

# The External Governance of Internal Governance: Evidence from Broker-Dealers and Insider Stock Gift Backdating \*

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## Abstract

We study the impact of mandated broker-dealer (BD) audit improvements focusing on internal controls testing on insider stock gift backdating following the implementation of more stringent internal controls testing by auditors in 2011. Comparing BDs with auditors already subject to PCAOB oversight (control) to those newly subject to PCAOB requirements (treatment), we find increased oversight and record-keeping standards reduce backdating. We find larger treatment effects for BDs offering more services, with a higher fraction of employees with some misconduct history, that are privately owned, and with longer auditor relationships whose auditors also had fewer clients. Overall, insider stock gifts decrease post-implementation, underscoring the importance of robust internal controls and regulatory oversight.

**Keywords:** *PCAOB, Dodd-Frank, investor protection, tax evasion*

**JEL codes:** G14, G18, G28, K22, M42

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# 1 Introduction

Insider trading is a significant concern in financial markets as it undermines investor confidence, leads to market inefficiencies, and poses ethical issues. BDs play a crucial role in the financial system, processing and managing capital market transactions for a large portion of American households (Federal Reserve Board, 2017). As intermediaries, BDs have access to sensitive information and are well-positioned to detect and deter insider trading. However, the BD industry has also faced significant challenges in recent years, with high-profile scandals such as the Madoff Ponzi scheme revealing weaknesses in BD regulation and oversight.<sup>1</sup>

In this paper, we investigate whether the audit improvements as BDs came under PCAOB oversight have had an impact on the prevalence of backdated insider trades. We hypothesize that the increased regulatory oversight and record-keeping requirements imposed on BDs will lead to a reduction in backdating activity. Our premise is that insiders trade through brokers, who are listed on Form 144 for insider transactions. By comparing the behavior of auditors whose clients are publicly listed and already subject to Public Company Accounting Oversight Board (PCAOB) oversight (control firms) with those who are newly subject to PCAOB reporting requirements (treatment firms), we can isolate the effect of the audit improvements on backdating practices.

By exploiting the differential impact of Rule 17a-5 on BDs, we employ a quasi-experimental research design that allows us to establish a causal link between audit improvements and changes in backdating behavior. This approach helps to overcome the endogeneity concerns that often plague studies of insider trading and regulatory effectiveness.

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<sup>1</sup>The Madoff Ponzi scheme, orchestrated by Bernard L. Madoff Investment Securities LLC (BLMIS), a registered BD, defrauded investors of an estimated \$17.5 billion. BLMIS fabricated account statements, falsified trading records, and misappropriated client funds for decades. The firm's auditor, Frierling & Horowitz, a small accounting firm, failed to conduct proper audits detect the wrongdoing. See <https://content.time.com/time/business/article/0,8599,1867092,00.html>.

Our findings have important policy implications, as they shed light on the efficacy of the SEC's efforts to combat insider trading through enhanced oversight of BDs. If we find that the audit improvements lead to a significant reduction in backdating activity, it would suggest that targeting the intermediaries through which insiders trade can be an effective strategy for curbing illegal behavior. Conversely, if we find no significant effect, it may indicate the need for additional or alternative regulatory measures to address this issue. Given the central role played by BDs in the financial system and the potential for insider trading to undermine market integrity, our study makes an important contribution to the literature on financial regulation and investor protection.

## **Related Literature**

This paper contributes to several strands of literature. First, it adds to the extensive research on insider trading, which has studied the determinants and consequences of this practice (Cohen et al., 2012; Jeng et al., 2003; Lakonishok and Lee, 2001; Seyhun, 1986). However, few studies have focused specifically on the role of broker-dealers in facilitating or deterring insider trading (Dolgoplov, 2012). Our study fills this gap by examining the impact of enhanced audit requirements on the behavior of insiders and their brokers, providing novel evidence on the effectiveness of regulatory interventions in this context.

Second, our focus on backdating practices contributes to the growing literature on this form of insider trading. Prior studies have documented the prevalence of backdating or strategic disclosures in various contexts, such as option grants (Fried, 2008; Heron and Lie, 2007; Lie, 2005), corporate disclosures (Guttentag, 2017), and insider trading (Biggerstaff et al., 2020). However, the effect of regulatory changes on backdating activity remains largely unexplored. Our study addresses this by investigating the impact of Rule 17a-5 on the prevalence of back-

dated insider trades.

Third, this paper is related to the literature on insider giftings and tax fraud, which highlights the potential for executives to exploit tax laws and securities regulations through the strategic timing of their stock donations. Yermack, 2009 finds that executives can profit from insider trading around the timing of their stock donations to charitable organizations, while Avci et al., 2015 examines how executives manipulate the timing of their stock gifts to take advantage of tax deductions and securities laws. Other studies have also explored the tax implications of insider stock gifts (Avci et al., 2021). Our study extends this literature by exploring the relationship between insider gifting and backdating practices.

Fourth, our research contributes to the broader literature on corporate tax avoidance and the role of executives' personal tax aggressiveness. Yost and Yu, 2023 introduce a novel approach to identifying tax-aggressive executives based on the timing of their corporate stock donations, suggesting that these executives make decisions that lead to increased regulatory violations across various areas. This finding is consistent with prior research linking executives' personal tax behavior to corporate tax avoidance (Chyz and Li, 2012; Koester et al., 2017). Our study provides further evidence of the link between executives' personal tax behavior and corporate outcomes.

Finally, this study is relevant to the literature on the effectiveness of regulatory interventions in financial markets. By exploiting the differential impact of Rule 17a-5 on broker-dealers, we employ a quasi-experimental research design that allows us to establish a causal link between audit improvements and changes in backdating behavior. This approach helps to overcome the endogeneity concerns that often plague studies of regulatory effectiveness (Christensen et al., 2020; Leuz and Wysocki, 2016). Our findings contribute to the ongoing debate on the efficacy of regulatory interventions in curbing insider trading and other forms of financial misconduct

(Bhattacharya, 2014; Bris, 2005).

## **2 Institutional Setting and Hypothesis Development**

### **2.1 PCAOB Oversight of BD Auditors**

The financial security of investors relies heavily on high-quality audits of broker-dealers (BDs), as these entities process and manage capital market transactions for more than 50 percent of American households (Bricker et al., 2017). The Securities and Exchange Commission (SEC) requires BD auditors to attest to the effectiveness of internal controls and compliance with regulations for both publicly and privately owned BDs.

Broker-dealer auditors play a critical role in deterring misreporting and ensuring regulatory compliance. Their responsibilities encompass verification of customer assets held by broker-dealers, proper revenue recognition, and accurate recording of assets under management. They address risks of material misstatement by testing the broker's stock records and examining securities in transit, pledged, loaned, or subject to repurchase agreements. Additionally, for those carrying customer accounts, auditors scrutinize the relationship with the carrying broker, ensuring accurate documentation of fees, trades, and balances. These rigorous auditing procedures are crucial for identifying potential misstatements that could mask asset misappropriation or regulatory violations. Historically, the SEC delegated regulatory authority over BDs to the Financial Industry Regulatory Authority (FINRA) or its predecessors, and oversight of BD audits to the American Institute of Certified Public Accountants (AICPA).

Following the 2008 financial crisis, concerns arose about the effectiveness of this self-regulatory regime in protecting investors. In response, policymakers implemented a series of reforms to enhance the oversight of BD audits in terms of inspections, standard setting, and

enforcement, powers that had not been expressly granted under SOX.<sup>2</sup> The high-profile Madoff Ponzi case also highlighted the potential for BDs and their auditors to be complicit in or fail to detect fraudulent activities, underscoring the importance of effective regulatory oversight. In this case, Madoff's BD firm, Bernard L. Madoff Investment Securities LLC, played a central role in perpetrating the fraud. Madoff exploited his position as a BD to attract investors and maintain the appearance of legitimacy while operating a massive Ponzi scheme. Moreover, the case highlights the involvement of other actors, such as accountants and auditors, in enabling or failing to uncover the fraud. Paul Konigsberg, a senior tax partner at Konigsberg Wolf & Co, pleaded guilty to assisting in the manipulation of customer account statements and filing false tax returns on behalf of Madoff's clients. This example underscores the potential for BDs to collude with external parties to deceive investors and regulators.

The PCAOB's initial inspections under the interim program in 2011 revealed widespread deficiencies in BD audits. Comments in response to the interim guidelines from large auditors show the desire for more guidance from PCAOB. Deloitte and EY pointed out that the proposed examination standard lacks specific guidance on how auditors should verify the accuracy of information used to assert compliance with SEC rules. This is particularly important when it comes to detecting any discrepancies in trade or settlement dates in broker-dealer's books and records. EY suggested that the PCAOB should clarify the procedures to be performed, while Deloitte recommended including guidelines on the nature and extent of these procedures. Both suggestions aim to ensure auditors conduct more detailed testing of the accuracy of information in broker-dealer's books and records, such as cross-checking transaction details with source documents like trade confirmations or customer statements.

The Board's second progress report on the interim inspection program, released in Au-

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<sup>2</sup>The Sarbanes-Oxley Act of 2002 (SOX) required all BD auditors to register with the PCAOB, although the SEC initially exempted audits of privately held BDs from this requirement until the end of 2008.

gust 2013, noted that inspectors identified audit deficiencies in portions of 57 of the 60 audits selected for inspection, or 95% of the engagements reviewed (Public Company Accounting Oversight Board, 2013 Release No. 2013-006, p. 3). Key deficiencies revolved around risks of material misstatement of the financial statements in 70% of the audits, including deficiencies in auditing revenue (56% of audits), reliance on records and reports (35% of audits), fair value measurements (26% of audits), and receivables and payables (22% of audits) (PCAOB Release No. 2013-006, pp. 9-10) and auditor independence. Most independence deficiencies related to auditors preparing or assisting in the preparation of the BD's financial statements (PCAOB Release No. 2013-006, pp. 10-11). Following the report, the PCAOB provided auditors with guidelines.

The period after 2011 thus marked a major shift in the regulation of BD audits in the U.S., with the transition from self-regulation under FINRA and the AICPA to PCAOB oversight aiming to strengthen investor protection by improving BD audit quality through PCAOB registration, inspections, standard setting, and enforcement. The PCAOB's subsequent standard-setting activities have focused on strengthening the requirements for BD audits in light of the unique risks in this area. For example, Attestation Standard No. 1, Examination Engagements Regarding Compliance Reports of Brokers and Dealers, and Attestation Standard No. 2, Review Engagements Regarding Exemption Reports of Brokers and Dealers, establish specific requirements for examining a BD's compliance with the SEC's financial responsibility rules and for reviewing a BD's claimed exemption from these rules, respectively (PCAOB Release No. 2013-007). Similarly, Auditing Standard No. 17, Auditing Supplemental Information Accompanying Audited Financial Statements, sets forth audit procedures for supporting schedules that BDs are required to file with the SEC (PCAOB Release No. 2013-008).

## 2.2 Hypothesis Development

We posit that the transition to PCAOB oversight likely affected insider gifting behavior through several channels. First, the PCAOB registration requirement for BD auditors effective for fiscal year 2009 served as an initial signal of impending heightened scrutiny of BD financial reporting and controls, potentially deterring aggressive gifting practices.

Second, the Dodd-Frank Act's explicit grant of oversight authority to the PCAOB in 2010 further strengthened the regulatory environment, increasing the perceived risk of detection for problematic insider behavior.

Third, the launch of the PCAOB's interim inspection program in 2011, which revealed widespread audit deficiencies, likely prompted BDs and their auditors to remediate internal control weaknesses, including those related to insider trading and securities gifting practices. Finally, as PCAOB inspections and enforcement actions progressed and audit firms responded with more rigorous procedures, the likelihood of detecting improper insider behavior increased, potentially curbing opportunistic gifting.

We expect that the enhanced scrutiny associated with the PCAOB oversight transition deterred aggressive insider gifting behavior as the regulatory reforms were phased in. We hypothesize that over the course of the transition period (roughly 2007-2014), the incidence of opportunistic timing of charitable stock gifts by BD insiders decreased as the new oversight regime took hold. Specifically, we predict that insider gift-giving became less sensitive to insider information and tax considerations following the shift to PCAOB oversight.

Next, we investigate whether PCAOB oversight specifically deters insider stock gifts that are more likely to feature fraudulent backdating, which broadly refers to executives using hindsight to go back into stock price history to select the most favorable gift date up to the SEC reporting date. In our main tests, we follow prior literature and identify backdated gifts using

the lag between the purported gift date and the date the gift was reported to the SEC (Avci et al., 2021; Yermack, 2009; Yost and Shu, 2022). We expect the deterrence effect of PCAOB oversight to be more pronounced for stock gifts with significantly delayed reporting. We test our conjecture by separately examining gifts with delayed and timely reporting, where delayed reporting refers to cases where the lag between the purported gift date and the reporting date is greater than fifteen trading days. Consistent with our expectations, we find that the deterrence effect is concentrated among insider stock gifts with delayed reporting (i.e., those more likely to feature backdating).

### **3 Sample Construction and Variable Measurement**

#### **3.1 Data**

##### **3.1.1 Data on Insider Stock Gifts**

We collect information on corporate insiders' stock gifts from Thomson Reuters Insider Filing Data Feed (TFN), which captures all U.S. insider activity as reported on SEC Forms 3, 4, 5, and 144 (Yost and Yu (2023)). To clean up all the stock gifts transactions, we begin with all stock dispositions with transaction code "G" made by firms' top executives from 2007 to 2014. We consider the following roles as top executives: CEO, CFO, COO, President, Chairman of the Board, Vice Chairman, Executive Vice President, Senior Vice President, and Vice President (e.g., Yost and Yu (2023); Avci et al. (2015)). To ensure the accuracy of the data, we limit our sample to transactions with cleanse codes "R" or "H".

We further exclude gifts not directly owned by the insider, gifts missing transaction dates or SEC report dates, and gifts we are unable to match to CRSP and Compustat. If an individual makes multiple gifts of the same firm's stock on the same day, those gifts are consolidated into

a single observation. Finally, we exclude transactions lacking the necessary data to construct the insider gifting or control variables. Consequently, our final sample includes 13,839 stock gifts made by the firms' top executives from 2007 to 2014.

The main empirical challenge is to identify the broker that corporate insiders use for their stock gifting. We identify these brokers through Form 144, through which insiders are required to report the broker used for sales of restricted and control shares (Li, Mukherjee, and Sen (2021)). Utilizing the broker names from Form 144, we search and scrape each broker's SEC file number (CRD) from FINRA BrokerCheck.

### **3.1.2 Data on Auditors and Broker-Dealer (BD)**

We obtain data on the auditors of broker-dealers from Audit Analytics. We identify the treated BDs as those with auditors that do not have any publicly listed clients in 2008 (i.e., prior to transition to PCAOB oversight). We merge the information on BD's auditors with data on stock gifts using the SEC file numbers (CRD).

We identify the primary broker for determining the treatment and control groups using the following method. If any broker involved in all the firm's transactions is treated, we designate the broker handling the largest number of shares in a year as the primary broker for all transactions. If none of the brokers for the firm's transactions is treated, we assign the broker managing the highest volume of shares in a year as the primary broker for all transactions.

The pre-period is from 2007 to 2010, and the post-period is from 2011 to 2014. Our sample consists of 109 treated BDs and 183 control BDs, with 1,919 treated transactions and 11,920 control transactions. In the pre-period, there are 80 treated BDs and 141 control BDs, with 993 treated transactions and 6,066 control transactions. In the post-period, there are 55 treated BDs and 134 control BDs, with 926 treated transactions and 5,854 control transactions. See detailed

variable definitions in Appendix A.

## 3.2 Summary Statistics

Table 1 presents the summary statistics. Panel A shows the transaction-level characteristics, and Panel B the firm-level characteristics. The average stock gift value is \$948,000, with a median of \$46,000. We measure cumulative abnormal returns around stock gifts at the transaction level for the 20 trading days following (Post-Gift CAR) each stock gift. Abnormal returns are computed as the difference between each stock's raw return and the CRSP equal-weighted market index, consistent with prior research on stock gifts (Avci et al., 2015; Yermack, 2009; Yost and Shu, 2022). The average Post-Gift CAR in the 20 days following the gift date ( $CAR[t + 1, t + 20]$ ) is  $-0.4\%$ , suggesting that insiders tend to time their gifts before price declines. The average prior fiscal year return is  $22.6\%$ , and the average return volatility is  $9.5\%$ . The median firm in the sample has a market capitalization of around \$1.289 billion and a return on assets of around  $4.7\%$ .

# 4 Empirical Results

## 4.1 Graphical Evidence

We present graphical evidence by plotting the cumulative abnormal returns (CAR) around the dates of the stock gift transactions. For each stock gift transaction, we calculate the CAR starting from 20 trading days before to 20 trading days after the gifting date (i.e.,  $CAR = \sum_{t=-20}^{t=+20} (ret - ewret_d)$ ), and  $t = 0$  is the event date. The daily abnormal return is calculated as the difference between the raw return ( $ret$ ) and equal-weighted market portfolio return ( $ewret_d$ ) following Yermack (2009) and Avci et al. (2015). Pre (post) periods are from 2007 to 2010 (2011

to 2014).

We proceed in multiple steps. First, we examine time-series changes in CARs around transaction dates by comparing the years before and after the shift to PCAOB oversight. Second, we divide the sample into treatment and control groups, comparing the differences in CARs for both groups before and after the BD audit oversight shift, using a difference-in-differences plot. Last, to address concerns that our results might be influenced by the 2008-2009 stock market crash, we perform a placebo test using the 2020 market crash caused by the COVID-19 pandemic. If our findings are driven by executives' responses to market crashes, we should observe similar results in 2020.

Figure 1 compares the average CARs in the pre- (solid line) and post-period (dashed line). We observe a positive CAR of around 2% in the 20 trading days leading up to the transaction date in both the pre- and post-periods, suggesting that executives generally give away stocks to charities after a sustained rally in stock price. However, we find that the CARs in the 20 days *after* the transaction dates differ significantly for stock gifts in the pre- and post-periods. This pattern indicates that stock prices significantly decrease immediately after executives give away their shares in the pre-period, whereas in the post-period, stock prices remain stable. Executives are more likely to give away stocks when prices are at a local maximum in the pre-period. This suggests that executives either become adept at timing their stock gifts or are more likely to have backdated their stock gifts during the pre-period compared to the post-period. Our time-series analysis provides suggestive evidence that the launch of the PCAOB's interim inspection program in 2011 might have impacted the timing of executives' stock gifts.

After examining the time-series patterns, Figure 2 plots the average CARs for the treat (sub-figure a) and control (sub-figure b) stock gifts in the pre- and post-periods. The treated group exhibits a more pronounced run-up in CARs (around 3%) before the gift date and a steeper de-

cline (around 2%) following the gift date compared with the control group in the pre-period. This suggests that treated gifts are more likely to have been backdated in the pre-period. However, we find that treated stock gifts are less likely to have been backdated in the post-period. Taken together, our difference-in-differences plot shows that the shift to PCAOB oversight potentially deters the occurrence of stock gift backdating for the treat group compared with the control group.<sup>3</sup>

Last, we conduct a placebo test by examining the time-series changes in the CARs of stock gifts around the 2020 stock market crash due to COVID-19. The placebo test helps to address concerns that our observed patterns are driven by the 2008-09 Great Recession. Specifically, we define the pre-period as 2016 to 2019 and the post-period as 2020 to 2023. Our analysis reveals no significant change in the probabilities of stock gift backdating before and after the COVID years, providing suggestive evidence that our findings are not entirely driven by executives' responses to stock market crashes.

## 4.2 Baseline Results

We test whether the shift of BD audits from AICPA to PCAOB oversight impacts the backdating of stock gifts. Empirically, we estimate the following difference-in-differences specification:

$$CAR_{i,[t+1,t+20]} = \alpha_{BD_{i,t}} + \alpha_{Y(t)} + Treat \times Post_{2011} + \Gamma' X_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

where  $Treat$  equals one for stock gifts transacted by BDs whose auditors do not have any public

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<sup>3</sup>We also conduct a t-test to show that the graphical differences are statistically significant. Table 2 presents a matrix of CARs for the periods [-20,-1] and [1,20], along with their differences, before and after the regulatory change. The treated transactions show a larger decrease in the difference between pre- and post-gift CARs from the pre- to post-regulation period (5.16% to 1.17%) compared to the control transactions (3.20% to 2.03%). This finding indicates that the regulatory change led to a more pronounced reduction in tax savings from insider gift timing for the treated group in the post-period.

listed client in 2008. Auditors with public clients (*Control*) have already been subject to stricter PCAOB guidelines. *Post* equals one for 2011 and subsequent years.

Our sample is at the stock gift transaction level. The dependent variable is the cumulative abnormal returns in the 20 trading days after the recorded stock gift transaction dates (i.e.,  $CAR[t + 1, t + 20]$ ). We examine the post-transaction date CAR since our graphical evidence shows that the difference between treat and control groups is much more pronounced in the post-transaction dates compared with pre-transaction dates. We include broker and year fixed effects to account for time-invariant broker characteristics and time-series shocks. We cluster standard errors by broker, which is the level of treatment assignment (Abadie et al., 2023).

We follow prior studies in including a battery of lagged control variables that affect post-transaction CARs. Specifically, we control for prior fiscal year return (*Ret 1 Yr*), prior fiscal year return volatility (*Ret Vol*), firm size ( $\ln(MVE)$ ), book-to-market value of equity (*BTM*), return on assets (*ROA*), sales growth (*SalesGrowth*), research development expenditures (*RD*), and institutional ownership holding percentage (*InstOwn*) (e.g., Chung et al. (2019), Skaife et al. (2013), and Yost and Yu (2023)). All control variables are lagged by one year.

Table 3 presents the results on the impact of PCAOB oversight on post-transaction CARs. We find that the treated group has significantly higher CARs after the transaction date compared with the control group. The estimated coefficients on  $Treat \times Post$  are around 1.1% and significant at the 1% level across different specifications without (column 1) and with (column 2) controls. In other words, the treated group experiences a smaller decline in post-gift CARs in the post-periods compared with the control group. Regarding economic magnitude, the estimated coefficient of there treatment effect is around 13% ( $= 0.011 / 0.086$ ) of the sample standard deviation.

Overall, we provide evidence that the improvements in BD auditor oversight deter oppor-

tunistic insider gift timing, particularly for the treated group of BDs newly subject to PCAOB oversight. The economic magnitudes suggest that the reduction in tax savings from insider gift timing is substantial, underscoring the significance of PCAOB oversight in curbing this form of insider trading.

In addition, we conduct back-of-the-envelope calculations on the incremental revenue gains for the tax authorities due to enhanced scrutiny by auditors. The average stock gift amount is 826,000 USD. Our results show that there is a 1% smaller stock price drop for treat groups. In other words, the loss of tax shield for executives is about 8,260 USD. Assuming that the marginal tax rate for executives is at the top bracket - 37%, the executives should pay around 3,000 in taxes to the IRS due to the change in auditor oversight. We multiply 3,000 by approximately 2,000 treated transactions to estimate that the IRS has collected an additional 6 million in tax revenue over the four years following the change in auditor oversight.

**Comparing that with IRS budget? Note that our calculations could potentially be conservative estimates of total tax savings for multiple reasons. First... Second....**

### **4.3 Stock Gifts with Delayed Reporting**

Having established that the shift to PCAOB oversight deters stock gift backdating, we next investigate whether the treatment effect is concentrated in the sub-sample of insider stock gifts featuring greater manipulation. Prior research suggests that stock gifts with longer lags between the purported gift date and the reporting date are more likely to involve manipulative activities such as backdating (Avci et al., 2015; Yermack, 2009; Yost and Shu, 2022). Accordingly, we expect the deterrence effect of BD audits to be more pronounced for stock gifts with delayed reporting compared with gifts with timely reporting.

Empirically, we partition our sample of stock gifts into those with delayed and timely re-

porting. Following Yost and Shu (2022), we define gifts with delayed (timely) reporting as those with greater than (no more than) fifteen trading days between the purported gift date and the date the gift is reported to the SEC. We separately examine the effect of BD audits improvements on the cumulative abnormal returns for stock gifts with delayed and timely reporting.

Table 4 presents our findings. In addition to using fifteen trading days as the main cutoff (panel B), we also use ten (panel A) or twenty (panel C) days as alternative cutoffs for robustness. Consistent with our hypothesis, our results show that the effect of improved oversight on BD audits is concentrated among insider stock gifts with delayed reporting, and the results are robust across three different definitions of delayed gifts. Specifically, the treatment effects on the delayed stock gifts are statistically significant and the economic magnitudes (around 2 - 3%) are more than two times higher than the full sample results (around 1%). However, we do not find a significant effect for treated stock gifts that are filed timely. Overall, our findings provide evidence of the deterrence effect of improved BD audits on corporate insiders' manipulated stock gifts.

## **5 Cross-sectional Tests**

We conduct cross-sectional tests to explore the mechanisms underlying the treatment effects of enhanced BD-audit oversight. Empirically, we divide the treated sample into two subsamples based on ex-ante characteristics. Our goal is to compare different subsamples of treated groups with the control group to determine which ex-ante characteristics drive the treatment effect, using the following specification (e.g., Samuels, Taylor, and Verrecchia (2021 JAE):

$$CAR_{i,[t+1,t+20]} = \alpha_{BD_{i,t}} + \alpha_Y(t) + High\ Treat \times Post_{2011} + Low\ Treat \times Post_{2011} + \Gamma' X_{i,t-1} + \varepsilon_{i,t}. \quad (2)$$

*High* and *Low* treated groups are defined based on characteristics measured in 2010, prior to the change in BD-audit oversight. We focus on three sets of cross-sectional tests that exploit the characteristics of broker-dealers, auditors, and firms. These tests illuminate which strategic players—BDs, auditors, or firms—are more responsive to changes in BD auditing standards, and help us better understand the broader implications of these audit standard changes on corporate practices.

## 5.1 Cross-sectional Tests on Broker-Dealers

We examine two crucial characteristics of broker-dealers that could potentially affect the treatment effect of more stringent audit regulations. First, we hypothesize that treated BDs with a higher fraction of financial advisors having customer complaints are more affected by the shift in BD audit oversight. These BDs likely have weaker internal control mechanisms and are potentially more impacted by the regulatory change.

Second, we explore whether the ex-ante complexity of BDs moderates the treatment effect. According to the PCAOB deficiency report, "the complexity of a broker or dealer is an important factor in the auditor's risk assessment... A larger and more complex broker or dealer might have multiple lines of business, many branch locations, and decentralized accounting and compliance functions, which would necessarily require more time and attention by the auditors to understand its operations, environment, and the relevant controls." Ex-ante more complex BDs pose greater challenges for auditors and should be more affected by enhanced audit oversight. However,

these BDs may also have more resources to monitor compliance and may already have stronger internal controls in place, potentially preventing stock gifting backdating. Therefore, whether the change in BD-audit oversight has a greater impact on more or less complex BDs remains an empirical question.

Table 5 presents the heterogeneous treatment effects of enhanced BD-audit oversight on treated BDs with different ex-ante characteristics. Column 1 presents the heterogeneous treatment effects on BDs with above (HighTreat) and below (LowTreat) the sample median level of employees with customer complaints. Columns 2 to 4 present results using three different proxies for BD complexity measured in 2010: the number of product categories, whether the BD has a certified financial planner (CFP), and the fraction of dual-registered employees. Specifically, High Product Categories Treat (Low Product Categories Treat) equals one for BDs with above (below) sample median number of products within the treated BDs. High CFP Treat (Low CFP Treat) equals one for BDs with more than one (zero) certified financial planner (CFP). High Frac Dual Treat (Low Frac Dual Treat) equals one for BDs with above (below) sample median fraction of dual-registered employees.

Our results show that improved BD-audit oversight has a larger effect on BDs with a higher fraction of employees who have customer complaints and on those that are more complex, as indicated by more product categories (e.g., investment advisory, tax planning, etc.), having certified financial planner (CFP), and having more dual-registered employees. Overall, these findings highlight the significant role of BD characteristics in shaping the impact of regulatory change on audit oversight.

## 5.2 Cross-sectional Tests on Auditors of Broker-Dealer

We explore whether auditor characteristics play a moderating role in the treatment effect. We hypothesize that the treatment effect is stronger for BDs with closer ties to their auditors or for those where the BD is more important to the auditor. Empirically, we use two proxies: the length of the relationship between the treated BD and its auditors, and the number of BD clients that auditors have. Our conjecture is that the treatment effect is more pronounced for BDs with longer relationships with their auditors and for auditors with fewer BD clients, as each BD client would be more significant to them.

Table 8 shows our results. In columns 1 and 2, we partition the treated group based on the relationship length between the BDs and auditors and the number of BD clients measured in 2010, respectively. We define High RelationshipLength Treat (Low RelationshipLength Treat) as an indicator variable that equals one for auditors with above (below) sample median relationship lengths. Similarly, we define High Number BD Clients (Low Number BD Clients) as an indicator variable that equals one for auditors with above (below) sample median numbers of BD clients. The empirical results are consistent with our hypothesis. Specifically, the treatment effect is concentrated in BDs that have longer relationships with their auditors and are more important to the auditors (i.e., those with fewer BD clients). Taken together, our results indicate that BDs with less independent auditors, as proxied by relationship length and number of clients, are more significantly affected by change in audit oversight.

## 5.3 Cross-sectional Tests on Firms

Last, we perform cross-sectional analyses using ex-ante firm characteristics. Our hypothesis is that companies with less external shareholder oversight prior to regulatory change are more impacted. We employ firm-level institutional ownership as a proxy for shareholder scrutiny,

since institutional investors typically have greater motivation (due to larger holdings) and resources to monitor companies.

The results in Table 9 are consistent with our hypothesis. The treatment effect is concentrated in firms with lower levels of institutional ownership. The deterrence effect of enhanced oversight on BD-audit is stronger for firms under less scrutiny from institutional investors.

**[Distance to Local FINRA branch between BD? or between FINRA and firm? ]**

## **6 Additional analyses**

### **6.1 Insider stock gift volume and value**

In addition to studying post-gift stock returns, we examine the impact of the shift in BD-audit oversight on the volume and value of corporate executives' stock gifts. Since the regulatory change deters strategic stock gift backdating, we hypothesize that the overall volume and value of stock gifts decline due to reduced tax-saving benefits of these gifts. However, there is a potential concern that tests on the total volume and value of stock gifts may lack sufficient statistical power. To address this issue, we focus on the subset of stock gifts with delayed reporting, where our test may have more power. We expect to find a stronger effect in stock gifts with filing delays compared with the full sample of stock gifts.

Empirically, we aggregate insider stock gifts at the firm-year level and construct two measures: gift volume and gift value. First, stock gift volume is the total number of shares gifted in a given year, scaled by the number of shares outstanding at the end of the prior year. Second, stock gift value is the total value of shares gifted in a given year, scaled by the market value of equity at the end of the prior year. We multiply both measures by 100 to facilitate interpretation.

Table X presents our findings. Panel A shows the results for stock gift value, while Panel

B displays the results for stock gift volume. Columns 1, 2, and 3 present results for the full sample, gifts with timely reporting, and gifts with delayed reporting, respectively. We observe a significant decline in the total value and volume of stock gifts (column 1) after the regulation change for treated firms. The decline in stock gifts is particularly pronounced for those with a filing delay, and insignificant for those with timely reporting. Overall, our results indicate that the enhanced BD-audit oversight not only affects the strategic timing of executives' stock gifts but also diminishes their incentives to gift away their shares. Since the regulation effectively increases executives' perceived cost of gift backdating and reduces the tax benefits associated with stock gifts, executives are less inclined to make these gifts. The regulatory change on BD-audits could have (unintended) spillover effect effects on charities that rely on stock gifts for their operations.

[not sure - if our results are in percentage (of the total shares/value) or in log? ]

## 6.2 Robustness Checks

We conduct multiple sets of robustness checks. First, we check whether our results are robust to different definitions of corporate executives. Second, we examine whether our results go through if we change the definition of treated BDs. Last, we use different combinations of fixed effects to absorb variations in the data for robustness.

Table X Panel A presents our findings using different definitions of corporate executives. Our main analyses include the stock gifts by the top 9 executives following Yost and Yu (2023). First, we restrict the top 9 to the top 5 insiders including the CEO, CFO, COO, President, and Chairman of the Board (e.g., Peress, 2010; Yost and Shu, 2022). Second, we further limit the stock gifts to the CEO and CFO only - who are most likely to have private information. We find consistent results using the top 5 or CEO & CFO only samples. We note that the results are

slightly stronger for the stock gifts by the CEO and CFO of firms.

Table X Panel B presents our findings using outside directors. We do not find any significant impact of enhanced BD-audit on outside directors.

Table X Panel C shows the results using different sets of fixed effects. Specifically, column 1 uses the year-month FE and broker FE to control for variations within the year (e.g., incentives to give away stocks at the end of the year for tax planning) and broker. Column 2 uses FINRA district  $\times$  year fixed effect and broker FE to absorb variations in the time-series changes in the scrutiny of FINRA regulators. Overall, our results continue to go through after absorbing potential variations in regulatory scrutiny and seasonal variations of stock gifting.

### 6.3 Falsification test: outside directors

**Not sure about whether outside director is a good placebo for our setting. Yost and Yu uses it since it argues that IRS audit less likely to scrutinize outside directors. Does the same reasoning apply to our setting with more stringent audit requirements. Presumably, auditors also scrutinize the trades by outside directors? Do outside directors and officers (i.e., executives) use the same broker?? - this we can check. Our current null result on the outside director could be due to they use different brokers than top5/top9 executives.**

Our analysis focus on stock gifts by top executives. In this subsection, we aim to mitigate concerns that firm-level correlated omitted variables may drive the observed link between IRS audits and insider stock gifts by performing a falsification test. Specifically, we examine the relation between audits and gifts by directors that do not also serve as officers in the firm (i.e., outside directors). Outside directors are likely to have similar opportunities to top executives for making manipulated stock gifts because they are privy to private information about the firm and are likely to possess substantial personal wealth as well as stock in the firm. However, because

outside directors receive less scrutiny during an IRS audit, they are less likely to be deterred from making manipulated stock gifts.

We test our conjecture by repeating our main analysis for Outside Directors (we also include Top 5 Officers for comparison) and present our findings in Table 11. Columns 1 of Panel A display the effect of BD Audit improvement on CAR for Outside Directors. As in Table 3, the coefficient on  $Treat*Post$  is significantly positive for Top 9 Officers (coef. = 0.011; t-stat. = 3.025), but insignificantly different from zero for Outside Directors (coef. = 0.001; t-stat. = 0.251). Columns 3–4 reveal a similar pattern for Gift ValueDelay. Panel B shows the relation between IRS audits and abnormal returns around stock gifts for the two groups. Columns 1–2 show that audits are associated with lower Pre-Gift CARDelay for Top 5 Officers (coef. =  $-0.035$ ; t-stat. =  $-2.24$ ) but have no effect on Pre-Gift CARDelay for Outside Directors (coef. = 0.013; t-stat. = 0.65). Columns 3–4 imply a similar takeaway for Post-Gift CARDelay – IRS audits are associated with more positive post-gift CARs for Top 5 Officers but exhibit no relation with post-gift CARs for Outside Directors.

Overall, the evidence in Table 11 demonstrates that while IRS audits are associated with a significant reduction in manipulated stock gifts by top executives, there is no apparent relation between IRS audits and manipulated stock gifts by outside directors. These findings help rule out the possibility that firm-level correlated omitted variables drive the observed relationship between IRS audits and gifts by top executives. Furthermore, they tighten our inference that top executives refrain from making manipulated stock gifts due to perceived IRS scrutiny.

## **7 Consequences for Broker-Dealers**

Are the BDs that facilitated suspicious insiders trades out of business? Do these BDs earn less fees? Do these BDs downsize after the regulation?

## **8 Conclusion**

This paper investigates the impact of the mandated audit improvements on the prevalence of backdated insider gift transactions. We find evidence that the audit improvements led to a significant reduction in opportunistic insider gift timing, particularly for the treated group of BDs. We find that the treated group experiences a larger decrease in the difference between pre- and post-gift CARs following the regulatory change compared to the control group. This finding suggests that the enhanced scrutiny and oversight associated with PCAOB registration and inspection were effective in curbing insider trading through gift transactions.

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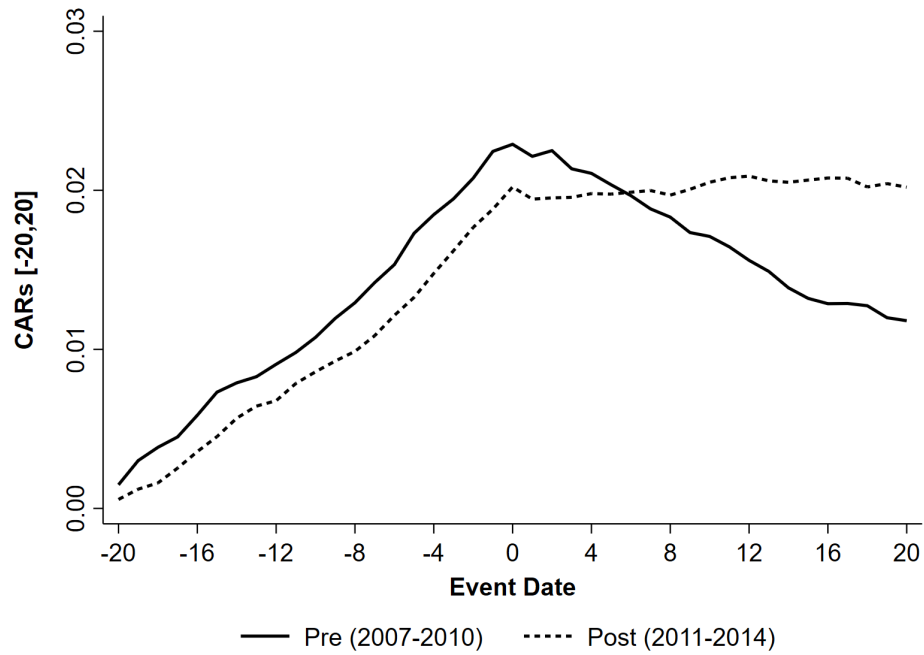
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## 9 Figures and Tables

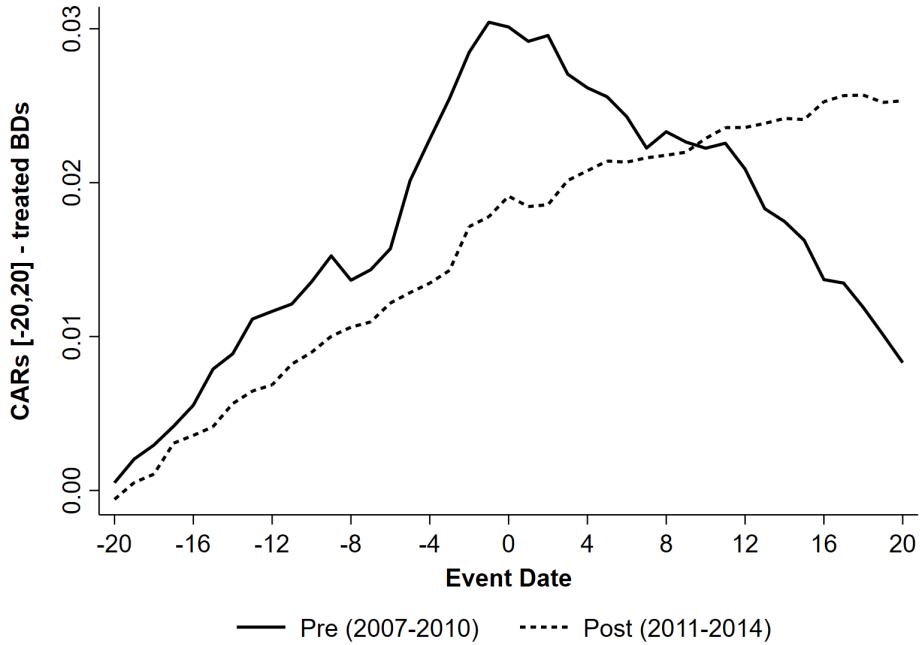
**Figure 1:** Pre and post shock CARs

The Figure 1 plots the Cumulative Abnormal Returns (CARs) around gifting dates (time 0), where CARs equals to  $\sum_{t=-20}^i (ret - ewret_d)$ , and  $i$  is the event date. The time frames for our analysis are the pre-period from 2007 to 2010 and the post-period from 2011 to 2014.

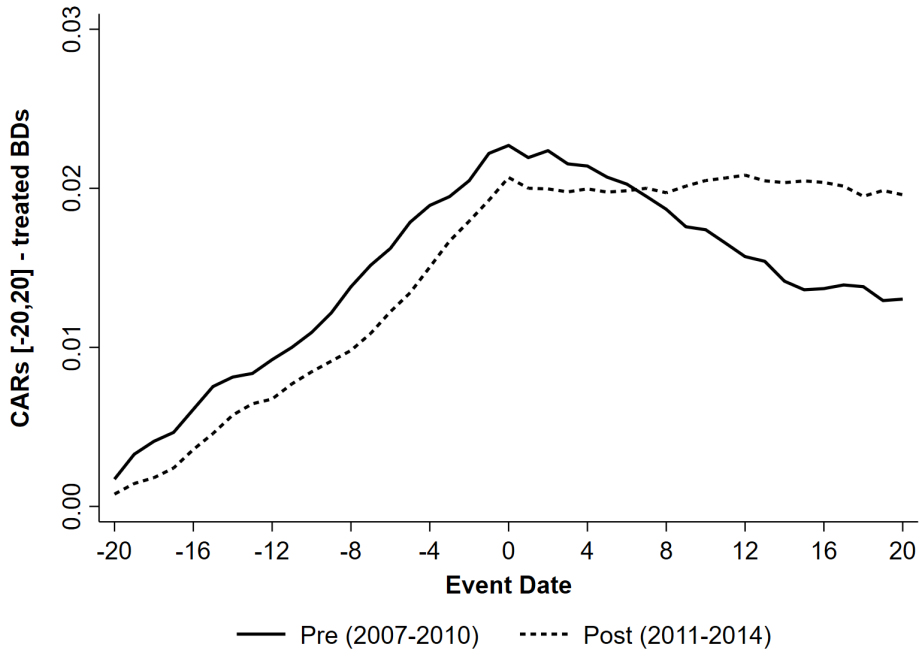


**Figure 2: CARs**

The Figure 2 plots the Cumulative Abnormal Returns (CARs) around gifting dates (time 0), where CARs equals to  $\sum_{t=-20}^i (ret - ewret_d)$ , and  $i$  is the event date. The time frames for our analysis are the pre-period from 2007 to 2010 and the post-period from 2011 to 2014.



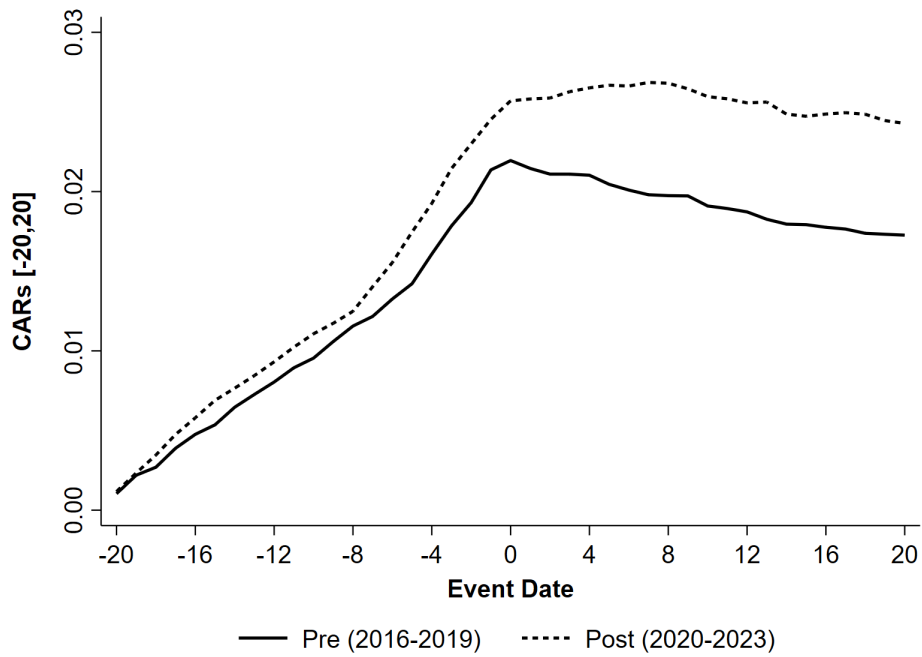
**(a) Treat**



**(b) Control**

**Figure 3: CARs around COVID-19**

The Figure 3 plots the Cumulative Abnormal Returns (CARs) around gifting dates (time 0), where CARs equals to  $\sum_{t=-20}^i (ret - ewretd)$ , and  $i$  is the event date. The time frames for our analysis are the pre-period from 2016 to 2019 and the post-period from 2020 to 2023.



**Table 1: Summary Statistics**

Table 1 presents the descriptive statistics of all the key variables containing the necessary data for the years 2007 to 2014. Panel A reflects descriptive statistics for the transaction-year-level sample. Panel B presents descriptive statistics for the firm-year-level sample. All variables are defined in Appendix A.

	N	Mean	SD	P25	P50	P75
<b>Transaction-Level Characteristics</b>						
<i>Stock Gift Value (millions)</i>	13839	0.826	6.793	0.016	0.052	0.255
<i>Log(GValue)</i>	13839	0.260	0.484	0.016	0.051	0.228
<i>Stock Gift Volume (thousands)</i>	13839	26393	214833	479	2000	9109
<i>CAR [t-20, t-1]</i>	13839	0.021	0.094	-0.028	0.018	0.067
<i>CAR [t+1, t+20]</i>	13839	-0.006	0.086	-0.048	-0.004	0.040
<i>CAR [t-30, t-1]</i>	13839	0.028	0.115	-0.032	0.026	0.085
<i>CAR [t+1, t+30]</i>	13839	-0.007	0.107	-0.061	-0.002	0.050
<b>Firm-Level Characteristics</b>						
<i>Ret 1 YR</i>	5672	0.169	0.399	-0.031	0.168	0.363
<i>Ret Vol</i>	5672	0.101	0.060	0.061	0.087	0.125
<i>ln(MVE)</i>	5672	7.528	1.836	6.217	7.538	8.730
<i>BTM</i>	5672	0.556	0.418	0.275	0.469	0.735
<i>ROA</i>	5672	0.046	0.121	0.012	0.048	0.098
<i>SalesGrowth</i>	5672	0.119	0.240	0.004	0.082	0.186
<i>R&amp;D</i>	5672	0.374	0.484	0.000	0.000	1.000
<i>InstOwn</i>	5672	0.656	0.303	0.498	0.735	0.881
<b>Broker-Level Cross-sectional Characteristics</b>						
<i>NumEmployees</i>	247	1593	5118	34.00	132.0	754.0
<i>Complaints</i>	247	0.056	0.069	0.000	0.029	0.091
<i>FracDual</i>	247	0.364	0.310	0.043	0.325	0.649

**Table 2: Matrix**

Table 2 shows the matrix includes CARs for the periods [-20,-1] and [1,20], along with their differences, pre and post the event. It demonstrates the decrease in tax savings (from engaging in shady trades) from pre- to post-period is much more pronounced for the treated transactions. CARs [-20,-1] and CARs [1,20] are cumulative abnormal returns over the past and future 20 trading days.

	(1)	(2) Pre	(3)	(4)	(5) Post	(6)
	CARs [-20,-1]	CARs [1,20]	Diff (1) - (2)	CARs [-20,-1]	CARs [1,20]	Diff (4) - (5)
Treat	3.04%	-2.12%	<b>5.16%</b>	1.78%	0.61%	<b>1.17%</b>
Control	2.22%	-0.98%	<b>3.20%</b>	1.93%	-0.10%	<b>2.03%</b>

**Table 3: Baseline Regression**

Table 3 presents the results from estimating the effect of BD audit improvement on cumulative abnormal returns (CARs) for the 20 trading days following the transaction date for insider stock gifts. The analysis is conducted at the transaction level. The dependent variable, CARs [t+1,t+20] represent cumulative abnormal returns over the future 20 trading days. In column 1, we report the main effect and include only the interaction term between the treatment indicator (Treat) and the post-regulation indicator (Post), year fixed effect and broker fixed effects in the regression to estimate the difference-in-differences model. In column 2, we add control variables. Due to the availability of data, the sample period in this table covers years 2007–2014. All variables are defined in Appendix A. All specifications include broker and year fixed effects. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by broker. \*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

VARIABLES	(1) CAR [t+1, t+20]	(2) CAR [t+1, t+20]
<i>Treat*Post</i>	<b>0.011***</b> (3.085)	<b>0.011***</b> (3.025)
<i>Log(GValue)</i>		0.001 (0.597)
<i>Ret 1 YR</i>		-0.006 (-1.279)
<i>Ret Vol</i>		0.025 (0.965)
<i>ln(MVE)</i>		-0.000 (-0.332)
<i>BTM</i>		0.003 (0.719)
<i>ROA</i>		-0.004 (-0.288)
<i>SalesGrowth</i>		-0.001 (-0.126)
<i>R&amp;D</i>		0.004** (2.253)
<i>InstOwn</i>		0.003 (0.848)
Constant	-0.007*** (-28.899)	-0.011 (-1.437)
Observations	13,777	13,777
R-squared	0.043	0.045
Y-mean	-0.006	-0.006
Y-sd	0.086	0.086
Controls	No	Yes
Year FE	Yes	Yes
Broker FE	Yes	Yes

**Table 4: Filing Delay**

Table 4 presents the results of tests separately estimating the effect of BD audit improvement on cumulative abnormal returns (CARs) for the 20 trading days following the transaction date for insider stock gifts with delayed reporting and insider stock gifts with timely reporting. Stock gifts are classified as having delayed (timely) reporting if more than 10/15/20 trading days (10/15/20 or fewer trading days) elapse between the purported transaction date and the date the gift is reported to the SEC. The analysis is conducted at the transaction level. Column 1 (column 2) shows the results for the 20 trading days CARs following stock gifts with timely (delayed) reporting. Due to the availability of data, the sample period in this table covers years 2007–2014. All variables are defined in Appendix A. All specifications include broker and year fixed effects. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by broker. \*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

VARIABLES	(1) Timely CAR [t+1, t+20]	(2) Delay CAR [t+1, t+20]
<b>Panel A: More than 10 trading days filing delay</b>		
<i>Treat*Post</i>	<b>-0.004</b> (-0.781)	<b>0.029***</b> (6.216)
p-value		0.000
Observations	7,723	6,003
R-squared	0.050	0.064
Y-mean	-0.006	-0.006
Y-sd	0.083	0.089
Controls	Yes	Yes
Year FE	Yes	Yes
Broker FE	Yes	Yes
<b>Panel B: More than 15 trading days filing delay</b>		
<i>Treat*Post</i>	<b>0.002</b> (0.505)	<b>0.025***</b> (5.208)
p-value		0.000
Observations	8,247	5,482
R-squared	0.051	0.061
Y-mean	-0.006	-0.007
Y-sd	0.082	0.090
Controls	Yes	Yes
Year FE	Yes	Yes
Broker FE	Yes	Yes
<b>Panel C: More than 20 trading days filing delay</b>		
<i>Treat*Post</i>	<b>0.004</b> (0.850)	<b>0.022***</b> (4.331)
p-value		0.009
Observations	8,555	5,172
R-squared	0.053	0.058
Y-mean	-0.006	-0.007
Y-sd	0.083	0.090
Controls	Yes	Yes
Year FE	Yes	Yes
Broker FE	Yes	Yes

**Table 5:** Subsample tests comparing less and more complaints

Table 5 presents the results from estimating the effect of BD audit improvement on cumulative abnormal returns (CARs) for the 20 trading days following the transaction date for insider stock gifts. The analysis is conducted at the transaction level. We define High CFP Treat (Low CFP Treat) as an indicator variable that equals one for BDs with more than one certified financial planner (CFP), measured over the year 2010. Similarly, we define High Frac Dual Treat (Low Frac Dual Treat) as an indicator variable that equals one for BDs with above-median (below-median) fraction of dual-registered employees within treat, measured over the year 2010. The main variable of interest is the interaction term between the low treatment indicator (Low Treat) and the post-regulation indicator (Post) and the interaction term between the high treatment indicator (High Treat) and the post-regulation indicator (Post). Column 1 (column 2) categorize the sample based on the CFP and fraction of dual-registered employees. The brokers are divided into two groups for each criterion: those with a median or above-median number (High Treat for CFPs, High Treat for Frac Dual) and those below the median (Low Treat for CFPs, Low Treat for Frac Dual). All variables are defined in Appendix A. All specifications include broker and year fixed effects. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by broker. \*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

VARIABLES	(1) Fraction of Employees with Complaint History <i>CAR [t+1, t+20]</i>	(2) <i>complaint_easyhard_v4_hard_lag</i> <i>CAR [t+1, t+20]</i>
<i>High Treat*Post</i>	<b>0.017***</b> (5.227)	<b>0.021***</b> (5.205)
<i>Low Treat*Post</i>	<b>0.011</b> (0.622)	<b>0.001</b> (0.055)
Observations	12,022	12,022
R-squared	0.042	0.042
p-value	0.746	0.239
Y-mean	-0.006	-0.006
Y-sd	0.086	0.086
Controls	Yes	Yes
Year FE	Yes	Yes
Broker FE	Yes	Yes

**Table 6:** Subsample tests comparing small versus large BD size

Table 6 presents the results from estimating the effect of BD audit improvement on cumulative abnormal returns (CARs) for the 20 trading days following the transaction date for insider stock gifts. The analysis is conducted at the transaction level. We define High BD Assets Treat (Low BD Assets Treat) as an indicator variable that equals one for BDs with more than one certified financial planner (CFP); High # Product Categories Treat (Low # Product Categories Treat) as an indicator variable that equals one for BDs with above-median (below-median) fraction of dual-registered employees within treat; High Public BD Treat (Low Public BD Treat) as an indicator variable that equals one for BDs with above-median (below-median) fraction of dual-registered employees within treat, measured over the year 2010. The main variable of interest is the interaction term between the low treatment indicator (Low Treat) and the post-regulation indicator (Post) and the interaction term between the high treatment indicator (High Treat) and the post-regulation indicator (Post). Column 1 (column 2) categorize the sample based on the BD Assets, # Product Categories and Public BD. The brokers are divided into two groups for each criterion: those with a median or above-median number (High Treat for BD Assets, High Treat for # Product Categories, High Treat for Public BD) and those below the median (Low Treat for BD Assets, Low Treat for # Product Categories, Low Treat for Public BD). All variables are defined in Appendix A. All specifications include broker and year fixed effects. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by broker. \*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

	(1)	(2)	(3)
	BD Assets	# Product Categories	Public BD
VARIABLES	CAR [t+1, t+20]	CAR [t+1, t+20]	CAR [t+1, t+20]
<i>High Treat*Post</i>	<b>0.017***</b> (3.790)	<b>0.018***</b> (3.498)	<b>-0.025</b> (-1.623)
<i>Low Treat*Post</i>	<b>0.010</b> (0.456)	<b>0.007</b> (0.343)	<b>0.018***</b> (2.932)
Observations	12,022	12,022	12,022
R-squared	0.042	0.042	0.042
p-value	0.775	0.585	0.009
Y-mean	-0.006	-0.006	-0.006
Y-sd	0.086	0.086	0.086
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Broker FE	Yes	Yes	Yes

**Table 7:** Subsample tests comparing small versus large fraction of dual-registered BDs

Table 7 presents the results from estimating the effect of BD audit improvement on cumulative abnormal returns (CARs) for the 20 trading days following the transaction date for insider stock gifts. The analysis is conducted at the transaction level. We define High CFP Treat (Low CFP Treat) as an indicator variable that equals one for BDs with more than one certified financial planner (CFP), measured over the year 2010. Similarly, we define High Frac Dual Treat (Low Frac Dual Treat) as an indicator variable that equals one for BDs with above-median (below-median) fraction of dual-registered employees within treat, measured over the year 2010. The main variable of interest is the interaction term between the low treatment indicator (Low Treat) and the post-regulation indicator (Post) and the interaction term between the high treatment indicator (High Treat) and the post-regulation indicator (Post). Column 1 (column 2) categorize the sample based on the CFP and fraction of dual-registered employees. The brokers are divided into two groups for each criterion: those with a median or above-median number (High Treat for CFPs, High Treat for Frac Dual) and those below the median (Low Treat for CFPs, Low Treat for Frac Dual). All variables are defined in Appendix A. All specifications include broker and year fixed effects. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by broker. \*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

VARIABLES	(1) CFP CAR [t+1, t+20]	(2) Frac Dual CAR [t+1, t+20]
<i>High Treat*Post</i>	<b>0.020***</b> (4.213)	<b>0.021***</b> (4.685)
<i>Low Treat*Post</i>	<b>-0.003</b> (-0.143)	<b>0.000</b> (0.001)
Observations	12,022	12,022
R-squared	0.042	0.042
p-value	0.270	0.273
Y-mean	-0.006	-0.006
Y-sd	0.086	0.086
Controls	Yes	Yes
Year FE	Yes	Yes
Broker FE	Yes	Yes

**Table 8: Auditor level subsample tests**

Table 8 presents the results from estimating the effect of BD audit improvement on cumulative abnormal returns (CARs) for the 20 trading days following the transaction date for insider stock gifts. The analysis is conducted at the transaction level. We define High RelationshipLength Treat (Low RelationshipLength Treat) as an indicator variable that equals one for auditors with median or above-median (below-median) relationship length within treat, measured over the year 2010. Similarly, we define High Number BD Clients Treat (Low Number of BD clients Treat) as an indicator variable that equals one for auditors with above-median (below-median) number of audits (BD clients) within treat, measured over the year 2010. The main variable of interest is the interaction term between the low treatment indicator (Low Treat) and the post-regulation indicator (Post) and the interaction term between the high treatment indicator (High Treat) and the post-regulation indicator (Post). Column 1 (column 2) categorize the sample based on the relationship length of the treatment BDs and auditors (the number of BD clients). The auditors are divided into two groups for each criterion: those with a median or above-median number (High Treat for BD clients, High RelationshipLength Treat for relationship length) and those below the median (Low Treat for BD clients, Low RelationshipLength Treat for relationship length). All variables are defined in Appendix A. All specifications include broker and year fixed effects. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by broker. \*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

VARIABLES	(1) Relationship Length <i>CAR [t+1, t+20]</i>	(2) # BD Clients <i>CAR [t+1, t+20]</i>
<i>High Treat*Post</i>	<b>0.020***</b> (6.551)	<b>-0.010</b> (-0.433)
<i>Low Treat*Post</i>	<b>-0.023</b> (-1.121)	<b>0.020***</b> (6.802)
Observations	12,022	12,022
R-squared	0.042	0.042
p-value	0.034	0.184
Y-mean	-0.006	-0.006
Y-sd	0.086	0.086
Controls	Yes	Yes
Year FE	Yes	Yes
Broker FE	Yes	Yes

**Table 9:** Subsample tests comparing low and high institutional holding ownership

Table 9 presents the results from estimating the effect of BD audit improvement on cumulative abnormal returns (CARs) for the 20 trading days following the transaction date for insider stock gifts. The analysis is conducted at the transaction level. We define High Institutional Ownership Treat (Low Institutional Ownership Treat) as an indicator variable that equals one for BDs with above-median (below-median) institutional ownership, measured over the year 2010. Similarly, we define High Distance to Local FINRA Branch Treat (Low Distance to Local FINRA Branch Treat) as an indicator variable that equals one for BDs with above-median (below-median) fraction of dual-registered employees within treat, measured over the year 2010. The main variable of interest is the interaction term between the low treatment indicator (Low Treat) and the post-regulation indicator (Post) and the interaction term between the high treatment indicator (High Treat) and the post-regulation indicator (Post). Column 1 (column 2) categorize the sample based on the Institutional Ownership and distance to local FINRA branch. The brokers are divided into two groups for each criterion: those with a median or above-median number (High Treat for institutional ownership, High Treat for distance to local FINRA branch) and those below the median (Low Treat for institutional ownership, Low Treat for distance to local FINRA branch). All variables are defined in Appendix A. All specifications include broker and year fixed effects. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by broker. \*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

VARIABLES	(1)	(2)
	Institutional Ownership <i>CAR [t+1, t+20]</i>	Distance to Local FINRA Branch <i>CAR [t+1, t+20]</i>
<i>High Treat*Post</i>	<b>0.002</b> <b>(0.354)</b>	<b>0.044**</b> <b>(2.123)</b>
<i>Low Treat*Post</i>	<b>0.010**</b> <b>(2.076)</b>	<b>-0.031</b> <b>(-1.581)</b>
Observations	13,777	12,022
R-squared	0.044	0.042
p-value	0.396	0.009
Y-mean	-0.006	-0.006
Y-sd	0.086	0.086
Controls	Yes	Yes
Year FE	Yes	Yes
Broker FE	Yes	Yes

**Table 10: The Impact on Stock Gift Value and Volume**

Table 10 panel A (B) column 1 presents the results from estimating the effect of BD audits on overall insider stock gift value (stock gift volume). Table 10 column 2 and 3 presents the results of tests separately estimating the effect of BD audits on insider stock gifts with timely reporting and insider stock gifts with delayed reporting. Stock gifts are classified as having delayed (timely) reporting if more than 10 trading days (10 or fewer trading days) elapse between the purported transaction date and the date the gift is reported to the SEC. We also conducted analyses on additional days (15 and 20 days) and found that the results are consistent with those observed over the 10-day period delay. Panel A (B) columns 2 and 3 show the results for the value (volume) of insider stock gifts with delayed and timely reporting, respectively. The analysis is conducted at the firm-person-year level. All variables are defined in Appendix A. All specifications include firm and year fixed effects. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by broker. \*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

<b>Panel A: Stock Gift Value</b>			
	(1)	(2)	(3)
VARIABLES	$\log(GValue + 1)$	<b>Timely</b> $\log(GValue + 1)$	<b>Delay</b> $\log(GValue + 1)$
<i>Treat*Post</i>	<b>-0.068**</b> (-2.257)	<b>-0.024</b> (-0.762)	<b>-0.142**</b> (-1.987)
Observations	8,029	5,423	3,153
R-squared	0.112	0.110	0.136
Y-mean	0.386	0.360	0.381
Y-sd	0.653	0.626	0.652
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Broker FE	Yes	Yes	Yes
<b>Panel B: Stock Gift Volume</b>			
	(1)	(2)	(3)
VARIABLES	$\log(Share + 1)$	<b>Timely</b> $\log(Share + 1)$	<b>Delay</b> $\log(Share + 1)$
<i>Treat*Post</i>	<b>-0.289***</b> (-2.679)	<b>-0.175</b> (-1.444)	<b>-0.659***</b> (-4.800)
Observations	8,029	5,423	3,153
R-squared	0.102	0.101	0.127
Y-mean	8.306	8.187	8.270
Y-sd	2.147	2.118	2.202
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Broker FE	Yes	Yes	Yes

**Table 11: Robustness Checks**

Table 11 panel A presents the results of tests separately estimating the effect of BD audit improvement on insider stock gifts made by three groups of insiders: Outside Directors, Top 5 Officers, and CEO and CFO only. The Major 5 Officers group includes the CEO, CFO, COO, President, and Chairman of the Board. The Outside Directors group includes directors who are not also officers in the firm. Panel A column 4 shows the results for sample excluding firm-year combination with more than one treated BD. All specifications include broker and year fixed effects in panel A. Table 11 panel B presents results for the robustness analysis include broker and year-month fixed effects and FINRA district-year fixed effects, respectively. All variables are defined in Appendix A. The tstatistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by broker. \*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

<b>Panel A: Falsification Test</b>				
	(1)	(2)	(3)	(4)
VARIABLES	Outsider <i>CAR [t+1, t+20]</i>	Major5 <i>CAR [t+1, t+20]</i>	CEO+CFO <i>CAR [t+1, t+20]</i>	AlternativeTreat <i>CAR [t+1, t+20]</i>
<i>Treat*Post</i>	<b>0.001</b> (0.251)	<b>0.014***</b> (3.269)	<b>0.018***</b> (3.171)	<b>0.009**</b> (2.522)
Observations	9,054	9,936	7,698	13,550
R-squared	0.048	0.057	0.060	0.040
Y-mean	-0.004	-0.006	-0.006	-0.006
Y-sd	0.089	0.089	0.092	0.085
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Broker FE	Yes	Yes	Yes	Yes
<b>Panel B: Alternative fixed effects</b>				
VARIABLES	(1)	(2)		
	<i>CAR [t+1, t+20]</i>	<i>CAR [t+1, t+20]</i>		
<i>Treat*Post</i>	<b>0.010**</b> (2.395)	<b>0.009**</b> (2.007)		
Observations	13,777	13,776		
R-squared	0.104	0.058		
Y-mean	-0.006	-0.006		
Y-sd	0.086	0.086		
Controls	Yes	Yes		
Year-Month FE	Yes	No		
FINRADistrict-Year FE	No	Yes		
Broker FE	Yes	Yes		

**Table 12:** Other tests need to be discussed

Table 12 presents the results from estimating the effect of BD audit improvement on cumulative abnormal returns (CARs) for the 20 trading days following the transaction date for insider stock gifts. The analysis is conducted at the transaction level. All variables are defined in Appendix A. All specifications include broker and year fixed effects. The t-statistics are reported below coefficient estimates in parentheses and are calculated based on standard errors clustered by broker. \*, \*\*, \*\*\* indicate statistical significance at the 0.10, 0.05, and 0.01 levels, respectively, using a two-tailed t-test.

	(1)	(2)	(3)	(4)
	Regtech index for Recordkeeping	# BD Employees	Firm Size	# BD Branches
VARIABLES	CAR [t+1, t+20]	CAR [t+1, t+20]	CAR [t+1, t+20]	CAR [t+1, t+20]
<i>High Treat*Post</i>	<b>0.031</b> (1.218)	<b>0.011</b> (1.210)	<b>0.006**</b> (2.263)	<b>0.014**</b> (1.992)
<i>Low Treat*Post</i>	<b>0.016***</b> (3.040)	<b>0.029*</b> (1.957)	<b>0.008</b> (1.256)	<b>0.033</b> (1.286)
Observations	12,022	12,022	13,777	12,022
R-squared	0.042	0.042	0.044	0.042
p-value	0.552	0.285	0.703	0.482
Y-mean	-0.006	-0.006	-0.006	-0.006
Y-sd	0.086	0.086	0.086	0.086
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Broker FE	Yes	Yes	Yes	Yes

## A Appendix: Variable Definitions

**Table A1:** Variable Definition

Variables	Definition
<b>Transaction-Level Characteristics</b>	
<i>Stock Gift Value (millions) (GValue)</i>	The total value of shares gifted during the fiscal year, expressed in millions of U.S. dollars.
<i>Stock Gift Value (millions) (logGValue)</i>	The total value of shares gifted during the fiscal year in million US\$.
<i>Stock Gift Volume (thousands)</i>	The total volume of shares gifted during the fiscal year, expressed in thousands.
<i>CAR [t-20, t-1]</i>	The firm's cumulative daily abnormal returns (computed as daily returns adjusted for the equal-weighted index) for the 20 trading days prior to the transaction date for all stock gifts.
<i>CAR [t+1, t+20]</i>	The firm's cumulative daily abnormal returns (computed as daily returns adjusted for the equal-weighted index) for the 20 trading days following the transaction date for all stock gifts.
<i>Filing Delay</i>	Gifts are classified as having delayed reporting if more than 10/15/20 trading days elapse between the transaction date and the date the gift is reported to the SEC.
<b>Firm-Level Characteristics</b>	
<i>Prior Fiscal Year Return (Ret 1 Yr)</i>	The firm's cumulative monthly returns during the prior fiscal year.
<i>Prior Fiscal Year Return Volatility (Ret Vol)</i>	The standard deviation of the firm's monthly returns for the current fiscal year.
<i>Size (ln(MVE))</i>	The firm's market value of equity at the prior fiscal year-end.
<i>Book-to-Market (BTM)</i>	The firm's book value of common equity scaled by the firm's market value of equity at the prior fiscal year-end.
<i>Return on Assets (ROA)</i>	The firm's income before extraordinary items for the current fiscal year scaled by total assets at the prior fiscal year-end.
<i>Sales Growth (SalesGrowth)</i>	Growth rate in sales.
<i>Research &amp; Development (RD)</i>	An indicator variable equal to one if the firm reports non-zero R&D expenditures in the current fiscal year, and zero otherwise.
<i>Institutional Ownership (%) (InstOwn)</i>	Percentage of shares held by institutional investors divided by the number of institutions that own the stock.
<b>BD-Level Characteristics</b>	
<i>Number of Employees</i>	The number of employees for firms.
<i>Fraction of Dual-Registered Employees</i>	The fraction of employees who are dually registered as brokers.
<i>Fraction of Employees with Complaint History</i>	
<i>Complaints</i>	
<i>Relationship between BD and Auditor</i>	

## **B Appendix: Data Construction**

### **B.1 Shock**

1. Following Schnader et al. (2019), we focus on the Jan 2009 event and narrowing our sample range to 2007 – 2014 (with pre: 2007-2010 and post: 2011-2014).

### **B.2 Data Sources**

See below for the list of datasets from 2007-2014 we used (all are accessible through the folder

“InsiderTrading\_Advisers/build/PanelConstruction/data/raw/ ”)

1. Audit Analytics - Audit Analytics Broker Dealer Focus Reports (hereafter referred to as “AA data”)
2. Refinitiv Insiders Data - Form 144 (hereafter referred to as “Form 144”)
3. Refinitiv Insiders Data - Table 1 (hereafter referred to as “Table 1”)
4. CRSP - CRSP Daily Stock

### **B.3 Data Processing**

1. Identify a unique identifier for the broker from Form 144: From the broker name list in Form 144, we scraped BrokerCheck for CRD/SEC numbers and cleaned up 2,519 unique broker names. We successfully matched 2,443 names (manually reviewed and cleaned 503), leaving 76 names unmatched. Note that due to manual entry, some brokers may have multiple versions of their names.
2. Merge the broker (Form 144) with its auditor (AA): We used the SEC file number, which is available in both BrokerCheck and AA data.
  - (a) We identified 1,414 unique brokers, each uniquely defined by a specific SEC file

number, and we successfully merged 1,158 out of these 1,414 brokers with the "Treat and Control bds data".

- (b) We only retained the brokers whose SEC file number was present in the AA data. If there was only one result for a broker, we used it directly. If multiple results were found, we cleaned the result name (or other names from the results) and the searched name, choosing the first name that exactly matched. If none matched exactly, we selected the first among the top ten results with a SEC file number that could successfully merge. This method enabled us to create a reliable link table without needing to combine exact and fuzzy matches. The relevant code for this process can be found in "InsiderTradingAdvisers/build/PanelConstruction/code/archive".

### 3. Defining Treated & Control:

- (a) We fixed the auditor-year level Treat and Control BDs data at a specific point before the shock, i.e., in 2008, and found 1,154 treated auditors (auditors with no public clients) and 235 control auditors.
- (b) After merging the Treat and Control BDs data with the AA data, considering that BDs might switch auditors occasionally, we classified them based on their 2008 auditor. We identified 510 treated BDs and 648 control BDs.
- (c) We extracted the firm-year level broker list from Form 144. If any broker for a firm's transactions is treated, we assigned the broker among the treated brokers who handles the largest number of trades (in shares) for the firm in year  $t$  as the go-to broker for all transactions for the firm in year  $t$ . If there is no treated broker for all the transactions for the firm, we assigned the broker who handles the largest number of trades (in shares) for the firm in year  $t$  as the go-to broker for all transactions for the firm in year  $t$ .

4. Construct DV: We used data from Table 1 and CRSP to calculate the Cumulative Abnormal Returns (CARs:  $\sum_{t=1}^{30} (ret - ewret_d)$  and  $\sum_{t=-30}^{-1} (ret - ewret_d)$ ) over the past and future 30 trading days and the Filing Delay (SEC filing date – transaction date).
5. Merge treat/control with dependent variable: Table ?? shows the final distribution for our panel.