Cross-Border Regulatory Cooperation and Firm Cross-Listing Decisions

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August 2024

* We appreciate constructive comments on an earlier version of this paper from workshop participants at Monash University, Latrobe University, Xiamen University, Nanjing University, Jinan University, and the CUHK-XMU Business and Management Academic Seminar.

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ABSTRACT

We find that firms are more likely to cross list in overseas capital markets after their home countries become signatories to the Multilateral Memorandum of Understanding (MMoU). Other evidence implies that MMoU adoption motivates firms' cross-listing mainly through reducing their agency problems and information asymmetry. Additionally, we show that firms tend to cross-list in countries that have already adopted the MMoU when their home countries join the MMoU network. Moreover, the impact of the MMoU on cross listing is more heavily concentrated in firms with stronger external financial dependence and that struggle to access their domestic market, and firms in countries with more impediments to cooperation. Finally, we document that MMOU adoption improves cross-listed firms' investments, information environment, and firm value.

Keywords: MMoU; Cross-border regulatory cooperation; Cross-listing; Information asymmetry; Agency problems

JEL Classification: K22, G15, G38, F23

"The Enhanced MMoU marks a turning point in cross-border enforcement cooperation and information sharing among IOSCO members. It raises the standards of enforcement action, making it increasingly difficult for wrongdoers to conduct cross-border misconduct in global securities markets."
——Paul Andrews, Secretary General of IOSCO

1. Introduction

In cross-country settings, securities regulators in home countries are often restrained by insufficient information, complex jurisdictional issues, and legal restrictions (Silvers, 2020). In contrast to enforcement in a strictly domestic environment, cross-border enforcement of securities laws requires regulators from different countries that operate in largely incompatible legal systems to cooperate. Given that the number of cross-border market activities has risen steeply in recent decades (Christensen, Hail, and Leuz, 2016; Meier, 2019), there has been a corresponding increase in demand for better cross-border regulatory cooperation. In response to this demand as well as the need to suppress terrorist financing and cross-border money laundering after the 9/11 attacks, the International Organization of Securities Commissions (IOSCO) developed a special nonbinding arrangement, the Multilateral Memorandum of Understanding (MMoU), in May 2002 to facilitate information sharing and regulatory cooperation among cross-border securities regulators.[1] Despite the importance of cross-border regulatory cooperation to enhancing firms' governance practices, there remains hardly any evidence on the economic consequences of such cooperation on cross-listing activities.

We help close this gap by focusing on the MMoU as the testing ground for examining whether domestic firms' cross-listing decisions are sensitive to cross-border regulatory cooperation. The MMoU offers several advantages conducive to identifying the effects of cross-border regulatory cooperation on cross-listing. First, the MMoU was developed to

[1] Recent research implies that after entering the MMoU, the regulatory enforcement costs of securities regulators fall, and their cross-border enforcement capacities rise (Silvers, 2020). The MMoU also mitigates agency problems stemming from information asymmetry, firm insiders' self-dealing activities, and asset tunneling (Silvers, 2020, 2021a).

combat terrorist financing and money laundering after 9/11 in 2001, suggesting that its establishment is unrelated to any market forces and thus exogenous to firms, investors, and even regulators (Silvers, 2020, 2021a, 2021b). Second, the MMoU enjoys wide participation, with securities regulators from 121 countries joining the arrangement at different times between 2002 and 2019. The staggered adoption of the MMoU enables us to better isolate the impact of the cross-border regulatory cooperation on cross-listing decisions.

Cross-listing is an important decision for firms that involves making their shares available for trading on a stock market outside of their home country. Prior studies document numerous incentives for firms to cross-list in overseas capital markets, including increasing their liquidity and overcoming market segmentation (Karolyi, 1998; Foerster and Karolyi, 1999; Miller, 1999), improving their financial transparency and disclosure quality (Khanna, Palepu, and Srinivasan, 2004), lowering equity pricing by broadening their shareholder base (Merton, 1987; Hail and Leuz, 2009), generating firm value and growth opportunities (Bris, Cantale, Hrnjić, and Nishiotis, 2012; Doidge, Karolyi, and Stulz, 2004; Khurana, Martin, and Periera, 2008; Lang, Lins, and Miller, 2003), and insulating them from hostile takeovers (Kastiel and Libson, 2019; Tsang, Yang, and Zheng, 2022). In another major driver, firms cross-list to adapt themselves to stronger securities law enforcement in the host countries (Reese and Weisbach, 2002; Doidge, Karolyi, Lins, Miller, and Stulz, 2009).[2]

However, it remains unclear at this stage whether a country's adoption of the MMoU affects its domestic firms' cross-listing decisions. In one direction, firms' cross-listing activities may increase after their home country adopts the MMoU. Compared to investors in firms' home countries, investors in their host countries may struggle to learn about cross-listed firms, leading to information asymmetry between these two groups of investors (Gordon and

[2] However, Lang, Raedy, and Wilson (2006) find that cross-listed non-U.S. firms from countries with weaker investor protection practice more earnings management, suggesting that SEC regulation does not supplant the impact of the local environment.

Bovenberg, 1996; Brennan and Cao, 1997; Kang and Stulz, 1997; Bae, Stulz, and Tan, 2008; Silvers, 2020). Further, compared to non-cross-listed firms, agency problems are usually more severe in cross-listed firms stemming from cross-border regulatory deficiencies (Leuz, 2006; Doidge et al., 2009). Given the higher information risk and agency costs, investors in host countries may be reluctant to hold equity stakes in cross-listed firms. However, the MMoU facilitates information sharing and improves regulatory enforcement among cross-border securities regulators, potentially alleviating investors' concerns that, in turn, encourages firms to cross-list in overseas markets. Additionally, firms may elect to cross list abroad to bond themselves to markets with stricter regulatory enforcement—such as the MMoU signatory countries—to reduce their financing costs and increase their valuations (Stulz, 1999; Doidge et al., 2004; Hail and Leuz, 2006; Karolyi, 2012; Silvers, 2016).

In the other direction, it is also plausible that firms reduce their cross-listing activities after their countries adopt the MMoU. The incidence of financial restatements rises with the increased threat of regulatory enforcement after the MMoU's adoption (Chang and He, 2021).[3] It follows that this closer scrutiny could also deter low quality firms from cross-listing abroad after the MMoU's adoption. Indeed, extensive prior research implies that the stricter disclosure standards that accompany cross-listing in the U.S. constrain dominant controlling shareholders from diverting corporate resources at the expense of outside investors (e.g., Doidge, 2004; Doidge, Karolyi, and Stulz, 2004, 2009).[4] Moreover, if firms cross-list to bond themselves to tougher security regulations, the impact of the bonding is largely determined

[3] Similarly, Silvers (2016) argue that the SEC increased enforcement imposed on U.S. listed foreign firms prompted a wave of restatements. Silvers (2021b) shows that the MMoU increases cross-border enforcement for financial reporting issues such as SEC-prompted restatements.

[4] Controlling shareholders extracting private benefits that they later conceal by distorting the financial statements may prefer to avoid the transparency that comes with cross-listing in overseas capital markets (Leuz and Oberholzer-Gee, 2006). Hail and Leuz (2009) document that the fall in the cost of equity capital that firms that become cross-listed in the U.S. enjoy is larger for firms located in countries with less extensive disclosure regulation. Marosi and Massoud (2008) document that U.S. institutional investors pressure foreign firms to remain cross listed to ensure that they continue to be subject to the active monitoring that SEC registration imposes. Hostak, Lys, Yang, and Carr (2013) conclude that dominant insiders eager to avoid the stricter disclosure standards under SOX are responsible for their evidence that these firms are more apt to deregister from the SEC.

by the disparity in regulatory enforcement between their home country and foreign countries (Leuz, 2006; Piotroski and Srinivasan, 2008; Diniz-Maganini, Rasheed, Yaşar, and Sheng, 2023). If the MMoU's adoption effectively narrows the gap, firms may have less of a need to cross-list in overseas markets to bond themselves to foreign regulatory institutions. Given the competing forces at work, the impact of the MMoU on firms' cross-listing decisions amounts to empirical question.

In analyzing a large sample containing 369,771 firm-year observations representing 19,693 unique firms from 76 countries (or regions) during the 1997−2019 period using a stacked difference-in-differences (DiD) research design, we find that firms located in countries that adopt the MMoU are more likely to cross-list in overseas markets afterward. In economic terms, firms' likelihood of cross-listing increases by 1.55% after their home country adopts the MMoU, which constitutes an increase of 55.96% relative to the sample mean. To evaluate whether the parallel trends assumption underlying our DiD design is defensible, we explore the dynamics of cross-listing around the MMoU's adoption. We find that treated and control firms do not exhibit significant differences in the likelihood of cross-listing before the adoption, helping justify the parallel trends assumption. Rather, the increase in cross-listing manifests immediately after the MMoU's adoption, reinforcing our baseline evidence. Our core results are robust when we use alternative measurements, samples, or model specifications, conduct country-level analysis, consider the timing of MMoU adoptions, apply Oster's (2019) test to address potential omitted variable bias, or rely on the robust estimators introduced in Borusyak et al. (2023) and De Chaisemartin and D'Haultfoeuille (2020).

Next, we investigate whether reductions in informational asymmetry and agency problems are the potential mechanisms through which the MMoU shapes firms' cross-listing decisions. Our cross-sectional analysis reveals that the role that the MMoU plays in cross-listing is magnified for firms with higher ex ante information asymmetry and agency

problems, lending support to the narrative that these channels are responsible for the MMoU motivating firms to cross-list in foreign capital markets.

In proceeding to investigate the destinations of cross-listings, we find that the positive impact of MMoU adoption on cross-listing is concentrated in cases in which the host countries have already adopted the MMoU. Additionally, we examine the cross-sectional heterogeneity in the impact of the MMoU on cross-listing. Its adoption allows firms to access deeper capital markets because foreign investors are more receptive to investing in firms with better governance practices. Accordingly, the beneficial effect of the MMoU on cross-listing should be stronger for firms with more dependence on external finance and firms having more difficulty in accessing their domestic capital market. Further, if a firm is located in a country with ex ante fewer impediments to cooperation, the beneficial effect of the MMoU on cross-listing should be muted since its marginal incremental effect on cross-border regulatory cooperation is relatively small. Consistent with expectations, we document a larger effect of the MMoU on cross-listing for firms with greater external finance dependence as well as in countries with less sophisticated capital markets and more extensive impediments to cooperation. Finally, in analyzing the real consequences of the MMoU's adoption, we find that cross-listed firms increase their capital and R&D investments, stock valuation, and stock price informativeness after its adoption. Anticipating such benefits, firms might be more likely to cross-list in overseas markets, which reconciles with our baseline findings.

We make several contributions to extant research. First, we advance the emerging line of studies exploring the consequences of the MMoU. Although the MMoU was developed two decades ago, empirical research has only recently begun to document its impacts, which include increasing cross-border enforcement and reducing the cost of liquidity provision (Silvers, 2020), expanding foreign investment (Lang, Maffett, Omartian, and Silvers, 2020), helping integrate equity markets (Silvers, 2021a), improving earnings quality and transparency (Silvers, 2021b), increasing the incidence of financial restatements (Chang and

He, 2021), and raising dividend payouts (Chang, He, and Mi, 2022; Chen, Hsieh, Tsang, and Xiang, 2022). We complement prior work by reporting evidence that the MMoU's adoption induces firms to cross-list abroad. Given the enormous benefits of cross-listing, our finding provides insight on the real consequences of the MMoU. Moreover, the increase in cross-listing equity after MMoU adoption could enlarge the supply of foreign investees in the local market, making it easier for domestic firms to invest in foreign assets. As such, we extend research on the MMoU's impact on foreign investments by showing that cross-listing incentives are a potential mechanism through which MMoU adoption affects firms' foreign investment (Lang et al., 2020).

Second, our evidence adds to prior research on the determinants of firms' cross-listing decisions. For example, firms are more likely to cross-list abroad when they need more liquidity and higher market integration (Karolyi, 1998; Foerster and Karolyi, 1999; Miller, 1999), they are eager to improve their financial transparency and disclosure practices (Khanna, Palepu, and Srinivasan, 2004), they have higher equity financing costs (Merton, 1987; Hail and Leuz, 2009), they strive to enhance firm value and growth opportunities (Bris et al., 2012; Doidge et al., 2004; Khurana et al., 2008; Lang et al., 2003), they have less board gender diversity (Shoham et al., 2020), they face hostile takeover threats (Kastiel and Libson, 2019; Tsang et al., 2022), and they prefer to adapt to stricter enforcement institutions in the host countries (Reese and Weisbach, 2002; Doidge et al., 2009). However, the impact of cross-border regulatory cooperation on firms' cross-listing decisions remains largely unexplored. In exploiting the staggered adoption of the MMoU, we document that improving cross-border cooperation has a positive effect on firms' decisions on whether to cross-list in overseas capital markets. Accordingly, our findings contribute to prior work by showing that cross-border regulatory cooperation is another major driver behind firms' cross-listing decisions.

Finally, we contribute to the public policy discourse by documenting the real implications of a nonbinding arrangement for cross-border regulatory enforcement (i.e., the

MMoU). Our findings imply that better cross-border regulatory cooperation will attract rather than deter foreign listed firms and facilitates integrating global stock markets. As such, we help inform the debate in policy circles over how stringent regulatory enforcement will affect overseas firms' cross-listing activities.[5] Additionally, reflecting its real implications for financial regulators, our evidence implies that cross-border cooperation engenders some unintended benefits, helping justify extending this policy initiative to other countries around the world.

The rest of this paper is organized as follows. Section 2 outlines the institutional background of the MMoU and develops our hypotheses. Section 3 describes the data, sample, and research model. Section 4 reports the main empirical results along with the evidence from robustness tests. Sections 5 and 6 cover the evidence from channel tests and additional analysis, respectively. Section 7 concludes.

2. Background and Hypotheses

2.1 Institutional Background of the MMoU

In the aftermath of the 9/11 attacks in 2001, regulatory agencies worldwide sought to suppress terrorist financing and cross-border money laundering. In May 2002, the IOSCO developed a special nonbinding arrangement, the MMoU, to facilitate information sharing and cooperation among cross-border securities regulators.[6] The MMoU is designed to lubricate information flows between regulators (e.g., audit work papers; bank, brokerage, beneficial ownership and telephone records; and depositions and testimony) in striving to enhance cross-border securities legal enforcement capabilities (e.g., asset identification, freezing, and repatriation; and preventing the destruction of critical documents). The MMoU

[5] For example, Piotroski and Srinivasan (2008) find that the Sarbanes-Oxley Act (SOX) can discourage foreign firms from listing on U.S. exchanges. Hostak et al. (2013) show that SOX undermines the attractiveness of U.S. capital markets for foreign firms. On the other hand, Doidge, Karolyi, and Stulz (2009) and Georgieva and Lee (2007) find that SOX did not negatively affect the incidence of cross-listings in the U.S.

[6] The formal MMoU is available at https://www.iosco.org/library/pubdocs/pdf/IOSCOPD386.pdf.

operates through various mechanisms, such as ad hoc requests, letters rogatory, and mutual legal assistance treaties (Silvers, 2020, 2021a, 2021b).

The MMoU currently covers 127 jurisdictions. The number of information exchanges rose sharply from 56 in 2003 to 4,319 in 2019, indicating that MMoU signatories increasingly actively exchange information for cross-border securities law enforcement purposes.[7] Further, the MMoU has enhanced securities regulators' supervision and cross-border enforcement capacities (IOSCO, 2012). Ashley Alder, the current chair of the IOSCO, stresses that regulatory agencies rely heavily on the MMoU arrangement in their cross-border enforcement activities (ESMA, 2019). His view is supported by IOSCO (2017), which reports that countries around the world have requested assistance through the MMoU; the top three countries with the most requests in 2017 were France (11.2%), the U.S. (10.8%), and the U.K. (9.9%).

2.2 Hypothesis Development

Prior research implies that the significantly higher costs associated with acquiring and processing information about foreign firms relative to domestic firms hinders investors' cross-border equity-holding decisions (Bradshaw, Bushee, and Miller, 2004; Yu and Wahid, 2014). In the context of cross-listing, investors in host countries often struggle to secure information about cross-listed firms relative to investors in home countries, resulting in information asymmetry between these two groups of investors (Gordon and Bovenberg, 1996; Brennan and Cao, 1997; Kang and Stulz, 1997; Bae et al., 2008; Silvers, 2020). For example, some nonpublic and value-relevant information could be disseminated in the local market before it reaches foreign investors. Such information asymmetry imposes adverse selection risks on investors in host countries, making them reluctant to invest in cross-listed firms.

The MMoU facilitates cross-country regulatory cooperation in the exchange of information and setting procedures for handling information requests among participating

[7] https://www.iosco.org/about/?subsection=mmou.

regulators globally. After cross-listed firms' home country signs the MMoU, these firms likely become more transparent to investors in the host country given the information sharing under this regime. It follows that the information gap between domestic and foreign investors shrinks after the MMoU's adoption. Prior research suggests that the MMoU plays a larger role when investors face wider information asymmetry, reflecting that the closer monitoring stemming from the MMoU is more valuable for these investors (e.g., Lang et al., 2020; Silvers, 2021a).

Further, given cross-border regulatory deficiencies, agency problems are usually more severe in cross-listed firms. For example, firms cross-listed in foreign markets tend to have a more concentrated ownership structure than their domestic counterparts (Leuz, 2006), worsening agency conflicts between dominant controlling shareholders and minority investors (Doidge et al., 2009). Firms' cost of equity is known to rise with agency costs, consistent with investors requiring a risk premium for investing in firms with serious agency conflicts (Boubakri, Guedhami, and Mishra, 2010). In the presence of severe agency costs, investors in host countries might resist holding stakes in cross-listed firms.

Silvers (2021a, 2021b) reports that the cross-border cooperation stemming from the MMoU tightens enforcement. Cross-border enforcement capabilities extended by the MMoU—including restriction orders on freezing assets, reducing defendant flight risks, mandatory identification of accounts, and prohibiting the destruction of critical documents—could deter opportunistic behaviors by managers and controlling shareholders such as insider trading, market manipulation, and tunneling, which, in turn, mitigates agency costs and lowers the information risk borne by investors in the host country. Accordingly, the MMoU could play a disciplinary role in motivating firms in signatory countries to improve their transparency and avoid self-dealing, reducing investors' concerns about agency conflicts.

Given the lower information asymmetry and agency problems, investors in host countries will become more eager to invest in cross-listed firms. Indeed, there is evidence that

the MMoU stimulates cross-border activities. For example, Silvers (2021a) argues that the MMoU enhances cross-border enforcement, improves regulatory decisions through learning and shared experiences, and reduces regulatory red tape in cross-border activities, which spurs cross-border equity investment. Silvers (2020) reports evidence implying that the MMoU standardizes the protocol for information sharing among participating countries' securities regulators, which reduces the cost of the liquidity provision in their capital markets. Also, Lang et al. (2020) document that U.S. cross-listed firms attract more foreign investment after their home country adopts the MMoU, suggesting a spillover effect from international regulatory cooperation. We extend this recent research on the MMoU's impact on foreign investment by exploring its role in firms' cross-listing decisions. Given that the MMoU induces investors in host countries to invest in cross-listed firms, firms may have more incentives to cross-list in overseas markets to reap its benefits, such as securing access to a more mature stock market, increasing ownership diversification and stock liquidity, creating firm value and growth opportunities, and insulating them from hostile takeover threats (Alexander, Eun, and Janakiramanan, 1987; Foerster and Karolyi, 1998; Coffee, 1999, 2002; Stulz, 1999; Miller, 1999; Doidge, 2004; Fernandes and Ferreira, 2008; Hail and Leuz, 2009; Tsang et al., 2022).

Additionally, firms in countries with lax legal and financial institutions could reduce their financing costs and increase their valuations through cross-listing in a foreign country with stronger regulatory enforcement (e.g., the U.S.) that facilitates corporate disclosure and shareholder protection (Coffee, 1999; Stulz, 1999; Doidge et al., 2004; Hail and Leuz, 2006; Silvers, 2016). Accordingly, a major incentive for firms to cross list is bonding themselves to markets with stronger enforcement institutions (Karolyi, 2012). Given that the bonding status (i.e., the ability for stronger host market regulation to substitute for weaker home market regulation) largely hinges on cross-country enforcement capacity, the MMoU could raise firms' interest in cross-listing by reinforcing the bonding effect. Combining these arguments,

we expect firms' cross-listing activities to increase after their home country adopts the MMoU, which translates into this prediction:

Hypothesis*: Firms are more likely to cross-list in overseas markets after their home country adopts the MMoU.*

However, injecting tension into this research question, it is also plausible that firms in MMoU countries are less likely to cross-list in foreign markets relative to their peers in non-MMoU countries. Overcoming market segmentation is known to motivate firms to cross list. For example, Foerster and Karolyi (1999) find that cross-listing firms enjoy positive abnormal returns around their cross-listing and the investor reaction to cross-listing intensifies when firms' home market exhibits more extensive market segmentation (e.g., emerging markets). As the more robust regulatory cooperation stemming from the MMoU would help integrate equity markets and alleviate market segmentation barriers, the benefits of cross-listing may subside after the adoption of the MMoU. Moreover, prior research finds that the MMoU prompts more accounting restatements for U.S. listed foreign firms (e.g., Chang and He, 2021; Silvers, 2021b). As negative signals, restatements could decrease earnings and increase the firms' equity financing costs (Hribar and Jenkins, 2004), while reducing their likelihood of becoming takeover targets in the market for corporate control (Amel-Zadeh and Zhang, 2015). Consequently, after home countries adopt the MMoU, firms may refrain from cross-listing to avoid the ensuing scrutiny.

Additionally, the bonding hypothesis implies that firms' cross-listing decisions are sensitive to their commitment to more stringent regimes governing disclosure quality and investor protection (Leuz, 2006; Piotroski and Srinivasan, 2008; Diniz-Maganini et al., 2023). If adopting the MMoU effectively narrows the gap in regulatory enforcement between a firm's home country and foreign countries, the firm may no longer need to cross-list in overseas markets to bond themselves with foreign regulations. In short, the MMoU's adoption could serve as a substitute for firms' needs to cross-list abroad. Given the forces running in opposite

directions, an empirical investigation is necessary to shed light on the net impact on firms' cross-listing activities when their home country adopts the MMoU.

3. Research Design

3.1 Data and Sample

Consistent with prior work on international cross-listing (e.g., Chen, Ng, and Tsang, 2015; Liao, Tsang, Wang, and Zhu, 2022; Shoham et al., 2020; Tsang et al., 2022), we retrieve firm cross-listing data from the Compustat (North American and Global) database.[8] For a firm with secondary securities listed on foreign exchanges, we identify all of its tickers and the corresponding stock exchanges. Next, we code a firm-year as cross-listed if the firm has at least one secondary security that is actively listed and traded in a foreign country that is different from its primary listing country. Since disclosure, governance, and minority shareholder protection are mainly determined by the exchange where the firm is primarily listed, we follow prior research by defining a firm's home country according to the location of its primary stock exchange listing in our baseline analysis (e.g., Chen, Ng, and Tsang, 2015; Liao, Tsang, Wang, and Zhu, 2022).[9] We collect the MMoU adoption year information for each country from the IOSCO.[10] As the earliest MMoU adoption year is 2002, we start our sample period from 1997 (i.e., five years before the first adoption year). In Appendix B, we report the MMoU adoption years by country. We obtain firm financial information from the Compustat database and analyst coverage data from I/B/E/S.[11] Data on regulatory quality and rule of law ratings come from a Fraser Institute report.[12]

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[8] For two reasons, Chen, Ng, and Tsang (2015) conclude that Compustat is a better source for international cross-listing data compared with collecting the data from major stock exchanges. First, the data available in Compustat includes the foreign stock listings from each company, providing more complete information on the securities listing status of each company over time. Second, in contrast to the different definitions of foreign companies by stock exchanges, data appearing in Compustat ensures consistent definitions of cross-listing by different companies and stock exchanges. We follow extensive prior research in relying on Compustat Global to identify international cross-listings (e.g., Chen et al., 2015; Shoham et al. 2020; Liao, Tsang, Wang, and Zhu, 2022).

[9] We verify that our core results hold when we redefine a firm's home country using its incorporation or legal registration country and its headquarters location country.

[10] https://www.iosco.org/about/?subSection=mmou&subSection1=signatories.

[11] For firm-years with missing data on analyst coverage, we set this variable to zero.

[12] http://www.freetheworld.com/datasets_efw.html.

Consistent with prior work (Chen et al., 2015; Liao et al., 2022; Tsang et al., 2022), we exclude firms without primary identifier codes, firms that are investment funds or trusts, and firms listed in tax havens. We also discard firms belonging to countries with less than 100 observations.[13] Further, given that the MMoU adoption date varies across the year (for example, China adopted the MMoU on May 29, 2007, while the Netherlands adopted it on Nov 22, 2007), we follow prior research by dropping the MMoU adoption year for each country from the analysis to facilitate clean identification (Chen et al., 2015; Chen, Gao, and Wang, 2021; Chen, Chen, Yang, and Yuan, 2022).[14] Finally, we require observations to have non-missing values for all variables in the baseline analysis.

There is a concern that heterogeneous treatment effects may admit bias when using a two-way fixed effects (TWFE) regression to analyze data from a staggered DiD setting (e.g., De Chaisemartin and D'Haultfoeuille, 2020; Barrios, 2021; Goodman-Bacon, 2021; Baker, Larcker, and Wang, 2022; Borusyak, Jaravel, and Spiess, 2023). Accordingly, we follow extensive prior research by applying an event-based stacked DiD in our baseline analysis (e.g., Gormley and Matsa, 2011; Sheen, Wu, and Yuan, 2021; Li, Shevlin, and Zhang, 2022). Stacked DiD is an econometric approach used to estimate the causal effect of a treatment or policy change on an outcome of interest. In a variation of the staggered DiD method, this technique allows for the consideration of multiple groups (or "stacks") in the analysis. In the stacked DiD approach, the treatment and control groups are divided into subgroups (or "stacks") based on sharing the same implementation time. Afterward, the DiD analysis is performed within each stack, comparing the change in the outcome for the treated group to the change for the control group. Next, the results from the individual DiD analyses within each stack are combined to arrive at a final estimate of the treatment effect. Stacked DiD is constructive when

[13] The results are almost identical when we recover these observations in the analysis.
[14] In untabulated tests, we find consistent results when we include the MMoU adoption year for each country in the sample.

the treatment effect may vary across different subgroups, and allows for the estimation of heterogeneity in the treatment effect.

Specifically, we identify the year in which a country adopts the MMoU, which we refer to as the cohort-year. An adopting country becomes a treatment country after the year in which it adopts the MMoU. Correspondingly, countries that have not adopted the MMoU in that year are control countries. Next, we construct a cohort of treatment and control firms around each batch of MMoU adoptions over the [-5, +5] period. Last, we pool the cohort-years in assembling the full cohort-based sample for our analysis.[15] Consistent with prior work (e.g., Gormley and Matsa, 2011; Sheen et al., 2021), we control for firm-cohort fixed effects in our baseline analysis to ensure that we exploit only within-firm variation in each treatment-control group, and year-cohort fixed effects to control for any secular time trends.[16] Our final sample consists of 369,771 firm-year observations for 19,693 unique firms from 76 countries (or regions) during the period from 1997 to 2019.

3.2 Research model

We estimate the following stacked DiD regressions to empirically evaluate the impact of MMoU adoption on firms' cross-listing decisions:

$$CL\_Firm_{i,t} = \beta_0 + \beta_1 \times MMoU_{i,t} + \beta_2 \times Controls + Firm\text{-}cohort\ FE + Year\text{-}cohort\ FE + \varepsilon_{i,t.} \quad (1)$$

where i denotes the firm, t denotes the year, and ε is the error term. *Firm-cohort FE* (*Year-cohort FE*) reflects firm-cohort (year-cohort) fixed effects. We estimate the regressions using ordinary

[15] To illustrate the cohort approach, we take the year 2005 as an example. In 2005, only Belgium and Singapore adopted the MMoU. To construct a cohort for the event window surrounding 2005, we classify firms in these two countries as the treatment firms and firms from other countries that never adopted the MMoU before 2005 as the control firms. Afterward, we keep all firm-years for the treatment and control firms for the period 2000–2010 as a cohort for the 2005 adoption. For control firms that adopted the MMoU between 2005 and 2010, we keep only firm-years during the pre-MMoU adoption period.

[16] We follow Gormley and Matsa (2011) and Sheen et al. (2021) by allowing the firm and year fixed effects to vary by cohort. This approach is more conservative than including standalone firm and year fixed effects. Including year-cohort fixed effects in the model helps mitigate the selection bias concern that the number of countries that have already adopted the MMoU each year could affect new MMoU adoption.

least squares (OLS) and cluster robust standard errors at the firm level.[17,18] The dependent variable, *CL_Firm*, is a dummy variable that equals 1 if at least one secondary security of the firm is actively listed and traded in a foreign country, and 0 otherwise.[19] The explanatory variable of interest, *MMoU*, is an indicator variable set to 1 after the firm's home country adopts the MMoU, and 0 otherwise. We expect β_1 to be positive and significant if the adoption of the MMoU in its home country induces the firm to cross-list abroad.

In line with prior work (Chen et al., 2015; Liao et al., 2022; Tsang et al., 2022), we control for several firm-, industry-, and country-level variables in the regression (denoted *Controls*). At the firm-level, we control for firm size (*Size*), defined as the natural logarithm of total assets; the return on assets (*ROA*), defined as net income divided by total assets; sales growth (*Sale Growth*), defined as the annual growth rate of total sales; the leverage ratio (*Leverage*), defined as total debt divided by total assets; the cash ratio (*Cash*), defined as cash and short-term investments divided by total assets; capital expenditures (*Capex*), defined as total capital expenditures divided by total assets; firm age (*Age*), defined as the natural logarithm of the number of years that the firm appears in Compustat; the interest ratio (*Interest*), defined as total interest divided by total sales; financial reporting opacity (*Accruals*), measured by country-, industry-, and year-adjusted total scaled accruals (Bhattacharya, Daouk, and Welker 2003); the market-to-book ratio (*MTB*), defined as the market value of equity scaled by its book value; and analyst coverage (*Analyst Coverage*), defined as the natural logarithm of one plus the number of analysts covering the firm.

[17] Even if the dependent variable is a binary variable, we use OLS in the baseline regression because adding fixed effects to the probit and logit models may create an incidental parameters problem (Greene, 2004). In untabulated tests, we perform the regression using the probit and logit models and find consistent results.

[18] In the stacked estimator, Wing (2021) recommends clustering standard errors at the unit level to account for duplication. Accordingly, we follow prior studies using the stacked DiD approach by clustering standard errors at the firm level (e.g., Sheen et al., 2021; Sun and Abraham, 2021). In untabulated tests, we verify that our results persist when we cluster standard errors by firm and year or by country.

[19] Our results are consistent if we use the total number of unique foreign countries where the firm's securities are cross-listed as alternative dependent variable.

At the industry-level, we control for whether the firm belongs to a high-tech industry according to its SIC classification (*HiTech*) and product market competition (*HHI*), calculated as the sum of squares of fractional market shares of all firms within each two-digit SIC industry for a country. Further, we add several country-level variables, including real GDP per capita (*GDP Per Capita*), specified as the real domestic product divided by the population for each firm-year divided by 10,000; GDP growth rate (*GDP Growth*), defined as the annual percentage growth rate of real GDP at market prices based on constant local currency for each firm-year; business regulation quality (*Regulatory Quality*), which is a rating of business regulation quality that captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development; agents' confidence in the rules of society (*Rule of Law*), which is a rating of legal structure and property rights. In Appendix A, we provide detailed regression variable specifications. To mitigate the potential effect of outliers, we winsorize all continuous variables at the 1% and 99% percentiles.

3.3 Descriptive Statistics

In Table 1, we report the summary statistics on the variables in the baseline analysis. Similar to the frequencies in prior research (e.g., Chen et al., 2015; Liao et al., 2022), 2.77% of the observations in our sample have at least one secondary security actively listed and traded in a foreign country. Moreover, 21% of our sample falls in the post-MMoU period. In Figure 1, we provide the distribution of the top ten cross-listing destination countries. In our sample, most of the host countries are developed countries. For all cross-listing firms, 26.0% cross-list in the U.S., 18.7% cross-list in Germany, 17.5% cross-list in the U.K., 8.2% cross-list in Canada, 3.9% cross-list in Hong Kong, 3.1% cross-list in Singapore, 2.3% cross-list in Australia, 1.9% cross-list in France, 1.5% cross-list in Japan, and 1.3% cross-list in Luxembourg. All these top ten cross-listing destination countries joined the MMoU in the earlier period (i.e., before 2008). Table 2 presents the Pearson correlation coefficient matrix, which shows that *CL_Firm* is

positively and significantly correlated with *MMoU*, providing preliminary univariate evidence that firms are more likely to cross-list their securities in foreign countries after their home country adopts the MMoU.

[Insert Tables 1 and 2 about here]

[Insert Figure 1 about here]

4. MMoU and Cross-Listings

4.1 Baseline Results

We report in Table 3 the results from the baseline analysis examining the role that MMoU adoption plays in shaping firms' cross-listing decisions. In Column (1), we control for firm- and year-cohort fixed effects without including any control variables. In Column (2), we add firm- and industry-level control variables to the analysis. In Column (3), we further add several country-level control variables to the model. In all three regressions, the coefficient on *MMoU* is positive and statistically significant at the 1% level, lending support to the prediction that, after the adoption of the MMoU, treated firms are more apt to cross-list abroad relative to control firms.[20] Reflecting its major economic impact, the coefficient estimate on *MMoU* in Column (3) implies that firms' likelihood of cross-listing rises by 1.55% after their home country adopts the MMoU. Given that the mean likelihood of cross-listing in our sample is 2.77%, this constitutes an increase of 55.96%.

[Insert Table 3 about here]

It is important to empirically validate a core assumption underlying the DiD design that the dependent variable exhibits parallel trends for the treated and control groups before the onset of the treatment (Roberts and Whited, 2013; Atanasov and Black, 2021). To provide insight on whether our baseline results are confounded by pre-existing differential trends in

[20] Table 3 shows that the coefficient estimates on *MMoU* are quite similar irrespective of whether we include controls in the models, implying that the adoption of MMoU event is indeed exogenous. The coefficients on the control variables are largely consistent with prior research (e.g., Chen et al., 2015; Liao et al., 2022; Tsang et al., 2022).

the cross-listing incentives between the treated and control firms, we examine the dynamic impact of the MMoU on firms' cross-listing decisions. Specifically, we follow Bertrand and Mullainathan (2003) by replacing *MMoU* with seven dummy variables, which reflect the years around the MMoU adoption. For example, the variable $MMoU_{t-1}$ indicates the year before the MMoU adoption year and $MMoU_{t+3}$ indicates the third year after the MMoU adoption year. We code the other dummy variables (i.e., $MMoU_{t-3}$, $MMoU_{t-2}$, $MMoU_{t+1}$, $MMoU_{t+2}$, and $MMoU_{t+4above}$) in a similar manner. Next, we run a dynamic regression model and report the results in Column (4) of Table 3. We find that the coefficients on $MMoU_{t-3}$, $MMoU_{t-2}$, and $MMoU_{t-1}$ are statistically indistinguishable from zero, reassuringly implying that there is no pre-existing trend in cross-listing before MMoU adoption; i.e., lending support that the parallel trends assumption is defensible in our setting. In contrast, the coefficients on $MMoU_{t+1}$, $MMoU_{t+2}$, $MMoU_{t+3}$ and $MMoU_{t+4above}$ are all positive and significant at the 1% level, suggesting that the likelihood that firms cross list abroad rises after the adoption of the MMoU. Moreover, our results show that all the post coefficients are larger than the pre coefficients and the impact of MMoU rises monotonically over time in the post period. In short, we find no perceptible differences before MMoU adoption, although the groups begin to diverge in their cross-listing likelihood right afterward and its impact gradually becomes stronger as firms have more time to adjust to the new regulatory enforcement environment.[21]

To make the evidence more visible, we plot the coefficients on the seven dummy variables and their confidence intervals at the 5% level in Figure 2. We observe that the trend in the coefficients is almost flat in the pre-MMoU years and starts to rise only after the MMoU adoption.

[Insert Figure 2 about here]

[21] Besides shedding light on whether there is a prevailing pre-determined trend, the dynamic model also mitigates endogeneity threats (Bertrand and Mullainathan, 2003; Amiram, Beaver, Landsman, and Zhao, 2017).

4.2 Robustness Tests

In this section, we conduct a number of tests to examine whether our core results are robust. First, we evaluate whether our findings hold when focusing on other event windows. In our baseline model, we set the event window as five years before and after the MMoU adoption year. To explore whether our results are sensitive to this design choice, we re-estimate the regression using three alternative event windows: three years, four years, and six years before and after the MMoU adoption year. In the results reported in Panel A of Table 4, the coefficients on *MMoU* continue to enter positively, corroborating our earlier evidence.

Second, we perform the analysis using four alternative samples. For starters, given that France (11.2%), the U.S. (10.8%), and the U.K. (9.9%) are the three countries with the most MMoU requests in 2017, we re-estimate the regressions after collectively excluding firms from these countries that contribute inordinately to the sample.[22] Next, we follow Chen et al. (2015) by dropping firms from the European Union because our findings may be affected by its efforts to unify the European capital markets in the past two decades. Additionally, we remove firm-year observations in countries that never signed the MMoU during our sample period to dispel the concern that our evidence spuriously stems from systematic differences between countries with and without the MMoU. Finally, to help alleviate any survivorship bias concerns, we require the firms in our sample to appear in a balanced pre- and post-MMoU period. Specifically, we repeat our baseline regression after requiring that firms appear in both the three years before and after the MMoU.[23] In Panel B of Table 4, we report the results for these alternative samples, which include that *MMoU* remains positive and significant in all four cases.

[22] This is particularly relevant since the nature of information asymmetry and agency costs may be different in the U.S. and the U.K. relative to other countries. Our results also hold when we sequentially exclude firms from France, the U.S., and the U.K.

[23] The results are similar when we require firms appear in both one year and five years before and after MMoU.

Third, to mitigate the concern that our baseline results reflect the heterogeneities between the treatment (i.e., MMoU) and control (i.e., non-MMoU) firms, we perform a robustness check by employing two matching approaches: propensity score matching and entropy balancing.[24] For the propensity score matching, we regress the *Treat* dummy against all controls in the baseline analysis (Shipman, Swanquist, and Whited, 2017); we calculate the propensity score based on a logit regression model for each cohort separately. Next, we perform a one-to-one nearest neighbor match with replacement; i.e., for each treated firm whose home country has adopted the MMoU (*MMoU*=1), we find a matched (control) firm whose country has not adopted the MMoU (*MMoU*=0) with the nearest score based on the same cohort and same fiscal year.[25] We use the entropy balanced matching method to adjust the distribution of covariates (i.e., based on all controls in the baseline analysis) in the treatment and control firms so that the two groups have similar distributions on the characteristic variables (Hainmueller, 2012). For the entropy balancing matching, we balance the treated and control samples by adjusting the mean and variances for the continuous control variables, and just means for the binary matching variable.[26] Afterward, we re-run the baseline regression using the matched samples and report the results in Panel C of Table 4, which include that the coefficients on *MMoU* are positive and significant in both regressions.

Fourth, we adopt alternative definitions of the home country. In the baseline analysis, we define a firm's home country based on its primary listing country. To examine the sensitivity of our findings to this definition, we use the firm's incorporation or legal

[24] The parallel trends assumption underlying the DiD analysis is more justifiable when the treated and control firms more closely resemble each other.

[25] To ensure that the treated and control firms are not significantly different in terms of major firm characteristics, we use the caliper matching method and match within a caliper of 5%, where caliper refers to the difference in the predicted probabilities between the treatment and matching firms. This procedure ensures that each treated firm is paired with a control firm with similar firm characteristics. After matching, our final sample includes 119,980 observations.

[26] Unlike propensity score matching, which assigns observations a weight of either one or zero (depending on whether they are included or excluded from the match sample), entropy balancing utilizes the complete sample and weighs observations along a continuous scale.

registration country and its headquarters location country to define its home country. In the results reported in Panel D of Table 4, we document that the coefficients on *MMoU* are significantly positive in both columns.

Fifth, we evaluate whether our baseline findings are sensitive to relying on alternative fixed effect structures. In the first regression, we add industry-year-cohort fixed effects to further control for time-varying industry heterogeneity. In the second regression, we add country-cohort fixed effects to further control for country-level heterogeneity. The results are shown in Panel E of Table 4, which include that the coefficients on *MMoU* are positive and significant in both cases.

Sixth, we examine whether our results persist in country-level analysis. This involves constructing country-level dependent and control variables by taking the average of the firm-level measures by country and year. This process yields 1,054 country-year observations. In Panel F of Table 4, we report the results from conducting our baseline analysis at the country level. We find that the coefficient on *MMoU* continues to enter positively, implying that our main results hold at the country level.

Seventh, we analyze the timing of MMoU adoptions. Although the MMoU constitutes an exogenous shock to cross-border cooperation at the firm level, the timing of these adoptions may not necessarily be exogenous at the country level given that the decision to join the MMoU may hinge on concurrent economic or political conditions. For example, the intensity of cross-listing activities may affect regulators' decision to implement the MMoU in a specific country. To mitigate this potential issue, we follow prior work by relying on proportional hazard models to model the time until the MMoU implementation (e.g., Kroszner and Strahan, 1999; Chen, Goyal, and Zolotoy, 2022).[27] In Panel G of Table 4, we

[27] Specifically, for each country in each year up to the MMoU year, we calculate time to MMoU *(Time to MMoU)*—the dependent variable in proportional hazard models—as the natural logarithm of one plus the number of years between a year and the MMoU adoption year. The explanatory variable of interest is *No. of Cross listing Firms*, defined as the total number of cross listing firms for each country in each year. Control variables include *Market*

report the estimates of the Cox proportional hazard model. We find that the coefficient on *No. of Cross-Listing Firms* is insignificant. This suggests that the timing of the MMoU is unrelated to country-level cross-listing intensity, reinforcing that MMoU adoption is plausibly exogenous in our setting.

Eighth, we apply Oster's (2019) methodology in striving to confront endogeneity threats arising from omitted variable bias. This involves estimating Oster δ that reflects the bias from unobservable factors relative to bias from observable control variables. δ is calculated based on the changes in β_1 and the R^2 values for regressions with and without observable control variables.[28] We report these results in Panel H of Table 4, which show an Oster δ of 1.4. This suggests that to overturn our findings, the unobservable factors need to be 1.4 times as important as the observable factors that we control for in our model. The Oster δ exceeds the benchmark of 1 advocated by Oster (2019), implying that our baseline results are unlikely to be driven by omitted variable bias.

Ninth, to further address the potential bias in staggered DiD designs, we replicate our baseline analysis using the robust estimators introduced in Borusyak et al. (2023) and De Chaisemartin and D'Haultfoeuille (2020). We begin by estimating the effects of a binary treatment with staggered rollout allowing for arbitrary heterogeneity and dynamics of causal effects using the imputation estimator of Borusyak et al. (2023). Next, we follow De Chaisemartin and D'Haultfoeuille's (2020) approach for estimating treatment effects under treatment timing variation and treatment effect heterogeneity under more general settings, where treatments may be reversible. We report this evidence in Panel I of Table 4. Consistent with the baseline results in a stacked DiD framework, the coefficients on *MMoU* are positive

Turnover, Market Return, Market Capitalization, GDP Per Capita, GDP Growth, Regulatory Quality, Rule of Law, Corruption Perception, and *Political Stability*.

[28] We follow Oster's (2019) advice by setting the parameters of the Oster test such that β_1=0 and R^2_{max}=1.33R^2_{within}.

and significant in both columns, implying that our evidence is robust to heterogeneous treatment effects.

[Insert Table 4 about here]

Finally, we conduct a placebo test to mitigate the concern that our results arise by chance. We follow Biggerstaff, Cicero, and Puckett (2015) by randomly assigning treated firms in our sample and then re-estimating the baseline regression on the placebo sample. We repeat the process 1,000 times to generate 1,000 coefficients on pseudo *MMoU* (*Pseudo_MMoU*). We plot the distribution of the coefficient estimates on *Pseudo_MMoU* in Figure 3, which shows that the mean value of *Pseudo_MMoU* is approximately zero. More importantly, the actual coefficient of *MMoU* in Column (3) of Table 3 is 0.0155, which lies far beyond the maximum value of the coefficient on *Pseudo_MMoU*, implying that our baseline findings are unlikely to occur by chance.

[Insert Figure 3 about here]

5. Channel Tests

Having established that there is a positive relation between the MMoU's adoption and firms' cross-listing activities, we proceed to examine the two potential channels through which the MMoU affects cross-listing: information asymmetry and agency problems.

5.1 Information Asymmetry Channel

In developing the intuition underlying our hypothesis, we stress that investors in host countries often suffer information disadvantages relative to investors in home countries in investing in cross-listed firms (Gordon and Bovenberg, 1996; Brennan and Cao, 1997; Kang and Stulz, 1997; Bae et al., 2008; Silvers, 2020). Information asymmetry between these two groups of investors could make investors in host countries reluctant to hold stakes in cross-listed firms, which deters foreign firms' cross-listing activities. The MMoU facilitates better cross-country regulatory cooperation on information sharing, which could reduce the information risk faced by investors in host countries. This, in turn, raises these investors'

interest in cross-listed stocks, which could encourage foreign firms' cross-listing activities. If this argument is valid, we would expect the impact of the MMoU on cross-listing decisions to be more heavily concentrated in firms experiencing worse information asymmetry given that these firms likely benefit more from the MMoU's adoption.

To explore this issue, we construct three firm-level information asymmetry measures. The first one is financial reporting opacity, defined as the absolute value of the discretionary accruals derived from the modified Jones model (Dechow, Sloan, and Sweeney, 1995). A higher value of *Financial Reporting Opacity* reflects more information asymmetry. The second one is *R&D Intensity*, specified as a firm's R&D expenditures scaled by its total assets. Since firms with higher R&D intensity tend to be more opaque stemming from the intangible nature of and uncertainty surrounding R&D investments (Aboody and Lev 2000; Sufi 2007), a higher value of *R&D Intensity* implies more severe information asymmetry.[29] The last information asymmetry measure under study is accounting conservatism, constructed based on Basu's (1997) model of asymmetric timeliness of earnings releases. Accounting conservatism reduces investors' information risk by providing them with more timely information on news that adversely affects firm value and by restraining managers from exaggerating reported earnings and asset values (Boulton, Smart, and Zutter, 2017). As such, the higher the value of *Accounting Conservatism*, the less severe the information problems.

Next, we bisect the sample into equal subsamples according to the sample median value of the three firm-level information asymmetry measures.[30] Afterward, we re-estimate

[29] For three reasons, R&D is a suitable proxy for firms' information asymmetry. First, investors struggle to value firms' R&D investments since many R&D projects are unique to the developing firm. Second, unlike physical and financial assets that are traded in organized markets, there are no organized markets for R&D assets to provide investors with asset prices to derive information. Third, R&D is treated differently from other investments under current accounting measurement and reporting rules. R&D is typically expensed in the financial statements, making it harder for investors to reliably determine the exact value and the productivity changes of R&D. Given the relative scarcity of public information on firms' R&D activities, R&D widens information asymmetry between corporate insiders and outside investors.

[30] For all cross-sectional tests, we bisect the sample using the sample median value of one-year lagged moderators at the cohort-year level.

our baseline regression in Equation (1) for each of the subsamples and report the results in Panel A of Table 5. In Columns (1) and (2), the coefficient on *MMoU* is positive and significant in both regressions, although it is perceptibly larger for the subsample with higher financial reporting opacity. Similarly, the coefficients on *MMoU* are all positive and significant in Columns (3) to (6), while, more relevant for our purposes, the coefficients are significantly larger for the subsamples with higher R&D intensity and lower accounting conservatism.

Further, we complement the firm-level analysis by employing four country-level information asymmetry measures. The first measure is the *Disclosure Index* that ranges from 0 to 1, with higher values indicating more extensive disclosure requirements in the country (Guedhami and Pittman, 2006; Guedhami, Pittman, and Saffar, 2014). The second measure, *Sue Auditor*, is the civil liability standard for auditors that reflects the difficulty investors experience in recovering damages for losses sustained when relying on misleading audited financial information accompanying the prospectus. A higher value of this index implies better investor protection stemming from auditor discipline, lowering information asymmetry by having a sobering impact on auditors' incentives to closely monitor their clients' financial reporting (Guedhami and Pittman, 2006; Guedhami et al., 2014). The third measure, *Securities Regulation*, is a composite securities regulation index, defined as the mean of the disclosure index, the liability standard index, and the public enforcement index. It captures the strength of securities regulation mandating and enforcing disclosure. A higher value indicates tougher securities regulation, narrowing information asymmetry (Guedhami et al., 2014). The above three securities regulation variables all stem from La Porta, Lopez-de-Silanes, and Schleifer (2006) and Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008).[31] The last measure is *Aggregated Earnings Management*, constructed consistent with Leuz, Nanda, and Wysocki (2003) and Boulton, Braga-Alves, and Chakrabarty (2022). A higher value of this

[31] We thank Rafael La Porta for publishing the dataset in his website https://faculty.tuck.dartmouth.edu/rafael-laporta/research-publications.

measure indicates higher financial reporting opacity of the firms in a country, reflecting that investors suffer more serious information risk.

After dividing the sample into subsamples by the median value of the four country-level measures, we re-estimate the baseline regression on each subsample and report the results in Panel B of Table 5. In Columns (1) to (6), we find that the coefficient on *MMoU* is larger for the subsample with worse information asymmetry—evident in a lower disclosure index, lower auditor civil litigation exposure, and lax securities regulation. Further, as shown in Columns (7) and (8), the coefficient on *MMoU* is positive and significant for the subsample with higher aggregated earnings management, while it fails to load for the subsample with lower aggregated earnings management. In a series of pairwise comparisons, the coefficients are also significantly different in all four cases.

Collectively, the evidence in this section suggests that the effect of the *MMoU* is amplified for firms subject to more information asymmetry, lending empirical support for the information asymmetry channel.

[Insert Table 5 about here]

5.2 Agency Problem Channel

Agency problems are another potential channel that drives the relation between the MMoU adoption and cross-listing. Since agency problems are usually more severe in cross-listed firms, investors in host countries might be reluctant to hold stakes in these firms. The stricter cross-border enforcement accompanying the MMoU could reduce investors' concerns about agency conflicts, encouraging firms' cross-listing activities. If this channel works, we would expect the impact of the MMoU on cross-listing decisions to be larger for firms with more severe agency problems given that they are apt to enjoy a larger reduction in agency costs after its adoption.

To analyze this issue, we specify two sets of agency problem measures. The first set consists of two firm-level measures. The first is the Q-free cash flow interaction (*Q_FCF*),

which is the product of firms' free cash flow and growth opportunities.[32] For a certain level of free cash flow, firms with lower growth opportunities are expected to have worse agency conflicts (Rashid, 2016; Opler and Titman, 1993). Accordingly, a higher value of this measure indicates more severe agency problems. The second measure is *Inefficient Asset Utilization*, defined as a firm's total revenue scaled by its total assets, then multiplied by -1. It captures how ineffectively a firm's assets are employed (Ang, Cole, and Lin, 2000; Singh and Davidson, 2003). A higher value implies lower investment efficiency, reflecting worse agency problems.

We split the sample into subsamples based on the median value of the two variables. Next, we re-estimate the baseline regression in Equation (1) for each subsample and report the results in Panel A of Table 6. In Columns (1) and (2), we find that the coefficient on *MMoU* is larger for the subsample with a higher Q-free cash flow interaction than for the subsample with a lower Q-free cash flow interaction; the difference between the two coefficients is significant. Similarly, in Columns (3) and (4), the coefficients on *MMoU* are significantly larger for the subsamples with a higher inefficient asset utilization ratio, consistent with expectations.

Additionally, we deepen the analysis by relying on four measures of country-level agency problems after La Porta et al. (2006) and Djankov et al. (2008). The first measure is the *Public Enforcement Index*, where a higher value indicates stronger public enforcement and, in turn, lesser agency problems. The second measure is the *Investor Protection Index*, which reflects the principal component of the disclosure, liability standards, and anti-director rights indices. A higher value of this index indicates stronger investor protection, translating into milder agency problems. The third measure is the *Anti-Director Rights* index which is based on the protection of minority shareholders in the corporate decision-making process. A higher

[32] Consistent with prior research (Doukas, Kim, and Pantzalis, 2000; Rashid, 2016), we measure growth opportunities using a dummy variable that equals 1 if the firm's Tobin's Q is less than 1, and 0 otherwise. Free cash flow is defined as income before extraordinary items plus depreciation and amortization, less cash dividends and capital expenditures. Tobin's Q is calculated as the market value of equity plus the book value of debt, divided by total assets.

value of the index indicates better investor protection that alleviates agency problems. The fourth measure is the *Anti-Self-Dealing* index, which captures the average of ex-ante and ex-post private control over self-dealing. A higher value of the index indicates smaller self-dealing threats, implying lesser agency issues.

We partition the sample into subsamples according to the median value of the four variables. Afterward, we re-estimate the baseline regression in Equation (1) for each subsample. In Table, 6, we report the results in Panel B. Columns (1) and (2) show that the coefficient on *MMoU* is only positive and significant in subsample with a low public enforcement index; moreover, the coefficient is perceptibly larger for the subsample with a lower public enforcement index. In Columns (3) to (8), we report corroborating split-sample evidence when we focus on the investor protection, anti-director rights, and anti-self-dealing indices. Altogether, the findings in this section suggest that the impact of MMoU adoption on cross-listing is magnified for firms subject to more severe agency problems, supporting the agency problem channel.

[Insert Table 6 about here]

6. Further Analysis

Next, we conduct three further analyses. First, we investigate whether firms are more likely to cross-list in countries that already joined the MMoU after their own country's MMoU adoption. Second, we explore the factors that are likely to influence the documented relation between the MMoU and cross-listing. Third, we examine the economic consequences of cross-listing after the MMoU's adoption.

6.1 Cross-Listing Destinations

In our baseline setting, we gauge the impact of MMoU adoption on a firm's cross-listing in general, irrespective of whether a firm cross-lists in a country that already belongs to the MMoU. Accordingly, to deepen the analysis by exploring this issue, we further classify the firm's cross-listing decision based on their cross-listing destination. If the MMoU facilitates

better investor protection and information access, we would expect the impact of MMoU adoption will be stronger when host countries have already adopted the MMoU.

To examine this conjecture, we re-estimate our baseline regression using two alternative dependent variables based on the destinations of the cross-listing: a dummy variable indicating whether a firm has at least one secondary security that is actively listed and traded in a foreign country that has already adopted the MMoU (*CL_MMoU*) and a dummy variable indicating whether a firm has at least one secondary security that is actively listed and traded in a country that had never adopted the MMoU (*CL_Non_MMoU*). In the results shown in Table 7, the coefficient on *MMoU* is significantly positive in Column (1) and insignificant in Column (2). Consistent with expectations, this evidence implies that the positive impact of MMoU adoption on cross-listing is concentrated in cases in which the host country has already adopted the MMoU.

[Insert Table 7 about here]

6.2 The Role of External Financing Dependence

Prior research implies that one of the benefits persuading firms to cross-list abroad is access to deeper capital markets (Abdallah and Goergen, 2008; Doidge et al., 2009). Bancel and Mittoo (2001) and Doidge, Karolyi, and Stulz (2010) document that pursuing external financing is behind firms' cross-listing decisions. Regulatory cooperation facilitated by the MMoU reinforces the beneficial effects of cross-listing. As such, we expect the impact of the MMoU on cross-listing to intensify when firms exhibit more external financing dependence.

To examine this issue, we construct three external financing dependence measures. We begin by specifying two firm-level measures. The first one is the Whited and Wu (2006) index, which reflects firms' financial constraints. A higher value of the index indicates that the firm is financially constrained, implying more reliance on external financing. The second one is firm net financing, which is constructed by hand from the debt and equity transactions (Frank and Yang, 2019). A higher value of this measure signifies that the firm depends more

on external financing. The third measure is at the industry level. We follow Rajan and Zingales (1998) in specifying industry equity financing as the industry median fraction of the net equity issuance amount to capital expenditures. A higher value of the measure indicates more demand for external financing.

After partitioning the sample into subsamples according to the median value of the three variables, we perform the baseline regression in Equation (1) for each of the subsamples and report the results in Table 8. In Columns (1) and (2), the coefficient on *MMoU* enters positively in both regressions, although the coefficient is perceptibly larger for the subsample with a higher Whited and Wu (2006) index. In Columns (3) to (6), we report very similar evidence when we gauge external financing dependence in other ways. Collectively, the results suggest that MMoU adoption matters more to the cross-listing decision when firms rely more heavily on external financing.

[Insert Table 8 about here]

6.3 The Role of Access to Domestic Market

As discussed earlier, firms may be eager to cross-list to secure access to more sophisticated capital markets in attempting to exploit benefits such as cheaper external financing and higher stock liquidity. Since the domestic market serves as a substitute for foreign markets, a well-developed domestic market may reduce firms' incentives to access foreign markets, minimizing the impact of the MMoU on their cross-listing decisions.

To explore this conjecture, we employ three measures of the development of firms' domestic market. The first measure is equity market access, an index capturing the extent to which corporate executives in a country agree with the statement, "Stock markets are open to new firms and medium-sized firms" (Schwab, Porter, and Sachs, 1999). The second measure is stock market development, specified as the total value of stocks traded scaled by the country's GDP. Extensive prior work relies on this measure to gauge the overall development of a country's financial institutions (e.g., Fernandes, 2011; Narayan, Mishra, and Narayan,

2011). The third measure is credit market development, defined as domestic credit provided by the country's financial sector scaled by GDP (Beck, Demirgüç-Kunt, and Levine, 2000).[33]

For each of the three variables, we divide our sample into two subsamples based on its median value. Next, we re-estimate the regression in Equation (1) for each subsample and report the results in Table 9. In Columns (1) and (2), we find that the coefficient on *MMoU* is larger for the subsample with lower equity market access than the subsample with higher equity market access; the difference is statistically significant. In Columns (3) to (6), we report that the coefficients on *MMoU* are significantly larger for the subsample with lower stock market development and lower credit market development. Altogether, consistent with expectations, we find that the impact of the MMoU on cross-listing rises when it is harder for firms to access their own domestic capital markets.

[Insert Table 9 about here]

6.4 The Role of Impediments to Cooperation

Our baseline results suggest that, by enhancing cross-border regulatory cooperation, the MMoU stimulates firms' cross-listing activities. Accordingly, the impact of MMoU adoptions on firms' cross-listing should be more pronounced for firms in countries with ex ante more impediments to cooperation.

In examining this issue, we rely on four measures of impediments to cooperation. The first one is blocking statutes, which make it a criminal offense for citizens to provide information to foreign agents. Although these statutes are routinely designed to protect national interests and sovereignty, they may deter cooperation in cross-border cases (Silvers, 2020). As such, the presence of blocking statutes could indicate stronger impediments to cooperation in a country. The second measure is PCAOB access, which indicates whether the

[33] We collect the equity market access data from the Global Competitiveness Report, the stock market development data from the WDI database, and the credit market development data from the World Bank Financial Development and Structure Database.

focal country permits the PCAOB to conduct inspections. Prior research implies that the PCAOB and local regulators have moved toward cooperative inspections, assisting in one another's regulatory compliance programs (e.g., Lamoreaux , 2016).[34] Prohibiting PCAOB access indicates that the home country regulators have poor ex ante cross-border regulatory cooperation, reflecting an impediment to cooperation. The third measure is North Atlantic Treaty Organization (NATO) member status. According to Massoud and Magee (2012), more cooperation on political and military issues elicits more trade among countries. Non-NATO membership suggests that a country does not have a strong military connection to the U.S. Since economic policy is highly affected by the presence of military connections, non-NATO membership implies an impediment to cooperation. The last measure is U.S. trade importance, an index capturing the trade connections between firms' home country and the U.S. A lower value of the U.S. trade importance index indicates that a country has relatively minimal trading activities with the U.S., implying an impediment to cooperation.

For this analysis, we successively bisect the sample according to whether the firms' home country has blocking statutes before the MMoU adoption year; whether the firms' home country allows PCAOB inspections; whether the firms' home country is a NATO member; and the median value of the U.S. trade importance index. Afterward, we re-estimate the regression in Equation (1) for each of the subsamples and report the results in Table 10. We find that the coefficients are significantly larger for the subsamples with ex ante blocking statutes, without PCAOB inspection access, without NATO membership, and a lower U.S. trade importance index. This evidence lends support to the narrative that formidable obstacles to cooperation moderate the positive impact of the MMoU on cross-listing.

[Insert Table 10 about here]

[34] The PCAOB often enters into formal cooperative arrangements with foreign audit regulators to facilitate cross-border cooperation (www.pcaobus.org/International).

6.5 Real Effects of Cross-Listing after the MMoU Adoption

Finally, we evaluate whether the MMoU's adoption has real consequences for cross-listed firms. The MMoU bolsters cross-country regulatory cooperation, which reduces information asymmetry and agency problems. As such, it is plausible that cross-border investment barriers are eased after its adoption, facilitating cross-listed firms' financing of their investment activities and enhancing their market value and stock price informativeness. In initially focusing on two types of investment activities in this analysis, we specify capital investments (*Investments*) as a firm's capital expenditures scaled by its total assets, and R&D investments (*R&D*) as a firm's R&D expenses scaled by its total assets. Afterward, we focus on the real effect of the MMoU on firms' valuations evident in Tobin's Q and stock price informativeness evident in stock price synchronicity.

We successively regress the four dependent variables on *MMoU*, *CL_Firm*, their interaction term *MMoU*×*CL_Firm*, and the same control variables and fixed effects in Equation (1). We report the results in Table 11. In the first three columns, the coefficient on *MMoU*×*CL_Firm* enters positively, suggesting that cross-listed firms are able to invest more in capital assets and R&D activities, and attract higher market valuations after the MMoU adoption. In Column (4), the coefficient on *MMoU*×*CL_Firm* enters negatively, implying that cross-listed firms have a lower synchronicity of stock price movements after the MMoU adoption. These findings suggest that cross-listed firms generate more firm-specific information after the MMoU adoption. Anticipating such benefits, firms may be more eager to cross-list abroad, which reconciles with our baseline findings.

[Insert Table 11 about here]

7. Conclusion

In this study, we examine the impact of cross-border regulatory cooperation facilitated by the Multilateral Memorandum of Understanding (MMoU) on cross-listing decisions of firms in signatory countries. Analyzing a large cross-country sample with a stacked

difference-in-differences (DiD) research design, we find that firms located in countries that adopt the MMoU are more likely to cross-list in overseas markets afterward. Moreover, we report evidence implying that reducing agency costs and information asymmetry are two channels through which the MMoU shapes firms' cross-listing decision. Additionally, we find that firms are more likely to cross-list in countries that have already adopted the MMoU by the stage that their home countries join the MMoU network. We also find that the positive effects of MMoU on cross-listing are more heavily concentrated in firms that rely more on external financing, and firms operating in countries whose domestic capital markets are harder to access and that impose more impediments to cooperation. Finally, we document that firms benefit in the form of increasing their investments, market valuations and stock price informativeness after they cross-list in the post-MMoU period.

We contribute to emerging research investigating the consequences of the MMoU by showing that it helps motivate firms to cross-list abroad. As such, our finding provides insight into the real economic outcomes stemming from the MMoU's adoption. Additionally, our evidence has public policy implications by showing some unintended benefits of cross-border regulatory cooperation. Further, our analysis advances prior work on the determinants of firms' cross-listing decisions by documenting that cross-border regulatory cooperation is a major driver of firms' cross-listing decisions.

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Appendix A: Variable definitions

Variables	Definition
Variables in Table 3	
CL_Firm	A dummy variable that equals 1 if at least one secondary security of the firm is actively listed and traded in a foreign country, and 0 otherwise.
MMoU	A dummy variable that equals 1 for the post window that nation has signed the MMoU, and 0 otherwise.
Size	The natural logarithm of total assets.
ROA	Net income divided by total assets.
Sale Growth	Annual growth rate of total sales.
Leverage	Total debt divided by total assets.
Cash	Cash and short-term investments divided by total assets.
Capex	Total capital expenditures divided by total assets.
Age	The natural logarithm of firm age, defined as the number of years appeared in Compustat.
Interest	Total interest divided by total sales.
Accruals	The country-, industry- and year-adjusted total scaled accruals based on Bhattacharya et al. (2003). Scaled accruals are computed as follows: $\text{Accural} = \Delta\text{CA} - \Delta\text{CL} - \Delta\text{CASH} + \Delta\text{STD} - \text{DEP} + \Delta\text{TP})/\text{lag(AT)}$, where ΔCA is the change in total current assets from the prior year, ΔCL is the change in total current liabilities from the prior year; ΔCASH is the change in cash from the prior year, ΔSTD is the change in the current portion of long-term debt included in total current liabilities from the prior year, DEP is depreciation and amortization expense in a given year, ΔTP is the change in income taxes payable from the prior year, and lag(TA) is total assets at the end of the prior year.
MTB	Market value of equity scaled by the book value of equity.
Analyst Following	The natural logarithm of one plus the number of analysts following the firm.
HiTech	A dummy variable that equals 1 if a sample firm is in a high-tech industry (SIC 2833–2836, 8731–8734, 7371–7379, 3570–3577, and 3600–3674), and 0 otherwise.
HHI	The Herfindahl index, calculated as the sum of squares of fractional market shares of all firms within each two-digit SIC industry for a country.
GDP Per Capita	Real domestic product divided by population for each firm-year divided by 10,000.
GDP Growth	Annual percentage growth rate of real GDP at market prices based on constant local currency for each firm-year. Aggregates are based on constant 2017 prices, expressed in U.S. dollars.
Regulatory Quality	A rating on business regulation quality for a given country-year that captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development. (Kaufmann, Kraay, and Mastruzzi, 2011).
Rule of Law	A rating on legal structure and property rights for a given country-year that measures agents' confidence in the rules of society—the quality of the nation's crime-prevention, contract enforcement, property rights, and courts (Kaufmann et al., 2011).
Additional Variables in Table 4	
Time to MMoU	The natural logarithm of one plus the number of years between a year and the MMoU year.
No. of Cross Listing Firms	The total number of cross listing firms for each country in each year.
Market Turnover	Country-specific annual aggregate stock market turnover ratio in the year, where stock market turnover ratio is calculated as the value of shares traded divided by their market capitalization.
Market Return	Annual stock return for each country in each year.
Market Capitalization	Country-specific annual total value of stock traded divided by GDP in the year.
Corruption Perception	Country-specific corruption perception index based on Worldwide Governance Indicators (WGI) project.
Political Stability	Country-specific political stability index based on the Worldwide Governance Indicators (WGI) project.

Additional Variables in Table 5	
Financial Reporting Opacity	The absolute value of the discretionary accruals derived from the modified Jones model (1991).
R&D Intensity	R&D expenditures scaled by total assets.
Accounting Conservatism	Basu's (1997) asymmetric timeliness measure of conservatism: estimated by running firm-specific time-series regressions using rolling windows (at minimum the preceding seven years) for each firm-year as: Net Income$_{it}$ = a_0 + a_1Negative$_{it}$ + a_2RET$_{it}$ + a_3 Negative$_{it}$×RET$_{it}$ + e_{it}. Where Net Income is the net income before extraordinary items, RET is the holding period return including dividends over fiscal year, Negative is a dummy variable set equal to 1 for negative return observations, zero otherwise. The timeliness measure is calculated as the ratio of (a_2 + a_3)/a_2.
Disclosure Index	The index of disclosure equals the arithmetic mean of: (1) Prospect; (2) Compensation of directors and key officers; (3) Ownership structure; (4) Inside ownership; (5) Contracts outside the ordinary course of business; (6) and Transactions between the issuer and its directors, officers, and/or large shareholders. The index ranges from 0 to 1, with higher values indicating more extensive disclosure requirements.
Sue Auditor	Index of the procedural difficulty in recovering losses from the accountant in a civil liability case for losses due to misleading statements in the audited financial information accompanying the prospectus. The index ranges from 0 to 1, with higher values indicating better investor protection stemming from auditor discipline.
Securities Regulation	It captures the strength of securities regulation mandating and enforcing disclosures. It is measured as the mean of the disclosure index, the liability standard index, and the public enforcement index.
Aggregated Earnings Management	The average ranking of each country based on the four indicators of earnings management activity comes from Leuz et al. (2003) and Boulton et al. (2022). The higher value indicates more aggressive earnings management.
Additional Variables in Table 6	
Q_FCF	The product of free cash flow and company's growth opportunities. The growth opportunities is defined as an indicator for growth that equals 1 when Tobin's Q is less than 1, and 0 otherwise. Free cash flow is calculated as the sum of income before extraordinary items plus depreciation and amortization, less cash dividends and capital expenditures. Tobin's Q is calculated as the market value of equity plus the book value of debt, divided by total assets.
Inefficient Asset Utilization	Total revenue scaled by total assets, multiply by -1.
Public Enforcement Index	The index of public enforcement equals the arithmetic mean of: (1) Supervisor characteristics index; (2) Rule-making power index; (3) Investigative powers index; (4) Orders index; and (5) Criminal index.
Investor Protection Index	The principal component of disclosure, liability standards, and Anti-director rights. Scale from 0 to 10.
Anti-Director Rights Index	Aggregate index of shareholder rights ranges from 0 to 6 from Djankov et al. (2008). The index is formed by summing: (1) vote by mail; (2) shares not deposited; (3) cumulative voting; (4) oppressed minority; (5) pre-emptive rights; and (6) capital to call a meeting.
Anti-Self-Dealing Index	The average of ex-ante and ex-post private control of self-dealing ranges from 0 to 1 from Djankov et al. (2008).
Additional Variables in Table 7	
CL_MMoU	A dummy variable that equals 1 if at least one secondary security of the firm is actively listed and traded in a foreign country that have already adopted the MMoU, and 0 otherwise.
CL_Non_MMoU	A dummy variable that equals 1 if at least one secondary security of the firm is actively listed and traded in a foreign country that never adopt the MMoU, and 0 otherwise.

Additional Variables in Table 8	
Whited and Wu (2006) index	WW Index = -0.091CF - 0.062DIVPOS + 0.021TLTD - 0.044LNTA + 0.102ISG-0.035SG, where CF = [income before extraordinary items (ib) + depreciation(dp)/total assets (at); DIVPOS = indicator set to one if dividends (dvc + dvp) is positive, and zero otherwise; TLTD = long-term debt (dltt)/total asset (at); LNTA = ln(total assets (at)); SG = sale (sale)/lagged sale where sale; ISG = average industry SG for each 3-digit SIC industry each year.
Net Financing	Net financing = (SSTK - PRSTKC + DLTIS - DLTR + DLCCH) / AT, where SSTK is sale of common and preferred stock; PRSTKC is purchase of common and preferred stock; DLTIS is long-term debt/issuance; DLTR is long-term debt/reduction; DLCCH is current debt/changes; AT is total assets (lagged by one year).
Industry Equity Financing	The industry median of sale of common and preferred stock scaled by year beginning capital expense (sstk/capx).
Additional Variables in Table 9	
Equity Market Access	An index of the extent to which business executives in a country agree with the statement "Stock markets are open to new firms and medium-sized firms" that proxies for the easiness of access to domestic capital markets. Scale from 1 (strongly agree) though 7 (strongly disagree). Source: Schwab et al., Porter, and Sachs (1999).
Stock Market Development	The total value of stocks traded scaled by the GDP in the country from world bank. Source: https://data.worldbank.org/indicator/CM.MKT.TRAD.GD.ZS.
Credit Market Development	The domestic credit provided by financial sector scaled by the GDP in the country. Source: https://data.worldbank.org/indicator/FS.AST.DOMS.GD.ZS.
Additional Variables in Table 10	
BLOCKING	An indicator equals one if the firm's home country is at the blocking statutes before the MMoU adoption year, and zero otherwise. We follow Silvers (2020) and classify the existence of blocking statutes using information from the Hague Evidence Convention and from various articles in the legal literature.
PCAOB	An indicator equals one if the country in which firm i's audit firm j is located allows PCAOB inspections before the MMoU adoption year, and zero otherwise (PCAOB website).
NATO	An indicator equals one if the firm's home country is a North Atlantic Treaty Organization (NATO) member before the MMoU adoption year, which indicates a country's military connection with the U.S., and zero otherwise. Source: https://www.nato.int/cps/en/natohq/nato_countries.htm.
US Trade Importance	Trade flows for each country *i* to U.S. as reported from IMF scaled by the country's Gross Domestic Product (GDP).
Additional Variables in Table 11	
Investment	Capital expenditure deflated by total assets.
Tobin's Q	The market value of equity plus the book value of debt, divided by total assets.
Synch	Stock price synchronicity calculated following Morck, Yeung, and Yu (2000) and Chan and Hameed (2006). We estimate the linear regression $R_{it} = \beta_{i0} + \beta_{i1}R_{mt} + e_{it}$, where R_{it} is the return of stock i at day t and R_{mt} is the market return at day t. Stock price synchronicity is defined as $\text{Synch}_{it} = \text{Log}\left(\frac{R^2}{1-R^2}\right)$, where R^2 is the coefficient of determination from the estimation of the above equation for firm i in year t.

Appendix B: MMoU Participation Year

Country/Region	MMoU Year	Country/Region	MMoU Year
Argentina	2014	Lithuania	2003
Australia	2002	Luxembourg	2007
Austria	2009	Malaysia	2007
Bahrain	2008	Malta	2006
Bangladesh	2013	Mauritius	2012
Belgium	2005	Mexico	2003
Brazil	2009	Morocco	2007
Bulgaria	/	Netherlands	2007
Canada	2002	New Zealand	2003
Chile	2018	Nigeria	2006
China	2007	Norway	2006
Colombia	2012	Oman	2012
Croatia	2009	Pakistan	2011
Cyprus	2009	Peru	2012
Czech Republic	2007	Philippines	2007
Denmark	2006	Poland	2003
Egypt	2012	Portugal	2002
Estonia	2011	Qatar	2013
Finland	2007	Russian	2015
France	2003	Saudi Arabia	2010
Germany	2003	Singapore	2005
Ghana	2007	Slovenia	2009
Greece	2002	South Africa	2003
Hong Kong, China	2003	Spain	2003
Hungary	2003	Sri Lanka	/
Iceland	2010	Sweden	2011
India	2003	Switzerland	2010
Indonesia	2014	Thailand	2008
Ireland	2012	Trinidad and Tob	2013
Israel	2006	Tunisia	2009
Italy	2003	Turkey	2002
Jamaica	2015	Ukraine	/
Japan	2008	United Arab	2012
Jordan	2008	United Kingdom	2003
Kazakhstan	/	United States	2002
Kenya	2009	Vietnam	2013
Korea	2010	Zambia	2018
Kuwait	/	Zimbabwe	/
Latvia	/		

Figure 1: Distribution of Cross-listing Destination Countries

This figure shows the distribution of the top ten cross-listing destination countries.

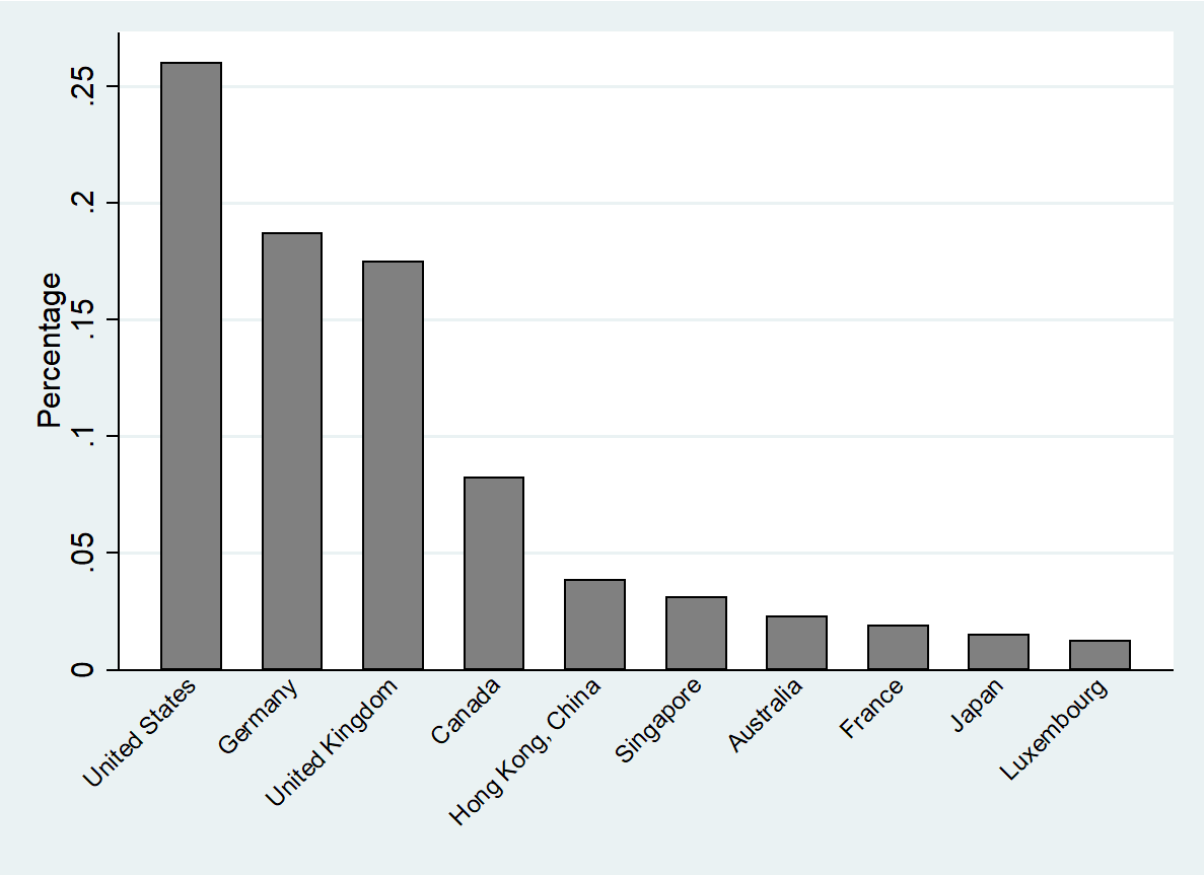

Figure 2: Dynamic Effect of MMoU on Cross Listing

This figure shows the dynamic effect of MMoU on cross-listing. We plot the coefficients and 5% confidence interval of $MMoU_{t-3}$, $MMoU_{t-2}$, $MMoU_{t-1}$, $MMoU_{t+1}$, $MMoU_{t+2}$, $MMoU_{t+3,}$ $MMoU_{t+4above}$ in Column (4) of Table 3. Detailed variable definitions are provided in Appendix A.

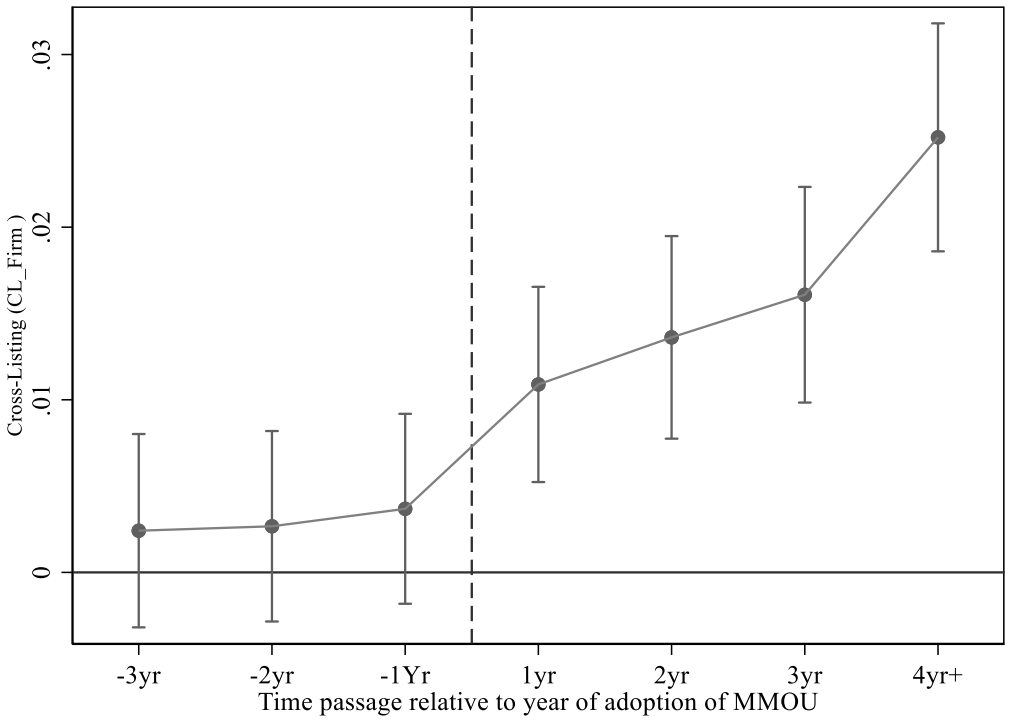

Figure 3: Placebo Test

This figure shows the results of the placebo test. We randomly assign treated firms in our sample and create *Pseudo_MMoU*. Then, we re-estimate the baseline regression in Equation (1) using *Pseudo_MMoU*. We repeat the process 1,000 times and plot the distribution of the coefficients on *Pseudo_MMoU* in the figure. We also plot the actual coefficient of *MMoU* in Column (3) of Table 3. Detailed variable definitions are provided in Appendix A.

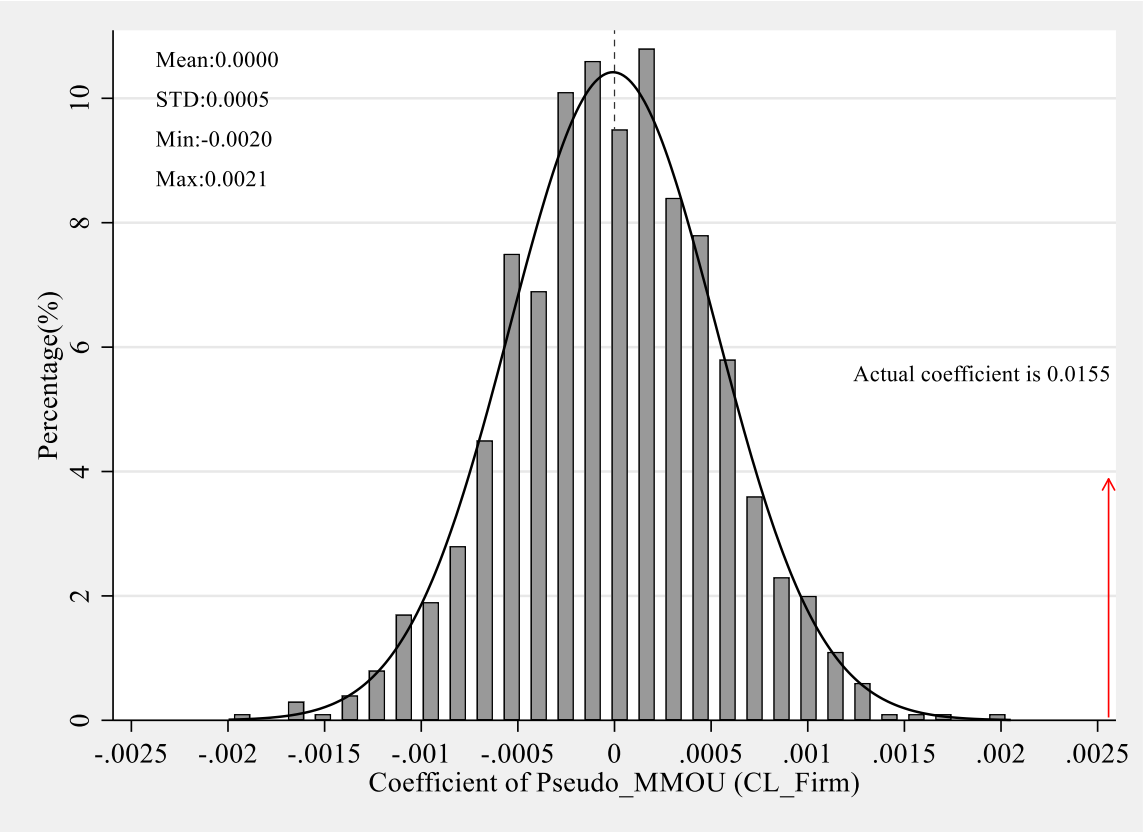

Table 1: Summary Statistics

This table reports the summary statistics of variables in the baseline analysis. Detailed variable definitions are provided in Appendix A.

Variable	Mean	SD	P5	P25	P50	P75	P95
CL_Firm	0.0277	0.1642	0.0000	0.0000	0.0000	0.0000	0.0000
MMoU	0.2102	0.4074	0.0000	0.0000	0.0000	0.0000	1.0000
Size	8.4104	3.3231	3.1416	5.9608	8.2684	10.8548	14.1980
ROA	0.0022	0.2251	-0.1954	0.0034	0.0292	0.0651	0.1530
Sale Growth	0.1555	0.6309	-0.3059	-0.0278	0.0679	0.1985	0.6987
Leverage	0.2384	0.2100	0.0000	0.0641	0.2101	0.3594	0.5917
Cash	0.1425	0.1471	0.0065	0.0406	0.0973	0.1916	0.4453
Capex	0.0505	0.0552	0.0022	0.0143	0.0337	0.0661	0.1583
AGE	2.2799	0.6037	1.0986	1.9459	2.3026	2.7081	3.0910
Interest	0.0305	0.0806	0.0000	0.0023	0.0095	0.0272	0.1112
Accruals	-0.0423	0.2701	-0.2733	-0.0911	-0.0295	0.0271	0.1973
MTB	2.0324	4.1426	0.6122	0.8855	1.1204	1.6375	4.6099
Analyst Following	0.6504	0.8941	0.0000	0.0000	0.0000	1.0986	2.6391
HiTech	0.1265	0.3324	0.0000	0.0000	0.0000	0.0000	1.0000
HHI	0.2675	0.2640	0.0322	0.0756	0.1607	0.3662	0.9955
GDP Per Capita	2.5410	1.8905	0.1909	0.5461	3.1431	3.5891	5.2796
GDP Growth	0.0371	0.0340	-0.0033	0.0154	0.0344	0.0550	0.0994
Regulatory Quality	0.7821	0.8052	-0.5784	0.0539	0.9775	1.4957	1.7893
Rule of Law	0.7863	0.8982	-0.7295	-0.0558	1.2350	1.4594	1.8820
Observations				369,771			

Table 2: Pearson Correlation

This table reports the Pearson correlation of variables in the baseline analysis. Detailed variable definitions are provided in Appendix A. Bold indicates that the coefficients are significant at the 5% level or below.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
(1)	*CL_Firm*																		
(2)	*MMoU*	**0.04**																	
(3)	*Size*	**0.01**	**-0.16**																
(4)	*ROA*	**0.01**	**-0.05**	**0.23**															
(5)	*Sale Growth*	**0.02**	**-0.01**	**-0.05**	**-0.01**														
(6)	*Leverage*	-0.00	**-0.03**	**0.10**	**-0.24**	**-0.02**													
(7)	*Cash*	**0.01**	**0.09**	**-0.15**	**-0.08**	**0.07**	**-0.34**												
(8)	*Capex*	**0.04**	**-0.03**	0.00	**0.04**	**0.07**	**0.07**	**-0.12**											
(9)	*AGE*	**0.04**	**0.28**	**0.15**	**0.07**	**-0.10**	**0.01**	**-0.10**	**-0.07**										
(10)	*Interest*	**0.02**	**0.01**	**-0.08**	**-0.29**	**0.01**	**0.37**	**-0.07**	-0.00	**-0.06**									
(11)	*Accruals*	**-0.01**	**0.01**	**0.07**	**0.20**	**0.10**	**-0.06**	**-0.01**	**-0.01**	**0.02**	**-0.06**								
(12)	*MTB*	0.00	**0.01**	**-0.16**	**-0.16**	**0.03**	**0.05**	**0.07**	**0.03**	**0.00**	**0.10**	**-0.05**							
(13)	*Analyst Following*	**0.09**	**0.08**	**0.22**	**0.11**	**-0.04**	**-0.07**	**0.05**	**0.03**	**0.19**	**-0.11**	**0.01**	**-0.01**						
(14)	*HiTech*	**0.01**	**0.06**	**-0.12**	**-0.11**	**0.03**	**-0.11**	**0.24**	**-0.06**	**-0.03**	**-0.02**	**-0.01**	**0.03**	**0.05**					
(15)	*HHI*	**0.12**	**-0.08**	**-0.07**	**0.07**	**0.02**	**0.01**	**-0.09**	**0.07**	**-0.08**	**0.05**	**-0.03**	**0.06**	**-0.09**	**-0.13**				
(16)	*GDP Per Capita*	**0.06**	**0.20**	**-0.27**	**-0.13**	**-0.01**	**-0.09**	**0.17**	**-0.07**	**0.15**	**-0.08**	**-0.02**	**-0.04**	**0.28**	**0.15**	**-0.07**			
(17)	*GDP Growth*	**-0.02**	**-0.04**	**-0.08**	**0.05**	**0.08**	**0.02**	**-0.02**	**0.12**	**-0.05**	**0.05**	**0.02**	**0.04**	**-0.20**	**-0.03**	**0.00***	**-0.39**		
(18)	*Regulatory Quality*	**0.04**	**0.17**	**-0.26**	**-0.13**	**-0.03**	**-0.09**	**0.13**	**-0.07**	**0.10**	**-0.08**	**-0.03**	**0.01**	**0.23**	**0.13**	**-0.08**	**0.82**	**-0.38**	
(19)	*Rule of Law*	**0.03**	**0.14**	**-0.18**	**-0.12**	**-0.04**	**-0.09**	**0.13**	**-0.10**	**0.10**	**-0.11**	**-0.02**	**-0.03**	**0.27**	**0.13**	**-0.11**	**0.86**	**-0.45**	**0.94**

Table 3: Baseline Regression Results

This table reports the regression results of the effect of MMoU on cross-listing. The regressions are performed by ordinary least squares (OLS), with *t*-statistics (in parentheses) calculated using standard errors corrected for heteroskedasticity and clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Detailed variable definitions are provided in Appendix A.

	(1)	(2)	(3)	(4)
Dep. Var. =	*CL_Firm*	*CL_Firm*	*CL_Firm*	*CL_Firm*
MMoU	0.0144***	0.0145***	0.0155***	
	(7.40)	(7.38)	(7.63)	
$MMoU_{t-3}$				0.0024
				(0.85)
$MMoU_{t-2}$				0.0027
				(0.95)
$MMoU_{t-1}$				0.0037
				(1.31)
$MMoU_{t+1}$				0.0109***
				(3.77)
$MMoU_{t+2}$				0.0136***
				(4.55)
$MMoU_{t+3}$				0.0161***
				(5.05)
$MMoU_{t+4above}$				0.0252***
				(7.48)
Size		0.0006	0.0011***	0.0012***
		(1.48)	(2.73)	(2.76)
ROA		0.0027	0.0021	0.0020
		(1.51)	(1.16)	(1.15)
Sale Growth		0.0028***	0.0027***	0.0026***
		(5.43)	(5.25)	(5.20)
Leverage		0.0070***	0.0071***	0.0070***
		(2.84)	(2.88)	(2.82)
Cash		0.0107**	0.0102**	0.0101**
		(2.57)	(2.45)	(2.41)
Capex		0.0473***	0.0429***	0.0428***
		(5.26)	(4.78)	(4.76)
AGE		0.0035**	0.0032**	0.0033**
		(2.39)	(2.22)	(2.28)
Interest		0.0332***	0.0319***	0.0317***
		(4.99)	(4.77)	(4.73)
Accruals		-0.0022**	-0.0024***	-0.0023**
		(-2.41)	(-2.61)	(-2.54)
MTB		-0.0003**	-0.0002*	-0.0002*
		(-2.18)	(-1.90)	(-1.72)
Analyst Following		0.0101***	0.0102***	0.0101***
		(9.11)	(8.99)	(8.94)
HiTech		0.0046**	0.0048**	0.0047**
		(2.34)	(2.39)	(2.39)
HHI		0.0464***	0.0442***	0.0444***
		(11.99)	(11.35)	(11.44)
GDP Per Capita			0.0047***	0.0046***
			(3.21)	(3.19)
GDP Growth			0.0761***	0.0783***
			(3.25)	(3.29)
Regulatory Quality			0.0153***	0.0148***
			(4.58)	(4.40)
Rule of Law			-0.0206***	-0.0204***
			(-5.67)	(-5.59)
Firm-cohort Fixed Effect	Yes	Yes	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes	Yes	Yes
Observations	369,771	369,771	369,771	369,771
Adjusted R-squared	0.430	0.436	0.436	0.437

Table 4: Robustness Tests

This table reports the results of robustness tests. The regressions are performed by ordinary least squares (OLS), with *t*-statistics (in parentheses) calculated using standard errors corrected for heteroskedasticity and clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A: Alternative windows

Dep. Var. =	(1) *CL_Firm*	(2) *CL_Firm*	(3) *CL_Firm*
	Window = [-3, +3]	Window = [-4, +4]	Window = [-6, +6]
MMoU	0.0095*** (5.09)	0.0128*** (6.52)	0.0175*** (8.27)
Controls	Yes	Yes	Yes
Firm-cohort Fixed Effect	Yes	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes	Yes
Observations	255,692	319,026	407,794
Adjusted R-squared	0.455	0.445	0.429

Panel B: Alternative samples

Dep. Var. =	(1) *CL_Firm*	(2) *CL_Firm*	(3) *CL_Firm*	(4) *CL_Firm*
	Drop US, France and UK firms	Drop EU firms	Drop non-MMoU firms	Keep firms in both 3 years before and after MMoU
MMoU	0.0185*** (7.53)	0.0164*** (8.40)	0.0137*** (6.64)	0.0189*** (6.94)
Controls	Yes	Yes	Yes	Yes
Firm-cohort Fixed Effect	Yes	Yes	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes	Yes	Yes
Observations	320,304	322,691	346,031	225,522
Adjusted R-squared	0.451	0.444	0.456	0.479

Panel C: Matched samples

Dep. Var. =	(1) *CL_Firm*	(2) *CL_Firm*
	PSM DID	Entropy-Balanced DID
MMoU	0.0111*** (3.86)	0.0061* (1.78)
Controls	Yes	Yes
Firm-cohort Fixed Effect	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes
Observations	119,980	369,771
Adjusted R-squared	0.512	0.522

Panel D: Alternative definitions of home country

Dep. Var. =	(1) *CL_Firm*	(2) *CL_Firm*
	Incorporated or legally registered	Headquarter location
MMoU	0.0135*** (6.78)	0.0150*** (7.35)
Controls	Yes	Yes
Firm-cohort Fixed Effect	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes
Observations	369,771	369,771
Adjusted R-squared	0.436	0.436

Panel E: Alternative fixed effects

Dep. Var. =	(1) *CL_Firm*	(2) *CL_Firm*
	Control for industry-year-cohort fixed effects	Control for country-cohort fixed effect
MMoU	0.0150***	0.0102***
	(7.33)	(6.31)
Controls	Yes	Yes
Firm-cohort Fixed Effect	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes
Observations	369,771	369,771
Adjusted R-squared	0.440	0.480

Panel F: Country-level analysis

Dep. Var. =	(1) *CL_Firm*
MMoU	0.0492***
	(3.49)
Controls	Yes
Country-cohort Fixed Effect	Yes
Year-cohort Fixed Effect	Yes
Observations	1,054
Adjusted R-squared	0.526

Panel G: Timing of MMoU: Hazard Models

Dep. Var. =	(1) Cox proportional hazard model *Time to MMoU*
No. of Cross Listing Firms	0.0207
	(0.61)
Market Turnover	0.0000
	(0.89)
Market Return	0.0084**
	(2.02)
Market Capitalization	0.0006
	(0.43)
GDP Per Capita	8.7980
	(1.44)
GDP Growth	-2.6634
	(-0.59)
Regulatory Quality	-0.4714
	(-0.53)
Rule of Law	0.2250
	(0.16)
Corruption Perception	-0.4609
	(-0.45)
Political Stability	-0.7328
	(-1.17)
Observations	469
Wald Chi-squared	64.50

Panel H: Oster test

	(1) Model without controls	(2) Model with controls
Coefficient on *MMoU*	0.0177	0.0155
R-squared	0.002	0.463
Max. R-squared	0.602	
δ	1.3991	

Panel I: Other estimations

Dep. Var. =	(1) *CL_Firm*	(2) *CL_Firm*
	Borusyak et al. (2023)	De Chaisemartin and D'Haultfoeuille (2020)
MMoU	0.0365***	0.0039***
	(11.64)	(3.98)
Controls	Yes	Yes
Firm-cohort Fixed Effect	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes
Observations	313,845	283,868

Table 5: Channel Tests: Conditional on Information Asymmetry

This table reports the results of cross-sectional tests by information asymmetry. The regressions are performed by ordinary least squares (OLS), with *t*-statistics (in parentheses) calculated using standard errors corrected for heteroskedasticity and clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Detailed variable definitions are provided in Appendix A.

Panel A. Firm-level information asymmetry

	Financial Reporting Opacity		***R&D Intensity***		***Accounting Conservatism***	
Dep. Var. = *CL_Firm*	(1)	(2)	(3)	(4)	(5)	(6)
	High	Low	High	Low	High	Low
MMoU	0.0177***	0.0106***	0.0311***	0.0095***	0.0084***	0.0328***
	(6.14)	(3.95)	(5.54)	(4.59)	(2.83)	(8.03)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm-cohort Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	173,345	176,657	108,315	249,215	159,570	113,272
Adjusted R^2	0.538	0.546	0.592	0.495	0.562	0.522
Coeff. Diff.	p < 0.01		p < 0.01		p < 0.01	

Panel B. Country-level information asymmetry

	Disclosure Index		***Sue Auditor***		***Securities Regulation***		***Aggregated Earnings Management***	
Dep. Var. = *CL_Firm*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	High	Low	High	Low	High	Low	High	Low
MMoU	0.0224***	0.0446***	0.0077	0.0144***	-0.0027	0.0321***	0.0188***	0.0057
	(8.59)	(7.89)	(0.72)	(5.35)	(-0.82)	(6.77)	(6.46)	(1.33)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-cohort Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	200,491	104,305	47,812	256,984	188,936	115,860	237,092	120,438
Adjusted R^2	0.497	0.546	0.582	0.434	0.488	0.539	0.522	0.523
Coeff. Diff.	p < 0.01		p < 0.01		p < 0.01		p < 0.01	

Table 6: Channel Tests: Conditional on Agency Problems

This table reports the results of cross-sectional tests by agency problems. The regressions are performed by ordinary least squares (OLS), with *t*-statistics (in parentheses) calculated using standard errors corrected for heteroskedasticity and clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Detailed variable definitions are provided in Appendix A.

Panel A. Firm-level agency problems

	Q_FCF		***Inefficient Asset Utilization***	
Dep. Var. = *CL_Firm*	(1)	(2)	(3)	(4)
	High	Low	High	Low
MMoU	0.0166***	0.0030	0.0143***	0.0120***
	(7.77)	(0.57)	(4.85)	(4.68)
Controls	Yes	Yes	Yes	Yes
Firm-cohort Fixed Effect	Yes	Yes	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes	Yes	Yes
Observations	328,913	26,748	175,182	182,348
Adjusted R^2	0.459	0.723	0.545	0.556
Coeff. Diff.	p < 0.01		p < 0.01	

Panel B. Country-level agency problems

	Public Enforcement Index		***Investor Protection Index***		***Anti-Director Rights Index***		***Anti-Self-Dealing Index***	
Dep. Var. = *CL_Firm*	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	High	Low	High	Low	High	Low	High	Low
MMoU	-0.0018	0.0506***	0.0071*	0.0195***	0.0070***	0.0330***	0.0047	0.0536***
	(-0.59)	(9.56)	(1.73)	(5.34)	(2.61)	(6.63)	(1.16)	(11.01)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-cohort Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	182,811	121,985	97,273	207,523	244,262	96,453	222,371	118,344
Adjusted R^2	0.482	0.578	0.591	0.459	0.523	0.537	0.524	0.573
Coeff. Diff.	p < 0.01		p < 0.01		p < 0.01		p < 0.01	

Table 7: MMoU and Destination of Cross-listing

This table reports the regression results of the effect of MMoU on destination of cross-listing. The regressions are performed by ordinary least squares (OLS), with *t*-statistics (in parentheses) calculated using standard errors corrected for heteroskedasticity and clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Detailed variable definitions are provided in Appendix A.

	(1)	(2)
Dep. Var. =	*CL_MMoU*	*CL_Non_MMoU*
MMoU	0.0157***	0.0005
	(7.90)	(0.57)
Size	0.0008**	0.0005***
	(2.20)	(3.37)
ROA	0.0011	0.0009
	(0.73)	(1.01)
Sale Growth	0.0028***	-0.0001
	(5.80)	(-0.56)
Leverage	0.0064***	0.0006
	(3.01)	(0.59)
Cash	0.0060*	0.0039**
	(1.82)	(1.99)
Capex	0.0320***	0.0130***
	(4.33)	(3.34)
AGE	0.0000	0.0029***
	(0.04)	(3.59)
Interest	0.0148***	0.0171***
	(2.96)	(4.55)
Accruals	-0.0011	-0.0013
	(-1.60)	(-1.46)
MTB	-0.0003***	0.0001
	(-2.99)	(1.22)
Analyst Following	0.0088***	0.0012**
	(9.36)	(2.41)
HiTech	0.0019	0.0029***
	(1.25)	(3.36)
HHI	0.0356***	0.0091***
	(10.79)	(6.58)
GDP Per Capita	0.0044***	0.0005
	(3.58)	(0.89)
GDP Growth	0.0351*	0.0418***
	(1.72)	(3.97)
Regulatory Quality	0.0060**	0.0092***
	(2.35)	(5.59)
Rule of Law	-0.0126***	-0.0082***
	(-4.38)	(-4.80)
Firm-cohort Fixed Effect	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes
Observations	369,771	369,771
Adjusted R-squared	0.385	0.222

Table 8: Cross-Sectional Tests: Conditional on External Financing Dependence

This table reports the results of cross-sectional tests by external financing dependence. The regressions are performed by ordinary least squares (OLS), with *t*-statistics (in parentheses) calculated using standard errors corrected for heteroskedasticity and clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Detailed variable definitions are provided in Appendix A.

	Whited and Wu (2006) Index		***Net Financing***		***Industry Equity Financing***	
Dep. Var. = *CL_Firm*	(1)	(2)	(3)	(4)	(5)	(6)
	High	Low	High	Low	High	Low
MMoU	0.0256***	0.0112***	0.0135***	0.0088***	0.0156***	0.0081**
	(7.29)	(4.07)	(5.69)	(2.59)	(5.54)	(2.38)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm-cohort Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Observations	179,125	178,405	260,635	96,443	237,132	120,398
Adjusted R^2	0.562	0.527	0.480	0.640	0.490	0.549
Coeff. Diff.	$p < 0.01$		$p < 0.01$		$p < 0.01$	

Table 9: Cross-Sectional Tests: Conditional on Access to Domestic Market

This table reports the results of cross-sectional tests by access to domestic market. The regressions are performed by ordinary least squares (OLS), with *t*-statistics (in parentheses) calculated using standard errors corrected for heteroskedasticity and clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Detailed variable definitions are provided in Appendix A.

Dep. Var. = *CL_Firm*		***Equity Market Access***		***Stock Market Development***		***Credit Market Development***	
		(1)	(2)	(3)	(4)	(5)	(6)
		High	Low	High	Low	High	Low
MMoU		-0.0014	0.0141***	0.0098***	0.0215***	-0.0001	0.0259***
		(-0.25)	(3.53)	(3.61)	(5.86)	(-0.01)	(3.29)
Controls		Yes	Yes	Yes	Yes	Yes	Yes
Firm-cohort Effect	Fixed	Yes	Yes	Yes	Yes	Yes	Yes
Year-cohort Effect	Fixed	Yes	Yes	Yes	Yes	Yes	Yes
Observations		114,408	170,759	192,052	144,637	104,162	56,642
Adjusted R^2		0.556	0.457	0.506	0.625	0.591	0.625
Coeff. Diff.		p < 0.01		p < 0.01		p < 0.01	

Table 10: Cross-Sectional Tests: Conditional on Impediment to Cooperation

This table reports the results of cross-sectional tests by impediment to cooperation variables. The regressions are performed by ordinary least squares (OLS), with *t*-statistics (in parentheses) calculated using standard errors corrected for heteroskedasticity and clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Detailed variable definitions are provided in Appendix A.

Dep. Var. = *CL_Firm*		***Blocking***		***PCAOB***		***NATO***		***US Trade Importance***	
		(1) Yes	(2) No	(3) Yes	(4) No	(5) Yes	(6) No	(7) High	(8) Low
MMoU		0.0398***	0.0061**	0.0079	0.0153***	-0.0134	0.0152***	0.0185***	0.0341***
		(7.43)	(2.00)	(0.85)	(6.82)	(-1.57)	(5.67)	(5.34)	(6.66)
Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-cohort Effect	Fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year-cohort Effect	Fixed	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations		148,371	123,015	11,329	293,467	65,214	292,315	206,343	113,966
Adjusted R^2		0.593	0.563	0.735	0.444	0.558	0.438	0.539	0.530
Coeff. Diff.		$p < 0.01$		$p < 0.01$		$p < 0.01$		$p < 0.01$	

Table 11: Economic Consequences of Cross-Listing after MMoU Adoption

This table reports the results of the economic consequences of cross listing after MMoU adoption. The regressions are performed by ordinary least squares (OLS), with *t*-statistics (in parentheses) calculated using standard errors corrected for heteroskedasticity and clustered at the firm level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively. Detailed variable definitions are provided in Appendix A.

	(1)	(2)	(3)	(4)
Dep. Var. =	$Investment_{t+1}$	$R\&D_{t+1}$	$Tobin's\ Q_{t+1}$	$Synch_{t+1}$
MMoU×CL_Firm	0.0030***	0.0038**	0.2629*	-1.0077***
	(2.74)	(2.01)	(1.90)	(-8.98)
CL_Firm	0.0011	-0.0002	-0.1682	1.7989***
	(1.44)	(-0.18)	(-1.60)	(18.54)
MMoU	-0.0001	-0.0026***	-0.5151***	0.0957***
	(-0.35)	(-6.84)	(-9.70)	(3.36)
Size	0.0003***	-0.0007***	-0.0986***	-0.1560***
	(5.76)	(-9.11)	(-11.03)	(-28.49)
ROA	0.0144***	-0.0431***	2.8510***	0.2385***
	(19.96)	(-20.27)	(16.28)	(7.97)
Sale Growth	0.0016***	0.0013***	-0.0572**	0.0154**
	(8.57)	(5.86)	(-2.47)	(2.02)
Leverage	-0.0039***	-0.0088***	-0.1069	0.0589
	(-6.57)	(-8.94)	(-0.91)	(1.59)
Cash	0.0132***	0.0476***	-0.8379***	-0.0549
	(14.64)	(19.67)	(-6.66)	(-1.09)
Capex	0.5053***	0.0052**	-0.4476**	0.7272***
	(150.09)	(2.47)	(-1.98)	(6.78)
AGE	-0.0010***	0.0027***	0.1452***	0.0428**
	(-3.74)	(8.32)	(4.49)	(2.00)
Interest	-0.0065***	0.0047	-1.1108***	0.1190
	(-3.86)	(1.50)	(-3.48)	(1.26)
Accruals	-0.0023***	0.0030***	-0.0473	0.0830***
	(-6.40)	(6.87)	(-0.91)	(4.54)
MTB	0.0002***	0.0001***	1.1716***	-0.0410***
	(8.30)	(3.12)	(68.33)	(-16.66)
Analyst Following	0.0011***	0.0016***	0.1645***	0.2509***
	(8.25)	(7.70)	(8.44)	(22.88)
HiTech	-0.0044***	0.0260***	0.1883***	0.0708***
	(-13.53)	(29.03)	(4.55)	(3.19)
HHI	0.0046***	-0.0075***	0.0849	0.1908***
	(9.93)	(-14.40)	(1.23)	(4.66)
GDP Per Capita	0.0000	0.0014***	-0.2356***	-0.2804***
	(0.05)	(6.12)	(-8.98)	(-17.09)
GDP Growth	0.0670***	-0.0214***	-0.3807	4.5523***
	(17.46)	(-9.33)	(-0.83)	(13.73)
Regulatory Quality	-0.0001	-0.0035***	0.3467***	-0.6115***
	(-0.27)	(-8.55)	(5.70)	(-14.88)
Rule of Law	-0.0030***	0.0034***	0.2087***	0.0934**
	(-6.29)	(6.25)	(2.84)	(1.98)
Firm-cohort Fixed Effect	Yes	Yes	Yes	Yes
Year-cohort Fixed Effect	Yes	Yes	Yes	Yes
Observations	366,057	369,252	366,247	365,060
Adjusted R^2	0.414	0.550	0.606	0.374