# Investor Reaction to the Prospect of Mandatory Audit Firm Rotation

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**SUMMARY:** The PCAOB recently considered implementing mandatory audit firm rotation in hopes of better aligning auditors' interests with investors' interests, suggesting that the PCAOB views long auditor tenure as problematic. However, the accounting profession argues that long tenure actually improves audit quality. This study provides insight into investors' views by evaluating the market's reaction to events related to the potential adoption of rotation that occurred between 2011 and 2013. The results provide some evidence that the market reacts negatively (positively) to events that increased (decreased) the likelihood of rotation, although these results are sensitive to the market index used to calculate abnormal returns. More importantly, particularly given the lack of a U.S.-specific control group, cross-sectional tests provide strong evidence that the market reaction is more negative (positive) on dates that increased (decreased) the likelihood of rotation given longer auditor tenure. Moreover, we also find that the market reaction is more negative (positive) on dates that increased (decreased) the likelihood of rotation given a Big 4 auditor.

**Keywords:** mandatory audit firm rotation; event study; PCAOB; investor perception.

## I. INTRODUCTION

The theme of the Public Company Accounting Oversight Board's (PCAOB or Board) 2014 Annual Report, as expressed on the Report's front cover, is "protecting investors". Auditor independence is needed for auditors to effectively protect investors. However, there has been a longstanding debate within the regulatory community as to whether indefinite tenure reduces audit quality as auditors' interests may become more aligned with management over time. One commonly recommended solution to guard against the loss of auditor independence is mandatory audit firm rotation.

While forced rotation has been considered in prior years, the PCAOB's recent consideration of this policy was arguably the most serious and formal consideration in United States history for the following reasons.[1] First, PCAOB Chairman Doty made rotation one of his major policy initiatives and began taking action at the beginning of his term as Chairman. Second, the PCAOB's consideration of rotation was so serious that the House of Representatives proposed and passed a bill in hopes of preventing it from happening. The House would not have done so if the majority did not believe that the implementation of mandatory rotation was a serious possibility. Third, mandatory rotation was implemented in Europe. Even after decades of debate in Europe, the European Commission's recent adoption of mandatory rotation finally ended the debate, which makes the prospect of mandatory rotation in the U.S. more plausible.[2] Despite the periodic consideration of mandatory rotation as a policy option, it remains unknown how investors view mandatory audit firm rotation, and whether investor reaction depends on



[1] The Metcalf Committee formed by the U.S. Senate in 1976 issued a report noting the independence issues created by long auditor tenure and suggested that "one alternative is mandatory change of accountants after a given period of years" (U.S. Congress 1976, 21). In 1978, the AICPA issued the Cohen Commission Report, which dismissed mandatory rotation for the time being (AICPA 1978). Then, during the deliberations surrounding the passage of the Sarbanes-Oxley Act in 2002, the requirement to rotate audit firms was seriously considered once again.

[2] The European Union published its mandatory audit firm rotation rule on May 27, 2014, which requires public interest entities to change auditors after 10 years (Tysiac 2014).

various characteristics of companies' auditors. We fill this void by examining investor reactions to the recent consideration of mandatory rotation in the United States.

It is important to determine how investors view mandatory audit firm rotation because such a policy would be enacted for their benefit. If investors believe that rotation would benefit them, then regulatory justification for such a significant regime shift is strengthened. On the other hand, evidence that investors oppose rotation would call into question the benefits of implementing such a policy and contribute to this longstanding debate. Perhaps even more importantly, investors likely view mandatory audit firm rotation differently depending on certain characteristics of a company's auditor. Understanding how these characteristics affect investor reactions to mandatory audit firm rotation would provide regulators and other stakeholders with a deeper understanding of the likely costs and benefits of this policy.



As the PCAOB considered implementing mandatory audit firm rotation, the Board commenced the process of examining its merits and drawbacks. While it is impossible to gather U.S. archival evidence on the effects of a potential policy, it is feasible to study whether or not investors might value the policy (Zhang 2007; Li et al. 2008; Armstrong et al. 2010; Joos and Leung 2013). Generally following the approach used in Armstrong et al. (2010) and Joos and Leung (2013), we examine the U.S. stock market reaction to events that occurred between 2011 and 2013 that can be expected to have affected the likelihood that the PCAOB would adopt a mandatory audit firm rotation policy. This research design allows us to measure the expected net benefits to the group, investors, that the policy is designed to benefit (DeFond and Zhang 2014). While we test for an overall stock market reaction, our primary focus is to examine whether the market reacts differently based on a company's auditor characteristics. The results of this analysis are particularly informative to the Board as they reveal the potential drivers of investors'

reactions to the prospect of mandatory audit firm rotation.

Overall, we find evidence of a significant negative (positive) market reaction to events that increased (decreased) the likelihood of rotation, although this result is sensitive to the index used to calculate abnormal returns. The mean cumulative abnormal returns across the event dates that increased (decreased) the likelihood of rotation are -0.0126 (0.0121) (both $p < 0.10$), where the cumulative abnormal market returns are calculated using the MSCI World Index (excluding the U.S.) since non-U.S. companies would have been less affected by the PCAOB's discussion of mandatory audit firm rotation.[3]

Since the PCAOB's discussion of audit firm rotation included all SEC registrants, we do not have a U.S.-specific control group. Therefore, given the lack of a U.S.-specific control group, we focus primarily on our cross-sectional tests.[4] We examine whether there is a *differential* market reaction based on audit firm industry specialization, audit firm tenure, Big 4/non-Big 4 dichotomy, and audit quality as proxied by the absolute value of abnormal accruals. Based on these cross-sectional tests, we find strong evidence that the market reaction is significantly more negative (positive) on dates that increased (decreased) the likelihood of rotation for companies with longer auditor tenure. We also find that companies with Big 4 auditors experienced a significantly more negative (positive) reaction on dates that increased (decreased) the likelihood of rotation than did companies with a non-Big 4 auditor. Companies with an industry expert auditor experience a significantly more negative market reaction than companies without an expert auditor, but only on dates that increased the likelihood of rotation. Finally, companies

[3] The mean cumulative abnormal return across the event dates that increased (decreased) the likelihood of rotation is -0.0108 (0.0134) (both $p > 0.10$), where the cumulative abnormal market return is calculated using the MSCI Pacific Index.

[4] We relax this assumption in the robustness section where we create a U.S.-specific quasi control group using non-accelerated filers as a group that may not be affected (or at least would be less affected) by any PCAOB audit firm rotation policy.

with higher absolute value of abnormal accruals, suggesting a lower quality audit from their current auditor, experienced a significantly more negative market reaction, but only on dates that decreased the likelihood of rotation.

Furthermore, we utilize non-event day returns as an alternative benchmark to test the significance of our overall market and regression results. Using a similar procedure to Armstrong et al. (2010) and Joos and Leung (2013), we calculate cumulative market-adjusted returns for three consecutive trading day windows that are not captured in our event windows. We then compare the mean market-adjusted returns across our event windows to the mean non-event returns to test the significance of the overall market reaction. In our cross-sectional tests, we estimate additional regressions replacing the market-adjusted returns of our event windows with the non-event day market-adjusted returns as the dependent variable. We compare the coefficients from the non-event regressions to the coefficients obtained in our main model by performing a seemingly unrelated estimation of the two models to test the significance of our variables of interest. This procedure ensures that our results are not a product of systematic relationships between our test variables and cumulative abnormal returns in any three-day window, but rather are specific to the event windows and therefore to the prospect of mandatory audit firm rotation.



This study contributes to the debate on audit firm rotation by providing the PCAOB and other regulators with relevant information regarding the market reaction to the prospect of mandatory rotation. As regulators are considering the implementation of this regime in order to protect investors, it is interesting to note the generally negative market reaction to the possibility of mandatory auditor rotation. It appears that investors respond negatively to the discussion of mandatory rotation as they perhaps believe that any potential benefits of rotation, such as

improved independence, would likely be outweighed by its costs, both direct and indirect. It also appears that investors view rotation as especially undesirable for companies utilizing a Big 4 auditor, and companies that have a longer relationship with their audit firm. We find some evidence that investors view rotation negatively for companies with an industry expert auditor, and positively for companies with low audit quality. These results suggest that investors do not view long audit firm tenure as intrinsically problematic, and that a one-size-fits-all approach might not be appropriate should audit regulators continue to explore the prospect of mandatory audit firm rotation.

The remainder of the paper is organized as follows. Section II provides further background on mandatory audit firm rotation and develops our hypotheses. Section III describes our research method, and Section IV presents our results and robustness tests. The last section discusses limitations and concludes.



## II. BACKGROUND AND HYPOTHESES

### PCAOB Consideration of Mandatory Audit Firm Rotation and Event Dates of Interest

The possibility of mandatory firm rotation was discussed when Congress was drafting the Sarbanes-Oxley Act (SOX) of 2002. However, Congress determined that more research was needed to see if audit *partner* rotation, among numerous other measures, was sufficient in addressing independence concerns. Therefore, Section 207 of SOX charged the General Accounting Office (GAO) to study mandatory firm tenure limits. The GAO concluded that audit firm rotation "may not be the most efficient way to enhance auditor independence and audit quality" (GAO 2003, 8). Notwithstanding the GAO's view as to the efficacy of audit firm rotation, and largely due to problems identified in PCAOB inspections of audit firms (Doty 2011a), the Board revisited whether audit firm rotation would improve audit quality. On June 2,

2011, PCAOB Chairman Doty publicly stated his belief that steps need to be taken to shift the auditors' "mindset to protecting the investing public." In his speech, he notably remarked that "it is incumbent on the PCAOB to take up the debate about firm tenure and examine it, with rigorous analysis and the weight of evidence in support and against [it]" (Doty 2011a). Doty also announced the PCAOB's plans to issue a concept release in the near future to formally explore rotation. As the Chairman's speech was the first significant statement regarding the PCAOB's consideration of mandatory rotation, we classify June 2, 2011 as the first event date that increases the likelihood of adoption.[5]

On August 11, 2011, the PCAOB announced that it would hold an open meeting on August 16, 2011 to formally consider the issuance of a Concept Release regarding auditor independence and mandatory audit firm rotation (PCAOB 2011a). We classify the announcement of the Concept Release (August 11, 2011) and the issuance of the Concept Release (August 16, 2011) as the second and third events that increase the likelihood of mandatory audit firm rotation. These events marked the Board's formal consideration of forced rotation and solicited public comment on ways to enhance auditor independence, skepticism, and objectivity, including the possible introduction of a mandatory audit firm rotation policy (PCAOB 2011b).[6]

The fourth event occurred on September 23, 2011 when PCAOB Member Jay Hanson spoke at the SEC Financial Reporting Conference. Since the issuance of the Concept Release, it was the first time a board member made public comments regarding mandatory audit firm rotation. Hanson stated his belief that "the Board should proceed cautiously along the path toward mandatory auditor rotation." He explained several of his concerns, including increased

[5] The Chairman's speech also discussed issues such as the auditor's reporting model and communications with the audit committee. In untabulated tests, we exclude this date and find that our results remain quantitatively and qualitatively unchanged. Please refer to the robustness section for more detailed information.

[6] The issuance of the Concept Release was widely disseminated in news articles issued by the popular press, including *The Wall Street Journal,* the *New York Times*, and *Forbes*.

financial costs, decreased audit quality in the first years of a new engagement, and the possibility that "auditor independence could suffer in a mandatory rotation framework, because audit firms may step up their marketing of non-audit services to audit clients near the end of the permissible term of the audit engagement" (Hanson 2011). As this event represents a Board Member's hesitation regarding mandatory firm rotation, we view this event as decreasing the likelihood of policy implementation.[7]

On October 4, 2011, Board Member Daniel Goelzer also publicly voiced his concerns regarding forced rotation. He expressed that he has "serious doubts that across-the-board mandatory rotation is a practical or cost-effective way of strengthening independence" (Goelzer 2011). Goelzer mentioned only requiring rotation in special cases such as when a PCAOB inspection report cites a professional skepticism issue (Goelzer 2011). We view this fifth event as also decreasing the likelihood of rotation, especially because two of the five Board members had essentially indicated their opposition to rotation by this point.

Despite his strong beliefs that auditor independence must be improved, PCAOB Chairman Doty recognized that "audit firm rotation presents considerable operational challenges" in a speech he gave on November 10, 2011 (Doty 2011b). Given the Chairman's acknowledgement of the difficulties in implementing forced rotation, we classify this sixth event date as decreasing the likelihood of mandatory audit firm rotation.

Our seventh event date is the issuance of a comment letter by the American Institute of CPAs (AICPA) in response to the PCAOB's Concept Release. On December 14, 2011, the AICPA revealed that it opposes the implementation of a mandatory firm rotation policy (AICPA 2011). As this association represents the largest professional group of certified public

[7] Note that a majority vote with a quorum present is required to execute any action as a Board (PCAOB 2005). Since the Board is comprised of only five members, the hesitation of at least one Board Member regarding rotation represents a significant hurdle in future Board discussions and votes.

accountants in the country, the AICPA's recommendation that the Board "refrain from pursuing a mandatory firm rotation requirement" signifies a public stance from the profession (AICPA 2011, 2). As such, we view this event as decreasing the likelihood of rotation.

The last three events included in our study involve a Congressional bill to prohibit the PCAOB from mandating audit firm rotation. On March 23, 2012, the House of Representatives announced a hearing to be held on March 28th by the Committee on Financial Services to discuss an amendment to SOX that Representative Michael Fitzpatrick of Pennsylvania proposed (Whitehouse 2012; U.S. House 2012). This amendment would preclude the PCAOB from implementing any regulation that requires auditors to be rotated. On July 8, 2013, the U.S. House of Representatives approved a bill, H.R. 1564, which would preclude the PCAOB from requiring public companies to employ specific auditors or rotate auditors (Tysiac 2013). The vote was 321 to 62 in favor of the bill. We classify the March 23, 2012 announcement, the March 28, 2012 hearing, and the July 8, 2013 bill approval as critical events in the regulatory process that decrease the likelihood of rotation.



**Impact of a Mandatory Audit Firm Rotation Policy on the Market**

The likely impact on the market of implementing a policy of mandatory audit firm rotation is a function of the market's assessment of the policy's net costs (or net benefits) multiplied by the probability of the policy being implemented.

***Costs and Benefits of Mandatory Audit Firm Rotation***

The costs of a mandatory audit firm rotation policy are the loss of consumer surplus and supply-side effects (i.e., audit fee changes). First, Gerakos and Syverson (2015) define consumer surplus as "… the total value client firms place on their purchased audit services in excess of the fees they pay for them" (p. 5). Gerakos and Syverson (2015) calculate that the mean company-

level reduction in consumer surplus if a 10-year rotation policy is implemented is $535,475 (see Table 9, Panel B, year 2010). Second, Gerakos and Syverson (2015) estimate that audit fees across the U.S. audit market will increase by approximately $750 million. Using 5,000 as the approximate number of public companies in the U.S. (from Gerakos and Syverson 2015), the mean company-level increase in audit fees is $150,000. Alternatively, the GAO (2003) estimated that a mandatory audit firm rotation policy would result in an audit fee increase of approximately 20 percent (p. 6).[8] Based on the average audit fee paid by the companies in our sample ($2.3 million), and using the GAO projected 20 percent increase in audit fees, audit fees would increase for our sample by $460,000 per company. Hence, on a per company basis, the costs of a mandatory firm rotation policy (including both a loss of consumer surplus and increased fees) are estimated to be between $685,475 ($535,475 + $150,000) and $995,475 ($535,475 + $460,000). These additional projected costs of rotation range from 30 percent to 43 percent of existing per company audit costs.[9]





On the other hand, mandatory audit firm rotation may provide benefits to companies and investors by potentially improving audit quality. Comment letters in favor of rotation argued that audit quality would increase due to the fresh perspective provided by new auditors and the improvements in auditor independence, objectivity, and professional skepticism.[10] If effective in improving audit quality, mandatory rotation would serve to reduce information risk. As a result of reduced information risk, investors may apply a lower discount rate in evaluating the present value of the cash flow stream associated with an equity investment, which serves to increase the



[8] Deloitte's comment letter on the PCAOB's mandatory rotation proposal also refers to a likely increase in audit fees of 20 percent (Deloitte 2011).

[9] In addition, we compare average audit fees to average cash flow from operations (CFO) for the companies in our sample. For those companies where CFO is positive, audit fees represent 14 percent of CFO. We view a non-operating expense (audit fees) that represents 14 percent of CFO as quite significant.

[10] Although examining audit partner rotation and not firm rotation, Laurion, Lawrence and Ryans (2015) provide evidence that partner rotation has a positive effect on audit quality.

stock price. Although somewhat controversial, the weight of prior empirical research supports this link between the quality of accounting information and a company's cost of capital (e.g., Bhattacharya et al. 2003; Francis et al. 2004, 2005a; Ashbaugh-Skaife et al. 2009; Kim and Qi 2010; Kravet and Shevlin 2010; Li 2010; Bhattacharya et al. 2012; Barth et al. 2013; Hou 2015).[11]

***Probability of Mandatory Audit Firm Rotation***

It is possible that the market viewed the likelihood of a mandatory rotation policy being adopted as low given a number of failed attempts to implement rotation in prior years, and if the market viewed mandatory rotation as a low probability event, then any market reaction should be muted. We, however, argue that market participants – primarily investors and auditors – viewed the prospect of mandatory rotation as a serious possibility. We offer evidence to this effect based on comment letters as well as accounting firm publications, lobbying expenditures, and campaign contributions.



Based on our review of the PCAOB's website (pcaobus.org), the PCAOB received 684 comment letters on its mandatory rotation Concept Release. This is an unprecedented number of comment letters for an auditing proposal. For comparison, the PCAOB received 23 comment letters on its 2009 Concept Release on the identification of the engagement partner, and 155 comment letters on its 2011 Concept Release on the audit reporting model. Both the engagement partner identification and audit reporting model were controversial, high profile projects, and

[11] We acknowledge the conflict in the literature between those who believe that accounting information risk is idiosyncratic and can be diversified away, and those who believe that better financial reporting should result in a lower cost of capital. Hughes et al. (2007), for example, creates a theoretical model where idiosyncratic information risk can be diversified away. Shevlin (2013), however, argues that the theoretical argument that information quality can be diversified away is premature. Furthermore, a recent empirical work by Hou (2015) finds that accounting information risk is priced even if entirely idiosyncratic, and diversification has little impact on the relation between accounting information risk and the cost of capital. Given the weight of empirical evidence that supports the link between information quality and the cost of capital, prior literature seems to provide a foundation for the argument we discuss above.

both projects were likely to result in final standards.[12] Yet the mandatory auditor rotation release received significantly more comment letters. It seems unlikely that organizations, many of them quite sophisticated, would have spent their limited resources preparing comment letters, often quite detailed and lengthy, if there was little likelihood of rotation being implemented. It is further interesting to note that 94 percent of the comment letters received opposed the implementation of mandatory auditor rotation (EY 2012). The strong consensus against mandatory audit firm rotation suggests that we may detect a stock price reaction if investors share the opposing views of comment letter writers.

The accounting profession certainly did not view the prospect of mandatory firm rotation as a low probability event. We see this reflected in the profession's external publications, and in the profession's lobbying and campaign contributions. In March 2013, after all our event dates except the passage of the House bill prohibiting rotation, EY described its opposition to mandatory rotation in a "Point of view" publication and notes that it issues a "Point of view" publication for a "current public policy and regulatory matter of importance to our stakeholders, our profession, and the capital markets" (EY 2013, 1). PwC expressed almost identical sentiments in one of its external publications (PwC 2013).

To the extent that the accounting profession was concerned that mandatory rotation might actually be implemented, we would expect the profession to respond through enhanced lobbying efforts and/or by increasing campaign contributions to the relevant House committee.[13] In fact, Ingram and Aubin (2012) reported an increase in Big 4 lobbying, and attribute the increase to the

[12] In fact, the PCAOB has already issued a final rule requiring the identification of the engagement partner (PCAOB 2015).

[13] During the time that rotation was being considered, the U.S. Senate was controlled by the Democratic party while the House of Representatives was controlled by the Republican party. It seems likely, and was borne out by legislation that was actually passed, that the House would be more receptive to efforts by the profession to block the implementation of mandatory rotation.

PCAOB's consideration of mandatory rotation. To provide evidence to this effect, we examine Big 4 lobbying expenditures reported by the Center for Responsive Politics. During the time period that mandatory rotation was being considered, 2011-13, the Big 4 firms spent $27.2 million on lobbying.[14] For comparison purposes, the Big 4 spent $26.5 ($23.1) million on lobbying during 2008-10 (2005-07). Perhaps even more tellingly, the Big 4 spent $8.6 million on lobbying in 2014 and $6.6 million on lobbying in 2015. If trends for the last two years continue in 2016, the Big 4 would have decreased their lobbying expenditures by $4.4 million (16 percent) in the three years after rotation was no longer being actively considered compared to their lobbying expenditures while rotation was being discussed.

Finally, we examine campaign contributions by the accounting profession to members of the U.S. House of Representatives. The consideration of mandatory rotation overlapped with the 112th Congress (2011-12) and the 113th Congress (2013-14). During that time, the accounting profession contributed a total of $15.5 million to the House of Representatives compared to $13.1 million between 2007 and 2010. Therefore, the total campaign contributions from the accounting profession to the House of Representatives increased by 19 percent. We also examined the accounting profession's campaign contributions to members of the House Financial Services Committee (HFSC), which is the committee with oversight responsibilities for the capital market. During the 112th and 113th Congress, the average campaign contribution from the accounting profession was $37,815 to each member of the HFSC (per each two-year cycle). For comparison, the accounting profession contributed an average of $32,220 per HFSC member

[14] All lobbying expenditures were collected by examining the Center for Responsive Politics' website (www.opensecrets.org). Specifically, we summed the annual lobbying expenditures from each of the Big 4 firms as reported under the "Accountants" industry.

(per each two-year cycle) between 2007-10.[15,16]

**Hypotheses**

As stated previously, it is important to determine how investors assess mandatory audit firm rotation because the policy would be implemented to guard investors' interests. Given that Schwert (1981) argues that a new regulation that could affect future cash flows will result in a change in asset prices as the market anticipates the regulatory change (assuming market efficiency), we examine investors' overall perception of mandatory audit firm rotation by analyzing the market reaction to the ten events outlined in Table 1. These events, discussed in detail in Section II, are expected to be critical events in the regulatory process that significantly impact the likelihood of mandatory rotation being implemented.

Examining the market reaction to events that affect the likelihood of implementing a mandatory audit firm rotation policy provides an opportunity to assess the expected benefits and costs of the policy (Zhang 2007; Li et al. 2008; Armstrong et al. 2010; Joos and Leung 2013; DeFond and Zhang 2014). If investors anticipate that audit firm rotation will benefit publicly traded companies in the future, then the market reaction should be positive (negative) to events that increase (decrease) the likelihood of implementation. If investors, however, are concerned that the potential benefits of rotation will be outweighed by its costs, then the market reaction will likely be negative (positive) to events that increase (decrease) the likelihood of implementation (Armstrong et al. 2010). As either a negative or positive reaction is plausible,

[15] All campaign contribution amounts were gathered from the Center for Responsive Politics website (www.opensecrets.org). Specifically, we obtained the campaign contributions to members of the House of Representatives from the "Accountants" industry. To determine the breakdown by HFSC member, we referenced the archived lists of the Financial Services Committee membership for each Congressional two-year period from the following website: http://financialservices.house.gov/archives/.

[16] We obtain similar results if we examine campaign contributions by the accounting profession to members of the House Capital Markets and Government-Sponsored Enterprises (CM & GSE) subcommittee of the House Financial Services Committee. The CM & GSE subcommittee is the FSC subcommittee with most direct oversight of the capital market.

we state the following null hypothesis:

**H1:** *There will not be a significant market reaction, as measured by cumulative abnormal returns, to events that affect the likelihood of mandatory audit firm rotation.*

In addition to the descriptive analysis provided by the overall market reaction, we examine cross-sectional differences in market reactions based upon important characteristics of companies' auditors. The PCAOB's Concept Release on audit firm rotation contemplated that all U.S. public companies would be subject to mandatory audit firm rotation if implemented, but it is unlikely that they would all be affected by this policy in the same way. Therefore, we analyze whether the market reaction to events related to mandatory rotation differs based on attributes of the companies' auditor and the quality of audits received in order to provide greater insight into the costs and benefits of rotation.



As one of the main arguments cited in opposition to rotation revolves around the loss of auditor knowledge and experience (SDA Bocconi 2002; Lu and Sivaramakrishnan 2009; Moritz 2012), we examine differences in investor reactions based on whether or not the company's current auditor is an industry expert. Even if mandatory firm rotation is viewed positively by the market, switching away from an industry expert auditor is more likely to increase information risk than if the switch is from a non-expert auditor (Craswell et al. 1995; Francis et al. 2005b; Reichelt and Wang 2010). Therefore, we predict a more negative (positive) market reaction to events that increase (decrease) the likelihood of mandatory rotation being implemented. We state our directional hypothesis as follows:



***H2a:*** *Companies with an industry expert as an auditor will experience more negative (positive) cumulative abnormal returns to events that increase (decrease) the likelihood of mandatory audit firm rotation.*

Next, we analyze variations in market reactions based upon auditor tenure. If investors believe that auditor independence is compromised as a result of longer auditor tenure (DeAngelo

1981; Gietzman and Sen 2002), then the market reaction should be positive (negative) to events that increase (decrease) the likelihood of implementation for companies with longer auditor tenure. If, however, investors value longer auditor tenure because they believe that auditors are able to provide a more effective audit as tenure increases (Myers et al. 2003; Mansi et al. 2004; Boone et al. 2008), then the market reaction will likely be negative (positive) to events that increase (decrease) the likelihood of implementation. Given the conflicting literature on the impact of auditor tenure, we state the following hypothesis in null form:

***H2b:*** *There will not be a significant difference in the cumulative abnormal returns of companies based on the length of auditor tenure in response to events that affect the likelihood of mandatory audit firm rotation.*

Another important distinction is whether or not a Big 4 accounting firm audits the company. If a company is currently audited by a Big 4 firm, it likely requires the resources that a Big 4 firm is able to provide. Thus, if required to rotate, the company would need to choose one of the other Big 4 auditors. Rotating between the Big 4 firms severely limits a company's auditor choices and becomes increasingly difficult if the company is using other Big 4 firms for non-audit services. Due to the lack of options and the additional challenges auditor rotation poses for companies audited by a Big 4 firm, investors may view mandatory term limits as particularly costly for companies using a Big 4 auditor as compared to companies using a non-Big 4 auditor. Therefore, we predict a more negative (positive) market reaction to events that increase (decrease) the likelihood of mandatory rotation being implemented. We thus state the following directional hypothesis:

***H2c:*** *Companies audited by a Big 4 accounting firm will experience more negative (positive) cumulative abnormal returns to events that increase (decrease) the likelihood of mandatory audit firm rotation.*

Finally, we examine differences based on audit quality to isolate a group of companies where the benefits of rotation might be most pronounced – companies currently receiving a

lower quality audit. Investors may view rotation as a means to improve the audit quality of companies with lower quality audits through enhanced independence between the company and its auditor. The market, however, may view rotation in a negative light for companies already receiving high quality audits given that those companies risk losing an effective audit firm. Therefore, we predict a more positive (negative) market reaction to events that increase (decrease) the likelihood of mandatory rotation being implemented for companies currently receiving lower audit quality.[17] We thus state the following directional hypothesis:

***H2d:*** *Companies currently receiving a lower quality audit will experience more positive (negative) cumulative abnormal returns to events that increase (decrease) the likelihood of mandatory audit firm rotation.*



## III. RESEARCH METHOD

### Determination of Event Dates



As described in Section II, we examine ten event dates that ex-ante we expect will affect the likelihood that the PCAOB will implement a mandatory audit firm rotation policy in the United States. To identify these events, we first searched the PCAOB's website for speeches, news releases, meetings, and other announcements pertaining to mandatory firm rotation. We also used Factiva to search for other news related to the mandatory rotation debate in the United States.[18] Of these ten events, we view the first three events as increasing the likelihood of implementing mandatory audit firm rotation and the remaining seven events as decreasing the



[17] We note, however, that some investors, specifically transient investors, may prefer to invest in companies with lower audit quality and may react negatively (positively) to events that increase (decrease) the likelihood of rotation. This provides some tension for H2d and highlights the importance of controlling for the level of institutional ownership as greater institutional ownership should be associated with a greater presence of transient investors.

[18] While there have been several other announcements and meetings that relate to mandatory audit firm rotation, we only include events that contain new information related to the rotation discussion. For example, the PCAOB held public meetings on auditor independence and rotation in Washington, D.C., San Francisco, and Houston. These roundtable discussions did not present significantly different information than had already been expressed in other meetings and speeches. We therefore would not expect the market to adjust their expectations of the likelihood of rotation being implemented based upon these other events.

likelihood of implementing mandatory rotation. Table 1 lists the ten events and presents their likelihood classification (increasing or decreasing). Table 1 also includes a summary of contemporaneous news events. Following Li et al. (2008), we reviewed the news described in *The Wall Street Journal*'s "What's News" section during our event windows focusing on macroeconomic news as well as accounting, auditing, and legal issues. As we discuss our results in Section IV, we consider these contemporaneous news events.

<Insert Table 1 Here>

**Test of Overall Market Reaction**

To test the overall market reaction to the prospect of mandatory audit firm rotation, we examine three-day cumulative market-adjusted returns centered on each event date, following Armstrong et al. (2010) and Joos and Leung (2013). As the PCAOB proposed that all U.S. public companies would be subject to mandatory firm rotation if implemented, it is not appropriate to use a U.S. index as our market index. Using a similar methodology to that used by Joos and Leung (2013), who analyze the potential adoption of IFRS in the United States, we use the value-weighted MSCI world index excluding the U.S. (we refer to this index as the "world index") to estimate the impact of other economic news on U.S. returns during the event periods.[19] The difference between our sample companies' cumulative returns and the cumulative returns of the world index provides the cumulative market-adjusted returns (we refer to these returns as the "World CARs"). Prior finance literature, such as Eun and Shim (1989) and Hamao et al. (1990), finds that U.S. companies and foreign companies are exposed to "substantial common economic

[19] The MSCI World Index excluding the U.S. represents large and mid-cap companies across 23 developed markets. The countries included in this index are as follows: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Ireland, Israel, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom.

news" (Zhang 2007, 85).[20] The majority of foreign companies, however, are not affected by changes in U.S. regulation, including the potential implementation of mandatory audit firm rotation. Therefore, the world index reflects the impact of global economic news affecting both U.S. and foreign markets but does not account for the impact of news related to the possible U.S. implementation of mandatory audit firm rotation.[21]

While the world index should alleviate concerns related to worldwide confounding events, it might be argued that European companies were affected by the U.S. audit firm rotation events because European regulators were also debating whether to require mandatory audit firm rotation. It is possible that prior to their adoption of a rotation policy in 2014, European regulators may have been more (or less) likely to require firm rotation if the U.S. became more (or less) likely to adopt rotation. To the extent that European companies reacted to the U.S. rotation events, the use of the foreign market index, which includes these European companies, would eliminate part of the market reaction we aim to capture and therefore biases us against finding significant results. As an alternative approach, we also use a market index in our analysis that excludes American and European companies, namely the MSCI Pacific Index.[22]

In addition, we also perform the analysis using three-day non-event market-adjusted returns. Following Armstrong et al. (2010) and Joos and Leung (2013), we compute the cumulative market-adjusted returns for three consecutive non-event trading days beginning with the first trading day in 2011. We repeat this process for all non-event trading days in 2011, 2012, and 2013 without overlapping the three-day windows. We use the non-event market-adjusted

[20] In untabulated tests, we find a significant positive correlation of 0.85 between returns for the MSCI World index excluding the U.S. and returns for the CRSP value-weighted U.S. index.

[21] We recognize that using foreign market returns to adjust our returns does not eliminate the effect of U.S. specific news that is unrelated to mandatory firm rotation (Leuz 2007; Joos and Leung 2013). We, however, seek to address this issue using non-event returns as well as other measures discussed in Sections IV and V.

[22] The MSCI Pacific Index represents large and mid-cap companies in the following countries: Australia, Hong Kong, Japan, New Zealand, and Singapore.

returns as an alternative test of the significance of the overall market reaction. This procedure tests whether or not we are documenting returns for our events of interest that are significantly different from our sample companies' returns on other days in 2011, 2012, and 2013.

**Cross-Sectional Analysis**

In order to test hypotheses *H2a-H2d*, we employ the following regression model:

$$WorldCAR_{ie} \text{ or } PacificCAR_{ie} = \beta_0 + \beta_1 (Expert_{ie} \text{ or } Tenure_{ie} \text{ or } Big4_{ie} \text{ or } AbsAccr_{ie}) + \beta_2 Size_{ie} + \beta_3 Leverage_{ie} + B_4 MTB_{ie} + \beta_5 ROA_{ie} + \beta_6 SalesGrowth_{ie} + \beta_7 InstOwn_{ie} + \beta_8 Industry_{ie} + \beta_9 Event_{ie} + \varepsilon_{ie} \quad (1)$$

where *i* denotes an individual company and *e* denotes an event. Variables are defined in Appendix 1.

Following Lim and Tan (2010), we define auditors with a large industry market share as an industry expert. Industries are based on two-digit SIC code and the threshold for a "large" industry market share is 30 percent of total industry audit fees (Neal and Riley 2004; Lim and Tan 2010). We measure auditor tenure as the cumulative number of years the audit firm has been engaged by the company (Lim and Tan 2010). Big 4 is an indicator variable equal to one if the company is audited by a Big 4 public accounting firm. We use the absolute value of abnormal accruals to proxy for audit quality and specifically focus on the piecewise modified Jones model (Dechow et al. 1995; Ball and Shivakumar 2006). We initially include each test variable (*Expert, Tenure, Big4,* and *AbsAccr*) individually before including all test variables in the same regression model. We follow this approach as three of our test variables – industry expert, Big 4, and abnormal accruals – could each be viewed as proxies for audit quality. In addition, we control for other factors that potentially influence market returns: (1) company size, measured using the natural log of total assets, (2) company performance, measured using return on assets, (3) company leverage, (4) company growth opportunities, measured using the firm's market-to-book

ratio and sales growth, (5) company ownership, measured using the percent of institutional ownership, and (6) industry, measured via Fama-French 48 industry controls (Fama and French 1997; Zhang 2007; Li et al. 2008).

Given that the events affect all sample companies concurrently, we acknowledge the potential for cross-sectional correlation among the residuals estimated in equation (1). To address this issue, we include event date fixed effects and run the regressions with White's robust standard errors.

As noted previously, we also use non-event returns as a benchmark for our regression results, following Armstrong et al. (2010) and Joos and Leung (2013). Specifically, we estimate equation (1), replacing *WorldCAR* or *PacificCAR* with cumulative market-adjusted returns for all trading days in 2011, 2012, and 2013 that are not included in our ten event windows. We then compare the coefficients generated from these regressions to the coefficients from the regressions using *WorldCAR* or *PacificCAR*. To facilitate this comparison, we perform a seemingly unrelated estimation of the event date regressions and the non-event date regressions. A chi-square test is used to compare the coefficients generated from the seemingly unrelated estimation. This methodology addresses the concern that we might document findings that are a consequence of systematic relationships between our variables of interest and cumulative abnormal returns across any three-day window and not just our event windows.



**Sample**

We obtain U.S. company returns through CRSP and the prices for the MSCI World index excluding the U.S. through Datastream.[23] In order to be included in our analysis, the observation must include the appropriate data to calculate abnormal accruals as well as auditor tenure from

[23] Following Larcker et al. (2011), we use returns excluding dividends and distributions to limit the possibility that the results we document are due to corporate events.

Compustat. We also require that all observations have the necessary audit fee data from Audit Analytics in order to compute our industry expertise variable. Furthermore, we must be able to compute additional control variables from Compustat, including company size, leverage, sales growth, and market-to-book. We also gather institutional ownership data from Thomson Reuters. We exclude all financial companies from the sample as is common in prior studies.[24] The final sample is comprised of 28,008 company-event observations and 3,688 companies. While the final sample is comprised of substantially fewer observations than the total number of observations with stock returns available in CRSP and Datastream, the sample companies represent over 75 percent of the entire market capitalization of U.S. companies. Furthermore, untabulated results indicate that the cumulative abnormal returns of the 66,970 observations with return data in CRSP are comparable in magnitude and significance to the sample returns presented in Table 4. Please see Panel A of Table 2 for more detail regarding the sample selection procedure.



Panels B and C of Table 2 tabulate the descriptive statistics of the company-event observations surrounding the increasing and decreasing event dates, respectively.[25] The companies in the sample have an average size of $5.3 – 5.4 billion in total assets. In addition, Big 4 firms audit over 76 percent of the sample and an industry expert auditor is employed by 28 percent of the sample companies. The mean auditor tenure is approximately 11 years and the median auditor tenure is nine years. The average institutional ownership of a sample company is 52 percent.

[24] The exclusion of financial companies is particularly important for our study given the time period we are examining. During this time, many financial companies were experiencing downgrades. By excluding these companies, we are able to avoid capturing negative market returns that are due to these events rather than the potential implementation of rotation.

[25] The extreme 1 percent and 99 percent of each continuous variable is winsorized. Inferences remain qualitatively unchanged if these variables are not winsorized.

<Insert Table 2 Here>

Panels A and B of Table 3 present correlation matrices for company-event observations around the increasing and decreasing event dates, respectively. There is a significant negative (positive) correlation between *Tenure* and our cumulative abnormal returns as measured by *WorldCAR* and *PacificCAR* surrounding the increasing (decreasing) event dates. In addition, *Expert* and *Big4* are each negatively (positively) correlated with cumulative abnormal returns around increasing (decreasing) event dates as predicted, although *Expert* is insignificant in the increasing event date matrix. The correlation between *AbsAccr* and cumulative abnormal returns is significant and positive (negative) as we expected around the increasing (decreasing) event dates.



<Insert Table 3 Here>

## IV. RESULTS



### Overall Market Reaction



Before performing our cross-sectional examination, we assess whether the market as a whole viewed the prospect of mandatory audit firm rotation positively or negatively by analyzing abnormal returns across the ten events. In both panels of Table 4, columns 3 and 4 list the cumulative returns for the CRSP value-weighted index and the cumulative returns for our sample companies, respectively. Our sample returns follow the same pattern and magnitude of the CRSP value-weighted index returns (in fact, there is no statistically significant difference between columns 3 and 4), which suggests that our sample companies align with the behavior of the general U.S. market (Joos and Leung 2013). To compute *WorldCAR*, we adjust our cumulative raw returns by subtracting the MSCI World Index returns excluding the United States (column 4 – column 5 = column 6). Similarly, to generate *PacificCAR*, we subtract the MSCI Pacific Index

from our cumulative raw returns (column 4 – column 7 = column 8).

Following Li et al. (2008), we analyze the *WorldCAR* and *PacificCAR* for each event date in light of the contemporaneous news reported in Table 1. The news reported by *The Wall Street Journal* during our first two event windows appears to be mixed. During the June 2, 2011 window, for example, the stock market was reported as improving, but the market also suffered a drop by the Dow industrials. Similarly, during the August 11, 2011 event window, global financial markets rebounded while Goldman was being investigated for bribery law violations and productivity for the second quarter was reported as declining. Given this mixed news, it is unlikely that contemporaneous events would be driving our results on either of these event dates. Table 1 also reveals that the news reported during our third event window, August 16, 2011, is mostly positive with a rebound in Dow industrials and Fitch's affirmation of the triple-A status of the United States. Since *WorldCAR* and *PacificCAR*, our dependent variables, are both negative on this event date, it is unlikely that these negative market-adjusted returns can be explained by other contemporaneous news. During the September 23, 2011 event window, most of the news was negative, including investors' loss of faith in the stock market and Moody's cut of major financial institutions' debt ratings. However, *WorldCAR* and *PacificCAR* are both positive during this window so it is improbable that other contemporaneous news would be driving these positive returns. Table 1 documents mixed news for the next two event windows, October 4, 2011 and November 10, 2011, which renders it unlikely that contemporaneous news can explain our reported cumulative abnormal returns in Table 4. The other news events occurring during the December 14, 2011 and March 23, 2012 windows appear mostly negative with global markets retreating due to the European debt crisis and numerous falls in Dow industrials. *WorldCAR* and *PacificCAR*, however, are both positive on each of these event dates.

Finally, the news reported on March 28, 2012 and July 8, 2013 is mixed as the S&P 500 hit a four-year high and stocks extended their winning streak while analysts' forecasts disappointed investors and the Dow industrials fell. It is therefore unlikely that this mixed news is associated with the cumulative abnormal returns reported in Table 4. Overall, it does not appear that other reported news significantly impacted our World CARs and Pacific CARs. However, to further mitigate concerns, we perform an additional date sensitivity test described in our robustness section.

We next present the mean return for the events that increase the likelihood of rotation and the mean return for the events that decrease the likelihood of rotation in Panels A and B of Table 4, respectively. The mean World CAR return for the events that increase the likelihood of rotation is -0.0126 and is significantly different from zero ($H_0$=0) at the p<0.10 level.[26] We also compute the non-event day mean return adjusted for the MSCI World Index excluding the U.S. (0.0010) and use it as an alternate benchmark to test the significance of our mean event-day return ($H_0$=non-event day mean return). Using this alternate benchmark, we find that the mean return for increasing events is significantly different from the non-event day return (p<0.10 level). Panel A also reveals that the Pacific CAR mean return for increasing events is negative (-0.0108). However, this mean return is not significantly different from zero ($H_0$=0) or from the non-event day mean return ($H_0$=non-event mean) at conventional levels.

<Insert Table 4 Here>

Panel B presents the same analysis described above for the event dates that decrease the likelihood of rotation. The World CAR mean return for the decreasing events is 0.0121 and is significantly different from zero ($H_0$=0) at the p<0.10 level. The mean return for decreasing

[26] Note that the values provided in Table 4 are unwinsorized in order to clearly demonstrate how the market-adjusted returns are calculated. Results remain unchanged if winsorized mean returns are used.

events is also significantly different from the non-event day mean return ($H_0$=non-event mean) at the p<0.10 level. Similar to Panel A, Panel B also reveals that the mean return for decreasing events is positive when the MSCI Pacific Index is used as the market index (0.0134), but it is not significantly different from zero ($H_0$=0) or from the non-event day mean return ($H_0$=non-event mean).[27]

Overall, the market-adjusted returns provide limited evidence that investors oppose the prospect of mandatory audit firm rotation as they react negatively (positively) to events that increase (decrease) the likelihood of rotation. However, as found in prior literature, even though a regulatory event may have a marginally significant (or insignificant) average effect, cross-sectional analyses can reveal significant differential effects that provide important information about the regulatory policy (Pownall 1986; Armstrong et al. 2010; Joos and Leung 2013). We, therefore, focus our attention on the cross-sectional analysis below because we expect the market reaction to these U.S. rotation events to depend on the characteristics of companies' auditors.



**Regression Results**

We present the regression results for events that increase the likelihood of rotation and those that decrease the likelihood of rotation in Tables 5 and 6, respectively. As shown in the first column in both tables, we begin with our base model that includes only our control variables regressed on World CARs (Pacific CARs) in Panel A (B) of each table. In columns 2 – 5, we add one variable of interest to the base model (*Expert*, *Tenure*, *Big4*, and *AbsAccr*). Finally, in column 6, we include all of our test variables and controls in the same regression. Under each coefficient, we report the t-statistic (in parentheses), which tests whether the coefficient is

[27] The range of our significant overall mean returns (absolute value) is 0.0121 (decreasing event dates) to 0.0126 (increasing event dates), both of which fall within the 0.0086 to 0.0153 range of mean returns reported by Joos and Leung (2013) in their study of the possible U.S. adoption of IFRS (see Table 3 on p. 592 of Joos and Leung 2013). This provides some evidence that our mean returns are not inconsistent with prior studies.

different from zero and is computed using robust standard errors.

Panels A and B of Table 5 show the results of the estimation of equation (1), using World CARs and Pacific CARs as the dependent variable respectively, only for the three event dates that we expect increase the likelihood of mandatory audit firm rotation. As reported in column 2 of Panels A and B, *Expert* is negative and significant in our estimation of equation (1) using World CARs and Pacific CARs, respectively. This finding is consistent with *H2a* as it provides evidence that companies with an industry expert as an auditor experienced more negative cumulative abnormal returns to events that increased the prospect of mandatory audit firm rotation than companies without an industry expert. We also find that *Tenure* is negative and significant in column 3 of both panels, which provides evidence that as auditor tenure at a company increases, the market's reaction to the prospect of forced rotation becomes more negative. Column 4 reveals a negative and significant coefficient on *Big4*, which supports *H2c* as companies audited by a Big 4 firm are associated with lower cumulative abnormal returns around events that increased the prospect of rotation. *AbsAccr,* however, is insignificant in both panels. Finally, we find in column 6 that our results are consistent when all variables of interest are included in the same regression with the exception of a loss of significance on *Expert* (perhaps due to its high correlation with *Big4*).



<Insert Table 5 Here>

Table 5 also reveals that our results are robust to using non-event returns as a benchmark for determining significance. Below the regressions in each panel, we present the results of our comparison of coefficients between our event date regressions and our non-event date regressions using a seemingly unrelated estimation procedure. Using this procedure (referred to as SUEST in Stata), we first estimate the event date regressions and non-event date regressions

for each variable of interest separately (as we did in columns 2 – 5 in the regression results). In Table 5, we report the coefficients of our variables of interest obtained from this estimation for each equation as well as the related z-statistic. This analysis reveals that *Expert*, *Tenure*, and *Big4* are still negative and significant in the event date regressions estimated using the SUEST command. Column 3 presents tests of differences between the coefficients obtained with the event date regressions and the coefficients obtained with the non-event date regressions. The chi-square statistics reveal that the coefficients on *Expert*, *Tenure*, and *Big4* from our event date regressions are significantly different from the coefficients on those variables obtained with the non-event regressions. We also include the results of the seemingly unrelated estimation when all variables of interest are included in the model (as in column 6 in the main regression results). The test of differences shows that the coefficients for *Tenure* and *Big4* in the *WorldCAR* and *PacificCAR* event date regression are significantly different from the coefficients estimated in the non-event date regression. Overall, this procedure provides comfort that our findings are not due to systematic relationships between our test variables and cumulative abnormal returns that would hold on random three-day trading windows. Instead, we can more confidently state that our results are specific to the event windows that we examine.



Table 6 presents the regression results for the seven event dates that we expect decrease the likelihood of rotation. The results reveal that companies with longer auditor tenure (*Tenure*) and a Big 4 auditor (*Big4*) experienced a more positive reaction to the events that decreased the likelihood of rotation.[28] Furthermore, companies with higher absolute value of abnormal accruals (i.e., lower audit quality) experienced a more negative market reaction around the events that decreased the probability of implementation. *Expert*, however, is insignificant in this specification. Furthermore, the seemingly unrelated estimation procedure reveals that the

[28] Note that *Big4* loses its significance in column 6 of Panels A and B of Table 6.

coefficients of *Tenure* and *AbsAccr* in the decreasing event date regressions are significantly different from coefficients in the non-event regressions using World CARs and Pacific CARs.

<Insert Table 6 Here>

Overall, our cross-sectional analysis reveals that companies audited by an industry expert (*Expert*), companies with longer auditor tenure (*Tenure*), and companies with a Big 4 auditor (*Big4*) experienced significantly negative reactions to events that increased the likelihood of mandatory rotation. Companies with longer auditor tenure and Big 4 auditors also experienced significantly more positive abnormal returns to events that decreased the likelihood of mandatory rotation while companies with higher absolute value of abnormal accruals (i.e., lower audit quality) experienced significantly more negative returns surrounding the decreasing event dates. It appears that our results for the *Expert* (*AbsAccr*) cross-section are primarily driven by the increasing (decreasing) event dates. Moreover, it is interesting to note the consistently significant results associated with the *Tenure* variable – coefficients on this variable are always significantly negative on dates when the likelihood of rotation increased and positive on dates when the likelihood of rotation decreased. It appears that market participants view long auditor tenure in a positive manner, which is ironic given that a motivating force behind this PCAOB project was the perceived pernicious effects of long auditor tenure.



**Robustness Tests**

***Date Sensitivity***

As described in Section III, we performed a comprehensive news search to determine the relevant event dates for our study. To alleviate the concern that our results are sensitive to the inclusion of specific dates, we re-estimate equation (1) leaving out one event date at a time. In untabulated analyses, we find that the exclusion of any one event date does not impact the

*Tenure* result. We also find that the exclusion of any increasing (decreasing) event date does not affect the *Expert* (*AbsAccr*) result. However, the *Big4* result appears to be somewhat sensitive to the inclusion of some event dates. Overall, this robustness test provides comfort that our findings are generally not driven by one specific date.

***Quasi-U.S. Control Group***

Since the PCAOB's Concept Release did not specifically state or imply that any publicly traded companies would be exempt from an audit firm rotation policy, a natural U.S.-specific control group does not exist. However, notwithstanding the language in the PCAOB's Concept Release, it is possible that a final rule would carve-out smaller companies, as has been the case in the implementation of several other regulations. Most notably, non-accelerated filers are exempt from Section 404(b) of SOX, which requires auditors to attest to and report on management's assessment of internal controls. Investors may believe that a similar exemption will be made for non-accelerated filers if the PCAOB adopts mandatory firm rotation. In fact, on November 29, 2011, there were indications that the Jumpstart Our Business Startups (JOBS) Act that was making its way through Congress would be amended to exempt emerging growth companies from any PCAOB rule that may require mandatory audit firm rotation.[29] While the JOBS Act was not signed into law until April 5, 2012, this legislative discussion that occurred during our event period provides support for the possible exemption of smaller, non-accelerated filers from a rotation policy.

If investors factor in the possibility that non-accelerated filers may not be required to comply with rotation, we would expect to see an insignificant market reaction for these

[29] In a letter to members of the Committee on Financial Services of the House of Representatives, the Chamber of Commerce expressed its support for an "amendment expected to be offered by Representative Spencer Bachus to H.R. 3213 [the JOBS Act]" (Josten 2011, 1). Moreover, this exemption (for emerging growth companies) from any future PCAOB rule requiring auditor rotation was included in the final version of the JOBS Act that was signed into law.

companies. In untabulated tests, we examine the overall market reaction to the increasing event dates and the decreasing event dates for two subgroups: accelerated filers and non-accelerated filers. We find that the mean World CAR for accelerated filers across the increasing (decreasing) event dates is -0.010 (0.015), which is significantly different from zero (at the $p<0.01$ level two-tailed). More importantly, the mean return for the increasing (decreasing) event dates are significantly more negative (positive) than the mean returns of non-accelerated filers around the increasing (decreasing) event dates at the $p<0.01$ level two-tailed. This analysis suggests that investors believe that non-accelerated filers are unlikely to be required to comply with rotation should it be implemented. As such, we use non-accelerated filers as a U.S.-specific quasi control group.

By creating an index of non-accelerated filers, we are able to examine the overall market reaction to disclosures concerning potential audit firm rotation since we are able to utilize a U.S. control group as a counterfactual. In order to perform this analysis, we first create a value-weighted index based on the returns of our sample of non-accelerated filers. We then limit our analysis to all accelerated filers (N=22,315) and compute cumulative abnormal returns as the difference between the sample companies' cumulative returns and the cumulative returns of the non-accelerated filers index. We find that the mean cumulative abnormal return for accelerated filers is -0.0048 ($p<0.01$) and 0.0007 ($p<0.05$) surrounding the increasing event dates and decreasing event dates, respectively. This supports our inference that investors, on average, negatively view the prospect of rotation.

In addition, we use the cumulative abnormal returns computed using a non-accelerated filers index in our cross-sectional regression analysis. In untabulated tests, we find quantitatively and qualitatively similar results to the findings reported in Table 5 and Table 6 for each of our

variables of interest. Overall, the use of this U.S. specific control group (i.e., non-accelerated filers) provides additional support for our finding that investors on average oppose the prospect of mandatory firm rotation and that this opposition is stronger for companies with longer audit firm tenure, Big 4 auditors, industry expert auditors, and companies with higher audit quality.[30]

## V. LIMITATIONS AND CONCLUSION

While we cannot completely rule out the possibility that the abnormal market reaction to the rotation events is affected by confounding news, we take several measures to lessen this concern. First, we utilize two foreign market indices, which capture economic news likely common to U.S. and world markets. For instance, one potentially pervasive confounding event surrounding our event windows involves the European debt crisis, but the use of the MSCI World index excluding the U.S. to adjust our returns should mitigate the effects of the debt crisis as it includes European countries that are equally and arguably much more affected by the crisis. Second, other major economic events during this time dealt with the failings and downgrades of banks. To ensure that these events were not driving our results, we excluded financial institutions from our analysis. Third, we use non-event day returns as an alternative benchmark for our overall market tests and regression results. This methodology provides evidence that our findings are not a consequence of systematic relationships between our variables of interest and cumulative abnormal returns. Finally, we would not expect to find the predicted differential impacts of company-auditor characteristics on abnormal returns if the market reacted mostly to events outside of the mandatory firm rotation discussion.

Given the potentially far-reaching effects of adopting a policy of mandatory auditor

[30] As in our main analysis presented in Tables 5 and 6, *Expert* is only significant in the increasing event date regression and *AbsAccr* is only significant in the decreasing event date regression.

rotation, it is important to consider the market implications of such a policy. We provide the first evidence as to how the U.S. stock market reacted to events that either increased or decreased the likelihood that a rotation policy would be adopted. Our results provide some evidence that the market generally reacted negatively to the possibility of mandatory firm rotation, and most importantly, the negative reaction was most pronounced for companies currently receiving high audit quality and, contrary to the concerns about long auditor tenure, for companies having longer auditor tenure.

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## TABLE 1: EVENT SUMMARY

Table 1 provides a summary of the events analyzed in this study, the classification of the event as either increasing or decreasing the likelihood that mandatory rotation will be implemented, and the predicted market reaction if expected benefits outweigh expected costs or if expected costs exceed expected benefits (in parentheses). The last two columns of the table provides a summary of the headlines included in the "What's News" Section of *The Wall Street Journal* on the three trading days centered around the event date that relate to macroeconomic news as well as accounting, auditing, and legal issues.

| | | | | | Contemporaneous Events | |
|---|---|---|---|---|---|---|
| | **Event** | **Description** | **Increasing or Decreasing Likelihood of Implementation** | **Predicted Market Reaction if Benefits>Costs (Benefits<Costs)** | **Macroeconomic News** | **Accounting, Auditing, & Legal News** |
| **1** | 6/2/2011 | PCAOB Chairman Doty announced plans to formally explore mandatory rotation | Increasing | + (−) | 6/1/2011: Stock markets rallied worldwide; crude oil prices fell; home prices in the U.S. have fallen to 2002 levels. | 6/1/2011: SAC is a focus of an SEC investigation into whether traders used inside information to profit from the 2007 takeover of MedImmune. |
| | | | | | 6/2/2011: Dow industrials fall; Treasurys continued their run; Big banks are boosting profits through commodities trading. | 6/3/2011: SEC probes China auditors; A second-generation employee of Madoff is expected to plead guilty to criminal charges next week and cooperate with authorities. |
| | | | | | 6/3/2011: Moody's said it may downgrade some U.S. banks; Blue-chip stocks drop; Upscale merchants and retailers that sell gasoline posted strong sales growth. | |
| **2** | 8/11/2011 | PCAOB public announcement of open meeting to formally consider the issuance of the Concept Release | Increasing | + (−) | 8/10/2011: Market turmoil is posing an unexpected challenge for luxury retailers; Productivity declined at a 0.3% annual rate in the second quarter. | 8/12/2011: Goldman said U.S. securities regulators are investigating whether it broke bribery laws. |
| | | | | | 8/11/2011: Companies have been socking cash away since the financial crisis; Fed officials would need to see evidence of continued weakening in economic growth in coming months before purchasing more government bonds. | 8/11/2011: Groupon removed an unconventional accounting measurement from financial statements for the e-commerce firm's IPO, bowing to regulatory pressure. |
| | | | | | 8/12/2011: Global financial markets rebounded sharply. | 8/12/2011: State attorneys general filed civil suits against BNY Mellon alleging that the bank cheated pension funds; The trustee recovering money for investors cheated by Bernard Madoff sued Abu Dhabi's sovereign-wealth fund, seeking $300 million. |
| **3** | 8/16/2011 | PCAOB issued a Concept Release to obtain public comments on mandatory rotation | Increasing | + (−) | 8/15/2011: After taking big risks and big losses in 2008, wealthy investors are hunkering down with cash, gold, farmland and other haven investments. | 8/15/2011: Florida lawsuit alleges that BNY Mellon gave some clients, but not public pension funds, red-carpet treatment in currency trading. |
| | | | | | 8/16/2011: The Dow industrials rose more than 200 points. | 8/16/2011: A Deutsche Boerse unit is being sued for allegedly assisting Iran in fraudulently moving $250 million out of the U.S. financial system. |
| | | | | | 8/17/2011: Fitch affirmed the triple-A status of the U.S., leaving S&P as the sole major credit-rating firm to downgrade the nation's rating; Home prices in some of the hardest-hit metro areas are far below pre-bubble levels. | 8/17/2011: A federal appeals court upheld a finding by the trustee in the Madoff case; A federal judge denied a bid by Galleon founder Rajaratnam to set aside his conviction for insider trading. |
| **4** | 9/23/2011 | PCAOB Member Hanson voiced his concerns about implementing a rotation policy | Decreasing | − (+) | 9/22/2011: The Fed decided to dramatically recast its $2.65 trillion securities portfolio; Moody's cut the debt ratings of BofA, Citigroup and Wells Fargo. | 9/22/2011: The SEC charged a former Goldman employee with tipping off his father in the first insider-trading case related to the market in ETFs. |

**TABLE 1: EVENT SUMMARY (CONTINUED)**

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | 9/23/2011: Global investors dumped everything from stocks to corporate bonds to foreign currencies and fled to the relative safety of Treasurys. | 9/23/2011: Schapiro said she had apologized to other members of the SEC for not informing them that the agency's former top attorney had a potential conflict in the Madoff probe. |
| | | | | | 9/26/2011: Investors are losing faith in holding stocks; Money-market funds could soon get some much-needed relief as a result of the Fed's latest stimulus plan. | 9/26/2011: Groupon remains committed to an IPO; A court dealt a blow last week to hedge funds and other investors who seek to buy life-insurance policies. |
| **5** | 10/4/2011 | PCAOB Member Goelzer expressed serious doubts about rotation | Decreasing | − (+) | 10/3/2011: An anti-Wall Street protest in New York entered its third week with hundreds of arrests for blocking traffic. | 10/3/2011: Citigroup might shake up its top ranks in Japan following a regulatory investigation that found alleged lapses in the bank's operations there. |
| | | | | | 10/4/2011: The Fed began implementing shifting its Treasury holdings into longer-term U.S. debt; U.S. auto sales rose nearly 10% in September from a year earlier. | 10/5/2011: Four people were charged in a $20 million federal procurement-fraud scandal. |
| | | | | | 10/5/2011: Stock investors beat back the bear, as the S&P 500 staged a surge; oil and precious metals slumped. | |
| **6** | 11/10/2011 | PCAOB Chairman Doty recognizes the serious operational challenges that rotation presents | Decreasing | − (+) | 11/9/2011: The Dow industrials climbed out of negative territory, gaining 101.79 points; Fannie Mae said it would seek another $7.8 billion in U.S. government aid after posting a wider loss for the third quarter. | 11/9/2011: Raj Rajaratnam, the former hedge-fund manager was ordered to pay a record financial penalty of more than $92.8 million in a related civil case brought by the SEC. |
| | | | | | 11/10/2011: U.S. home prices fell in nearly three-quarters of metropolitan areas. | 11/10/2011: Goldman and Morgan Stanley are considering changing the way they account for certain assets; A federal judge questioned the SEC about why it didn't force Citigroup to admit to "what the facts are" before settling a mortgage-bond case. |
| | | | | | 11/11/2011: U.S. stocks climbed, with the Dow industrials finishing up 112.85 points; Concerns are rising that the FHA could exhaust its reserves if the economy doesn't recover soon, increasing the risk the agency would seek a taxpayer bailout. | 11/11/2011: Nabors Industries said the SEC has opened an investigation into perks received by the oil-drilling contractor's executives; Morgan Stanley became the second Wall Street giant to agree to a set of standards that aim to halt foreclosure abuses. |
| **7** | 12/14/2011 | AICPA released its comment letter opposing rotation | Decreasing | − (+) | 12/13/2011: Markets around the globe retreated amid concern about Europe's ability to tackle its debt crisis; Occupy Wall Street protests aimed at shutting West Coast ports slowed business but fell short of a full shutdown; The economy is on track to grow faster in the current period than any time since the second quarter of 2010, but big risks abound. | 12/13/2011: Diamond Foods missed a deadline for filing its quarterly results as the snack maker works through an internal accounting investigation; The SEC sued the agency that insures U.S. brokerage accounts to force it to pay victims of Stanford's alleged Ponzi scheme; Glaxo's subsidiary and the unit's ex-chief were charged by the SEC with defrauding shareholders. |
| | | | | | 12/14/2011: The Dow industrials fell 66.45 points; Consumers increased spending only modestly heading into the holiday season; The Fed kept its easy-money policies and gave a guarded forecast. | 12/14/2011: Securities regulators and prosecutors are battling what they say is a nationwide surge of investment fraud against baby boomers. |
| | | | | | 12/15/2011: The Dow industrials slid 131.46 points. | 12/15/2011: The SEC's staff is expected to recommend that the agency appeal last month's rejection by a U.S. judge of a proposed settlement with Citigroup; Olympus unveiled results, lifting the immediate threat of a stock delisting but revealing significant damage from an accounting scandal; A Senate committee approved legislation that would explicitly prohibit members of Congress from trading on insider information. |

**TABLE 1: EVENT SUMMARY (CONTINUED)**

| | | | | | | |
|---|---|---|---|---|---|---|
| **8** | 3/23/2012 | Announcement of proposed amendment by the U.S. House of Representatives that would prohibit rotation | Decreasing | − (+) | 3/22/2012: Real-estate markets are showing signs of life as falling prices spur buyer demand; U.S. money-market funds sharply increased the amount of euro-zone bank debt they held last month; Sagging energy shares pulled the Dow industrials to a second straight loss. | 3/22/2012: Deutsche Bank restructured its U.S. unit so that it is no longer a bank-holding company, a move to avoid Dodd-Frank capital requirements. |
| | | | | | 3/23/2012: New signs of slowing global growth rattled investors, sending the Dow industrials down 78.48 points; New jobless claims fell to a four-year low last week. | 3/23/2012: The SEC is probing whether some rapid-fire trading firms have used close links to computerized stock exchanges to gain an unfair advantage; The Senate approved legislation easing financial-reporting rules for IPOs and an ethics bill banning insider trading by members of Congress; U.S. regulators are preparing a drive to tell workers at nonunionized businesses they have many of the same rights as union members. |
| | | | | | 3/26/2012: In the tussle between stocks and bonds, the former are regaining the upper hand. | 3/26/2012: BATS Global Markets killed its initial public offering on Friday to head off possible litigation and minimize damage to the computerized stock exchange's credibility on Wall Street. |
| **9** | 3/28/2012 | Hearing on proposed amendment in the U.S. House of Representatives that would prohibit rotation | Decreasing | − (+) | 3/27/2012: S&P 500 hitting its highest close in almost four years; The Dow gained 160.90 points. | 3/27/2012: BATS's chief has reached out to directors about his future at the company after the computerized-exchange operator botched its IPO; The FTC is pushing data collectors to adopt better digital-privacy practices. |
| | | | | | 3/28/2012: Stocks slipped as economic data met expectations but failed to excite investors. | 3/28/2012: The U.S. isn't winning the war against hackers, the FBI's top cyber cop said; Legislation to ease an array of business regulations, especially rules for IPOs, passed the House. |
| | | | | | 3/29/2012: Stocks dropped with the Dow industrials shedding 71.52 points. | 3/29/2012: Shares of Annie's rose 89% in the organic food maker's first day of trading, a hopeful signal for an IPO market that has been torpid for months; Regulators are examining volatile trading in a complex exchange-traded note. |
| **10** | 7/8/2013 | U.S. House of Representatives voted 321 to 62 to prohibit rotation | Decreasing | − (+) | 7/5/2013: The world's economic growth is increasingly falling on the shoulders of U.S. consumers; Steel prices have risen 10% in recent weeks. | 7/5/2013: U.S. prosecutors have concluded that they don't have enough evidence against hedge-fund billionaire Cohen to file criminal insider-trading charges; The FCC gave final regulatory approval to SoftBank's three-way merger with Sprint Nextel and Clearwire. |
| | | | | | 7/8/2013: As earnings season kicks off, investors who hope that U.S. companies will come to the stock market's rescue when the Fed scales back its bond-buying program are likely to be disappointed, according to analysts' forecasts; The U.S. office market continued its slow-but-steady recovery. | 7/8/2013: As regulators finalize the Volcker rule, banks are reaching widely different interpretations of a provision outlining curbs on employee participation in bank-run investments. |
| | | | | | 7/9/2013: Stocks extended their winning streak to three sessions, with the Dow industrials advancing 88.85 points. | |

## TABLE 2: SAMPLE SELECTION & DESCRIPTIVE STATISTICS

Panel A provides details of the sample construction. Panels B and C present descriptive statistics for company-event observations around increasing event dates and decreasing event dates, respectively. All variables are defined in Appendix 1 and the extreme 1 percent and 99 percent of each continuous variable is winsorized. Note that *Tenure* and *Size* are not presented in logged form in order to provide more useful information to the reader.

**Panel A: Sample Selection**

| | Company-event | Company |
|---|---|---|
| Observations with returns for at least one of the events | 66,970 | 7,544 |
| Less: observations missing the appropriate data to calculate abnormal accruals | (30,682) | |
| Less: observations missing auditor tenure data | (701) | |
| Less: observations missing necessary audit fee data from Audit Analytics | (4,808) | |
| Less: observations missing control variables | (1,091) | |
| Less: financial companies | (1,680) | |
| Final Sample Observations for All Event Dates | **28,008** | **3,688** |



**Panel B: Descriptive Statistics for Increasing Event Dates (N=8,147)**

| Variable | Mean | 25% | Median | 75% | SD |
|---|---|---|---|---|---|
| *WorldCAR* | -0.0124 | -0.0393 | -0.0143 | 0.0109 | 0.0494 |
| *PacificCAR* | -0.0108 | -0.0381 | -0.0131 | 0.0135 | 0.0501 |
| *Expert* | 0.2818 | 0.0000 | 0.0000 | 1.0000 | 0.4499 |
| *Tenure (in years)* | 11.0077 | 5.0000 | 9.0000 | 14.0000 | 9.2019 |
| *Big4* | 0.7657 | 1.0000 | 1.0000 | 1.0000 | 0.4236 |
| *AbsAccr* | 0.0925 | 0.0203 | 0.0486 | 0.1109 | 0.1242 |
| *Size (in millions)* | 5259.15 | 152.62 | 633.41 | 2744.32 | 15925.92 |
| *Leverage* | 0.2036 | 0.0065 | 0.1609 | 0.3260 | 0.2076 |
| *MTB* | 2.7578 | 1.2693 | 2.0125 | 3.2800 | 4.1504 |
| *ROA* | 0.0156 | -0.0076 | 0.0417 | 0.0924 | 0.1944 |
| *SalesGrowth* | 0.2172 | 0.0093 | 0.1106 | 0.2820 | 0.4845 |
| *InstOwn* | 0.5187 | 0.1741 | 0.5837 | 0.8332 | 0.3435 |



**Panel C: Descriptive Statistics for Decreasing Event Dates (N=19,861)**

| Variable | Mean | 25% | Median | 75% | SD |
|---|---|---|---|---|---|
| *WorldCAR* | 0.0113 | -0.0117 | 0.0111 | 0.0357 | 0.0472 |
| *PacificCAR* | 0.0118 | -0.0170 | 0.0097 | 0.0402 | 0.0509 |
| *Expert* | 0.2776 | 0.0000 | 0.0000 | 1.0000 | 0.4478 |
| *Tenure (in years)* | 11.3408 | 5.0000 | 9.0000 | 15.0000 | 9.3576 |
| *Big4* | 0.7649 | 1.0000 | 1.0000 | 1.0000 | 0.4241 |
| *AbsAccr* | 0.0962 | 0.0212 | 0.0522 | 0.1154 | 0.1270 |
| *Size (in millions)* | 5442.28 | 159.58 | 665.58 | 2909.53 | 16215.33 |
| *Leverage* | 0.2054 | 0.0066 | 0.1638 | 0.3293 | 0.2070 |
| *MTB* | 2.6787 | 1.1730 | 1.9154 | 3.2064 | 4.0878 |
| *ROA* | 0.0125 | -0.0086 | 0.0422 | 0.0913 | 0.1940 |
| *SalesGrowth* | 0.1933 | 0.0055 | 0.1035 | 0.2509 | 0.4643 |
| *InstOwn* | 0.5204 | 0.1879 | 0.5848 | 0.8283 | 0.3387 |

## TABLE 3: CORRELATION MATRICES

Panels A and B report the correlation matrices for company-event observations around increasing event dates and decreasing event dates, respectively. All variables are defined in Appendix 1 and the extreme 1 percent and 99 percent of each continuous variable is winsorized. * indicates that the correlation is significant at the 0.10 level or less in a two-tailed test (based on one-tailed test where relation is predicted).

**Panel A: Increasing Event Dates (N=8,147)**

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | *WorldCAR* | 1.0000 | | | | | | | | | | | |
| **2** | *PacificCAR* | 0.9952* | 1.0000 | | | | | | | | | | |
| **3** | *Expert* | -0.0134 | -0.0130 | 1.0000 | | | | | | | | | |
| **4** | *Tenure* | -0.0386* | -0.0373* | 0.1434* | 1.0000 | | | | | | | | |
| **5** | *Big4* | -0.0317* | -0.0304* | 0.3349* | 0.3304* | 1.0000 | | | | | | | |
| **6** | *AbsAccr* | 0.0175* | 0.0168* | -0.1116* | -0.1472* | -0.1790* | 1.0000 | | | | | | |
| **7** | *Size* | 0.0193* | 0.0206* | 0.2981* | 0.3110* | 0.5181* | -0.3023* | 1.0000 | | | | | |
| **8** | *Leverage* | 0.0420* | 0.0411* | 0.0976* | 0.0488* | 0.1485* | -0.1234* | 0.3470* | 1.0000 | | | | |
| **9** | *MTB* | -0.0170 | -0.0167 | 0.0021 | 0.0095 | 0.0413* | 0.0584* | -0.0518* | -0.0982* | 1.0000 | | | |
| **10** | *ROA* | -0.0163 | -0.0151 | 0.0391* | 0.0885* | 0.0809* | -0.3138* | 0.3017* | -0.0099 | -0.0533* | 1.0000 | | |
| **11** | *SalesGrowth* | 0.0150 | 0.0150 | -0.0554* | -0.1104* | -0.0090 | 0.1968* | -0.0530* | -0.0806* | 0.0835* | 0.0031 | 1.0000 | |
| **12** | *InstOwn* | -0.0769* | -0.0745* | 0.1475* | 0.2783* | 0.3700* | -0.2063* | 0.3723* | 0.0484* | 0.0549* | 0.1736* | -0.0690* | 1.0000 |

**Panel B: Decreasing Event Dates (N=19,861)**

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | *WorldCAR* | 1.0000 | | | | | | | | | | | |
| **2** | *PacificCAR* | 0.9618* | 1.0000 | | | | | | | | | | |
| **3** | *Expert* | 0.0342* | 0.0354* | 1.0000 | | | | | | | | | |
| **4** | *Tenure* | 0.0705* | 0.0579* | 0.1560* | 1.0000 | | | | | | | | |
| **5** | *Big4* | 0.0597* | 0.0553* | 0.3315* | 0.3227* | 1.0000 | | | | | | | |
| **6** | *AbsAccr* | -0.0596* | -0.0610* | -0.1036* | -0.1487* | -0.1595* | 1.0000 | | | | | | |
| **7** | *Size* | 0.0531* | 0.0462* | 0.2866* | 0.3191* | 0.5156* | -0.2975* | 1.0000 | | | | | |
| **8** | *Leverage* | -0.0098 | -0.0106 | 0.0936* | 0.0408* | 0.1433* | -0.0975* | 0.3419* | 1.0000 | | | | |
| **9** | *MTB* | 0.0134* | 0.0183* | 0.0009 | 0.0108 | 0.0417* | 0.0515* | -0.0342* | -0.0802* | 1.0000 | | | |
| **10** | *ROA* | 0.0635* | 0.0624* | 0.0497* | 0.1048* | 0.0983* | -0.3327* | 0.3191* | -0.0282* | -0.0361* | 1.0000 | | |
| **11** | *SalesGrowth* | -0.0528* | -0.0390* | -0.0448* | -0.1103* | -0.0025 | 0.1632* | -0.0453* | -0.0647* | 0.0804* | 0.0129* | 1.0000 | |
| **12** | *InstOwn* | 0.1334* | 0.1213* | 0.1525* | 0.2875* | 0.3608* | -0.1982* | 0.3738* | 0.0435* | 0.0693* | 0.1986* | -0.0464* | 1.0000 |

## TABLE 4: OVERALL MARKET REACTION

Panels A and B of Table 4 provide an analysis of the overall market reaction to the three increasing event dates and the seven decreasing event dates, respectively. Column 3 reports the three-day cumulative returns for the CRSP value-weighted index centered on each event date. Column 4 reports the three-day cumulative raw return of our sample companies centered on each event date. Column 5 presents the three-day cumulative returns for the MSCI World Index excluding the U.S. centered on each event date. World CAR reported in column 6 is the difference between our sample's cumulative returns presented in column 4 and the MSCI World Index excluding US returns presented in column 5. Column 7 presents the three-day cumulative returns for the MSCI Pacific Index centered on each event date. Pacific CAR reported in column 8 is the difference between our sample's cumulative returns presented in column 4 and the MSCI Pacific Index returns presented in column 7. We test whether the *Mean Return* for World CAR (column 6) and the *Mean Return* for Pacific CAR (column 8) are significantly different from zero in each panel as denoted by *t-statistic ($H_0$=0)*. *Non-Event Day Mean Return* is the average of non-overlapping three-day market-adjusted returns for all non-event trading days in 2011, 2012, and 2013. *T-statistic ($H_0$=non-event mean)* tests whether the mean return for our event dates is significantly different from the *Non-Event Day Mean Return*. Please note that all values presented in the table are unwinsorized in order to clearly demonstrate how the market-adjusted returns are calculated. * indicates significance at the 0.10 level (two-tailed).

**Panel A: Increasing Event Dates**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | **Event Date** | **Likelihood of Implementation** | **CRSP Value-Weighted Index Returns** | **Sample Cumulative Return** | **MSCI World Index ex. US** | **World CAR (4) - (5)** | **MSCI Pacific Index** | **Pacific CAR (4) - (7)** |
| **1** | 6/2/2011 | Increasing | -0.0332 | -0.0369 | -0.0179 | -0.0190 | -0.0195 | -0.0174 |
| **2** | 8/11/2011 | Increasing | 0.0109 | 0.0150 | 0.0208 | -0.0059 | 0.0129 | 0.0020 |
| **3** | 8/16/2011 | Increasing | 0.0123 | 0.0078 | 0.0206 | -0.0129 | 0.0250 | -0.0172 |
| | | **Mean Return** | **-0.0033** | **-0.0047** | **0.0079** | **-0.0126** | **0.0061** | **-0.0108** |
| | | *t-statistic ($H_0$=0)* | | | | *-3.33** | | *-1.69* |
| | | Non-Event Day Mean Return | | | | 0.0010 | | 0.0011 |
| | | *t-statistic ($H_0$=non-event mean)* | | | | *-3.59** | | *-1.86* |

**Panel B: Decreasing Event Dates**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | **Event Date** | **Likelihood of Implementation** | **CRSP Value-Weighted Index Returns** | **Sample Cumulative Return** | **MSCI World Index ex. US** | **World CAR (4) - (5)** | **MSCI Pacific Index** | **Pacific CAR (4) - (7)** |
| **4** | 9/23/2011 | Decreasing | -0.0072 | -0.0179 | -0.0446 | 0.0267 | -0.0560 | 0.0381 |
| **5** | 10/4/2011 | Decreasing | 0.0108 | 0.0099 | -0.0253 | 0.0352 | -0.0447 | 0.0546 |
| **6** | 11/10/2011 | Decreasing | -0.0109 | -0.0144 | -0.0061 | -0.0083 | -0.0090 | -0.0054 |
| **7** | 12/14/2011 | Decreasing | -0.0207 | -0.0242 | -0.0279 | 0.0038 | -0.0345 | 0.0103 |
| **8** | 3/23/2012 | Decreasing | 0.0102 | 0.0132 | 0.0070 | 0.0062 | 0.0029 | 0.0103 |
| **9** | 3/28/2012 | Decreasing | -0.0115 | -0.0138 | -0.0181 | 0.0043 | 0.0093 | -0.0231 |
| **10** | 7/8/2013 | Decreasing | 0.0216 | 0.0206 | 0.0038 | 0.0168 | 0.0120 | 0.0086 |
| | | **Mean Return** | **-0.0011** | **-0.0038** | **-0.0159** | **0.0121** | **-0.0171** | **0.0134** |
| | | *t-statistic ($H_0$=0)* | | | | *2.13** | | *1.36* |
| | | Non-Event Day Mean Return | | | | 0.0010 | | 0.0011 |
| | | *t-statistic ($H_0$=non-event mean)* | | | | *1.96** | | *1.25* |

**TABLE 5: REGRESSION ANALYSIS FOR INCREASING EVENT DATES**

Panels A and B of Table 5 present our regression analysis of the three increasing event dates using *WorldCAR* and *PacificCAR* as the dependent variables, respectively. All variables are defined in Appendix 1 and the extreme 1 percent and 99 percent of each continuous variable is winsorized. *,**, and *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively (based on one-tailed test where relation is predicted). Below each panel, we present the results of our seemingly unrelated estimation that compares our increasing event date regressions to non-event date regressions.

**Panel A: World CARs**

| VARIABLES | Prediction | (1) World CAR | (2) World CAR | (3) World CAR | (4) World CAR | (5) World CAR | (6) World CAR |
|---|---|---|---|---|---|---|---|
| *Expert* | - | | -0.0022** | | | | -0.0015 |
| | | | (-1.76) | | | | (-1.20) |
| *Tenure* | ? | | | -0.0015** | | | -0.0012* |
| | | | | (-2.23) | | | (-1.76) |
| *Big4* | - | | | | -0.0040** | | -0.0030* |
| | | | | | (-2.20) | | (-1.63) |
| *AbsAccr* | + | | | | | 0.0056 | 0.0048 |
| | | | | | | (0.86) | (0.74) |
| *Leverage* | ? | 0.0072** | 0.0070** | 0.0068** | 0.0071** | 0.0073** | 0.0067** |
| | | (2.18) | (2.10) | (2.05) | (2.15) | (2.19) | (2.01) |
| *Size* | ? | 0.0006** | 0.0008** | 0.0008** | 0.0011*** | 0.0007** | 0.0012*** |
| | | (2.06) | (2.39) | (2.50) | (3.07) | (2.19) | (3.39) |
| *ROA* | ? | -0.0009 | -0.0012 | -0.0011 | -0.0017 | -0.0001 | -0.0012 |
| | | (-0.22) | (-0.29) | (-0.26) | (-0.41) | (-0.02) | (-0.29) |
| *MTB* | ? | -0.0001 | -0.0001 | -0.0001 | -0.0001 | -0.0001 | -0.0001 |
| | | (-0.79) | (-0.77) | (-0.76) | (-0.70) | (-0.81) | (-0.69) |
| *SalesGrowth* | ? | 0.0002 | 0.0002 | -0.0000 | 0.0003 | 0.0000 | -0.0001 |
| | | (0.17) | (0.15) | (-0.00) | (0.23) | (0.01) | (-0.07) |
| *InstOwn* | ? | -0.0116*** | -0.0115*** | -0.0110*** | -0.0106*** | -0.0114*** | -0.0101*** |
| | | (-6.69) | (-6.64) | (-6.30) | (-5.96) | (-6.55) | (-5.65) |
| Industry Controls | | Yes | Yes | Yes | Yes | Yes | Yes |
| Event Fixed Effects | | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | | 8,147 | 8,147 | 8,147 | 8,147 | 8,147 | 8,147 |
| R-squared | | 0.033 | 0.033 | 0.034 | 0.034 | 0.033 | 0.035 |

*Seemingly Unrelated Estimation Results*

| | | (1) Event Date Estimation | | | (2) Non-Event Date Estimation | | | (3) Test of Differences |
|---|---|---|---|---|---|---|---|---|
| | | coefficient | z-stat | | coefficient | z-stat | | chi2 |
| Separate Test Variables: | | | | | | | | |
| *Expert* | - | -0.0022 | -1.77** | ? | 0.0001 | 0.93 | - | 3.42** |
| *Tenure* | ? | -0.0015 | -2.24** | ? | 0.0001 | 1.59 | ? | 5.68** |
| *Big4* | - | -0.0040 | -2.21** | ? | 0.0006 | 3.48*** | - | 6.33*** |
| *AbsAccr* | + | 0.0056 | 0.86 | ? | -0.0007 | 1.29 | + | 0.94 |
| All Test Variables: | | | | | | | | |
| *Expert* | - | -0.0015 | -1.21 | ? | -0.0000 | -0.02 | - | 1.44 |
| *Tenure* | ? | -0.0012 | -1.76* | ? | 0.0001 | 0.93 | ? | 3.40* |
| *Big4* | - | -0.0030 | -1.63* | ? | 0.0005 | 3.21*** | - | 3.69** |
| *AbsAccr* | + | 0.0048 | 0.74 | ? | -0.0006 | -1.19 | + | 0.70 |

**TABLE 5: REGRESSION ANALYSIS FOR INCREASING EVENT DATES (CONTINUED)**

**Panel B: Pacific CARs**

| VARIABLES | Prediction | (1) Pacific CAR | (2) Pacific CAR | (3) Pacific CAR | (4) Pacific CAR | (5) Pacific CAR | (6) Pacific CAR |
|---|---|---|---|---|---|---|---|
| *Expert* | - | | -0.0023** | | | | -0.0016 |
| | | | (-1.79) | | | | (-1.23) |
| *Tenure* | ? | | | -0.0015** | | | -0.0012* |
| | | | | (-2.20) | | | (-1.73) |
| *Big4* | - | | | | -0.0040** | | -0.0030* |
| | | | | | (-2.20) | | (-1.63) |
| *AbsAccr* | + | | | | | 0.0056 | 0.0048 |
| | | | | | | (0.86) | (0.74) |
| *Leverage* | ? | 0.0070** | 0.0068** | 0.0066** | 0.0069** | 0.0071** | 0.0065* |
| | | (2.10) | (2.03) | (1.98) | (2.08) | (2.11) | (1.94) |
| *Size* | ? | 0.0007** | 0.0008** | 0.0008*** | 0.0011*** | 0.0007** | 0.0013*** |
| | | (2.16) | (2.49) | (2.58) | (3.16) | (2.29) | (3.46) |
| *ROA* | ? | -0.0007 | -0.0010 | -0.0009 | -0.0015 | 0.0000 | -0.0010 |
| | | (-0.18) | (-0.26) | (-0.23) | (-0.38) | (0.01) | (-0.25) |
| *MTB* | ? | -0.0001 | -0.0001 | -0.0001 | -0.0001 | -0.0001 | -0.0001 |
| | | (-0.79) | (-0.76) | (-0.76) | (-0.69) | (-0.80) | (-0.69) |
| *SalesGrowth* | ? | 0.0003 | 0.0002 | 0.0000 | 0.0003 | 0.0000 | -0.0001 |
| | | (0.18) | (0.16) | (0.01) | (0.24) | (0.02) | (-0.05) |
| *InstOwn* | ? | -0.0115*** | -0.0114*** | -0.0108*** | -0.0105*** | -0.0113*** | -0.0100*** |
| | | (-6.60) | (-6.54) | (-6.22) | (-5.88) | (-6.46) | (-5.57) |
| Industry Controls | | Yes | Yes | Yes | Yes | Yes | Yes |
| Event Fixed Effects | | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | | 8,147 | 8,147 | 8,147 | 8,147 | 8,147 | 8,147 |
| R-squared | | 0.053 | 0.053 | 0.054 | 0.054 | 0.053 | 0.055 |

*Seemingly Unrelated Estimation Results*

| | | (1) Event Date Estimation | | | (2) Non-Event Date Estimation | | | (3) Test of Differences |
|---|---|---|---|---|---|---|---|---|
| | | coefficient | z-stat | | coefficient | z-stat | | chi2 |
| Separate Test Variables: | | | | | | | | |
| *Expert* | - | -0.0023 | -1.79** | ? | 0.0001 | 1.02 | - | 3.55** |
| *Tenure* | ? | -0.0015 | -2.21** | ? | 0.0001 | 1.49 | ? | 5.50** |
| *Big4* | - | -0.0040 | -2.21** | ? | 0.0006 | 3.43*** | - | 6.32*** |
| *AbsAccr* | + | 0.0056 | 0.86 | ? | -0.0009 | -1.71* | + | 1.01 |
| All Test Variables: | | | | | | | | |
| *Expert* | - | -0.0016 | -1.23 | ? | 0.0000 | 0.11 | - | 1.53 |
| *Tenure* | ? | -0.0012 | -1.73* | ? | 0.0001 | 0.81 | ? | 3.26* |
| *Big4* | - | -0.0030 | -1.63* | ? | 0.0005 | 3.15*** | - | 3.68** |
| *AbsAccr* | + | 0.0048 | 0.74 | ? | -0.0009 | -1.62 | + | 0.76 |

**TABLE 6: REGRESSION ANALYSIS FOR DECREASING EVENT DATES**

Panels A and B of Table 6 present our regression analysis of the seven decreasing event dates using *WorldCAR* and *PacificCAR* as the dependent variables, respectively. All variables are defined in Appendix 1 and the extreme 1 percent and 99 percent of each continuous variable is winsorized. *,**, and *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively (based on one-tailed test where relation is predicted). Below each panel, we present the results of our seemingly unrelated estimation that compares our decreasing event date regressions to non-event date regressions.

**Panel A: World CARs**

| VARIABLES | Prediction | (1) World CAR | (2) World CAR | (3) World CAR | (4) World CAR | (5) World CAR | (6) World CAR |
|---|---|---|---|---|---|---|---|
| *Expert* | + | | 0.0007 | | | | 0.0003 |
| | | | (0.95) | | | | (0.43) |
| *Tenure* | ? | | | 0.0017*** | | | 0.0016*** |
| | | | | (4.32) | | | (3.97) |
| *Big4* | + | | | | 0.0017* | | 0.0009 |
| | | | | | (1.61) | | (0.84) |
| *AbsAccr* | - | | | | | -0.0090*** | -0.0084*** |
| | | | | | | (-2.61) | (-2.46) |
| *Leverage* | ? | -0.0050*** | -0.0049** | -0.0045** | -0.0049** | -0.0050*** | -0.0045** |
| | | (-2.61) | (-2.57) | (-2.34) | (-2.57) | (-2.61) | (-2.34) |
| *Size* | ? | 0.0003 | 0.0003 | 0.0001 | 0.0001 | 0.0002 | -0.0001 |
| | | (1.60) | (1.36) | (0.43) | (0.58) | (1.14) | (-0.43) |
| *ROA* | ? | 0.0114*** | 0.0115*** | 0.0116*** | 0.0117*** | 0.0101*** | 0.0105*** |
| | | (4.83) | (4.86) | (4.92) | (4.95) | (4.19) | (4.36) |
| *MTB* | ? | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| | | (0.30) | (0.28) | (0.25) | (0.24) | (0.35) | (0.27) |
| *SalesGrowth* | ? | -0.0036*** | -0.0036*** | -0.0033*** | -0.0037*** | -0.0033*** | -0.0031*** |
| | | (-4.13) | (-4.12) | (-3.79) | (-4.18) | (-3.68) | (-3.40) |
| *InstOwn* | ? | 0.0160*** | 0.0159*** | 0.0152*** | 0.0156*** | 0.0157*** | 0.0148*** |
| | | (15.75) | (15.72) | (14.85) | (15.08) | (15.42) | (14.15) |
| Industry Controls | | Yes | Yes | Yes | Yes | Yes | Yes |
| Event Fixed Effects | | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | | 19,861 | 19,861 | 19,861 | 19,861 | 19,861 | 19,861 |
| R-squared | | 0.113 | 0.113 | 0.114 | 0.114 | 0.114 | 0.115 |

*Seemingly Unrelated Estimation Results*

| | | (1) Event Date Estimation | | | (2) Non-Event Date Estimation | | | (3) Test of Differences |
|---|---|---|---|---|---|---|---|---|
| | | coefficient | z-stat | | coefficient | z-stat | | chi2 |
| Separate Test Variables: | | | | | | | | |
| *Expert* | + | 0.0007 | 0.95 | ? | 0.0001 | 0.93 | + | 0.62 |
| *Tenure* | ? | 0.0017 | 4.33*** | ? | 0.0001 | 1.59 | ? | 16.10*** |
| *Big4* | + | 0.0017 | 1.62* | ? | 0.0006 | 3.48*** | + | 1.10 |
| *AbsAccr* | - | -0.0090 | -2.61*** | ? | -0.0007 | -1.29 | - | 5.67*** |
| All Test Variables: | | | | | | | | |
| *Expert* | + | 0.0003 | 0.43 | ? | -0.0000 | -0.02 | + | 0.18 |
| *Tenure* | ? | 0.0016 | 3.97*** | ? | 0.0001 | 0.93 | ? | 14.23*** |
| *Big4* | + | 0.0009 | 0.84 | ? | 0.0005 | 3.21*** | + | 0.10 |
| *AbsAccr* | - | -0.0084 | -2.46*** | ? | -0.0006 | -1.19 | - | 5.07*** |

**TABLE 6: REGRESSION ANALYSIS FOR DECREASING EVENT DATES (CONTINUED)**

**Panel B: Pacific CARs**

| VARIABLES | Prediction | (1) Pacific CAR | (2) Pacific CAR | (3) Pacific CAR | (4) Pacific CAR | (5) Pacific CAR | (6) Pacific CAR |
|---|---|---|---|---|---|---|---|
| *Expert* | + | | 0.0007 | | | | 0.0004 |
| | | | (1.03) | | | | (0.51) |
| *Tenure* | ? | | | 0.0017*** | | | 0.0016*** |
| | | | | (4.33) | | | (3.98) |
| *Big4* | + | | | | 0.0016* | | 0.0008 |
| | | | | | (1.59) | | (0.79) |
| *AbsAccr* | - | | | | | -0.0093*** | -0.0088*** |
| | | | | | | (-2.66) | (-2.52) |
| *Leverage* | ? | -0.0050*** | -0.0049** | -0.0045** | -0.0049** | -0.0050*** | -0.0045** |
| | | (-2.60) | (-2.57) | (-2.34) | (-2.57) | (-2.61) | (-2.33) |
| *Size* | ? | 0.0003* | 0.0003 | 0.0001 | 0.0001 | 0.0002 | -0.0001 |
| | | (1.69) | (1.44) | (0.51) | (0.67) | (1.22) | (-0.36) |
| *ROA* | ? | 0.0116*** | 0.0117*** | 0.0118*** | 0.0119*** | 0.0102*** | 0.0106*** |
| | | (4.87) | (4.90) | (4.95) | (4.98) | (4.21) | (4.38) |
| *MTB* | ? | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| | | (0.29) | (0.28) | (0.25) | (0.24) | (0.35) | (0.27) |
| *SalesGrowth* | ? | -0.0037*** | -0.0037*** | -0.0034*** | -0.0037*** | -0.0033*** | -0.0031*** |
| | | (-4.18) | (-4.17) | (-3.84) | (-4.22) | (-3.71) | (-3.43) |
| *InstOwn* | ? | 0.0158*** | 0.0158*** | 0.0151*** | 0.0155*** | 0.0156*** | 0.0147*** |
| | | (15.63) | (15.60) | (14.72) | (14.96) | (15.30) | (14.03) |
| Industry Controls | | Yes | Yes | Yes | Yes | Yes | Yes |
| Event Fixed Effects | | Yes | Yes | Yes | Yes | Yes | Yes |
| Constant | | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | | 19,861 | 19,861 | 19,861 | 19,861 | 19,861 | 19,861 |
| R-squared | | 0.238 | 0.238 | 0.239 | 0.238 | 0.238 | 0.239 |

*Seemingly Unrelated Estimation Results*

| | | (1) Event Date Estimation | | | (2) Non-Event Date Estimation | | | (3) Test of Differences |
|---|---|---|---|---|---|---|---|---|
| | | coefficient | z-stat | | coefficient | z-stat | | chi2 |
| Separate Test Variables: | | | | | | | | |
| *Expert* | + | 0.0007 | 1.03 | ? | 0.0001 | 1.02 | + | 0.71 |
| *Tenure* | ? | 0.0017 | 4.34*** | ? | 0.0001 | 1.49 | ? | 16.26*** |
| *Big4* | + | 0.0016 | 1.59* | ? | 0.0006 | 3.43*** | + | 1.03 |
| *AbsAccr* | - | -0.0093 | -2.66*** | ? | -0.0009 | -1.71* | - | 5.60*** |
| All Test Variables: | | | | | | | | |
| *Expert* | + | 0.0004 | 0.51 | ? | 0.0000 | 0.11 | + | 0.24 |
| *Tenure* | ? | 0.0016 | 3.99*** | ? | 0.0001 | 0.81 | ? | 14.43*** |
| *Big4* | + | 0.0008 | 0.79 | ? | 0.0005 | 3.15*** | + | 0.08 |
| *AbsAccr* | - | -0.0088 | -2.52*** | ? | -0.0009 | -1.62 | - | 5.01** |

## Appendix 1: Variable Definitions

### Dependent variables

| | |
|---|---|
| *PacificCAR* | Cumulative three-day (centered on the event date) market-adjusted returns using the value-weighted MSCI Pacific Index. |
| *WorldCAR* | Cumulative three-day (centered on the event date) market-adjusted returns using the value-weighted MSCI World Index excluding the United States. |

### Variables of interest

| | |
|---|---|
| *AbsAccr* | The absolute value of abnormal accruals computed using the piecewise modified Jones model measured for the year prior to the event. |
| *Big4* | Indicator variable equal to one if the company is audited by a Big 4 firm and zero otherwise, determined at the end of the year prior to the event. |
| *Expert* | Indicator variable equal to one if the audit firm market share is at least 30 percent of total industry audit fees and zero otherwise, measured at the end of the year prior to the event. |
| *Tenure* | The natural logarithm of auditor tenure measured as of the end of the year prior to the event. |



### Control variables

| | |
|---|---|
| *Event* | Event date fixed effects. |
| *Industry* | Fama-French 48 industry controls. |
| *InstOwn* | The percentage of institutional ownership in a company measured as of the end of the year prior to the event. |
| *Leverage* | The ratio of total debt divided by total assets measured as of the end of the year prior to the event. |
| *MTB* | The market value of equity divided by the book value of equity measured as of the end of the year prior to the event. |
| *ROA* | Income before extraordinary items measured as of the end of the year prior to the event divided by assets as of two years prior to the event. |
| *SalesGrowth* | The percentage growth in sales from two years prior to the event to the year prior to the event. |
| *Size* | The natural logarithm of total assets measured as of the end of the year prior to the event. |