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The value of the PCAOB's international audit oversight on U.S. listed foreign companies: Evidence from an initial enforcement breakdown

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ABSTRACT

Using, as a natural experiment, the Public Company Accounting Oversight Board's May 18, 2010, release stating that its oversight of certain foreign auditors had been denied, we examine investors' early valuation of the PCAOB's international audit oversight on U.S.-listed foreign companies. Comparing reactions for the release-exposed U.S.-listed foreign companies to reactions for other U.S.-listed foreign companies, we find a significant decline in the share values of the release-exposed companies. The decline is driven by companies with auditors from China; the on-list companies from the 19 on-list European jurisdictions do not experience significantly negative stock market reactions. Using difference-in-differences analyses of earnings response coefficients, abnormal stock returns and trading volumes surrounding earnings announcements, and analyst forecast dispersions, we find a decline in perceived financial reporting quality for the release-exposed foreign listings from China but not for the release-exposed companies from the 19 European jurisdictions—a finding in line with the results of the stock market reaction analyses. These results are consistent with the view that the PCAOB's international inspection would create a net value for U.S.-listed companies from China.

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1. Introduction

Unlike U.S.-operated companies, foreign companies listed on U.S. exchanges mostly hire local auditors rather than U.S. auditors. Section 104 of Sarbanes-Oxley Act of 2002 (SOX) requires and authorizes the Public Company Accounting Oversight Board (hereafter, PCAOB) to inspect these registered foreign audit firms, and PCAOB Rule 4003 specifies that an inspection must take place at least once every-three years.¹ On the one hand, international audit oversight could ease the potential agency conflict with the audited firms' public shareholders and create value for these companies. On the other hand, such oversight

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¹ Under SOX (Section 104) and the corresponding PCAOB rule (Rule 4003), the PCAOB is required to inspect registered audit firms at least once every year if the audit firm issued audit reports for more than 100 public companies that file periodic financial statements with the SEC in the previous calendar year. If the number is less than 100, then the inspection needs to be conducted at least once every-three years, beginning with the calendar year the audit firm is registered with the PCAOB and issues an audit opinion for SEC registered companies. Since no foreign auditor has more than 100 U.S.-listed clients, the required inspection frequency for foreign companies is at least once every-three years.

may needlessly impose disclosure requirements and bureaucratic burdens on firms (Butler and Ribstein, 2006; Karolyi, 1998; Litvak, 2007; Romano, 2005). To assess whether the PCAOB's international audit oversight creates net value for U.S.-listed foreign companies, we utilize a May 18, 2010, announcement, by the PCAOB, that certain foreign institutions had declined the PCAOB's international inspection. To determine whether this announcement is associated with a change in investors' perceptions of the financial reporting quality of the U.S.-listed foreign companies, we also conduct difference-in-differences analyses for the earnings response coefficients, absolute abnormal returns and abnormal trading volumes surrounding earnings announcements, and analyst forecast dispersions.

A unique advantage of investigating the effects of this announcement (and related announcements during the same period) is that, during the early years of bilateral communication between the PCAOB and foreign regulatory bodies, delisting was less of a concern than it is today, as investors still largely expected that the regulatory bodies would enter into cooperative agreements.² The capital market reactions to the PCAOB's announcements during this period are thus largely attributable to the net effect of the additional regulatory burden and the perceived improvement in financial reporting quality that result from the PCAOB inspections. In later years, by contrast, repeated objections to international inspections would raise concerns about delisting, which could substantially affect companies' liquidity, investor base, and litigation risk. In today's settings, a study of stock market reactions to inspection objections would most likely be confounded by such concerns.

On May 18, 2010, the PCAOB for the first time released the names of SEC-filing U.S.-listed foreign companies whose external auditors were from countries that were denying the PCAOB access to local audit information. Prior to that date, the PCAOB had disclosed that some scheduled inspections were delayed and had provided the names of audit firms experiencing inspection delays, without mentioning the underlying reasons for the delay. Specifically, on August 12, 2009, the PCAOB published a list of 18 foreign audit firms whose inspections were being delayed, without providing any reason for the delay (Announcement 1, hereafter). The 18 audit firms were from nine jurisdictions, including China, Israel and seven European countries. On February 3, 2010, the PCAOB updated the inspection-delay list to include 70 audit firms from 25 jurisdictions, including China, Hong Kong, Turkey, Venezuela, Czech Republic, and 20 European countries (Announcement 2, hereafter). (We label the May 18, 2010, disclosure Announcement 3.) After the Dodd-Frank Act (July 21, 2010) gave the PCAOB permission to share confidential information with its non-U.S. counterparts, the PCAOB also announced, on January 10, 2011, that it had entered into a cooperative agreement with the United Kingdom audit regulator.

Among these announcements, Announcement 3 (May 18, 2010) is important for two reasons. First, it was the first to directly acknowledge the enforcement problem. Both Announcement 1 (August 12, 2009) and Announcement 2 (February 3, 2010) were titled "Progress on PCAOB International Inspections" and were bundled with other information, including "List of jurisdictions that the PCAOB has conducted inspection" and "List of jurisdictions that the PCAOB planned to conduct inspection." Given this vague language, investors did not necessarily infer, from these announcements, that inspection delays indicated denials of inspection by other countries or the inability of the PCAOB to conduct inspections. By contrast, the May 18, 2010, announcement was saliently titled "PCAOB publishes list of issuer audit clients of non-U.S. registered firms in jurisdictions where the PCAOB is denied access to conduct inspections." In this announcement, the information content was clear. Second, Announcement 3 was the first to publish information that went to the audit client level: it included the names of the 419 companies and the associated audit firms from the 21 jurisdictions denying the PCAOB's international inspections. By contrast, the previous two announcements had only provided the names of the audit firms that were experiencing inspection delays.

To gain a comprehensive understanding of how the announcements cause investors to update their perceptions, we examine stock market reactions to each announcement. If investors perceive that the PCAOB international audit inspection creates a net value for U.S.-listed foreign companies, we expect the stock market reaction to be strongest for the May 18, 2010 disclosure (Announcement 3), as it was the most salient of the three.

Specifically, we compare stock market reactions for foreign companies that are exposed by the PCAOB's lists with stock market reactions for foreign companies that have registered and reported audited financial statements with the Securities and Exchange Commission (SEC) but are not exposed by the lists. The sample includes all foreign companies audited by foreign auditors from April 1, 2007, to January 10, 2011, as identified in Audit Analytics. During this period, a total of 1,898 companies file audit opinions by foreign auditors; the number falls to 712 after we delete companies that are headquartered in the United States, do not have stock price information in DataStream, have a stock price of less than one dollar, or do not have enough days with non-zero trading volume.³ The 712 companies comprise firms listed on the major U.S. exchanges (NASDAQ, New York Stock Exchange) in direct form and as American Depositary Receipts (ADRs), as well as firms trading on over-the-counter (OTC) markets. The sample includes foreign companies that have a home listing and a U.S. listing; only a U.S. listing; a U.S. listing and other foreign listings but no home listing; or a home listing, U.S. listing and other foreign listings. The audit firms of the 712 companies are domiciled in 43 countries.

² On December 18, 2020, the Holding Foreign Companies Accountable Act was signed into law. The law permits the Securities and Exchange Commission to ban companies from trading and to delist them from exchanges if the PCAOB is unable to audit requested reports for three consecutive years. Before that, there were discussions of the possibility of firms' being delisted after repeated denials of requests to audit their foreign working papers, but no law directly allowed the SEC to delist foreign companies listed in the U.S.

³ The reduction from 1898 to 712 is largely caused by deleting penny stocks. If penny stocks and companies headquartered in the U.S. are not deleted, the sample size is 1192. Penny stocks, which are mainly listed on OTC markets, frequently miss trading volume information, and are very illiquid. We drop them to make the expected return model more reliable. The stock market reaction is much more significant when penny stocks are included. We choose to present the conservative results by dropping the penny stocks.

Using Standard & Poor's 500 index as our U.S. market benchmark, the Morgan Stanley Capital International (MSCI) All-Capital World Index (excluding the U.S. index) as our world market benchmark (Doidge et al., 2010; Gagnon and Karolyi, 2018), and a matched local pair firm as an alternative benchmark (Litvak, 2007), we compare the abnormal returns of various subsamples. For Announcements 1 and 2, which disclose only audit firms and jurisdictions that are experiencing inspection delays, we find that only companies with auditors from mainland China or Hong Kong SAR (i.e., companies with operations in mainland China) experience significant and negative market reactions, compared with companies with auditors from jurisdictions not experiencing inspection delays; this holds whether or not the firms' auditors are actually named on the delay list. By contrast, for the companies with auditors from the other on-list (i.e., delayed) jurisdictions—all European countries in our sample—we do not find evidence of significantly negative stock market reactions, compared to companies whose auditors are from off-list jurisdictions.

The negative abnormal stock market returns for companies with auditors from mainland China and Hong Kong SAR are greatest following the release of Announcement 3 (which included information on audit clients). For Announcement 3, we again find no evidence of significant and negative stock market reactions for the companies from the on-list European countries (19 nations in this case). We also assess the market reaction to the PCAOB's January 10, 2011, announcement of its cooperative agreement with the United Kingdom audit regulator and do not find significantly positive abnormal returns for companies with U.K. auditors.

Our results for the earnings announcements analyses are consistent with the evidence on the stock market reactions. Using difference-in-differences analyses that compare on-list and off-list companies, we find a decline in the perceived financial reporting quality (as proxied by earnings response coefficients, abnormal returns and abnormal trading volume surrounding earnings announcements, and analyst forecast dispersions) for foreign companies from China after Announcement 3. For companies from the 19 on-list European jurisdictions, we do not find a change in perceived financial reporting quality, compared with off-list companies. Collectively, the evidence implies that the PCAOB's international inspection of auditors from China would create a net value for U.S.-listed Chinese companies and would increase investor confidence in these companies' financial reporting quality.

Overall, this paper complements the literature that investigates the real effects of PCAOB international inspections. Prior studies find that the international inspections improve audit quality for non-U.S.-listed foreign clients (Fung et al., 2017), reduce information uncertainty in M&A deals (Kim et al., 2020), and provide useful information for lenders (Shroff, 2020). Our investigation of the market reactions to the PCAOB's initial announcements on inspection "denials" provides insights into investors' perception of the net value of these inspections for a group of U.S.-listed foreign companies that were denied them.

Additionally, the paper sheds lights on a long-lasting question in the bonding literature. That foreign firms experience significant positive returns after listing in the U.S. is well-documented (e.g., Foerster and Karolyi, 1999; Miller, 1999). The leading theory about international cross-listings—the "bonding theory" advocated by Coffee (1999) and Stulz (1999)—argues that the stringent SEC disclosure requirements and increased legal exposure associated with a U.S. listing benefit cross-listed firms.⁴ However, prior research has been unable to provide direct evidence on the valuation benefits of accounting/auditing requirements for international listings, since it is difficult to disentangle them from confounding effects associated with cross-listing (such as the effects of changes in the investor base or in investment banking relations). Leuz (2003) suggests that "in order to fully understand the cross-listing phenomenon, it is important to differentiate between the different explanations and to delve deeper into the sources of the cross-listing effects, such as improved risk sharing, increased disclosure, greater legal exposure and/or stronger SEC enforcement." In this spirit, our study uses an after-listing regulatory breakdown to show that enforcing U.S. auditing and accounting requirements creates value for U.S.-listed Chinese firms.

The only other paper that investigates a similar setting is the working paper by Carcello et al. (2011). Our paper differs from theirs in three important aspects. First, our full sample includes all U.S.-listed foreign companies and compares the stock market reactions of various subsamples. Carcello et al. (2011) use a truncated sample by comparison. For instance, for the May 18, 2010, announcement, their sample is limited to 188 companies that were mentioned in the published list but not mentioned in prior announcements and—as their benchmark group—122 ADRs from international listings that were not included in the May 18, 2010 list.⁵ Our total sample size (712 foreign companies) is 59.3 % larger than theirs (447). Recognizing their sampling and empirical strategy limitation, Carcello et al. (2011: 30) state, "Our sample sizes are modest. ... Future research that replicates and, hopefully, extends our findings would be helpful." Second, for the abnormal return estimation, we use benchmarks that are much less likely to be affected by the PCAOB disclosures. Carcello et al. (2011) use S&P ADR Index for their market model estimation. The S&P ADR Index is constructed from the non-U.S. components of the S&P Global 1200, which includes all Level II and Level III ADRs or ordinary share listings in the U.S. issued by the constituents of S&P Europe 350, S&P/TOPIX 150 (Japan), S&P/TSX 60 (Canada), S&P/ASX All Australian 50, S&P Asia 50, and S&P Latin America 40. Thus, their

⁴ The traditional bonding theory is applied to the setting of cross listing, i.e., a company lists its equity shares on one or more foreign stock exchanges in addition to its domestic exchange. Currently, in the U.S. stock market, the de facto foreign companies include three groups: 1) cross-listed companies, 2) companies with U.S. and other foreign listings but no domestic listing, and 3) companies with only a US listing. Therefore, we do not constrain our sample to cross-listings. Nevertheless, when we constrain our sample to group "1)", the main stock market reaction results remain.

⁵ As identified by Audit Analytics, the whole sample size (without deleting penny stock) is 1,165 for Announcement 3. Of these firms, 821 are international listings not mentioned in the list published by the PCAOB. After deleting penny stocks, the sample of international listings not mentioned in Announcement 3 includes 821 stocks, 164 of which are ADRs.

benchmark index could be largely affected by the PCAOB disclosures, and the estimated abnormal returns are predictably biased. Third, we provide novel analyses and findings. We find that the negative abnormal returns following the PCAOB announcements are driven by companies from China. The other foreign companies exposed to the PCAOB lists (i.e., companies with auditors from the 19 on-list European jurisdictions) do not experience significantly negative market reactions. Consistent with this, we document a decrease in perceived financial reporting quality for exposed companies from China following the key disclosure (Announcement 3). The evidence is particularly relevant to the ongoing bilateral communication between the U.S. and China on potential cooperative arrangements, especially those involving international inspections.

2. Background, prior literature, and predictions

2.1. Background of the PCAOB international oversight

A critical challenge to international audit inspection is that access to foreign audit firms' documents located in their home jurisdictions requires permission from the home country regulators.⁶ This jurisdiction authority-related challenge became increasingly significant for the PCAOB at the end of 2007, when the first inspection deadlines for several foreign audit firms were approaching.⁷ The PCAOB had to choose whether and how to inform investors about the challenges it faced. On December 4, 2008, the PCAOB adopted a rule amendment that allowed it to postpone deadlines (PCAOB, 2008a; PCAOB, 2008b). On April 7, 2009, the PCAOB published a list of jurisdictions where it had conducted inspections and a list of jurisdictions where it planned to conduct them (PCAOB, 2009a). On June 25, 2009, the PCAOB adopted additional rule amendments that further postponed the deadlines (PCAOB, 2009b, 2009c). On August 12, 2009 (Announcement 1), the PCAOB provided a list of jurisdictions where it had conducted inspections of audit firms, accompanied by a list of 18 audit firms from nine jurisdictions that had not been inspected even though the original deadlines had passed (PCAOB, 2009d). On February 3, 2010 (Announcement 2), the PCAOB provided an updated list of 70 audit firms from 25 jurisdictions experiencing inspection delays. For the first time, the PCAOB mentioned that China and some European countries had denied the PCAOB access to local audit documents (PCAOB, 2010a).

Then, on May 18, 2010 (Announcement 3), came the unexpected news release titled "PCAOB publishes list of issuer audit clients of non-U.S. registered firms in jurisdictions where the PCAOB is denied access to conduct inspections" (PCAOB, 2010b). This release identified 419 companies whose audit firms were from the 21 jurisdictions that had denied the PCAOB access to local information. The 21 jurisdictions were China, Hong Kong SAR (to the extent that audit clients have operations in mainland China), and 19 European countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Spain, Sweden, Switzerland and United Kingdom). Whereas prior announcements had been triggered by the PCAOB's transparency rules (PCAOB Release No. 2008-007 and PCAOB Release No. 2009-003), this announcement was not required by any pre-set rules and thus came unexpectedly. This was followed, on January 10, 2011, by the PCAOB's announcement of its cooperative agreement with the United Kingdom's audit regulator (PCAOB, 2011).

As the events evolved, companies in countries that were not granting the PCAOB access to audit work papers showed concern. Financial Executives International (FEI), the Business Roundtable, the National Retail Federation, the U.S. Chamber of Commerce, and the U.S.-China Business Council submitted a joint letter stating that their members were "deeply concerned" that "a failure to reach agreements on these issues may severely harm businesses and their investors in both the U.S. and China. . . . Their capital markets and businesses—issuers and users of financial reports—must have a strong system of transparency and internal controls to raise the capital needed to grow and operate" (Financial Executives International, May 22, 2013). Two characteristics of this period—the perceived importance of international audit oversight, and the variation in the progress of enforcement—make it ideal for assessing the value implication of the international auditor discipline imposed by the PCAOB.

2.2. Hypothesis development

The central intention of the PCAOB's international inspection is to ensure that foreign auditors comply with U.S. Generally Accepted Auditing Standards (GAAS) so that audited financial statements are in accordance with applicable accounting standards—either U.S. Generally Accepted Accounting Principles (U.S. GAAP) or International Financial Reporting Standards (IFRS). When U.S. GAAS require auditors to perform additional procedures to support an audit opinion, the auditors may discover material misstatements that would not be detected under their home country auditing standards (PCAOB, 2012).⁸ Inspections that detect possible violations of the SEC or PCAOB rules can trigger additional investigations. If violations are found, the PCAOB can impose sanctions, including suspending or revoking the accounting firm's registration, suspending or barring individuals from associating with a registered public accounting firm, and issuing monetary penalties.

⁶ In foreign jurisdictions, handing over audit documents to U.S. regulators would be considered a breach of national sovereignty and in conflict with local laws. Recognizing the political tension surrounding this, the PCAOB began seeking cooperation with foreign regulators in 2003 (March 31, 2003, PCAOB Round Table). However, investors were not informed about the progress of these communications.

⁷ With the requirement that foreign audit firms register with the PCAOB taking effect on July 19, 2004, the deadlines for the first inspections arrived in 2007.

⁸ See the PCAOB release "Information for Audit Committees About the PCAOB Inspection Process" (Aug. 1, 2012).

It is generally accepted that external auditing helps to reduce agency costs for creditors, outside shareholders, and managers (Jensen and Meckling, 1976; Watts and Zimmerman, 1983). The theoretical work by Titman and Trueman (1986) and Datar et al. (1991) suggests that an entrepreneur who has favourable information about his firm's value is likely to choose a higher-quality auditor. The theory thus supports a positive association between client value and audit quality. Because the PCAOB has the authority to trigger restatements and impose penalties, its international inspection regime is expected to improve financial reporting quality by increasing auditors' effort *ex ante* and improving audit firms' internal control systems.

On the other hand, auditors of U.S.-listed foreign companies—and the companies themselves—are already exposed to the high litigation risk that is associated with the U.S. legal regime. If foreign companies from countries with weak institutional environments self-select to list in the U.S. stock market in order to receive more monitoring, they may have already established a strong reputation on governance. If this is the case, stock market participants might not respond negatively to the PCAOB's "inability" to conduct cross-border audit inspections. Furthermore, the additional oversight by the PCAOB may increase the firms' compliance costs and bureaucratic burdens. Prior studies document that the cost of compliance with U.S. accounting requirements can be sizeable. For instance, Seetharaman et al. (2002) and Choi et al. (2009) find that auditors charge higher fees for firms that cross-list in countries with stronger regimes than for non-cross-listed firms. Mittoo (1992) surveys Canadian companies listing in the U.S. and U.K. and finds that more than 60 % identify SEC reporting and compliance requirements as the greatest impediment to listing. The two competing forces—improved reporting versus higher compliance costs—make it unclear whether the U.S. international inspection regime increases or harms the value of U.S.-listed foreign companies. We thus state our hypothesis regarding the average net effect in the following null form.

H1: Stock market reactions of foreign companies that are exposed to the PCAOB inspection "delay" or "denial" list are insignificant.

Nevertheless, the benefits associated with a decrease in agency conflicts should be greater for foreign companies from countries with weak rule of law and poor audit regulation. To better understand the variations in stock market reactions (if any), we investigate the effects of country-specific institutional strength. Since, except for China, all the jurisdictions in the May 18, 2010, PCAOB denial list are European, we separately analyze the market reactions for companies from China and the market reactions for companies from the on-list European jurisdictions.

3. Sample construction and summary statistics

Our sample comprises all foreign companies that were audited by non-U.S. auditors and that filed audited periodic financial statements with the SEC from April 1, 2007, to January 1, 2011. We classify a company as foreign if it is headquartered in a non-U.S. country (regardless of its place of incorporation), using the variable *CIQ_LOC* from Capital IQ.⁹ For companies whose headquarters are not in the same country as the audit firm, we use the country of the audit firm to define the company's home country. For companies hiring Hong Kong audit firms, we use China as the home country, since almost all of these companies operate in China, as suggested by the PCAOB.¹⁰

The sample construction starts with companies with foreign auditors in the Audit Opinion file of Audit Analytics and filing dates between April 1, 2007, and January 1, 2011. The Audit Opinion database in Audit Analytics covers all SEC registrants, tracks all auditor reports on financial statements disclosed since 2000, and includes auditors' location information. Thus, the database provides a comprehensive list of all foreign companies that are subject to SEC periodic financial statement reporting requirements. The initial screening returns 1,898 unique companies. After that, we obtain the Capital IQ identifiers for each company using the Capital IQ Excel plug-in.

We first seek to verify whether the sample of companies mentioned in the May 18, 2010, announcement fully overlap with the companies in Audit Analytics whose auditors were from the 21 jurisdictions on the May 18, 2010, list. The original list of companies is not currently available on the PCAOB website, so we use the website "Wayback Machine – Internet Archive" to obtain it.¹¹ After obtaining the May 18, 2010 list, we use the Capital IQ Identifier Convertor to generate the identifiers from company names, and manually check the matching for each company name to correct mismatching.¹² Comparing

⁹ Such criteria may rule out companies that operate in foreign countries but are headquartered in the U.S. For example, the documented headquarter country of Solar EnerTech Corp. is Mountain View, California (United States). However, its actual operations are in Shanghai, China. Similarly, Synutra International Inc. mainly operates in China but is headquartered in Rockville, Maryland (United States). Both companies hire audit firms from China. We were able to replicate the main results of the paper keeping only the requirement that the company be audited by foreign auditors (without requiring that companies be headquartered in foreign countries).

¹⁰ Companies hiring Hong Kong auditors but operating in mainland China were listed in Announcement 3. That is, Hong Kong auditors were denying the PCAOB inspections of clients operating in mainland China.

¹¹ Since the PCAOB updates the name list (under the same web page) annually or when a cooperative agreement is signed with the country that was blocking the PCAOB from accessing information, the original list is not currently available. The PCAOB website does not archive this file. "Wayback Machine – Internet Archive" regularly takes snapshot of certain web pages to preserve the websites' historical information. The "Archive" website allows us to find a list as of June 4, 2010, which is a version with corrections of the original list. Google-searching the name of this pdf file "issuer_audit_clients_of_certain_non-US_firms_by_jurisdiction," we found the original May 18, 2010, pdf file. A comparison between the two lists suggests that they were not substantially different. The June 4, 2010, list corrected typos and deleted duplicate companies only.

¹² Note that the *CIQ_IDs* generated by the Capital IQ Identifier Convertor often mismatches with company names, so manual checking is needed.

companies on the May 18, 2010, list and companies in Audit Analytics that (1) filed audit reports from April 15, 2009, to April 15, 2010,¹³ and (2) hired auditors from the 21 mentioned jurisdictions, we find that 35 companies appearing in Audit Analytics were not on the May 18, 2010, list. Further investigation suggests that 19 of these 35 firms do not have U.S. listing information; the remaining 16 do have U.S. listing information and show up in a 2011 update to the May 18, 2010 announcement. In other words, Announcement 3 appears to have missed these 16 companies. In our stock market reaction analyses, we find that the inclusion or exclusion of these companies does not affect the results. We present only the results that exclude them.

To match the sample with DataStream, we first use company names to manually search the unique security identifier (DSCODE) in DataStream. For securities that are traded on both major U.S. exchanges and OTC markets, we keep the identifier for the former. For those traded as both ADR and ordinary shares, we keep the ADR code. There is also a concern that a manual name search could miss stocks. So, for companies for which we cannot find matches in DataStream, we search in Capital IQ (using the unique company level Capital IQ identifier) for ISINs and then use the ISINs to search for matches in DataStream. As a result, we find 1,523 matches in DataStream.

To construct subsamples for the analysis of each event, we use a rolling window to screen the sample.¹⁴ We require companies in the subsample to have filed audit opinions within 15 months before the news release date. This ensures that the company has hired a foreign auditor and is subject to SEC filing period requirements before the PCAOB announcement date. For example, to be included in the sample for the August 12, 2009, news release, the company needs to (1) have a filing date between May 12, 2008, and August 11, 2009, and (2) have engaged a foreign auditor. Such screening is necessary since companies may change from a non-U.S. audit firm to a U.S. audit firm, or vice versa, during the two years we study. For example, Tat Technologies, an Israel-based company trading on NASDAQ, had U.S. auditors for the fiscal years up to and including 2008, after which it hired Israeli auditors. For a firm to be included in each subsample, we further require that its stock price be at least one dollar in the expected return model estimation period and abnormal return analysis period, and that it not be headquartered in the United States.¹⁵ These requirements reduce the sample size to 712. To avoid extreme cases and potential data errors, we trim the stock return data at the 1% and 99% levels.

Financial statement data are from Capital IQ. We choose Capital IQ as the source for two reasons. First, it covers more than 62,000 public companies and provides “auditable” data for financial statement items.¹⁶ Second, pulling items from different databases is impractical because global databases such as Capital IQ, WorldScope, and Compustat each standardize financial statement items differently and thus are not perfectly comparable.¹⁷ In the cross-sectional analysis, firms in the financial industry (i.e., SIC codes between 6000 and 6999) are dropped, since the control variables (e.g., total asset and sales growth) have different meanings in that industry. To reduce the effect of extreme cases or data errors, all continuous variables are winsorized at the 1% and 99% levels.¹⁸

Table 1 provides the country and industry distributions for the final 712 unique companies. These 712 companies were incorporated in 50 jurisdictions and had audit firms from 43 countries. The sample covers 43 of the 48 industries defined by Fama and French (1997). These observations suggest that the sample has a broad coverage of countries and industries. Examples for the details of the news releases are provided in Appendices B, C, and D.

4. Empirical design

Karolyi (2012) suggests that event study results for cross-listed firms are particularly sensitive to the selection of expected return models. However, there is no norm about how to filter out the systematic factors for cross-listed firms. Thus, in addition to using an estimation model that controls for both U.S. market-specific factors and world market factors to estimate the abnormal return, we follow Litvak (2007) in obtaining a home country local firm that is listed in the home market but not the U.S. market as the local benchmark for each U.S.-listed foreign company.

Specifically, following Doidge et al. (2010) and Gagnon and Karolyi (2018), we apply the market model that estimates abnormal returns using Standard & Poor's 500 index as our benchmark for the U.S. market, and the Morgan Stanley Capital International (MSCI) All-Capital World Index (excluding the U.S. index) as our benchmark for the world market. The estimation model is as follows in Eq. (1).

¹³ The May 18, 2010, news release indicates that the list includes companies filing audited financial statements with the SEC from mid-April 2009 to mid-April 2010. Therefore, we use this time period to search for comparable companies in Audit Analytics.

¹⁴ Rolling is an important sampling strategy. The subsamples are not exactly the same across each announcement. A company subjected to the SEC's periodic filing requirement one year does not necessarily face the same requirements the next year. For example, if a company meets the SEC's definition of a “foreign private issuer,” then it needs to provide audited financial statements to the SEC even if it is traded on the OTC market or major exchanges. Whether a company is classified as a foreign private issuer depends on time-varying factors such as the percentage of U.S. shareholders.

¹⁵ Future studies that replicate this study could delete companies headquartered in the U.S. at earlier stages, since it saves the effort needed to manually search for identifiers in different databases. We choose to do it in the final step because we want to see if we can replicate our results without the headquarter constraints.

¹⁶ For every financial statement item, Capital IQ provides the details for the calculation of the item and shows how the number is derived.

¹⁷ Even though Compustat belongs to the company S&P Capital IQ, it standardizes data differently from the Capital IQ platform. To compare the databases, we retrieve data needed to calculate market to book ratio from all of the three databases for our sample. For our sample, the coverage of Compustat is two-thirds of the coverage of either Capital IQ or WorldScope. When we compare the market to book ratios calculated using the three databases, we find that for the observations with data available in all the three databases, the statistics are similar across the three. For observations without data in Compustat, there are more extreme values found in the other two databases. We trimmed these extreme observations.

¹⁸ The winsorization does not involve stock returns, since they were trimmed at the 1% and 99% levels already.

Table 1
Summary statistics on U.S.-listed foreign companies.

| Variable | N ¹ | Mean | Std Dev | P1 | P25 | P50 | P75 | P99 |
|--------------------|----------------|-------|---------|-------|-------|-------|-------|-------|
| CHINA | 457 | 0.19 | 0.40 | 0 | 0 | 0 | 0 | 1 |
| ONLIST_EUROPEAN | 457 | 0.22 | 0.42 | 0 | 0 | 0 | 0 | 1 |
| RULE_OF_LAW | 457 | 1.00 | 0.87 | -0.71 | 0.35 | 1.43 | 1.81 | 1.92 |
| AUDITOR_COMPLIANCE | 452 | 24.31 | 7.64 | 4 | 20.5 | 26 | 32 | 32 |
| JUDICIAL | 435 | 4.19 | 0.92 | 2.33 | 3.25 | 4.58 | 5 | 5 |
| LNGDP | 457 | 9.94 | 0.94 | 7.05 | 9.22 | 10.33 | 10.59 | 11.27 |
| DISCLOSURE | 456 | 0.79 | 0.28 | 0.2 | 0.8 | 1 | 1 | 1 |
| SIZE | 457 | 7.37 | 2.29 | 2.28 | 5.52 | 7.40 | 9.19 | 11.96 |
| BIG4 | 457 | 0.91 | 0.29 | 0 | 1 | 1 | 1 | 1 |
| USGAAP | 457 | 0.50 | 0.50 | 0 | 0 | 1 | 1 | 1 |
| AGE | 457 | 36.67 | 34.95 | 3 | 13 | 22 | 51 | 154 |
| MB | 457 | 2.10 | 7.07 | 0.59 | 1.02 | 1.35 | 1.86 | 9.20 |
| LEVERAGE | 457 | 0.16 | 0.17 | 0.00 | 0.00 | 0.12 | 0.25 | 0.72 |
| SALEGRW | 457 | 0.14 | 1.85 | -0.61 | -0.17 | -0.01 | 0.19 | 1.35 |
| CFO | 457 | 0.04 | 1.00 | -0.38 | 0.05 | 0.09 | 0.14 | 0.33 |
| CAPEX | 457 | 0.06 | 0.06 | 0.00 | 0.02 | 0.05 | 0.09 | 0.27 |
| CAR | 1,950 | 0.00 | 0.08 | -0.21 | -0.05 | 0.00 | 0.05 | 0.22 |
| CAR | 1,950 | 0.05 | 0.04 | 0.00 | 0.02 | 0.05 | 0.09 | 0.23 |
| UEARN | 1,968 | 0.01 | 0.16 | -0.60 | -0.03 | 0.01 | 0.06 | 0.45 |
| UEARN | 1,968 | 0.10 | 0.13 | 0.00 | 0.02 | 0.05 | 0.12 | 0.61 |
| AVOL | 1,896 | 0.22 | 0.63 | -1.44 | -0.15 | 0.21 | 0.60 | 1.80 |
| POST | 1,968 | 0.28 | 0.45 | 0 | 0 | 0 | 1 | 1 |
| NUMEST | 1,968 | 5.00 | 3.36 | 2 | 2 | 4 | 6 | 16 |
| LOSS | 1,968 | 0.14 | 0.35 | 0 | 0 | 0 | 0 | 1 |
| DISP | 1,968 | 0.08 | 0.28 | 0 | 0.01 | 0.03 | 0.07 | 0.68 |
| ANN | 1,968 | 0.18 | 0.38 | 0 | 0 | 0 | 0 | 1 |
| ADR | 1,968 | 0.37 | 0.48 | 0 | 0 | 0 | 1 | 1 |
| OTC | 1,968 | 0.09 | 0.28 | 0 | 0 | 0 | 0 | 1 |

$$R_{i,t} = \alpha_i + \beta^{US} R_{S\&P500,t} + \beta^W R_{MSCIexUS,t} + \varepsilon_i \quad (1)$$

where, on day t , $R_{i,t}$ is the firm i 's return; $R_{S\&P500,t}$ is the return to the Standard & Poor's 500 Index; and $R_{MSCIexUS,t}$ is the return to the MSCI All-Capital World Index Ex-U.S. For each U.S.-listed foreign firm in the sample, we estimate the parameters in the models over a 240-day pre-event period (Day -270 to Day -31). Daily abnormal returns during the event period are calculated by subtracting the expected return (implied by the expected return model) from the firm's actual return. In contrast to other market models (e.g., the [Fama and French \(1993\)](#) three-factor model), the advantage of using the S&P 500 index and the MSCI All-Capital World Index Ex-U.S. as benchmarks is that it controls for factors in both the U.S. and non-U.S. markets.

In addition, we follow [Litvak \(2007\)](#) in estimating the abnormal return by subtracting the return of the local benchmark firm from that of the U.S.-listed foreign company. We then compare the abnormal returns of the release-exposed companies with the abnormal returns of the non-exposed, U.S.-listed foreign companies. For the local benchmarks, we pair each U.S.-listed foreign firm in our sample with a firm from the same home country that is (1) listed on the home stock exchange but not the U.S. market, (2) in the same industry, and (3) closest in size (as measured by market capitalization). We require that the local pair firm have trading data surrounding all the three announcements. All affiliates of foreign companies and branches of the same firm are manually excluded by name. Using the local pair firm as a benchmark for abnormal return estimation has two advantages. First, it controls for hidden country-specific factors around the three one-time events. Second, the requirement that the local pair firm not be U.S.-listed ensures that the firm is not impacted by the PCAOB announcements.

Because firms in our analysis have the same event periods in calendar time, some degree of cross-sectional correlation in abnormal returns across firms is expected, and conventional test-statistics will be biased. We therefore test for statistical significance with the test statistic proposed by [Kolari and Pynnönen \(2010\)](#), which modifies the widely used t -statistic of [Boehmer, Musumeci, and Poulsen \(Boehmer et al., 1991\)](#). [Kolari and Pynnönen \(2010\)](#) show that contemporaneous correlation in abnormal returns will be accounted for by multiplying the BMP variance by a term that increases the variance when the correlation is positive. Such modification produces a closer-to-zero statistic since cross-sectional correlation is usually positive, as is the case in our sample. This new statistic takes event-induced variance into account while adjusting for cross-sectional correlation and thus is particularly applicable to our setting.

We examine market reactions of all foreign companies with equity traded in the U.S. that are registered and file audited financial statements with the SEC. Specifically, for each announcement, we examine stock market reactions for the following subsamples of U.S.-listed foreign companies: 1) those with on-list auditors from China, 2) those with off-list auditors from China, 3) those with auditors from China, 4) those with on-list auditors from the other on-list jurisdictions, 5) those with off-list auditors from the other on-list jurisdictions, 6) those with auditors from the other on-list jurisdictions, and 7) those with auditors from off-list jurisdictions.

Table 2
Summary statistics for variables for cross-sectional analysis and earnings announcement analysis.

| Variable | N ¹ | Mean | Std Dev | P1 | P25 | P50 | P75 | P99 |
|--------------------|----------------|-------|---------|-------|-------|-------|-------|-------|
| CHINA | 457 | 0.19 | 0.40 | 0 | 0 | 0 | 0 | 1 |
| ONLIST_EUROPEAN | 457 | 0.22 | 0.42 | 0 | 0 | 0 | 0 | 1 |
| RULE_OF_LAW | 457 | 1.00 | 0.87 | -0.71 | 0.35 | 1.43 | 1.81 | 1.92 |
| AUDITOR_COMPLIANCE | 452 | 24.31 | 7.64 | 4 | 20.5 | 26 | 32 | 32 |
| JUDICIAL | 435 | 4.19 | 0.92 | 2.33 | 3.25 | 4.58 | 5 | 5 |
| LNGDP | 457 | 9.94 | 0.94 | 7.05 | 9.22 | 10.33 | 10.59 | 11.27 |
| DISCLOSURE | 456 | 0.79 | 0.28 | 0.2 | 0.8 | 1 | 1 | 1 |
| SIZE | 457 | 7.37 | 2.29 | 2.28 | 5.52 | 7.40 | 9.19 | 11.96 |
| BIG4 | 457 | 0.91 | 0.29 | 0 | 1 | 1 | 1 | 1 |
| USGAAP | 457 | 0.50 | 0.50 | 0 | 0 | 1 | 1 | 1 |
| AGE | 457 | 36.67 | 34.95 | 3 | 13 | 22 | 51 | 154 |
| MB | 457 | 2.10 | 7.07 | 0.59 | 1.02 | 1.35 | 1.86 | 9.20 |
| LEVERAGE | 457 | 0.16 | 0.17 | 0.00 | 0.00 | 0.12 | 0.25 | 0.72 |
| SALEGRW | 457 | 0.14 | 1.85 | -0.61 | -0.17 | -0.01 | 0.19 | 1.35 |
| CFO | 457 | 0.04 | 1.00 | -0.38 | 0.05 | 0.09 | 0.14 | 0.33 |
| CAPEX | 457 | 0.06 | 0.06 | 0.00 | 0.02 | 0.05 | 0.09 | 0.27 |
| CAR | 1,950 | 0.00 | 0.08 | -0.21 | -0.05 | 0.00 | 0.05 | 0.22 |
| [CAR] | 1,950 | 0.05 | 0.04 | 0.00 | 0.02 | 0.05 | 0.09 | 0.23 |
| UEARN | 1,968 | 0.01 | 0.16 | -0.60 | -0.03 | 0.01 | 0.06 | 0.45 |
| [UEARN] | 1,968 | 0.10 | 0.13 | 0.00 | 0.02 | 0.05 | 0.12 | 0.61 |
| AVOL | 1,896 | 0.22 | 0.63 | -1.44 | -0.15 | 0.21 | 0.60 | 1.80 |
| POST | 1,968 | 0.28 | 0.45 | 0 | 0 | 0 | 1 | 1 |
| NUMEST | 1,968 | 5.00 | 3.36 | 2 | 2 | 4 | 6 | 16 |
| LOSS | 1,968 | 0.14 | 0.35 | 0 | 0 | 0 | 0 | 1 |
| DISP | 1,968 | 0.08 | 0.28 | 0 | 0.01 | 0.03 | 0.07 | 0.68 |
| ANN | 1,968 | 0.18 | 0.38 | 0 | 0 | 0 | 0 | 1 |
| ADR | 1,968 | 0.37 | 0.48 | 0 | 0 | 0 | 1 | 1 |
| OTC | 1,968 | 0.09 | 0.28 | 0 | 0 | 0 | 0 | 1 |

Table 2 presents the summary statistics for variables in the May 18, 2010, cross-sectional analysis and earnings announcement analysis. CHINA is an indicator variable equal to 1 if the company hires an audit firm from China, and 0 otherwise. ONLIST_EUROPEAN is an indicator variable equal to 1 if the company hires an audit firm from the 19 on-list European jurisdictions, and 0 otherwise. RULE_OF_LAW is the World Bank governance index (Kaufmann et al., 2011), which reflects perceptions of the extent to which countries adhere to the rule of law in practice. AUDITOR_COMPLIANCE is an index measuring the extent to which auditors are likely to comply with the auditing standard and accounting standard, as constructed by Preiato et al. (2013). JUDICIAL is an index that measures the efficiency of a country's legal system, as constructed by Laeven and Majnoni (2005). LNGDP is the natural logarithm of the home country's per capita GDP expressed in current U.S. dollars as retrieved from World Bank Development Indicators. DISCLOSURE is an index of disclosures required in periodic disclosures (e.g., annual reports), with higher scores representing higher disclosure requirements, as constructed by Djankov et al. (2008). SIZE is the natural logarithm of market values. BIG4 is an indicator variable which equals 1 if the firm hires a Big 4 auditor, and 0 otherwise. USGAAP is 1 if the financial statement follows the United States General Accepted Accounting Principles, and 0 otherwise. AGE is the year 2010 minus the year the firm was founded. MB is the ratio of the market value of total assets to book value of total assets. LEVERAGE is the ratio of total liabilities to total assets. SALEGRW is the net revenue growth over the past year. CFO is cash flow from operating scaled by total assets. CAPEX is capital expenditure scaled by total assets. CAR is the firm's mean abnormal returns accumulated over the three-day window centered on the earnings announcement date, where abnormal return is the difference between raw returns and estimated returns calculated using the S&P 500 index and the MSCI All-Capital World Index Ex-U.S. as the benchmark in the OLS market model. [CAR] is the absolute value of CAR. UEARN is earnings surprise, defined as the difference between actual earnings per share and the mean of broker's latest analyst forecasts made 90 days before the earnings announcement date. [UEARN] is the absolute value of UEARN. AVOL is a measure of abnormal trading volume, defined as the natural logarithm of the ratio of cumulative three-day mean event-period volume and the average three-day estimate-period volume. POST is an indicator variable equal to one if the announcement date is later than May 18, 2010, and zero if the announcement date is earlier than August 12, 2009. NUMEST is the number of brokers that provide forecasts in the 90 days before the earnings announcement date. LOSS is an indicator variable equal to one if the actual earnings per share reported in I/B/E/S is smaller than zero, and zero otherwise. DISP is the standard deviation of analyst forecasts. ANN is an indicator variable equal to one if it is the fourth quarter earnings announcement, and zero otherwise. ADR is an indicator variable equal to one if the security is an ADR, and zero otherwise. OTC is an indicator variable equal to one if the security is traded on OTC markets, and zero otherwise. Detailed data definitions and sources are in Appendix A.

¹We report the sample size of the whole sample for each analysis. As several variables are repeatedly used (e.g., CHINA and ONLIST_EUROPEAN are used in both the cross-sectional analysis and the earnings announcement analysis of change in perceived financial reporting quality), the sample size we report is the size of the datasets in which the variable is used earlier. We find that the distribution is similar for the repeatedly used variables.

5. Market reactions around the key dates

5.1. Summary statistics of overall market reactions

To provide an overall view of the effects of the announcements, this section presents and discusses the summary statistics for mean abnormal returns on day 0 of all U.S.-listed foreign companies hiring non-U.S. auditors, with the S&P 500 index and the MSCI All-Capital World Index Ex-U.S. used as market proxies. We denote the day following each PCAOB release day as *Day 0* because these PCAOB disclosures were released after the markets closed in New York (Carcello et al., 2011). Table 3 shows that neither announcement has a market-wide impact for the full sample of U.S.-listed foreign companies. For instance, the average share price reaction for U.S.-listed foreign companies is -18 basis points on May 19, 2010

Table 3

Cross-sectional distribution of cumulative abnormal returns for U.S.-listed foreign stocks.

| Event | Mean | St. Dev | Z-stat. | P1 | P25 | P50 | P75 | P99 |
|-------------------|---------|---------|---------|---------|---------|---------|--------|--------|
| December 04, 2008 | -0.0102 | 0.0489 | -0.760 | -0.1562 | -0.0329 | -0.0063 | 0.0128 | 0.1163 |
| April 07, 2009 | 0.0017 | 0.0390 | 0.059 | -0.1620 | -0.0108 | 0.0005 | 0.0133 | 0.1278 |
| June 25, 2009 | 0.0086 | 0.0345 | 0.159 | -0.0817 | -0.0055 | 0.0022 | 0.0173 | 0.1181 |
| August 12, 2009 | 0.0049 | 0.0334 | 0.692 | -0.1053 | -0.0085 | 0.0014 | 0.0163 | 0.1170 |
| February 03, 2010 | -0.0101 | 0.0283 | -0.898 | -0.0862 | -0.0249 | -0.0067 | 0.0061 | 0.0611 |
| May 18, 2010 | -0.0018 | 0.0250 | -0.474 | -0.0833 | -0.0241 | -0.0059 | 0.0048 | 0.0424 |
| January 10, 2011 | 0.0068 | 0.0206 | 1.541 | -0.0406 | -0.0036 | 0.0028 | 0.0153 | 0.0714 |

Table 3 presents the summary statistics of average abnormal returns on day 0 for all U.S.-listed foreign stocks in our sample. To be included in the subsamples for each event, the firm needs to have filed, with the SEC, financial statements audited by a foreign auditor during the 15 months before the event date, and the firm's stock price must be at least one dollar during this period. In addition, the firm needs to be headquartered in a non-U.S. country. Abnormal returns are calculated using the S&P 500 index and the MSCI All-Capital World Index Ex-U.S. as our market proxies. The test statistic is a modified version of the widely used *t*-statistic of Boehmer, Musumeci, and Poulsen (BMP, 1991), as proposed by Kolar and Pynnönen (2010). This new statistic takes event-induced variance into account while adjusting for cross-sectional correlation.

($Z = -0.474$). The interquartile range of reactions across firms is -241 to $+48$ basis points. The distribution is negatively skewed. Announcement 1 (August 12, 2009) and Announcement 2 (February 3, 2010) have average market reactions of 49 basis points ($Z = 0.692$) and -101 basis points ($Z = -0.898$), respectively; both reactions are insignificant. For the two dates (December 4, 2008, and June 25, 2009) on which the PCAOB announced postponing the deadline for its international inspection, U.S.-listed foreign companies are not impacted in a statistically meaningful way. On January 10, 2011, when the PCAOB announced its entry into a cooperative agreement with the UK audit regulator, the average market reaction is $+68$ basis points ($Z = 1.541$).

Since we investigate the mean abnormal returns of the full sample of U.S.-listed foreign companies, it is not surprising that the market reactions are not statistically significant. To explore whether the announcement-exposed companies were revalued by the stock market, we analyze their abnormal returns and compare them with the abnormal returns of the non-announcement-exposed companies in Sections 5.2 to 5.5.

5.2. Test of investor response to Announcement 1

This section presents results for Announcement 1. As discussed in Section 2, Announcement 1 disclosed that the inspections of 18 audit firms from nine jurisdictions were delayed. Both the names of the auditors and names of the jurisdictions were listed. We first compare the abnormal returns of U.S.-listed foreign companies from the same region by the on-list and off-list auditor group, then compare the abnormal returns of the exposed companies and non-exposed companies. A company is identified as "exposed" if its auditor is from the on-list countries, whether or not the specific auditor is listed on the release. For each announcement, we separately analyze the China group and European group, as the companies within each group share similar cultural and institutional environments. For Announcement 1, the on-list jurisdictions are China, Israel, and seven European countries. We term the non-China jurisdictions "the eight other on-list jurisdictions."

We calculate four daily abnormal returns (from day -1 to day $+2$) surrounding the announcement date. We expect abnormal returns on day 0 and cumulative abnormal returns of (0, $+1$) and (0, $+2$) to be statistically significant if the market has reacted to the delay list in the PCAOB release. Table 4 presents abnormal returns using the two return benchmarks discussed in Section 4, by on-list/off-list and by region. To estimate abnormal returns, we use the market model (Eq. (1)) in Panel A and the return of the local benchmark firm in Panel B.

Overall, the inferences from Panels A and B are similar. In both panels, U.S.-listed foreign companies with auditors from China experience significantly negative stock market reactions, whether or not their auditors' names are on the list. For U.S.-listed foreign companies with auditors from the eight other on-list jurisdictions, we do not find significantly negative market reactions to the release, whether or not the companies' auditors' names are on the list. This result suggests that the extent to which the stock market reacted to the PCAOB's international inspection delay was region-variant.

5.3. Test of investor response to Announcement 2

In Announcement 2, the PCAOB extended the inspection delay list to 70 audit firms from 25 jurisdictions and provided reasons for the delay. The 25 jurisdictions are China, Hong Kong SAR, Venezuela and 22 European countries. Similar to our analyses for Announcement 1, we analyze the results from China separately from the results from the 23 other on-list jurisdictions. In our sample, no foreign company from Venezuela satisfies the sample selection criteria. We term the on-list jurisdictions other than China and Hong Kong SAR "the 23 other on-list jurisdictions."

As shown in Table 5, the inferences are akin to the evidence from the Announcement 1 analysis. That is, companies from China experience significantly negative stock market reactions, whether or not their auditors' names are on the list. We find no evidence that the companies from the 23 other on-list jurisdictions experience significantly negative stock market reactions, whether or not their auditors' names are on the list.

Table 4

Announcement 1 (August 12, 2009) stock market reactions.

| Panel A: S&P 500 Index and MSCI All-Capital World Index Ex-U.S. as benchmarks | | | | | | | | | | |
|---|------------------------------|----------|---|----------|------------------|---------|-----------|----------|-----------|---------|
| Panel A1: August 12, 2009, by on-list/off-list for companies with auditors from China and Hong Kong | | | | | | | | | | |
| China | | | | | | | | | | |
| Day | (1) On the PCAOB list N = 35 | | (2) Not on the PCAOB list N = 84 | | (1) - (2) | | t-stat. | | | |
| | Return | Z-stat. | Return | Z-stat. | Dif. | | | | | |
| -1 | -0.66 % | -0.218 | -0.63 % | -0.759 | -0.03 % | | -0.03 | | | |
| 0 | -2.05 % | -1.145 | -0.31 % | 0.002 | -1.74 % | | -2.03** | | | |
| +1 | -0.50 % | -0.561 | -1.08 % | -1.480 | 0.58 % | | 1.02 | | | |
| +2 | -2.66 % | -1.812* | -2.34 % | -2.318** | -0.32 % | | -0.42 | | | |
| (0,+1) | -2.54 % | -1.428 | -1.36 % | -0.848 | -1.18 % | | -1.29 | | | |
| (0,+2) | -5.12 % | -2.101** | -3.65 % | -1.931* | -1.47 % | | -1.16 | | | |
| Panel A2: August 12, 2009, by on-list/off-list for companies with auditors from the 8 other on-list jurisdictions | | | | | | | | | | |
| The 8 other on-list jurisdictions | | | | | | | | | | |
| Day | (1) On the PCAOB list N=28 | | (2) Not on the PCAOB list N=110 | | (1) - (2) | | t-stat. | | | |
| | Return | Z-stat. | Return | Z-stat. | Dif. | | | | | |
| -1 | 1.39% | 1.953* | 0.18% | 0.374 | 1.21% | | 2.55** | | | |
| 0 | 1.52% | 1.126 | 0.99% | 1.232 | 0.53% | | 0.86 | | | |
| +1 | 0.01% | -0.124 | 0.04% | -0.056 | -0.03% | | -0.06 | | | |
| +2 | -0.28% | -0.546 | -1.20% | -1.973** | 0.92% | | 2.09** | | | |
| (0,+1) | 1.53% | 0.562 | 1.03% | 1.018 | 0.50% | | 0.58 | | | |
| (0,+2) | 1.25% | 0.321 | -0.16% | -0.117 | 1.41% | | 1.58 | | | |
| Panel A3: August 12, 2009, by country group for all U.S.-listed foreign companies | | | | | | | | | | |
| Day | (1) China N=119 | | (2) The 8 other on-list jurisdictions N=138 | | (3) Others N=431 | | (1) - (3) | | (2) - (3) | |
| | Return | Z-stat. | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | Dif. | t-stat. |
| -1 | -0.64% | -0.553 | 0.39% | 0.593 | 0.30% | 0.445 | -0.94% | -1.85* | 0.09% | 0.32 |
| 0 | -0.79% | -0.434 | 1.08% | 1.269 | 0.74% | 0.932 | -1.64% | -3.20*** | 0.34% | 1.08 |
| +1 | -0.92% | -1.220 | 0.04% | -0.081 | -0.40% | -0.290 | -0.52% | -1.58 | 0.44% | 1.68* |
| +2 | -2.43% | -2.296** | -1.03% | -1.684* | -1.11% | -0.796 | -1.32% | -2.84*** | 0.08% | 0.25 |
| (0,+1) | -1.68% | -1.128 | 1.12% | 0.906 | 0.34% | 0.568 | -2.02% | -3.35*** | 0.78% | 1.03 |
| (0,+2) | -4.05% | -2.116** | 0.09% | 0.029 | -0.76% | -0.331 | -3.29% | -4.30*** | 0.85% | 1.09 |
| Panel B: Local pair firm as benchmark | | | | | | | | | | |
| Panel B1: August 12, 2009, by on-list/off-list for companies with auditors from China and Hong Kong | | | | | | | | | | |
| China | | | | | | | | | | |
| Day | (1) On the PCAOB list N=32 | | (2) Not on the PCAOB list N=75 | | (1) - (2) | | t-stat. | | | |
| | Return | Z-stat. | Return | Z-stat. | Dif. | | | | | |
| -1 | -0.59% | -0.329 | -0.88% | -0.713 | 0.29% | | 0.48 | | | |
| 0 | -2.17% | -1.653* | -1.34% | -1.437 | -0.83% | | -1.06 | | | |
| +1 | -0.96% | -0.964 | -0.42% | -0.482 | -0.54% | | -0.76 | | | |
| +2 | -0.72% | -0.446 | -1.05% | -1.023 | 0.33% | | 0.41 | | | |
| (0,+1) | -3.11% | -2.284** | -1.73% | -1.182 | -1.38% | | -1.45 | | | |
| (0,+2) | -3.76% | -1.723* | -2.73% | -1.428 | -1.03% | | -0.85 | | | |
| Panel B2: August 12, 2009, by on-list/off-list for companies with auditors from the 8 other on-list jurisdictions | | | | | | | | | | |
| The 8 other on-list jurisdictions | | | | | | | | | | |
| Day | (1) On the PCAOB list N=24 | | (2) Not on the PCAOB list N=101 | | (1) - (2) | | t-stat. | | | |
| | Return | Z-stat. | Return | Z-stat. | Dif. | | | | | |
| -1 | -0.72% | -0.562 | -1.02% | -0.933 | 0.30% | | 0.70 | | | |
| 0 | 1.64% | 1.447 | 0.58% | 0.563 | 1.06% | | 2.14** | | | |
| +1 | -0.64% | -0.178 | 1.25% | 1.195 | -1.89% | | -3.20*** | | | |
| +2 | 0.25% | 0.519 | -0.11% | -0.241 | 0.36% | | 0.64 | | | |
| (0,+1) | 1.00% | 0.228 | 1.83% | 1.668* | -0.83% | | -0.92 | | | |
| (0,+2) | 1.25% | 0.412 | 1.73% | 1.544 | -0.47% | | -0.33 | | | |

Table 4 (continued)

| Panel B3: August 12, 2009, by country group for U.S.-listed foreign companies | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--------------------|---------|--|---------|---------------------|---------|-----------|----------|-----------|---------|-----|--------------------|--|--|--|---------------------|--|-----------|--|-----------|--|--------|---------|--------|---------|--------|---------|------|---------|------|---------|----|--------|--------|--------|--------|--------|--------|--------|-------|--------|-------|---|--------|--------|-------|-------|-------|-------|--------|----------|--------|-------|----|--------|--------|-------|-------|--------|--------|-------|------|-------|---------|----|--------|--------|--------|--------|-------|--------|--------|----------|--------|-------|--------|--------|---------|-------|-------|-------|-------|--------|---------|-------|------|--------|--------|--------|-------|-------|-------|-------|--------|----------|-------|------|
| Day | (1) China N=107 | | (2) The 8 other on- list jurisdictions N=125 | | (3) Others N=387 | | (1) – (3) | | (2) – (3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Return | Z-stat. | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | Dif. | t-stat. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Panel B3: August 12, 2009, by country group for U.S.-listed foreign companies | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1"> <thead> <tr> <th rowspan="2">Day</th> <th colspan="2">(1) China N=107</th> <th colspan="2">(2) The 8 other on- list jurisdictions N=125</th> <th colspan="2">(3) Others N=387</th> <th colspan="2">(1) – (3)</th> <th colspan="2">(2) – (3)</th> </tr> <tr> <th>Return</th> <th>Z-stat.</th> <th>Return</th> <th>Z-stat.</th> <th>Return</th> <th>Z-stat.</th> <th>Dif.</th> <th>t-stat.</th> <th>Dif.</th> <th>t-stat.</th> </tr> </thead> <tbody> <tr> <td>-1</td> <td>-0.79%</td> <td>-0.612</td> <td>-0.96%</td> <td>-0.889</td> <td>-0.45%</td> <td>-0.492</td> <td>-0.34%</td> <td>-0.51</td> <td>-0.51%</td> <td>-0.92</td> </tr> <tr> <td>0</td> <td>-1.58%</td> <td>-1.532</td> <td>0.78%</td> <td>0.756</td> <td>1.36%</td> <td>1.346</td> <td>-2.94%</td> <td>-3.18***</td> <td>-0.58%</td> <td>-1.19</td> </tr> <tr> <td>+1</td> <td>-0.58%</td> <td>-0.637</td> <td>0.89%</td> <td>0.961</td> <td>-0.99%</td> <td>-0.875</td> <td>0.41%</td> <td>0.62</td> <td>1.88%</td> <td>2.98***</td> </tr> <tr> <td>+2</td> <td>-0.95%</td> <td>-0.913</td> <td>-0.04%</td> <td>-0.153</td> <td>0.65%</td> <td>-0.419</td> <td>-1.60%</td> <td>-2.99***</td> <td>-0.69%</td> <td>-0.83</td> </tr> <tr> <td>(0,+1)</td> <td>-2.03%</td> <td>-1.693*</td> <td>1.67%</td> <td>1.425</td> <td>0.37%</td> <td>0.437</td> <td>-2.40%</td> <td>-2.74**</td> <td>1.30%</td> <td>1.34</td> </tr> <tr> <td>(0,+2)</td> <td>-2.91%</td> <td>-1.515</td> <td>1.63%</td> <td>1.284</td> <td>1.02%</td> <td>0.566</td> <td>-3.93%</td> <td>-4.23***</td> <td>0.61%</td> <td>0.52</td> </tr> </tbody> </table> | | | | | | | | | | | Day | (1) China N=107 | | (2) The 8 other on- list jurisdictions N=125 | | (3) Others N=387 | | (1) – (3) | | (2) – (3) | | Return | Z-stat. | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | Dif. | t-stat. | -1 | -0.79% | -0.612 | -0.96% | -0.889 | -0.45% | -0.492 | -0.34% | -0.51 | -0.51% | -0.92 | 0 | -1.58% | -1.532 | 0.78% | 0.756 | 1.36% | 1.346 | -2.94% | -3.18*** | -0.58% | -1.19 | +1 | -0.58% | -0.637 | 0.89% | 0.961 | -0.99% | -0.875 | 0.41% | 0.62 | 1.88% | 2.98*** | +2 | -0.95% | -0.913 | -0.04% | -0.153 | 0.65% | -0.419 | -1.60% | -2.99*** | -0.69% | -0.83 | (0,+1) | -2.03% | -1.693* | 1.67% | 1.425 | 0.37% | 0.437 | -2.40% | -2.74** | 1.30% | 1.34 | (0,+2) | -2.91% | -1.515 | 1.63% | 1.284 | 1.02% | 0.566 | -3.93% | -4.23*** | 0.61% | 0.52 |
| Day | (1) China N=107 | | (2) The 8 other on- list jurisdictions N=125 | | (3) Others N=387 | | (1) – (3) | | (2) – (3) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Return | Z-stat. | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | Dif. | t-stat. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -1 | -0.79% | -0.612 | -0.96% | -0.889 | -0.45% | -0.492 | -0.34% | -0.51 | -0.51% | -0.92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | -1.58% | -1.532 | 0.78% | 0.756 | 1.36% | 1.346 | -2.94% | -3.18*** | -0.58% | -1.19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| +1 | -0.58% | -0.637 | 0.89% | 0.961 | -0.99% | -0.875 | 0.41% | 0.62 | 1.88% | 2.98*** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| +2 | -0.95% | -0.913 | -0.04% | -0.153 | 0.65% | -0.419 | -1.60% | -2.99*** | -0.69% | -0.83 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (0,+1) | -2.03% | -1.693* | 1.67% | 1.425 | 0.37% | 0.437 | -2.40% | -2.74** | 1.30% | 1.34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| (0,+2) | -2.91% | -1.515 | 1.63% | 1.284 | 1.02% | 0.566 | -3.93% | -4.23*** | 0.61% | 0.52 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Table 4 presents the abnormal returns for the days surrounding August 12, 2009. On August 12, 2009, the PCAOB published a list of audit firms that had not yet been inspected even though four years had passed since the issuance of an audit report while registered (i.e., audit firms that experienced inspection delays). This list contains 18 audit firms and nine jurisdictions. The nine on-list jurisdictions of the on-list audit firms are China, France, Germany, Israel, Netherlands, Portugal, Sweden, and Switzerland. The PCAOB did not give a reason for the delay in this announcement. We classify companies with auditors from non-exposed jurisdictions as "Others." August 13, 2009, is day 0.

Panel A adopts the market model (Eq. (1)) to estimate abnormal returns. Panels A1 and A2 compare the abnormal returns of exposed companies from the same region between the on-list and off-list auditor groups. Panel A3 compares the abnormal returns of the exposed companies and non-exposed companies. Panel B uses the returns of the local benchmark firm to estimate abnormal returns. Panels B1 and B2 compare the abnormal returns of exposed companies from the same region by the on-list and off-list auditor groups. Panel B3 compares the abnormal returns of the exposed companies and non-exposed companies. ***, **, and * indicate significance at the 1%, 5%, and 10% level for a two-tailed test, respectively. The test statistic for market returns is the ADJ-BMP Z value, as proposed by [Kolari and Pynnönen \(2010\)](#).

5.4. Test of investor response to Announcement 3

Unlike the two previous announcements of the PCAOB's inspection delay, Announcement 3 (May 18, 2010) listed the names of the specific companies and expressly stated that the listed jurisdictions had denied the PCAOB access to the local information. As in the previous announcements, auditors' names and jurisdictions were also disclosed. The on-list jurisdictions for Announcement 3 are China, Hong Kong SAR, and 19 European countries. We term the jurisdictions other than China and Hong Kong SAR "the 19 on-list European jurisdictions."

The evidence from this announcement is consistent with, but more salient than, the results for the previous two announcements. In Table 6, we report the abnormal returns by region and compare the abnormal returns of the exposed and non-exposed groups. As shown in column (1) of Panels A and B, the abnormal returns of companies with auditors from China are significant and negative on day 0 (e.g., -155 basis points with $Z = -2.204$ in Panel A). This suggests that the stock market is concerned about the clearly stated news that the auditors of U.S.-listed companies from China are being scrutinized by the PCAOB. Meanwhile, the inter-group comparison between companies from China and companies from off-list countries shows clear differences in both day-0 abnormal returns and cumulative abnormal returns of (0, +1) and (0, +2). For instance, in Panel B, the difference in the average cumulative abnormal returns (0, +2) between the group from China and the group from off-list jurisdictions is significantly negative ($\text{difference} = -386$ basis points, $Z = -4.72$).

By contrast, the 134 companies from the 19 on-list European jurisdictions experience a mean three-day (0, +2) cumulative abnormal return of 86 basis points ($Z = 0.806$, percentage of negative returns = 39 %) when the market model is used to estimate abnormal returns (Panel A). In Panel B, where we employ the non-U.S.-listed local pair firm as the return benchmark, the day-0 abnormal return is not statistically significant. We do not find that the abnormal returns of companies from these 19 on-list European jurisdictions are statistically different from the abnormal returns of the off-list companies. This evidence implies that, for the companies from the 19 on-list European jurisdictions, investors do not perceive the PCAOB inspection regime as a creator of net value after the associated costs (e.g., disclosure and bureaucratic burdens) are considered.

In sum, we find robust evidence that the market reacted negatively to the denial list in the case of U.S.-listed foreign companies from China but in the case of U.S.-listed foreign companies from the 19 on-list European countries. As we explained in our hypothesis development section (Section 2), this may be because investors believe that, for the European companies, bonding to the U.S. legal regime already provides significant investor protection, so the benefits of PCAOB cross-border inspection do not outweigh the costs. To further explore whether the lack of evidence for these companies is driven by a subgroup from countries that have strong rule of law, we conduct cross-sectional analysis in Section 6 and investigate whether the abnormal returns of this group vary depending on the home countries' institutional strength.

Table 5

Announcement 2 (February 3, 2010) stock market reactions.

| Panel A: S&P 500 Index and MSCI All-Capital World Index Ex-U.S. as benchmarks | | | | | | | | | | |
|---|-------------------------------|-----------|--|-----------|------------------|---------|-----------|----------|-----------|----------|
| Panel A1: February 3, 2010, by on-list/off-list for companies with auditors from China and Hong Kong | | | | | | | | | | |
| China and Hong Kong | | | | | | | | | | |
| Day | (1) On the PCAOB list N = 81 | | (2) Not on the PCAOB list N = 46 | | (1) - (2) | | | | | |
| | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | | | | |
| -1 | 0.59 % | 0.656 | 0.82 % | 1.124 | -0.24 % | -0.40 | | | | |
| 0 | -1.94 % | -2.370** | -1.89 % | -1.034 | -0.05 % | -0.19 | | | | |
| +1 | 0.05 % | -0.143 | -0.83 % | -1.197 | 0.88 % | 1.74* | | | | |
| +2 | -0.15 % | -0.046 | -0.49 % | 0.358 | 0.34 % | 0.59 | | | | |
| (0,+1) | -1.86 % | -1.984** | -2.72 % | -1.476 | 0.86 % | 1.33 | | | | |
| (0,+2) | -1.99 % | -1.713* | -3.21 % | -2.846*** | 1.21 % | 1.61 | | | | |
| Panel A2: February 3, 2010, by on-list/off-list for companies with auditors from the 23 other on-list jurisdictions | | | | | | | | | | |
| The 23 other on-list jurisdictions | | | | | | | | | | |
| Day | (1) On the PCAOB list N=70 | | (2) Not on the PCAOB list N=74 | | (1) - (2) | | | | | |
| | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | | | | |
| -1 | -0.41% | -0.860 | -0.13% | -0.328 | -0.28% | -0.97 | | | | |
| 0 | -0.92% | -1.534 | -0.80% | -0.977 | -0.12% | -0.27 | | | | |
| +1 | -1.66% | -2.584*** | -1.19% | -2.251** | -0.47% | -1.02 | | | | |
| +2 | -0.12% | -0.139 | -0.35% | -0.489 | 0.23% | 0.63 | | | | |
| (0,+1) | -2.58% | -3.072*** | -1.99% | -2.009** | -0.59% | -0.95 | | | | |
| (0,+2) | -2.70% | -3.080*** | -2.34% | -2.040** | -0.36% | -0.39 | | | | |
| Panel A3: February 3, 2010, by country group for U.S.-listed foreign companies | | | | | | | | | | |
| Day | (1) China and Hong Kong N=127 | | (2) The 23 other on-list jurisdictions N=144 | | (3) Others N=431 | | (1) - (3) | | (2) - (3) | |
| | Return | Z-stat. | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | Dif. | t-stat. |
| -1 | 0.67% | 0.874 | -0.26% | -0.688 | -0.25% | -0.466 | 0.92% | 2.57*** | -0.01% | -0.05 |
| 0 | -1.92% | -1.335 | -0.86% | -1.369 | -0.84% | -0.970 | -1.08% | -2.57*** | -0.02% | -0.06 |
| +1 | -0.27% | -0.617 | -1.41% | -2.658*** | -0.01% | -0.225 | -0.26% | -0.88 | -1.41% | -3.16*** |
| +2 | -0.27% | 0.173 | -0.24% | -0.342 | 0.16% | 0.276 | -0.43% | -1.49 | -0.40% | -1.55 |
| (0,+1) | -2.17% | -1.508 | -2.27% | -2.736*** | -0.84% | -0.887 | -1.33% | -2.30*** | -1.43% | -2.14** |
| (0,+2) | -2.44% | -2.091** | -2.51% | -2.257*** | -0.68% | -0.610 | -1.76% | -2.80*** | -1.83% | -2.63*** |
| Panel B: Local pair firm as benchmark | | | | | | | | | | |
| Panel B1: February 3, 2010, by on-list/off-list for companies with auditors from China and Hong Kong | | | | | | | | | | |
| China and Hong Kong | | | | | | | | | | |
| Day | (1) On the PCAOB list N=74 | | (2) Not on the PCAOB list N=41 | | (1) - (2) | | | | | |
| | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | | | | |
| -1 | -1.23% | -1.631 | -0.63% | -0.923 | -0.60% | -0.78 | | | | |
| 0 | -2.01% | -1.954* | -1.60% | -1.593 | -0.41% | -0.56 | | | | |
| +1 | 0.77% | 0.596 | 0.45% | 0.469 | 0.32% | 0.32 | | | | |
| +2 | -1.32% | -1.274 | -0.85% | -0.783 | -0.47% | -0.62 | | | | |
| (0,+1) | -1.22% | -1.129 | -1.14% | -0.768 | -0.08% | -0.12 | | | | |
| (0,+2) | -2.54% | -2.012** | -1.99% | -1.934* | -0.55% | -0.64 | | | | |
| Panel B2: February 3, 2010, by on-list/off-list for companies with auditors from the 23 other on-list jurisdictions | | | | | | | | | | |
| The 23 other on-list jurisdictions | | | | | | | | | | |
| Day | (1) On the PCAOB list N=64 | | (2) Not on the PCAOB list N=70 | | (1) - (2) | | | | | |
| | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | | | | |
| -1 | -0.67% | -1.027 | -0.38% | -0.785 | -0.29% | -0.49 | | | | |
| 0 | -0.87% | -1.524 | -1.02% | -1.264 | 0.15% | 0.32 | | | | |
| +1 | -0.22% | -0.428 | -0.07% | -0.097 | -0.15% | -0.30 | | | | |
| +2 | 0.25% | 0.283 | -0.11% | -0.128 | 0.36% | 0.78 | | | | |
| (0,+1) | -1.07% | -0.924 | -1.08% | -0.822 | 0.01% | -0.09 | | | | |
| (0,+2) | -0.82% | -0.655 | -1.19% | -0.778 | 0.37% | 0.41 | | | | |

Table 5 (continued)

| Panel B3: February 3, 2010, by country group for U.S.-listed foreign companies | | | | | | | | | | | |
|--|----------------------------------|---------|---|---------|---------------------|---------|-----------|----------|-----------|---------|--|
| Day | (1) China and Hong Kong N=115 | | (2) The 23 other on-list jurisdictions N=134 | | (3) Others N=387 | | (1) – (3) | | (2) – (3) | | |
| | Return | Z-stat. | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | Dif. | t-stat. | |
| Panel B3: February 3, 2010, by country group for U.S.-listed foreign companies | | | | | | | | | | | |
| Panel B3: February 3, 2010, by country group for U.S.-listed foreign companies | | | | | | | | | | | |
| Day | (1) China and Hong Kong N=115 | | (2) The 23 other on-list jurisdictions N=134 | | (3) Others N=387 | | (1) – (3) | | (2) – (3) | | |
| | Return | Z-stat. | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | Dif. | t-stat. | |
| -1 | -1.01% | -1.352 | -0.52% | -0.899 | -0.54% | -0.894 | -0.47% | -0.74 | 0.02% | 0.05 | |
| 0 | -1.86% | -1.797* | -0.95% | -1.385 | -0.87% | -0.992 | -0.99% | -2.25** | -0.08% | -0.14 | |
| +1 | 0.65% | 0.542 | -0.14% | -0.255 | 0.46% | 0.698 | 0.19% | 0.31 | -0.60% | -1.33 | |
| +2 | -1.15% | -0.852 | 0.06% | -0.347 | -0.22% | -0.374 | -0.93% | -1.95* | 0.28% | 0.53 | |
| (0,+1) | -1.19% | -0.800 | -1.07% | -0.770 | -0.40% | -0.324 | -0.79% | -1.86* | -0.77% | -1.05 | |
| (0,+2) | -2.34% | -1.764* | -1.01% | -0.663 | -0.62% | -0.413 | -1.72% | -2.98*** | -0.39% | -0.40 | |

Table 5 presents the abnormal returns for the days surrounding February 3, 2010. On February 3, 2010, the PCAOB published an updated list of audit firms that experienced inspection delays. There are 25 jurisdictions on the February 3, 2010 audit name list. For the first time, the PCAOB mentioned in the news release that access to local audit information had been denied by certain jurisdictions. Nevertheless, the PCAOB did not explicitly indicate that denial of access to information was the reason for the delays. We classify companies with auditors from non-exposed jurisdictions as "Others." February 04, 2010, is Day 0.

Panel A adopts the market model (Eq. (1)) to estimate abnormal returns. Panels A1 and A2 compare the abnormal returns of exposed companies from the same region between the on-list and off-list auditor groups. Panel A3 compares the abnormal returns of the exposed companies and non-exposed companies. Panel B uses the return of the local benchmark firm to estimate abnormal returns. Panels B1 and B2 compare the abnormal returns of exposed companies from the same region by the on-list and off-list auditor group. Panel B3 compares the abnormal returns of the exposed companies and non-exposed companies. ***, **, and * indicate significance at the 1%, 5%, and 10% level for a two-tailed test, respectively. The test statistic for market returns is the ADJ-BMP Z value, as proposed by [Kolari and Pynnönen \(2010\)](#).

5.5. Stock market reactions to the cooperative agreement with the U.K.

To further our understanding of investors' valuation of the PCAOB's inspection regime for U.S.-listed foreign companies, we also examine the stock market reactions to the announcement that the PCAOB had entered into a cooperative agreement with the United Kingdom's audit regulator. Table 7 shows the results. If investors believe that this arrangement creates net value for U.S.-listed companies from the U.K., then we will observe significantly positive stock market reactions for these firms. We find, however, that the firms' abnormal returns are not statistically significant. In addition, when we compare these firms' abnormal returns with the abnormal returns of the other U.S.-listed foreign companies, the differences are not statistically significant. This result suggests that investors did not perceive this cooperative arrangement as creating a net value for the affected companies. The evidence is consistent with our results for the companies from the 19 on-list European jurisdictions.

6. Cross-sectional analysis for abnormal returns

We conduct a cross-sectional analysis to better control for firm-specific characteristics that drive the results of the univariate analyses and to further explore whether companies from countries with relatively weak rule of law experienced more negative market reactions. The dependent variable is the three-day cumulative abnormal return following May 18, 2010 (0, +2). The results are statistically similar when we use the returns on Day 0 or the two-day cumulative returns (0, +1). Table 8 presents the results for the cross-sectional analyses of the abnormal returns that we estimated for Announcement 3. We report standardized estimates of coefficients.

In column (1), the sample excludes companies with auditors from the 19 on-list European countries. The CHINA indicator variable is included. The coefficient on CHINA is significantly negative (coefficient estimate = -0.1648 , $t = -4.86$). Consistent with the results from our univariate analysis, this finding suggests that companies with auditors from China lost share value due to the PCAOB disclosure.

In columns (2) to (7), the sample includes all U.S.-listed foreign companies except those with auditors from China. In column (2), the ONLIST-EUROPEAN indicator variable is included. Consistent with our univariate results, we do not find evidence that companies with auditors from the 19 on-list European countries experienced significantly negative stock market reactions. In columns (3) to (7), we include the interactions between the ONLIST-EUROPEAN indicator variable and the proxies for the country's institutional strength. We do not find that the abnormal returns vary with home country institutional strength. This result is not surprising, given that we do not find evidence of significantly negative returns from our univariate analysis. We also note that, of the 21 jurisdictions on the May 18, 2010 denial list, China is the lowest in the

Table 6

Announcement 3 (May 18, 2010), stock market reactions.

| Panel A: S&P 500 Index and MSCI All-Capital World Index Ex-U.S. as benchmarks | | | | | | | | | | |
|---|------------------------------------|----------|--|---------|-----------------------|---------|-----------|----------|-----------|---------|
| | (1) China and Hong Kong N = 124 | | (2) The 19 on-list European jurisdictions N = 134 | | (3) Others N = 396 | | (1) – (3) | | (2) – (3) | |
| Day | Return | Z-stat. | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | Dif. | t-stat. |
| -1 | 0.57 % | 0.859 | -0.16 % | -0.403 | -0.35 % | -0.702 | 0.92 % | 1.75* | 0.19 % | 1.41 |
| 0 | -1.55 % | -2.204** | -0.08 % | 0.400 | 0.27 % | 0.573 | -1.82 % | -2.57*** | -0.35 % | -1.98* |
| +1 | 0.28 % | 0.197 | 0.41 % | 0.813 | 0.14 % | 0.321 | 0.14 % | -1.07 | 0.27 % | 1.14 |
| +2 | 0.85 % | 0.699 | 0.54 % | 0.399 | 0.20 % | 0.166 | 0.65 % | 1.21 | 0.34 % | 1.43 |
| (0,+1) | -1.26 % | -1.095 | 0.32 % | 0.705 | 0.41 % | 0.257 | -1.67 % | -3.18*** | -0.09 % | -0.25 |
| (0,+2) | -0.43 % | -0.418 | 0.86 % | 0.806 | 0.61 % | 0.501 | -1.04 % | -1.98* | 0.25 % | 0.35 |

| Panel B: Local pair firm as benchmark | | | | | | | | | | |
|---------------------------------------|----------------------------------|-----------|--|-----------|---------------------|---------|-----------|----------|-----------|----------|
| | (1) China and Hong Kong N=118 | | (2) The 19 on-list European jurisdictions N=111 | | (3) Others N=337 | | (1) – (3) | | (2) – (3) | |
| Day | Return | Z-stat. | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | Dif. | t-stat. |
| -1 | -1.38% | -1.945* | -2.89% | -3.702*** | -0.34% | 0.604 | -1.04% | -2.18** | -2.55% | -3.90*** |
| 0 | -2.12% | -2.782*** | 1.23% | 1.201 | 1.11% | 2.022** | -3.23% | -3.95*** | 0.12% | 0.70 |
| +1 | -1.09% | -1.693* | -1.26% | -1.592 | -0.26% | -0.554 | -0.83% | -1.93* | -1.00% | -2.12** |
| +2 | 0.65% | 0.474 | 0.99% | 0.993 | 0.45% | 0.410 | 0.20% | 1.27 | 0.54% | 1.61 |
| (0,+1) | -3.03% | -3.294*** | -0.03% | 0.120 | 0.83% | 0.618 | -3.86% | -4.72*** | -0.80% | -0.95 |
| (0,+2) | -2.41% | -2.338** | 0.96% | 0.984 | 1.29% | 1.077 | -3.70% | -4.70*** | -0.33% | -0.44 |

Table 6 presents the abnormal returns for the days surrounding May 18, 2010. On May 18, 2010, the PCAOB for the first time published a name list of companies with auditors from countries that were denying the PCAOB access to the information needed for U.S. international audit inspection. The exposed jurisdictions are China, Hong Kong SAR (to the extent that audit clients have operations in mainland China), Norway, Switzerland, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Poland, Portugal, Spain, Sweden, and United Kingdom. The 21 jurisdictions overlap the 25 jurisdictions in the February 3, 2010, list. Non-exposed foreign jurisdictions in the sample are Argentina, Australia, Bermuda, Brazil, Canada, Chile, Columbia, India, Indonesia, Israel, Japan, South Korea, Mexico, New Zealand, Panama, Papua New Guinea, Peru, Philippines, Russia, Singapore, South Africa, Taiwan (China), and Turkey. We classify companies with auditors from non-exposed jurisdictions as "Others." May 19, 2010, is day 0.

Panel A adopts the market model (Eq. (1)) to estimate abnormal returns and compares the abnormal returns of the exposed companies and non-exposed companies. Panel B uses the return of the local benchmark firm to estimate abnormal returns and compares the abnormal returns of the exposed companies and non-exposed companies. ***, **, and * indicate significance at the 1%, 5%, and 10% level for a two-tailed test, respectively. The test statistic for market returns is the ADJ-BMP Z value, as proposed by [Kolari and Pynnönen \(2010\)](#).

rule of law index. The results suggest that investors did not perceive the PCAOB international inspection regime as creating a net value for U.S.-listed companies from the 19 on-list European countries. The evidence on whether the PCAOB international inspection created net value for companies from off-list countries after the companies from on-list countries experienced the negative shock (i.e., the release) is inconclusive.

7. Additional analysis of change in perceived financial reporting quality

As discussed in [Section 2](#), the investors' underlying rationale for valuing the PCAOB international inspection regime is that the ex ante expectation of inspections motivates auditors and managers to provide higher-quality financial statements. If investors realize that the regulatory authorities of certain countries are denying the PCAOB access to local audit information, they may conclude that, for foreign auditors and companies, the threat of inspection is no longer valid. Such a conclusion would cause a decline in perceived financial reporting quality. To better infer the underlying reasons for the market reactions to the "denial list," we analyze changes in perceived financial reporting quality. As proxies for perceived financial reporting quality, we use earnings announcement coefficients ([Teoh and Wong, 1993](#)), abnormal stock returns and abnormal trading volumes surrounding earnings announcements ([Bailey et al., 2006](#)), and analyst forecast dispersions ([Behn et al., 2008](#)). We conduct difference-in-differences analyses to infer the causal relationship between Announcement 3 and changes in perceived financial reporting quality.

We define the period from August 12, 2009, to May 18, 2010, as the event period. *POST* is an indicator variable equal to one if the announcement date is later than May 18, 2010,¹⁹ and earlier than January 10, 2010 (when the PCAOB entered into its cooperative agreement with the U.K. regulator), and zero if the announcement date is earlier than August 12, 2009. [Table 9](#) presents the results for the difference-in-differences analyses. In column (1), the treatment group is companies with auditors from China, and the control group is off-list companies. As shown in Panel A, companies from China experience a greater decline in

¹⁹ Since data errors in earnings announcement dates were well documented ([Livnat and Mendenhall, 2006](#)), we select the reliable dates by cross-checking within Capita IQ, Compustat, DataStream, and I/B/E/S, and by manually checking with the SEC website.

Table 7
January 10, 2011, stock market reactions.

| Panel A: S&P 500 Index and MSCI All-Capital World Index Ex-U.S. as benchmarks | | | | | | | |
|---|-----------------|---------|----------------------|---------|-----------|---------|--|
| Day | (1) UK (N = 38) | | (2) Others (N = 626) | | (1) – (2) | | |
| | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | |
| –1 | 0.11 % | 0.262 | 0.07 % | 0.006 | 0.04 % | 0.11 | |
| 0 | 0.25 % | 0.374 | 0.70 % | 1.580 | –0.45 % | –1.33 | |
| 1 | 0.37 % | 0.556 | 0.17 % | 0.569 | 0.20 % | 0.60 | |
| 2 | 0.51 % | 1.142 | –0.10 % | 0.029 | 0.61 % | 1.60 | |
| (0,+1) | 0.62 % | 0.613 | 0.86 % | 1.476 | –0.24 % | –0.53 | |
| (0,+2) | 1.11 % | 1.083 | 0.76 % | 1.096 | 0.35 % | 0.61 | |
| Panel B: Local pair firm as benchmark | | | | | | | |
| Day | (1) UK (N=35) | | (2) Others (N=541) | | (1) – (2) | | |
| | Return | Z-stat. | Return | Z-stat. | Dif. | t-stat. | |
| –1 | 0.34% | 0.748 | –0.15% | –0.412 | 0.49% | 1.22 | |
| 0 | 0.53% | 0.799 | 0.62% | 1.393 | –0.09% | –0.25 | |
| 1 | 0.82% | 1.130 | 0.44% | 0.715 | 0.38% | 1.07 | |
| 2 | –0.08% | –0.106 | –0.19% | –0.368 | 0.11% | 0.74 | |
| (0,+1) | 1.35% | 1.579 | 1.06% | 1.773* | 0.29% | 0.61 | |
| (0,+2) | 1.27% | 1.242 | 0.87% | 1.154 | 0.40% | 0.69 | |

Table 7 provides the abnormal returns for the days surrounding January 10, 2011. On January 10, 2011, the PCAOB published a news release indicating that it had entered into a cooperative agreement with the United Kingdom audit regulator. On the same day, the cooperative agreement was published on the PCAOB website. January 11, 2011, is day 0.

Panel A adopts the market model (Eq. (1)) to estimate abnormal returns and compares the abnormal returns of the U.S.-listed U.K. companies and other U.S.-listed foreign companies. Panel B uses the return of the local benchmark firm to estimate abnormal returns and compares the abnormal returns of the U.K. companies and other U.S.-listed foreign companies. ***, **, and * indicate significance at the 1%, 5%, and 10% level for a two-tailed test, respectively. The test statistic for market returns is the ADJ-BMP Z value, as proposed by Kolari and Pynnönen (2010).

the earnings announcement coefficients ($coefficient\ on\ CHINA \times POST \times UEARN = -0.0638, t = -1.99$), compared with the control group. In column (2), we compare companies from the 19 on-list European countries with companies from non-exposed jurisdictions. The coefficient on $ONLIST_EUROPEAN \times POST \times UEARN$ is insignificant ($coefficient\ estimate = -0.0234, t = -0.71$), suggesting that perceived financial reporting quality does not deteriorate following the announcement. In column (3), we compare companies from China with companies from the 19 on-list European countries. Again, the evidence suggests that China experiences a decline in its perceived financial reporting quality following Announcement 3. Panels B to D repeat the Panel A analysis using the three alternative measures of perceived financial reporting quality. The results for these additional analyses yield similar inferences.

8. Conclusion

When critical information is confined within borders, regulators and investors can only see a portion—often a small one—of the risks faced by enterprises operating in foreign jurisdictions. When home country regulators shield local information, U.S. accounting regulators have difficulties detecting misconduct by foreign companies. Thus, cross-border cooperation in oversight is important. We show that investors particularly value the PCAOB's international inspection of audits of U.S.-listed companies from China. We present evidence of a decline in the perceived information content of earnings announcements by these companies, which suggests that investors expect international inspections of auditors from China to have a disciplining effect on financial reporting quality. This evidence is particularly relevant to the ongoing communication between the U.S. and China on collaborating in international inspections.

Meanwhile, our lack of evidence of significantly negative stock market reactions for the other on-list companies suggests that investors do not perceive the PCAOB international inspection as creating incremental net positive value for these companies. This may be because investors believe the high costs of compliance (e.g., additional audit fees and disclosure and bureaucratic burdens) outweigh the incremental benefits, or because they believe the companies' bonding to the U.S. legal regime already provides a relatively high level of protection for investors.

A caveat to our analyses is that our evidence is inconclusive about whether investors perceive the PCAOB's international inspection regime as creating a net value for off-list companies. In addition, investors are likely to update their valuation of the PCAOB's international inspections as they learn more about the PCAOB's actual enforcement of the regulatory rules and as the PCAOB changes its inputs of resources for enforcement.

Data availability

Data are available from sources identified in the paper. The sample of U.S.-listed foreign companies is available on request.

Table 8
Cross-sectional analysis for Announcement 3 (May 18, 2010).

| Independent variables | Dependent variable is CAR (0,+2) | | | | | | |
|---|----------------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| CHINA | -0.1648*** [-4.86] | | | | | | |
| ONLIST_EUROPEAN | | -0.0093 [-0.13] | 0.0970 [0.77] | 0.3080 [1.44] | 0.1302 [0.31] | 1.5932 [1.38] | 0.0369 [0.30] |
| RULE_OF_LAW | | | 0.1867** [2.36] | | | | |
| RULE_OF_LAW × ONLIST_EUROPEAN | | | -0.1741 [-1.22] | | | | |
| AUDITOR_COMPLIANCE | | | | 0.2389*** [3.59] | | | |
| AUDITOR_COMPLIANCE × ONLIST_EUROPEAN | | | | -0.3623 [-1.57] | | | |
| JUDICIAL | | | | | 0.1139 [1.30] | | |
| JUDICIAL × ONLIST_EUROPEAN | | | | | -0.1839 [-0.43] | | |
| LNGDP | | | | | | 0.1756** [2.21] | |
| LNGDP × ONLIST_EUROPEAN | | | | | | -1.6692 [-1.42] | |
| DISCLOSURE | | | | | | | 0.0639 [0.61] |
| DISCLOSURE × ONLIST_EUROPEAN | | | | | | | -0.0425 [-0.27] |
| SIZE | 0.1354** [2.35] | 0.1188* [1.96] | 0.0967 [1.51] | 0.0950 [1.51] | 0.0790 [1.16] | 0.1031 [1.56] | 0.1074 [1.55] |
| BIG4 | 0.0853 [0.78] | 0.1055** [2.09] | 0.0894* [1.75] | 0.0941* [1.95] | 0.1040* [1.87] | 0.0996* [1.96] | 0.0974* [1.90] |
| USGAAP | 0.0298 [0.77] | 0.1720*** [2.87] | 0.1731*** [3.50] | 0.1901*** [4.27] | 0.1895*** [3.62] | 0.1854*** [3.41] | 0.1724*** [2.83] |
| AGE | 0.0462 [1.54] | 0.0570 [0.90] | 0.0566 [0.98] | 0.0385 [0.67] | 0.0868 [1.59] | 0.0494 [0.83] | 0.0573 [0.92] |
| MB | 0.1392** [2.13] | 0.0236 [1.16] | 0.0164 [0.75] | 0.0127 [0.61] | 0.0112 [0.65] | 0.0195 [0.91] | 0.0223 [1.02] |
| LEVERAGE | -0.0119 [-0.17] | -0.1454** [-2.69] | -0.1314** [-2.32] | -0.1354** [-2.41] | -0.1555** [-2.68] | -0.1443** [-2.62] | -0.1354*** [-2.72] |
| SALEGRW | 0.0825*** [5.74] | 0.0349* [1.72] | 0.0257 [1.26] | 0.0209 [1.23] | 0.0256 [1.32] | 0.0289 [1.36] | 0.0344 [1.59] |
| CFO | 0.1117* [2.05] | 0.1389*** [3.01] | 0.1384*** [3.42] | 0.1392*** [3.51] | 0.1447*** [3.27] | 0.1475*** [3.65] | 0.1393*** [3.02] |
| CAPEX | -0.0325 [-0.56] | -0.2101*** [-3.38] | -0.1911*** [-3.37] | -0.1871*** [-3.30] | -0.2140*** [-3.69] | -0.2121*** [-3.74] | -0.2083*** [-3.45] |
| N | 356 | 368 | 368 | 363 | 346 | 368 | 367 |
| adj. R-sq | 0.0392 | 0.0764 | 0.1005 | 0.1172 | 0.1043 | 0.0977 | 0.0736 |

Table 8 presents the results of the cross-sectional regression for Announcement 3. The dependent variable is individual firms' cumulative abnormal returns of the three days surrounding May 18, 2010. CHINA is an indicator variable equal to 1 if the company hires an audit firm from China, and 0 otherwise. ONLIST_EUROPEAN is an indicator variable equal to 1 if the company hires an audit firm from the 19 on-list European jurisdictions, and 0 otherwise. Detailed data definitions and sources are in Appendix A. All financial statement data are measured as of the end of fiscal year 2009. Financial statement data are trimmed at 1% and 99%. The indexes are as of the year that is closest to and prior to year 2010, among all the available years. Firms in the financial industry are dropped (SIC between 6000 and 6999). Column (1) excludes companies with auditors from the 19 on-list European countries. Columns (2) to (7) exclude companies hiring auditors from China. ***, **, and * indicate significance at the 1%, 5%, and 10% level for a two-tailed test, respectively.

Data availability

Data will be made available on request.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Table 9
Analysis of change in perceived financial reporting quality.

| Panel A: Earnings response coefficients (ERCs) | | | |
|--|------------------------------------|----------------------------------|-----------------------------------|
| Independent variables | (1)China vsOff list | (2)On list European vs Off list | (3)China vsOn list European |
| CHINA × POST × UEARN | -0.0638** (-1.99) | | -0.0711* (-1.78) |
| ONLIST_EUROPEAN × POST × UEARN | | -0.0234 (-0.71) | |
| CHINA | -0.0563* (-1.79) | | -0.0909** (-1.97) |
| ONLIST_EUROPEAN | | 0.0104 (0.35) | |
| UEARN | 0.2273*** (4.12) | 0.2472*** (4.87) | 0.2214*** (3.67) |
| POST | 0.0164 (-0.54) | -0.0188 (-0.63) | -0.0684* (-1.70) |
| CHINA × POST | -0.0477 (-1.56) | | 0.0306 (0.61) |
| CHINA × UEARN | 0.0825*** (2.34) | | 0.1069** (2.09) |
| ONLIST_EUROPEAN × POST | | -0.0354 (-1.09) | |
| ONLIST_EUROPEAN × UEARN | | -0.0092 (-0.27) | |
| UEARN × POST | -0.0322 (-1.08) | -0.0315 (-0.90) | -0.0486 (-1.44) |
| UEARN × LOSS | -0.1032** (-2.70) | -0.0904** (-2.49) | -0.0885* (1.92) |
| UEARN × ANN | -0.0234 (-0.72) | -0.0474 (-1.44) | -0.0549 (-1.44) |
| NUMEST | 0.0355 (1.39) | 0.0194 (0.75) | -0.0079 (-0.23) |
| LOSS | -0.0673** (-2.17) | -0.0765** (-2.32) | -0.1021*** (-2.62) |
| DISP | -0.0538* (-1.79) | -0.0533** (-2.06) | -0.0637 (1.60) |
| ANN | 0.0189 (0.74) | -0.0012 (-0.04) | 0.0351 (1.03) |
| ADR | 0.0104 (0.38) | 0.0201 (0.70) | 0.0308 (0.77) |
| OTC | -0.0369 (-1.48) | -0.0274 (-1.08) | 0.0114 (0.34) |
| SIZE | -0.0386 (-1.31) | -0.0560** (-2.19) | -0.0876** (-2.04) |
| N | 1,583 | 1,510 | 891 |
| adj. R-sq | 0.0544 | 0.0537 | 0.0509 |
| Panel B: Absolute returns | | | |
| Independent variables | (1)China vs Off list | (2)On list European vs Off list | (3)China vs On-list European |
| CHINA*POST | -0.0534** (-2.05) | | -0.0531* (-1.74) |
| ONLIST_EUROPEAN*POST | | -0.0262 (-0.98) | |
| CHINA | 0.1283*** (6.10) | | 0.1494*** (5.41) |
| ONLIST_EUROPEAN | | 0.0318 (1.29) | |
| POST | -0.1088*** (-4.30) | 0.1159*** (-4.61) | -0.1503*** (-3.84) |
| UEARN | -0.0057 (-0.25) | -0.0012 (-0.05) | 0.0581* (1.92) |
| NUMEST | 0.0384* (1.79) | 0.0270 (1.21) | 0.0689** (2.08) |
| LOSS | 0.0064 (0.29) | 0.0025 (0.11) | -0.0234 (-0.79) |
| DISP | 0.0395* (1.76) | 0.0554** (2.25) | 0.0548* (1.88) |
| ANN | -0.0333 (-1.56) | -0.0338 (-1.52) | -0.0445 (-1.55) |

(continued on next page)

Table 9 (continued)

| Panel B: Absolute returns | | | |
|---------------------------------------|-----------------------------------|----------------------------------|-----------------------------------|
| Independent variables | (1)China vs Off list | (2)On list European vs Off list | (3)China vs On-list European |
| ADR | 0.0013 (0.05) | 0.0116 (0.47) | 0.0195 (0.51) |
| OTC | 0.0353* (1.67) | 0.0521** (2.42) | 0.0298* (1.74) |
| SIZE | -0.1700*** (-6.17) | -0.1248*** (-5.45) | -0.1690*** (-4.65) |
| N | 1,583 | 1,510 | 891 |
| adj. R-sq | 0.0814 | 0.0598 | 0.0793 |
| Panel C: Abnormal trading volumes | | | |
| Independent variables | (1)China vs Off list | (2)On list European vs Off list | (3)China vs On list European |
| CHINA*POST | -0.0587* (-1.69) | | -0.0629* (-1.65) |
| ONLIST_EUROPEAN*POST | | -0.0411 (-1.15) | |
| CHINA | 0.1029*** (3.90) | | 0.1122*** (3.17) |
| ONLIST_EUROPEAN | | 0.0801*** (2.72) | |
| POST | -0.0617* (-1.85) | -0.0347 (-1.07) | -0.0951** (-2.03) |
| UEARN | 0.0996*** (3.57) | 0.0704** (2.43) | 0.0886** (2.16) |
| NUMEST | 0.0645** (2.26) | 0.0613** (2.22) | 0.0844** (2.46) |
| LOSS | -0.1110*** (-4.13) | -0.1209*** (-4.40) | -0.1331*** (-3.75) |
| DISP | 0.0839*** (3.07) | 0.0504* (1.73) | 0.0975*** (2.85) |
| ANN | -0.0473* (-1.87) | -0.0219 (-0.57) | -0.0725** (2.06) |
| ADR | -0.0275 (-1.54) | -0.0386 (-1.33) | -0.0563 (-1.56) |
| OTC | -0.0011 (-0.44) | -0.0289 (-1.13) | -0.0088 (-0.26) |
| SIZE | -0.0081 (-0.28) | -0.0189 (-0.62) | 0.0109 (0.31) |
| N | 1,601 | 1,479 | 876 |
| adj. R-sq | 0.0528 | 0.0386 | 0.0647 |
| Panel D: Analyst forecast dispersions | | | |
| Independent variables | (1)China vs Off list | (2)On list European vs Off list | (3)China vs On list European |
| CHINA*POST | 0.0576* (1.69) | | 0.0437* (1.74) |
| ONLIST_EUROPEAN*POST | | -0.0086 (-0.33) | |
| CHINA | 0.1440*** (3.88) | | 0.0784*** (2.90) |
| ONLIST_EUROPEAN | | 0.0115 (0.69) | |
| POST | 0.0512 (1.62) | 0.0202 (0.88) | 0.0344* (1.67) |
| BIG4 | -0.0350* (-1.75) | -0.0289 (-1.48) | -0.015 (-0.57) |
| LEVERAGE | 0.0374* (1.86) | 0.267 (1.36) | 0.0352 (1.16) |
| MB | -0.0973*** (-4.86) | -0.0540*** (-2.76) | -0.0184 (-0.65) |
| LNGDP | -0.0434** (-2.01) | -0.0377* (-1.76) | -0.0637 (-1.58) |
| RULE_OF_LAW | -0.0590** (-2.29) | -0.0327 (-1.46) | -0.1708** (-1.96) |
| ADR | 0.0222 (0.77) | -0.0036 (-0.14) | 0.0120 (0.38) |
| OTC | 0.0146 (0.75) | -0.0022 (-0.12) | 0.0146 (0.56) |
| SIZE | -0.0784*** | -0.0149 | -0.0400 |

Table 9 (continued)

| Panel D: Analyst forecast dispersions | | | |
|---------------------------------------|----------------------|---------------------------------|------------------------------|
| Independent variables | (1)China vs Off list | (2)On list European vs Off list | (3)China vs On list European |
| N | (-3.59) 2,545 | (-0.68) 2,745 | (-1.14) 1,556 |
| adj. R-sq | 0.0488 | 0.0112 | 0.0302 |

Table 9 presents the results for analyses of financial reporting quality of quarterly earnings announcements. Column (1) presents the analysis of earnings response coefficient (ERC), column (2) presents the abnormal return analysis, column (3) provides the abnormal volume analysis, and column (4) presents

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Appendix A. Variable definitions

| Variables | Description | Source |
|--------------------------------|--|-----------------|
| <i>1) Firm characteristics</i> | | |
| ADR | = 1 if the security is an ADR, and 0 otherwise. | DataStream |
| AGE | = Current year minus the year the firm was founded. | Capital IQ |
| ANN | = 1 if it is the fourth quarter earnings announcement, and 0 otherwise. | I/B/E/S |
| AVOL | = The natural logarithm of the ratio of cumulative three-day mean event-period volume and the average three-day estimate-period volume. Daily volume is the number of shares traded on a particular day divided by the total number of shares outstanding. | DataStream |
| BIG4 | = 1 if the firm hires a Big 4 auditor, and 0 otherwise. | Audit Analytics |
| CAPEX | = Capital expenditures scaled by total assets. | Capital IQ |
| CAR | = Firm's mean abnormal returns accumulated over the three-day window centered on the earnings announcement date, where abnormal return is the difference between raw returns and estimated returns calculated using the S&P 500 index and the MSCI All-Capital World Index Ex-U.S. as the benchmark in the OLS market model. | DataStream |
| CAR | = The absolute value of CAR. | DataStream |
| CFO | = Cash flow from operating scaled by total assets. | Capital IQ |
| CHINA | = 1 if the company hires an audit firm from China (including Hong Kong SAR), and 0 otherwise. | Audit Analytics |
| DISP | = The standard deviation of analyst forecasts. | I/B/E/S |
| LEVERAGE | = The ratio of total liabilities to total assets. | Capital IQ |
| LOSS | = 1 if the actual earnings per share reported in I/B/E/S is smaller than 0, and 0 otherwise. | I/B/E/S |

(continued on next page)

Variable definitions (continued)

| Variables | Description | Source |
|-----------------------------------|--|---|
| MB | = The ratio of the market value of total assets to book value of total assets; | Capital IQ |
| NUMEST | = The number of brokers that provide forecasts in the 90 days before the earnings announcement date. | I/B/E/S |
| ONLIST_EUROPEAN | = 1 if the company hires an audit firm from the 19 on-list European jurisdictions, and 0 otherwise. | Audit Analytics |
| OTC | = 1 if the security is traded on OTC markets, and 0 otherwise. | DataStream |
| POST | = 1 if the announcement date is later than May 18, 2010, and 0 if the announcement date is earlier than August 12, 2009. | DataStream, I/B/E/S, Compustat, Capital IQ, and SEC website |
| SALEGRW | = Net revenue growth over the past year. | Capital IQ |
| SIZE | = The natural logarithm of market values. | Capital IQ |
| UEARN | = The difference between actual earnings per share and the mean of the brokers' latest analyst forecasts made 90 days before the earnings announcement date. | I/B/E/S |
| UEARN | = The absolute value of UEARN. | I/B/E/S |
| USGAAP | = 1 if the financial statement follows the United States General Accepted Accounting Principles, and 0 otherwise. | Audit Analytics |
| <i>2) Country-level variables</i> | | |
| AUDITOR_COMPLIANCE | = An index of the extent to which auditors are likely to comply with the auditing standard and accounting standard. The index was constructed using factors relating to auditor skills, training, supervision, etc. The index ranges from 0 to 32, with higher scores reflecting stronger enforcement. | Preiato et al. (2013) |
| LNGDP | = The natural logarithm of the home country's per capita GDP expressed in current U.S. dollars. | World Bank Development Indicators, the GDP for Taiwan (of China) is retrieved from International Monetary Fund World Economic Outlook Data) |
| JUDICAL | = An index that measures the efficiency of a country's legal system. | Laeven and Majnoni (2005) |
| DISCLOSURE | = Index of disclosures required in periodic disclosures (e.g., annual reports). The index ranges from 0 to 1, with higher scores representing higher disclosure requirements. | Djankov et al. (2008) |
| RULE_OF_LAW | = An index capturing the perceived influence and authority of laws for a country. The index ranges from -2.5 to 2.5, with higher scores reflecting stronger rule of law. | World Bank Governance Indicators |

Appendix B. The PCAOB news releases on progress of cross-border inspections

| Date | News release | Details |
|------------|--|---|
| 2008-11-28 | PCAOB to Consider Rule Amendments Concerning Timing of Non-U.S. Inspections, Seeking Comments | Announced that it has scheduled an open meeting for Thursday, Dec. 4, at 9:00 a.m. |
| 2008-12-04 | PCAOB Adopts and Proposes Rule Amendments on the Timing of Certain Non-U.S. Inspections and Seeks Comment on Related Issues | Webcast available (indicates a timing problem for certain countries). Information also disclosed in Release No. 2008-007. But the disclosure is obscure. |
| 2009-04-07 | PCAOB Discloses Information Related to its International Inspections Program | Two lists are published: (1) non-U.S. jurisdictions in which there are registered firms that the Board intends to inspect in 2009, and 2) non-U.S. jurisdictions in which there are registered firms that the Board has inspected to date. |
| 2009-06-19 | PCAOB to Consider Rule Amendment Concerning the Timing of Certain Non-U.S. Inspections | Announced that it has scheduled an open meeting for Thursday, June 25, at 9:30 a.m. |
| 2009-06-25 | PCAOB Adopts Rule Amendment on the Timing of Certain Non-U.S. Inspections | Webcast and related documents available. |
| 2009-08-12 | PCAOB Provides New and Updated Information on Inspections | Two lists are published: 1) jurisdictions in which the PCAOB has conducted inspections, and 2) registered firms not yet inspected even though four years have passed since issuance of an audit report while registered. |
| 2010-02-03 | Progress on PCAOB International Inspections | Four lists are published: 1) jurisdictions in which PCAOB has conducted inspections, 2) registered firms not yet inspected even though four years have passed since issuance of an audit report while registered, 3) jurisdictions where the PCAOB intends to conduct inspections in 2010, and 4) information on PCAOB international inspections. |
| 2010-05-18 | PCAOB Publishes List of Issuer Audit Clients of Non-U.S. Registered Firms In Jurisdictions where the PCAOB is Denied Access To Conduct Inspections | One list is published: issuer audit clients of non-U.S. registered firms in jurisdictions where the PCAOB is denied access to conduct inspections. |
| 2011-01-10 | PCAOB Enters into Cooperative Agreement with United Kingdom Audit Regulator | A cooperative agreement with U.K. audit regulator is published. |

Appendix C. Timeline for the key events

Date: August 12, 2009 (Announcement 1)

Event: Publish audit names list for inspection delays.

Levels of disclosure: 1) Audit names; 2) Jurisdiction names.

Reason for the delay: NO

Bundling information: List of jurisdictions that the PCAOB has conducted inspections. This list has certain overlap with the delay-list.

Title: "PCAOB Provides New and Updated Information on Inspections"

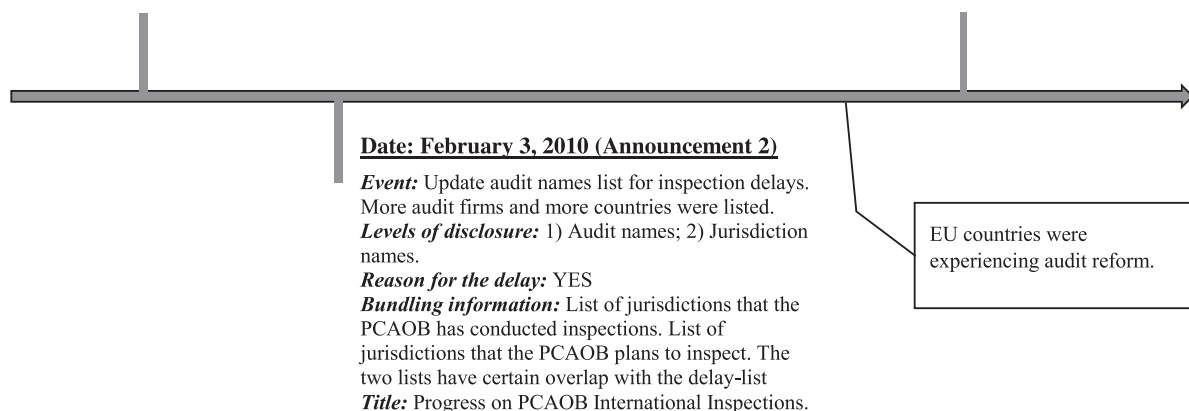
Date: May 18, 2010 (Announcement 3)

Event: All companies from countries denying the PCAOB inspection were publically listed.

Levels of disclosure: 1) Audit names; 2) Jurisdiction names; 3) Client name.

Bundling information: NO

Title: "PCAOB Publishes List of Issuer Audit Clients of Non-U.S. Registered Firms In Jurisdictions where the PCAOB is Denied Access To Conduct Inspections"



Appendix D. PCAOB news release examples

Example 1: Announcement 1 (August 12, 2009)

Note by author of this paper: the excerpt below is part of the text content in the PCAOB's August 12, 2009, news release. The original text font and color have been preserved. Attached in this news release are two lists in PDF format: (1) "Jurisdictions in which PCAOB Has Conducted Inspections of Registered Non-U.S. Firms," and (2) "Registered Firms Not Yet Inspected Even Though Four Years Have Passed Since Issuance of an Audit Report While Registered." We attached part of the second PDF file as well.

1) Text content:

PCAOB Provides New and Updated Information on Inspections (Note by author of this paper: this is the title of the news release.)

Washington, D.C., Aug. 12, 2009

The Public Company Accounting Oversight Board today published two lists: a list of registered firms that have not yet been inspected by the PCAOB, even though more than four years have passed since the end of the calendar year in which the firm first issued an audit report while registered with the Board; and an updated list of jurisdictions in which the Board has conducted inspections of registered non-U.S. firms. In addition, the Board today reported its progress on meeting its 2009 target for the inspection of certain non-U.S. firms eligible to be deferred, pursuant to a recent Board rule amendment. These disclosures provide transparency about aspects of the Board's inspection program, including progress with respect to international inspections.

LIST OF FIRMS

The Board previously announced its intention to publish the new list of certain firms that have not yet been inspected in two recent releases: PCAOB Release No. 2009-003, Final Rule Concerning the Timing of Certain Inspections of Non-U.S. Firms, and Other Issues Relating to Inspections of Non-U.S. Firms (June 25, 2009), issued in connection with the Board's adoption of PCAOB Rule 4003(g); and PCAOB Release No. 2008-007, Rule Amendments Concerning the Timing of Certain

Inspections of Non-U.S. Firms, and Other Issues Relating to Inspections of Non-U.S. Firms (Dec. 4, 2008), issued in connection with the Board's adoption of PCAOB Rule 4003(f).

2) Partial PDF file for names of audit firms:

| Name of Firm | Country |
|---|---------|
| Deloitte Touche Tohmatsu CPA Ltd. | China |
| PricewaterhouseCoopers Zhong Tian CPAs Ltd. Co. | China |
| Deloitte & Associates | France |
| Deloitte Touche Tohmatsu | France |
| Ernst & Young Audit | France |
| KPMG SA | France |
| PricewaterhouseCoopers Audit | France |
| Ernst & Young AG WPG | Germany |
| Ernst & Young DATAG WPG | Germany |

Example 2: Announcement 3 (May 18, 2010).

1) Text content:

PCAOB Publishes List of Issuer Audit Clients of Non-U.S. Registered Firms in Jurisdictions where the PCAOB Is Denied Access to Conduct Inspections.

Washington, D.C., May 18, 2010.

The Public Company Accounting Oversight Board (PCAOB) today published a list of more than 400 non-U.S. companies whose securities trade in U.S. markets, but whose PCAOB-registered auditors the Board currently cannot inspect because of asserted non-U.S. legal obstacles.

Because investors in U.S. markets may be relying on the audit work of certain firms without realizing that those firms are presently uninspected by the PCAOB, the Board is publishing this list of issuers that have in 2009 or 2010 (through mid-April), filed financial statements with the SEC that were audited by a firm in one of these jurisdictions. The auditors of the issuers appearing on the list are located in China, Hong Kong, Switzerland and 18 European Union countries.

2) Partial PDF file for names of U.S.-listed companies

Name of PDF file: Issuer Audit Clients of Non-U.S. Registered Firms in Jurisdictions where the PCAOB is Denied Access to Conduct Inspections

| EUROPE | | |
|----------------|---|---|
| | Auditor | Issuers |
| AUSTRIA | KPMG Wirtschaftsprüfungs- und Steuerberatungs GmbH | OESTERREICHISCHE KONTROLLBANK AKTIENGESELLSCHAFT |
| BELGIUM | Deloitte Bedrijfsrevisoren / Reviseurs d'Entreprises | DELHAIZE GROUP |
| | Ernst & Young Bedrijfsrevisoren - Reviseurs d'Entreprises S.C.C. | WABCO Holdings Inc. |
| | Klynveld Peat Marwick Goerdeler Bedrijfsrevisoren civil CVBA/SCRL | AB InBev France S.A.S. Anheuser-Busch InBev S.A. |
| | PKF Bedrijfsrevisoren BCVBA | REMEDENT, INC. |

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