to the level of informational advantages of institutional investors.

The rest of the article is organized as follows. The next section is the literature review. Section 3 describes the data and presents descriptive statistics. Section 4 investigates the impact of local institutional trading on future stock returns for in different corruption areas. Section 5 concludes.

2.2 Literature reviews and hypothesis development

Prior research typically focuses on identifying which institutional investors have informational advantages. Yan and Zhang (2011) classify institutional investors into short- and long-term investors based on investors' past portfolio turnover and find that short-term institutions' trading forecasts future stock returns. Furthermore, short-term institutions' trading is also positively related to future earnings surprises. Ali, Klasa, and Li (2008) divide institutions into small, medium, and large stakes institutions based on the level of ownership and find that only medium stake institutions (institutional ownership is from 1% to 5% of total shares) possess more precise private pre-disclosure information and have incentives to trade on this information around earnings announcements. Other studies focus on the geographic proximity between the institutional investors and firm headquarters. For example, Coval and Moslowitz (2001) show that mutual fund managers earn higher returns from their local investment compared to their nonlocal investment. In addition, these returns are particularly higher for funds that operate out of remote areas. Baik, Kang, and Kim (2010) use state identifiers as a measure of locality and document that institutional investors have significant informational advantages on local stocks. They also find that the informational advantages are greatest among high asymmetric firms (small, high R&D intensive and young firms).

A potential channel from which institutional investors gain informational advantages is through the inappropriate sharing of information. Prior studies suggest that this misbehavior is related to the regional culture. Individual behaviors are likely to conform to the norms in local culture via social interaction (Tajfel (1978) and Hogg and Abrams (1988)). Previous studies examine the impact of local religious beliefs, an important aspect of local culture, on a wide range of corporate and institutional investor decisions (Hilary and Hui (2009), Shu, Sulaeman, and Yeung (2012)). In addition to local religious beliefs, regional misconduct culture also play a significant role on local individuals' misbehaviors. Glaeser, Sacerdote, and Scheinkman (1996) find that crime rates vary significantly among U.S. cities and that the regional culture can significantly explain these differences. In the finance field, Parsons, Sulaeman, and Titman

(2018) show that financial misconduct rates differ widely among major U.S cities and that the differences are strongly related to city-level misconduct culture. Dimmock, Gerken, and Graham (2018) find that the misconduct of financial advisors is positively related to local political corruption.

An important aspect of misconduct behaviors is the inappropriate sharing of information. Since the regional misconduct culture varies across the country, the level of information sharing will diverge significantly in different areas. Using regional political corruption to capture the misconduct culture of local areas, we expect the inappropriate sharing of information to be more prevalent in high corruption areas. As a result, we hypothesize that institutional investors are more local biased and their trading on local stocks generates higher returns in these high corruption areas.

Finally, one might concern that political corruption may be related to other regional characteristics (rather than local culture), which may also affect the inappropriate sharing of information. First, the political corruption may be correlated to regional economic conditions. An extensive literature studies the relation between economic growth and corruption. For example, Johnson, LaFountain and Yamarik (2011) find that political corruption plays a significant role on lowering growth and investment across U.S. states. To account for this possibility, in untabulated test, we include district's average income as an additional control variable and find that the main results remain unchanged. Second, the political corruption may be related to regional enforcement. However, the political corruption is enforced at the federal level by the Department of Justice. Glaeser and Saks (2006) argue that because the federal judicial system should be above the influence of local corruption, enforcement is more or less equal around the country.

2.3 Data and variable constructions.

2.3.1 Data

We obtain the institutional ownership data from the Thompson Reuters 13F fillings from first quarter of 1996 to the fourth quarter of 2014. The CDA/Spectrum data are based on the Securities and Exchange Commission (SEC)'s Form 13-F, which requires institutions managing more than $100 million in equity to file a quarterly report of all equity holdings greater than 10,000 shares or $200,000 in market value. Thompson Reuter divides the institutional ownership into 5 types: banks (type code 1), insurance companies (type code 2), investment companies, mostly mutual fund management companies (type code 3), investment advisors (type code 4), and others (type code 5, including pension funds, endowment funds and others). However, since 1998, this classification is very problematic in which other type codes (mostly, type code 4) are classified as type code 5. As the result, type code 5 accounts for more than 50% of all institutions. Thus, we follow Agarwal, Jiang, Tang and Yang (2013) to deal with "other" category. First, we reassign an institution which has type code 5 after 1997 to an earlier code, if available and if different from 5. Second, we manually classify the remaining institutions (mainly based on information from the institutions' websites). Then we reclassify institutions into 3 groups as follows: group 1 includes bank and insurance companies, group 2 includes investment companies and investment advisors, and group 3 includes other types of institutions (pension funds, endowment funds). After reclassification, group 2 accounts for about 80% of all institutions. In this paper, we focus of the local institutional ownership of investment companies and investment advisors (group 2), which has shown to have informational advantages in previous research (Baik, Kang, and Kim (2010)). We exclude those observations with total institutional ownership greater than 100%.

We hand collect institutions' headquarter from SEC filings. Firms' headquarters are from COMPUSTAT. We obtain stock return, share price, and number of shares outstanding from CRSP for all NYSE/AMEX/NASDAQ stocks. Firm financial data are from COMPUSTAT and analyst forecast data from I/B/E/S.

We measure the misconduct culture of a local area by using the level of political corruption of that area. To measure political corruption, we use U.S. Department of Justice data on the number of corruption convictions of public officials in each of the 94 federal judicial districts in the US. The types of activities include electoral fraud, conflict of interest, campaign violations and obstructions of justice. We scale the number of convictions by the number of district population to get conviction rate per 1,000,000 inhabitants. In our sample, the District of Columbia has a substantially higher number of per capita corruption convictions relative to the rest of the sample. For example, the average of our district-level corruption measure (exclude District of Columbia) is 3.10, whereas the average for District of Columbia is 63.35. Therefore, we exclude District of Columbia from our sample to control for the effect of this outlier.

We use federal court district identifiers as a measure of locality. Previous studies use different measures to capture locality. Coval and Moskowitz (2001) define local stocks as holding within 100 kilometers of the mutual fund headquarter, Baik, Kang and Kim (2010) use state identifiers as a measure locality. The use of federal court district as a measure of locality is best suited for our study for two reasons. First, it is consistent with our measure of political corruption as mentioned above. Second, the level of corruption varies substantially within a state. For example Illinois has three court districts: Central, Northern, and Southern. The average corruption measure of the Central District is 2.46, whereas the corruption measure of the Northern District and Southern District is 4.52 and 4.99, respectively. Therefore, to better capture the corruption culture of each region, we decide to use court district instead of state boundary to measure locality.

2.3.2 Firm characteristics

We follow Gompers and Metrick (2001) to include ten firm characteristics as control variables: size is the log of market capitalization, book-to-market ratio is calculated as the ratio of the book value of equity to the market capitalization, return volatility is estimated as the standard deviation of monthly returns over the past 2 years, turnover is defined as the average monthly volume to number of shares outstanding over the past three months, stock price is share price from CRSP, SP500 is a dummy variable that equals one if a firm is included in the S&P 500 index, RETt-3,t is the preceding 3 month cumulative gross return before the filling quarter. MRETt-12,t-3 is the penultimate nine month cumulative gross return before the filling quarter. Firm age is the number of months since a firm's first stock return appears in CRSP. Dividend yield is calculated as cash dividend divided by market capitalization.

2.3.3 Descriptive statistics

Panel A of Table 2.1 reports the level of local institutional ownership at the firm level in different corruption areas. At the firm level, the level of local institutional ownership is computed as the number of shares held by local institutional investors divided by total shares outstanding. On the average, local institutions hold 1.97% of total shares outstanding. We then classify local areas into high (low) corruption areas. At the beginning of the year, we divide local areas into high corruption areas (top 30) and low corruption areas (bottom 30) based on the previous year's level of corruption of each local area. Local institutions hold 2.03% of total shares outstanding in high corruption areas, while local institutions hold only 1.39% of all shares in low corruption areas. The difference is 0.64% and is significant at 1% level. Panel B of table

2.1 reports the level of institutional holding at the manager level, which is calculated as the total market value of local equity held by each manager divided by the total market value of equity held by each manager. Institutions hold an average of 6.53% of their total assets in local stocks. Institutions located in high corruption areas hold significantly more local stocks in their total assets comparing to those located in low corruption areas, 7.27% versus 5.81%, respectively.

Finally, we report the extent of local bias by institutional investors. We follow Seasholes and Zhu (2010) and Sinclair (2011) to calculate the extent of local bias of each institution as the ratio of the weight of local firms in the institution investor divided by the weight of local firms in the market portfolio minus one.

$$Local\ bias = \frac{\text{The dollar value invested in local stocks/ total assets under management}}{\text{Market values of local stocks/Market values of all stocks}} -1$$

Each quarter, we calculate the extent of local bias of each institutional investors. Then, we aggregate the extent of local bias across institutions, using the dollar assets of each institutions in the previous quarter as weights. Panel C of table 2.1 reports the time series average of the extent of local bias.

Generally, we observe that institutional investors are local biased, which is widely documented in previous literature. The mean local bias is 44%. For comparison, Bradley, Pantzalis and Yuan (2015) use state boundary as a measure of locality and study the local bias by pension funds, and they find that mean local bias is 26%. Thus, the extent of local bias appears to be larger when we include other types of institutions and use district identifiers as a measure of geographic proximity. Furthermore, we find that institutional investors in high corruption areas are more local biased compared to those in low corruption areas. The mean local bias by institutional investors in high and low corruption areas is 73% and 54%, respectively. The difference is statistically significant at 5% level.

[Please insert table 2.1 here]

We compute, for each quarter, mean cross-sectional political corruption, institutional ownership, stock returns, and other firm characteristics for the period from the third quarter of 1996 to the fourth quarter of 2014. Table 2.2 reports the time-series mean, median, standard deviation, 25th, and 75th of these 62 cross-sectional averages. On average, the level of district-level corruption measure is 3.10. This result is similar to Dass, Nanda, and Xian (2016), who report a 3.16 average district-level corruption measure for the period from 1990 to 2011. The mean (median) of local institutions holding is 1.97% (2.03%) of total shares outstanding, while the mean (median) of nonlocal institutions holding is 31.36% (30.66%) of all shares. The mean one-quarter-ahead stock return is 4.02%, with a median of 3.61%. The mean (median) market capitalization is $3.6 billion ($3.4 billion). The mean and median book-to-market ratios are about 0.69. Return volatility has a mean (median) of 13.15% (11.93%). The mean turnover is 14.68, with a median of 14.86. The mean and median stock prices are close to $22.92 and $22.70, respectively. The S&P 500 inclusion dummy shows that about 10% of our sample firms are included in the S&P 500 index. The mean (median) cumulative gross return for the preceding three months is 3.94% (4.02%), and the mean (median) cumulative gross return for the penultimate nine months is 4.36% (4.27%). On average, our sample firms have 15 years of CRSP data. Finally, the mean and median dividend yields are close to 1.5%.

[Please insert table 2.2 here]

2.4 Empirical results.

2.4.1 The effect of local institutional trading on future stock return

To determine whether institutional investors have information advantages, we follow Gompers and Metrick (2001) to decompose the level of institutional ownership into the level of lagged institutional ownership and the change in institutional ownership. Gompers and Metrick (2001) use the level of lagged institutional ownership as a measure for future institutional demand and the change in institutional ownership as a measure for institutional information advantages. Also, Baik, Kang, and Kim (2010) document that local institutional ownership does not change markedly over a short period such as one quarter. Therefore, we divide the current level of institutional ownership into the two-quarter lagged institutional ownership and the change in institutional ownership over the previous two quarters.

Each quarter, we run the following regression:

$$RET_{i,t+1} = \beta_0 + \beta_1 \Delta LIO_{i,t} + \beta_2 LIO_{i,t-2} + \beta_3 \Delta NIO_{i,t} + \beta_4 NIO_{i,t-2} + Controls_{i,t} + e_{i,t} \quad (1)$$

Where: Local (nonlocal) institutional investors are institutional investors whose headquarters are located within the same (different) district as the firms' headquarters. Local (nonlocal) institutional ownership is computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. $RET_{i,t+1}$ is the stock returns in the next quarter; $\Delta LIO_{i,t}$ is the change of local institutional ownership over the previous two quarter; $LIO_{i,t-2}$ is the two-quarter lagged local institutional ownership; $\Delta NIO_{i,t}$ is the change of nonlocal institutional ownership over the previous two quarter; $NIO_{i,t-2}$ is the two-quarter lagged nonlocal institutional ownership. Similar to Gompers and Metrick (2001), we include ten stock characteristic as control variables: size, book-to-market, return volatility, turnover, stock price, S&P 500 inclusion, cumulative gross return for the preceding three months, cumulative gross return for the penultimate nine months, age, and dividend yield.

We estimate equation (1) each quarter and use the Fama and Macbeth (1973) method to calculate standard errors for the time-series average of coefficients. Table 2.3 reports the time series average of coefficient estimates and the associated p-values. We report the p-values on the basis of the Newey–West (1987) standard errors to account for autocorrelation. The average coefficient on ΔLIO is 0.052 and is significant at 5% level. This finding is consistent with the finding of Baik, Kang, and Kim (2010) and suggests that institutional investors have informational advantages on local stocks.

[Please insert table 2.3 here]

To examine how local institution's trading will affect future local stock returns in different corruption areas, we divide local areas into high and low corruption areas and re-estimate equation (1). In high corruption areas, we find that the average coefficient on ΔLIO is 0.104 and is significant at 1% level. On the contrast, the average coefficient on Δ LIO is smaller in magnitude (0.072) in low corruption areas and is statistically insignificant. These results suggest that local institutions have more information advantages if they locate in high corruption areas.

2.4.2 Small/big, value/growth, high R&D/low R&D.

If the institutions possess information advantages, we should expect to find stronger results for small firms, value firms, high volatility, and high R&D firms. In general, these firms face more uncertainty and their values are more difficult to evaluate (Wermers (1999), Sias (2004), Baik, Kang and Kim (2010)). To test this implication, we divide all sample stocks into small/large, growth/value, high volatility/low volatility, and high R&D/low R&D categories. Specifically, each quarter, a firm is classified as a small firm if its market capitalization is lower than the NYSE median. Otherwise, it is considered a big firm. A firm is classified as a growth firm if its book-to-market ratio is less than the cross-sectional median; otherwise, it is a value firm. A firm is classified as a high volatility firm if its stock return volatility is higher than the cross-sectional median; otherwise, it is a low volatility firm. A firm is classified as a high R&D firm if its R&D ratio is greater than the cross-sectional median; otherwise, it is a low R&D firm.

We re-estimate equation (1) for small/large, growth/value, high volatility/low volatility, and high R&D/low R&D firms. Table 2.4 reports the results. We report the results for the full sample first, followed by institutions in high corruption areas and institutions in low corruption areas. For the full sample, consistent with the information advantage hypothesis, we find the positive relation between the change in local institutional ownership and future returns exists only for small, growth, high R&D and high volatility firms. We obtain a similar pattern for local institutions in high corruption areas, the average of coefficients on ΔLIO for small, growth, high R&D and high volatility firms is bigger in magnitude and is statistically significant. For example, in Panel A, the average of coefficients on ΔLIO for small firms is 0.109 and is significant at 1% level. In the contrast, average of coefficients on ΔLIO for big firms is only 0.006 and is insignificant. In low corruption areas, we find that the average of coefficients on ΔLIO is also stronger for small, growth, high R&D and high volatility firms. However, none of these coefficients are statistically significant.

[Please insert table 2.4 here]

2.3.3 Portfolio approach.

To provide a robustness check on our previous results and gauge the economic significance of the effect of informed institutions' trading on future returns in different corruption areas, we use a portfolio approach. This approach allow us to control for known predictors of future stock returns such as size, book-to-market, and past return. At the beginning of the year, we divide local areas into high (top 30), and low (bottom 30) corruption areas based on previous year corruption measure. Then for each quarter, we independently sort firms into 5 quintile based on the change in local institutional ownership (Q1 is the portfolio with largest ownership decrease and Q5 is the portfolio with largest ownership increase). We then calculate one-quarter-ahead value-weighted returns of each portfolio. We also form a zero- cost investment strategy that is long in portfolio Q5, and short in portfolio Q1. In addition to raw returns, we also calculate adjusted returns following Daniel et al. (1997) (DGTW) benchmark-adjusted returns, and abnormal returns using Fama-French-Carhart four-factor model.

Table 2.5 reports the results on the portfolio tests. In high corruption areas, the average quarterly return on the zero-investment strategy Q5−Q1 is 0.41% (p-value=0.04) over the next quarter after portfolio formation. This average return difference is 0.45% (p-value=0.04) using DGTW-adjusted returns, and 0.43% (p-value=0.04) using Fama-French-Carhart four-factor model.

[Please insert table 2.5 here]

Consistent with our earlier results, we find no evidence that local institutional investors have informational advantages in low corruption areas. Whether measured by raw returns, DGTW-adjusted returns, or Fama-French-Carhart four-factor model, there's no significant spread between Q5 and Q1 portfolios.

In summary, results in Table 2.5 show a significant difference between local institutional investors in high and low corruption areas. In high corruption areas, local institutions' trading strongly predicts future returns while in low corruption areas, local institutions' trading does not. These results are consistent with those reported in Table 2.4 and suggest that local institutional investors in high corruption areas are better informed than those in low corruption areas.

2.4.4 Institutional trading and future earnings news

Prior research documents that specific institutional investors have private information and their trading is positively associated with firms' future earnings surprises (Pinnuck (2005), Ke and Petroni (2004), Ke, Ramalingegowda, and Yu (2006)). Therefore, to provide more direct evidence that local institutions possess private information that is useful in predicting future return in these areas, we examine the relation between institutional trading and future earnings surprises.

We obtain analysts' quarterly earnings forecast from I/B/E/S, and obtain quarterly earnings announcement dates from COMPUSTAT. The earnings surprise is defined as the difference between reported earnings and consensus analysts' earnings forecast divided by the stock price of the previous quarter. Each quarter, we sort firms into 5 quintile based on the change in local institutional ownership (Q1 is the portfolio with largest ownership decrease and Q5 is the portfolio with largest ownership increase). We then calculate the median earning surprise over one-quarter-ahead for each portfolio each quarter. This procedure is then repeated for high and low corruption areas.

Table 2.6 reports the time-series average of median earnings surprises for portfolios Q5 and Q1, as well as the difference between Q5 and Q1. We find that, in high corruption areas, stocks for which local institutional ownership increases the most (Q5) experience significantly higher earnings surprises than those stocks for which local institutional ownership decreases the most (Q1). This difference is statistically significant at 5% level. By contrast, in low corruption areas, we find no evidence that stocks that local institutions buy or sell exhibit significantly different earnings surprises in the next quarter.

[Please insert table 2.6 here]

2.4.5 Local corruption and local institutional ownership: Evidence from mutual funds.

Ahern (2017) finds that insider information flows through strong social ties. Therefore, we expect that the inappropriate sharing of information is stronger between local institutional investors and their social connected local firms. Also, as the inappropriate sharing of information seem to be more prevalent in high corruption areas, we expect that mutual funds to be more biased toward local connected stocks in these high corruption areas. To test these intuitions, we obtain mutual fund holding from the CDA/Spectrum Mutual Fund Holding database. Our mutual fund manager education data come from Morningstar, and educational background to firms' key executives (CEO, CFO and Chairman) is from BoardEx database. We defined local connected (non-connected) stocks as those where the firm head-quarter located in the same federal court district with the mutual fund head-quarter and where fund managers and firm executives attend the same (different) school. Each quarter, we calculated the extent of bias on local connected (non-connected) stocks of each fund as the ratio of the weight of local connected (non-connected) firms in the fund divided by the weight of local connected (non-connected) firms in the market portfolio minus one. Then, we aggregate the extent of bias across funds, using the dollar assets of each fund in the previous quarter as weights.

Table 2.7 reports the time series average of the extent of bias by mutual fund managers on local connected (non-connected) stocks in different corruption areas. For local connected stocks, the mean bias by mutual funds is 141.4% in high corruption areas, while in low corruption areas, the mean bias is only 20.2%. The difference in mean bias in high and low corruption areas is 121.2% and is significant at 5% level. For non-connected stocks, we find that mutual funds are biased toward these stocks in both high and low corruption areas. The mean bias on local non-connected stocks in high and low corruption areas is 73.2% and 68.6%, respectively. However, the difference is not statistically significant.

[Please insert table 2.7 here]

Next, we examine whether mutual fund trading can predict the performance of local connected (non-connected) stocks in high corruption areas. Because the mean quarterly change in local ownership by mutual funds is only 0.002% and that the quarterly change in local ownership provides little power in explaining the cross-sectional variation in future returns, we follow Pool, Stoffman, and Yonker (2015) to construct the buy and sell portfolios. For each fund, we form four distinct portfolios at the beginning of each quarter based on (1) whether the fund bought or sold a stock during the previous quarter and (2) whether stocks are local connected stocks or local non-connected stocks. Each quarter, we calculate one-quarter-ahead returns of these portfolios of each fund, weighting each stock's return in the portfolios by the new money it receives during the previous quarter. We then average across funds in a quarter, using new money it receives during the previous quarter as weights, producing value-weighted average quarterly returns of the local connected and local non-connected buy and sell portfolio for each quarter.

Our trading portfolio results are summarized in table 2.8. In high corruption areas (panel A), the long-short strategy on local non-connected generate a return of 1.14% (DGTW adjusted), and 1.18% (Fama-French-Carhart four-factor model) per quarter. The risk adjusted return is statistically significant at 5% level. On the other hand, the long-short strategy on local non-connected stocks earns no abnormal returns. The last column shows difference-in-difference estimates. Our difference-in-difference estimates are equal to 0.98% (DGTW adjusted), and 1.01% (Fama-French-Carhart four-factor model) per quarter, and is significant at 10% level.

Panel B reports the results for low corruption areas. The buy and sell strategy for connected stocks generate 0.86% (DGTW adjusted), and 0.61% (Fama-French-Carhart four-factor model) per quarter, and is statistically insignificant. Similarly, the buy and sell strategy for non-connected stocks is also not statistically different from 0.

[Please insert table 2.8 here]

2.5 Conclusion

Even though it is well-known that some specific institutional investors have informational advantages, little is known how these institutional investors gain the information. Our paper tries to fill the gap by investigating the relationship between local institutional investors' trading and future local stock returns in different misconduct culture areas. Using regional political corruption to proxy for misconduct culture, we show that local institution investors are more local biased in high corruption areas. More importantly, we find that the positive relation between local institutional investors' trading and future stock returns, particularly for high information asymmetry stocks, exists only in these high corruption areas. These results are evidence that local institutional investors in high corruption areas are better informed in high corruption areas. Since the inappropriate sharing of information seems to be more prevalent in high corruption areas. These results also suggest that the inappropriate sharing of information is a channel from which institution investors gain informational advantages.

If the inappropriate sharing of information is a channel from which institutional investors gain informational advantages, we expect that local institutional investors possess more private information about local stocks in high corruption areas. Consistent with this prediction, we find that local institutional trading is significantly positively related to future earnings surprise in high corruption areas. In contrast, there is only weak evidence that institutional trading is related to future earnings surprise in low corruption areas.

Finally, using mutually fund data to classify local stocks into local connected stocks and local non-connected stocks, we find that mutual fund managers in high corruption areas are more biased toward local connected stocks compared to those in low corruption areas. Furthermore, portfolio tests show that mutual fund trading is able to predict one-quarter-ahead returns for local connected stocks in high corruption areas. In the contrast, we do not find significant differences in the extent of bias on local non-connected stocks in different corruption areas. Also, we find little evidence that the mutual fund trading is related to future returns of local non-connected stocks.

Overall, these results suggest that the inappropriate sharing of information is a channel from which institutional investors gain informational advantages. Our results highlight the importance of informed trading in the relation between institutional trading and stock returns.

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Table 2.1: Descriptive statistics of local institutional ownership and the extent of local bias.

Panel A reports the level of local ownership at the firm level at different corruption areas. The sample period is from September 1999 to December 2014. Local institutional investors are institutional investors whose headquarters are located within the same district as the firms' headquarters. Local institutional ownership is computed as the number of shares held by local institutional investors divided by total shares outstanding. The level of local corruption is measured as the number of corruption convictions by public officials in a district, scaled by the total population of that district. An area is classified as high (low) corruption area if its corruption level is in top (bottom) 30% of the sample. Panel B reports the level of local ownership at the manager level. Local institutional ownership at the manager level is defined as the total market value of local equity held by each manager divided by the total market value of equity held by each manager. Panel C summarizes the extent of local bias. The local bias of each manager is calculate as $\frac{\text{The dollar value invested in local stocks/ total assets under management}}{\text{Market values of local stocks/Market values of all stocks}}$ -1. We aggregate the level of local ownership and the level of local bias across managers, using the total market value of equity held by each manager as the weight. The reported numbers are the time-series average of these value-weighted averages. Standard deviation is in parenthesis and p-value is in square brackets.

	Full sample	High corruption	Low corruption	Dif
Panel A: Local institutional ownership at the firm level (%)				
	1.97	2.03	1.39	0.64*** [0.00]
Panel B: Local institutional ownership at the manager level (%)				
	6.53	7.27	5.81	1.46*** [0.01]
Panel C: Local Bias				
	0.44 [0.00]	0.73 [0.00]	0.54 [0.00]	0.19** [0.04]

Table 2.2: Descriptive statistics

The table report the time-series mean, median, standard deviation, first quartile, and third quartile of the quarterly averages of the 62 quarters from September 1, 1999 to December 31, 2014.

	Number of firm-quarter	Mean	Median	Std	25th	75th
Corruption	62	3.10	3.06	0.21	2.97	3.14
Ownership and future returns						
Local Ins Ownership (%)	62	1.97	2.03	0.21	1.75	2.15
Non-Local Ins Ownership (%)	62	31.36	30.66	5.04	25.98	34.48
Change in Non-Local Ins Ownership	62	0.68	0.45	1.54	0.08	1.18
Ret $_{t,t+3}$ (%)	62	4.02	3.61	12.29	-3.89	10.93
Other firm characteristics						
Size ($mil)	62	3,601.05	3,377.1	1,195.96	2,644.29	4,297.21
Book-to-Market	62	0.69	0.69	0.21	0.51	0.80
Return volatility (%)	62	13.15	11.93	3.88	10.09	15.36
Turnover $_{t-6,t}$	62	14.68	14.86	2.25	13.73	16.43
Price	62	22.92	22.70	5.57	18.69	25.80
SP500	62	0.10	0.10	0.02	0.08	0.12
MRET $_{t-3,t}$ (%)	62	3.94	4.02	9.68	-1.01	8.18
MRET $_{t-12,t-3}$ (%)	62	4.36	4.27	9.78	-0.94	8.37
Age	62	207.05	206.54	30.78	182.98	236.25
Div	62	0.015	0.013	0.007	0.011	0.017

Table 2.3: The effect of local institutional holding and trading on future stock return

The table represents the results from Fama-Macbeth regressions of one-quarter-ahead stock returns on local (nonlocal) institutional ownership, change in local (non-local) institutional ownership, and other firms' characteristics. Local (nonlocal) institutional investors are institutional investors whose headquarters are located within the same (different) district as the firms' headquarters. Local (nonlocal) institutional ownership is computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. Local (nonlocal) institutional ownership$_{t-2}$ is the two-quarter lagged local (nonlocal) institutional ownership. Change in local (nonlocal) institutional ownership is the change in local (nonlocal) institutional ownership over the previous two quarters. The sample period is from September 1999 to December 2014. The firm characteristics are as defined in table 2.1. I winsorize all variables at 1 percentile and 99 percentile to reduce the effect of outliers. Numbers in the bracket are p-value based on Newey-West standard errors.

	Full sample (1)	High corruption (3)	Low corruption (2)
Change in local Ins Ownership	0.052** [0.04]	0.104*** [0.00]	0.072 [0.17]
Local Ins Ownership t-2	0.041* [0.10]	0.050* [0.09]	0.028 [0.45]
Change in Nonlocal Ins Ownership	0.009 [0.61]	0.012 [0.66]	0.013 [0.60]
NonLocal Ins Ownership t-2	0.043*** [0.00]	0.040*** [0.00]	0.056*** [0.00]
Size	-0.004*** [0.00]	-0.004** [0.03]	-0.005*** [0.00]
BM	0.003 [0.29]	0.002 [0.67]	0.007* [0.09]
Return volatility	-0.061** [0.04]	-0.089*** [0.00]	-0.047 [0.14]
Turnover t-6,t	-0.005** [0.02]	-0.006** [0.04]	-0.004* [0.07]
Price	-0.000* [0.08]	-0.000 [0.12]	-0.000 [0.18]
SP500	0.022*** [0.00]	0.018*** [0.00]	0.027*** [0.00]
MRET t-3,t	0.006 [0.56]	0.009 [0.49]	0.004 [0.68]
MRET t-12,t-3	-0.001 [0.92]	0.001 [0.94]	-0.004* [0.07]
Age	0.000 [0.34]	0.000 [0.76]	0.000 [0.15]
Div	0.002 [0.38]	0.001 [0.82]	0.003 [0.32]
Intercept	0.064* [0.06]	0.057* [0.10]	0.069** [0.03]
Average R2	0.069	0.084	0.083

Table 2.4: The effect of local institutional holding and trading on future stock return: small/large, value/growth, low volatility/high volatility.

The table represent the results from Fama-Macbeth regressions of one-quarter-ahead stock returns on local (nonlocal) institutional ownership, change in local (non-local) institutional ownership, and other firms' characteristics for small/large, value/growth, high volatility/low volatility stocks separately. Local (nonlocal) institutional investors are institutional investors whose headquarters are located within the same (different) district as the firms' headquarters. Local (nonlocal) institutional ownership is computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. Local (non-local) institutional ownership$_{t-2}$ is the two-quarter lagged local (non-local) institutional ownership. Change in local (non-local) institutional ownership is the change in local (non-local) institutional ownership over the previous two quarters. Small stocks have market capitalization less than that of the median NYSE stocks. Large stocks have market capitalization greater than that of the median NYSE stocks. Growth (value) stocks are those that have book-to-market ratio less (greater) than the cross-sectional median. Low (high) volatility stocks have return volatility less (greater) than the cross-sectional median. The sample period is from September 1999 to December 2014. The firm characteristics are as defined in table 2.1. I winsorize all variables at 1 percentile and 99 percentile to reduce the effect of outliers. Numbers in the bracket are p-value based on Newey-West standard errors.

Panel A: Small/large stocks

	Full sample		High corruption		Low corruption	
	Small	Large	Small	Large	Small	Large
Change in local Ins Ownership	0.058* [0.06]	0.007 [0.84]	0.109*** [0.00]	0.006 [0.94]	0.048 [0.45]	0.012 [0.92]
Local Ins Ownership t-2	0.043 [0.13]	0.002 [0.96]	0.030 [0.35]	0.057 [0.21]	0.019 [0.67]	0.021 [0.64]
Change in Non-local Ins Ownership	-0.005 [0.82]	0.035* [0.08]	-0.011 [0.69]	0.048 [0.17]	0.003 [0.91]	0.047 [0.16]
Non-Local Ins Ownership t-2	0.039*** [0.00]	0.025*** [0.00]	0.036** [0.04]	0.029*** [0.00]	0.056*** [0.00]	0.014 [0.44]
Firm characteristics controls	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	0.063* [0.10]	0.175*** [0.00]	0.029 [0.50]	0.175*** [0.00]	0.074** [0.04]	0.185*** [0.00]
Average R^2	0.069	0.089	0.086	0.098	0.084	0.105

Panel B: Growth/value stocks

	Full sample		High corruption		Low corruption	
	Growth	Value	Growth	Value	Growth	Value
Change in local Ins Ownership	0.053* [0.08]	0.047 [0.12]	0.138** [0.02]	0.112* [0.06]	0.078 [0.32]	0.052 [0.55]
Local Ins Ownership t-2	0.041 [0.17]	0.037 [0.25]	0.077** [0.05]	0.033 [0.46]	0.028 [0.55]	0.105* [0.09]
Change in Non-local Ins Ownership	0.037 [0.11]	-0.024 [0.29]	-0.031 [0.29]	0.054 [0.11]	0.033 [0.24]	-0.025 [0.43]
Non-Local Ins Ownership t-2	0.061*** [0.00]	0.023 [0.15]	0.033* [0.09]	0.049*** [0.00]	0.067*** [0.00]	0.037** [0.03]
Firm characteristics controls	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	0.082** [0.04]	0.056* [0.08]	0.071** [0.03]	0.065 [0.16]	0.074* [0.06]	0.060* [0.07]
Average R^2	0.077	0.071	0.098	0.102	0.098	0.097

Panel C: Low/high volatility

	Full sample		High corruption		Low corruption	
	High	Low	High	Low	High	Low
Change in local Ins Ownership	0.073** [0.05]	0.024 [0.26]	0.165** [0.02]	0.042 [0.28]	0.068 [0.35]	0.078 [0.13]
Local Ins Ownership t-2	0.052* [0.10]	0.021 [0.26]	0.050 [0.20]	0.035 [0.42]	0.025 [0.67]	0.089** [0.04]
Change in Non-local Ins Ownership	0.013 [0.59]	0.015 [0.28]	0.017 [0.63]	0.008 [0.72]	0.019 [0.54]	0.024 [0.29]
Non-Local Ins Ownership t-2	0.059*** [0.00]	0.017* [0.06]	0.057*** [0.00]	0.015 [0.26]	0.075*** [0.00]	0.022** [0.03]
Firm characteristics controls	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	0.087** [0.02]	0.051 [0.11]	0.080** [0.04]	0.042 [0.17]	0.091** [0.02]	0.056* [0.10]
Average R^2	0.062	0.065	0.0835	0.0858	0.0822	0.089

Panel D: Low/high R&D

	Full sample		High corruption		Low corruption	
	High	Low	High	Low	High	Low
Change in local Ins Ownership	0.079*** [0.00]	0.018 [0.64]	0.149** [0.02]	0.081 [0.19]	0.142* [0.08]	-0.017 [0.82]
Local Ins Ownership t-2	0.041* [0.10]	0.026 [0.37]	0.017 [0.72]	0.064* [0.06]	0.073 [0.22]	0.158** [0.05]
Change in Non-local Ins Ownership	0.015 [0.54]	-0.005 [0.81]	0.057 [0.17]	-0.028 [0.36]	0.020 [0.47]	0.009 [0.78]
Non-Local Ins Ownership t-2	0.049*** [0.00]	0.036*** [0.00]	0.041* [0.06]	0.037*** [0.01]	0.052*** [0.00]	0.049*** [0.00]
Firm characteristics controls	Yes	Yes	Yes	Yes	Yes	Yes
Intercept	0.105*** [0.01]	0.049* [0.10]	0.084** [0.04]	0.061* [0.07]	0.126*** [0.00]	0.026 [0.31]
Average R^2	0.072	0.0724	0.099	0.102	0.089	0.098

Table 2.5: Returns to the change in local and nonlocal institutional ownership portfolios.
The table represents the returns on portfolio sorted by the quarterly change in local (nonlocal) institutional ownership. Local (nonlocal) institutional investors are institutional investors whose headquarters are located within the same (different) district as the firms' headquarters. Local (nonlocal) institutional ownership is computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. The sample period is from September 1999 to December 2014. At the beginning of the year, we sort firms into high (top 30), medium, and low (bottom 30) corruption areas based on previous year corruption measure. Then, each quarter, we independently sort firms into 5 quintiles based on the change in local institutional ownership (Q1 is the portfolio with largest ownership decrease and Q5 is the portfolio with largest ownership increase). We then calculate average one-quarter-ahead value-weighted returns of each portfolio. We report the time-series means of both raw returns, the Daniel et al. (1997) (DGTW) benchmark adjusted returns, and Fama-French-Carhart 4 factor returns. The returns are in percent. Numbers in the bracket are p-value.

	Full sample	High corruption	Low corruption
Low(Q1)	0.66	0.91	0.84
High(Q5)	0.79	1.32	0.98
High – low (Raw)	0.13 [0.41]	0.41** [0.04]	0.14 [0.57]
High – Low (DGTW)	0.02 [0.86]	0.45** [0.04]	0.07 [0.79]
High – Low (FF4)	0.03 [0.81]	0.43** [0.04]	0.04 [0.89]

Table 2.6: Institutional trading and earning surprise

The table represents the earnings surprises by institutional trading portfolio. Local (nonlocal) institutional investors are institutional investors whose headquarters are located within the same (different) district as the firms' headquarters. Local (nonlocal) institutional ownership is computed as the number of shares held by local (nonlocal) institutional investors divided by total shares outstanding. The sample period is from September 1999 to December 2014. The earnings surprise is calculated as the difference between reported earnings and consensus analysts' earnings forecast, scaled by the stock price of the previous quarter. Earnings data is from I/B/E/S. Earnings announcement dates are obtained from COMPUSTAT. At the beginning of the year, we sort firms into high (top 30), medium, and low (bottom 30) corruption firms based on previous year corruption measure. Then, each quarter, we independently sort firms into 5 quintile based on the change in local institutional ownership (Q1 is the portfolio with largest ownership decrease and Q5 is the portfolio with largest ownership increase). We then calculate the median of the earnings surprise of each portfolio in the next quarter. Earnings surprises are percent. Numbers in the bracket are p-value.

Earnings Surprises (%)

	Full sample	High	Low
Low(Q1)	0.010	-0.011	0.028
High(Q5)	0.017	0.026	0.017
High – low	0.007** [0.02]	0.037** [0.04]	-0.009 [0.82]

Table 2.7: Local corruption and local institutional ownership: Evidence from mutual funds.

The table represents the level of mutual funds' local bias in different corruption areas. Local connected mutual funds are mutual funds whose headquarters are located within the same district as the firms' headquarters and are socially connected with firms' managers. Local non-connected mutual funds are mutual funds whose headquarters are located within the same district as the firms' headquarters and are not socially connected with firms' managers. The sample period is from September 1999 to December 2014. High/low corruption are mutual funds locating in high (top 30)/low (bottom 30) corruption areas. Each quarter, the local bias for local connected stocks and local non-connected stocks held by a mutual fund are calculate as below:

$$\text{Local bias}_{\text{local, connected/(non-connected)}} = \frac{\text{The dollar value invested in local connected (non-connected) stocks/mutual fund total assets}}{\text{Market values of local connected (non-connected) stocks/Market values of all stocks}} - 1$$

The local bias measures are then aggregated across funds, using the dollar assets (TNA) of each fund in the previous quarter as weights.

	High corruption	Low corruption	Diff
Local bias(connected stocks)	1.414*** [0.00]	0.202 [0.20]	1.212** [0.03]
Local bias(non-connected stocks)	0.732*** [0.01]	0.686*** [0.01]	0.046 [0.84]
Dif-dif			1.166* [0.06]

Table 2.8: The performance effect of mutual funds trading.

The table reports the performance of portfolios based on trades made by local connected stocks and local non-connected stocks. Local connected mutual funds are mutual funds whose headquarters are located within the same district as the firms' headquarters and are socially connected with firms' managers. Local non-connected mutual funds are mutual funds whose headquarters are located within the same district as the firms' headquarters and are not socially connected with firms' managers. The sample period is from September 1999 to December 2014. High/low corruption are mutual funds locating in high (top 30)/low (bottom 30) corruption areas. For each fund, we form four distinct portfolios at the beginning of each quarter based on (1) whether the fund bought or sold a stock during the previous quarter and (2) whether stocks are local connected stocks or local non-connected stocks. Each quarter, we calculate the one-quarter-ahead returns of these portfolio of each fund, weighting each stock's return in the portfolios by the new money it receives during the previous quarter. We then average across funds in a quarter, using the dollar assets (TNA) of each fund in the previous quarter as weights, producing value-weighted quarterly returns of the local connected and local non-connected buy and sell portfolio for each quarter.

Panel A							
High corruption							
	Connect			Non-connect			
	Buy	Sell	Dif	Buy	Sell	Dif	Dif-dif
Raw	1.26* [0.07]	-0.05 [0.92]	1.31** [0.03]	0.73 [0.13]	0.50 [0.27]	0.23 [0.40]	1.08* [0.06]
DGTW	0.92 [0.21]	-0.22 [0.54]	1.14** [0.05]	0.42 [0.41]	0.26 [0.54]	0.16 [0.66]	0.98* [0.08]
FF4	0.88** [0.03]	-0.30 [0.33]	1.18** [0.02]	0.40 [0.11]	0.23 [0.29]	0.17 [0.67]	1.01* [0.06]

Panel B							
Low corruption							
	Connect			Non-connect			
	Buy	Sell	Dif	Buy	Sell	Dif	Dif-dif
Raw	0.32 [0.75]	-0.43 [0.54]	0.75 [0.42]	0.56 [0.37]	0.32 [0.62]	0.24 [0.50]	0.51 [0.61]
DGTW	0.32 [0.75]	-0.54 [0.47]	0.86 [0.37]	0.57 [0.37]	0.38 [0.58]	0.19 [0.65]	0.67 [0.49]
FF4	0.01 [0.99]	-0.60 [0.25]	0.61 [0.39]	0.44 [0.17]	0.32 [0.56]	0.12 [0.23]	0.49 [0.58]

Chapter 3

CEO Work Experience and Corporate Tax Avoidance

3.1 Introduction

Tax researchers have long been interested in investigating determinants of corporate tax avoidance (Hanlon and Heitzman (2010) for a review). Along with this line of literature, Dyreng et al. (2010) show that executive effects are important determinant in firms' tax avoidance. However, which executive characteristics can explain firms' tax avoidance is not conclusive. In fact, Dyreng et al. (2010) document that common executive characteristics (age, tenure, gender, educational background) are unable to explain the effect of manager effects on firms' effective tax rates (ETRs). In this paper, I re-examine the effect of CEO characteristics on firms' tax avoidance by looking at the CEO's work experience. More specifically, I consider CEOs who previously worked at low-tax firms as low-tax experience CEOs and I examine the effect of low-tax experience CEOs on corporate tax avoidance.

Work experience and its impact on productivity has featured prominently in economic theories of human capital (e.g., Becket (1964) and Mincer (1974)). Building on these earlier studies, a growing body of work examines how work experience benefits firm managers and investment managers. For instance, acquirers earn higher announcement abnormal returns if acquirer CEOs have previous work experience in the target industry (Custodio and Metzger (2013)). Acquirers where directors have acquisition experience have better acquisition performance (Field and Mkrtchyan (2017)). Mutual fund managers' stock picks from industries where they previously worked outperform stock picks from their non-experience industries (Cici et al. (2018)). Based on this literature, I predict that CEOs with low-tax experience have knowledge about tax saving strategies and are able to carry these strategies to their current firms. As a result, firms headed by low-tax experience CEOs are associated with lower ETRs compared to their counterparts.

To determine CEO tax experience, I use data from ExecuComp and BoardEx to track the employment history of CEOs. I define low-tax firms as those that belong to the bottom quintile of the industry adjusted GAAP ETRs of all industrial firms in COMPUSTAT. Then if a CEO used to work for a low-tax firm before joining the current firm, I classify her as a low-tax experience CEO. Simple univariate tests show that firms headed by low-tax experience CEOs are associated with 2.80% lower GAAP ETRs (t-statistics: 2.96) and 2.20% lower CASH ETRs (t-statistics: 2.20) compared to their counterparts. This relation continues to hold in multivariate regression, where I find that firms headed by low-tax experience CEOs report ETRs that are 1.4% - 1.5% (t-statistics: 2.35-3.23) lower than those headed by non-low-tax experience CEOs. In economics terms, comparing to the mean of 30.4% for GAAP ETRs (25.2% for CASH ETRs), these coefficients translate into approximately 4.9% (5.5%) of the mean, which is economically meaningful.

Next, I examine the strategical similarity between CEOs' past low-tax firms and their current firms. Different firms have different operating strategies, and ultimately different tax planning strategies. Therefore, the ability of a CEO to carry the tax saving strategies from her past low-tax firm to her current firm depends on whether these firms are strategically similar. To test this intuition, I use two proxies to capture the strategical similarity between firms. The first proxy is based on industry membership. I consider two firms as strategically similar firms if they have the same 4-digit SIC code. The second proxy is based on the difference in the average ROA between the most recent low-tax firm at which the CEO worked and the firm the CEO is currently managing. I define strategical similarity firms as those that are in the bottom quartile of the difference in average ROA. I find that the positive association between low-tax experience CEOs and corporate tax avoidance is stronger when their past low-tax firms and their current firms are strategically similar. Among firms headed by low-tax experience CEOs, those firms where CEOs' low-tax firms and current firms are strategically similar, are associated with 2.6%-3.4% (t-statistics: 2.28%-2.79%) lower ETRs compared to their counterparts.

To re-evaluate the effect of CEO fixed effects on corporate tax avoidance**,** as well as to examine whether the CEO work experience is able to explain the effect of CEO fixed effects on firms' tax policy, I use the econometric technique proposed by Abowd et al. (1999) to decompose the variation in ETRs into 4 components (CEO fixed effect, firm fixed effect, firm characteristics and residuals). I find that heterogeneous CEO fixed effects can explain 39% - 46% of the variation in firms' ETRs. More importantly, while other common personal characteristics (age, tenure, gender, and financial education) fail to explain CEO-specific heterogeneity in firm ETRs, CEO low-tax experience is able to explain 2.4%-2.7% (t-statistics: 3.19 – 3.95) of the variation in CEO fixed effects on corporate tax avoidance.

Firm tax policy could change overtime. A firm that wishes to lower its ETRs could hire a low-tax experience CEO. To deal with this CEO and firm matching issue, I follow Bernile et al. (2017) and Dittmar and Duchin (2015) to look at the change in firm ETRs around exogenous CEO turnover. The analyses indicate that firm average ETRs significantly decrease 3.9%-5.2% when low-tax experience CEOs replace non-low-tax experience CEOs. Similarly, firm average

ETRs increase 2.4%-3.1% when non-low-tax experience CEOs replace low-tax experience CEOs.

Multiple supplementary tests provide robustness checks for previous results. First, effective in 2007, FIN 48 requires firms to disclose tax reserves for unrecognized tax benefits (UTBs). Prior studies show that the level of UTB indicates the extent of aggressive tax planning activities (Lisowsky et al. 2013). I find that firms headed by low-tax experience CEOs are associated with 0.3% higher UTBs (t-statistics: 2.64), which suggests that low-tax experience CEOs engage in more aggressive tax strategies. Second, low-tax experience CEOs may prefer to work for a low-tax firms because they share the same culture with these firms. To deal with this self-selection bias, I additionally require that the CEO's current firm is not a low-tax firm. Thus, low-tax experience CEOs are defined as follows: CEOs worked for low-tax firms before joining their current firm and current firms themselves are not low-tax firms. I find that my previous results on the effects of low-tax experience CEOs on corporate tax avoidance still hold with a new definition of low-tax experience CEOs. Finally, in the main analyses, I use industry adjusted GAAP-ETRs to capture low-tax firms. To provide robustness check for the previous findings, I use industry adjusted CASH-ETRs to capture low-tax firms. Accordingly, low-tax firms are those that belong to the bottom quintile of the industry adjusted CASH ETRs of all industrial firms in COMPUSTAT. I find that the effects of low-tax experience CEOs on firms' tax avoidance remain unchanged when I use CASH-ETRs to capture low-tax firms.

Finally, as CFOs also play an important role in accounting functions (Aier et al. (2005), Francis et al. (2014)), I investigate the role of CFO low-tax experience on corporate tax avoidance. I find that firms headed by low-tax experience CFOs are associated with 1.4%-1.4% lower ETRs (t-statistics: 2.22-2.75). I also investigate whether firms can even reduce ETRs further if they have both low-tax experience CEOs and CFOs. I find that while having either low-tax experience CEOs or CFOs, firms experience lower ETRs, firms cannot reduce ETRs further when having both low-tax experience CEOs and CFOs.

My paper contributes to the effect of manager characteristics on corporate tax avoidance. While Dyreng et al. (2010) find that the while corporate tax avoidance does vary with changes of CEOs, CEO common characteristics (age, gender, education background, tenure) are unable to explain such variation. Law and Mills (2017) show that CEOs' military experience is able to explain firms' tax avoidance strategies. However, they find that military experience only explains approximately 4% of the variation in manager fixed effects on corporate tax avoidance and call for more research to better understand the influence of other executive characteristics on firms' tax avoidance strategies. My paper responds to their call by showing that manager work experience is an additional robust determinants of firms' tax avoidance behavior.

This paper is organized as follows. The next section provides a literature review and hypotheses development. Section three describes the data and variable construction. Section four presents the empirical findings. Section five tests the robustness of my results and section six studies the effect of CFO work experience on firms' tax policy and section seven concludes the paper.

3.2 Literature review and hypotheses development

My research is related the role of top executives in corporate tax avoidance. A CEO can affect firms' tax avoidance by creating a "tone at the top" with regard to the firm's tax activities. For examples, CEOs may allocate more resources to hire different tax advisors both within and outside of the firm. CEOs may also increase the compensation incentives of the tax directors who have direct involvement in the firms' tax decisions. Consistent with this intuition, Dyreng et al.

(2010) track the movement of 908 executives across firms over time and find that executive effects are an important determinant of firms' tax avoidance. Koester at al. (2017) measure executives' ability to manage firm resources efficiently by looking at how efficiently managers can convert firm resources (e.g., capital, labor, and intangible assets) into revenues relative to the firm's industry competitors. They find that mangers with superior ability to effectively manage corporate resources engage in greater tax avoidance. Law and Mills (2017) investigate the role of managers' military experience on firms' tax avoidance, and find that managers with military experience pursue less tax avoidance. An additional managerial characteristics that may affect corporate tax avoidance is the managers' work experience.

Economic theories of human capital suggest that individuals benefit from their work experience (e.g., Becket (1964) and Mincer (1974)). In the finance field, a growing body of work examines how work experience benefits firm managers and investment managers. Field and Mkrtchyan (2017) document the impact of directors' acquisition experience on the acquisition performance of firms hiring them. They find that firms where directors have acquisition experience have better acquisition performance. Custodio and Metzger (2013) investigate how CEO work experience affects the performance of acquirers. When the acquirer's CEO has previous experience in the target industry, he has an ability to negotiate better deals and pay lower premium for the target. Cici et al. (2018) find that mutual fund managers' stock picks from industries where they previously worked outperform stock picks from their non-experience industries. Bradley et al. (2017) study the role of pre-analyst work experience on analysts' forecast accuracy, and they find that analysts make better forecasts in firms in industries related to their pre-analyst experience. Building on this literature, I hypothesize that managers who used to work for low-tax firms have better knowledge about tax saving strategies and thus engage in greater tax avoidance. Anecdotal evidence also suggests that executives' low-tax experience is an important determinant of firms' tax avoidance. For example, David Bullington, Wal-Mart's vice president for tax policy, stated that he began to feel pressure to lower the company's effective tax rate after the chief financial officer, Thomas Schoewe, was hired in 2000. "Mr. Schoewe was familiar with some very sophisticated and aggressive tax planning … And he rides herd on us all the time that we have the world's highest tax rate of any major company," (Drucker 2007).

H1: Firms headed by low-tax experience CEOs are associated with greater tax avoidance.

The strategy literature suggests that the effectiveness of strategy implementation is contingent on strategy content (Barney and Zajac (1994); Galbraith and Kazanjian (1986)). For instance, research finds that a strategy of diversification requires different kinds of corporate reward systems and information systems than strategies that focus on a single market (Galbraith and Merrill (1991); Gerhart and Milkovich (1990); Gomez-Mejia (1992)). Thus, the strategical similarity between the CEOs' old and current firms enables CEOs to observe firsthand the experiences of other firms in implementing similar strategies, and provides CEOs with a more sophisticated understanding of the combination of systems and structures needed for successful implementation of the strategies.

H2: The effect of CEO low-tax experience on corporate tax avoidance will be stronger when CEOs' past low-tax and current firms are strategically similar.

3.3 Data and variable measurement

3.3.1 Executive data.

My initial sample of executives is from the ExecuComp database, which has information of all S&P 1500 managers (including S&P 500, S&P Mid Cap 400, and S&P Small Cap 600 indices). Consistent with prior literature (e.g., Mills and Newberry (2005), Hanlon (2005)), I exclude utility firms (SIC codes 4900-4999), financial firms (SIC code 6000-6999), and firms incorporated outside the United States. I then match my executive sample with the BoardEx database to obtain executives' work experience. I obtain corresponding firm-level financial variables from Compustat. I require firms to have at least $10 million in total assets. My final sample contains 3,489 CEOs, which represent 18,335 firm year observations from 1992 to 2017.

3.3.2 Tax avoidance.

Following prior literature, I use ETRs to measure the level of tax avoidance. The first measure is GAAP ETRs, which is defined as income tax expense divided by pre-tax income minus special items. GAAP ETRs captures tax avoidance activities that result in permanent tax savings. However, GAAP ETRs generally do not capture tax planning strategies that defer cash taxes (Hanlon and Heitzman (2010)). Therefore, my second measure, CASH ETRs, is defined as cash taxes paid divided by pre-tax book income less special items. CASH ETRs uses cash taxes paid in the numerator and thus captures tax deferral strategies (Dyreng et al. (2008)). Consistent with other tax research (Gupta and Newberry (1997), Law and Mills (2017)), I truncate both ETRs measures at zero and one.

3.3.3 Low tax firms.

I follow Brown and Drake (2013) to identify low-tax firms. Each year, I sort all industrial firms in Compustat into quintiles based on industry adjusted GAAP ETRs. I adjust firm GAAP ETRs for the industry median. Then I categorize firms in the lowest quintile as low-tax firms. Finally, if a CEO used to work at a low-tax firm before he joined his current firm, I classify that CEO as a low-tax experience CEO.

3.3.4 Control variables.

3.3.4.1 Manager characteristics.

Previous studies document several CEO attributes that potentially affect the level of firm tax avoidance.

Born in recession: Malmendier et al. (2011) find that executives who were raised during the Great Depression (born between 1920 and 1929) adopt more conservative corporate policies. I expect that these executives avoid less tax, consistent with adopting conservative policies.

Graduation in recession: Schoar and Zuo (2017) find that managers who graduate in a tough economic environment choose more conservative corporate policies, such as lower investment in capital expenditure and research and development, more cost cutting, and lower leverage and working capital needs. I predict that managers who graduate in recession years avoid less tax, consistent with adopting conservative policies. I construct a *Graduation in recession* variable that equals one if a manager turns 24 during an NBER recession year. I predict that managers who graduate in recession years avoid less tax.

MBA/Accounting degree: managers with an MBA/Accounting degree have more financial traings, therefore I predict that these manager are more likely to avoid tax. I obtain the CEOs' education background from the Boardex.

Age: age can affect executives' probability to engage in tax avoidance in different directions. The literature on career concerns suggests that younger managers face more career concerns and therefore should be less likely to take risks associated with tax avoidance (Hong et al. (2000)). On the other hand, Bartrand and Mullainathan (2003) argue that CEOs have a preference for the quiet life and these preferences likely increase with age. Thus, physiological changes occur with age can make older CEOs less inclined to avoid tax. On balance, I expect that older managers avoid less tax. I obtain *Age* from ExecuComp, if Age is missing, I use various biographical databases (e.g. NNDB).

Tenure: Holmstrom and Costa (1986), Holmstrom (1999) suggest that mangers with longer tenure have less career concerns. Therefore, I expect that managers with longer tenure, controlling for their age, will avoid more tax avoidance. I obtain tenure from Execucomp.

Gender: The psychology and economics literature suggests that women in the general population are more risk averse than men. For instance, women tend to have less risky assets in their investment portfolios (e.g., Jianakoplos and Bernasek (1998); Bernasek and Shwiff (2001)). Several studies also find that female executives are associated with less earnings management (Barua et al. (2010)), and less risky financing and investment decisions (Huang and Kingen (2013)). I expect that male executives are more aggressive in their tax policy. I obtain gender from Execucomp.

Percentage of stock options: several studies show that managers' incentive compensation is an important determinant of corporate tax avoidance (Armstrong et al. (2012)). I expect that managers avoid more tax if options comprise a significant portion of their compensation packages. I define *Percentage of stock option* as the value of stock options granted divided by total compensation (Desai and Dharmapala (2006)).

3.3.4.2 Firm characteristics.

I control for several firm-level characteristics which have been shown to effect corporate tax avoidance in the prior literature. These include firm size, market-to-book ratio, return on assets

(ROA), corporate leverage, net operating loss, foreign operation, intangible assets, capital expenditures, advertisement expenditure, and R&D expenditure.

Firm size and market-to-book ratio represent firm fundamentals and are widely used as control variables in tax avoidance literature. I include ROA to captures firm profitability, which can affect the incentives and needs to avoid taxes (Chen et al. (2010)). I include financial leverage to capture the effect of the tax shield of debt. Higher debt tax shields can reduce marginal tax rates and the incentives for incremental tax planning (Graham (1996a, 1996b, 2000)). I control for foreign assets because Rego (2003) finds that multinational firms with more extensive foreign operations have more opportunities for tax planning. I use intangible assets, capital expenditures, advertisement expenditure, and R&D expenditure to control for the effect of a firm's investment activities on book-tax different for these investments (e.g. Chen et al. (2010)).

3.4 Empirical results

3.4.1 Descriptive statistics

Table 3.1 presents the summary statistics of the variables used in this study. I first present the two main dependent variables which are two measures of tax avoidance – GAAP ETRs and CASH ETRs. I then present 9 personal characteristics of managers and 11 firm-level fundamental variables. The sample for my baseline analyses consists of up to 18,335 firm years. The mean (median) of CASH ETRs and GAAP ETRs are 25.4 % (25.2%) and 30.4% (32.6%), respectively. As for managerial characteristics, 9.9% of CEOs are classified as low-tax experience CEOs. Most of CEOs are male (97.4%), with the average age of 56 and 7 years of experience. 33.7% have an MBA degree, and 6.7% of them have an accounting degree. Only a small fraction of managers were born during the Great Depression. On average, 15.3% of their compensation is in the form of stock options.

About firm characteristics, the mean (median) market capitalization is $3.6 billion ($3.4 billion). The mean and median market-book ratios are 1.75 and 1.31, respectively. ROA has a mean (median) of 13.40% (11.10%). The mean of leverage is 21.10%, with a median of 19.50%. The mean and median of intangible asset ratio are 20.60% and 15.60%, respectively. The mean (median) of capital expenditure ratio is 12.20% (9.90%), and the mean (median) of R&D expenditure ratio is 3.30% (0.10%). Finally, the mean of advertisement expenditure ratio is 1.3%, with a median of 0%.

[Please insert table 3.1 here]

To start my analyses, I compare the ETRs of firms headed by low-tax experience CEOs to those headed by non-low-tax experience CEO. The results are presented in Table 3.2. The average GAAP ETRs of firms headed by low-tax experience CEOs is 27.9%, while average GAAP ETRs is 30.7% for firms headed by non-low-tax experience CEOs, and the different is significant at 1 percent level. The similar results are found in CASH ETRs. Firms headed by low tax experience CEOs are associated with 2.2% lower CASH ETRs comparing to their counterparts and is also significant at 1% level.

[Please insert table 3.2 here]

3.4.2 OLS regression results

Next, I perform multivariate analyses that control for factors that have been previously shown to affect firm ETRs. I include all other CEO characteristics, and firm-level fundamental variables mentioned above as control variables. Specifically, I test the following models:

$GAAP\ ETRs_{i,t} = \alpha + \beta_1$ Low-tax experience$_{i,t}$ + β_2 other CEO Characteristics$_{i,t}$ + β_3 Firm Characteristics$_{i,t}$ + δ Year dummies + θ Industry dummies + $\varepsilon_{i,t}$, (1)

$CASH\ ETRs_{i,t} = \alpha + \beta_1$ Low-tax experience$_{i,t}$ + β_2 other CEO Characteristics$_{i,t}$ + β_3 Firm Characteristics$_{i,t}$ + δ Year dummies + θ Industry dummies + $\varepsilon_{i,t}$, (2)

The main independent variable in these two model is *low-tax experience*, a dummy which takes a value of 1 if a firm is headed by a low-tax experience CEO, and 0 otherwise. Table 3.3 reports the OLS regression results for GAAP ETRs (column 1) and CASH ETRs (column 2). The coefficient of *Low-tax experience* is negative and statistically significant in both measure of ETRs. This result implies that managers with low-tax experience report 1.4% - 1.5% (t-statistics: 2.35-3.23) lower ETRs than their non-low-tax experience counterparts.

The results in table 3.3 also indicate that no other manager characteristics are able to explain both CASH ETRs and GAAP ETRs. These findings are consistent with Dyreng et al. (2010). I do find some evidence that CEOs with MBA Degree or Accounting Degree are associated with lower CASH ETRs, but not GAAP ETRs. One interpretation of this result is that managers with an MBA degree or an Accounting degree have better knowledge about tax saving strategies.

[Please insert table 3.3 here]

3.4.3 Strategical similarity between past employers and current firms.

The results so far indicate that managers with low-tax experience report lower ETRs than their non-low-tax experience counterparts. In this section, I investigate further into these low-tax experience CEOs to see whether their past low-tax firms and current firms are strategically similar. Overall, I expect that the effect of CEO low-tax experience on firms' tax avoidance to be stronger when CEOs' old and current firms are strategically similar as it provides CEOs with a more sophisticated understanding of how to implement similar strategies. I use two proxies to capture the strategical similarity between firms. The first proxy is based on industry membership (Haunschild and Beckman (1998); Carpenter and Westphal (2001)). Intra-industry firms share the same operating environment. Further, some tax preferences are specific to particular industries. I define two firms as strategically similar firms if they have the same 4-digit SIC code. The second proxy is the difference in the average ROA from the most recent low-tax firm at which the CEO worked to the firm the CEO is currently managing. The ROA in the low-tax firm is measured as the average ROA over the period when the CEO worked at her low-tax firm. The ROA in the current firm is measured as the average ROA over the tenure of the CEO at her current firm. Then, I define strategically similar firms as those that are in the bottom quartile of the difference in average ROA between the CEO's current and low-tax firms.

The results are reported in table 3.4. The first two columns report the results for the first proxy for similarity and the last two columns reports the results for the second proxy for similarity. The first two columns show that among firms headed by low-tax experience CEOs, those firms where CEO's low-tax firms are in the same industry as their current firms, experience 2.7%-3.4% (t-statistics: 2.26-2.79) lower ETRs compared to their counterparts. Similarly, in the last two columns, the results show that among firms with low-tax experience CEOs, those firms where the difference in average ROA between the CEO's current and low-tax firms are in the lowest quartile, are associated with 2.6%-2.9% (t-statistics: 2.28-2.37) lower ETRs compared to their counterparts. These results show that the effects of the CEO low-tax experience on corporate tax avoidance is stronger when CEOs' old firms and current firms are operational similar.

[Please insert table 3.4 here]

3.4.4 Isolating firm fixed effects

Dyreng et al. (2010) find that executive effects are an important determinant in firms' tax avoidance. Therefore, to re-evaluate the effect of manager effects on corporate tax avoidance**,** as well as to examine whether the manager work experience is able to explain the effect of manager fixed effects on firm tax policy, I disentangle manger fixed effects from firm fixed effects (FEs). Studies of manager FEs traditionally rely on a small number of top executives who move to different firms in order to disentangle firm and manager FEs. The moving sample is generally small and exhibits a lack of statistical power. The sample size is salient in my study, as I focus only on CEOs, and only 10% of CEOs are low-tax experience CEOs. To address this concern, I use the econometric technique proposed by Abowd et al. (1999) (AKM) and recently applied by Graham et al. (2012) and Law and Mills (2017) in finance and accounting literature. They show that, with simple looping procedures, a small degree of personal mobility can offer a rich amount of data to estimate manager and firm FEs simultaneously, even for managers who do not work in more than one firm.

I first use the AKM method to decompose the variation of ETRs into four components: firm FEs, CEO FEs, firm-level characteristics, and residuals. Then, I regress CEO FEs on *Low-Tax Experience* and other manager characteristics.

Table 3.5 presents the results. In panel A, the results show that the CEO FEs can explain a large proportion of the variation of ETRs. CEO fixed effects explain up to 39.5% of the variation of GAAP ETRs and up to 46.1% of the variation in CASH ETRs. These results are consistent with the findings of Law and Mills (2017) who find that CEO FEs explain approximately 50% of the variation in firms' ETRs. The F-test to test whether all CEO FEs equal zero is rejected at the 1% level.

Panel B presents the results from the regression of CEO FEs on *Low-Tax Experience* and other CEO characteristics. Consistent with Dyreng et al. (2010), I find that CEO common characteristics such as age, gender, tenure, and educational background are unable to explain the effects of manager FEs on firm ETRs. More importantly, I find that the coefficient of *Low-Tax Experience* are negative and significant at both specifications. Thus, the results indicate that the CEO work experience explains about 2.4% - 2.7% (t-statistics: 3.19 – 3.95) of the effect of manager FEs on corporate tax avoidance.

[Please insert table 3.5 here]

3.4.5 Firms and CEOs matching

Results in previous sections show that firms with low-tax experience CEOs are associated with higher tax avoidance. However, firm tax policy could change overtime. A firm that wishes to lower its ETRs could hire a low-tax experience CEO. To deal with this CEO and firm matching issue, I follow Bernile et al. (2017) and Dittmar and Duchin (2015) to look at the change in firm ETRs around exogenous CEO turnover. As firms' tax policies are less likely to change around exogenous CEO turnovers, any changes in firms' tax policies around the exogenous turnovers should be caused by the new CEOs. I follow the previous literature to define exogenous CEO turnovers as one of follows: (1) The CEO turnover is part of the firm's succession plan; (2) The turnover is caused by CEO deaths or health problems. I start with the exogenous CEO turnover events from Eisfeldt and Kuhnen (2013), which have exogenous turnover events from 1992-2006. I follow their method to significantly expand their data to 2017. For every turnover event in Execucomp, I search for news related to the turnover from LexisNexis. And if a turnover event meet one of two above conditions, I classify the turnover as an exogenous turnover. For each exogenous turnover event, I calculate the change in industry-adjusted GAAP-ETRs (CASH-

ETRs) around each turnover by subtracting the average industry-adjusted GAAP-ETRs (CASH-ETRs) over years [t-2,t] from the average industry-adjusted GAAP-ETRs (CASH-ETRs) over years [t+1,t+2]. The results are reported in table 3.6.

Despite the small sample size, the evidence in table 3.6 is consistent with the causal effect of CEOs' low-tax experience on firm tax avoidance. The results in column 1 show that firms experience a reduction of 3.9% - 5.2% in ETRs when low-tax experience CEOs replace non-low-tax experience CEOs, and the differences are significant at 5% level of significant. On the other hand, firms experience an increase in ETRs of 2.4% - 3.1% when non-low-tax experience CEOs replaces low-tax experience CEOs, even though the differences are not significant.

[Please insert table 3.6 here]

3.5 Robustness and Extensions

3.5.1 Unrecognized tax benefits (UTB) balances

Previously, I use GAAP ETRs and CASH ETRs to proxy for corporate tax avoidance. I now consider another proxy for firm tax planning and avoidance behavior. FIN 48 requires all firms to report their previously non-disclosed UTB balances starting in 2007. Recent studies find these UTB balances are significantly associated with firms' tax planning and avoidance behavior (e.g., Mills et al. 2010; Lisowsky et al. 2013). I regress Unrecognized Tax Benefits on *Low-Tax Experience* and other control variables. Table 3.7 show that firms headed by low-tax experience CEOs are associated with higher UTB balances than firms headed by non-low-tax experience CEOs. The coefficient on Low-Tax Experience is 0.3% and statistically significant at 5% level. Given the mean of UTB balance is 1.1%, the difference represent 27% increase in UTB balance by low-tax experience CEOs.

One interpretation of the above results is that low-tax experience CEOs are just as tax aggressive, but they record a higher reserve for such uncertainty (maybe because of differences in risk appetite). However, the higher reported UTM together with the lower ETRs reported in the previous section suggests that firms with low-tax experience CEOs engage in larger uncertainty tax positions. The UTB evidence thus demonstrates that low-tax experience are likely to pursue more aggressive tax planning.

[Please insert table 3.7 here]

3.5.2 Self-selection

The results so far indicate that firms headed by low-tax experience CEOs are associated with lower ETRs than firms headed by non-low-tax experience CEOs. One alternative explanation for the above results could be that managers with low-tax experience prefer to work for low-tax firms because they share the same culture with these firms. Therefore, for robustness check, I strictly require that the CEO's current firm is not a low-tax firm. Thus, a low-tax experience CEO is defined as follow: the CEO worked for a low-tax firm before joining his current firm and the current firm itself is not a low-tax firm. The results in table 3.8 indicate that self-selection bias is not a concern in my paper. When I impose the additional condition on the CEOs' current firms, the coefficient of *Low-tax experience* is still negative and statistically significant.

[Please insert table 3.8 here]

3.5.3 Using Cash-ETRs to measure low tax firms.

Previously, I use industry adjusted GAAP-ETRs to capture low-tax firms. To evaluate the robustness of my previous results, I use industry adjusted CASH-ETRs to identify low-tax firms. Accordingly, low-tax firms as those that belong to the bottom quintile of the industry adjusted CASH ETRs of all firms in COMPUSTAT. Because the income taxed paid variable used to calculate CASH-ETRs is only available since 1987, the sample of low-tax CEO reduce to 271, which accounts for 6.5% of my firm year observations. Table 3.9 reports the results. The effects of CEO low-tax experience on corporate tax avoidance still hold when using CASH-ETRs to capture low tax firms. Firms headed by low tax experience CEOs are associated with 1.4% - 2.2% (t statistics: 2.18-2.91) reduction in ETRs comparing to their counterparts.

[Please insert table 3.9 here]

3.5.4 Personal experience or risk appetite

So far, my findings suggest that CEOs' low-tax experience influences firms' tax avoidance. However, one alternative explanation is that low-tax experience CEOs are more risk taking and therefore associate with greater tax avoidance. To address this concern, I examine the relation between low-tax experience CEOs and firm risk. Table 3.10 reports estimates from pooled OLS regressions where the dependent variables are various measures of annualized volatility of daily stock returns over the fiscal year. In particular, column (1) reports estimates where total volatility is the dependent variable, whereas column (2) reports estimates for the idiosyncratic component of total volatility, calculated using a CAPM market model. The evidence in table 3.10 shows that firms headed by low-tax experience CEOs are not associated with higher stock return volatility compared to their counterparts. These findings suggest that the CEOs' low-tax experience is an important determinant of firms' tax avoidance.

[Please insert table 3.10 here]

3.6 CFO work experience and corporate tax avoidance

All of the above analyses focus on the work experience of the CEO. However, as CFOs also have great responsibility for the accounting functions, I expect that the work experience of CFOs also play an important role in lowering firm ETRs. To identify low-tax experience CFOs, I use the same methodology as in identifying low-tax experience CEOs.

The results are reported in table 3.11. The results on the CFO work experience consist with what I find previously on CEOs'. The coefficient on *CFO low-tax experience* is negative and significant at 5 percent level. These results indicated that firms with a low-tax experience CFO are associated with 1.4% reduction in ETRs compared to their counterpart.

Finally, in panel B, I investigate whether a firm has even lower ETRs if it has both low-tax experience CEO and low-tax experience CFO. To do that, I create an interaction term between *CEO low-tax experience* and *CFO low-tax experience*. Panel B indicates that either low-tax experience CEOs or low-tax experience CFOs play an important role in lowering firm ETRs. Firms with solely low-tax experience CEOs experience 1.3% - 1.4% reduction in ETRs, while firms with solely low-tax experience CFOs experience 0.9% - 1.5% reduction in ETRs. The interaction term between CEO low-tax experience and CFO low-tax experience is not significant, which indicate that firms cannot lower their ETRs further if they have both CEO and CFO low-tax experience.

[Please insert table 3.11 here]

3.7 Conclusion

While Dyreng et al. (2010) find that executive effects are important determinant in firms' tax avoidance, which executive characteristics can explain firms' tax avoidance is not conclusive, my paper tries to fill this gap by studying the effect of CEO work experience on firms' tax avoidance. I document that firms headed by low-tax experience CEOs have lower ETRs comparing to their counterpart. Further, firms experience even lower ETRs if the CEOs' current firms and their low-tax firms are strategically similar. These results suggest that CEOs are effectively carrying tax policy from his old firms to his current firms. Furthermore, while other CEOs' common characteristics such as age, tenure, gender and educational background are unable to explain the variation in firm tax planning strategies, I find strong evidence that the CEO work experience are robustly associated with corporate tax avoidance behavior.

Even though firm tax policies may change over time. A firm that wishes to lower its ETRs may wish to hire a CEO with low-tax experience. My analysis on the change in tax policy around the exogenous CEO turnover minimizes this concern. I find that around the exogenous turnover events, firms experience a reduction in ETRs when low-tax experience CEOs replace non-low-tax experience CEOs.

Finally, I find that CFO low-tax experience also play an important role on firms' tax policies. Firms with low-tax experience CFOs have lower ETRs comparing to their counterparts. However, firms cannot lower their ETRs further if having both low-tax experience CEOs and CFOs.

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Table 3.1: Summary statistics
The table reports the descriptive statistics of the variables used in the paper. Variable definitions are given in the appendix 1

Summary statistics						
	N	Mean	Std.	P25	P50	P75
Main variables						
Cash ETRs	18,335	0.254	0.158	0.150	0.252	0.338
GAAP ETRs	18,335	0.304	0.131	0.248	0.326	0.372
FIN 48 UTB	8,813	0.011	0.017	0.002	0.006	0.014
Managerial characteristics						
Low-tax experience	18,335	0.099	0.299	0	0	0
Age	18,335	56.252	7.438	51	56	61
Tenure	18,335	7.347	8.047	2	5	10
Female	18,335	0.026	0.160	0	0	0
MBA degree	18,335	0.337	0.473	0	0	1
Accounting degree	18,335	0.067	0.250	0	0	0
Great Depression	18,335	0.016	0.124	0	0	0
Graduation in recession	18,335	0.328	0.470	0	0	1
% Stock options	18,335	0.153	0.246	0	0	0.289
Firm characteristics						
ROA	18,335	0.134	0.105	0.067	0.111	0.173
Leverage	18,335	0.211	0.194	0.050	0.195	0.316
Net operating loss	18,335	0.455	0.498	0	0	1
Foreign operations	18,335	0.575	0.494	0	1	1
PPE	18,335	0.502	0.361	0.223	0.417	0.707
Intangible asset	18,335	0.206	0.194	0.038	0.156	0.327
Log(Firm size)	18,335	7.509	1.547	6.384	7.353	8.465
Market-to-book	18,335	1.745	1.649	0.816	1.307	2.130
R&D expenditure	18,335	0.033	0.061	0	0.001	0.037
Capital expenditure	18,335	0.122	0.084	0.067	0.099	0.152
Advertisement expenditure	18,335	0.013	0.031	0	0	0.012

Table 3.2: CEO low-tax experience and tax avoidance: Univariate analyses.

The table represents the univariate analyses for the effect of CEO low-tax experience on firm tax avoidance. The dependent variables are GAAP Effective Tax Rates (GAAP ETRs) and Cash Effective Tax Rates (CASH ETRs). Low-tax experience is an indicator variable which equals one if a CEO used to work for a low-tax firm. The sample period is from 1992 to 2017. T-statistics are reported in the parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% probability level, respectively.

	GAAP ETRs			Cash ETRs		
	Indicator=1	Indicator=0	Difference	Indicator=1	Indicator=0	Difference
Low-tax experience	0.279	0.307	-0.028*** (2.96)	0.234	0.256	-0.022*** (2.76)

Table 3.3: CEO low-tax experience and tax avoidance: Multivariate analyses.

The table represents the multivariate analyses for the effect of CEO low-tax experience on firm tax avoidance. The dependent variables are GAAP Effective Tax Rates (GAAP ETRs) and Cash Effective Tax Rates (CASH ETRs). Low-tax experience is an indicator variable which equals one if a CEO used to work for a low-tax firm. Control variables are detailed in table 1. The sample period is from 1992 to 2017. Standard errors are clustered at the firm level. T-statistics are reported in the parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% probability level, respectively.

	GAAP-ETRs	Cash-ETRs
Low-tax Experience	-0.015*** (3.23)	-0.014** (2.35)
Managerial characteristics		
Age	0.001 (1.28)	0.001 (0.64)
Tenure	0.001 (1.46)	0.000 (0.14)
Female	0.008 (0.89)	0.011 (0.96)
MBA degree	0.001 (0.24)	-0.006* (1.68)
Accounting degree	-0.001 (0.13)	-0.013* (1.87)
Great Depression	-0.008 (0.83)	-0.018 (1.33)
Graduation in recession	-0.003 (1.09)	-0.004 (1.18)
% Stock options	-0.003 (0.61)	-0.003 (0.62)
Firm characteristics		
ROA	-0.264*** (5.96)	-0.089*** (4.24)
Leverage	-0.024*** (2.66)	-0.067*** (4.54)
Net operating loss	-0.005** (2.08)	-0.026*** (4.17)
Foreign operations	-0.016*** (5.43)	0.003 (0.85)
PPE	-0.011** (2.26)	-0.030*** (4.45)
Intangible asset	-0.004 (0.37)	0.007 (0.50)
Log(Firm size)	-0.003** (2.55)	-0.004** (2.48)
Market-to-book	-0.007*** (5.09)	-0.004*** (3.50)
R&D expenditure	-0.206*** (4.80)	-0.313*** (5.48)

Table 3.3 continued		
Capital expenditure	0.017 (1.01)	-0.142*** (5.47)
Advertisement expenditure	-0.021 (0.49)	0.023 (0.42)
Constant	0.338*** (7.40)	0.373*** (7.80)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
N	18,335	18,335
R^2	0.143	0.096

Table 3.4: Operational similarity between past employers and current firms.

The table represents the multivariate analyses for the effect of the operational similarity between past employers and current firms on firm tax avoidance. The dependent variables are GAAP Effective Tax Rates (GAAP ETRs) and Cash Effective Tax Rates (CASH ETRs). The main independent variable is *similarity,* which takes a value of 1 if the CEO old low-tax firm and his current firm are operationally similar, and 0 otherwise. I use two proxies to capture the operational similarity between firms. The first proxy is based on industry membership (the same 4-digit SIC code). The second proxy is the difference in the ROA from the most recent low-tax firm at which the CEO worked to the firm the CEO is currently managing. The first two columns report the results for the first similarity proxy, and the last two columns report the results for the second similarity proxy. Control variables are detailed in table 1. The sample period is from 1992 to 2017. Standard errors are clustered at the firm level. T-statistics are reported in the parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% probability level, respectively.

	GAAP ETRs (1)	CASH ETRs (2)	GAAP ETRs (3)	CASH ETRs (4)
Similarity	-0.027** (2.26)	-0.034*** (2.79)	-0.026** (2.28)	-0.029** (2.37)
Managerial characteristic controls	Yes	Yes	Yes	Yes
Firm characteristic controls	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes
N	1821	1821	1821	1821
R^2	0.168	0.149	0.176	0.127

Table 3.5: Disentangling manager effects from firm effects

Panel A decomposes the variation in GAAP/CASH ETRs into four components using estimation method by Abowd et al. (1999): manager fixed effects, firm fixed effects, firm-level characteristics, and residuals. Panel B used the manager fixed effects estimated under the AKM method as a dependent variable, where one fixed effect observation is estimated for each manager. Low-tax experience is an indicator variable which equals one if a CEO used to work for a low-tax firm. Other variables are detailed in table 1. The sample period is from 1992 to 2017. Standard errors are clustered at the firm level. T-statistics are reported in the parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% probability level, respectively.

Panel A: Decomposition of ETRs		
	$\frac{Covariance(GAAP\ ETR, Component)}{Variance(GAAP\ ETR)}$	$\frac{Covariance(Cash\ ETR, Component)}{Variance(Cash\ ETR)}$
Descriptions		
CEO fixed effects	0.395	0.461
Firm fixed effects	0.008	0.007
Firm characteristics	0.049	0.023
Residuals	0.548	0.509
Total variation	1.000	1.000
F-test that manager fixed effects = 0	2.71	3.01
Panel B: Explaining manager fixed effects		
	GAAP ETR fixed effect	Cash ETR fixed effect
Low-tax experience	-0.027*** (3.95)	-0.024*** (3.19)
Age	0.002 (0.63)	0.002 (0.61)
Tenure	-0.001 (1.09)	-0.001 (1.24)
Female	0.022 (1.58)	0.019 (1.46)
MBA degree	0.001 (0.15)	-0.009* (1.77)
Accounting degree	0.005 (0.65)	-0.006 (0.69)
Great Depression	0.013 (1.13)	0.020 (1.20)
Graduation in recession	-0.001 (0.34)	-0.001 (0.16)
% Stock options	-0.014 (1.24)	-0.045*** (3.83)
Constant	0.230*** (11.65)	0.154*** (7.04)
N	3,489	3,489
R^2	0.019	0.024

Table 3.6: The change in ETRs around exogenous CEO turnover events

The table represents the change in industry-adjusted GAAP/CASH ETRs around exogenous CEO turnovers. I define exogenous CEO turnovers as CEO departures which were announced at least six months before the announcement of succession or caused by a health problem. The change in the firm's industry-adjusted ETRs is calculated by subtracting the average industry-adjusted value of the ETRs over years [t–2,t] from the average industry-adjusted value over years [t+1,t+2]. The first column reports the mean change around exogenous CEO turnover events where the incoming CEO has low-tax experience, and the outgoing CEO doesn't have low-tax experience. Column (3) reports the difference in the mean change in ETRs between the two samples of exogenous CEO turnover events and Column (4) reports the corresponding t-statistic for the null hypothesis of no difference in means. ***, **, and * indicate significance at the 1%, 5%, and 10% probability level, respectively.

	Non-low-tax experience to low-tax experience (N = 22) (1)	Low-tax experience to non-low-tax experience (N = 22) (2)	(1)-(2) (3)	t-stat (4)
GAAP ETRs	-0.039**	0.024	0.063*	1.75
Cash ETRs	-0.052**	0.031	0.083***	2.70

Table 3.7: CEO low-tax experience and unrecognized tax benefits (UTBs) balance
The table represents the multivariate analyses for the effect of CEO low-tax experience on firm unrecognized tax benefits (UTB) balance. The dependent variable is UTB, defined as the UTB divided by lagged total assets. Low-tax experience is an indicator variable which equals one if a CEO used to work for a low-tax firm. Other variables are detailed in table 1. The sample period is from 2007 to 2017. Standard errors are clustered at the firm level. T-statistics are reported in the parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% probability level, respectively.

	All Firms	Firms with positive UTB
	Dependent variable: Unrecognized tax benefits (UTB)	
Low-tax experience	0.003** (2.64)	0.003** (2.64)
Managerial characteristics		
Age	-0.000 (0.92)	-0.000 (1.09)
Tenure	-0.000 (0.22)	0.000 (0.08)
Female	0.002 (1.28)	0.002 (1.23)
MBA degree	-0.001 (1.40)	-0.001 (1.49)
Accounting degree	0.002 (1.32)	0.002 (1.40)
Great Depression	0.010 (1.42)	0.010 (1.36)
Graduation in recession	0.001 (0.64)	0.000 (0.40)
% Stock options	0.000 (0.19)	0.000 (0.10)
Firm characteristics		
ROA	0.018** (2.17)	0.019** (2.08)
Leverage	0.004* (1.65)	0.004 (1.49)
Net operating loss	0.001 (0.30)	0.001 (0.27)
Foreign operations	0.003*** (4.47)	0.003*** (3.65)
PPE	-0.003*** (2.89)	-0.004*** (2.95)
Intangible asset	-0.006*** (3.16)	-0.006*** (3.11)
Log(Firm size)	0.002*** (5.09)	0.001*** (4.20)
Market-to-book	0.001 (0.53)	0.001 (0.77)

Table 7 continued		
R&D expenditure	0.055*** (6.25)	0.054*** (6.01)
Capital expenditure	-0.015*** (3.15)	-0.016*** (3.15)
Advertisement expenditure	0.031** (2.51)	0.033** (2.53)
Constant	0.005 (1.32)	0.009* (1.93)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
N	8,813	8,256
R^2	0.165	0.156

Table 3.8: Robustness: the current firm is not a low-tax firm

The table represents the multivariate analyses for the effect of CEO low-tax experience on firm tax avoidance. The dependent variables are GAAP Effective Tax Rates (GAAP ETRs) and Cash Effective Tax Rates (CASH ETRs). Low-tax experience is an indicator variable which equals one if a CEO used to work for a low-tax firm and his current firm is not a low-tax firm. Control variables are detailed in table 1. The sample period is from 1992 to 2017. Standard errors are clustered at the firm level. T-statistics are reported in the parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% probability level, respectively.

	GAAP-ETRs	Cash-ETRs
Low-tax experience	-0.015*** (3.13)	-0.012** (1.96)
Managerial characteristics controls	Yes	Yes
Firm characteristics controls	Yes	Yes
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
N	18,335	18,335
R^2	0.142	0.089

Table 3.9: Robustness: using Cash ETRs to identify low-tax firms

The table represents the multivariate analyses for the effect of CEO low-tax experience on firm tax avoidance. The dependent variables are GAAP Effective Tax Rates (GAAP ETRs) and Cash Effective Tax Rates (CASH ETRs). Low-tax experience is an indicator variable which equals one if a CEO used to work for a low-tax firm (based on Cash ETRs). Control variables are detailed in table 1. The sample period is from 1992 to 2014. Standard errors are clustered at the firm level. T-statistics are reported in the parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% probability level, respectively.

	GAAP-ETRs	Cash-ETRs
Low-tax experience	-0.014** (2.18)	-0.022*** (2.91)
Managerial characteristics controls	Yes	Yes
Firm characteristics controls	Yes	Yes
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
N	18,335	18,335
R^2	0.142	0.090

Table 3.10: CEO low-tax experience and firm risk.

The table represents the multivariate analyses for the effect of CEO low-tax experience on firm risk. The dependent variable is the annualized standard deviation of the firm's daily stock returns over the fiscal year. Low-tax experience is an indicator variable which equals one if a CEO used to work for a low-tax firm. Control variables are detailed in table 1. The sample period is from 1992 to 2017. Standard errors are clustered at the firm level. T-statistics are reported in the parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% probability level, respectively.

	Stock Volatility (1)	Idiosyncratic Volatility (2)
Low-tax experience	0.744 (1.05)	0.651 (0.95)
Managerial characteristics controls	Yes	Yes
Firm characteristics controls	Yes	Yes
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
N	18,335	18,335
R^2	0.537	0.505

Table 3.11: CFO low-tax experience and tax avoidance.

The table represents the multivariate analyses for the effect of CFO low-tax experience on firm tax avoidance. The dependent variables are GAAP Effective Tax Rates (GAAP ETRs) and Cash Effective Tax Rates (CASH ETRs). Low-tax experience is an indicator variable which equals one if a CFO used to work for a low-tax firm. Control variables are detailed in table 1. The sample period is from 1992 to 2017. Standard errors are clustered at the firm level. T-statistics are reported in the parenthesis. ***, **, and * indicate significance at the 1%, 5%, and 10% probability level, respectively.

Panel A: CFO low-tax experience and tax avoidance.		
	GAAP-ETRs	Cash-ETRs
CFO Low-tax experience	-0.014*** (2.75)	-0.014** (2.22)
CFO characteristics controls	Yes	Yes
Firm characteristics controls	Yes	Yes
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
N	15,000	15,000
R^2	0.135	0.083
Panel B: CFO and CEO low-tax experience and tax avoidance.		
CEO Low-tax experience	-0.013** (2.24)	-0.014** (2.01)
CFO low-tax experience	-0.009** (1.99)	-0.015*** (2.66)
CEO*CFO low tax experience	-0.001 (0.91)	-0.003 (0.83)
CEO characteristics controls	Yes	Yes
CFO characteristics controls	Yes	Yes
Firm characteristics controls	Yes	Yes
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
N	15,000	15,000
R^2	0.135	0.084

Appendix 1: Variable descriptions

Variable	Description/construction details
Main variables	
Cash ETR	Cash effective tax rate: income taxes paid divided by pre-tax income minus special items (TXPD/(PI-SPI)).
GAAP ETR	GAAP Effective tax rate: income taxes divided by pre-tax income minus special items (TXT/(PI-SPI)).
Managerial characteristics	
Low-tax experience	Indicator that equals one if a manager used to work for a low-tax firm before joining his current firm.
Age	Age of managers
Tenure	Number of years a manager has worked in a firm.
Female	Indicator that equals one if a manager is male, and zero otherwise.
Great Depression	Indicator that equals one if a manager was born between 1920 and 1929, and zero otherwise (Malmendier et al. 2011).
Graduation in recession	Indicator that equals one if a manager graduates during an NBER recession year, and zero otherwise. A manager is assumed to graduate 24 years after birth (Schoar and Zuo 2016).
% Stock options	Value of stock options granted divided by total compensation following Desai and Dharmapala (2006).
Accounting degree	Indicator which equals one if a manager had an accounting degree.
MBA degree	Indicator which equals one if a manager had an MBA degree.
Firm characteristics	
Return on assets	Return on assets in year t, scaled by lagged total assets ((PI-XI)/Lag(AT)).
Leverage	Long-term debt in year t, scaled by lagged total assets (DLTT/Lag(AT)).
Net operating loss	Indicator if the firm has a non-missing value of tax loss carry-forward (TLCF).
Foreign operation	The firm has a non-missing, non-zero value for pre-tax income from foreign operations (PIFO).
PPE	Property, plant, and equipment in year t, scaled by lagged total assets (PPENT/ Lag(AT)).
Firm size	Natural logarithm of the market value of equity at the beginning of year t (Log(Lag(AT))).
Market-to-book	Market-to-book ratio at the beginning of year t (PRCC_F*CSHPRI)/AT).
Research and	Research and development expenditure in year t, scaled by lagged total assets

development	(XRD/Lag(AT)). Missing values are replaced with zeros.
Advertisement expenditure	Advertisement expenditure in year t, scaled by lagged total assets (XAD/Lag(AT)). Missing values are replaced with zeros.
Capital expenditure	Capital expenditure (CAPX) divided by gross property, plant, and equipment (PPEGT).