The effects of cross-border information-sharing on enforcement and earnings attributes◊

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Abstract: The events of Sept. 11, 2001 inadvertently prompted sweeping cross-border coordination efforts for securities regulators around the globe. After 9/11, the International Organization of Securities Commissions (IOSCO) forged an agreement—the Multilateral Memorandum of Understanding Concerning Consultation and Cooperation and the Exchange of Information (MMOU)—that standardizes information sharing between securities regulators. I link this agreement to the practical ability of the SEC to pursue U.S.-listed foreign firms by showing that the probability of enforcement increases by a factor of two or more in firms whose home countries enlist in the MMOU. Because countries enter into the MMOU over time, the events create a set of staggered shocks to the SEC's enforcement capacity for U.S.-listed foreign firms. The shocks generated by the agreement are associated with predictable improvements in U.S. GAAP-reconciled earnings properties. In countries that have entered the agreement, proxies for earnings quality for U.S.-listed firms increase and incrementally converge to those of matched U.S. firms. The practical effects of this cooperative agreement, as shown in this study, help resolve lingering questions about why the earnings quality of U.S.-listed foreign firms diverged from U.S. firms during pre-MMOU periods.

Keywords: information sharing, regulatory coordination, enforcement, SEC, cross-list, bonding
JEL codes: K22, G38, F22, F23, F59, M48

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I. INTRODUCTION

After Sept. 11, 2001, a clear need to expose and eliminate terrorism-related financing and money laundering compelled the International Organization of Securities Commissions (IOSCO) to standardize the information-sharing process for securities regulators. The resulting agreement—the Multilateral Memorandum of Understanding Concerning Consultation and Cooperation and the Exchange of Information (MMOU)—governs the scope, privacy, and use of information shared between regulators.[1] By showing that the MMOU is associated with SEC enforcement actions, I link cross-border information sharing to the practical ability of the SEC to pursue U.S.-listed foreign firms.[2] Then, using the dates of MMOU application as staggered exogenous shocks to the SEC's capacity to pursue U.S.-listed foreign firms, I trace the effect of the MMOU on accounting properties.

Although the literature on enforcement has become more substantive in recent years, enforcement remains difficult to identify empirically due to endogeneity concerns. Cross-sectional enforcement variation may simply proxy for omitted institutional variables that catalyze observed capital market outcomes (Jackson and Roe, 2009; Coffee, 2007). Variation across time can also be problematic, because enforcement events often commingle with other institutional changes or are jointly determined by the regulatory mechanism and firm behavior (similar arguments are presented by Bhattacharaya et al. (2003), Daske et al. (2008), and Christensen et al. (2011)).

To mitigate the risk of endogeneity, this study uniquely identifies enforcement using the impact of the MMOU on SEC oversight of U.S.-listed foreign firms. IOSCO introduced the MMOU to aid investigations of terrorist financing and money laundering and *not* as an endogenous response to market failure, firm malfeasance, or investor dissatisfaction.[3] As IOSCO describes it, "*The MMOU*

[1] The MMOU document (along with revisions in 2012) can be viewed here.
[2] The terms "foreign" and "cross-listed" are used interchangeably throughout the paper. Both terms apply to formal cross-listings through ADRs, dual-listings, and foreign firms listed only in the U.S.
[3] IOSCO routinely refers to the 9/11 attacks as the impetus for the MMOU (e.g., in the MMOU document, press release from IOSCO following the attacks, and in other places in the IOSCO site). This is consistent with interpretations from

was developed by IOSCO following the events of 11 September 2001, when IOSCO created a Special Project Team to explore how securities regulators could expand cooperation and information sharing" (IOSCO, 2014). That the MMOU arose from security concerns—and not market-, firm-, or investor-related forces—makes endogeneity less likely in this setting. As a result, this study extends prior literature that uses other enforcement proxies.

The setting provides other useful properties that promote reasonable identification. First, the application dates for MMOU signatories clearly identify when information sharing efforts begin. This eliminates imprecision in dating and classifying enforcement changes. Second, different countries join the MMOU at different times, so the country-level efforts to cooperate are staggered in time and location. Unlike in studies that exploit a singular shock isolated to just one country, this setting can use, as benchmarks, firms from countries that have not yet committed to share information. A strength of this design is that it identifies both *when* and *where* effects should take place (see Agrawal (2009) and Christensen et al. (2013)) as examples of other studies that exploit staggered events). Third, because all accounting measures are prepared under U.S. GAAP-reconciled standards, variation in accounting standards should not drive the properties of earnings. Finally, although my research design has some similarities to the one used by Christensen et al. (2013), it differs in that the shocks to information flows all occur in the same regulator (the SEC). This implicitly holds constant other features, such as the SEC's regulatory skills, motivation, and abilities.[4]

The literature has paid close attention both to SEC enforcement practices against U.S.-listed foreign firms and to the reporting quality of those firms. Several papers conclude that cross-listed firms

legal and political economy scholars (see Sheng (2002), Nakagawa (2011), Austin (2012), Kempthorne (2013)) as well as the expressed views of those within the SEC, IOSCO, other regulators, and high-ranking officials (e.g., Felice Freidman, former Director of the Office of International Affairs at the SEC; Robert Peterson, Deputy Director of the Office of International Affairs at the SEC; David Brown, former Chair of IOSCO's Technical Committee and Chairman of the Ontario Securities Commission; and Greg Tanzer, former Secretary General of IOSCO).

[4] Nonetheless, variation could still occur because of differences in foreign regulatory capacities. Note also that Christensen et al. possesses other useful features, like the ability to study the *magnitude* of changes in enforcement.

are subject to lower and less consequential standards of SEC oversight than U.S. firms are (Siegel (2005), Frost and Pownall (1994), and Frost and Kinney (1996)). This literature identifies a potential deficiency in the threat of SEC enforcement as a possible difference in incentives for foreign firms. If this particular difference does exist, it may or may not affect reporting quality. Lang et al (2006) conclude that U.S.-listed foreign firms in the late 1990s and early 2000s do exhibit lower-quality reporting attributes than matched-U.S. firms do. However, the researchers contend that differences in earnings attributes result from incentives in general and not necessarily from enforcement deficiencies. My study helps illuminate the extent to which weak enforcement is responsible for different accounting properties in foreign firms (relative to U.S. firms).

To understand the extent to which the MMOU facilitates practical changes in enforcement, I construct logistic regression models that predict enforcement actions, given a set of firm characteristics shown to be associated with litigation (from Kim and Skinner (2011)). Indicator variables that denote observations after home regulators have applied to become an MMOU signatory reveal that the probability of SEC enforcement increases significantly. Notably, firms from countries that have applied to the MMOU are between 2.01 and 2.83 times as likely to be pursued by the SEC (depending on the specification).

One potential issue that could cloud my results is that the pattern of enforcement increases monotonically, which could induce a spurious correlation with indicators that are set to '1' at the information-sharing application date and remain set to '1' for the remainder of the sample period. To establish that the MMOU is uniquely correlated with enforcement as hypothesized, I scramble the various MMOU application dates and apply them to the sample countries at random. When this process is repeated, the coefficient estimate for the MMOU using the pseudo-dates very rarely exceeds the estimate using the real dates. The results also get weaker as the MMOU date is systematically shifted

away from the real dates. Ultimately, I conclude that information sharing under the MMOU helps catalyze effective enforcement.

The MMOU provides an opportunity to study earnings properties when levels of enforcement change due to exogenous events. In the context of the MMOU, I reexamine the earnings-quality proxies employed by Lang et al. (2006)—earnings management, timely loss recognition, and various value relevance regressions—and reach conclusions similar to theirs. The evidence suggests that prior to the MMOU application foreign firms have greater earnings management, less timely recognition of losses, and lower associations between accounting outputs and stock prices. These differences are eradicated after the MMOU application. The MMOU agreement is associated with substantial changes to earnings properties, which can be interpreted as an increase in earnings quality and a convergence toward U.S. firms.[5]

This paper contributes to the literature three ways. First, it is the initial study linking an intelligence network to a practical increase in regulatory enforcement. Several organizations, including IOSCO, contend that the formal agreements of intent to cooperate are useful for regulatory agencies due to the increasing globalization of business. The SEC continues to actively pursue similar agreements: In 2013 alone, the commission entered into bilateral agreements with 29 different European Union (EU) countries.[6] Reciprocal cooperation agreements like these are proliferating, yet empirical assessments of their effects remain scant. The evidence in this study establishes the MMOU as an important gateway between regulators, and suggests that regulators can indeed use transnational networks to access information that enables effective enforcement. This finding extends Silvers (2016), who identifies the same expansion in SEC enforcement of foreign firms, but is unable to establish the

[5] To remove the effects of IAS/IFRS, I run the tests in separate partitions.
[6] To be clear, these agreements pertain to Alternative Investment Fund Managers, not enforcement. Therefore, they are not included in this study. See http://www.sec.gov/about/offices/oia/oia_cooparrangements.shtml.

source of increased enforcement. My study can discriminate between information sharing and other potential factors such as Sarbanes-Oxley, 9/11, and SEC budgetary increases.

Second, by linking accounting properties to the MMOU, this paper avoids some of the risks associated with conventional designs. A number of studies use cross-sectional variation to link accounting properties to broad-level institutional features (such as public versus private firm status, legal origins and indices of formal laws, regulatory powers, and investor protection), and some of these studies attempt to describe the effects of enforcement. However, critics of cross-sectional designs point out that omitted variables may play a large role in the results.[7] In contrast, this study provides an incrementally better identification of enforcement—a shock to enforcement cooperation prompted by information flows from the MMOU. This complements prior research that uses variation across countries, or an event confined within a single country and lays the groundwork to use a new enforcement proxy.

Third, this study helps resolve enduring questions about why the reporting properties for U.S.-listed foreign firms have differed from domestic U.S. firms, and it adds to the literature that views a U.S. listing as promoting more stringent oversight.[8]

II. BACKGROUND AND HYPOTHESES

Enforcement cooperation and information-sharing agreements

The evolution of cross-border information sharing at the SEC started in the early 1980s, a period when suspicious trading took place from foreign accounts prior to several mergers (Freidman et al., 2002). The SEC's attempts to track down these insiders often entailed lengthy, expensive, and minimally successful court proceedings in other countries—efforts that exposed significant deficiencies in transnational regulation. For example, in the earliest cross-border interactions with Switzerland, the

[7] See Coffee (2007) and Jackson and Roe (2011) for cautions about using these measures as a surrogate for enforcement.
[8] The bonding hypothesis is an explanation for why foreign firms choose to list their shares in U.S. markets (Coffee, 2002; Stulz, 1999). It proposes that firms can "bond" to the more stringent standards of investor protection and disclosure that are present in the U.S. As a consequence, firm value is increased because investment risks decline.

SEC had difficulty achieving even the most basic tasks, like ascertaining the identity and accounts of persons trading from Swiss bank accounts. In large part, the difficulty arose because insider trading was not illegal in Switzerland, and dual-illegality was a precondition for Switzerland's cooperation under criminal legal treaties (this was a common precondition in most countries at the time). In fact, Swiss blocking statutes that determine the methods and uses of information gathering within a sovereign nation placed Swiss banks in a position where they had to choose to ignore U.S. court orders (violating U.S. laws) or violate Swiss secrecy laws. Mann notes that, although these statutes often serve legitimate purposes, blocking laws inhibited the exchange of information about securities law violations (Mann, 1985). As a temporary fix, the Swiss used a liberal application of a law that prohibits stealing a corporate secret, and on these grounds provided limited assistance to the SEC. However, it became clear that cross-border investigations like the ones in Switzerland could not keep pace with the speed of the capital markets.

During the 1980's and 1990's, the SEC and other regulators signed several bilateral memorandum-of-understanding agreements to promoted reciprocal assistance. Unlike a treaty, a memorandum of understanding is simply a statement of intent (known as "soft law") and is not enforceable under international law. These initial efforts by SEC and foreign counterparties, which often stemmed from informal contact between regulators during ad hoc investigations, routinely acknowledged that both parties lacked the legal authority to share information. Instead, they made commitments to obtain it in the future (see Mann (2008)). Although may they represent incremental progress, they did little to enhance observable foreign enforcement outputs.

In 1990, Congress attempted to address deficiencies in transnational regulation by passing the International Securities Enforcement Cooperation Act. This act aids in extraterritorial discovery (Erwin, 1992) by permitting the SEC to assist other regulators in conducting investigations,

producing documents, and preparing sworn testimony. The act also stipulates that assistance can be rendered even if the activity in question is not illegal in the United States. In other words, regulators can share information even on legal activities. Several other countries soon established their own legal bases for disseminating information across borders, and today this legislation remains fundamental to information sharing.

Another impediment to cross-border information sharing during this period was the other was the Freedom of Information Act (FOIA), which can compel the disclosure of documents controlled by the U.S. government. Uncertainty about FOIA disclosures may have made foreign regulators wary of sharing sensitive information with the SEC. Members of the SEC Office of International Affairs recall that, even in cases where a strong legal basis for cross-border information sharing existed, privacy concerns often took precedent (Freidman et al., 2002). However, additional U.S. legislation addressed this issue by outlining FOIA exemptions for information obtained from foreign regulators (in Section 24(d) of the Exchange act) (U.S. Congress, 1990).

The adjustments to FOIA, the passage of the International Securities Enforcement Cooperation Act, and new bilateral agreements (many more of which were in place by the late 1990s) may have led to modest improvements in cross-border information flows in the 1990s. Despite these developments, however, the SEC enforcement stance toward foreign firms during that time has been criticized as "infrequent and ineffective" (Siegel, 2005). The terrorist attacks on September 11, 2001, provided an extraordinary exogenous change to this environment by generating widespread political support for information-sharing efforts—especially ones targeting terrorist financing and money laundering.[9] This groundswell quickly led to the passage of the Patriot Act of 2001, which promoted

[9] Kempthorne (2013) states that "Regulators recognized the limitations to the current network of bilateral MOUs prior to the crisis, but it had not reached a critical point where securities regulators were willing to do something to address it. September 11 was that critical point."

cooperation between different U.S. agencies as well as agencies around the globe.[10] At the SEC's Office of International Affairs, the changes were felt almost immediately:

> *"The effects of the events of 11th September, 2001 on securities markets underscored the importance of international cooperation among regulators. In the aftermath of the attacks securities regulators cooperated – perhaps more than ever before. Regulators were in touch on a daily basis to exchange regulatory and enforcement information, and consulted with one another about the regulatory relief they were considering."*
> -Friedman et al. [2002, p 37]

The MMOU framework for regulatory assistance, established in May 2002, represents an important outcome of the political impetus (both domestic and abroad) for improved financial-reporting networks. In helping shape the MMOU, the SEC drew upon its experiences with past bilateral agreements and stressed the many practical considerations involved in information sharing (Freidman et al., 2002). The MMOU identifies the scope, permissible uses, and confidentiality obligations associated with information sharing; it provides a blueprint for sharing investigation costs with agencies that request information; and it compels members not only to comply with requests from other authorities but also to make reasonable efforts to *voluntarily* provide those authorities with any information *likely* to be useful to them (see "Unsolicited Assistance" in the MMOU application).

A key component of the MMOU is its focus on the regulator's ability to provide practical assistance. Unlike prior cross-border arrangements, the MMOU requires a rigorous review of the applicant's legal basis for (as well as any impediments to) information sharing. In the MMOU application, nine detailed questions focus on the applicant's capability to obtain and share information. Applicants likely to deliver a high standard of assistance are identified. Applicants that cannot comply

[10] As an example, the Special Measures section of the Patriot Act compels identification and oversight of bank accounts and imposes significant prohibitions against noncompliant jurisdictions. Other sections, including the Prohibition on U.S. Correspondent Accounts with Foreign Shell Banks, Cooperative Efforts to Deter Money Laundering, and Bank Records Related to Anti-Money Laundering Programs, bestow investigative powers and tools to disrupt terrorist financing, money laundering, and related illegal activities that take place outside the U.S. territory. See www.uspatriotact.org/ and https://www.fincen.gov/statutes regs/patriot/ for details.

with the MMOU obligations sometimes receive guidance through the SEC's International Technical Assistance Program, which is designed to disseminate best practices to regulators across the globe. For its part, the SEC sees this program not only as an aid to foreign regulators but also as a boon to its own enforcement efforts.[11]

> *"The SEC often requires assistance from regulatory authorities abroad in the form of banking, brokerage or telephone records, testimony, and other evidence as it pursues wrongdoing …The contacts forged through the Technical Assistance program often significantly advance SEC investigations and examinations, resulting in referrals, document production, and arrangements for freezing and securing the proceeds of fraud, in conjunction with our enforcement efforts." - Fact Sheet for SEC's International Technical Assistance Program*[12]

Today, cooperation between regulators in the MMOU network typically bypasses ad hoc efforts in foreign courts in favor of well-established alternative channels. At the SEC's Office of International Affairs, contacts help route information requests through the MMOU network, and devoted agents facilitate foreign assistance and fulfill information requests. Figure 1a reveals considerable growth in the number of requests that have been made by the SEC and by all nations within the MMOU framework since the memorandum's inception.[13] SEC Chairman Donaldson, points out the importance of the MMOU to the commission's enforcement efforts:

> *"The SEC has long recognized that international cooperation is vital to an effective enforcement program. The IOSCO MOU is an important contribution to cross-border enforcement cooperation and a public statement that the world's securities regulators are committed to assisting one another in preventing and prosecuting violations of our securities laws. We are pleased to be a signatory to the (M)MOU and anticipate that this agreement will enhance our ability to obtain information valuable to our enforcement investigations."*

[11] According to Ethiopis Tafara, the former director of the Office of International Affairs, an annual spring two-week institute for emerging markets covers "Securities Regulations from A to Z," and a fall institute for developed markets considers enforcement and market oversight. Tafara estimates that there are 6–12 annual bilateral or regional workshops, and says the OIA has "to turn away requests for bilateral and regional training [because] there are so many of them." See Tafaris (2006) for more details.

[12] Available at: http://www.sec.gov/news/press/2010/2010-68-factsheet.htm.

[13] It is not clear how these two metrics are calibrated or if they are measured on an equal basis, so these graphs should be interpreted with these limitations in mind. The point of the graph is to show that these events are becoming more frequent over time.

Given the discussion above, I propose that the MMOU increases the feasibility, in terms of both cost and logistics, of SEC enforcement towards U.S.-listed foreign firms. Consequently, I expect that MMOU applications are associated with an increased probability of SEC enforcement.

The MMOU and earnings properties

Useful properties of the MMOU setting

A natural question is whether the MMOU, by facilitating the information sharing required to prosecute U.S.-listed foreign firms, is associated with a change in the attributes of financial reporting. An increasing amount of literature links the enforcement practices in a cross-section of countries to the earnings properties within those countries. By using the MMOU as a shock to information flows, this study offers a potentially superior identification of enforcement. Because the impetus behind passage of the MMOU was exogenous (the terrorist attacks of 9/11), it reduces the likelihood that observed increases in enforcement simply reflect an increase in malfeasant behavior or other endogenous economic shocks.

Earnings properties of U.S.-listed foreign firms

By entering U.S. markets, foreign firms subject themselves to a nexus of accounting, legal, regulatory, and enforcement regimes. Cross-listed firms must not only satisfy the requirements of their home country but also those of the United States, such as U.S. GAAP financial reporting and SEC oversight. Stulz (1999) and Coffee (1999) suggest that when a foreign firm willingly unites with the regulatory strictness that accompanies a U.S. listing, this credibly signals to investors that the firm is bound to higher standards of investor protection and disclosure (an explanation known as the "bonding hypothesis"). The composite of incentives defined by legal institutions, market forces, and operating characteristics at the firm level may impact reporting discretion and therefore affect reporting outcomes.

Lang, et al. (2003) use a host of earnings measures (including earnings management, timely loss recognition, and value relevance) to confirm that cross-listing alters financial reporting attributes

relative to both foreign firms who do not cross-list and to cross-listed firms prior to cross-listing. Consistent with the bonding explanation, their study, which controls for selection issues, suggests that the difference between cross-listed and non-cross-listed firms stems partly from differences that existed prior to the cross-listing, but also from changes associated with the cross-listing itself.

However, some prior research questions the idea that a U.S. listing results in a meaningful increase in enforcement. Frost and Kinney (1996) fail to find any public actions by the SEC against U.S. listed foreign firms in their 1989/1990 sample period, despite several known disclosure violations (see also Frost and Pownall (1994)). Siegel (2005) provides evidence that this trend continues throughout his sample period ending in 2002. He concludes that SEC enforcement is absent for U.S-listed foreign firms, even in cases of severe misconduct. And Shnister (2010) indicates that foreign firms receive less SEC oversight than their representation in U.S. markets would imply.

Given these descriptions of weak SEC enforcement, it is not surprising that Lang et al. (2006) observe what may be a related outcome—that from 1991 to 2002 the reconciled earnings attributes of cross-listed firms fail to fully converge with a matched sample of comparable U.S. companies. The research design in the 2006 study employs the same proxies as Lang et al. (2003), holds accounting standards constant using U.S. GAAP reconciliations, and changes the benchmark from foreign firms to U.S. firms. The authors conjecture that the remaining differences in earnings attributes result from differing incentives (perhaps linked to enforcement), and that foreign firms may not realize similar reporting outputs if disparities in enforcement undermine the accounting principles required by the SEC.

Yet it may be premature to attribute the divergence in reporting attributes to enforcement. Lang et al. (2006) caution that their study cannot differentiate between the effects of inconsistent enforcement and those of other differences in incentives. And in a review of the Lang et al. (2006)

study, Leuz (2006) points out several characteristics besides enforcement (one being divergence in ownership structure) that could explain the different earnings attributes in these firms. Leuz holds that while cross-listing may subject firms to a homogeneous set of standards, it may not fully substitute for certain home-market features that persist after cross-listing.

Using the MMOU as an exogenous shock to information flows (and ultimately to enforcement) can help determine whether enforcement is a factor that explains the differences in earnings properties between foreign and U.S. firms. I expect the observations unaffected by the MMOU to be similar to those in Lang et al. (2006)—that is, relative to matched U.S. firms, the foreign firms will possess attributes associated with greater earnings management, less timely loss recognition, and lower value relevance. If disparities in enforcement are responsible for these differences, an exogenous increase in enforcement capacities should prompt the earnings properties of foreign firms to incrementally converge with those of U.S. firms. Therefore, my expectation is that MMOU membership is associated with higher earnings quality and incremental convergence toward U.S. firms.

III. EMPIRICAL CONSTRUCTS AND RESEARCH DESIGN

Measures of earnings quality

I predict that information-sharing agreements, by promoting enhanced enforcement, will reduce the discrepancies in earnings properties found in prior research. To test this, I use well-established proxies of earnings quality employed by Lang et al. (2003, 2006) and subsequently by Barth et al. (2008). The main constructs of interest are earnings management (a negative proxy for earnings quality), timely loss recognition, and value relevance. Barth et al. (2008) warn that even though these measures have been accepted into the literature, the relation between them and "earnings quality" could be ambiguous (see also Dechow et al. (2011) for a full discussion). Although these measures are not universally accepted, my decision to use them is motivated by their past use in research involving firms

either in this setting (foreign/cross-listed firms) or in a similar one (foreign firms applying international accounting standards), and by a desire for consistent measurement with Lang et al. (2006).

In this study, I measure earnings management using three smoothing measures and one measure of benchmark beating. The first smoothing measure evaluates the variability of earnings changes (scaled by total assets). Following prior research, I first regress earnings changes on a set of control variables (defined in the appendix) and use the residual from this regression when calculating variability. In the absence of interventions that artificially smooth the earnings stream, the variance of earnings is expected to be larger (Lang et al, 2003; Leuz et al., 2003; Ball and Shivakumar, 2005; Lang et al., 2006; Barth et al., 2008). The studies above find that smoothing is inversely related to (stronger) common law origins, timely recognition of losses, incentives provided by greater monitoring, and cross-listing in the United States (versus not cross-listing there). Greater variation in the amount of reported income may indicate less discretionary intervention by management (Ewert and Wagenhofer, (2005). Because the MMOU facilitates robust enforcement, it may deter managers from minimizing extreme reporting outcomes, which would lead to greater earnings variability (less smoothing). Because underlying economic conditions also contribute to the variation in earnings changes, I follow prior literature by adding a second smoothing measure, which scales the variation in earnings changes by the variation in cash flow changes to control for variation inherent in a firm's operations.[14] In both of these measures, less variability indicates greater earnings management. The rationale behind the third and final smoothing metric—the rank correlation between cash flows and accruals—is that managers may use reporting discretion to supplement periods of poor cash flow performance with accruals. If information flows under the MMOU constrain such behavior, then the negative correlation between cash flows and accruals should be attenuated. Consistent with the design in Lang et al. (2006),

[14] Cash flows are also scaled by total assets, using the residuals from a regression of cash flows changes on control variables in the appendix.

I use the residual from a regression of cash flows and accruals on the control variables in the appendix.[15]

The final measure of earnings management uses the propensity to beat salient benchmarks. Burgstahler and Dichev (1997) use the positive earnings threshold as a possible target that firms would achieve by taking aggressive reporting choices. In similar international settings, Leuz et al. (2003) and Lang et al. (2003, 2006) assert that small positive earnings are inversely associated with better regulatory and enforcement mechanisms. Following their approach, I use an OLS regression of the binary dependent variable, *SMALL_POS*, on control variables and an indicator for treatment (cross-listed) firms.[16]

I also consider the properties of loss recognition timeliness. Greater information flow across regulators may promote prompter recognition of large losses and discourage the diffusion of losses into multiple future periods (Ball et al. (2000)). If this is the case, then large losses should be more prevalent among firms that are subject to the regulatory assistance provided by the MMOU. Note that large losses could also result if managers artificially overstate losses in order to establish reserves for later use. Cases like these may reduce the quality of reported earnings. Again, I use an OLS regression of the binary dependent variable, *LARGE_NEG* on control variables and an indicator for treatment (cross-listed) firms.

A related metric for assessing timeliness is the asymmetric timeliness coefficient first proposed by Basu (1997). This measure, known as conditional conservatism, allows a slope (and intercept) shift

[15] Although I expect that smoothing metrics indicate inferior earnings quality, Barth et al. (2008) note the possibility that smoothing could actually promote earnings quality. This is because the objective of accrual accounting is to reassign cash flow in a way that recognizes economic events regardless of when cash transactions occur (that is, smoothing earnings is the expressed function of accruals) (see Dechow, 1994). Ewert and Wagenhofer's (2010) model suggests that smoothing may be the primary vehicle for managers to incorporate private information about expected future earnings into current earnings reports, thereby promoting (rather than subverting) earnings informativeness (see also Sankar and Subramanyam (2001)).

[16] I acknowledge that the merits of benchmark beating measures are also debatable (see Durtschi and Easton (2009) and Burgstahler and Chuk (2011)).

for a differential reporting lag for bad news (with negative returns as a proxy for bad news). In an accounting system that incorporates economic losses immediately (but recognizes gains as they are realized in future periods), one would expect the reporting lag for losses to be shorter. Therefore, in Basu's equation (shown below), the α_3 coefficient measures asymmetric timeliness and is proportional to the conditional conservatism exhibited by a firm. Therefore, I anticipate that by enabling enforcement, the MMOU will increase the α_3 coefficient.[17]

(1) $$EPS^*_{it} = \alpha_0 + \alpha_1 RET + \alpha_2 DUM + \alpha_3 RET*DUM + \varepsilon_{eit}$$

Prior research also constructs measures of the association between accounting outputs and equity returns using R^2. As advocated by Ball et al. (2000), I separately examine this association for good- and bad-news firms (identified by positive and negative returns, respectively). The maintained assumption is that a higher association between accounting data and equity returns indicates more informative accounting outputs. I acknowledge, however, that these associations do not identify causality between returns and earnings (Holthausen and Watts, 2001; Barth, 2001).

Finally, I examine the value relevance of earnings and the book value of stockholders' equity in explaining the cross-section of equity share prices. If the MMOU promotes an accounting measurement framework that is more consistent with economic performance, then value relevance should be positively associated with the MMOU. The value relevance metric regresses price on current year earnings and the book value of stockholders' equity.

General considerations of accounting metrics

Almost all of the metrics described above have ambiguities in relation to accounting quality, and these relations may not be monotonic. However, Barth et al. (2008) note that if the metrics converge in a way that precludes alternative explanations (see their footnote 9), the ambiguity is

[17] Note that in this regression, earnings per share is actually the residual of earnings per share regressed on the control variables in the appendix.

lessened.[18] If an enforcement deficiency is responsible for divergence in earnings properties, then the metrics for foreign firms that are subject to MMOU agreements should converge towards those of U.S. firms (regardless of the directional relation to earnings quality). Consequently, it is less important, in this context, to label any particular property as superior or inferior.

Important empirical design details

This study differs from the Lang et al. (2003, 2006) studies in that it must accommodate a shock to enforcement. To accommodate this shock, I pattern the main empirical approach after Barth et al. (2008), who use International Financial Reporting Standards (IFRS) adoption as a potential shock to earnings attributes. Barth et al. compare International Accounting Standards (IAS) firms and non-IAS firms after the adoption of IAS; then, to explore whether the differences between groups are inherent to the firms, the authors compare the same firms in the pre-IAS adoption period. I follow this method and ultimately combine the pre- and post-MMOU adoption period differences from matched U.S. firms using difference-in-difference tests. One useful difference in my setting is that, unlike the shock of IAS adoption, the shocks of the MMOU do not result from a choice made by the firm.

Like Barth et al. (2008), I compare domestic firms with U.S.-listed foreign firms that reconcile their earnings to U.S. GAAP—first in settings where the MMOU is not applicable (non-MMOU countries and pre-MMOU observations) and later evaluate the firms subject to the MMOU. Although the sample observations do not perfectly duplicate those of Lang et al. (2006), I expect a similar result—that U.S. earnings properties generally dominate the earnings properties of cross-listed firms. Next, I compare the domestic firms to foreign firms with active applications to the MMOU. I expect that these foreign firms will exhibit properties more like those of the benchmark U.S. firms. Finally, I

[18] In their example they point out that, although higher earnings variability and large losses could be ambiguous, jointly finding greater value relevance in that group lessens the possibility that these properties are remnants of earnings management.

construct a difference-in-difference test where U.S. firms are used as a benchmark, using a bootstrap methodology to determine statistical significance.

All of the accounting data in this study are prepared in accordance with U.S. GAAP, but the application of IAS/IFRS in the home accounts could affect U.S. GAAP accounting properties. These effects could result from a direct relation between high quality accounting standards and accounting outputs (Barth et al. (2008)), or from indirect channels such as IFRS-related enforcement changes within the foreign firms' home country environments. Consequently, I construct separate partitions for IAS/IFRS firms and firms that apply other home market GAAPs. Note that although I use a larger sample than many similar studies do, my imposing the required partitions produces few observations in some instances. In such cases, degradation of the metrics' precision and significance is anticipated.

IV. SAMPLE AND EMPIRICAL CONSTRUCTS

MMOU, bilateral agreements, enforcement, and reconciled earnings data

The data for the study come from three traditional sources (Compustat, CRSP, and Worldscope) plus four others: (1) the MMOU (from IOSCO), (2) bilateral SEC agreements and SEC data describing enforcement of U.S.-listed foreign firms (from the SEC's website), (3) reconciled earnings data (from EDGAR), and (4) data on private litigation (from the Stanford Class Action Clearinghouse).

Table 1 presents information regarding the MMOU application. Of the 60 countries with a U.S.-listed foreign firm, 38 have applied to the MMOU. Between 1995 and 2010, 8,292 firm-years are unaffected by the MMOU, and 6,300 are affected. The MMOU application dates are staggered across countries and distributed from 2002 through the end of the sample period (2010).

Data related to SEC enforcement from 1995 to 2010 is hand-collected from the SEC's website (www.sec.gov).[19] The enforcement sample includes *all* foreign incorporated firms, including cross-listed, dual (full) listings, and foreign incorporated firms that are only listed in the United States. Of the

[19] Various sources are used to screen for these events, but each event must be publicized by the SEC website.

172 cases in the enforcement sample, 135 have a complete data set, which is required for subsequent analyses.[20] Table 1 describes 14,592 total firm-years (1,652 unique firms) in the enforcement sample for foreign incorporated firms across 59 countries (Panel A) and ten industries (Panel B). On average, 1.19% of firm-years are targets of SEC enforcement actions.

U.S. GAAP-reconciled earnings are hand-collected from 20-f reports in the SEC's EDGAR database. Unlike the enforcement sample, which uses *all* foreign-incorporated firms, the earnings property sample is limited to foreign firms listed on U.S. exchanges that reconcile their earnings to U.S. GAAP using form 20-f, that file electronically with the SEC, and that are covered by CRSP, Compustat, and Worldscope between 2000 to 2009. I require that observations possess equity-market information, accounting data, and a clearly identified secondary regulator. While the majority of these firms are American Depositary Receipts (Level II and III ADRs), some have a full secondary share listing and reconcile to U.S. GAAP. By using earnings under U.S. GAAP, I can evaluate changes in the properties of earnings that are not likely to be a function of changing accounting standards. To be included in the sample, firms must have non-missing variables required to construct the main and control variables used later in the study. These criteria result in a primary sample of 390 foreign firms (1,947 firm-years) from over 40 countries during the ten years from 2000 to 2009. Again, country and industry divisions of the sample are tabulated in Table 1 (under the heading "Earnings Quality Sample"). The sample, which is larger than the ones in similar studies, allows me to impose important partitions (related to IFRS, the MMOU, and, in later analyses, changes in ownership and home country enforcement).[21]

[20] In the tabulations shown in table 1, there are actually 173 actions reported. This is because one event simultaneously targets two different foreign firms that are from different countries. 38 firm-years represent enforcement actions that do not have data required for subsequent analyses, making the sample shrink from 14,592 to 14,554 firm-years.

[21] As a benchmark, Lang et al. (2006) includes 181 firms (698 firm-years) from 34 countries over the 12 years from 1991 to 2002. I possess several years of pre-2000 data available from the 20-f, but most of my data come from reports filed in later years. Although the electronically filed 20-f from the year 2000 often contains reconciled earnings and equity back

Matching procedure and summary statistics

I assemble all U.S.-listed firms with non-missing data for the analyses. Next, I match each foreign firm to the U.S. firm that shares the same year and three-digit SIC industry classification *and* is closest in size to the foreign firm (with replacement, as in Lang et al. (2006)).[22] The primary sample is restricted to firms for which U.S. GAAP reconciliations are available. To limit the influence of outliers, I winsorize continuous variables at the 2% tails.[23] The test and control variables are described by their mean, median, standard deviation, and interquartile range across U.S. and cross-listed partitions in Table 5. The U.S. firms have lower annual returns, lower growth, and higher asset turnover, but are otherwise fairly similar to cross-listed firms. Note, however, that these tests pool non-MMOU and MMOU observations (which may possess differences that offset).

It is important to recognize that other features, which may not fully be equated by the matching procedure, could affect accounting attributes. As described in the previous section, I follow Lang et al. (2006) by controlling for factors identified in Pagano et al. (2002) that are expected to affect the cross-listing decision. These controls attempt to remove the effects of firm size, accruals, cash flows, financing structure, growth, need for capital, and the occurrence of debt and equity issuances, any of which could alter reporting incentives and outcomes. The operationalization of these controls, which is described in the appendix, is slightly different for each test but follows the design of Lang et al. (2006).

V. EMPIRICAL RESULTS

The research design proceeds in two stages. The first stage examines the association between the MMOU application and enforcement outcomes. If the MMOU is responsible for expanded

to 1996 (which I have collected), I refrain from reporting this data in case any unknown adjustments have been made to historical data. However, including these observations does not change any inferences.

[22] Bhojaraj, et al. (2003) demonstrate GICs superiority over other industry classifications in return-earnings settings, but Lang et al. (2006) use SIC codes. Inferences are insensitive to using GIC.

[23] Prior to winsorizing, I delete a few absurd observations for net income, cash flows, total accruals, change in net income, and change in cash flows. Because each of these variables is scaled by end-of-year total assets, observations greater than 1.0 in absolute value represent nonsensical extremes. Results are not sensitive to this choice. Alternative treatments using the 1% and 5% thresholds and trimming rather than winsorizing yield identical inferences. I define winsorizing as setting the extreme values equal to given percentiles.

enforcement capacities, then SEC enforcement actions should be more likely in firms whose home regulators have applied for signatory status. The second stage uses the proxies described in Section III. I start by reevaluating the basic findings in Lang et al. (2006), which show that cross-listed firms exhibit lower-quality earnings. Then, I explore whether the MMOU ameliorates the differences between the earnings properties of U.S. and foreign firms.

Associations between the MMOU and enforcement

To investigate the association between the MMOU and enforcement, I start with univariate evidence. Prior research asserts that SEC enforcement against U.S.-listed firms is deficient (although identifying the expected level of enforcement is complicated and subjective (Benos and Weisbach (2004)). If deficiencies do exist, they may not be homogeneous in the cross-section of countries, since prior bilateral agreements may condition SEC enforcement capacities. Also, several countries have engaged in multiple agreements with the SEC, which may represent deeper channels for information.[24] To account for these effects, I separate firm-years into six categories in a 2 x 3 table. The table has rows for firm-years without a bilateral agreement, firm-years with one bilateral agreement, and firm-years with multiple bilateral agreements, and columns for firm-years before and after the MMOU.[25] Although these partitions serve as time- and country-variant proxies for regulatory assistance, bilateral agreements often take place prior to the beginning of the sample period, so these agreements, unlike the MMOU, are often constant for the entire sample period. Next I calculate the percentage of firm-years with an enforcement action. This allows each partition to be compared without being influenced by the number of observations in a category.

[24] The first head of the SEC's Office of International Affairs, Michael Mann, describes the SEC's bilateral agreement with Hungary as *"a very different thing than our previous MOUs. The focus of the U.S. government, with the fall of the Berlin Wall, was on trying to help these markets emerge and develop. There was no real concern in the United States that there was going to be a lot of market abuse aimed at the U.S. from Hungary*"(Mann, 2005). Therefore, it could be important to separate bilateral agreements into finer classes.

[25] In this paper, "MMOU" refers specifically to IOSCO's 2002 MMOU. Note that multiple bilateral agreements are different than the MMOU, which is a multilateral network with more than two parties.

Table 2 presents these partitions for SEC enforcement. The proportion of firms subject to SEC enforcement for the entire period across all partitions is 1.19%; the percentage of firm-years with an enforcement action ranges from 0.56% to 5.53% across the various partitions. I contrast cell differences by presenting marginal differences and ratios for the MMOU (on the right-hand side) and bilateral agreements (below). The probability of enforcement is greater conditional on the MMOU. The table provides estimates of economic significance by showing that the probability of enforcement is between 2.47 and 4.40 times as likely in the presence of the MMOU. Enforcement also significantly intensifies in the presence of multiple bilateral agreements. However, a singular bilateral agreement is not a major catalyst for enforcement (consistent with the intuition from footnote 24). The table also reports tests for differences in proportions across these partitions and marginal ratios.

The univariate evidence in Table 2 indicates a positive association between the MMOU and SEC enforcement. It is important to control for other factors associated with enforcement when formally testing this relationship. To partial out these other effects, I apply the private litigation model proposed by Kim and Skinner (2011), which uses "explanatory variables that are readily available from Compustat and CRSP" (page 9). This model preserves a maximum number of observations, making it ideal for the current setting. To predict litigation, the model uses industries with historically high rates of litigation, firm size, percentage change in sales, share turnover, equity returns, and distributional properties of returns (skewness and standard deviation). To help rule out malfeasance as an explanation for changes in SEC enforcement across time and countries, I follow Silvers (2016) by supplementing the model with an indicator for private litigation within the previous five years.[26,27]

[26] The typical statute of limitations for the SEC is five years. See page 36 of the 2011 SEC enforcement manual, available at www.sec.gov/divisions/enforce/enforcementmanual.pdf.

[27] Dechow et al. (2011) model the probability of restatements using accounting data. The data requirement for that model is more restrictive and reduces the number of enforcement actions to less than 100. However, that model also supports the inferences in this paper. Therefore, I conclude that these inferences are robust.

It is also important to rule out alternatives related to time and place that could contaminate the estimate of the MMOU's effect. Countries that join the MMOU may be systematically different, and these latent differences (rather than the MMOU itself) could drive enforcement, regardless of when the pledge to share information takes place. Consequently, I also include an indicator set equal to '1' for countries that join the MMOU at any point (regardless of whether these countries have yet become signatories). Also, the results in Table 2 indicate that the presence of multiple bilateral agreements conditions SEC enforcement. Therefore, I employ indicator variables for a single bilateral agreement and for multiple bilateral agreements, respectively. Another concern is the possibility of a general trend, unrelated to the MMOU, toward increasing SEC enforcement of foreign firms. For example, a policy shift by the SEC related to the Patriot Act or the Sarbanes-Oxley Act could confound inferences because the MMOU would be a weak proxy for post-2002 observations. Therefore, I include an indicator (*POST*) set equal to '1' for post-2002 time periods ('0' otherwise).[28]

(2) $$SEC\_ACTION_{it} = \alpha_0 + \alpha_1 MMOU\_FILE_{it} + \alpha_2 BILATERAL_{it} + \alpha_3 BILATERAL\_MULTI_{it} + \alpha_4 MMOU_{it} + \alpha_5 POST_{.t} + \alpha_6 CLASS\_ACTION_{it} + \alpha_7 HI\_LIT_{it-1} + \alpha_8 SIZE_{it-1} + \alpha_9 PCT\_CH\_SALES_{it-1} + \alpha_{10} RETURN_{it-1} + \alpha_{11} SKEW_{it-1} + \alpha_{12} RET\_STD_{it-1} + \alpha_{13} TURNOVER_{it-1} + \varepsilon_{eit}$$

My expectation is that the coefficient on α_1 will be positive and significant. I anticipate that α_2-α_5 will also be positive, indicating an increased likelihood of SEC enforcement for firms from: foreign countries that have engaged in bilateral agreements; foreign countries that apply to the MMOU at any point; and (all) foreign countries since 2002, respectively. Also, class action litigation may identify malfeasant behavior that would increase the probability of SEC enforcement against a foreign firm (Silvers 2016). I report the expected sign for the set of control variables from Kim and Skinner (2011) in Table 3.

[28] This is a fairly demanding specification, as the post indicator will have considerable collinearity with the MMOU indicator. Recall that this will not bias the coefficient, but tends to increase standard error estimates.

In Table 3, the set of control variables from Kim and Skinner (2011) are generally consistent with their expected sign (although firm size is the only consistently significant predictor). Regression 1 indicates that enforcement is significantly more likely after a firm's home regulator applies to the MMOU, even after factors known to influence SEC litigation rates are controlled for. The coefficient on '*MMOU'* of 0.92 ($p<.01$) indicates that after home regulators pledge to share information, firms are 251% as likely to be targeted by the SEC. Regression 2 includes additional controls for observations governed by one bilateral agreement or multiple bilateral agreements. A single bilateral agreement has an insignificant association with SEC enforcement, which is similar to the univariate evidence from Table 2. However, when firms' home countries have signed multiple bilateral agreements, SEC enforcement is significantly more likely. This is consistent with additional regulatory agreements opening new and deeper channels for information transfer and regulatory cooperation. To rule out the possibility that countries applying to the MMOU are systematically different from non-signatories and produce more enforcement through a mechanism other than the MMOU, regression 3 uses an indicator for countries joining the MMOU at any point during the sample period (regardless of whether it is currently active). This association is insignificant, but the MMOU itself remains economically and statistically significant. Regression 4 supplements the model with the '*POST*' indicator to control for time factors like the Patriot and Sarbanes-Oxley Acts, respectively. As expected, the MMOU estimates decline in significance with these additional controls, but are not fully subsumed. These results support the idea that the MMOU facilitates enforcement. Regression 5 includes all of the previously discussed controls and continues to yield economically and statistically significant results. Regressions 6 and 7 show that discarding observations from the United Kingdom and Canada (the two largest countries in the sample) and the other seven countries in the G8 yields results that are almost identical to those previously reported.

These associations could occur according to the staggered process I describe, but it is also possible that an unknown research design factor could induce a correlation. It is important to rule out the latter, because temporal increases would partially map onto any indicators (like the MMOU application) that remain set equal to '1' for the remainder of the sample. To understand whether applying indicators at random would produce comparable results, I run a simulation that scrambles the real MMOU application dates by assigning them to sample countries at random. After repeating this analysis 1,000 times, only 23 trials yield coefficient estimates that are greater than the ones for the real dates, corresponding to a simulated p-value of 0.023. Regression 8 presents the average coefficient values of each of the 1,000 trials (which confirms my suspicion that random assignment could yield a positive estimate). These results provide strong support for the idea that the enforcement increases are unique to the true time and place of the MMOU.

Finally, Table 4 systematically shifts the dates of the MMOU application one year at a time, in order to reveal whether the timing of increases in enforcement correspond to the true application dates. As the dates are counterfactually shifted further from the true dates, the coefficient on *MMOU_FILE* becomes smaller. This is consistent with increased enforcement corresponding to the true MMOU dates.

The results of these additional tests are consistent with a causal association between the MMOU and enforcement. This provides an important framework for testing the effects of enforcement on earnings quality, the subject of the next section.

Associations between the MMOU and earnings quality

Consistent with the design of Lang et al. (2006), I employ controls for selection issues (influenced by Pagano (2002)) when testing proxies for earnings management, benchmark beating, timely loss recognition, and value relevance. The results are presented in Table 6. The left part of Panel A shows 850 non-MMOU observations for firms that use domestic accounting standards in their home accounts, and 850 matched U.S. firms. Despite the use of a different sample, the results in Panel A

(non-MMOU firms) are remarkably similar to those of Lang et al. (2006), who interpret the evidence as supportive of lower earnings quality for foreign firms. The differences conform to the expectation that, compared with U.S. firms, cross-listed firms have less variability in income, a more negative correlation between cash flows and accruals, and a greater likelihood of reporting small positive earnings—all of which are consistent with a greater prevalence of earnings management. The results also show that cross-listed firms are less likely to report large losses and are less timely in reporting losses. Finally, the cross-listed firms exhibit lower associations between accounting data and market prices than their matched-U.S. counterparts do.

Note that in the current design, an omitted variable would have to both affect reporting outcomes and be correlated with the MMOU. The staggered timing of MMOU application dates makes this eventuality unlikely. In the right-hand columns of Table 6, I reexamine the same four properties (earnings management, benchmark beating, timely loss recognition, and value relevance) in the presence of the MMOU. During firm-years governed by the MMOU, the differences between U.S. and foreign firms are reduced or even reversed (in which case greater earnings quality is indicated for the *foreign* firms) in ***all*** metrics, compared with the non-MMOU firm-years. During the MMOU years, only two significant differences are observed. The correlation of cash flows and accruals still favors the U.S. firms, although its significance is weakened. And large losses are significantly more frequent for foreign firms, indicating more conservative reporting in those firms. The remaining properties are all insignificantly different, which is consistent with an MMOU-facilitated convergence between the reporting properties of foreign and U.S. firms.

A more formal joint evaluation of both time periods uses the difference-in-difference approach, with matched-U.S. firms serving as a benchmark. If earnings properties have converged, then the differences that existed prior to the MMOU should either be smaller or opposite in sign in the MMOU-

governed firm-years. Consequently, I expect a difference-in-differences opposite in sign to the expected differences in Lang et al. (2006) and on the left side of Table 6, Panel A. The results are consistent with this prediction on almost every attribute. This supports the idea that the reporting attributes of foreign and U.S. firms converge in the presence of the MMOU, and is consistent with my expectation that the MMOU promotes better financial reporting.

A slightly different pattern emerges in Panel B—the IAS/IFRS partition—in that the results do not fully conform to predictions based upon Lang et al. (2006) in the pre-MMOU period. In fact, the signs of the difference in variability of income, in small positive and large negative net income, in Basu coefficient, and in good news value relevance are all directionally consistent with non-MMOU foreign firms exhibiting *greater* earnings quality than U.S. firms do. However, the only statistically significant difference favoring the foreign firms is in the variability of net income, and this relation is inverted when scaled by cash flow variability.[29] The fact that matched-U.S. firms do not strictly dominate cross-listed firms is not surprising, given the Barth et al. (2008) conclusion that applying IAS alters earnings properties in a manner consistent with increased quality and that increased enforcement efforts may map onto IFRS adoption. Also, many dimensions remain consistent with U.S. firms having greater earnings quality. For example, U.S. firms have a less negative correlation between cash flows and accruals and greater value relevance for price.

In the IFRS observations subject to the MMOU, displayed on the right-hand side of Panel B, the cross-listed firms report small positive net incomes less frequently, exhibit a greater Basu coefficient, and show greater value relevance for bad news than U.S. firms do. Each difference is significant. This is consistent with the MMOU's elevating earnings quality. Other measures, such as

[29] While a reduced power from a smaller sample size is certain to factor into the lack of significance, the magnitudes of difference (effect sizes) are small relative to those that reach significance in Panel A.

the variance of net income,[30] the propensity to report large negative net income, price value relevance, and good news R^2 values, are insignificantly different. The insignificant difference in price value relevance can be interpreted as a convergence in the presence of the MMOU. The correlation between cash flows and accruals remains significantly more negative for cross-listed firms, and therefore does not conform to expectations. Although the characteristics in Panel B are not as uniformly consistent as those in Panel A, several of them do indicate significant effects of the MMOU on earnings quality, in conformance with expectations.

VI. Additional analyses

Endogeneity concerns with the MMOU and enforcement

Friedman et al. (2002) indicate that most countries that become MMOU signatories do so following ad hoc enforcement cooperation with the SEC. If the new MMOU agreements tend to closely follow SEC enforcement actions, then this is likely to bias *against* finding an association between the MMOU and enforcement (which may explain the slightly reduced probability for single bilateral agreements). However, one concern is that the SEC's process for pursuing a foreign firm could begin with the establishment of a bilateral agreement, or with coercion by the SEC to join the MMOU, *prior* to the outcome of the enforcement. This would mechanically link enforcement and the MMOU and bias in favor of finding an association. Of the 27 different countries with SEC enforcement actions, 7 have first-time enforcement actions that follow the MMOU.[31] Repeating the analyses after excluding all of these cases should yield a conservative estimate (i.e., the lower limit) of the effect of the MMOU.[32] Even when this test is conducted, the estimated effect of the MMOU using the most

[30] During the non-MMOU firm-years, in contrast, the difference indicated a greater variability for cross-listed firms than for U.S. firms. This is difficult to explain in light of the assumption that greater variation indicates greater smoothing. Nonetheless, this remains consistent with the MMOU promoting convergence in properties.

[31] Because the other cases will bias *against* finding a relationship between enforcement and the MMOU (because enforcement precedes the MMOU), I am not concerned about excluding them.

[32] Note that only 2 of the 7 cases take place within 3 years of the MMOU application. The remaining 5 enforcement actions are, on average, more than 4.5 years after the MMOU. It seems unlikely that the MMOU would be tautologically linked to actions that culminate this long after the MMOU application. Therefore, excluding all these cases is a very conservative way to structure these tests.

demanding model (equivalent to regression 5 in Table 3) remains significant. This rules out the concern described above.

Enforcement and earnings properties

In theory, the results of this study could also be affected by home-country enforcement changes (although the MMOU does not show an obvious mapping with home country changes in enforcement). The current design already splits the sample into IFRS and non-IFRS groups and therefore also splits the sample on any changes in enforcement that occur with changes in applying IFRS. To more explicitly control for changes in home country enforcement, I create orthogonal partitions that hold constant the home country enforcement variable. The partitions reveal that only a trivial portion of the non-IAS/IFRS sample observations (in Table 6, Panel A) experience a change in enforcement. When these firm-years are removed, the results are virtually unaffected. In the IAS/IFRS partition (in Panel B), 25 non-MMOU and 85 MMOU firm-years are subject to increased levels of enforcement. Discarding these observations does not materially change any of the study's inferences.

Finally, Leuz (2006) cautions that U.S. and foreign firms have many different mechanisms that could affect earnings properties, and proposes that one such mechanism, ownership structure, could be responsible for the results in Lang et al. (2006). Again, the MMOU (and resulting, staggered changes in the enforcement landscape) does not directly or obviously map into ownership-structure changes, but this alternative explanation warrants further investigation. I explore the possibility of significant associations between ownership structure and the MMOU in Table 7. The table reports the fraction of closely held shares for observations partitioned by IAS/IFRS and the MMOU (as in Table 6). The data requirements reduce the sample from 1,947 to 1,192, with more observations lost in the non-MMOU sample (roughly half remain). The results show the percentage of closely held shares to be significantly greater for MMOU firm-years in both the non-IAS/IFRS and the IAS/IFRS partitions.[33] Although the

[33] Note also that IAS/IFRS is also associated with broader ownership.

magnitude of the difference is relatively small (7.1% and 4.7%, respectively), these differences could contribute to changes in earnings properties and should therefore be controlled for.[34]

Orthogonal partitions that hold ownership structure constant are infeasible because ownership structures are continuous. Consequently, I use a secondary matching scheme to rule out ownership changes as the catalyst for the earnings quality results. In this matching scheme, I create deciles for the percentage of closely held shares, then match a non-MMOU firm-year to an MMOU firm-year in the same ownership decile, without replacement.[35] The resulting sample, reported under the heading "*After 2nd Match*" in Table 7, is therefore virtually identical not only in the *mean* of closely held shares but also across the *entire distribution*. If the results persist in this subsample, then it provides evidence that ownership changes are not responsible.

The results in Table 8 indicate that, even when ownership structures are held constant, the MMOU remains associated with improvements in earnings quality. The results in Table 8 (Panel A) are very similar to those in Table 6 (Panel A), with two minor exceptions. First, the correlation between cash flows and accruals becomes slightly more negative for MMOU firms, although this is not significant. Second, while the difference-in-differences for the bad-news value relevance regressions are similar in magnitude to the ones in Table 6, they are no longer statistically significant. This is to be expected because, as the sample size declines, so too does the power to detect differences. In Table 8 (Panel B), the sample size declines to 171 observations, so one should interpret the results of this panel carefully. Nonetheless, the inferences remain similar to Panel B of Table 6. Ultimately, the results in

[34] This difference, documented in Table 7, is a necessary condition for ownership structure to drive these results. However, it could be the case that changes in enforcement lead to changes in ownership structure (which could be a mechanism by which the MMOU alters earnings properties).

[35] Although performing the match without replacement does further constrain the sample size, the effects turn out to be rather small. For example, there are 303 and 233 MMOU observations in the non-IAS/IFRS partition and the IAS/IFRS partition respectively. Of these observations, I am able to match 297 and 171 non-MMOU observations.

Table 8 are consistent with the expectation that the MMOU alters the quality of earnings (H2), and that these results are not driven by an evolution in ownership structures over that time period.

VII. CONCLUSION

This paper examines how information-sharing networks for securities regulators affect enforcement and earnings quality. I find that enforcement is significantly more likely for firms whose home regulators participate in information sharing via IOSCO's MMOU. This suggests that interagency coordination and information flows are important factors in robust enforcement. Because the MMOU agreements are not prompted by market failure, firm malfeasance, or investor dissatisfaction, this setting may permit better identification of the enforcement construct. Using the agreements as staggered shocks to SEC enforcement capacities, I show that the MMOU is associated with substantial improvements in earnings quality. These results persist despite explicit controls for confounding factors such as latent country differences, underlying accounting standards, home country enforcement, and ownership structure. These results help resolve a number of questions, from prior literature, regarding why U.S. and cross-listed firms have different earnings properties despite having the same accounting standards and well-developed incentives for high-quality reporting.

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Appendix A: Variable definitions

Variables used in the earnings quality analysis are defined below. The 'ε' indicates that the variables employ the two-stage procedure from Lang et al. (2006) to help control for factors that relate to the cross-listing decision that may also relate to earnings properties. The first stage regresses the variable of interest on leverage, growth, debt and equity issuances, asset turnover and size. The second stage uses the residual (unexplained) component from the first stage to construct the variables deployed in the tests. These variables are winsorized at the 2% tails of each distribution.

Main variables:

CHANGE_NI $^{\varepsilon}$ is the change in net income, scaled by end-of-year total assets.
CHANGE_CF $^{\varepsilon}$ is the change in operating cash flows, scaled by end-of-year total assets.
TOTACC $^{\varepsilon}$ is the difference between net income and operating cash flows, scaled by end-of-year total assets.
CF $^{\varepsilon}$ is operating cash flow, scaled by end-of-year total assets.
SMALL is an indicator equal to '1' when net income scaled by total assets is between 0 and 0.01.
LARGE is an indicator equal to '1' when net income scaled by total assets is less than -.20.
ANNRET is the cumulative annual return (calculated from monthly observations).
EPS $^{\varepsilon}$ is earnings per share scaled by price.

Controls:

LEV is end-of-year total liabilities divided by end-of-year total equity.
GROWTH is the percentage change in sale**s.**
EQUITY_ISS is the percentage change in common stock.
DEBT_ISS is the year-over-year percentage change in total liabilities.
ASSET_TURN is sales divided by end-of-year total assets.
SIZE is the natural log of the market value of equity.

Table 1: The SEC Enforcement and Earnings Quality samples

Panel A: Sample Firms by Country

		Enforcement Sample					Earnings Quality Sample		
	MMOU	Firm-Years	Pct. Firm-Years	Enforcement Actions	Pct. Firm-Years w/ enforcement	Unique Firms	Firm-Years	Pct. Firm-Years	Unique Firms
Antigua And Barbuda	-	10	0.07	-	-	1	-	-	-
Argentina	-	175	1.20	-	-	19	56	2.88	7
Australia	1	284	1.95	3	1.06%	35	74	3.80	15
Austria	1	12	0.08	-	-	1	7	0.36	1
Bahamas	-	50	0.34	-	-	5	-	-	-
Belgium	1	45	0.31	4	8.89%	7	7	0.36	1
Belize	-	12	0.08	-	-	2	-	-	-
Bermuda	1	860	5.89	16	1.86%	106	38	1.95	6
Brazil	1	169	1.16	2	1.18%	18	82	4.21	15
British Virgin Isl.	1	260	1.78	2	0.77%	36	7	0.36	3
Canada	1	4,590	31.46	37	0.81%	496	414	21.26	110
Cayman Islands	1	521	3.57	-	-	90	9	0.46	2
Chile	-	235	1.61	1	0.43%	25	54	2.77	10
China	1	222	1.52	6	2.70%	27	69	3.54	11
Colombia	-	5	0.03	-	-	1	1	0.05	1
Curacao	-	44	0.30	-	-	3	-	-	-
Denmark	1	61	0.42	2	3.28%	6	11	0.56	2
Dominican Republic	-	8	0.05	-	-	1	-	-	-
Finland	1	71	0.49	-	-	8	17	0.87	4
France	1	397	2.72	7	1.76%	40	67	3.44	12
Germany	1	288	1.97	13	4.51%	32	38	1.95	7
Ghana	-	7	0.05	-	-	1	3	0.15	1
Greece	1	42	0.29	1	2.38%	5	16	0.82	2
Hong Kong	1	122	0.84	2	1.64%	15	31	1.59	5
Hungary	1	15	0.10	-	-	1	5	0.26	1
India	1	150	1.03	-	-	16	15	0.77	3
Indonesia	-	46	0.32	1	2.17%	5	9	0.46	1
Ireland	-	311	2.13	3	0.96%	33	39	2.00	9
Israel	1	1,223	8.38	9	0.74%	133	53	2.72	12
Italy	1	167	1.14	8	4.79%	17	51	2.62	9
Japan	1	471	3.23	5	1.06%	39	27	1.39	4
Jersey	1	43	0.29	-	-	4	15	0.77	3
Jordan	1	5	0.03	-	-	1	-	-	-
Korea	1	129	0.88	-	-	15	46	2.36	6
Liberia	-	68	0.47	-	-	6	-	-	-
Luxembourg	1	142	0.97	-	-	15	21	1.08	6
Marshall Islands	-	166	1.14	-	-	29	-	-	-
Mexico	1	359	2.46	6	1.67%	39	122	6.27	18
Netherlands	1	486	3.33	13	2.67%	50	76	3.90	13
Netherlands Antilles	-	34	0.23	-	-	3	-	-	-
New Zealand	1	55	0.38	-	-	8	7	0.36	1
Norway	1	61	0.42	1	1.64%	8	27	1.39	5
Panama	-	68	0.47	1	1.47%	7	-	-	-
Papua New Guinea	-	14	0.10	-	-	1	7	0.36	1
Peru	-	22	0.15	-	-	2	13	0.67	2
Philippines	-	37	0.25	-	-	4	-	-	-
Poland	1	4	0.03	-	-	1	-	-	-
Portugal	1	27	0.19	-	-	2	6	0.31	1
Puerto Rico	-	5	0.03	-	-	1	-	-	-
Russia	-	48	0.33	-	-	5	3	0.15	1
Singapore	1	88	0.60	-	-	9	7	0.36	1
South Africa	1	146	1.00	-	-	16	29	1.49	4
Spain	1	111	0.76	1	0.90%	10	20	1.03	5
Sweden	1	136	0.93	1	0.74%	19	45	2.31	9
Switzerland	1	288	1.97	20	6.94%	24	24	1.23	5
Taiwan	1	79	0.54	1	1.27%	7	37	1.90	5
Turkey	1	12	0.08	-	-	1	-	-	-
United Kingdom	1	1,066	7.31	7	0.66%	138	233	11.97	48
Venezuela	-	20	0.14	-	-	3	9	0.46	2
Total	**38**	***14,592***	***100.00***	***173***	***1.19%***	***1,652***	***1,947***	***100***	***390***

Panel B: Sample Firms by Industry								
	Firm-Years	**Pct. Firm-Years**	**Enforcement Actions**	**Pct. Firm-Years Enforcement**	**Unique Firms**	**Firm-Years**	**Pct. Firm-Years**	**Unique Firms**
Agriculture, Forestry, and Fish	102	0.70	0	0.00%	10	10	0.51	2
Construction	107	0.74	2	1.87%	22	13	0.67	3
Finance, Insurance, and Real Est	1,636	11.27	30	1.83%	196	207	10.63	40
Manufacturing	5,568	38.37	69	1.24%	612	695	35.70	140
Mining	2,177	15.00	12	0.55%	248	308	15.82	79
Public Administration	119	0.82	11	9.24%	10	15	0.77	6
Retail Trade	248	1.71	8	3.23%	29	38	1.95	8
Services	1,985	13.68	17	0.86%	242	122	6.27	30
Transportation & Public Utilities	2,339	16.12	18	0.77%	256	493	25.32	89
Wholesale Trade	311	2.14	6	1.93%	27	46	2.36	8
Total	***14,592***	***100.00***	***173***	***1.19%***	***1,652***	***1,947***	***100***	***405***

Panel A reports 14,592 firm-years and distinct firms in the enforcement sample, by country, for observations from 1995-2010. It separately reports firm-years targeted by the SEC and number of SEC enforcement actions. The right-hand side of the table presents the earnings quality sample, which uses hand-collected U.S. GAAP-reconciled data from electronically filed 20-f reports from 2000-2009. Panel B reports the same data by industry. Note that the number of unique firms in the enforcement and earnings quality samples is inconsistent between Panel A and Panel B. This is because of changes in location of incorporation and leading industrial code over time.

Table 2: SEC enforcement by governing agreements

	No MMOU		MMOU		Total		Effect of MMOU			
								Marginal Difference		*Marginal Ratio*
	Firm-Years	Pct	Firm-Years	Pct	Firm-Years	Pct	*Exp*	*MMOU-No MMOU*	*Exp*	*MMOU/No MMOU*
A-No Agreement	3,013	0.56%	1,201	1.75%	4,214	0.90%	+	*1.19%* ***	*1<*	*3.10*
B-Bilateral Agreement	4,387	0.34%	4,520	1.50%	8,907	0.93%	+	*1.16%* ***	*1<*	*4.40*
C-Multiple Bilateral Agreements	892	2.24%	579	5.53%	1,471	3.54%	+	*3.29%* ***	*1<*	*2.47*
Total	*8,292*	*0.63%*	*6,300*	*1.92%*	*14,592*	*1.19%*	+	*1.29%* ***	*1<*	*3.06*

	Effect of Bilateral Agreements					
Marginal differences	***Exp***		***Exp***		***Exp***	
B-A	+	*-0.22%*	+	*-0.25%*	+	*0.03%*
C-B	+	*1.90%* ***	+	*4.023%* ***	+	*2.60%* ***
C-A	+	*1.68%* ***	+	*3.78%* ***	+	*2.63%* ***
Marginal ratio						
B/A	*1<*	*0.61*	*1<*	*0.86*	*1<*	*1.03*
C/B	*1<*	*6.56*	*1<*	*3.67*	*1<*	*3.79*
C/A	*1<*	*3.98*	*1<*	*3.16*	*1<*	*3.92*

This table reports observed proportions of SEC enforcement, measured using the percentage of firm-years with an enforcement action, partitioned by agreements that govern regulatory cooperation. There are three categories of bilateral agreements (No Agreement, Bilateral Agreement, and Multiple Bilateral Agreements) and two categories of multilateral agreement (No MMOU and MMOU). To understand these differences, I also present marginal differences and ratios. If these agreements are associated with enforcement, an increasing trend should be observed as one moves from the top left cells to the lower right cells. *, **, *** denotes significance at the 10%, 5%, and 1% levels for a two-tailed difference in proportion, respectively.

Table 3: Probability of SEC enforcement

		(1)		(2)		(3)		(4)	
Parameter		**Estimate**	**Odds Ratio**	**Estimate**	**Odds Ratio**	**Estimate**	**Odds Ratio**	**Estimate**	**Odds Ratio**
MMOU_FILE	***+ (H1)***	0.92***	2.51	1.03***	2.79	1.04***	2.83	0.72**	2.05
BILAT	+			-0.16	0.85	-0.15	0.86	-0.12	0.89
BILAT_MULTI	+			1.13***	3.09	1.13***	3.11	1.11***	3.02
MMOU	+					-0.17	0.84		
POST	+							0.47	1.6
CLASS_ACTION	+	1.42***	4.13	1.38***	3.96	1.38***	3.96	1.36***	3.88
HI_LIT	+	0.21	1.24	0.12	1.13	0.12	1.13	0.12	1.13
SIZE	+	0.22***	1.25	0.17***	1.19	0.17***	1.19	0.17***	1.18
PCT_CH_SALES	+	0.00**	1.00	0.00	1.00	0.00	1.00	0.00	1.00
RETURN	-	0.24	1.28	0.26	1.3	0.26	1.3	0.26	1.29
SKEW	-	-0.05	0.95	-0.08	0.92	-0.08	0.92	-0.08	0.93
RET_STD	+	3.08***	21.74	3.23***	25.24	3.23***	25.27	3.27***	26.3
TURNOVER	+	0.14	1.15	0.15	1.16	0.15	1.16	0.15	1.16
Intercept		-7.59***		-7.33***		-7.18***		-7.50***	
N (Number of Targets)		14,554	(135)	14,554	(135)	14,554	(135)	14,554	(135)
Pseudo-R^2		0.12		0.14		0.14		0.14	
Area Under ROC Curve		78.4		80.3		80.3		80.3	

		(5)		(6)		(7)		(8)	
Parameter		**Estimate**	**Odds Ratio**	**Estimate**	**Odds Ratio**	**Estimate**	**Odds Ratio**	**Estimate**	**Odds Ratio**
MMOU_FILE	***+ (H1)***	0.70**	2.01	0.93**	2.53	1.11***	3.03	0.48	1.62
BILAT	+	-0.12	0.88	-0.11	0.89	-0.44	0.64	0.04	1.05
BILAT_MULTI	+	1.10***	3.01	1.03**	2.81	1.73***	5.64	0.98	2.65
MMOU	+	0.01	1.01						
POST	+	0.48	1.62						
CLASS_ACTION	+	1.35***	3.88	1.41***	4.11	1.47***	4.37	1.52	4.55
HI_LIT	+	0.12	1.13	0.32	1.37	0.6	1.82	0.13	1.14
SIZE	+	0.17***	1.18	0.22***	1.24	0.19***	1.21	0.19	1.21
PCT_CH_SALES	+	0.00	1.00	0.00	1.00	0.00	1.00	0.00	1.00
RETURN	-	0.26	1.29	0.08	1.09	0.02	1.03	0.28	1.33
SKEW	-	-0.08	0.93	-0.11	0.89	-0.14	0.87	-0.08	0.92
RET_STD	+	3.27***	26.24	3.50***	33.23	4.03***	56.39	3.28	26.51
TURNOVER	+	0.15	1.16	0.31	1.36	0.32	1.37	0.16	1.17
Intercept		-7.50***		-7.62***		-7.67***		-7.22	
N (Number of Targets)		14,554	(135)	8,906	(99)	7,541	(73)	14,554	(135)
Pseudo-R^2		0.14		0.15		0.2			
Area Under ROC Curve		80.3		80		83.4			

This table presents the results from logistic regressions with SEC enforcement as an indicator dependent variable (set equal to '1' for firm-years with SEC enforcement actions, '0' otherwise). The sample includes all foreign firms listed in U.S. markets (described in Table 1). Because most of the variables of interest are binary indicator variables, odds ratios are reported. The control variables in the model come from Kim and Skinner (2011). I also include indicators for class action litigation in the previous 5 years, and—in certain specifications—bilateral agreements, multiple bilateral agreements, applying to the MMOU at any point in time, and post-2002 observations. Standard errors are double-clustered by country and year. Because several indicator variables are used, I apply the Firth procedure to reduce coefficient bias due to quasi-complete separation (Firth 1993; Heinz and Schemper 2002). $^{*, **, ***}$ denotes significance at the 10%, 5%, and 1% levels for a two-tailed test, respectively.

Table 4: Effect of counterfactually shifting the MMOU filing date on SEC enforcement probability

		-5	-4	-3	-2	-1	0	1	2	3	4	5
Parameter		**Estimate**	**Estimate**	**Estimate**	**Estimate**	**Estimate**	**Estimate**	**Estimate**	**Estimate**	**Estimate**	**Estimate**	**Estimate**
MMOU_FILE	*+ (H1)*	0.67**	0.83***	0.98***	0.74***	0.89***	1.03***	0.79***	0.61**	0.64**	0.46*	0.58**
BILAT	+	-0.14	-0.16	-0.18	-0.12	-0.14	-0.16	-0.12	-0.09	-0.1	-0.05	-0.07
BILAT_MULTI	+	1.00***	1.02***	1.05***	1.05***	1.09***	1.13***	1.11***	1.08***	1.10***	1.06***	1.08***
CLASS_ACTION	+	1.51***	1.46***	1.41***	1.43***	1.39***	1.38***	1.44***	1.49***	1.51***	1.55***	1.54***
HI_LIT	+	0.14	0.14	0.14	0.13	0.13	0.12	0.13	0.13	0.12	0.12	0.13
SIZE	+	0.19***	0.19***	0.18***	0.18***	0.18***	0.17***	0.17***	0.18***	0.18***	0.19***	0.18***
PCT_CH_SALES	+	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1
RETURN	-	0.3	0.29	0.29	0.28	0.27	0.26	0.26	0.27	0.27	0.29	0.28
SKEW	-	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08	-0.08
RET_STD	+	3.17***	3.18***	3.20***	3.27***	3.26***	3.23***	3.18***	3.25***	3.22***	3.21***	3.21***
TURNOVER	+	0.16	0.16	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Intercept		-7.45***	-7.5***	-7.54***	-7.36***	-7.36***	-7.33***	-7.17***	-7.11***	-7.06***	-7.05***	-7.02***

This table presents the results from logistic regressions with SEC enforcement as an indicator dependent variable (set equal to '1' for firm-years with SEC enforcement actions, '0' otherwise). The *MMOU_FILE* indicator has been created using a process that counterfactually shifts the real date by one year at a time. Standard errors are double-clustered by country and year. Because several indicator variables are used, I apply the Firth procedure to reduce coefficient bias due to quasi-complete separation (Firth 1993; Heinz and Schemper 2002). *, **, *** denotes significance at the 10%, 5%, and 1% levels for a two-tailed test, respectively.

Table 5: Earnings quality descriptive statistics

	Cross-listed (N=1,947)				U.S. Firms (N=1,947)			
	Mean	Median	Std	IQR	Mean	Median	Std	IQR
CHANGE_NI	0.00	0.00	0.13	0.07	0.00	0.01	0.13	0.06
CHANGE_CF	0.00	0.00	0.09	0.07	0.00	0.01	0.09	0.06
TOTACC	0.00	0.02	0.11	0.09	0.00	0.02	0.11	0.08
CF	0.00	0.00	0.11	0.13	0.00	0.01	0.12	0.11
SMALL_POS	0.51	1.00	0.50	1.00	0.51	1.00	0.50	1.00
LARGE_NEG	0.14	0.00	0.35	0.00	0.13	0.00	0.34	0.00
ANNRET	0.12	0.11	0.53	0.57	0.01***	0.00	0.57	0.48
EPS	1.03	0.42	2.72	1.93	0.87**	0.58	2.66	2.28
Controls								
LEV	2.56	1.09	4.71	1.83	2.40	1.22	4.21	2.28
GROWTH	0.91	0.10	3.18	0.32	0.42***	0.08	1.90	0.25
EQUITY_ISS	0.12	0.00	0.34	0.07	0.11	0.01	0.30	0.07
DEBT_ISS	0.31	0.08	1.00	0.33	0.26	0.06	0.93	0.27
ASSET_TURN	0.62	0.50	0.57	0.63	0.72***	0.56	0.64	0.74
SIZE	7.11	7.32	2.74	4.28	6.94	7.15	2.68	3.76

This table presents the sample of firms used for the earnings quality analyses: 1,947 firm-years from 390 distinct firms. The first segment contains the main variables of interest used in the earnings quality analyses, and the second segment contains control variables used in the analyses. *, **, and *** indicate significant differences between cross-listed and matched-U.S. firms at the 10%, 5%, and 1% levels, respectively. Variables are defined in the appendix.

Table 6: Comparisons of non-MMOU and MMOU firms

Panel A: Domestic GAAP

	Non-MMOU Obs=850				MMOU Obs=566				Diff-in-Diff	
	U.S.	Cross-listed	Exp Diff	*Diff*	U.S.	Cross-listed	Exp Diff	*Diff*	Exp D-I-D	*D-I-D*
Earnings Management Metrics										
Variability of ΔNI*	0.019	0.014	-	*-0.005* ***	0.024	0.025	N/A	*0.001*	+	*0.006* **
Variability of ΔNI* over ΔCF*	2.092	1.766	-	*-0.326*	1.838	2.113	N/A	*0.275*	+	*0.601*
Correlation of ACC* and CF*	-0.115	-0.328	-	*-0.214* ***	-0.004	-0.154	N/A	*-0.150* **	+	*0.063*
Small positive NI	0.050		+	*0.050* **	-0.035		N/A	*-0.035*	-	*-0.085* ***
Timely Loss Recognition Metrics										
Large Negative NI	-0.016		-	*-0.016* *	0.039		N/A	*0.039* *	+	*0.055* **
Basu Coefficient	0.225	0.110	-	*-0.115* ***	0.177	0.245	N/A	*0.068*	+	*0.183* **
Value Relevance Metrics (R^2)										
Price	0.467	0.382	-	*-0.085* **	0.593	0.675	N/A	*0.082*	+	*0.167* ***
Good News	0.014	0.001	-	*-0.013* *	0.102	0.136	N/A	*0.033*	+	*0.047*
Bad News	0.279	0.069	-	*-0.209* *	0.117	0.071	N/A	*-0.046*	+	*0.163* **

Panel B: IAS/IFRS Firms

	Non-MMOU Obs=266				MMOU Obs=265				Diff-in-Diff	
	U.S.	Cross-listed	Exp Diff	*Diff*	U.S.	Cross-listed	Exp Diff	*Diff*	Exp D-I-D	*D-I-D*
Earnings Management Metrics										
Variability of ΔNI*	0.009	0.013	-	*0.004* **	0.009	0.008	N/A	*-0.001*	?	*-0.005* *
Variability of ΔNI* over ΔCF*	2.253	2.030	-	*-0.223*	1.709	1.178	N/A	*-0.530*	+	*-0.307*
Correlation of ACC* and CF*	-0.184	-0.398	-	*-0.214* **	-0.147	-0.399	N/A	*-0.251* **	+	*-0.038*
Small positive NI	-0.022		+	*-0.022*	-0.072		N/A	*-0.072*	?	*-0.049*
Timely Loss Recognition Metrics										
Large Negative NI	0.023		-	*0.289*	0.018		N/A		?	*-0.005* *
Basu Coefficient	0.069	0.168	-	*0.099*	0.264	0.551	N/A	*0.287* **	?	*0.188* *
Value Relevance Metrics (R^2)										
Price	0.465	0.094	-	*-0.371* ***	0.535	0.495	N/A	*-0.040*	+	*0.331* ***
Good News	0.005	0.012	-	*0.007*	0.021	0.020	N/A	*-0.001* *	?	*-0.008*
Bad News	0.120	0.107	-	*-0.012*	0.219	0.290	N/A	*0.071*	+	*0.083*

The metrics are described in Section 3 and, where appropriate, include the set of controls employed by Lang et al. (2006). I use a bootstrap to calculate the significance of differences in variance and other variables across treatments (type of firm (U.S. or cross-listed) and MMOU, in this case) (see Boos and Brownie, 1988). The first step is to create an empirical distribution through resampling N observations from each cell for the variable in question. Then I assemble all pairwise combinations to calculate the difference in that variable between U.S. and cross-listed firms. I perform this task once for non-MMOU and once for MMOU samples and evaluate all pairwise combinations of the non-MMOU and MMOU differences (to obtain a "difference-in-difference"). *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 7: Characteristics of ownership structure

Panel A: Domestic GAAP

	Before 2nd Match		After 2nd Match	
	Non-MMOU Obs=474	**MMOU Obs=303**	**Non-MMOU Obs=297**	**MMOU Obs=297**
Mean	40.8***	33.7	34.7	34.3
P1	0.0	0.0	0.0	0.0
P5	0.2	0.2	0.1	0.2
P25	15.8	9.1	8.7	9.7
Median	39.0	27.7	28.7	28.1
P75	63.8	54.7	56.1	54.8
P95	82.5	84.1	81.7	84.1
P99	100.0	88.6	89.9	89.7

Panel B: IAS/IFRS Firms

	Before 2nd Match		After 2nd Match	
	Non-MMOU Obs=182	**MMOU Obs=233**	**Non-MMOU Obs=171**	**MMOU Obs=171**
Mean	27.6**	22.9	24.2	23.9
P1	0.0	0.0	0.0	0.0
P5	0.0	0.0	0.0	0.0
P25	0.2	0.2	0.2	0.2
Median	13.9	13.1	13.0	13.6
P75	50.4	35.4	38.9	36.6
P95	90.0	83.5	77.8	75.2
P99	100.0	97.7	100.0	98.2

This table reports the fraction of shares that are closely held for observations with available data. The percentage of closely held shares causes the sample size to decline by 639 firm-years in the "*Before 2nd Match*" section and by an additional 183 firm-years the second matching procedure is applied. The matching procedure is intended to equate the non-MMOU and MMOU observations on the dimension of ownership structure, measured using the percentage of closely held shares. To accomplish this objective, I separate firm-years into ownership deciles and then match non-MMOU observations to MMOU observations in the same decile (without replacement). This creates a distribution that is virtually identical. This is shown in the "*After 2nd Match*" section below. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 8: Comparisons of Non-MMOU and MMOU firms controlling for ownership

Panel A: Domestic GAAP

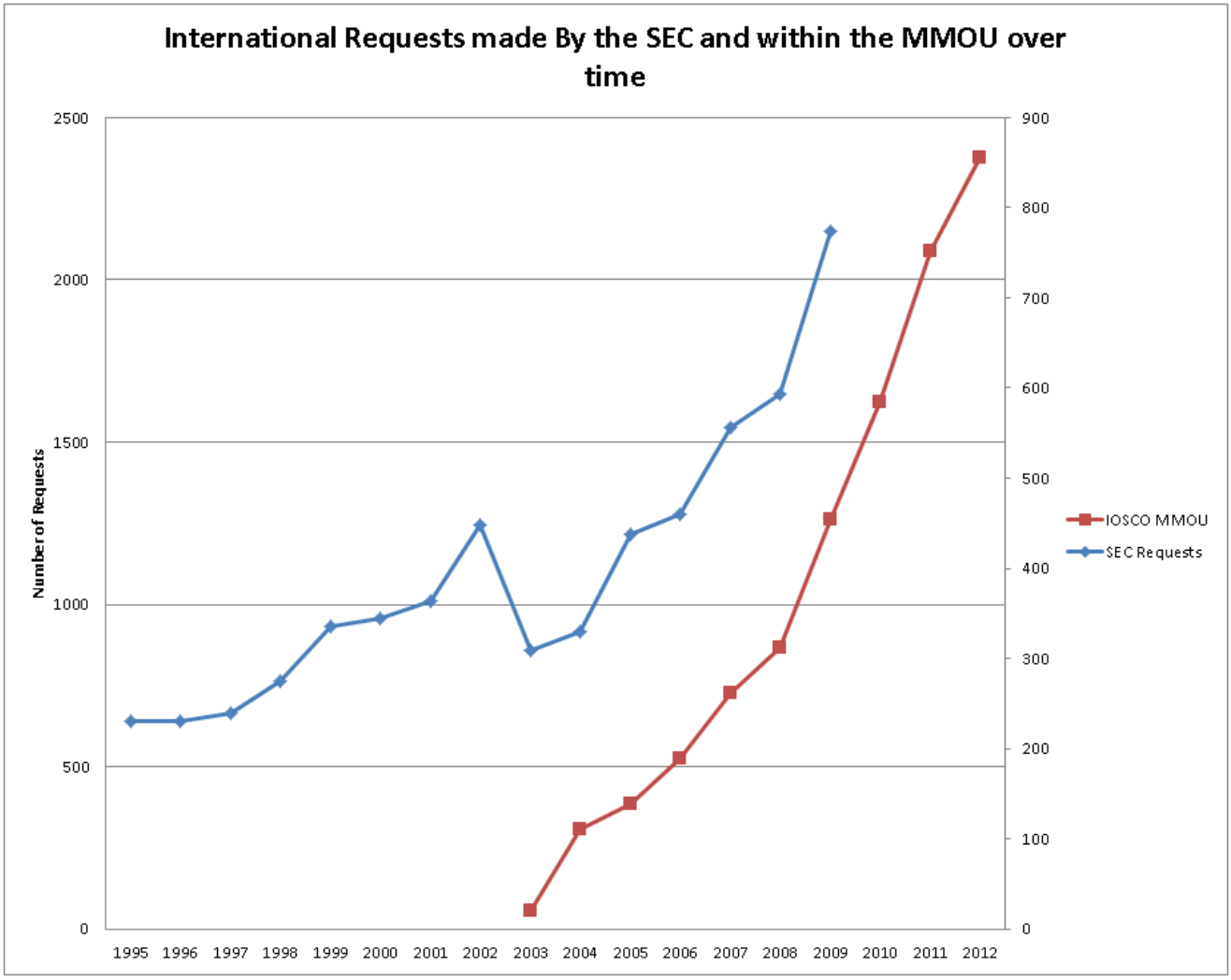
	Non-MMOU Obs=297				MMOU Obs=297				Diff-in-Diff	
	U.S.	Cross-listed	Exp Diff	*Diff*	U.S.	Cross-listed	Exp Diff	*Diff*	Exp D-I-D	*D-I-D*
Earnings Management Metrics										
Variability of ΔNI*	0.016	0.010	-	*-0.006* **	0.020	0.019	N/A	*-0.001*	+	*0.005* *
Variability of ΔNI* over ΔCF*	2.271	1.658	-	*-0.614*	2.162	1.902	N/A	*-0.260*	+	*0.353*
Correlation of ACC* and CF*	-0.147	-0.303	-	*-0.156* ***	-0.003	-0.182	N/A	*-0.179* *	+	*-0.024*
Small positive NI	0.005		+	*0.005*	-0.000		N/A	*0.000*	-	*-0.006* *
Timely Loss Recognition Metrics										
Large Negative NI	-0.002		-	*-0.002*	0.001		N/A	*0.001* *	+	*0.002* **
Basu Coefficient	0.240	0.083	-	*-0.156* ***	0.282	0.380	N/A	*0.099* **	+	*0.255* **
Value Relevance Metrics (R^2)										
Price	0.424	0.406	-	*-0.018*	0.599	0.705	N/A	*0.106* *	+	*0.124* *
Good News	0.000	0.025	-	*0.025*	0.123	0.144	N/A	*0.021*	?	*-0.004*
Bad News	0.339	0.119	-	*-0.220* **	0.197	0.125	N/A	*-0.073*	+	*0.147*

Panel B: IAS/IFRS Firms

	Non-MMOU Obs=171				MMOU Obs=171				Diff-in-Diff	
	U.S.	Cross-listed	Exp Diff	*Diff*	U.S.	Cross-listed	Exp Diff	*Diff*	Exp D-I-D	*D-I-D*
Earnings Management Metrics										
Variability of ΔNI*	0.008	0.015	-	*0.007* ***	0.008	0.008	N/A	*0.000*	?	*-0.007*
Variability of ΔNI* over ΔCF*	2.098	2.381	-	*0.283*	1.191	1.112	N/A	*-0.080*	?	*-0.363*
Correlation of ACC* and CF*	-0.229	-0.407	-	*-0.178* ***	-0.152	-0.437	N/A	*-0.285* *	+	*-0.107*
Small positive NI	0.000		+	*0.000*	-0.001		N/A	*-0.001* *	-	*-0.001*
Timely Loss Recognition Metrics										
Large Negative NI	0.000		-	*0.000*	0.000		N/A	*0.000*	?	*0.000*
Basu Coefficient	0.036	0.156	-	*0.120*	0.267	0.611	N/A	*0.344* **	?	*0.224* **
Value Relevance Metrics (R^2)										
Price	0.395	0.052	-	*-0.342* ***	0.543	0.447	N/A	*-0.096*	+	*0.247* **
Good News	0.008	0.003	-	*-0.004*	0.036	0.015	N/A	*-0.021*	+	*-0.017*
Bad News	0.057	0.104	-	*0.046*	0.216	0.397	N/A	*0.181*	?	*0.134*

The metrics are described in Section 3 and, where appropriate, include the set of controls employed by Lang et al. (2006). In these tests, I explicitly control for ownership structure by using the procedure described in Table 7. I use a bootstrap to calculate the significance of differences in variance and other variables across treatments (type of firm (U.S. or cross-listed) and MMOU, in this case) (see Boos and Brownie, 1988). The procedure is described in the notes to Table 6. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Figure 1: Increases in requests for assistance



The graph below shows the number of requests the SEC made to international regulators and the number of requests made within the MMOU framework over time. Data is not available for SEC requests after 2009, and the MMOU data starts in 2003 (the year after the MMOU was established). The information comes from the SEC Annual Reports and the IOSCO website. The SEC requests use the left-hand axis labels and the MMOU uses the right-hand axis labels. As stated in footnote 12, it is not clear how these two metrics are calibrated or if they are measured on an equal basis, so the graph should be interpreted with this in mind. The point of the graph is simply to show that these events have proliferated over time.