Three Essays on Information Frictions and the Integration of International Capital Market

A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

By

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Declaration of Originality

This thesis is an original written work incorporating an account of research completed in the Doctor of Philosophy (Commerce) program at the Australian National University. It has not been submitted for any other degree or purposes. This thesis, to the best of my knowledge, contains no material previously published or written by another person except where due reference is made in the text of the thesis.

Nathan Zhenghang Zhu

Zhenghang Zhu
Dated: November 7, 2021

Acknowledgment

I would like to express my deepest gratitude to my principal supervisor, Dr. Tracy Wang, for her invaluable advice, continuous support, and patience during my PhD study. Her immense knowledge and plentiful experience have encouraged me in all the time of my academic research and daily life. I would also like to thank my panel supervisors, Prof. Albert Tsang and Prof. Mark Wilson, for their supervision, scholarly support and constructive suggestions. This thesis would not have been completed without their generous help.

I am so appreciative to have the loyal, supportive, and caring family that I do. Thank you for accepting me for who I am and where I am at right now. I would like to thank my wife, Candice Cheng, for all the sacrifices you have made. Words cannot describe how fortunate I feel to have you in my life.

Lastly, I express my gratitude to all faculty members at the Research School of Accounting for their advice and suggestions at different stages of my PhD study. I thank the Australian National University and the Research School of Accounting for the funding and administrative support. I thank my fellow PhD students for your companion, useful feedback, encouragement and all the fun time we had together.

Abstract

This thesis comprises three studies examining factors associated with information frictions in the international capital market. Study I examines the impact of loosening disclosure requirements initiated by Rule 12h-6 on firm innovation. Using a difference-in-differences (DID) research design, I find that cross-listed firms experience a significant reduction in innovation in the post-Rule 12h-6 period, compared with non-cross-listed domestic firms, suggesting implementation of Rule 12h-6 impedes innovation for cross-listed firms. The results from firm-level cross-sectional tests indicate this effect is stronger for external financing dependent firms, and for research and development (R&D)-intensive firms. The results from country-level cross-sectional tests show that Rule 12h-6 more strongly affects firms in countries with low investor protection, low regulatory quality, and greater accounting differences from the US Generally Accepted Accounting Principles (GAAP). Finally, I find that the negative effect of Rule 12h-6 on firm innovation is attenuated in countries with more liberalized stock markets. I also document a negative relation between US cross-listing and foreign institutional ownership in the post-Rule 12h-6 period. Taken together, my findings suggest that implementation of Rule 12h-6 reduces the benefits of attracting foreign investors through cross-listing, which in turn hinders innovation in non-US economies.

Study II examines the economic consequences of hosting Olympic Games on firms' cross-listing activities.Using a difference-in-differences research design and based on evidence from nine Olympic-hosting countries from 2000 to 2016, I find that relative to firms domiciled in home countries hosting no Olympics, firms domiciled in Olympic-hosting countries are more likely to exhibit a higher level of cross-listing activities in the years following the hosting of the Olympics. The results from cross-sectional tests further indicate that the effect of Olympics on firms' cross-listing activities is more pronounced for firms domiciled in countries with better sport performance in the Games and in countries hosting the Summer Olympics, and for domestic firms of the Olympic-hosting countries. Finally, I find that cross-listing firms tend to cross-list in foreign countries with greater level of institutional distance after hosting the Games. Taken together, my findings suggest that hosting the Olympics plays a positive role in improving the international reputation of Olympic-host countries thereby help firms from such countries to overcome the concern of liability of foreignness in making cross-listing decisions.

Study III examines the influence of foreign versus domestic media coverage of earnings news on the pricing of US firms' accounting information. Using a novel dataset containing 1,126 media outlets in 48 countries, I find that foreign media coverage of good (bad) earnings news

is associated with a weaker (stronger) stock market reaction compared with US domestic media coverage. I further find that foreign media coverage from outlets in countries that have less economic, political, and cultural proximity to the US generally prompt stronger reactions to bad earnings news. Further analyses show that foreign media coverage (1) facilitates the incorporation of future earnings news into current stock prices; (2) reduces firms' stock price crash risks; and (3) increases foreign institutional ownership. Additionally, using public holidays in foreign news media's home country as exogenous events that reduce the activities of foreign investors from those countries, I find that the effect of foreign media coverage on the stock market reaction to earnings news of US firms is muted during these holidays. My findings thus support the conjecture that foreign media plays an important role in the pricing of accounting information, likely through its role in attracting the attention from foreign investors.

Table of Contents

Declaration of Originality 2

Acknowledgment 3

Abstract 4

List of Tables 8

List of Appendices 9

Chapter 1. Introduction 10

1.1. Overview 10

1.2. Study I: The Impact of Loosening Disclosure Requirements on Firm Innovation: Evidence from SEC Rule 12h-6 11

1.3. Study II: The Economic Consequences of Hosting the Olympic Games: International Evidence from Cross-Listings 13

1.4. Study III: Foreign Media Coverage and the Pricing of Accounting Information 16

1.5. Thesis Structure 20

Chapter 2. The Impact of Loosening Disclosure Requirements on Firm Innovation: Evidence from SEC Rule 12h-6 21

2.1. Introduction 21

2.2. Background of Rule 12h-6 27

2.3. Related Literature and Hypothesis Development 29

2.4. Research Design 33

2.5. Data and Sample Selection 34

2.6. Results and Analysis 37

2.7. Additional Analysis 42

2.7.1. Firm-level Cross-sectional Tests 42

2.7.2. Country-level Cross-sectional Tests 43

2.7.3. Channel 45

2.8. Chapter 2 Conclusion 49

Chapter 3. The Economic Consequences of Hosting the Olympic Games: International Evidence from Cross-Listings 66

3.1. Introduction 66

3.2. Literature Review and Hypothesis Development 71

3.2.1 Benefits and Costs of Hosting the Olympics for the Host Country 71

3.2.2 Cross-listings 72

3.2.3 Hypothesis Development 73

3.3 Research Design 76

3.4 Sample and Data 79

3.5. Main Results 81

3.5.1. Univariate Analysis 81

3.5.2. Olympics-Hosting Countries and the Cross-Listing Propensity and Intensity of Firms Domiciled in the Host Country 83
3.5.3. Alternative Benchmark: Cohort-Matched Bidding Countries 83
3.5.4. Olympics-Hosting Cities and Cross-Listing Propensity and Intensity of Firms Domiciled in the Host Cities 84
3.5.5. Olympics-hosting Countries, Cross-Listings, and Institutional Holdings 85
3.6. Additional Tests 86
3.6.1 Cross-Sectional Tests: Olympic Medal Achievement, Summer vs. Winter Olympics, Domestic vs. Foreign Firms 86
3.6.2 Olympics Hosting and Cross-Listing Country Choices of Firms Domiciled in the Host Country 88
3.6.3 Dynamic DID Analysis 89
3.6.4 Other Robustness Tests 89
3.7. Chapter 3 Conclusion 91
Chapter 4. Foreign Media Coverage and the Pricing of Accounting Information 105
4.1. Introduction 105
4.2. Related Literature and Hypothesis Development 112
4.3. Research Design 116
4.3.1. Data and Sample 116
4.3.2. Empirical Models and Variable Measurements 117
4.4. Main Empirical Results 121
4.4.1. Results of Testing Hypotheses 1 and 2 121
4.4.2. Results of Testing Hypothesis 3 127
4.5. Additional Analyses 127
4.5.1. Tests on News Selectivity 127
4.5.2. Tests on Price Informativeness of Future Earnings 128
4.5.3. Tests on Stock Price Crash Risks 130
4.5.4. Tests on Foreign Institutional Ownership 132
4.5.5. Tests on Media Tone 133
4.5.6. Tests on Alternative Explanations 134
4.6. Chapter 4 Conclusion 135
Chapter 5. Conclusion 156
References 156

List of Tables

Table 2.1 Sample Distribution (Chapter 2) 51
Table 2.2 Summary Statistics (Chapter 2) 53
Table 2.3 The Effect of Rule 12h-6 on Firm Innovation 54
Table 2.4 Dynamic Effect of Rule 12h-6 on Firm Innovation 55
Table 2.5 The Effect of Rule 12h-6 on Firm Innovation–Alternative Measurements 56
Table 2.6 The Effect of Rule 12h-6 on Firm Innovation – Robustness Tests 57
Table 2.7 Firm-level Cross-Sectional Effect of Rule 12h-6 on Firm Innovation 59
Table 2.8 Country-level Cross-Sectional Effect of Rule 12h-6 on Firm Innovation 60
Table 2.9 Channel Analysis 62
Table 3.1 Sample Distribution (Chapter 3) 94
Table 3.2 Summary Statistics (Chapter 3) 95
Table 3.3 Univariate Analysis 95
Table 3.4 Olympics-Hosting Countries and Cross-Listing 96
Table 3.5 Alternative Benchmark: Cohort-Matched Bidding Countries 97
Table 3.6 Olympics-Hosting Cities and Cross-Listing 97
Table 3.7 Cross-Sectional Tests: OG Achievement, Summer vs Winter OG, Domestic vs Foreign Firms 98
Table 3.8 Olympic Games Hosting and Cross-Listing Country Choices 99
Table 4.1 Sample Distribution (Chapter 4) 135
Table 4.2 Summary Statistics (Chapter 4) 136
Table 4.3 Foreign Media Coverage and ERC 137
Table 4.4 Foreign Media Coverage and ERC: Alternative Measurements and Tests on Endogeneity 139
Table 4.5 The Impact of Institutional Proximity on the Relation between Foreign Media Coverage and ERC 144
Table 4.6 News Selectivity and Timeliness of News Coverage 149
Table 4.7 Foreign Media Coverage and Future ERC 150
Table 4.8 Foreign Media Coverage and Stock Price Crash Risks 151
Table 4.9 Foreign Media Coverage and Foreign Institutional Ownership 153
Table 4.10 Tone of Foreign Media Coverage 154

List of Appendices

Appendix A Variable Definitions (Chapter 2).....49
Appendix B Olympic Games held between 2000 and 2016 (Chapter 3).....90
Appendix C Variable Definitions (Chapter 3).....91
Appendix D Examples of Media Outlets Included in my Sample (Chapter 4) 133
Appendix E Variable Definition (Chapter 4).....134

Chapter 1. Introduction

1.1. Overview

The pace of international capital market integration has accelerated over the past two decades and has had a profound impact on how firms access external capital resources and how investors manage their investment portfolios. Economic theory predicts that by removing or relaxing restrictions on cross-border investments, firms can reap the benefits of raising more capital at a lower cost, while investors can achieve better risk diversification. However, a large body of literature shows that gains from capital market integration are only partially realized because investors are reluctant to provide capital to firms outside of their domestic markets, a phenomenon generally known as the "home bias" (Coval and Moskowitz 1999; Van Nieuwerburgh and Veldkamp 2009; Lin and Viswanathan 2016; Liao et al. 2021). This home bias not only persists but is ubiquitous across a wide range of countries and various types of capital market participants (Miller 2009). The literature offers a number of possible explanations for the home bias phenomenon, in particular information frictions arising from high information processing costs, uncertainty about information quality, and inherent unfamiliarity with foreign markets (Beneish and Yohn 2008). Therefore, it is important to understand the factors that may mitigate information frictions and ease the constraints of cross-border capital supply.

This thesis comprises three studies that follow from the abovementioned research agenda. In the first two studies, I examine two institutional features that may affect equity market integration in the context of firms' international cross-listing activities, which have been a prevalent channel of cross-border investment and portfolio flows (Karolyi 2006; Gagnon and Karolyi 2010). The third study explores the role of foreign news media, which is one of the major contributors to the cross-border flow of information, in the capital market.

1.2. Study I: The Impact of Loosening Disclosure Requirements on Firm Innovation: Evidence from SEC Rule 12h-6

Study I investigates the impact of Exchange Act Rule 12h-6—the first significant deregulation of regulatory requirements for foreign firms cross-listed in the United States (US) market—on firm innovation. Specifically, by using a sample of foreign firms cross-listed on major US-based exchanges, this study investigates whether the reduced regulatory requirements initiated by Rule 12h-6 affects corporate innovation, an important driver of national and international long-term economic growth. Empirical evidence supports the notion that firms' abilities to finance their investment opportunities are largely affected by country-level institutional quality (La Porta 1997; La Porta 2002; Carlin Mayer 2003). Firms in countries with inadequate legal protection for shareholders not only face difficulty raising capital from domestic markets but also shy away from foreign investments because of the fear of expropriation. Therefore, listing a firm in the US equity market, which offers better protection of investors, is seen as an effective way to overcome institutional drawbacks (Coffee, 1999; Stulz, 1999; Karolyi 2012). In doing so, foreign firms must register their securities with the US Securities and Exchange Commission (SEC) and comply with strict reporting and disclosure requirements. This registration requirement is intended to reduce the information frictions faced by US investors when investing in foreign securities through detailed and informative information disclosure. However, many policy debates have raged over the stringency of SEC registration requirements, with the main issue being the complicated deregistration rules that make it almost impossible for cross-listed firms to deregister and terminate their reporting obligations, even if they decide to delist from US markets (Nelson 2003; SEC 2006; Leuz et al. 2006). In light of this concern, the SEC passed Exchange Act Rule 12h-6 on March 21, 2007, which considerably relaxed the deregistration rules, making it easier for cross-listed firms to terminate their US disclosure and regulatory requirements. While

an emerging stream of research has started to investigate the effects of Rule 12h-6 on market valuation, finding that it leads to both short-term and long-term reductions in firm value for US cross-listed firms (Fernandes et al. 2010; Ghosh and He 2017), the effect of Rule 12h-6 on firms' behaviors in the real economy (e.g., investments, use of resources, and consumption) remains underexplored. This is important to further the understanding of the net benefits associated with this disclosure deregulation.

Using a large international sample comprising 16,782 unique non-US firms from 49 countries between 2002 and 2012, I investigate whether and how the implementation of Rule 12h-6 has affected firm innovation. I argue that the easier deregistration requirement initiated by Rule 12h-6 could cause sophisticated (e.g., institutional) US investors to shy away from investing in cross-listed firms because of the perceived increase in information risks and monitoring costs. This could diminish the benefit of cross-listing non-US firms as a means of overcoming innovation constraints to the extent that US institutional investors are a crucial driver of firms' long-term investments. By using a difference-in-differences (DID) research design, I find that cross-listed firms, on average, experience a significant reduction in firm innovation in the post–Rule 12h-6 period compared with non-cross-listed domestic firms, suggesting that the implementation of Rule 12h-6 has impeded innovation for cross-listed firms. This negative effect of Rule 12h-6 on firm innovation is greater for firms in countries with low investor protection, low regulatory quality, and greater accounting differences from the US GAAP and less pronounced for firms in countries with more liberalized stock markets. I also document a negative relation between US cross-listing and foreign institutional ownership in the post–Rule 12h-6 period, supporting my conjecture that the reduction in the attractiveness of cross-listed firms to foreign investors is the underlying mechanism driving the negative effect of Rule 12h-6 on cross-listed firm innovation.

This study makes several contributions to the literature. First, it extends the line of research examining the effects of Rule 12h-6. The limited research finds that the implementation of Rule 12h-6 has led to a reduction in firm value for firms cross-listed on US exchanges (Fernandes et al 2010; Ghosh and He 2017). My finding identifies firm innovation as an important channel through which Rule 12h-6 affects firm value. Second, this study contributes to the literature on the various benefits of US cross-listing, including the lower cost of capital and the improved information environment (Foerster and Karolyi 1998; Stulz 1999; Lang et al. 2003). However, its effect on corporate investment is relatively under-researched (Abdallah and Abdallah 2019). My findings suggest that cross-listing in markets with more stringent reguatory requirements can promote non-US firms' innovation activities. Finally, this study contributes to the research related to the determinants of cross-border institutional investments. My finding that the easier deregistration of cross-listed firms initiated by Rule 12h-6 negatively influences US institutional ownership of these firms suggests that imposing stringent regulatory requirements is an important institutional feature that facilitates cross-border capital flow.

1.3. Study II: The Economic Consequences of Hosting the Olympic Games: International Evidence from Cross-Listings

Study II examines whether and how hosting the Olympic Games (the Olympics) affects the decisions of firms domiciled in the host country regarding the cross-listing of securities in foreign countries. The Olympics are the world's largest and most prestigious sporting event, and their social, economic, and cultural effects have extended far beyond individual sports (Baade and Matheson 2016). Despite the considerable interest expressed by many countries in hosting the Olympics and the growing academic attention given to the consequences of this (e.g., Chappelet 2002; Flyvbjerg et al. 2002; Essex and Chalkley 2004; Preuss 2004; Owen

2005), research on their economic impacts on the host country is limited (Dolan et al. 2019). Therefore, whether hosting the Olympics economically benefits the host country remains an open question (Scandizzo and Pierleoni 2018; Overmyer 2017). This study draws on the literature related to the benefits and costs of hosting the Olympics to examine its potential impact on corporate financing decisions in the host country. It seeks to determine whether and how hosting the Olympics affects the decisions of firms domiciled in the host country regarding the cross-listing of securities in foreign countries.

The literature suggests that one of the main challenges that firms face when cross-listing is how to overcome the liability of foreignness. Investors are generally reluctant to own stocks in foreign countries because of the information costs and unfamiliarity with foreign economic environments and capital markets (Bradshaw et al. 2004; Covrig et al. 2007; Baik et al. 2013; Chen et al. 2019; Hu et al. 2019; Tsang et al. 2019). The degree of proximity or familiarity (e.g., geographical, cultural, institutional, and accounting-related) between a firm's home country and the foreign country in which its securities are cross-listed is an important factor determining the firm's cross-listing decisions as well as investors' foreign portfolio holdings. As a world-class sporting event, the Olympics attract great attention worldwide, increasing global awareness of the host country and city (Dechow et al. 2019). This may bring benefits for hosts, such as attracting tourists and foreign customers and investors (Papadopoulos and Heslop 2002; Sun and Paswan 2012). To this end, hosting the Olympics increases the visibility and information salience of firms domiciled in the host country, reducing foreign investors' unfamiliarity with the country and the firms domiciled there, thus helping domestic firms to overcome the liability of foreignness when cross-listing and leading to more successful foreign capital raising. Therefore, I predict that hosting the Olympics will have a positive impact on the cross-listing incentives of firms in host countries.

However, it is also possible that increased visibility will have the opposite effect. Hosting the Olympics may increase the host country's access to external capital, allowing firms domiciled in the host country to also directly access more foreign capital. In turn, this may reduce firms' incentives to cross-list given the nontrivial costs associated with cross-listing. If this is true, then I predict that hosting the Olympics will have a negative impact on the cross-listing activities of firms domiciled in the host country. Taken together, these discussions suggest that the impact of hosting the Olympics on firms' cross-listing activities is ultimately an empirical question.

To test these hypotheses, I use a novel hand-collected dataset of international cross-listing from 61 countries worldwide. I then conduct a quasi-natural experiment using a DID approach to examine the cross-listing incentives of firms domiciled in nine countries that have hosted the Olympics between 2000 and 2016 (i.e., Australia, the US, Greece, Italy, China, Canada, the United Kingdom, Russia, and Brazil). Based on the evidence from these nine countries, I show that compared with firms in countries that did not host the Olympics, those in hosting countries engaged in more cross-listing in the years following the Olympics. The results of the cross-sectional tests indicate that the effect of hosting the Olympics on firms' cross-listing activities is more pronounced for firms in host countries that perform better in the Olympics, for those in countries hosting the Summer (vs. the Winter) Olympics, and for domestic (vs. foreign) firms. Finally, I find that firms domiciled in an Olympics-hosting country tend to cross-list in foreign countries with a greater institutional distance from the host country following the Olympics. My findings suggest that hosting the Olympics improves the international reputation of the host country, helping firms domiciled in that country to overcome the liability of foreignness when making cross-listing decisions.

This study contributes to the literature in several ways. First, it extends the line of research on the costs and benefits of hosting the Olympics. Given the substantial costs and

financial risks associated with hosting the Olympics, it is critical for future host cities and countries to understand the implications of the investments required to host the Olympics. Given that cross-listing is an important corporate decision that may bring substantial economic benefits to a firm and the country in which the firm is located, my findings suggest an important and previously undocumented economic consequence of hosting the Olympics for the host country.

Moreover, this study contributes to the understanding of factors that may affect firms' cross-listing activities. It adds to the literature on the determinants of cross-listing in an international setting (e.g., Sarkissian and Schill 2004; Chen et al. 2015; Chen et al. 2019; Liao et al. 2021; Tsang et al. 2021) by investigating the effect of hosting the Olympics on the cross-listing activities of firms domiciled in the host country. Therefore, my study complements the emerging stream of research on the effects of seemingly value-irrelevant sporting events (e.g., the National Collegiate Athletic Association Basketball Tournament and the International Federation of Association Football World Cup) on capital market participants (Edmans et al. 2007; Palomino et al. 2009; Martins and Serra 2011; Ehrmann and Jansen 2016; Drake et al. 2016). My findings suggest that the increased visibility of a country caused by hosting the Olympics can significantly affect the behavior of capital market participants.

1.4. Study III: Foreign Media Coverage and the Pricing of Accounting Information

Study III examines the role of foreign media in the domestic capital market. News media outlets are widely recognized as an important information intermediary in the capital market. They not only disseminate information to a wide audience but also provide new information through journalistic activities such as the interpretation and investigation of events (Bushee et al. 2010; Drake et al. 2014; Miller and Skinner 2015; Coyne et al. 2019). The increasing globalization of economies and financial markets along with technological advances in the

dissemination of information have considerably reshaped the news media industry. This has led to a substantial increase in the presence of foreign media in recent decades, increasing the international flow of news. Although foreign media outlets now represent a significant segment of the full media spectrum, their role in the capital market remains unexplored. A large body of literature has documented that a higher level of media coverage facilitates the aggregation of public opinion about earnings announcements and improves trading and pricing activities (Bushee et al. 2010; Drake et al. 2014). However, it is unclear whether foreign news media plays a similar role to that of domestic news media in the price discovery process following earnings announcements. This study compares the effects of foreign and domestic media coverage on the pricing of accounting information following earnings announcements, which represent one of the most important channels of communication between firm insiders and outside investors in the US market (Ball and Brown 1968; Beaver 1968; Landsman and Maydew 2002; DeFond et al. 2007; Pevzner et al. 2015; Beaver et al. 2018; Beaver et al. 2019).

I argue that foreign media outlets may be at an information disadvantage compared with domestic media outlets because they face greater information acquisition costs stemming from geographical, language, cultural, and legal differences. This will undermine the role of foreign media in information collection, dissemination, and creation. Therefore, I hypothesize that foreign media plays a less important or informative role in capital markets compared with domestic media. I term this prediction the "foreign media information disadvantage" hypothesis. However, it is also possible that foreign media outlets are relatively more independent and objective than domestic media outlets because they are less likely to have business relationships with the covered firms or be subject to political pressure in the domestic market. Therefore, foreign media outlets may provide more objective news coverage on firms. Thus, I hypothesize that foreign media coverage of firms' earnings news is more informative

for capital market participants than coverage from domestic media. I term this prediction the "foreign media independence" hypothesis.

To test these competing hypotheses, I use a novel hand-collected dataset that incorporates the headquarter locations of 1,126 media outlets from 48 countries and covers 100,000 quarterly earnings announcements of firms listed in US stock exchanges during the period 2007–2017. I document several important findings. First, I find that, on average, foreign media coverage is associated with a weaker stock market reaction to firms' earnings announcements compared with domestic media coverage. Second, and more importantly, with respect to the nature of news disclosed in earnings announcements, I find that foreign media coverage increases the stock market reaction to bad news earnings announcements, while domestic media coverage increases the stock market reaction to good news earnings announcements. These findings are surprising because the results from pooled regressions support the foreign media information disadvantage hypothesis, while those from my investigation (i.e., that reactions are conditional on the type of earnings announcement) lend greater support to the foreign media independence hypothesis, indicating that the two hypotheses are not mutually exclusive.

To shed more light on the role played by foreign media in covering corporate bad news, subsequent cross-sectional analyses show that the relationship between foreign media coverage and stock market responses to negative earnings news is greater when foreign media outlets are located in countries with low economic, political, and cultural proximity to the US. This finding lends support to the argument that foreign media outlets are relatively more independent because they are less likely to have business connections with covered domestic firms. I also find that greater levels of foreign media coverage accelerate the incorporation of future earnings information into the current stock price when firms' future earnings are expected to be negative. Finally, I document a significant positive relationship between foreign

media coverage and foreign institutional ownership. This is because foreign institutional investors rely on information to foster better corporate governance practices in general as well as in firms' disclosure policies (Ferreira and Matos 2008; Aggarwal et al. 2011; Lel 2019; Tsang et al. 2019). To the extent that foreign media coverage reduces the information friction faced by foreign institutional investors, this finding suggests that attracting more foreign institutional investments is a channel through which foreign media coverage leads to improvements in the incorporation of negative earnings news in stock prices.

This study contributes to the extant literature in the following ways. First, the existing literature offers evidence that media outlets vary in terms of their professionalism, transmission media, and political connections. Each of these variables has a different implication for market participants (Drake et al. 2017; Blankespoor et al. 2018; You et al. 2018). I add to this strand of research by showing how the role of media coverage also varies with the media outlet's country of origin. Second, previous studies show that within the context of one country, media outlets with less geographical proximity to firms tend to be more objective and provide less positively biased coverage of those firms (Gurun and Butler 2012; Kim et al. 2019). This study extends this finding to a large number of media outlets beyond the national border. I show that foreign media, given their greater level of independence, appear to play a more effective role than domestic media in facilitating the incorporation of negative earnings news into stock prices. Unlike prior studies that predominantly focus on media outlets within a single country (Graf-Vlachy et al. 2020), the cross-country examination of foreign news media enables an examination of the heterogeneity of effects across many countries with a range of institutional characteristics, including their economic, political, and cultural proximity to the US.

1.5. Thesis Structure

The remainder of this thesis is structured as follows. Chapter 2 presents the first study, which investigates whether the reduced regulatory requirements initiated by Rule 12h-6 affects corporate innovation. Chapter 3 presents the second study, which examines whether and how hosting the Olympics Games affects the decisions of firms domiciled in the host country regarding the cross-listing of securities in foreign countries. Chapter 4 presents the third study, which explores the role of foreign media in the domestic capital market. Chapter 5 concludes the thesis.

Chapter 2. The Impact of Loosening Disclosure Requirements on Firm Innovation: Evidence from SEC Rule 12h-6

2.1. Introduction

It is widely believed that a country's institutional quality plays a critical role in shaping how firms finance their investment opportunities (e.g., Carlin and Mayer 2003; La Porta 1997, 2002; McLean et al. 2012). Firms in countries where legal systems provide inadequate protection for shareholders face higher cost of external financing, thereby constraining their abilities to invest in potentially profitable projects (Rajan and Zingales 1998; Shleifer and Wolfenzon 2002). To overcome this shortcoming of the institutional framework, an extensive literature has indicated cross-listing in the United States (US) as a complimentary solution, which allows foreign firms to bond themselves by leveraging the US capital market's superior investor protection regimes (e.g., Coffee 1999; Karolyi 2012; Stulz 1999).

When cross-listing on a US exchange, foreign firms must register their securities with the Securities and Exchange Commission (SEC) and commit to complying with US security regulations, including reporting and disclosure requirements. Requiring foreign firms to register with the SEC is intended to protect investors through detailed financial information disclosure. However, the SEC registration requirement for cross-listed firms on US exchanges has sparked a series of policy debates (e.g., Leuz et al. 2008; Nelson 2003; SEC 2006). The core issue lies in the complicated deregistration rules—that is, once a firm has registered with the SEC, it is almost impossible for it to deregister and terminate its reporting obligations, even if it decides to leave the US market. This, together with other significant US regulations, including the Sarbanes-Oxley (SOX) Act, has raised serious concern that cross-listing in the US is associated with excessive compliance costs,[1] which impedes the competitiveness of US

[1] For example, a report by McKinsey & Company shows that British Airways and Air France could save approximately 20 million USD each in annual service and compliance costs after being delisted from US exchanges. See 'Why Cross-listing Shared Doesn't Create Value', https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/why-cross-listing-sharesdoesnt-create-value

capital markets.[2] To address this concern, on March 21, 2007, the SEC passed the Exchange Act Rule 12h-6, which significantly amended the deregistration rules and made it considerably easier for cross-listed firms to terminate US disclosure and legal requirements. An emerging body of literature seeks to investigate the market valuation impact of Rule 12h-6. For example, Fernandes et al. (2010) find that the stock market reacted negatively to the announcement of Rule 12h-6. Ghosh and He (2017) find that Rule 12h-6 leads to reduced cross-listing benefits, including higher voting premium, fewer equity issuances, and lower firm value. Nevertheless, how Rule 12h-6 implementation affects firms' behaviors in the real economy (e.g., investment, use of resources, consumption) remains under-explored, and understanding this effect is important for evaluating the net benefit associated with this disclosure deregulation.

Our study speaks directly to the impact of Rule 12h-6 on the real economy by investigating how it affects corporate innovation, which is a key driving force of a country's overall economic growth and a firm's long-term competitive advantage (Porter 1992; Romer 1986; Solow 1957).[3] I posit that the implementation of Rule 12h-6 could diminish the benefit of using cross-listing as a means to overcome local firms' innovation constraints. Given the substantial cost involved, information asymmetry issue, and uncertain returns from innovation projects, financing investment for innovation presents a significant challenge for firms (Kerr and Nanada 2015; Scherer and Harhoff 2000). This challenge is more severe in countries with poor institutional quality, as stock markets in these countries are less developed and accessible (Brown et al. 2013). As such, cross-listing in the US enables local firms to tap a large pool of low-cost capital provided by foreign investors, especially more sophisticated ones (e.g.

[2] For example, see Remarks of Treasury Secretary Henry M. Paulson on the Competitiveness of the US Capital Markets at the Economic Club of New York (November 20, 2006), available at https://www.treasury.gov/press-center/press-releases/Pages/hp174.aspx; Interim Report of The Committee On Capital Markets Regulation (November 30, 2006), available at http://www.capmktsreg.org/research.html.

[3] A report by the Organization for Economic Co-operation and Development (2015) indicates that nearly half of a country's total gross domestic product (GDP) growth could be attributable to increases in innovation, including technological progress, investment in knowledge-based capital, and increased productivity growth, with the influence varying depending on the country's economic development.

institutional investors). This benefit of cross-listing can promote firm innovation in two ways. First, the tendency of US institutional investors to actively search and trade on information could improve firms' stock price informativeness, which facilitates the compounding of innovation-related information into stock price (Fernandes and Ferreira 2008; Foucault and Frésard 2012). This allows managers to obtain new information regarding their R&D investment from stock prices and identify more valuable R&D projects. Second, US institutional investors tend to implement strong corporate governance to safeguard their investments (Aggarwal et al. 2011), which can discipline managers' behaviors during the implementation of innovation projects. Thus, US cross-listing could therefore optimize managers' R&D capital allocation decisions.

The willingness of US institutional investors to supply capital relies heavily on the protection offered by the SEC. The new deregistration initiated by Rule 12h-6 has made it easier for foreign firms to escape the SEC oversight and regulatory requirements, which could increase the perceived information risk and monitoring costs faced by US institutional investors. Therefore, I predict that the benefit of using cross-listing as a means to increase foreign investment, and consequently firm innovation, would be diminished.

To test my hypothesis, I construct a large international sample comprising 16,782 unique non-US firms from 49 countries between 2002 and 2012, and use a difference-in-differences (DID) research design that provides the advantage of mitigating the endogeneity concern commonly found in the innovation literature. I therefore compare changes in cross-listed firms' innovation outputs in the post-Rule 12h-6 period relative to the pre-period with that of non-cross-listed firms. I find that, on average, cross-listed firms experience a significant reduction in innovation in the post-Rule 12h-6 period, compared with non-cross-listed domestic firms, suggesting that the implementation of Rule 12h-6 impedes innovation for cross-listed firms.

To test whether the parallel trend assumption underlying the DID approach holds, I perform a standard dynamic test, and find that cross-listed and non-cross-listed firms show similar trends in corporate innovation output prior to Rule 12h-6 implementation, thus validating the parallel trend assumption. My results are robust to a set of alternative measurements of firm innovation, such as the truncation-adjusted measures of innovation, innovation efficiency, and innovation inputs. I also employ a number of empirical strategies to further alleviate endogeneity concerns, including: (1) the use of a propensity score matched sample to increase the comparability between cross-listed and non-cross-listed firms; (2) the use of country × year fixed effects to fully absorb the heterogeneity in macroeconomic shocks at the country-level; and (3) the use of a different sampling method to account for concern about unbalanced sample composition across countries.

Next, I analyze the possible cross-sectional variations in the effect of Rule 12h-6 on firm innovation. At the firm level, I find that firms with greater financing needs are affected more by Rule 12h-6, as the negative effect of Rule 12h-6 on firm innovation is stronger for external financing dependent firms and for research and development (R&D)-intensive firms. At the country level, I find that Rule 12h-6 more strongly affects firms in countries that should have obtained more risk-sharing benefits from US cross-listing, as its negative effect on firm innovation is greater for firms in countries with low investor protection, low regulatory quality, and greater accounting differences from the US Generally Accepted Accounting Principles (GAAP).

Finally, I directly examine whether the reduction in the attractiveness of cross-listed firms for foreign investment is the underlying mechanism that drives the negative effect of Rule 12h-6 on cross-listed firms' innovation. My analysis lends support to this conjecture. I find that the negative effect of Rule 12h-6 on firm innovation is attenuated in countries with more liberalized stock markets, which tend to have less restrictions on foreign investors. Next,

I find a negative relation between US cross-listing and foreign institutional ownership in the post-Rule 12h-6 period. Further analysis reveals that this negative effect is only observed for foreign institutional investors who actively monitor and govern firm actions (i.e., independent foreign institutional investors).

My study contributes to the literature in several ways. First, I contribute to research on the consequences of the implementation of Rule 12h-6. Despite the regulatory importance of Rule 12h-6 to cross-listed firms and market participants, its effect is under-explored. The limited research focuses on the market valuation effects of Rule 12h-6 and reports that it has led to a steep reduction in firm value for US cross-listed firms, in both the short term (e.g., Fernandes et al. 2010) and long term (Ghosh and He 2017). I extend this line of research by providing further evidence that this deregulation hinders firm innovation. Thus, my study identifies firm innovation as an important channel through which Rule 12h-6 affects firm value.

Second, I contribute to the literature on the benefits of US cross-listing. While prior research documents that US cross-listing is associated with various benefits, including greater firm liquidity, lower cost of capital, and improved information environment (Foerster and Karolyi 1998; Lang et al. 2003; Stulz 1999), its effect on corporate investment decisions is relatively under-researched (Abed and Abdallah 2019). Adding to this stream of literature, my study offers new insights regarding whether and how cross-listing affects firm innovation. my findings suggest that cross-listing in the market with more stringent regulatory requirements can significantly foster innovation activities.

Third, I contribute to the literature related to the determinants of cross-border institutional investment. Despite the fact that US institutional investors represent an increasingly important part of the international capital market (Aggarwal et al. 2011; Tsang et al. 2019), cross-listed firms in the US market struggle to attract US institutional investors; therefore, it is necessary

to understand which institutional features can affect the supply of cross-border capital (He et al. 2021; Liao et al. 2021). My finding that easier deregistration of cross-listed firms initiated by Rule 12h-6 has a negative effect on US institutional ownership of these firms suggests that institutional investors place higher value on more stringent regulatory requirements and regulatory oversight when supplying capital to cross-listed firms.

More broadly, the findings herein also contribute to the literature related to the impact of financial reporting on firm innovation. Recent studies note that the extent to which the provision of information to external parties affect firms 'innovation activities. For example, using the enactment of the American Inventor's Protection Act (AIPA) as an exogenous shock to firms' disclosure of patent information, Kim and Valentine (2021) find that, following the enactment of the law, disclosing firms become less innovative while their competitors engage more innovative activities. This is consistent with the notion that detailed information disclosure impose proprietary costs on disclosing firms and hinder their innovation. In addition, Fu et al (2020) find that higher financial reporting frequency could induce managerial myopia and in turn hinders corporate innovation. Moreover, Huang et al.(2021) find that firms' face greater information demand following successful innovation activities, and as a response, they tend to provide more voluntary disclosure to reduce the uncertainty in predicting whether to what extent innovations can generate future cash flows for the firm. Different from abovementioned studies that focus the interplay between the actual information disclosure and innovation outcomes, my finding suggests that investors' perception about firms' information transparency is also an important determinant of firm-level innovation.

Finally, previous studies suggest that stock market liberalization increases productivity growth, and that technological innovation is a major mechanism that drives this positive effect (e.g., Bekaert et al. 2011; Moshirian et al. 2021). In this sense, firms in countries without liberalized stock markets would consider US cross-listing a crucial instrument to fund their

innovation investments and support their growth. However, as suggested by my evidence, this benefit of using US cross-listing to support firm growth is subsided by the implementation of Rule 12h-6, which should alert SEC regulators in the design of the regulation/deregulation.

The next section details the background of Exchange Act Rule 12h-6. I review the related literature and develop my hypothesis in Section 3. In Sections 4 and 5, I describe my research design and sampling procedure, respectively. I present the results of my empirical analysis in Sections 6 and 7. Section 8 concludes my study.

2.2. Background of Rule 12h-6

In this section, I provide a detailed background on the Exchange Act Rule 12h-6 enacted by the SEC on June 4, 2007. The rule considerably amended the previous conditions that a foreign firm in the US must satisfy to terminate the registration of its equity securities and related filing obligations required by the Securities and Exchange Act of 1934. Under Section 12(b) of the 1934 Exchange Act, a foreign private issuer (FPI) was subject to SEC registration if the FPI listed a class of equity securities on a US major exchange, such as the American Stock Exchange, New York Stock Exchange, and NASDAQ Stock Market. While the SEC registration process appeared to be a relatively straightforward process, deregistration was much more complicated.

Prior to the passage of Rule 12h-6, a FPI who wished to deregister its securities had to meet the following conditions if: (1) the FPI's security was held by fewer than 300 US record holders or (2) the security was held by fewer than 500 US record holders around the world for FPIs with assets below US$10 million. The difficulty of the deregistration process arose from the counting method of US record holders, which required firms to view the record ownership of brokers, banks, and other nominees around the world, and count the number of individual accounts of US customers to quantify US record holders. As a result, many FPIs found it

difficult, if not impossible, to deregister, even when their US holdings I re relatively small (Greene and Underhill 2007). It is worth noting that it is the *deregistration*, not *delisting*, that exempts FPIs from the Exchange Act reporting obligations. Under the former rules, if FPIs chose to delist from the US exchanges without deregistration, they would still need to comply with the SEC reporting requirements, including the provisions of the SOX Act, which represented a significant cost faced by cross-listed firms. Moreover, even if the FPI met the deregistration condition, it could only suspend, rather than terminate, its reporting obligations, and the reporting exemption criteria had to be assessed repeatedly on an annual basis.

In an attempt to ease the regulatory burden associated with the deregistration process, the SEC enacted Exchange Act Rule 12h-6, which simplifies the deregistration rules for FPIs by using an new standard based on a comparison between the FPI's average daily trading volume in the US and that in the FPI's primary trading market. Specifically, an FPI can terminate its reporting obligations if its average daily trading volume in the US does not exceed 5% of its worldwide average daily trading volume, and this rule applies regardless of the FPI's number of US record holders or asset values. Under the trading volume rule, the FPI must: (1) meet the trading volume standard at the time of delisting from the US stock exchange or (2) wait for 12 months after delisting to compute the benchmark of trading volume. Given that delisting from the US exchange will mechanically reduce a FPI's trading volume in the US, the new rule has essentially allowed cross-listed firms to deregister and avoid the Exchange Act reporting obligations by simply delisting and waiting for 12 months to compute the benchmark of trading volume that would make the firm eligible for the rule.

In addition, the new rule offers an alternative to the trading value rule—that is, a FPI can also deregister when its securities are held by fewer than 300 US record holders. Under the new rule, the FPI does not need to examine record ownership around the world; instead, the FPI can limit its search to accounts located in the US and its home country of incorporation.

The new rule also lists a number of additional conditions that an FPI must satisfy to ensure that US investors are given appropriate information before deregistering. First, the FPI must have been an Exchange Act reporting entity for at least one year, must have filed and submitted all reports required for the period, and must have filed at least one annual report. Second, the FPI must not have sold securities in the US during the 12 months prior to deregistration. Third, the FPI must have maintained a listing for at least one year in its primary trading market prior to the deregistration.

2.3. Related Literature and Hypothesis Development

It is well understood that technological innovation is a key driver of a country's economic development and helps firms strengthen their long-term competitive position (Porter 1992; Romer 1986; Solow 1957). While innovation is indeed crucial, financing innovation projects tend to be difficult, which is due to the fact that innovation is a long process that involves substantial uncertainty and a high probability of failure (Kerr and Nanada 2015; Scherer and Harhoff 2000). This risky nature of innovation makes public equity markets a particularly suitable mechanism in financing innovation projects, as equity investors share upside returns, require no collateral value from their investments, and facilitate information production (Archarya and Xu 2017; Rajan 1998). Accordingly, the public equity market forms a relatively large pool of low-cost capital for firms to access, and provides information to managers in evaluating innovation projects. However, in countries where shareholder rights are poorly protected, the stock market tends to be relatively small, less accessible, and under-developed (e.g., Giannetti and Koskinen 2010; LaPorta et al 1997; Shleifer and Wolfenzon 2002), which undermines the ability of stock markets to promote firm innovation (Brown et al. 2013; Hsu et al. 2014).

One way to fill this institutional void is to cross-list a firm's share to a foreign market that offers a better institutional environment (e.g., the US). By doing so, firms expand their investor bases and provide access to sophisticated investors (mainly institutional investors) located in the host country who are unable to trade in the firm's domestic market.[4] This can benefit firm innovation in two ways. First, institutional investors are better informed, as they are more able to gather and process information because of their superior investment experience (Chen et al. 2017). The active searching and trading on information can improve firms' stock price informativeness, which facilitates the compounding of R&D-related information into stock price (Fernandes and Ferreira 2008; Foucault and Frésard 2012). This allows managers to obtain new information regarding their R&D investment from stock prices and identify more valuable R&D projects. Second, foreign institutional investors, especially those from the US, tend to implement strong corporate governance to safeguard their investments (Aggarwal et al. 2011). The increased monitoring can discipline managers' behaviors during the implementation of innovation projects. Supporting this notion, previous studies have shown that U.S. cross-listing is associated with capital market benefits, including lower costs of capital (Hail and Leuz 2009), reduced financial constraints (Huang et al. 2013) and higher firm value (Doidge et al. 2004). Given that firm innovation is affected by the development of financial markets and the access to equity markets (Hsu et al. 2014; Acharya and Xu 2017), the capital market benefits of U.S. cross-listing can promote firm innovation, as they optimize managers' R&D capital allocation decisions.

The underlying theory regarding how these benefits are achieved notes that US equity cross-listing acts as a bonding mechanism that signals a firm's commitment to a more vigorous regulatory regime (Coffee 2002). Nevertheless, the monitoring capacity of foreign institutional

[4] Supporting this view, previous studies find that US equity cross-listing increases a firm's foreign investor recognition and attracts more foreign investments (Foerster and Karolyi 1999; King and Segal 2009).

investors tends to be constrained by the information frictions they face, because they tend to be less familiar with the cross-listed firm and its industry and economic conditions than with their counterparts in the firm's home country (Brennan and Cao 1997).[5] Thus, high-quality public disclosure is important to mitigate this information friction and enable foreign institutional investors to better perform their monitoring roles (Bird and Karolyi 2016; Tsang et al. 2019). In this regard, SEC registration becomes vital, as it requires foreign firms to meet the US stringent disclosure rules and subject themselves to the related regulatory burden. Prior to the passage of Rule 12h-6, the obligation to comply with SEC reporting requirements still largely applied to non-US firms, even when they decided to delist from the US exchange, yet continued to be publicly traded in their home stock exchanges (Fernandes et al. 2008). This ongoing oversight provided by the SEC thus offered US investors an extra layer of protection in addition to cross-listed firms' home institutions, which was intended to reduce US investors' monitoring costs and increase their confidence in owning cross-listed securities.

Conversely, following the implementation of Rule 12h-6, the new deregistration amendment has made it easier for foreign firms to escape SEC monitoring and terminate their US disclosure and regulatory requirements. This may decrease foreign firms' commitment to US disclosure regulations and legal provisions, and could in turn increase the perceived information risk and monitoring costs faced by US institutional investors.[6] Therefore, after the implementation of Rule 12h-6, US investors may be less eager to invest in cross-listed firms, and the aforementioned benefit of using cross-listing to promote firm innovation may be diminished. Based on these discussions, I state my formal hypothesis as follows:

[5] These frictions include high information acquisition and processing costs, uncertainty about reporting quality, and greater regional complexity (Beneish and Yohn 2008).
[6] It is important to note that this study focus on how Rule 12h-6 investors' perception about cross-listed firms' information disclosure rather than the actual disclosure

Hypothesis 1*. The implementation of Rule 12h-6, which eases the SEC deregistration requirements, reduces cross-listed firms' innovation outputs.*

However, H1 may not be supported, at least for the following reasons. First, previous studies question the strength of SEC regulatory enforcement toward US listed foreign firms. For example, Siegel (2005) finds that the SEC imposes much less meaningful sanctions against cross-listed foreign firms with material violations because the institutional difference across countries hinders US regulators' enforcement efficiency. Similarly, previous studies (e.g., Boone et al. 2021; Naugton et al. 2018) show that SEC regulators exhibit lower monitoring intensity when it comes to reporting requirements, as they have to defer their regulatory duties partially to foreign firms' home regulators or exchanges. Moreover, previous studies show that institutional investors are better informed and have more resources, which allows them to exploit private information to execute probable trades (Ali et al. 2004; Bushee and Goodman 2019; Ke and Petroni 2004). This means that institutional investors may rely more on private, rather than public, information. Supporting this view, a survey conducted by Brown et al. (2015) finds that many sophisticated investors view mandatory audit as less important when evaluating firms' earnings quality. Lastly, However, if the effects of U.S. cross-listing on firm innovation is mainly driven by the multi-market trading (i.e. broadened investors' base), the eased regulatory requirement will encourage more firms to cross-list in U.S. and will have no direct effect on existing cross-listed firms' innovation. Therefore, whether cross-listed firms can easily opt out of US reporting requirements may be less relevant to US institutional investors' decisions, and, in turn, may not affect cross-listed firms' innovation outputs.

2.4. Research Design

To empirically examine the effect of Rule 12h-6 on cross-listed firms' innovation, I employ a DID design and estimate the following regression using panel data with firm-year observations (where the subscripts *i*, *j*, and *t* denote firm, country, and year, respectively):

$$INNOVATION_{ijt+2} = \beta_0 + \beta_1 POST_{ijt} + \beta_2 TREAT_{ijt} + \beta_3 POST_{ijt} \times TREAT_{ijt} + CONTROLS_{ijt} + FirmFE + YearFE + \mathcal{E}_{ijt} \quad (1)$$

Following previous studies (e.g., He and Tian 2013; Tsang et al. 2021; Zhong 2018), I use two output-based measures—the total number of patent applications eventually granted (*PATENT*) and the number of patent citations received (*CITATION*)—to capture the quantity and quality of firms' innovation output, respectively. Given that innovation measures are right-skewed, I use the natural logarithm of one plus these two variables in the regression analyses. In addition, to account for the long-term nature of patenting activities, I estimate the innovation variables in year $t + 2$.[7]

We identify treatment firms based on their cross-listing status, which is measured by an indicator variable, *TREAT*, which equals one if a non-US firm has at least one secondary security actively listed and traded in a US stock exchange, and zero otherwise. *POST* is an indicator variable that equals one for observations since 2007 (i.e., the effective year of Rule 12h-6), and zero otherwise. The variable of interest is the interaction term *POST* × *TREAT*, which is the DID estimator that captures the incremental change (from pre- to post-Rule 12h-6 period) in innovation of cross-listed firms relative to that of non-cross-listed firms.

We also include a set of firm-, industry-, and country-level variables in my model to control for other known factors that could concurrently affect firm-level innovation outcomes,

[7] My inference remains unchanged when I use alternative lead periods in computing innovation variables (i.e., year $t + 1$ or year $t + 3$).

following existing studies (e.g., Dai et al. 2021; Faleye et al. 2011; Luong et al. 2017; Zhong 2018). Specifically, I control for firm size (*SIZE*), which is computed as the natural logarithm of total assets in millions; R&D intensity (*R/D*), which is defined as R&D expenditures divided by total assets;[8] the cash holding level (*CASH*), measured by the cash amount divided by total assets; firm performance (*ROA*), measured by returns on assets; sales growth (*SGROWTH*), measured by the annual change in net sales divided by total assets; firm leverage (*LEV*), which is the ratio between total liabilities and total assets; percentage of foreign sales (*FSALES*); percentage of closely held shares (*CLOSE*); percentage of shares held by institutional investors (*IO*); firm value proxied by Tobin's *q* (*TOBINQ*); access to external financing (*EFINANCE*), measured as the sum of the firm's net equity issues scaled by total assets over a rolling five-year window; capital expenditures scaled by total sales (*CAPEX*); net value of property, plant, and equipment scaled by total assets (*PPE*); firm age (*AGE*), measured as the natural log of the number of years a firm has been listed in Worldscope; level of product market competition (*HHI*), measured by the Herfindahl–Hirschman Index; squared term of *HHI* (HHI^2); and GDP per capita of the firm's home country (*GDP*). Finally, I include year and firm fixed effects to account for intertemporal variations in innovation and firm fixed effects to control for unobservable firm characteristics that are time-invariant. I estimate all of the regressions with standard errors clustered at the firm-level.[9]

2.5. Data and Sample Selection

I start my sample construction by first collecting data related to US cross-listings for all firms from the Capital IQ Compustat database in the period between 2002 and 2012. Rule 12h-6 took effect in 2007; thus, I start my sample period in 2002 (five years prior to implementation

[8] My results remain consistent if I do not control for R&D intensity.
[9] To address the concern that there are likely correlations between firms in the same industry, country, or year, I repeat my regression tests using alternative clustering methods, including clustering by firm and industry, firm and year, and firm and country. I find that my results are not sensitive to varying the clustering methods.

of the rule) and end it in 2012 (five years after implementation of the rule) to provide a relatively balanced comparison between the pre- and post-Rule 12h-6 periods. Starting the sample period in 2002 also helps isolate the effect of Rule 12h-6 from the other major regulatory event, the enactment of SOX, which has been found to affect firms' cross-listing activities and innovation outcomes (e.g., Gao and Zhang 2019; Litvak 2007; Piotroski and Srinivasan 2008). Following previous studies (e.g., Chen et al. 2015; Liao et al. 2021), I use a firm's primary stock exchange listing country as its home country, and define a firm-year as cross-listed if a non-US firm has at least one secondary security listed and traded in the US.[10] Further, I retain exchange listing and remove securities listed over the counter (OTC), such as pink sheets and OTC bulletin boards, because OTC firms are exempt from most SEC registration requirements and thus unlikely to be affected by Rule 12h-6 (Fernandes et al. 2010).

Next, I collect data on innovation variables from the Bureau Van Dijk's (BvD) Orbis patent database, which covers patent applications around the world and is sourced from more than 40 patent authorities. Compared with other databases commonly used in innovation studies, such as the National Bureau of Economic Research (NBER) patent database and Harvard Patent Network Database (HPND), BvD Orbis provides a wider coverage of firms' patent applications worldwide and tracks them for a longer period.[11] When computing the patent-related measures, I use a patent's application year, rather than the year that it was granted, because the former is more likely to capture the actual timing of innovation (Griliches et al. 1986; Hall et al. 2001). In addition, I only include the first successful patent applications if the patent owner filed the application to multiple patent offices in order to avoid double-counting the patent number.[12] I then calculate for each firm the total number of granted patents and total

[10] My inference remains unchanged if I alternatively define a firm's home country as the country where it is incorporated.
[11] In comparison, the NBER and HPND patent databases are sourced solely from the US Patent and Trademark Office. HPND (NBER) only provides coverage up to 2010 (2006).
[12] My inference remains unchanged if I include all the successful patent applications for a patent.

number of patent citations in a year, and assign a value of zero to *PATENT* (*CITATION*) for all firm-year observations that do not have patent (citation) information in the BvD Orbis patent database. Next, I obtain accounting and financial data from the Worldscope database and country-level data from the World Bank's official website. I then remove firms from financial and utility industries (SIC codes 4900 to 4999 and 6000 to 6999), as they are highly regulated. I also require observations to have an asset size of more than $100 million to increase the comparability of firms across countries, following Ghosh and He (2017). Finally, I merge all datasets and remove observations with missing data on control variables. My final sample consists of 107,402 firm-year observations for 16,782 unique firms from 49 countries.

Table 2.1 provides an overview of the sample distribution. Panels A and B report the number of US exchange cross-listed firm years and average innovation output by country and year, respectively. Panel A shows that firms from China and Japan account for a relatively large proportion of my sample, which is consistent with Ghosh and He (2017). To ensure that my results are not affected by this clustering of firms from the two countries, in a later robustness test, I exclude firms from the two countries from my analysis, and my inference remains unchanged. Moreover, Japan, Canada, and the United Kingdom (UK) have a higher number of exchange cross-listed firms relative to others. I also observe a large variation in corporate innovation output across countries, with Japan and South Korea being the two countries with the highest rate of innovation output. I control for the influence of country fixed effects on firm innovation by including firm fixed effects in all my regression models. The yearly distribution in Panel B shows that the number of US exchange cross-listed firms increased after 2007, suggesting that US exchanges attracted more foreign listing activities after Rule 12h-6 was enacted. Meanwhile, I also observe a decreasing trend in the number of

patents applied and successfully granted in a later sample period.[13] This may reflect the time lag between a patent's application year and patent application's actual grant year (e.g., Fang et al. 2014), which justifies the use of truncation-adjusted measures of innovation output described in a later analysis.

[Table 2.1 Here]

Table 2.2 provides descriptive statistics of the variables used in the main analyses. To reduce the effect of outliers, I winsorize all the continuous variables at the top and bottom one percentile. The average total number of patent applications that are eventually granted for a firm in a given year is 18.662 (79.819) and the average total number of citations received by each firm-year is 13.524 (96.590) for the full sample (patent/citation sample). On average, 3.8% of my sample firms cross-list their equities in US exchanges, which is comparable with that reported in previous studies (e.g., Ball et al. 2018; Ghosh and He 2017).

[Table 2.2 Here]

2.6. Results and Analysis

Table 2.3 reports the results of testing my hypothesis. Columns 1 and 2 show the estimated effect of Rule12h-6 from the baseline regressions that only control for year and firm fixed effects. The dependent variable is innovation output, measured by *PATENT* and *CITATION*, respectively. The coefficients for *TREAT* are positive (0.063 for the patent model; 0.100 for the citation model) and significant at the 1% level, indicating that cross-listed firms are associated with more innovation outputs than are non-cross-listed firms. The coefficient of my test variable, *POST* × *TREAT*, is negative (-0.067 for the patent model; -0.095 for the citation model) and significant across the two models, suggesting that the difference in

[13] I also observe that several countries have zero patents or zero citations, yet include them for the completeness of my dataset. My results are unaffected when removing these countries from my sample.

innovation output between cross-listed and non-cross-listed firms substantially reduced and barely existed after Rule 12h-6. I find consistent results when adding all the control variables to my regression model, which is reported in Columns 3 and 4. The results of the control variables are generally consistent with those reported by other studies in the innovation literature. Specifically, I find that firm size, insider ownership, institutional ownership, firm value, firm age, and GDP per capita are positively associated with firm innovation, which is consistent with previous studies (e.g., Aghion et al. 2013; Dai et al. 2021; Zhong 2018). In addition, I find that my sample firms with greater financing constraints tend to generate more innovation outputs, as the cash holding and external financing are negatively associated with innovation output, while firm leverage is positively associated with firm innovation. Given that my sample firms are relatively large in size, this finding is consistent with Almeida et al. (2021), who find that additional financial slack for finically unconstrained firms would impede innovation.

[Table 2.3 Here]

In support of a casual interpretation of my main finding, I next examine the dynamic effect of Rule 12h-6 to ensure there is no significant difference in innovation between cross-listed and non-cross-listed firms in the pre-implementation period—a key assumption underlying the DID design. In doing so, I define five indicators, *YEAR_-2*, *YEAR_-1*, *YEAR_0*, *YEAR_1*, and *YEAR_2+*, which indicate two years prior to the implementation, one year prior to the implementation, the effective year, one year after the implementation, and two or more years after the implementation, respectively. I then replace *POST* in Eq. (1) with these indicators and interact them respectively with *TREAT*. The results are reported in Table 2.4. I find that the coefficients for *YEAR_-2* × *TREAT* and *YEAR_-1* × *TREAT* are indistinguishable from zero, indicating that there is no pre-existing trend in innovation prior to the implementation of Rule 12h-6. The significantly negative effect of Rule 12h-6 on cross-listed

firms' innovation appears only after the rule, which supports the validity of the parallel trend assumption.

[Table 2.4 Here]

We next conduct an array of tests using alternative measurements of firm innovation to ensure the robustness of my main finding. First, the truncation problem is the main concern in empirical studies using patent- or citation-related variables. Previous studies suggest that there exists an approximate two-year lag between a patent's application year and grant year (He and Tian 2013; Zhong 2018). This means that I would likely observe a gradual decrease in patent number as I approach the later years in my sample period, because only the granted patent would appear in the database. Similarly, as a patent can receive citations over a long period, patents granted in the last few years are likely to receive fewer citations. The yearly distribution of the average number of patents and citations (reported in Table 1) shows a decreasing trend, which seems to validate the truncation concern. Therefore, following previous studies (e.g., Fang et al. 2014; Hall et al. 2005), I make a truncation adjustment for the number of patents and citations. I first compute an application-grant lag distribution function for patents filed and granted during the first half of my sample period (2002 to 2007) and then adjust the number of patents and citations in the other half of my sample period (2008 to 2012). The truncation-adjusted patent (citation) is computed as:

$$PATENT\_adj\ (CITATION\_adj) = \frac{PATENT\_raw(CITATION\_raw)}{\sum_{s=0}^{2012-t} W_s}$$

where *PATENT_raw* (*CITATION_raw*) is the raw number of patents (citations) in year *t* and $2008 \leq t \leq 2012$. Columns 1 and 2 of Table 2.5 present the results using these truncation-adjusted measures as the dependent variable, and show that the coefficient of *POST* × *TREAT* continues to be significantly negative, which is consistent with my main finding.

[Table 2.5 Here]

Second, following previous studies (e.g., Hirshleifer et al. 2013), I use another set of alternative measurements of firm innovation. Based on the premise that successful patent applications filed in year *t* are the outcome of R&D investment over the preceding five years (Lev et al. 2005), I use the number of patents scaled by R&D capital (*PATENT_eff*) and the number of forward citations received by the patents applied scaled by R&D capital (*CITATION_eff*) as two alternative measures of firm innovation.[14] Consistent with my main analysis, I use the log-transformed values of the two variables in the regression analysis to correct the skewness of their distributions. The results are reported in Columns 3 and 4 of Table 2.5. The coefficient of *POST* × *TREAT* is still significantly negative on both models. Third, although my study relies on output measures of innovation, I also examine whether the implementation of Rule 12h-6 affect firms' innovation input. Following previous studies (e.g., Zhong 2018), I use R&D intensity to capture innovation input. Column 5 of Table 2.5 reports the results, and again shows a negative and significant coefficient of *POST* × *TREAT*.

In the next section, I perform a set of tests to mitigate the endogeneity concern. A firm's decision to cross-list is likely to be endogenous; thus, it could potentially introduce self-selection bias due to both observable and unobservable factors. I include the firm fixed effects in my regression model to control for time-invariant unobservable firm characteristics; however, self-selection due to observable characteristics remains a concern. To mitigate this concern, I re-estimate my main regression using a propensity score matched sample. I match each cross-listed firm with a non-cross-listed firm from the same country on all firm-level controls used in Eq. (1). To increase the comparability between the two groups, I apply the

[14] Following Lev et al. (2005), *RDC* is calculated as $RDEXP_t + 0.8 * RDEXP_{t-1} + 0.6 * RDEXP_{t-2} + 0.4 * RDEXP_{t-3} + 0.2 * RDEXP_{t-4}$. I set missing R&D expenditure (*RDEXP*) to zero in computing *RDC*, and replace zero *RDC* with the country-industry-year average. Given that *RDC* is the denominator of the dependent variable in this case, I remove the R&D variable from the controls to reduce concern of mechanical correlation.

nearest-neighbor matching technique with no replacement. This method also helps control for changes in the composition of sample firms prior to and after the implementation of Rule 12h-6. Columns 1 and 2 of Table 2.6 report the results, and again indicate that my inference remains unchanged.

[Table 2.6 Here]

We also assess whether my main finding is robust to omitted variable concern at the country level. Although the inclusion of firm fixed effects accounts for the effect of time-invariant country-level characteristics on firm innovation, country-level time-varying factors, such as local economic conditions, could still threaten my main finding. To mitigate this concern, I augment my regression models with *Country* × *Year* fixed effects. Again, I continue to observe a significant and negative coefficient for my test variables (Columns 3 and 4 of Table 2.6).

Finally, the unbalanced sample size across countries represents an issue in international studies, especially when a small number of countries contributes a large proportion of the sample, which could lead to biased results if these countries' common characteristics have a strong effect in a pooled regression model. To mitigate this concern, I repeat my analysis after excluding countries with a relatively large number of observations (Japan, China, South Korea, and the UK).[15] The results (reported in Columns 5 and 6 of Table 2.6) indicate that the coefficient of *POST* × *TREAT* remains significantly negative. In addition, to control for possible bias in the results because of the difference in firm composition between the pre- and post-Rule 12h-6 periods, I repeat my analysis by restricting the sample to firms that have observations in all the sample years, and find my results remain qualitatively unchanged.

[15] The results are also consistent when I exclude observations from these countries each separately.

2.7. Additional Analysis

Having documented a robust negative effect of Rule 12h-6 on cross-listed firms' innovation output, I conduct a number of tests to explore the cross-sectional variation in the effect of Rule 12h-6, and probe the plausible economic channel that could explain my main finding. These tests are designed based on existing theories about the potential benefits of cross-listing for firm innovation, and the way in which the easier deregistration process initiated by Rule 12h-6 could reduce these benefits.

2.7.1. Firm-level Cross-sectional Tests

Prior research suggests that access to capital in the foreign market is the primary motivation for firms to cross-list (e.g., Alexander et al. 1987; Karolyi 2012; Miller 1999), especially for firms with greater external financing needs (Lins et al. 2005). The external capital acquired via cross-listing could enable firms to fund more innovation projects, which are a long-term process that tends to exhaust firms' internal capital. If the commitment to US regulations was reduced following the implementation of Rule 12h-6, the benefit of using cross-listing as a mechanism to facilitate funding needs of innovation projects would be diminished, thereby reducing innovation outputs. If this is the case, I expect the negative effect of Rule 12h-6 on cross-listed firms' innovation to be more pronounced for those with greater external financing needs.

To test this conjecture, I use two measures of a firm's need for external financing. First, I classify firms into external or internal financing dependent based on the degree of need for external financing at the industry level, following previous studies (e.g., Acharya and Xu 2017; Rajan and Zingales 1998). Specifically, I create a new indicator variable, *EFD*, which equals one if the firm operates in an industry with a positive value for the external finance dependence

measure, and zero otherwise.[16] Second, I use a firm's R&D intensity to measure its financing needs, given that R&D-intensive firms typically require higher external finance to fund their high investment demands (Brown et al. 2013; Martinsson 2010). I define a variable, *RDINTENSE*, that equals one if the firm's average R&D expenditure is above its industry average level in a given country, and zero otherwise. I then interact these two variables with *POST* × *TREAT*, respectively. The results (reported in Table 2.7) show that the coefficients for *POST* × *TREAT* × *EFD* and *POST* × *TREAT* × *RDINTENSE* are negative and significant across all models, suggesting that firms with greater external financing needs are affected more by Rule 12h-6.

[Table 2.7 Here]

2.7.2. Country-level Cross-sectional Tests

The existing literature suggests that country-level institutions play a significant role in firms' innovation activities (He and Tian 2020). Consistent with this view, previous studies find that countries with better shareholder protection and regulatory quality result in a larger domestic investor base (Brown et al. 2013; Houston et al. 2018; Wang et al. 2021). Therefore, risk diversification could be better achieved in the domestic investor community, which lowers cost of capital and boosts additional investments, including innovation projects. In contrast, firms from countries with lower investor protection and regulatory quality may seek risk-sharing between domestic and foreign investors through cross-listings (Abdallah and Goergen 2008; Reese and I isbach 2002). Likewise, the risk-sharing benefit of cross-listing is expected to be greater for firms in countries with greater accounting differences from US GAAP because the difference in accounting regimes represents a major challenge for investors to hold foreign

[16] I first measure a firm's external financing needs in a year as the proportion of capital expenditures that is not financed through cash flow from operations. I use the median value of the external financing needs of all firms in a two-digit SIC industry in a country to construct a country-specific industry-level external financing dependence measure.

equities (Bradshaw et al. 2004; Chen et al. 2015). Cross-listing can reduce this informational difference and allow firms to attract more foreign capitals. Therefore, if investors view that the easier process of opting out of the stringent US legal environment and reporting system is a negative event, they would be reluctant to hold equities from these cross-listed firms in countries with lower investor protection, lower regulatory quality, and greater accounting differences. Therefore, cross-listed firms from these countries are expected to be affected more by Rule 12h-6.

In addition, the level of stock market liberalization is a critical government decision to relax restrictions on foreign investors and allow them to enter domestic equity markets directly (e.g., Bekaert et al. 2011; Moshirian et al. 2021), thereby reducing the need for domestic firms to use cross-listing as a vehicle for attracting foreign investors. Accordingly, if Rule 12h-6 reduces the attractiveness of cross-listed firms and thereby discourages foreign investments, I expect the negative effect of Rule 12h-6 to be less pronounced for firms in countries with more liberalized stock markets. Following previous studies (e.g., Bae et al. 2008; Djankov et al. 2008; Iwanow and Kirkpatrick 2007), I use the anti-self-dealing index developed by Djankov et al. (2008) to measure the level of investor protection, regulatory quality index obtained from the World Bank's 'Doing Business' initiative to measure the country-level regulatory quality, and accounting differences across countries constructed by Bae et al. (2008) to measure the country-level differences in accounting standards. I also obtain data on stock market liberalization from Bekaert et al. (2005).

We then construct four indicator variables—*LOW_INV, LOW_REG* , *HIGH_ACCDIF*, and *LIBMARKET*—and interact each of them with *POST* × *TREAT*, respectively. *LOW_INV* (*LOW_REG*) is an indicator variable that equals one if the firm is in a country whose anti-self-dealing index (regulatory quality index) is below the sample average, and zero otherwise. *HIGH_ACCDIF* is an indicator variable that equals one if the firm is in a country whose

accounting differences from the US GAAP are above the sample average, and zero otherwise. *LIBMARKET* is an indicator variable that equals one for firms in countries that experienced a major equity market liberalization before the implementation of Rule 12h-6, and zero otherwise. The results are reported in Table 2.8, which shows that the coefficients for *POST* × *TREAT* × *LOW_INV*, *POST* × *TREAT* × *LOW_REG*, and *POST* × *TREAT* × *HIGH_ACCDIF* are all negative and significant. These results suggest that the negative effect of Rule 12h-6 on firm innovation is more pronounced for firms from countries that could have enjoyed greater risk-sharing benefits through US equity cross-listings. I also find a positive and significant coefficient of *POST* × *TREAT* × *LIBMARKET*, suggesting that the negative effect of Rule 12h-6 on cross-listed firms' innovation is attenuated by liberalized local stock markets.

[Table 2.8 Here]

2.7.3. Channel

We next examine the channel through which Rule 12h-6 affects firm innovation. I do so by performing two sets of tests. First, I examine the effect of Rule 12h-6 on sensitivity of R&D to price. As stated in Section 3, the implementation of Rule 12h-6 could diminish the benefit of more informative stock price resulted from US cross-listing, which would make managers less able to extract new information about their R&D projects and induce them to select R&D investments that are less aligned with firm fundamentals. If this is the case, then I should expect a lower sensitivity of R&D investment to stock price after the implementation of Rule 12h-6. To test this, I specify the following model:

$$R/D_{ijt+1} = \beta_0 + \beta_1 POST_{ijt} + \beta_2 TREAT_{ijt} + \beta_3 TOBINQ_{ijt} + \beta_3 POST_{ijt} \times TREAT_{ijt} + \beta_3 POST_{ijt} \times TOBINQ_{ijt} + \beta_3 TREAT_{ijt} \times TOBINQ_{ijt} + \beta_3 POST_{ijt} \times TREAT_{ijt} \times TOBINQ_{ijt} + CONTROLS_{ijt} + FirmFE + YearFE + \mathcal{E}_{ijt} \quad (2)$$

The three-way interaction term *POST* × *TREAT* × *TOBINQ* captures the change in R&D investment − price sensitivity in the post-Rule 12h-6 period. The results are reported in Table 2.9, Panel A, and consistent with my expectation: the coefficient of *POST* × *TREAT* × *TOBINQ* is negative and significant, suggesting a lower R&D − price sensitivity after implementing Rule 12h-6.

[Table 2.9 Here]

In the second set of tests, I directly examine whether the implementation of Rule 12h-6 reduces foreign institutional ownership. Foreign institutional investors have been shown to promote long-term investments in innovation projects by providing intensive monitoring over firm policies and improving corporate governance of firms (e.g., Bena et al. 2017; Luong et al. 2017). In this light, if holding cross-listed securities is of less interest to foreign investors after the implementation of Rule 12h-6, I would expect a decrease in cross-listed firms' foreign institutional holdings, which in turn should reduce monitoring from foreign institutional investors, thereby decreasing firm innovation. To perform this analysis, I use a measure of residual foreign institutional ownership in a similar manner to LaFond and Roychowdhury (2008) and Ramalingegowda and Yu (2012), given that institutional ownership tends to be endogenously determined by firm characteristics (Gompers and Metrick 2001).

Specifically, I regress the sum of a firm's shares owned by foreign institutions as a percentage of the firm's total number of shares outstanding on lagged firm-level variables specified in Eq. (1), and then extract the regression residuals as my measure of foreign institutional ownership (*RFIO*). The results are reported in Column 1, Panel B, of Table 2.9. I find that the coefficient of *TREAT* (*POST* × *TREAT*) is positive (negative) and significant, suggesting that cross-listed firms are associated with higher foreign institutional ownership than are non-cross-listed firms; however, this positive relation is attenuated following the

implementation of Rule 12h-6. In addition, as the registration/deregistration process is intended protect US investors' interests, I expect the effect of Rule 12h-6 to be greater for investors from US institutions. I test this by separating foreign institutional ownership into US (*RFIO_US*) and non-US (*RFIO_NUS*) foreign institutional ownership, and report the results in Columns 2 and 3, Panel B, of Table 9. I find that the negative effect of Rule 12h-6 on foreign institutional ownership is only observed for those from the US.

To shed more light on the role played by foreign institutional investors, I next separate foreign institutional ownership into two types: ownership by independent foreign institutional investors and ownership by grey foreign institutional investors. I then examine whether the effect of Rule 12h-6 on foreign institutional investors differs across these two ownership types. Previous studies (e.g., Chen et al. 2007; Ferreira and Matos 2008; Luong et al. 2017) suggest that only independent foreign institutional investors actively engage with firm policies and exert monitoring efforts, while grey foreign institutional investors tend to rely on business relationships with firms and have little incentives to monitor. Therefore, if Rule 12h-6 negatively affects firm innovation because of loss of active monitoring by foreign institutional investors, I expect the decrease in foreign institutional ownership to be greater for foreign investors from independent institutions than for grey institutions.

We decompose *RFIO* into two variables, *RFIO_IND* and *RFIO_GREY*, which are two residual measures of independent and grey foreign institutional ownership, and test the effect of Rule 12h-6 on these two variables, respectively. Columns 4 and 5 of Panel B, Table 9, report the results. Consistent with my expectation, I only observe a significant decrease in independent foreign institutional ownership following the implementation of Rule 12h-6. Thus, this finding supports my conjecture that the negative effect of Rule 12h-6 on firm innovation is due to the loss of active monitoring by independent foreign institutional investors. In addition, I find a significant increase in grey foreign institutional ownership in the post-Rule 12h-6

period, which is consistent with the notion that loosened regulatory requirements brought by Rule 12h-6 could allow grey foreign institutional investors to exploit their information advantage obtained from close ties to management, which potentially induces managerial myopia (Wahal and McConell 2000).

In addition, prior studies (e.g. Luong et al. 2017) suggest that foreign institutional investors can affect firm innovation through channels other than active monitoring, such as alleviating managers' concerns over innovation failures (i.e. insurance channel) and/or facilitating knowledge spillovers across countries (i.e. knowledge spill-over channel). Therefore, I examine whether the implementation of Rule 12h-6 affects firm innovation through these alternative channels. To test the insurance channel, I examine whether the implementation of Rule 12h-6 affect CEO turnover-performance sensitivity. If Rule 12-6 reduces firm innovation because it decreases the failure tolerance for innovation projects, I would expect the CEO turnover to be more sensitive to firm performance, following the implementation of Rule 12h-6.The data on CEO turnover is collected from Capital IQ, which records public announcements on CEO departures globally. I find that the insurance channel is not supported as the results (reported in Table 2.9 Panel C) show that there is no any significant changes in the CEO turnover-performance sensitivity following the rule.

Next, I examine the knowledge spill-over channel by testing whether the negative impact of Rule 12h-6 on firm innovation is greater for firms in economies that are less innovative than others, as foreign institutional investors from the U.S. play a greater role in exchanging knowledge, ideas and opportunities in these countries (Luong et al. 2017) . In doing so, I count the total number of patents filed by a country and construct an indicator variable, *LOW_INNOVA*, that equals one that equals one if the total number of patents filed and eventually granted to sample firms domiciled in the country is below the sample average, and zero otherwise. I then interact this variable with the main test variable *POST* × *TREAT*. Table

2.9 Panel D reports the results and show that the three-way interaction term *POST* × *TREAT* × *LOW_ INNOVA* is statistically insignificant, and therefore does not support the 'knowledge spillover' channel.

2.8. Chapter 2 Conclusion

In this study, I examine the real effect of the first significant deregulation of US regulatory requirements for cross-listed foreign firms (Exchange Act Rule 12h-6). Using a sample of foreign firms cross-listed in the US major exchanges, I investigate whether the reduced regulatory requirements initiated by Rule 12h-6 affect corporate innovation—a key driver of national and international long-term economic growth. Using a DID framework, I find that the implementation of Rule 12h-6 diminished the benefits of US cross-listing in fostering foreign firms' innovation, as measured by the total number of patents successfully granted and patent citations received. In the cross-sectional analysis, I find that the negative effect of Rule 12h-6 varies with both country- and firm-level characteristics.

At the firm level, I find that my finding is stronger for firms with high dependence on external financing and high R&D intensity, suggesting that Rule 12h-6 more strongly affects firms with higher financing needs for innovation investments. At the country level, I find that the negative effect of Rule 12h-6 on innovation is disproportionally larger for firms in countries that could benefit most from stringent US disclosure requirements and regulatory oversight (i.e., countries with low investor protection, low regulatory quality, and greater accounting differences from the US GAAP). In addition, I find that the negative effect of Rule 12h-6 on firm innovation is attenuated in countries with more liberalized stock markets, where restrictions on foreign direct investment are mostly lifted.

Finally, I find a negative relation between US cross-listing and foreign institutional ownership in the post-Rule 12h-6 period, especially for independent foreign institutional investors who have been shown to promote corporate innovation worldwide. These results suggest that the change in foreign ownership that results from cross-listing is a viable channel through which Rule 12h-6 affects firm innovation.

Appendix A - Variable Definitions (Chapter 2)

Variable	Definition	Data Source
POST	An indicator variable that equals one for observations since 2007 (i.e. the passage year of Rule 12h-6), and zero otherwise.	SEC
TREAT	An indicator variable that equals one if a non-U.S. firm has at least one secondary security actively listed and traded in a USstock exchange, and zero otherwise.	CIQ
$PATENT_{t+2}$	The natural logarithm of one plus firm i's total number of patents filed (and eventually granted) in year *t+2*.	Orbis
$CITATION_{t+2}$	The natural logarithm of one plus the total number of citations received on the firm's patents filed (and eventually granted) in year *t+2*.	Orbis
$PATENT\_adj_{t+2}$	Patent counts adjusted for truncation bias. I compute the application-grant lag distribution function (W_s) for all patents filed and granted between 2002 and 2007, and then estimate the truncation-adjusted number of patents by computing the adjusted number of patents $P_{adj} = \frac{P_{raw}}{\sum_{s=0}^{2016-t} W_s}$, where P_{raw} is the raw number of patent applications filed at year t and 2008=< t <= 2012.	Orbis
$CITATION\_adj_{t+2}$	Citation counts adjusted for truncation bias.	Orbis
SIZE	The natural logarithm of total assets (in millions of USdollars) at the end of the fiscal year.	Worldscope
R&D	Research and development expenditure scaled by total assets.	Worldscope
CASH	Cash holding scaled by total assets.	Worldscope
ROA	Net income before extraordinary items scaled by beginning total assets.	Worldscope
SGROWTH	Annual change in net sales scaled by beginning total assets.	Worldscope
LEV	Total liabilities scaled by total assets.	Worldscope
FSALE	Foreign sales scaled by total sales.	Worldscope
CLOSE	The total number of closely held shares as a percentage of the total number of shares outstanding.	Worldscope
IO	The total number of shares held by institutional investors as a percentage of the total number of shares outstanding.	FactSet
TOBINQ	Total assets minus book value of equity plus market value of equity divided by book value of total assets.	Worldscope
EFINANCE	The sum of a firm's net equity issues (scaled by total assets) over a rolling five-year window ending in the current fiscal year.	Worldscope
CAPEX	The net value of property, plant and equipment scaled by total assets.	Worldscope
AGE	The natural logarithm of one plus the number of years listed on Worldscope.	Worldscope
HHI	Industry Herfindahl–Hirschman Index based on all firms within each country, where industries are defined by 3-digit SIC code.	Worldscope
HHI^2	The squared term of HHI.	Worldscope
GDPPER	The natural logarithm of gross domestic product per capita.	World Bank
EFD	An indicator variable that equals one the firm operates in an industry with a positive value for the external finance dependence measure and zero otherwise.	Worldscope
RDINTENSE	An indicator variable that equals one if the firm's average R&D expenditures above industry average level in a given country, and zero otherwise.	Worldscope
LOW_INV	An indicator variable that equals one if the firm is in a country with an anti-self-dealing index below the sample average, and zero otherwise.	Dkankov et al. (2008)
LOW_REG	An indicator variable that equals one if the firm is in a country with a regulatory quality index below the sample average, and zero otherwise.	World Bank

HIGH_ACCDIF	An indicator variable that equals one if the firm has negative net income for a given year, and zero otherwise.	Bae et al. (2008)
LIBMARKET	An indicator variable that equals one for firms in countries experienced major liberalization equity market liberalization, and zero otherwise.	Bekaert et al. (2005)
RFIO	A residual-based measure of foreign institutional ownership	FactSet; Worldscope
RFIO_US	A residual-based measure of USforeign institutional ownership	FactSet; Worldscope
RFIO_NUS	A residual-based measure of non-U.S. foreign institutional ownership	FactSet; Worldscope
RFIO_GREY	A residual-based measure of grey foreign institutional ownership	FactSet; Worldscope
RFIO_INDEP	A residual-based measure of independent foreign institutional ownership	FactSet; Worldscope

Table 2.1 - Sample Distribution

Panel A. By Country

Country	# of firm-years	% of sample	# of CL firm-years	%	*PATENT_raw*	*CITATION_raw*
Argentina	249	0.23%	51	1.26%	0.012	0.024
Australia	2,889	2.69%	203	5.00%	0.348	0.705
Austria	431	0.40%	42	1.03%	2.244	1.942
Belgium	616	0.57%	46	1.13%	3.727	4.688
Brazil	1,392	1.30%	79	1.95%	0.621	0.623
Canada	4,842	4.51%	425	10.47%	3.020	9.562
Cayman Islands	51	0.05%	5	0.12%	0.000	0.000
Chile	705	0.66%	33	0.81%	0.027	0.000
China	15,264	14.21%	136	3.35%	8.580	5.069
Colombia	152	0.14%	5	0.12%	0.039	0.039
Czech Republic	69	0.06%	4	0.10%	0.130	0.014
Denmark	582	0.54%	24	0.59%	15.309	20.679
Egypt	433	0.40%	8	0.20%	0.002	0.000
Finland	702	0.65%	48	1.18%	15.483	76.729
France	2,931	2.73%	110	2.71%	9.895	10.311
Germany	2,958	2.75%	180	4.43%	22.095	42.076
Greece	1,009	0.94%	47	1.16%	0.031	0.011
Hong Kong	4,487	4.18%	282	6.94%	0.082	0.045
Hungary	83	0.08%	1	0.02%	2.506	0.795
Iceland	52	0.05%	2	0.05%	6.538	35.788
India	5,216	4.86%	69	1.70%	0.709	0.634
Indonesia	1,364	1.27%	55	1.35%	0.001	0.000
Ireland	336	0.31%	59	1.45%	0.033	0.696
Israel	1,196	1.11%	73	1.80%	1.814	7.962
Italy	1,449	1.35%	61	1.50%	1.367	1.283
Japan	26,464	24.64%	541	13.32%	53.084	39.880
Luxembourg	155	0.14%	25	0.62%	0.006	0.013
Malaysia	3,010	2.80%	77	1.90%	0.003	0.001
Mexico	728	0.68%	104	2.56%	0.044	0.077
Netherlands	984	0.92%	67	1.65%	37.780	58.368
New Zealand	352	0.33%	75	1.85%	0.034	0.014
Norway	847	0.79%	24	0.59%	0.779	0.774
Pakistan	556	0.52%	2	0.05%	0.000	0.000
Peru	393	0.37%	20	0.49%	0.000	0.000
Philippines	407	0.38%	19	0.47%	0.017	0.034
Poland	826	0.77%	27	0.66%	0.225	0.064
Portugal	298	0.28%	32	0.79%	0.010	0.000
Russia	1,262	1.18%	71	1.75%	1.699	0.801
Singapore	2,191	2.04%	91	2.24%	1.065	7.423
South Africa	1,214	1.13%	168	4.14%	0.102	0.067
South Korea	6,564	6.11%	31	0.76%	48.460	40.732
Spain	744	0.69%	18	0.44%	0.569	0.309
Sweden	1,234	1.15%	46	1.13%	12.439	24.349
Switzerland	1,291	1.20%	60	1.48%	9.077	10.328
Thailand	1,427	1.33%	9	0.22%	0.050	0.154
Turkey	1,235	1.15%	51	1.26%	1.298	0.208
Ukraine	193	0.18%	12	0.30%	0.161	0.005
United Kingdom	5,489	5.11%	416	10.24%	0.814	0.930
Venezuela	80	0.07%	27	0.66%	0.000	0.000
Total	107,402	100%	4061	100%		

Panel B. By Year

Year	# of firm-years	% of sample	# of CL firm-years	%	*PATENT_raw*	*CITATION_raw*
2002	7,129	6.64%	269	6.62%	19.557	27.832
2003	7,501	6.98%	251	6.18%	19.970	22.453
2004	7,898	7.35%	257	6.33%	21.422	23.008
2005	8,393	7.81%	254	6.25%	22.232	25.764
2006	9,183	8.55%	266	6.55%	21.047	22.779
2007	10,371	9.66%	274	6.75%	19.537	19.995
2008	10,289	9.58%	425	10.47%	20.305	18.568
2009	10,672	9.94%	459	11.30%	18.460	14.120
2010	11,545	10.75%	481	11.84%	18.001	10.805
2011	12,116	11.28%	525	12.93%	17.526	8.315
2012	12,305	11.46%	600	14.77%	16.738	5.437
Total	107,402	100%	4061	100%		

Table 2.2 - Summary Statistics

VARIABLES	N	mean	sd	p1	p25	p50	p75	p99
PATENT_full	107402	0.580	1.273	0	0	0	0	5.784
CITATION_full	107402	0.271	0.732	0	0	0	0	2.708
PATENT_patent	25111	2.481	1.488	0.693	1.099	2.197	3.434	5.784
CITATION_citation	15038	1.938	0.770	0.693	1.099	2.079	2.708	2.708
TREAT	107402	0.038	0.191	0	0	0	0	1
POST	107402	0.627	0.484	0	0	1	1	1
SIZE	107402	6.212	1.309	4.630	5.203	5.890	6.885	10.419
R/D	107402	0.088	0.255	0	0	0	0.050	1.198
CASH	107402	0.143	0.136	0.000	0.047	0.104	0.195	0.650
ROA	107402	0.040	0.170	-0.288	0.008	0.036	0.079	0.381
SGROWTH	107402	0.139	0.335	-0.553	-0.012	0.079	0.223	1.550
LEV	107402	0.512	0.230	0.051	0.354	0.518	0.662	1.025
FSALES	107402	0.187	0.295	0	0	0	0.311	0.891
CLOSE	107402	0.340	0.290	0	0	0.339	0.585	0.878
IO	107402	0.086	0.128	0	0.001	0.028	0.119	0.595
TOBINQ	107402	1.423	1.214	0.454	0.893	1.118	1.572	5.583
EFINANCE	107402	0.031	0.122	-0.212	-0.018	0	0.048	0.542
CAPEX	107402	0.054	0.062	0.000	0.014	0.035	0.069	0.315
PPE	107402	0.322	0.216	0.003	0.152	0.293	0.460	0.897
AGE	107402	3.309	0.229	2.197	3.258	3.367	3.434	3.497
HHI	107402	0.360	0.299	0.025	0.125	0.254	0.514	1
HHI2	107402	0.219	0.314	0.001	0.016	0.065	0.264	1
GDP	107402	9.816	1.243	6.675	9.204	10.329	10.612	12.772

This table provides summary statistics for key variables used in the regression analyses. All of the variables are defined in Appendix A.

Table 2.3 - The Effect of Rule 12h-6 on Firm Innovation

	(1)	(2)	(3)	(4)
Dep. Var.	$PATENT_{t+2}$	$CITATION_{t+2}$	$PATENT_{t+2}$	$CITATION_{t+2}$
TREAT	0.063***	0.100***	0.052**	0.090***
	(0.002)	(0.000)	(0.011)	(0.000)
POST	-0.077***	-0.211***	-0.233***	-0.330***
	(0.000)	(0.000)	(0.000)	(0.000)
TREAT x POST	**-0.067*** **	**-0.095*** **	**-0.066*** **	**-0.092*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**
SIZE			0.092***	0.070***
			(0.000)	(0.000)
R/D			0.034	-0.013
			(0.105)	(0.571)
CASH			-0.066***	-0.069***
			(0.002)	(0.001)
ROA			0.020***	0.015***
			(0.003)	(0.003)
SGROWTH			-0.010**	-0.021***
			(0.024)	(0.000)
LEV			0.035***	0.036***
			(0.003)	(0.002)
FSALES			-0.041***	-0.082***
			(0.000)	(0.000)
CLOSE			0.071***	0.072***
			(0.000)	(0.000)
IO			0.247***	0.176***
			(0.000)	(0.000)
TOBINQ			0.007***	0.011***
			(0.001)	(0.000)
EFINANCE			-0.033***	-0.047***
			(0.005)	(0.000)
CAPEX			-0.141***	-0.079***
			(0.000)	(0.009)
PPE			0.017	-0.035**
			(0.286)	(0.016)
AGE			0.093***	0.086***
			(0.003)	(0.000)
HHI			-0.387***	-0.258***
			(0.000)	(0.000)
HHI2			0.287***	0.196***
			(0.000)	(0.000)
GDP			0.023***	0.011**
			(0.000)	(0.015)
Constant	0.558***	0.339***	-0.439***	-0.404***
	(0.000)	(0.000)	(0.000)	(0.000)
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
N	107,402	107,402	107,402	107,402
R^2	0.914	0.751	0.915	0.752

This table presents the regression results examining the effect of Rule 12h-6 on firm innovation. The dependent variable in Column 1 is $PATENT_{t+2}$, which is the natural logarithm of one plus the firm's total number of patents filed (and eventually granted) in year *t+2*. The dependent variable in Column 2 is $CITATION_{t+2}$, which is the natural logarithm of one plus the total number of citations received by the firm's patents filed (and eventually granted) in year *t+2*. All of the variables are defined in Appendix A. *p*-values (reported in parentheses) are based on robust standard errors clustered by firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2.4 - Dynamic Effect of Rule 12h-6 on Firm Innovation

	(3)	(4)
Dep. Var.	$PATENT_{t+2}$	$CITATION_{t+2}$
TREAT	0.027	0.056*
	(0.173)	(0.089)
TREAT x YEAR_-2	**0.019**	**0.052**
	(0.473)	**(0.264)**
TREAT x YEAR_-1	**-0.015**	**0.027**
	(0.544)	**(0.515)**
TREAT x YEAR_0	**-0.026**	**0.012**
	(0.304)	**(0.774)**
TREAT x YEAR_1	**-0.061*** **	**-0.078** **
	(0.007)	**(0.030)**
TREAT x YEAR_2+	**-0.072*** **	**-0.086*** **
	(0.000)	**(0.006)**
YEAR_-2	-0.001	-0.027**
	(0.925)	(0.012)
YEAR_-1	-0.007	-0.044***
	(0.347)	(0.000)
YEAR_0	-0.016*	-0.079***
	(0.056)	(0.000)
YEAR_1	0.002	-0.084***
	(0.792)	(0.000)
YEAR_2+	-0.037***	-0.245***
	(0.003)	(0.000)
Constant	-0.298***	-0.571***
	(0.001)	(0.000)
Controls	YES	YES
Year FE	YES	YES
Firm FE	YES	YES
N	107,402	107,402
R^2	0.892	0.805

This table presents the regression results for assessing the dynamic effects of Rule 12h-6 on firm innovation. I regress Rule 12h-6 passage indicators, *YEAR_-2* (two year prior to the passage), *YEAR_-1* (one year prior to the passage), *YEAR_0* (the year Rule 12h-6 is passed), *YEAR_1* (the first year following the passage), *YEAR_2+* (the second and later years following the passage) on innovation variables. Control variables are included but not reported for brevity. All of the variables are defined in Appendix A. *p*-values (reported in parentheses) are based on robust standard errors clustered by firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2.5 - The Effect of Rule 12h-6 on Firm Innovation – Alternative Measurements

	(1)	(2)	(3)	(4)	(5)
Dep. Var.	$PATENT\_adj_{t+2}$	$CITATION\_adj_{t+2}$	$PATENT\_eff_{t+2}$	$CITATION\_eff_{t+2}$	R/D_t
TREAT	0.039**	0.135***	0.005**	0.005***	0.001**
	(0.031)	(0.000)	(0.011)	(0.006)	(0.038)
POST	-0.031**	-0.425***	-0.036***	-0.039***	0.002***
	(0.032)	(0.000)	(0.000)	(0.000)	(0.000)
TREAT x POST	**-0.066*** **	**-0.158*** **	**-0.005*** **	**-0.006*** **	**-0.001** **
	(0.000)	**(0.000)**	**(0.009)**	**(0.000)**	**(0.012)**
SIZE	0.063***	0.086***	0.009***	0.008***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)
R/D	0.058***	-0.046*			
	(0.006)	(0.076)			
CASH	-0.051**	-0.085***	-0.020***	-0.012***	-0.002***
	(0.014)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	0.014**	0.021***	0.001	0.001*	-0.001***
	(0.024)	(0.000)	(0.560)	(0.091)	(0.000)
SGROWTH	-0.001	-0.025***	-0.002**	-0.002***	-0.000
	(0.735)	(0.000)	(0.032)	(0.000)	(0.716)
LEV	0.025**	0.048***	0.008***	0.006***	-0.001***
	(0.040)	(0.000)	(0.000)	(0.000)	(0.000)
FSALES	-0.004	-0.111***	-0.004**	-0.008***	0.001***
	(0.710)	(0.000)	(0.019)	(0.000)	(0.000)
CLOSE	0.059***	0.100***	0.017***	0.013***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
IO	0.197***	0.199***	0.033***	0.024***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.005)
TOBINQ	0.006***	0.012***	0.001***	0.001***	-0.000***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
EFINANCE	-0.006	-0.092***	-0.006***	-0.006***	-0.002***
	(0.606)	(0.000)	(0.004)	(0.000)	(0.000)
CAPEX	-0.102***	-0.099***	-0.006	-0.005	0.002***
	(0.002)	(0.003)	(0.289)	(0.176)	(0.000)
PPE	0.028*	-0.044***	-0.010***	-0.009***	0.001***
	(0.074)	(0.006)	(0.000)	(0.000)	(0.004)
AGE	0.054*	0.113***	0.018***	0.013***	-0.000
	(0.065)	(0.000)	(0.000)	(0.000)	(0.151)
HHI	-0.396***	-0.326***	-0.088***	-0.040***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.787)
HHI2	0.292***	0.251***	0.068***	0.034***	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.985)
GDP	0.020***	0.024***	0.006***	0.003***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-0.191*	-0.622***	-0.099***	-0.087***	0.001
	(0.072)	(0.000)	(0.000)	(0.000)	(0.134)
Year FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES
N	107,402	107,402	107,401	107,402	107,402
R^2	0.891	0.768	0.738	0.559	0.906

This table presents the regression results examining the effect of Rule 12h-6 on firm innovation using alternative measurements. The dependent variables in Columns 1 and 2 are patent counts and citations adjusted for truncation bias ($PATENT\_adj_{t+2}$ and $CITATION\_adj_{t+2}$), respectively. The dependent variables in Columns 3 and 4 are $PATENT\_eff_{t+2}$ and $CITATION\_eff_{t+2}$, which the number of patents scaled by R&D capital (RDC) and the number of citation scaled by RDC. RDC is calculated as $RDEXP_t+0.8\times RDEXP_{t-1}+0.6\times RDEXP_{t-2}+0.4\times RDEXP_{t-3}+0.2\times RDEXP_{t-4}$, where *RDEXP* is R&D expenditure in millions. I set missing R&D expenditure (*R/D*) to zero in computing RDC, and replace zero RDC with the country-industry-year average. I also use the log-transformed values of $PATENT_eff_{t+2}$and $CITATION\_eff_{t+2}$ in the regression. The dependent variable in Column 3 is R/D_t, which is Research and development expenditure scaled by total assets. All of the variables are defined in Appendix A. *p*-values (reported in parentheses) are based on robust standard errors clustered by firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2.6 - The Effect of Rule 12h-6 on Firm Innovation – Robustness Tests

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. Var.	$PATENT_{t+2}$	$CITATION_{t+2}$	$PATENT_{t+2}$	$CITATION_{t+2}$	$PATENT_{t+2}$	$CITATION_{t+2}$
TREAT	0.121***	0.070**	0.038*	0.090***	0.039**	0.110***
	(0.004)	(0.048)	(0.063)	(0.000)	(0.036)	(0.000)
POST	-0.264***	-0.219***	-0.019	0.043**	-0.068***	-0.177***
	(0.000)	(0.006)	(0.329)	(0.038)	(0.000)	(0.000)
TREAT x POST	**-0.206*** **	**-0.071*** **	**-0.041** **	**-0.110*** **	**-0.039** **	**-0.094*** **
	(0.000)	**(0.009)**	**(0.014)**	**(0.000)**	**(0.019)**	**(0.000)**
SIZE	0.047*	0.076***	0.049***	0.021***	0.019***	0.019***
	(0.085)	(0.009)	(0.000)	(0.000)	(0.000)	(0.000)
R/D	0.026	-0.034	0.008	-0.025	0.002	-0.026
	(0.760)	(0.547)	(0.698)	(0.265)	(0.929)	(0.318)
CASH	0.050	0.095	0.004	-0.012	0.045**	0.035
	(0.636)	(0.209)	(0.839)	(0.548)	(0.023)	(0.102)
ROA	0.041	-0.013	0.023***	0.013***	0.012***	0.008*
	(0.118)	(0.602)	(0.001)	(0.008)	(0.004)	(0.060)
SGROWTH	0.057**	0.014	-0.008	-0.010**	-0.000	-0.006
	(0.025)	(0.599)	(0.100)	(0.023)	(0.942)	(0.199)
LEV	0.022	-0.038	-0.013	-0.014	-0.026**	-0.004
	(0.717)	(0.312)	(0.286)	(0.229)	(0.021)	(0.697)
FSALES	-0.011	-0.025	-0.030***	-0.062***	-0.022**	-0.034***
	(0.794)	(0.515)	(0.002)	(0.000)	(0.015)	(0.000)
CLOSE	0.046	0.086*	0.077***	0.079***	0.018**	0.015**
	(0.290)	(0.098)	(0.000)	(0.000)	(0.018)	(0.047)
IO	0.302**	0.420***	0.224***	0.121***	0.162***	0.176***
	(0.022)	(0.003)	(0.000)	(0.000)	(0.000)	(0.000)
TOBINQ	0.001	-0.001	-0.001	0.003**	0.002	0.004***
	(0.737)	(0.769)	(0.709)	(0.041)	(0.127)	(0.003)
EFINANCE	-0.106	-0.107**	-0.005	-0.013	0.004	-0.025**
	(0.107)	(0.019)	(0.704)	(0.283)	(0.723)	(0.041)
CAPEX	0.157	0.266	-0.088***	-0.037	-0.003	0.023
	(0.427)	(0.197)	(0.008)	(0.218)	(0.917)	(0.417)
PPE	-0.008	0.001	0.079***	0.058***	0.025*	0.009
	(0.918)	(0.979)	(0.000)	(0.000)	(0.076)	(0.520)
AGE	0.065	0.036	0.037	-0.014	0.023	0.017
	(0.337)	(0.636)	(0.277)	(0.554)	(0.268)	(0.376)
HHI	0.034	0.129	-0.126*	-0.033	-0.101	0.049

	(0.932)	(0.714)	(0.052)	(0.580)	(0.119)	(0.436)
HHI2	0.096	-0.011	0.103**	0.034	0.093*	-0.024
	(0.749)	(0.964)	(0.040)	(0.473)	(0.059)	(0.625)
GDP	0.011	0.021			0.017***	0.017***
	(0.635)	(0.330)			(0.000)	(0.000)
Constant	-0.308	-0.168	0.064	-0.079	-0.089	-0.168**
	(0.402)	(0.740)	(0.696)	(0.563)	(0.253)	(0.026)
Year FE	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES
Country × Year	NO	NO	YES	YES	NO	NO
N	7,896	7,896	107,402	107,402	65,674	65,674
R^2	0.875	0.952	0.918	0.762	0.888	0.721

This table presents the results of a series of robustness tests. Columns 1 and 2 present the results using alternative innovation measures. $PATENT\_adj_{t+2}$ and $CITATION\_adj_{t+2}$ are patent counts and citations adjusted for truncation bias, respectively. Columns 3 and 4 present the results using a propensity-score-matched sample. Columns 5 and 6 present the results after including the *Country* × *Year* fixed effects. Columns 7 and 8 present the results after excluding countries with a relatively large number of observations (i.e., Japan, China, South Korea, and U.K.). All of the variables are defined in Appendix A. p-values (reported in parentheses) are based on robust standard errors clustered by firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2.7 – Firm-level Cross-Sectional Effect of Rule 12h-6 on Firm Innovation

Dep. Var.	(1) $PATENT_{t+2}$	(2) $CITATION_{t+2}$	(3) $PATENT_{t+2}$	(4) $CITATION_{t+2}$
	External Financing Dependence		***R&D Intensity***	
TREAT	0.037	0.065***	0.046	0.170**
	(0.115)	(0.005)	(0.132)	(0.015)
POST	-0.246***	-0.366***	-0.266***	-0.561***
	(0.000)	(0.000)	(0.005)	(0.000)
TREAT x POST	-0.037*	-0.061***	-0.042*	-0.254***
	(0.082)	(0.004)	(0.050)	(0.005)
EFD	-0.013**	-0.035***		
	(0.024)	(0.000)		
TREAT x EFD	0.031	0.066**		
	(0.313)	(0.027)		
POST x EFD	0.026***	0.075***		
	(0.000)	(0.000)		
TREAT x POST x EFD	**-0.063***	**-0.066****		
	(0.051)	**(0.036)**		
RDINTENSE			-0.036	-0.096***
			(0.218)	(0.009)
TREAT x RDINTENSE			0.042	0.127***
			(0.111)	(0.002)
POST x RDINTENSE			0.040**	0.123***
			(0.029)	(0.001)
TREAT x POST x RDINTENSE			**-0.064****	**-0.099*****
			(0.041)	**(0.001)**
Constant	-0.437***	-0.394***	-0.417	-0.556
	(0.000)	(0.000)	(0.427)	(0.318)
Controls	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES
N	107,402	107,402	107,402	107,402
R^2	0.915	0.753	0.919	0.808

This table presents the firm-level cross-sectional effect of Rule 12h-6 on firm innovation. *EFD* is an indicator variable that equals one if a firm operates in an external finance dependent industry, and zero otherwise. *RDINTENSE* is an indicator variable that equals one if the firm's average R&D expenditures is above industry average level in a given country, and zero otherwise. Control variables are included but not reported for brevity. All of the variables are defined in Appendix A. p-values (reported in parentheses) are based on robust standard errors clustered by firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2.8 – Country-level Cross-Sectional Effect of Rule 12h-6 on Firm Innovation

Dep. Var.	(1) $PATENT_{t+2}$	(2) $CITATION_{t+2}$	(3) $PATENT_{t+2}$	(4) $CITATION_{t+2}$	(5) $PATENT_{t+2}$	(6) $CITATION_{t+2}$	(7) $PATENT_{t+2}$	(8) $CITATION_{t+2}$
	Investor Protection		***Regulatory Quality***		***Accounting Difference***		***Stock Market Liberalization***	
TREAT	0.049**	0.063**	0.042	0.068**	0.057***	0.263***	0.072***	0.137***
	(0.046)	(0.017)	(0.114)	(0.038)	(0.004)	(0.000)	(0.001)	(0.000)
POST	-0.269***	-0.364***	-0.269***	-0.360***	-0.246***	-0.403***	-0.165***	-0.238***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TREAT x POST	-0.039**	-0.058***	-0.032	-0.069**	-0.048**	-0.194***	-0.110***	-0.153***
	(0.046)	(0.008)	(0.125)	(0.021)	(0.012)	(0.000)	(0.000)	(0.000)
TREAT x LOW_INV	0.017	0.105**						
	(0.693)	(0.041)						
POST x LOW_INV	0.135***	0.131***						
	(0.000)	(0.000)						
TREAT x POST x LOW_INV	**-0.093****	**-0.122*****						
	(0.010)	**(0.006)**						
TREAT x LOW_REG			0.037	0.074				
			(0.354)	(0.129)				
POST x LOW_REG			0.131***	0.111***				
			(0.000)	(0.003)				
TREAT x POST x LOW_REG			**-0.084****	**-0.053***				
			(0.013)	**(0.055)**				
TREAT x HIGH_ACCDIF					0.044	0.097		
					(0.351)	(0.190)		
POST x HIGH_ACCDIF					0.005	-0.094***		
					(0.399)	(0.000)		
TREAT x POST x HIGH_ACCDIF					-0.085**	-0.368***		
					(0.027)	(0.000)		
TREAT x LIBMARKET							-0.032	-0.096**
							(0.488)	(0.044)
POST x LIBMARKET							-0.102***	-0.137***
							(0.000)	(0.000)
TREAT x POST x LIBMARKET							**0.072****	**0.102*****
							(0.040)	**(0.008)**
Constant	-0.461***	-0.425***	-0.387***	-0.359	-0.470***	-0.532***	-0.437***	-0.394***
	(0.000)	(0.000)	(0.001)	(0.300)	(0.000)	(0.000)	(0.000)	(0.000)
Controls	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
6N	107,402	107,402	107,351	107,351	106,954	106,954	107,402	107,402
R^2	0.914	0.751	0.915	0.753	0.919	0.808	0.915	0.753

This table presents the country-level cross-sectional effect of Rule 12h-6 on firm innovation. *LOW_INV* is an indicator variable that equals one if the firm is in a country with an anti-self-dealing index below the sample average, and zero otherwise. *LOW_REG* is an indicator variable that equals one if the firm is in a country with a regulatory quality index below the sample average, and zero otherwise. *HIGH_ACCDIF* is an indicator variable that equals one if the firm has negative net income for a given year, and zero otherwise. The sample size is slightly reduced from Columns 3 to 6 due to the data availability on regulatory quality index and the country-level difference in accounting standards. *LIBMARKET* is an indicator variable that equals one for firms in countries experienced major liberalization equity market liberalization, and zero otherwise. The main effect of *LOW_INV*, *LOW_REG*, *HIGH_ACCDIF* and *LIBMARKET* are absorbed by the inclusion of firm fixed effects. Control variables are included but not reported for brevity. All of the variables are defined in Appendix A. p-values (reported in parentheses) are based on robust standard errors clustered by firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 2.9. Channel Analysis

Panel A. The effect of Rule 12h-6 on the sensitivity of R&D investment to stock price

	(1)
Dep. Var.	R/D_{t+1}
TREAT	-0.001
	(0.581)
POST	-0.000*
	(0.084)
TOBINQ	-0.001***
	(0.004)
TREAT x TOBINQ	0.001***
	(0.000)
TREAT x POST	-0.001
	(0.293)
POST x TOBINQ	-0.001***
	(0.007)
TREAT x POST x TOBINQ	**-0.001****
	(0.015)
Constant	-0.001
	(0.475)
Controls	YES
Year FE	YES
Firm FE	YES
N	107,401
R^2	0.872

Panel B. The effect of Rule 12h-6 on foreign institutional ownership

	(1)	(2)	(3)	(4)	(5)
Dep. Var.	$RFIO_t$	$RFIO\_US_t$	$RFIO\_NUS_t$	$RFIO\_GREY_t$	$RFIO\_INDEP_t$
TREAT	0.009***	0.005***	0.003**	0.001**	0.007***
	(0.000)	(0.001)	(0.017)	(0.011)	(0.000)
POST	0.003*	0.004***	-0.001	0.002***	0.002
	(0.064)	(0.002)	(0.910)	(0.000)	(0.308)
TREAT x POST	**-0.005*****	**-0.003*****	**0.001**	**0.001*****	**-0.005*****
	(0.000)	**(0.000)**	**(0.395)**	**(0.000)**	**(0.000)**
Constant	0.029	0.018	0.016*	0.007**	0.020
	(0.110)	(0.104)	(0.056)	(0.013)	(0.210)
Controls	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES
N	107,402	107,402	107,402	107,402	107,402
R^2	0.647	0.610	0.663	0.503	0.646

Panel C. The effect of Rule 12h-6 on CEO turnover-performance sensitivity

	(1)
Dep. Var.	$TURNOVER_{t+1}$
TREAT	0.013
	(0.178)
POST	-0.053***
	(0.000)
ROA	-0.001
	(0.949)
TREAT x ROA	0.021
	(0.630)
TREAT x POST	-0.018**
	(0.028)
POST x ROA	-0.003
	(0.818)
TREAT x POST x ROA	**-0.021**
	(0.657)
Constant	0.221***
	(0.000)

Controls	YES
Year FE	YES
Firm FE	YES
N	107,401
R^2	0.306

Panel D. The effect of Rule 12h-6 on firm innovation, conditional on country-level innovativeness

	(1)	(2)
Dep. Var.	$PATENT_{t+2}$	$CITATION_{t+2}$
TREAT	0.030	-0.059
	(0.747)	(0.483)
POST	-0.288***	-0.415***
	(0.000)	(0.000)
TREAT x POST	-0.095	-0.145**
	(0.130)	(0.017)
TREAT x LOW_INNOVA	0.040	0.196**
	(0.670)	(0.025)
POST x LOW_INNOVA	0.128***	0.199***
	(0.000)	(0.000)
TREAT x POST x LOW_INNOVA	**0.008**	**0.022**
	(0.901)	**(0.728)**
Constant	-0.269**	-0.140
	(0.017)	(0.101)
Controls	YES	YES
Year FE	YES	YES
Firm FE	YES	YES
N	107,402	107,402
R^2	0.915	0.755

This table presents the results of channel analysis. Panel B presents the results on the impact of Rule 12h-6 on the sensitivity of R&D investment to stock price. Panel B presents the results on the impact of Rule 12h-6 on foreign institutional ownership. Column 1 of Panel B presents the results using aggregated foreign institutional ownership as the dependent variable. Columns 2 and 3 of Panel B present the results using US and non-U.S. foreign institutional ownership as dependent variables, respectively. Columns 4 and 5 of Panel B present the results using grey and independent foreign institutional ownership as dependent variables, respectively. Control variables are included but not reported for brevity. Panel C presents the results testing the impact of Rule 12h-6 on CEO turnover-performance sensitivity. $TURNOVER_{t+1}$ is an indicator variable that equals one if the firm changes its CEO for a given year, and zero otherwise. Panel D examines whether the impact of Rule 12h-6 on firm innovation is conditional on country-level innovativeness. *LOW_INNOVA* is and indicator variable that equals one if the total number of patents filed and eventually granted to sample firms domiciled in the country is below the sample average, and zero otherwise. All other variables are defined in Appendix A. p-values (reported in parentheses) are based on robust standard errors clustered by firm. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Chapter 3. The Economic Consequences of Hosting the Olympic Games: International Evidence from Cross-Listings

3.1. Introduction

The Olympic Games (the Olympics) are the world's largest and most prestigious series of sporting events (Baade and Matheson 2016).[17] They have evolved over centuries, and their social, environmental, economic, and cultural impact now extends far beyond individual games.[18] The development of television, the Internet, social media, and public transportation has brought the Olympics to a global audience, increasing both their prestige and their cost (Dolan et al. 2019). Consequently, competition to host the Olympics is hotly debated in the political arena (Andranovich et al. 2001). Although many countries evince considerable interest in hosting the Olympics and numerous studies examine the economic effects of hosting (e.g., Chappelet 2002; Flyvbjerg et al. 2002; Essex and Chalkley 2004; Preuss 2004; OIn 2005), studies find little evidence of a significant long-term economic impact on the host country (Dolan et al. 2019). It thus remains unclear whether hosting the Olympics economically benefits the host country (Scandizzo and Pierleoni 2018; Overmyer 2017).[19]

Hosting the Olympics is often expected to increase the stature of both the host country and the host city on the global stage (Nebenzahl and Jaffe 1991; Jaffe and Nebenzahl 1993; Sun and Paswan 2012; Overmyer 2017). For example, the host country may receive greater and/or more positive coverage from the media during and following the olympics (Morphet 1996; Auruskeviciene et al. 2010; Dechow et al. 2019), which may enhance the visibility and reputation of its products in the global market, ultimately leading to greater demand for these

[17] Today, the quadrennial Summer Olympic Games attract more than 11,000 athletes, representing over 200 countries, and offer more than 300 individual events across 33 sports (according to initial estimates for the Tokyo 2020 Summer Olympics, made before the COVID-19 pandemic).
[18] For example, some studies suggest that successfully hosting the Olympics can improve the health and Ill-being of residents of the host city and country (Jin et al. 2008; Do et al. 2021).
[19] Baade and Matheson (2016: 202) conclude that "in most cases the Olympics are a money-losing proposition for host cities."

products (e.g., Anholt 1998; Papadopoulos and Heslop 2002; Paswan et al. 2003; Loo and Davies 2006). I draw on studies examining the benefits and costs of hosting the Olympics to examine the potential influence of hosting on corporate decision-making within the host country. I seek to determine whether and how hosting the Olympics affects the decisions of firms domiciled in the host country regarding the cross-listing of securities in foreign countries.

To shed light on these issues, I use a novel hand-collected dataset of cross-listed securities from 61 countries around the world. Unlike prior studies in this area, which focus on foreign firms' cross-listing activities on US stock exchanges (i.e., via American deposit receipts), my global cross-listing dataset allows me to examine the cross-listing activities of firms from any country with cross-listed securities in any foreign countries. I conduct a quasi-natural experiment with a difference-in-differences (DID) approach to examine the cross-listing incentives of firms domiciled in nine countries that hosted the Olympics between 2000 and 2016 (Australia, the US, Greece, Italy, China, Canada, the UK, Russia, and Brazil). I find that a country's hosting the Olympics increases the cross-listing incentives of firms domiciled in that country.

Specifically, I find that after the Olympics, firms domiciled in the host country (compared with firms domiciled in other countries) are more likely to cross-list their securities in foreign countries (i.e., increased cross-listing propensity). In addition, these firms cross-list their securities in a larger number of foreign countries (i.e., increased cross-listing intensity).[20] That is, relative to firms domiciled in non-Olympics-hosting countries, firms domiciled in Olympics-hosting countries increase their cross-listing activities in the years following the Olympics. In terms of economic magnitude, measured in odds ratios, the cross-listing propensity of these firms approximately doubles and their cross-listing intensity increases by

[20] I quantify firms' cross-listing activities in terms of their cross-listing propensity (i.e., the likelihood that a country's firms will list their securities in markets of foreign countries) and their cross-listing intensity (i.e., the average number of unique foreign countries in which firms' securities are listed).

1.9 times, which is substantially higher than the average figures for firms in countries across the globe.

I conduct a battery of tests to gauge the robustness of my results, namely (1) using countries that unsuccessfully bid to host the Olympics as a control sample for each successful bidder, (2) benchmarking the changes in the cross-listing activities of firms domiciled in the host country around the time of the Olympics against the changes in the cross-listing activities of firms in the same country around a pseudo period, (3) conducting a country-by-country analysis, and (4) using alternative DID approaches.

Institutional changes (e.g., stringency of legal protection, corporate governance reforms, and the adoption of International Financial Reporting Standards) can alter firms' incentives to cross-list and hence their cross-listing activities (e.g., Chen et al. 2015; Liao et al. 2021). If such changes occur around the time that a country hosts the Olympics, any observed changes in corporate decisions following the Olympics are likely to be jointly affected by the country's hosting of the Olympics and the concurrent institutional changes. Such joint effects may be particularly pronounced in the context examined in my study, as my set of treatment countries comprises both developed and developing nations with significant difference in country-level institutional characteristics. To examine this possibility in greater depth, I conduct another DID test within each treatment country by comparing the cross-listing activities of firms from an Olympics-hosting *city* with those of firms from non-Olympics-hosting *cities* in the same host country. As significant institutional changes within a country are likely to affect both the treatment city and the control cities, this approach increases the reliability of my conclusions. Consistent with my predictions, I find that firms domiciled in an Olympics-hosting city engage in significantly more cross-listing activities than firms domiciled in non-Olympics-hosting cities in the same host country.

The results of additional cross-sectional tests show that the effect of hosting the Olympics on the cross-listing activities of firms domiciled in the host country is more pronounced when the host country performs better (wins more gold medals) in the hosted Olympics relative to the previous Olympics; when the country hosts the Summer Olympics (rather than the Winter Olympics); and for domestic firms (vs. foreign firms). Additionally, I find that cross-listing firms domiciled in an Olympics-hosting country tend to cross-list in foreign countries with a greater institutional distance from the host country after the hosting of the Olympics. Furthermore, untabulated results from additional analyses show that cross-listing firms tend to exhibit greater foreign (vs. domestic) institutional ownership after the country in which they are domiciled hosts the Olympics. [21] Finally, I assess the persistence of the effect of hosting the Olympics on the cross-listing decisions of the firms domiciled in the host country. I find that this effect can be long-lasting.

Taken together, my findings suggest that hosting the Olympics improves the international reputation of the host country, which in turn helps firms domiciled in that country to overcome the liability of foreignness when cross-listing overseas. The findings also suggest that the observed increase in firms' cross-listing activities after the hosting of the Olympics by their country of domicile is supported by economic rather than non-economic (e.g., political) considerations.

This study contributes to the literature in several ways. First, it adds to research on the costs and benefits of hosting the Olympics for the host country. It is notoriously difficult to identify and quantify the economic benefits to the host country of hosting the Olympics (Flyvbjerg and Stewart 2012; Baade and Matheson 2016; Dolan et al. 2019). Given the substantial costs and financial risk associated with hosting the Olympics, it is critical for future

[21] In an additional analysis, I examine whether a similar effect is observed after a country announces a winning bid for the Olympics. Consistent with Martins and Serra (2011), who find little evidence of a significant stock market reaction around the time of such an announcement, I find that the announcement of a winning Olympics bid does not significantly affect the cross-listing activities of firms domiciled in the winning country.

host cities and countries and various other stakeholders to understand the implications of the investment required to host the Olympics. Given that cross-listing is an important corporate decision that may bring substantial economic benefits to a firm and also to the firm's country of domicile,[22] my findings suggest an important and previously undocumented economic consequence of the hosting of the Olympics for the host country.

Moreover, examining the factors that may affect firms' cross-listing activities is important because raising capital through cross-listing has become a prevalent method of external financing for firms in many countries (Karolyi 2006; Gagnon and Karolyi 2010). This study adds to the literature related to the determinants of cross-listing in an international setting (e.g., Sarkissian and Schill 2004; Chen et al. 2015; Chen et al. 2019; Liao et al. 2021; Tsang et al. 2021) by investigating the effect of hosting the Olympics on the cross-listing activities of firms domiciled in the host country. My study thus complements the emerging accounting and finance literature on the effects of seemingly value-irrelevant sporting events (e.g., the NCAA Basketball Tmynament and the FIFA World Cup) on capital market participants (Edmans et al. 2007; Palomino et al. 2009; Martins and Serra 2011; Ehrmann and Jansen 2016; Drake et al. 2016). My findings suggest that the increased visibility of a country caused by its hosting of the Olympics can significantly affect the behavior of capital market participants.

The remainder of this study is organized as follows. In Section 2, I review the related literature and develop my hypotheses. In Sections 3 and 4, I describe my research design and sample, respectively. In Sections 5 and 6, I discuss the main empirical results and the results of my additional analyses, respectively. Section 7 concludes the study.

[22] Studies suggest that cross-listing is one of the most important factors in attracting foreign investment. For example, Ammer et al. (2012) show that whether a firm cross-lists on a US stock exchange is the most important determinant of US investment in the firm. Supporting this view, other research suggests that corporate cross-listing increases firms' access to foreign smyces of external financing and fosters cross-border capital flows (Karolyi 2006; Gagnon and Karolyi 2010; Chen et al. 2015).

3.2. Literature Review and Hypothesis Development

3.2.1 Benefits and Costs of Hosting the Olympics for the Host Country

When a city decides to compete for the opportunity to host the Olympics, it does so in the belief that hosting will provide significant and long-term benefits for the city and its home country, both directly and indirectly. The cost of hosting the Olympics is substantial and typically includes investment in general infrastructure (e.g., housing and transportation), investment in sports-related infrastructure for competition venues, and operational costs (e.g., costs associated with bidding to host the Olympics, general administration, the opening and closing ceremonies, and security) (Baade and Matheson 2016). [23] Studies show that in most cases, hosting the Olympics is a money-losing proposition for host cities (Baade and Matheson 2016). [24]

Although the cost of hosting the Olympics can be well determined, accurately estimating its benefits is challenging (Flyvbjerg and Stewart 2012). Many of the perceived benefits of hosting the Olympics (e.g., increased trade and foreign investment, a better brand image, and greater Ill-being and national pride for citizens) are difficult to estimate precisely. A key economic justification for hosting the Olympics is that it will send a positive signal to the world about the host country's future economic status. It is thought that hosting the Olympics improves the host country's image and increases its visibility, which in turn helps to differentiate the country's companies or products from those of non-host countries, thereby giving the host country a competitive advantage in the global market (Loo and Davies 2006; Sun and Paswan 2012). In line with this view, studies show that countries tend to report a

[23] Flyvbjerg and Stewart (2012) find that the direct costs of hosting the Summer Olympics for each of the Olympics-hosting countries during 2000–2012—i.e., Australia (2000), Greece (2004), China (2008), and the UK (2012)—Ire approximately US$4.2 billion, US$3.1 billion, US$5.5 billion, and US$15.8 billion, respectively. Indirect spending on Olympics preparation is much harder to estimate.

[24] In recent decades, fierce competition among cities to host the Olympics has increased the expenditure related to hosting the Olympics. In advance of the 2024 Olympic Games, three of the five candidates (Poland, Ukraine, and SIden) withdrew from the bidding, largely because of the cost involved.

significant increase in exports after hosting the Olympics (e.g., Rose and Spiegel 2011; Brückner and Pappa 2015).

3.2.2 Cross-listings

Studies document that cross-listing can bring a variety of benefits for firms. These benefits include attracting foreign investment (Ammer et al. 2012), enhancing the firm's shareholder base (Bradshaw et al. 2004), reducing the cost of equity capital and increasing access to capital (Lins et al. 2005; Hail and Leuz 2009), increasing liquidity (Errunza and Miller 2000), protecting minority shareholders (Reese and Iisback 2002), facilitating access to foreign product markets (Pagano et al. 2002), and improving corporate investment decision-making (Foucault and Frésard 2012). Additionally, studies provide strong evidence of the relationship between cross-listing and legal bonding (Coffee 1998; Licht 1998; Stulz 1999; Benos and Iisbach 2004; Boubakri et al. 2010). Cross-listing can be considered as a bonding mechanism that signals firms' commitment to corporate transparency and thereby attracts investors (Chen et al. 2019). Supporting this hypothesis, Lang et al. (2020) show that the greater regulatory oversight of cross-listed firms increases foreign investment in these firms.

Despite the capital market benefits of cross-listing, firms that trade their securities on foreign stock exchanges face many obstacles, such as the cost of navigating a different set of generally accepted accounting principles and disclosure requirements (Saudagaran and Biddle 1995; Kang and Stulz 1997; Chen et al. 2015; Chen et al. 2019). Most importantly, the perceived reluctance of foreign investors to obtain cross-border securities is a major barrier to firms' decision to cross-list (Lundholm et al. 2014; Chen et al. 2015; Chen et al. 2019). Furthermore, research shows that foreign firms are commonly sidelined due to "home bias" arising from investors' inherent unfamiliarity with and cated knowledge of foreign firms (Kang and Stulz 1997; Coval and Moskowitz 1999; Dahlquist et al. 2003; Bradshaw et al. 2004; Schumacher 2018). In their investment portfolios, investors tend to underweight securities

issued by firms located outside the investors' home countries, especially those issued by firms from geographically remote countries (Pagano et al. 2002; Sarkissian and Schill 2016). Supporting this argument, Chen et al. (2015) show that investors' familiarity towards foreign firms' accounting standards plays an important role in the firm's cross-listing decisions.

3.2.3 Hypothesis Development

Research suggests that investors are generally reluctant to invest in foreign stocks from countries outside their zone of familiarity because of the cost of collecting value-relevant information on firms operating in unfamiliar economic environments and capital markets (Bradshaw et al. 2004; Covrig et al. 2007; Baik et al. 2013; Chen et al. 2019; Hu et al. 2019; Tsang et al. 2019). Consequently, a major challenge that firms face when cross-listing is how to overcome the liability of foreignness.[25] One strategy is suggested by Boubakri et al. (2016), who show that foreign firms cross-listed in the US exhibit greater corporate social responsibility (CSR) engagement than their domestic counterparts. This indicates that enhancing their reputation and recognition by committing to better CSR performance helps foreign firms to overcome the liability of foreignness. Similarly, Chen et al. (2019) find that providing better voluntary disclosure supports firms' decision to cross-list and attracts foreign institutional investors. Their findings suggest that firms can use voluntary disclosure to build a reputation of corporate transparency to overcome the liability of foreignness faced by firms in making cross-listing decisions.

The degree of proximity and/or familiarity (e.g., geographical, cultural, institutional, and accounting-related) between firms' home countries and the foreign countries where their securities are cross-listed is an important factor determining firms' cross-listing decisions and

[25] The literature suggests that liability of foreignness in capital markets tends to have a significant effect on crosslisting decisions of firms (Ding et al. 2010; Bell et al. 2012). For example, Bell et al. (2012) argue that cross-listed firms suffer from the tremendous liability of foreignness in capital markets because of the differences in institutions. Other studies argue that the liability of foreignness in the capital markets can be partially overcome by reputation of cross-listed firms through channels such as prestigious underwriters, audit firms and alliance partners (Shi et al. 2012; Peng and Su 2014).

investors' foreign portfolio holdings. World-class sporting events such as the Olympics attract widespread media attention and coverage, which raise global awareness of the host countries and cities (Dechow et al. 2019). This may have many benefits for the hosts, such as attracting foreign customers and investors (Papadopoulos and Heslop 2002; Sun and Paswan 2012). Information salience also plays a crucial role in investors' decision-making because individuals have limited information-processing abilities and attention (Klibanoff et al. 1998; Chan 2003; Palomino et al. 2009; Gilbert et al. 2012). Therefore, to the extent that foreign investors are more likely to pay attention to firms from countries with greater salience, I predict that a firm's incentive to cross-list increases with the hosting of the Olympics by the country in which the firm is domiciled.

Based on the above discussion, I hypothesize that firms domiciled in an Olympics hosting country have more incentives to cross-list their securities in foreign countries after the Olympics because their home country has become more visible on the global stage. This is likely to increase foreign investors' familiarity with the country and the firms domiciled there, helping domestic firms to overcome the liability of foreignness when cross-listing. In line with this view, research suggests that proximity breeds familiarity (Sarkissian and Schill 2004), which in turn breeds investment (Leblang 2010). The conjecture that hosting the Olympics increases the visibility and information salience of firms domiciled in the host country, leading to more successful foreign capital raising, is supported by anecdotal evidence from foreign IPOs. For instance, the Agricultural Bank of China set an IPO record of US$22.1 billion in mid-2010, less than two years after China hosted the 2008 Summer Olympics.[26]

[26] See https://www.nytimes.com/2010/07/07/business/global/07ipo.html. Additionally, while China's global financial market integration was generally slow before 2008 (Zhang and King 2010), based on my analysis using data from WIND, approximately 29% of new listings on US stock exchanges (including the NYSE, NASDAQ, and AIM) in 2009 were Chinese companies, up from 17% in 2008 (see Figure 2). Moreover, between 2008 and 2010, the overall number of IPOs of Chinese firms listed abroad significantly increased relative to the years before 2008 (Lombardi and Malkin 2017).

However, increased visibility may have the opposite effect. It is not obvious that accessing foreign capital market should necessarily require firms to seek stock listings in foreign countries (Pagano et al. 2001), Firms domiciled in an Olympics-hosting country may be able to source more foreign capital directly from their home country after the Olympics, because the capita market benefits of hosting this global, such as increase analyst following and media coverage, may increase cross-border investment from foreign funds.[27] This may reduce firms' incentives to cross-list their securities in foreign countries, especially given the substantial costs associated with cross-listing and maintaining cross-listed securities.[28]

The above discussion suggests a possible alternative effect of hosting the Olympics on the cross-listing activities of firms domiciled in the host country. Based on this discussion, I state my first pair of competing hypotheses as follows:

H1a: *Relative to firms domiciled in countries not hosting the Olympics, firms in host countries are likely to increase their cross-listing activities following the hosting of the Olympics.*

H1b: *Relative to firms domiciled in countries not hosting the Olympics, firms in host countries are likely to decrease their cross-listing activities following the hosting of the Olympics.*

Furthermore, economic factors may play a less important role than often assumed in a country's decision to bid for and subsequently host the Olympics. For instance, this decision may be driven by the government's desire to showcase the economic development and political power of the country (i.e., a developing country) or one of its cities.[29] Hosting the Olympics

[27] To test this conjecture, I conduct a country-level analysis (untabulated) using data from IMD World Competitiveness Reports (https://worldcompetitiveness.imd.org/) to examine possible changes in the country-level financial environment around the year in which a country hosts the Olympics. Consistent with my conjecture, I find that Olympics-hosting countries indeed tend to enjoy significantly greater improvement in their credit ratings, access to external debt, and level of IPOs following the hosting of the Olympics, relative to non-Olympics-hosting countries.

[28] For instance, Kanagaretnam et al. (2020) show that firms' cross-listing costs are an important determinant of their cross-listing decisions.

[29] This view probably explains why Russia and China made huge investments to host the 2014 Sochi Games and 2008 Beijing Games, respectively (Baade and Matheson 2016). Brady (2009) discusses China's hosting of the Olympics within the context of the modernization of the Chinese Communist Party's propaganda system. She observes that the extensive Olympics-related news coverage in China during 2006–2008 and the ongoing public morals campaign represent efforts to distract the population from more troubling issues, such as inflation, unemployment, and environmental degradation.

can also be considered as a tool for non-economic development, such as cultural integration (Scandizzo and Pierleoni 2018). If this non-economic related argument is generalizable to more developed Olympics-hosting countries as well, then I expect hosting the Olympics will not affect the cross-listing activities of the firms domiciled in the host country.

While studies examining the effect of an external shock on corporate behavior conducted in international settings commonly make a parallel trend assumption across treatment and control countries before an event, heterogeneity in country-specific characteristics (e.g., investment opportunities and institutions) and institutional changes can detract from the validity of the inferences drawn from DID analysis in such studies. For instance, the documented effects of hosting the Olympics on a country may be caused by concurrent (possibly unknown) changes in the country's institutional characteristics, which may not be related to its hosting of the Olympics per se. Disentangling the effect of Olympics hosting from the potential effects of evolving country-level institutions on firms' cross-listing activities is challenging. Thus, I re-examine the changes in cross-listing activities around the time of the Olympics by focusing on firms domiciled in Olympics-hosting *cities* and firms domiciled in all other *cities* in the same Olympics-hosting countries. Accordingly, I state my second pair of competing hypotheses as follows:

H2a: *Relative to firms domiciled in non-Olympics-hosting cities in the host country, firms domiciled in the host city are likely to increase their cross-listing activities following the hosting of the Olympics.*

H2b: *Relative to firms domiciled in non-Olympics-hosting cities in the host country, firms domiciled in the host city are likely to decrease their cross-listing activities following the hosting of the Olympics.*

3.3 Research Design

To test the effect of hosting the Olympics on the cross-listing activities of firms domiciled in the host country relative to the cross-listing activities of firms domiciled in a country that does not host the Olympics, I apply the DID framework and estimate the following regression

for the panel data of firm-year observations (with country, firm, and year subscripts omitted for parsimony):

$$\begin{aligned} CL = {} & \beta_0 + \beta_1 \text{Post} + \beta_2 \text{Treatment} + \beta_3 \text{Post} \times \text{Treatment} + \beta_4 \text{Relative Size} + \beta_5 \text{ROA} \\ & + \beta_6 \text{Sales Growth} + \beta_7 \text{Leverage} + \beta_8 \text{Interest} + \beta_9 \text{Insider} + \beta_{10} \text{IO} \\ & + \beta_{11} \text{Accruals} + \beta_{12} \text{Cash} + \beta_{13} \text{MTB} + \beta_{14} \text{CAPEX} + \beta_{15} \text{Analyst} \\ & + \beta_{16} \text{Big4Auditor} + \beta_{17} \text{Geographic Segment} + \beta_{18} \text{Wrd Competition} \\ & + \beta_{19} \text{Ind Competition} + \beta_{20} \text{HiTech} + \text{CountryLevelControls} \\ & + \sum \text{Year Indicators} + \sum \text{Industry Indicators} + \sum \text{Country Indicators} + \varepsilon \end{aligned} \quad (1)$$

I use two measures to capture firms' cross-listing activities (*CL*): cross-listing propensity (*CL_Firm*) and cross-listing intensity (*CL_NMarket*). *CL_Firm* is an indicator variable that equals one if the firm has at least one secondary security actively listed and traded in a foreign country in a given year and equals zero otherwise. *CL_NMarket* is defined as the total number of unique foreign countries in which the firm's securities are cross-listed in a given year.

For firms domiciled in Olympics-hosting countries (treatment group), *Post* is an indicator variable that equals one if a sample year is the year after a country hosts the Olympics and equals zero otherwise. Firms domiciled in non-Olympics-hosting countries (the control group) are randomly assigned a pseudo-Olympics-hosting year; accordingly, for these firms, *Post* indicates the sample year following the pseudo-Olympics-hosting year.[30] *Treatment* is an indicator variable that equals one if a sample firm's home country hosted the Olympics during my sample period and equals zero otherwise. The interaction term *Post* × *Treatment* is the key variable of interest and is the DID estimator that captures the incremental change from the pre-Olympics period to the post-Olympics period in firms' cross-listing propensity/intensity relative to the corresponding changes for the control group. To adjust for possible cross-sectional and serial correlations, I cluster the standard errors by both firm and home country.[31]

[30] In an additional test, using unsuccessful bidders as the control firms (i.e., firms domiciled in countries that made an unsuccessful bid for the Olympics held in that year), I assign the pseudo-Olympics-hosting year for the unsuccessful countries as the year in which the successful bidder hosted the Olympics.

[31] I alternatively conduct my tests with standard errors clustered by year and home country, and by year and firm, and find that my results remain qualitatively unchanged.

Additionally, I draw on the literature to identify and control for a wide range of factors that may influence firms' cross-listing activities. I include the following firm-level control variables: (1) *Relative Size*, defined as the market value of a firm's equity as a percentage of the total capitalization of the firm's domestic equity market, to control for the firm's capital demand in a country (Biddle and Saudagaran 1991; Ashbaugh 2001); (2) *ROA*, to control for a firm's profitability (Fuerst 1998); (3) *Sales Growth*, defined as the annual change in a firm's net sales scaled by its initial total assets; (4) *Leverage*, defined as the ratio of a firm's total liabilities to its total assets; (5) *Interest*, defined as a firm's total interest divided by its total sales; (6) *Insider*, defined as the total number of a firm's shares that are held by corporate insiders as a percentage of its total number of shares outstanding, to control for the firm's private benefits of control (Coffee 1999, 2002; Doidge 2004; Doidge et al. 2004); (7) *IO*, defined as the percentage of a firm's shares that are held by institutional investors; (8) *Accruals*, to control for the earnings opacity of different firms (Bhattacharya et al. 2003); (9) *Cash*, defined as the ratio of a firm's cash and short-term investments to its total assets, to control for the firm's need to access external capital (Lins et al. 2005); (10) *MTB*, defined as the market-to-book ratio of equity of a firm, to control for the firm's growth prospects (Coffee 2002; Doidge et al. 2004; Foucault and Gehrig 2008); (11) *CAPEX*, capital expenditure; (12) *Analyst*, defined as the total number of analysts following a firm, to control for the firm's information environment (Saudagaran and Biddle 1995); (13) *Big4Auditor*, an indicator variable that equals one if the auditor of a sample firm in a given year is a Big Four auditor and equals zero otherwise; and (14) *Geographic Segment*, defined as the natural logarithm of one plus the total number of geographical segments possessed by a sample firm in a given year.

I also include three industry-level controls: (1) *Ind Competition*, to control for the level of industry competition within a country in a given year; (2) *HiTech*, to control for a high-technology industry (defined based on the 23 industry classifications suggested by Barth et al.

2005); and (3) *Wrd Competition*, to control for industry competition at the global level in a given year. Because differences between the country-level institutions of their home countries and those of foreign countries play an important role in firms' cross-listing decisions (e.g., Boubakri et al. 2010), following prior studies (e.g., Boubakri et al. 2010; Chen et al. 2015; Liao et al. 2021), I include country-level controls in the model to control for differences in economic development (*GDP* per capita), corporate governance reform (*CGR*), accounting standards (*IFRS*), the stringency of the legal environment (*Rule of Law*), and the level of investor protection (*Investor Protection*).

Finally, following prior studies (e.g., Gibson 2003; Lel and Miller 2008; Lel and Miller 2015), I include country, industry, and year indicators to control for possible fixed effects.[32] I measure the control variables in year *t*-1 and measure the dependent variables in year *t*. The variables are defined in Appendix C. I use logit (Poisson) regression when the dependent variable is *CL_Firm* (*CL_NMarket*) in my main regression analyses.[33] I further exclude the Olympics hosting (pseudo-Olympics-hosting) year from my sample period when estimating Equation 1. As the Olympics may be held at different times in a year (ranging from February to September, as shown in Appendix B), the effect of hosting the Olympics on the cross-listing activities of firms domiciled in the host country during the hosting year may be less clear.[34]

3.4 Sample and Data

To construct my international cross-listing dataset, I hand-collect data related to foreign

[32] Although I could use firm-fixed effects to explore the panel nature of my dataset, I control for group effects using country indicators because the Olympics are hosted at the country level. Also, as my dependent variables (cross-listing propensity and intensity) exhibit relatively little time-series variation, firm fixed effects would lack the power to detect significant relationships. Therefore, following previous studies (Gibson 2003; Lel and Miller 2008; Lel and Miller 2015), I use country fixed effects in my DID analysis.

[33] I also estimate the regression using Ordinary Lease Square specification, and the results (untabulated) show that the inferences remain unchanged, supporting that firms in Olympic hosting countries/cities are more likely to cross-list and tend to cross-list in more foreign countries following the Olympics.

[34] I find similar results when I include the Olympics hosting year in either the pre- or post-Olympics-hosting period and rerun all of the regressions.

equity listings for firms in the Capital IQ Compustat (CIQ) database between 1998 and 2017. I collect information on firms with secondary securities listed in foreign countries and their publicly traded tickers, together with the stock exchanges on which each ticker is listed. Following Chen et al. (2015), I define a firm-year observation as cross-listed if the firm has at least one secondary security listed and traded in a country other than its primary listing country in a given year. I further remove securities listed over the counter (OTC), such as on OTC bulletin boards, Norway OTC, and Deutsche Börse. Finally, I exclude countries with fewer than 100 observations during my sample period.

Next, I gather information on countries that hosted the Olympics (both Summer and Winter) during my sample period from the official website of the International Olympic Committee (IOC; https://www.olympic.org/). I identify nine countries that hosted the Olympics during my sample period, five of which hosted the Summer Olympics and four of which hosted the Winter Olympics. For each of these Olympics, I identify the host country and city, the hosting year, the duration of the Games, the total number of medals received by the participating countries, and the cities that made unsuccessful bids to host the Olympics in that year.[35]

To mitigate the effects of other confounding events, I also conduct additional analyses by applying two relatively short event windows to restrict my sample period to four years and two years surrounding the hosting (pseudo-hosting) year. I obtain data on all of the firm-level and industry-level control variables from the Worldscope database, with the exception of the data on analyst coverage, which I obtain from the Institutional Brokers' Estimate System (I/B/E/S). I assume values of zero when data are missing. I obtain data on institutional ownership and the Big Four auditors from CIQ.

To facilitate my comparison of firms' cross-listing activities, I use various benchmarks:

[35] Details are provided in Appendix B.

(1) all non-Olympics-hosting countries in my sample period; (2) non-Olympics-hosting cities in each host country; and (3) unsuccessful bidders that lost in the final round of the bidding phase. [36] The resulting sample consists of 590,784 firm-year observations from 61 countries/regions.

Panel A of Table 3.1 presents the sample distribution and average cross-listing activities by country. The US represents the largest proportion of my sample (20.05%), followed by Japan (11.05%) and the UK (5.55%). Panel B of Table 3.1 reports the sample distribution by year. There is an increasing trend in the number of firms in my sample over time, which is probably driven by the increasing number of firms and countries from the control group included in the sample over time. Panel C of Table 3.1 summarizes the sample distribution by industry, following the industry classification suggested by Barth et al. (2005). The extractive industry has the highest percentage of cross-listed firms, followed by the transportation industry.

[Insert Table 3.1 about here]

Panel A of Table 3.2 provides descriptive statistics for the variables used in the main analyses. For parsimony, I only present the results for the full sample. To reduce the effect of outliers, the continuous variables are winsorized at the 1st and 99th percentiles of the distribution. An average of 4% of the sample firms cross-list their securities, which is in line with prior studies (e.g., Chen et al. 2015).

[Insert Table 3.2 about here]

3.5. Main Results

3.5.1. Univariate Analysis

[36] In a robustness test (untabulated), I find that my results also hold if I restrict my sample to the nine Olympics-hosting countries and use a randomly assigned pseudo-Olympics year for the Olympics-hosting countries as the benchmark.

Table 3.3 presents the results of a univariate analysis of the mean differences in the cross-listing propensity and cross-listing intensity between the treatment group and the control group before and after the hosting of the Olympics.[37] The cross-listing propensity of the Olympics-hosting countries increases from 2.1% before the Olympics to 6.2% after the Olympics, while the cross-listing propensity of the non-Olympics-hosting countries increases from 3.9% to 5.5% in the same period. A Wilcoxon–Mann–Whitney test suggests that the difference in the changes in the means (DID) of cross-listing propensity and intensity between the treatment and control groups in the post-Olympics period relative to the pre-Olympics period is significantly different from zero (DID = 0.024, $p < 0.001$ for *CL_Firm*; DID = 0.025, $p < 0.001$ for *CL_NMarket*). [38] I obtain similar findings when I compare firms from Olympics-hosting cities with those from non-Olympics-hosting cities.

[Insert Table 3.3 about here]

To more intuitively illustrate the effect of hosting the Olympics on the cross-listing activities of firms domiciled in the host country, I plot the relative changes in the cross-listing propensity of firms in Olympics-hosting and non-Olympics-hosting cities. The results are shown in Figure 3.1. Within the Olympics-hosting countries, firms in both the Olympics-hosting and non-Olympics-hosting cities show an increasing trend in their cross-listing propensity during the test window; however, firms in the Olympics-hosting cities exhibit a much larger increase in cross-listing propensity in the post-Olympics period. The treatment and control groups exhibit similar patterns in the pre-Olympics period, which supports the parallel

[37] As indicated before, I use multiple benchmark samples: (1) all non-Olympics-hosting countries, (2) non-Olympics-hosting countries that are also unsuccessful bidding countries, and (3) non-Olympics-hosting cities in the same Olympics-hosting country. In this analysis, I restrict the sample to the two years before and after the Olympics hosting year to allow a better comparison. As the results for all non-Olympics-hosting countries and non-Olympics-hosting countries that are also unsuccessful bidding countries are similar, I only report the results when the former sample is used as the control group.

[38] The results of Pearson correlation analysis (untabulated) show that the post-Olympics indicator, *Post*, is positively and significantly correlated with the two cross-listing measures, *CL_Firm* (0.049) and *CL_NMarket* (0.045), indicating that firms are more likely to cross-list and that they cross-list in more countries in the post-Olympics period (thus supporting H1a and H2a).

trend assumption underlying the DID analysis. The results of the univariate analysis suggest that hosting the Olympics increases the cross-listing activities of firms domiciled in the host country, thus supporting H1a and H2a.

[Insert Figure 3.1 about here]

3.5.2. Olympics-Hosting Countries and the Cross-Listing Propensity and Intensity of Firms Domiciled in the Host Country

Table 3.4 reports the regression estimates from Equation 1. Columns 1–3 (4–6) report the results when the dependent variable is firms' cross-listing propensity (cross-listing intensity). Columns 1 and 4 report the results for the full sample, for which observations from all non-Olympics-hosting countries serve as the control group. A positive and highly significant coefficient is found for the interaction term *Post* × *Treatment*.

To mitigate the effects of confounding events, I repeat the analysis while restricting my sample period to two years before and after and one year before and after the Olympics, which I label as "[t - 2, t + 2] sample" and "[t - 1, t + 1] sample," respectively. The results reported in Columns 2 and 3 (5 and 6) of Table 3.4 are for the cross-listing propensity (intensity) model. I observe significantly positive coefficients for the interaction term across all of the models. These results strongly support H1a.

[Insert Table 3.4 about here]

3.5.3. Alternative Benchmark: Cohort-Matched Bidding Countries

In this section, I repeat my main analysis using an alternative benchmark: countries that made unsuccessful bids to host the Olympics. Using the unsuccessful bidders corresponding to each Olympics-hosting country reduces the concern that any observed change in firms' cross-listing activities is driven by self-selection by the Olympics-hosting countries. For example, the cross-listing propensity of firms domiciled in Olympics-hosting countries may be correlated with the economic development and/or capital demand of these countries. As the same argument probably applies to both successful and unsuccessful bidders in a given year,

because both voluntarily indicate their strong intention to host the Olympics, unsuccessful bidder countries serve as a valid "matching" sample in my examination.

I identify control firms as those based in countries that made unsuccessful bids to host each of the Olympic Games included in my sample. The results are reported in Table 3.5 and show that hosting the Olympics leads to an increase in the cross-listing activities of the host country's firms. To further compare the Olympics-hosting countries and the unsuccessful bidding countries, for each successful bidder, I choose as a control the unsuccessful bidder with the closest GDP per capita. In a further robustness test, I choose the unsuccessful bidding country with the closest number of observations (for better comparison) as the control sample and obtain similar results. My conclusion above is generally consistent across all of these tests.

[Insert Table 3.5 about here]

3.5.4. Olympics-Hosting Cities and Cross-Listing Propensity and Intensity of Firms Domiciled in the Host Cities

Although I control for multiple country-level institutional variables in my model, to further control for the potential correlations between evolving country-level institutions, regulatory regimes, accounting standards, and the hosting of the Olympics, I repeat my main analyses by comparing the changes in the cross-listing activities of firms domiciled in Olympics-hosting cities and those domiciled in non-Olympics-hosting cities in the same host countries. Given that the Olympics take place primarily in the host cities, firms domiciled in these cities are expected to be most affected by the Olympics. Therefore, an incremental change in the cross-listing activities of firms in Olympics-hosting cities relative to those in non-Olympics-hosting cities within the same Olympics-hosting countries is likely to be driven by the Olympics rather than by confounding country-level institutional changes, which would presumably affect all firms and cities in the Olympics-hosting countries.

I begin this analysis by obtaining information on the city where each firm is headquartered from the CIQ and restrict my sample to firms domiciled in Olympics-hosting

countries. Next, I redefine the treatment group as firms domiciled in Olympics-hosting cities, redefine the control group as firms domiciled in non-Olympics-hosting cities in the same Olympics-hosting countries, and re-estimate Equation 1. The regression results are reported in Table 3.6. Columns 1 and 4 show that the coefficients of *Post* × *Treatment* are significantly positive across the cross-listing propensity and intensity models, suggesting that the changes in the cross-listing activities of firms from Olympics-hosting cities are greater than those of the benchmark firms after the Olympics. I find consistent results when using alternative test windows, i.e., [t - 2, t + 2] and [t - 1, t + 1]. These results corroborate my finding that firms' cross-listing activities increase after their city of domicile hosts the Olympics, thus supporting H2a.

[Insert Table 3.6 about here]

3.5.5. Olympics-hosting Countries, Cross-Listings, and Institutional Holdings

My baseline results show that hosting the Olympics increases the cross-listing activities of firms domiciled in the host country. A key underlying assumption of my hypotheses is that firms are likely to obtain greater capital market benefits (e.g., attracting foreign investors; Kang and Stulz 1997; Bradshaw et al. 2004; Kho et al. 2009) after the Olympics are hosted by their country of domicile. As such, I argue that firms have more incentives to cross-list their securities after the hosting of the Olympics in their home country because of the expected increase in foreign institutional investment in their securities after the Olympics. In this section, I directly test this assumption. To the extent that hosting the Olympics increases the visibility and salience of firms from the Olympics-hosting country, thereby reducing their liability of foreignness, I expect to observe an increase in foreign institutional holdings in cross-listed firms domiciled in hosting countries following the hosting of the Olympics.

To perform this test, I obtain data on both domestic and foreign institutional holdings

from Factset.[39] I then include *CL_Firm* in the regression and further interact it with *Post* × *Treatment*, using domestic and foreign institutional holdings as the dependent variables. Consistent with my expectations, my (untabulated) results show that the coefficients on the three-way interaction term *CL_Firm* × *Post* × *Treatment*, which captures the incremental changes in institutional ownership for cross-listed firms following the Olympics, is positive and significant across the columns when the dependent variable is foreign institutional ownership (*FIO*). This suggests that the cross-listing activities of firms domiciled in an Olympics-hosting country in the post-Olympics period (relative to the pre-Olympics period) are likely to be associated with greater foreign institutional ownership.

Additionally, I find that the domestic institutional ownership (*DIO*) of cross-listing firms increases with the hosting of the Olympics in their country of domicile. However, further comparison of the estimated coefficients across the models with different dependent variables (i.e., *FIO* and *DIO*) indicates that this effect is greater for foreign institutional ownership than for domestic institutional ownership. These results suggest that cross-listed firms attract more foreign investors following the hosting of the Olympics by their home country, which is consistent with the notion that increased familiarity with firms is a channel through which Olympics hosting increases the cross-listing incentives of firms in the host country.

3.6. Additional Tests

3.6.1 Cross-Sectional Tests: Olympic Medal Achievement, Summer vs. Winter Olympics, Domestic vs. Foreign Firms

In this section, I conduct additional analyses to further explore the cross-sectional differences in the effects of hosting the Olympics on the cross-listing activities of firms domiciled in the host country. First, research suggests that the effect of hosting the Olympics

[39] For this test, I restrict my sample to begin in 2000 because Factset's coverage of institutional holdings begins in this year.

on the host country's economy derives not only from the act of hosting per se but also from the success of athletes competing in the Games (Kaplanidou and Karadakis 2010; Wicker et al. 2012). Athletes who win Olympic medals increase the international visibility and reputation of the athletes' home countries. In this light, I investigate whether the performance of a host country's athletes in the Olympics can affect firms' cross-listing activities in that country. To do this, I construct a country-level variable that captures a country's performance in the Olympics in a given year—namely the percentage change in the number of gold medals won by the country's athletes relative to the previous year—and interact it with my main test variable. [40] The results are reported in columns 1 and 2 of Table 3.7. The coefficients on the three-way interaction terms are all positive and highly significant for both cross-listing propensity and cross-listing intensity. These findings indicate that among Olympics-hosting countries, those whose athletes perform better in the Olympics experience greater changes in firms' cross-listing activities in the post-Olympics period.[41]

Second, the Summer Olympics attract much more global attention than the Winter Olympics due to the greater number and popularity of the sporting events in the former. Consequently, it is plausible that the effect of hosting the Olympics on the cross-listing activities of the host country's firms is stronger for the Summer Olympics than the Winter Olympics. To test this possibility, I add an indicator variable, *Summer OG* (an indicator variable that equals one if the Olympics hosted by the country is a summer Olympics and equals zero otherwise), and examine its interaction with *Post* and *Treatment*. I find a positive coefficient on *Post* × *Treatment* × *Summer* in both models (Columns 3 and 4), supporting my prediction.

[40] As the Summer and Winter Olympics tend to have different scales, when calculating the performance of a country, I benchmark the number of gold medals won by the country in a Summer (Winter) Olympics by the number of gold medals it won in the previous Summer (Winter) Olympics.

[41] My conclusion is not affected when I use an alternative measure to capture a country's performance in the Olympics. For this alternative measure, I define a country's performance as the percentage of gold medals it won during that Olympics divided by the total number of gold medals won by all countries during that Olympics.

In the last set of cross-sectional tests, I explore whether the effect of hosting the Olympics on the cross-listing activities of firms domiciled in the host country varies between domestic and foreign firms. A firm is defined as domestic (foreign) if it is headquartered and incorporated in the same country (in different countries). The results are presented in Columns 5 and 6 and show that the positive effect of hosting the Olympics on firms' cross-listing activities is significantly greater for domestic firms than foreign firms, supporting the argument that hosting the Olympics increases the visibility of local firms (which are presumably associated with a lower level of global visibility) from the host country.

[Insert Table 3.7 about here]

3.6.2 Olympics Hosting and Cross-Listing Country Choices of Firms Domiciled in the Host Country

A key assumption underlying my argument that hosting the Olympics increases the cross-listing incentive of firms domiciled in the host country is that the Olympics improve the international reputation of the host country, helping firms from that country to overcome the liability of foreignness when making cross-listing decisions. In this section, I directly test this channel. I examine whether firms cross-list in foreign countries with more institutional differences from the firms' home country after their home country hosts the Olympics. I define two new dependent variables: *Comleg*, an indicator variable that equals one if the legal origin of a firm's home country is different from that of its cross-listing country, and equals zero otherwise; and *Distance*, an indicator variable that equals one if the physical distance between the capital of a firm's home country and the capital of the firm's cross-listing country is greater than the average distance across all countries, and equals zero otherwise. Table 3.8 reports the results and I find a positive coefficient on *Post* × *Treatment*, supporting the conjecture that after the hosting of the Olympics, firms domiciled in the host country are more likely to cross-list in foreign countries associated with a greater liability of foreignness.

[Insert Table 3.8 about here]

3.6.3 Dynamic DID Analysis

Next, I examine the dynamic effects of hosting the Olympics. I regress my cross-listing measures on four indicators—*Pre_1*, *Post_1*, *Post_2*, and *Post_3*—that indicate a period one year before the Olympics and periods one year, two years, and three years following the Olympics, respectively. To facilitate this analysis, I also use three test windows, namely [t - 2, t + 1], [t - 2, t + 2], and [t - 2, t + 3], corresponding to the one- to three-year-ahead cross-listing variables. I find positive and significant coefficients for the interaction between each of the three *Post* indicators and *Treatment* across all of the models (untabulated). The coefficient on *Pre_1* is insignificant, indicating that my results are not driven by a pre-Olympics trend, which further validates the parallel trend assumption of the DID framework. These results further support the notion that the observed increase in the cross-listing activities of firms in an Olympics-hosting country after the Olympics is likely to be non-transitory.

3.6.4 Other Robustness Tests

In this section, I conduct further analyses to reinforce the robustness of my findings. First, I use firm-years around a pseudo-Olympics-hosting year as an alternative control group for the Olympics-hosting countries. I restrict my sample to Olympics-hosting countries and use observations from either five years before the hosting of the Olympics (i.e., year window [t - 7, t - 3]) or five years after the hosting of the Olympics (i.e., year window [t + 3, t + 7]) as the benchmark for the actual event window of [t - 2, t + 2]. This is similar to examining the effect of the announcement by the IOC of a country's successful bid to host the Olympic Games, as this announcement is usually made several years before the Olympics are hosted. Therefore, the control group for this test is composed of observations from the same Olympics-hosting

country but from different years.[42] The results (untabulated) show a consistently positive and highly significant coefficient for the variable *Post* × *Treatment*, suggesting that the documented changes in firms' cross-listing activities are likely to be observed only during the periods surrounding the year of the Olympics.

In the second test, rather than assuming that hosting the Olympics has a relatively constant effect on firms' cross-listing activities across all Olympics-hosting countries, I conduct a country-by-country analysis. I run nine separate regressions for each Olympics-hosting country and all non-Olympics-hosting countries, randomly assigning to the latter a pseudo-Olympics-hosting year within my sample period.[43] My untabulated results reveal a significant post-Olympics increase in firms' cross-listing activities in eight of the nine countries (with the only exception being the US) that hosted the Olympics during my sample period.

Third, to ensure that the observed increase in the cross-listing propensity of firms domiciled in the host country after the hosting of the Olympics is driven by the increased number of cross-listing firms (i.e., the numerator) instead of a decrease in the number of public firms (i.e., the denominator) over time, I re-calculate my model using a constant sample in which I require a firm to exist in both the pre- and post-Olympics periods. I again find my inference unchanged.

Moreover, given the fact firms' cross-listing decisions can be affected by the extent of how much foreign capital that the firm can directly attract, I therefore re-estimate the main regression by control for the amount of foreign direct investments in a given country (obtained from World Bank). The untabulated results continue to show a positive and significant impact of hosting Olympics on firms' cross-listing activities.

Finally, I use a widely deployed alternative DID approach (Bertrand and Mullainathan

[42] To maintain consistency, I also exclude the pseudo-Olympics year from this analysis.
[43] For example, when observations from Australia (which hosted the Olympics in 2000) are used as the treatment group, observations for the pseudo-Olympics year of 2000 constitute the control group.

2003; Fauver et al. 2017; Amiram et al. 2018) to exploit the effect of the Olympics by staggering the hosting years in the treatment sample. I include in my model a variable *Treatment* that equals one for treatment countries after the hosting of the Olympics (i.e., the current *Post* × *Treatment*). Next, firm- and year-fixed effects and controls are included in the model. The results (untabulated) are consistent with my previous findings.

3.7. Chapter 3 Conclusion

The Olympics are the world's largest and most prestigious series of sporting events. They play an important role in enhancing the reputation of their host cities and countries on the global stage. Given the scale of public interest in the Olympics and the massive costs they incur, many studies seek to quantify the economic effects of hosting the Olympics. Such major sporting events, although seemingly value-irrelevant, may substantially affect the behavior of capital market participants (e.g., investors). However, to the best of my knowledge, no studies to date offer a systematic empirical investigation of the effect of hosting the Olympics on managerial decision-making in the host country. I fill this gap by examining the effect of hosting the Olympics on the cross-listing incentives of the host country's firms. I conjecture that a country's increased salience and enhanced reputation and visibility after hosting the Olympics increase the attention paid by foreign investors to firms domiciled in that country. Supporting this conjecture, my results show that firms domiciled in Olympics-hosting countries tend to engage in significantly more cross-listing than do firms domiciled in non-Olympics-hosting countries. The results of an array of cross-sectional tests also support this conclusion.

These results are shown to be robust across different benchmark samples. For instance, to explore whether my findings may be explained by institutional changes around the time of the Olympics, I further use countries that bid unsuccessfully to host the Olympics as a control sample in my examination of the effect of hosting the Olympics on the cross-listing of firms domiciled in the host country. I also compare cross-listing activities around the time of the

Olympics between firms domiciled in the Olympics-hosting city and firms domiciled in all other cities in the same host country. Consistent with the conjecture that the hosting of the Olympics helps firms in the host country overcome the liability of foreignness when making foreign cross-listing decisions, my results show that firms in an Olympics-hosting country are more likely to cross-list in foreign countries with a greater institutional distance from the host country after the Olympics. Overall, this study identifies an important economic consequence of hosting the Olympics for host countries and suggests an important channel through which firms can overcome the liability of foreignness. The findings have important practical implications, as it is critical for countries aspiring to host the Olympics to understand the benefits and costs associated with this undertaking.

Appendix B: Olympic Games held between 2000 and 2016 (Chapter 3)

	OG Hosting Year	*OG Hosting Country*	*OG Hosting City*	*OG Start Date*	*OG End Date*	*# of Gold Medals*	*# of Silver Medals*	*# of Bronze Medals*	*Total # of Medals*	*Global Rank of Gold*	*Summer Games*	*Winter Games*	*Bidding Countries*
1	2000	Australia	Sydney	15 Sep 00	1 Oct 00	16	25	17	58	4th	Yes	No	China, Germany, Turkey, United Kingdom
2	2002	United States	Salt Lake City	8 Feb 02	24 Feb 02	10	13	11	34	3rd	No	Yes	Sweden, Canada, Switzerland
3	2004	Greece	Athens	13 Aug 04	29 Aug 04	6	6	4	16	15th	Yes	No	Argentina, South Africa, Italy, Sweden
4	2006	Italy	Turin	10 Feb 06	26 Feb 06	5	0	6	11	9th	No	Yes	Switzerland
5	2008	China	Beijing	8 Aug 08	24 Aug 08	48	22	30	100	1st	Yes	No	Turkey, Japan, France, Canada
6	2010	Canada	Vancouver	14 Feb 10	28 Feb 10	14	7	5	26	1st	No	Yes	South Korea, Austria
7	2012	United Kingdom	London	27 Jul 12	12 Aug 12	29	17	19	65	3rd	Yes	No	Spain; Russia, United States, France
8	2014	Russia	Sochi	7 Feb 14	23 Feb 14	13	11	9	33	1st	No	Yes	South Korea, Austria
9	2016	Brazil	Rio de Janeiro	5 Aug 16	21 Aug 16	7	6	6	19	13th	Yes	No	United States, Spain, Japan

Appendix C: Variable Definitions (Chapter 3)

Variable	*Definition*	*Data Smyce*
Dependent Variables		
CL_Firm	An indicator variable that equals one if at least one secondary security of a firm is actively listed and traded in a foreign country in a given year and equals zero otherwise.	Capital IQ
CL_NMarket	The total number of unique foreign countries where a firm's securities are cross-listed in a given year.	Capital IQ
Test Variables		
Treatment	An indicator variable that equals one if a sample firm's home country hosted the Olympics in my sample period and equals zero otherwise.	International Olympic Committee (IOC)
Post	For observations in the treatment (control) group, *Post* is an indicator variable that equals one if a sample year is the year following the Olympics-hosting year (pseudo-Olympics-hosting year) and equals zero otherwise.	IOC
Pre_1	An indicator variable indicating one year before the hosting of the Olympics.	IOC
Post_1, *Post_2*, and *Post_3*	Indicator variables indicating one year, two years, and three years following the hosting of the Olympics, respectively.	IOC
OG Achievement	The total number of gold medals won by a country in the Summer (Winter) Olympics less the total number of gold medals won by the same country in the previous Summer (Winter) Olympics, scaled by the total number of gold medals won by the country in the previous Summer (Winter) Olympics.	IOC
Summer OG	An indicator variable that equals one if the Olympics hosted by the country is a summer Olympics and equals zero otherwise.	IOC
Domestic Firms	An indicator variable that equals one if a firm is headquartered and incorporated in the same country and equals zero otherwise.	IOC
All Other Variables		
Relative Size	The market value of a firm's shares listed on its domestic exchange divided by the total capitalization of its domestic equity market in a given year.	Worldscope
ROA	The ratio of a sample firm's net income to its total assets in a given year.	Worldscope
Sales Growth	A firm's annual growth rate of total sales from the prior year.	Worldscope
Leverage	The ratio of a firm's total debt to its total assets in a given year.	Worldscope
Interest	The ratio of a firm's total interest expense to its total sales in a given year.	Worldscope
Insider	The percentage of a firm's shares held by officers and directors of the firm at the end of a given year.	Worldscope
IO	The percentage of shares held by institutional investors at the end of a given year.	Factset
Accruals	A measure of firm-year-level financial opacity measured by country-, industry-, and year-adjusted total scaled accruals based on Bhattacharya et al. (2003). Scaled accruals are computed using balance sheet and income statement information: $ACCRUAL = (\Delta CA - \Delta CL - \Delta CASH + \Delta STD - DEP + \Delta TP)/\text{lag}(TA)$, 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, $\Delta CASH$ 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 the depreciation and amortization expense in a given year, ΔTP is the change in income taxes payable from the prior year, and $\text{lag}(TA)$ is the total assets at the end of the prior year.	Worldscope
Cash	The ratio of the sum of a firm's cash and short-term investments to its total assets in a given year.	Worldscope

MTB	A firm's market value of equity to book value of equity ratio in a given year.	Worldscope
Capital Expenditure	The ratio of a firm's total capital expenditures to total assets in a given year.	Worldscope
Analyst	The natural logarithm of one plus the total number of analysts following a firm in a given year.	I/B/E/S
Big4Auditor	An indicator variable that equals one if the auditor of a sample firm in a given year is a Big Four auditor and equals zero otherwise.	Capital IQ
Geographical Segment	The total number of geographical segments of a firm.	Worldscope
FIO	The percentage of a firm's shares held by foreign institutional investors at the end of a given year.	Factset
DIO	The percentage of a firm's shares held by domestic institutional investors at the end of a given year.	Factset
Industry-level Variables		
Ind Competition	A measure of the industry competition within a country in a given year, which is defined as the Herfindahl Index × (-1). The Herfindahl Index is calculated as the sum of squares of the fractional market shares of all firms within each two-digit SIC industry for a country during a given year.	Worldscope
Wrd Competition	A measure of global industry competition in a given year, which is defined similarly to *Ind Competition* but is calculated using the market shares of all firms within each two-digit SIC industry of all countries covered in my study during a given year.	Worldscope
HiTech	An indicator variable that equals one if a sample firm is in a high-technology industry (SIC 2833–2836, 8731–8734, 7371–7379, 3570–3577, and 3600–3674) and equals zero otherwise.	Worldscope
Country-level Variables		
GDP	The annual GDP per capita in a country.	World Bank
CGR	An indicator variable that equals one if the country adopts the corporate governance reform and equals zero otherwise.	Liao et al. (2021)
IFRS	An indicator variable that equals one if the country is a mandatory IFRS adopter and equals zero otherwise.	Chen et al. (2015)
Rule of Law	Captures perceptions of the extent to which agents have confidence in and abide by the rules of society, particularly contract enforcement, property rights, the police, and the courts, as Ill as the likelihood of crime and violence.	World Bank
Investor Protection	The investor protection index in a country.	World Bank
Comleg	An indicator variable that equals one if the legal origin of a firm's home country is different from that of its cross-listing country, and equals zero otherwise. Data are from the CEPII database at http://www.cepii.fr/cepii/en/bdd_modele/bdd.asp.	CEPII
Distance	An indicator variable that equals one if the physical distance between the capital of a firm's home country and the capital of the firm's cross-listing country is greater than the average distance across all countries and equals zero otherwise. Data are from the CEPII database at http://www.cepii.fr/cepii/en/bdd_modele/bdd.asp.	CEPII

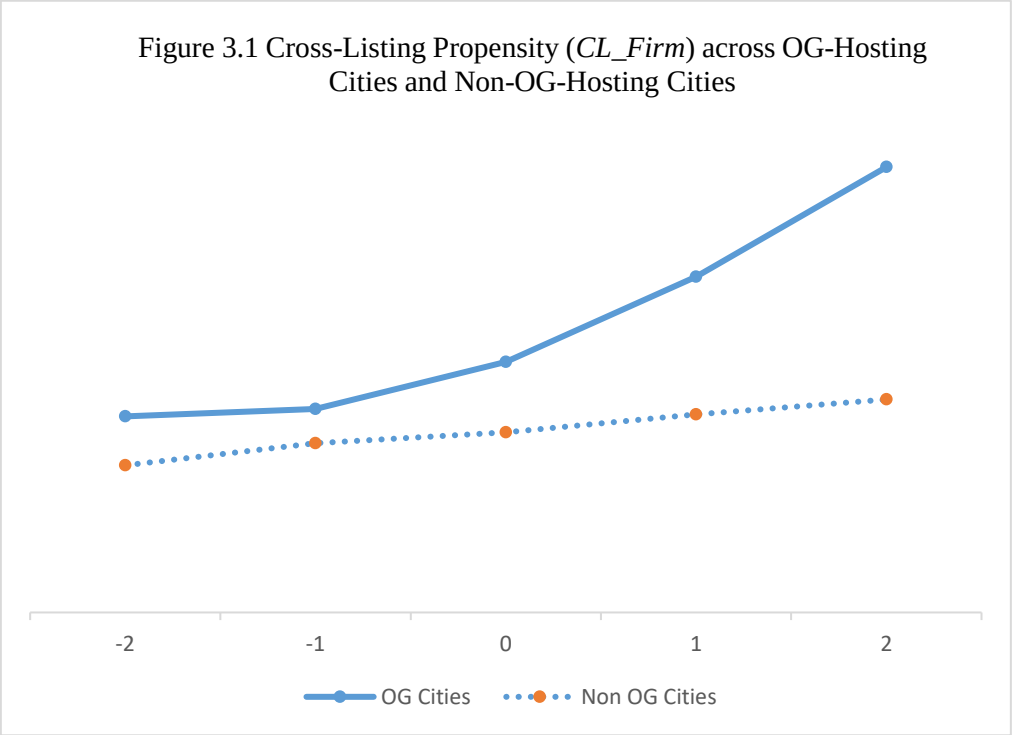

Figure 3.1 Relative changes in cross-listing propensity (*CL_Firm*) over the [-2, +2] year window between the Olympics-hosting city and non-Olympics-hosting cities in the same Olympics-hosting country, where year 0 is the Olympics hosting year. I randomly assign a pseudo-Olympics-hosting year for non-Olympics-hosting countries. OG: Olympic Games.

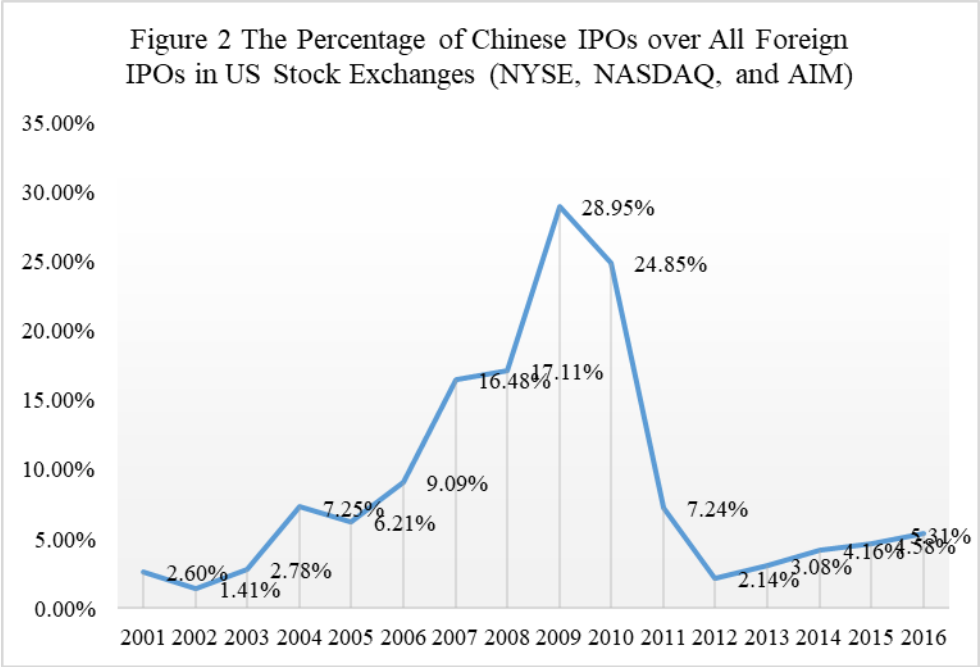

Figure 3.2 The percentage of Chinese IPOs over all foreign IPOs in all major US stock exchanges (NYSE, NASDAQ, and AIM) from 2001 to 2016. On July 13, 2001, the International Olympic Committee (IOC) announced that China was to host the Summer Olympics in August 2008.

Table 3.1. Sample Distribution

Panel A: By Country		(1)	(2)	(3)	(4)
		N	**%**	***CL_Firm***	***CL_NMarket***
	Country	*Full Sample*	*Full Sample*	*Full Sample*	*CL Sample*
1	Argentina	1,294	0.22%	0.122	1.000
2	**Australia* (2000)**	26,180	4.43%	0.029	0.967
3	Austria	1,450	0.25%	0.180	0.973
4	Belgium	2,205	0.37%	0.144	1.019
5	Bermuda	708	0.12%	0.052	1.000
6	**Brazil* (2016)**	4,925	0.83%	0.026	0.945
7	Bulgaria	2,092	0.35%	0.007	1.000
8	**Canada* (2010)**	35,700	6.04%	0.062	0.952
9	Chile	3,128	0.53%	0.038	1.167
10	**China* (2008)**	39,984	6.77%	0.022	0.750
11	Colombia	592	0.10%	0.029	1.000
12	Croatia	985	0.17%	0.011	1.000
13	Czech Republic	323	0.05%	0.149	1.000
14	Denmark	2,580	0.44%	0.099	0.910
15	Egypt	2,013	0.34%	0.042	1.000
16	Estonia	181	0.03%	0.110	1.000
17	Finland	2,402	0.41%	0.217	1.004
18	France	12,338	2.09%	0.117	1.017
19	Germany	12,685	2.15%	0.102	1.015
20	**Greece* (2004)**	3,507	0.59%	0.069	0.946
21	Hong Kong	18,761	3.18%	0.024	0.969
22	Hungary	585	0.10%	0.096	0.482
23	India	28,944	4.90%	0.056	1.029
24	Indonesia	6,537	1.11%	0.016	1.000
25	Ireland	1,134	0.19%	0.362	0.915
26	Israel	6,247	1.06%	0.073	1.000
27	**Italy* (2006)**	4,369	0.74%	0.225	0.988
28	Jamaica	209	0.04%	0.163	1.000
29	Japan	65,256	11.05%	0.012	1.046
30	Kuwait	1,956	0.33%	0.016	1.000
31	Latvia	334	0.06%	0.524	0.994
32	Lithuania	346	0.06%	0.402	1.050
33	Luxembmyg	642	0.11%	0.156	0.960
34	Malaysia	15,671	2.65%	0.004	1.000
35	Mexico	1,923	0.33%	0.126	1.004
36	Morocco	600	0.10%	0.023	1.000
37	Netherlands	3,128	0.53%	0.147	1.072
38	New Zealand	2,152	0.36%	0.075	0.832
39	Nigeria	734	0.12%	0.016	1.000
40	Norway	3,041	0.51%	0.147	1.004
41	Pakistan	3,574	0.60%	0.012	1.000
42	Peru	1,629	0.28%	0.010	0.471
43	Poland	5,537	0.94%	0.011	1.000
44	Portugal	933	0.16%	0.252	1.000
45	Qatar	364	0.06%	0.027	1.000
46	**Russia* (2014)**	4,848	0.82%	0.062	1.150
47	Singapore	10,190	1.72%	0.023	0.970
48	South Africa	5,631	0.95%	0.057	0.997
49	South Korea	25,341	4.29%	0.012	1.016
50	Spain	2,709	0.46%	0.183	0.988
51	Sri Lanka	2,494	0.42%	0.008	1.000
52	SIden	7,137	1.21%	0.095	0.984
53	Switzerland	4,096	0.69%	0.126	1.148
54	Taiwan	25,315	4.28%	0.032	1.073
55	Thailand	8,764	1.48%	0.022	0.647
56	Tunisia	526	0.09%	0.015	1.000
57	Turkey	4,913	0.83%	0.008	1.000
58	United Arab Emirates	701	0.12%	0.057	0.725
59	**United Kingdom* (2012)**	32,768	5.55%	0.022	1.044
60	**United States* (2002)**	118,466	20.05%	0.019	1.078

61	Vietnam	7,007	1.19%	0.002	1.000
	Overall	***590,784***	***100.00%***	***0.039***	***0.998***

Panel B: By Year

		(1)	(2)	(3)	(4)
		N	**%**	***CL_Firm***	***CL_NMarket***
	Year	*Full Sample*	*Full Sample*	*Full Sample*	*CL Sample*
1	1998	7,750	1.31%	0.020	1.083
2	1999	8,987	1.52%	0.024	1.083
3	2000	21,655	3.67%	0.016	1.083
4	2001	23,255	3.94%	0.018	1.067
5	2002	25,471	4.31%	0.018	1.069
6	2003	25,812	4.37%	0.020	1.046
7	2004	26,700	4.52%	0.021	1.041
8	2005	27,952	4.73%	0.023	1.034
9	2006	32,537	5.51%	0.025	1.037
10	2007	35,369	5.99%	0.034	1.018
11	2008	36,488	6.18%	0.039	1.017
12	2009	37,037	6.27%	0.041	1.013
13	2010	37,391	6.33%	0.048	1.018
14	2011	36,541	6.19%	0.054	1.011
15	2012	35,454	6.00%	0.056	1.010
16	2013	34,223	5.79%	0.056	1.006
17	2014	34,062	5.77%	0.054	0.944
18	2015	34,386	5.82%	0.051	0.943
19	2016	34,466	5.83%	0.049	0.942
20	2017	35,248	5.97%	0.047	0.934
	Overall	***590,784***	***100.00%***	***0.039***	***0.998***

Panel C: By Industry

		(1)	(2)	(3)	(4)
		N	**%**	***CL_Firm***	***CL_NMarket***
	Industry	*Full Sample*	*Full Sample*	*Full Sample*	*CL Sample*
1	Mining/Construction	60,453	10.23%	0.051	0.976
2	Food	23,004	3.89%	0.046	1.038
3	Textiles/Print/Publ.	32,316	5.47%	0.027	0.971
4	Chemicals	22,488	3.81%	0.040	1.075
5	Pharmaceuticals	19,852	3.36%	0.048	0.965
6	Extractive	19,967	3.38%	0.078	1.000
7	Manf.: Rubber/glass/etc.	18,519	3.13%	0.039	0.960
8	Manf.: Metal	24,568	4.16%	0.038	0.995
9	Manf.: Machinery	21,784	3.69%	0.034	0.965
10	Manf.: Electrical Eqpt.	22,868	3.87%	0.040	1.017
11	Manf.: Transport Eqpt.	13,745	2.33%	0.060	0.968
12	Manf.: Instruments	18,459	3.12%	0.028	1.033
13	Retail: Misc.	4,385	0.74%	0.029	0.930
14	Computers	65,388	11.07%	0.036	1.010
15	Transportation	31,764	5.38%	0.075	1.015
16	Utilities	16,612	2.81%	0.054	1.000
17	Retail: Wholesale	25,457	4.31%	0.019	0.971
18	Retail: Misc.	23,654	4.00%	0.035	0.971
19	Retail: Restaurant	5,264	0.89%	0.014	1.000
20	Financial	20,150	3.41%	0.027	1.106
21	Insurance/Real Estate	38,479	6.51%	0.010	0.992
22	Services	54,592	9.24%	0.027	0.974
23	Others	7,016	1.19%	0.046	1.022
	Overall	***590,784***	***100.00%***	***0.039***	***0.998***

Panels A, B, and C present the sample distribution by country, year, and industry, respectively. In Panel A, "*" indicates Olympics-hosting countries, with the hosting year included in brackets. In Panel C, industry classification is based on Barth et al. (2005). Manf.: Manufacturing.

Table 3.2. Summary Statistics

Variable	N	Mean	Std. Dev.	25%	50%	75%
CL_Firm (Full Sample)	590,784	0.039	0.193	0	0	0
CL_NMarket (CL Sample)	22,877	0.998	0.304	1	1	1
Treatment	590,784	0.458	0.498	0	0	1
Post	590,784	0.702	0.457	0	1	1
Relative Size	590,784	0.057	0.238	0	0.002	0.013
ROA	590,784	-0.134	0.804	-0.040	0.024	0.071
Sales Growth	590,784	0.092	0.379	-0.037	0.025	0.157
Leverage	590,784	0.576	0.750	0.276	0.479	0.664
Interest	590,784	0.065	0.162	0.002	0.020	0.055
Insider	590,784	0.314	0.295	0	0.273	0.566
IO	590,784	0.047	0.140	0	0	0.011
Accruals	590,784	-0.004	1.114	-0.003	0	0
Cash	590,784	0.187	0.209	0.041	0.112	0.251
MTB	590,784	2.201	4.631	0.672	1.299	2.585
Capital Expenditure	590,784	0.052	0.071	0.008	0.028	0.064
Analyst	590,784	0.227	0.667	0	0	0
Big4Auditor	590,784	0.228	0.420	0	0	0
Geographic Segment	590,784	0.155	0.436	0	0	0
Wrd Competition	590,784	-0.256	0.256	-0.339	-0.158	-0.076
Ind Competition	590,784	-0.229	0.085	-0.291	-0.226	-0.167
HiTech	590,784	0.171	0.377	0	0	0

This table provides summary statistics for the key variables used in the regression analyses. All variables are defined in Appendix C.

Table 3.3. Univariate Analysis

Panel A: Olympics-Hosting versus Non-Olympics-Hosting Countries (cross-country comparison)

	(1)		(2)		(3)	(4)	(5)
CL_Firm	***Pre-OG [t-2, t-1]***		***Post-OG [t+1, t+2]***		***Diff (Post - Pre)***	***t-stat***	***p-value***
	N	***Mean***	***N***	***Mean***			
OG-Hosting Countries	29,889	***0.021***	30,945	***0.062***	***0.041***	25.411	0.000
Non-OG-Hosting Countries	28,474	***0.039***	33,949	***0.055***	***0.016***	9.683	0.000
DID: ***CL_Firm*** *[Diff (OG) – Diff (Non-OG)]*					***0.024******	***10.382***	***0.000***
	(1)		(2)		(3)	(4)	(5)
CL_NMarket	***Pre-OG [t-2, t-1]***		***Post-OG [t+1, t+2]***		***Diff (Post - Pre)***	***t-stat***	***p-value***
	N	***Mean***	***N***	***Mean***			
OG-Hosting Countries	29,889	***0.023***	30,945	***0.065***	***0.042***	23.896	0.000
Non-OG-Hosting Countries	28,474	***0.040***	33,949	***0.058***	***0.018***	9.493	0.000
DID: ***CL_NMarket*** *[Diff (OG) - Diff (Non-OG)]*					***0.025******	***9.624***	***0.000***

This table reports the comparative statistics (means) for cross-listing propensity (*CL_Firm*) and cross-listing intensity (*CL_NMarket*) across the treatment and control groups. The treatment and control groups are firms from Olympics-hosting countries and firms from non-Olympics-hosting countries, respectively. I randomly assign a pseudo-Olympics-year for non-Olympics-hosting countries. DID: Difference-in-differences. All continuous variables are winsorized at the 1st and 99th percentiles. The differences in means between the treatment and benchmark samples are compared using a two-tailed t-test (Wilcoxon–Mann–Whitney test). ***, **, and * indicate that the difference between the benchmark sample and the treatment sample is significant at the 1%, 5%, and 10% levels, respectively.

Table 3.4. Olympics-Hosting Countries and Cross-Listing

	(1)	(2)	(3)	(4)	(5)	(6)
Sample Period	*Full Sample*	*[t-2, t+2]*	*[t-1, t+1]*	*Full Sample*	*[t-2, t+2]*	*[t-1, t+1]*
Treatment Group	Firms in *Olympics-Hosting Countries*					
Control Group	Firms in *All Non-Olympics-Hosting Countries*					
Dep. Var.	*CL_Firm*	*CL_Firm*	*CL_Firm*	*CL_NMarket*	*CL_NMarket*	*CL_NMarket*
Model	*Logit*	*Logit*	*Logit*	*Poisson*	*Poisson*	*Poisson*
Post ×Treatment	**0.705*** **	**0.666*** **	**0.429*** **	**0.643*** **	**0.483*** **	**0.263*** **
	(8.033)	**(8.387)**	**(4.383)**	**(8.523)**	**(7.388)**	**(3.319)**
Post	-0.368***	-0.057	-0.057	-0.360***	-0.036	-0.038
	(-9.210)	(-1.121)	(-0.814)	(-11.218)	(-0.913)	(-0.693)
Treatment	-8.250***	-9.557***	-9.682***	-6.502***	-6.830***	-7.555***
	(-10.008)	(-10.750)	(-8.528)	(-10.212)	(-9.165)	(-7.926)
Relative Size	1.200***	1.335***	1.393***	0.545***	0.667***	0.742***
	(25.584)	(18.315)	(16.153)	(26.881)	(16.804)	(14.999)
ROA	0.042***	0.141***	0.120**	0.031***	0.178***	0.165***
	(3.578)	(2.784)	(2.105)	(3.803)	(3.675)	(2.840)
Sales Growth	-0.152***	-0.126**	-0.185**	-0.083***	-0.064	-0.135**
	(-7.275)	(-2.175)	(-2.279)	(-5.811)	(-1.389)	(-1.971)
Leverage	-0.032**	-0.021	0.016	-0.028***	-0.019	0.014
	(-2.347)	(-0.467)	(0.260)	(-3.003)	(-0.477)	(0.272)
Interest	0.141**	0.314**	0.027	0.116***	0.282***	0.086
	(2.289)	(2.507)	(0.145)	(2.832)	(2.668)	(0.497)
Insider	-0.239***	-0.078	-0.104	-0.147***	-0.024	-0.064
	(-5.829)	(-0.953)	(-0.975)	(-5.272)	(-0.387)	(-0.765)
IO	3.066***	3.465***	3.697***	1.261***	1.820***	2.069***
	(38.087)	(19.835)	(16.987)	(30.894)	(14.755)	(13.309)
Accruals	-0.004	0.016	-0.026	-0.003	-0.003	-0.006
	(-0.689)	(0.923)	(-1.189)	(-0.552)	(-0.153)	(-0.247)
Cash	-0.020	-0.378***	-0.431**	0.034	-0.220**	-0.284**
	(-0.364)	(-2.868)	(-2.546)	(1.006)	(-2.079)	(-2.045)
MTB	-0.011***	0.009*	0.012*	-0.004***	0.010**	0.014***
	(-5.870)	(1.842)	(1.707)	(-3.413)	(2.515)	(2.663)
CAPEX	0.241*	0.352	0.316	0.266***	0.550**	0.560*
	(1.697)	(1.213)	(0.836)	(2.991)	(2.346)	(1.753)
Analyst	0.206***	0.585***	0.593***	0.088***	0.231***	0.241***
	(6.191)	(5.697)	(5.448)	(4.725)	(4.369)	(4.366)
Big4Auditor	1.018***	1.058***	0.955***	1.142***	1.083***	0.976***
	(19.410)	(16.826)	(12.676)	(23.513)	(19.365)	(14.796)
Geographic Segment	0.509***	0.535***	0.544***	0.473***	0.391***	0.371***
	(14.268)	(12.144)	(10.421)	(17.645)	(11.267)	(8.878)
Wrd Competition	-0.014	0.066	0.067	0.018	0.145*	0.113
	(-0.246)	(0.573)	(0.457)	(0.533)	(1.647)	(0.982)
Ind Competition	-0.555***	-0.956**	-1.599***	-0.458***	-0.704**	-1.099***
	(-2.589)	(-2.433)	(-3.249)	(-3.655)	(-2.491)	(-2.995)
HiTech	0.134	0.622***	0.638***	0.134***	0.463***	0.472***
	(1.632)	(3.361)	(2.832)	(2.590)	(3.247)	(2.614)
GDP	0.024***	0.028***	0.030***	0.012**	0.014**	0.015**
	(3.847)	(3.105)	(2.636)	(2.404)	(2.000)	(1.969)
CGR	0.808***	0.583***	0.671***	0.651***	0.457***	0.547***
	(7.394)	(4.358)	(4.054)	(6.154)	(3.954)	(3.966)
IFRS	0.570***	1.124***	0.699***	0.519***	0.906***	0.507***
	(5.029)	(6.552)	(2.983)	(5.235)	(6.114)	(2.634)
Rule of law	2.344***	1.494***	1.422***	2.026***	1.315***	1.506***
	(7.928)	(4.661)	(3.145)	(8.557)	(4.555)	(3.803)
Investor Protection	0.432***	0.312**	0.569***	0.242**	0.173	0.489***
	(3.529)	(2.054)	(2.588)	(2.419)	(1.317)	(2.607)
Constant	-1.521***	-1.433***	-1.577***	-1.707***	-1.592***	-1.547***
	(-3.764)	(-2.853)	(-3.076)	(-6.025)	(-4.080)	(-3.848)
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
Observations	542,755	123,257	61,655	559,492	123,257	61,655
Pseudo-R^2	0.400	0.341	0.328	0.320	0.287	0.276

This table presents the regression results for the effect of hosting the Olympics on firms' cross-listing propensity and cross-listing intensity. The *t*-values based on robust standard errors adjusted for clustering by firm and home country are reported in brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix C. FE: Fixed effect.

Table 3.5. Alternative Benchmark: Cohort-Matched Bidding Countries

	(1)	(2)	(3)	(4)	(5)	(6)
Sample Period	*Full Sample*	*[t-2, t+2]*	*[t-1, t+1]*	*Full Sample*	*[t-2, t+2]*	*[t-1, t+1]*
Treatment Group	Firms in *Olympics-Hosting Countries*					
Control Group	Firms in *Unsuccessful Olympics-Bidding Countries*					
Dep. Var.	*CL_Firm*	*CL_Firm*	*CL_Firm*	*CL_NMarket*	*CL_NMarket*	*CL_NMarket*
Model	*Logit*	*Logit*	*Logit*	*Poisson*	*Poisson*	*Poisson*
Post ×Treatment	**0.439*** **	**1.124*** **	**0.882*** **	**0.300*** **	**0.635*** **	**0.568*** **
	(4.099)	**(9.224)**	**(4.561)**	**(3.295)**	**(7.823)**	**(4.487)**
Post	-0.382***	-0.116	-0.323	-0.237***	0.038	0.401**
	(-7.219)	(-1.559)	(-1.239)	(-5.375)	(0.996)	(2.306)
Treatment	-1.148	-1.516	-2.098	-3.138***	-0.307	0.473
	(-1.022)	(-1.076)	(-0.317)	(-3.310)	(-0.326)	(0.113)
All other controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
Observations	391,035	62,360	37,661	391,035	62,360	37,661
Pseudo-R^2	0.433	0.350	0.346	0.344	0.268	0.262

This table presents the regression results of the effect of hosting the Olympics on the cross-listing activities of firms domiciled in the host country by using firms from unsuccessful bidding countries as an alternative benchmark. The *t*-values based on robust standard errors adjusted for clustering by firm and home country are reported in brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix C.

Table 3.6. Olympics-Hosting Cities and Cross-Listing

	(1)	(2)	(3)	(4)	(5)	(6)
Sample Period	*Full Sample*	*[t-2, t+2]*	*[t-1, t+1]*	*Full Sample*	*[t-2, t+2]*	*[t-1, t+1]*
Treatment Group	Firms in *Olympics-Hosting Cities*					
Control Group	Firms in *Non-Olympics-Hosting Cities* of Olympics-Hosting Countries					
Dep. Var.	*CL_Firm*	*CL_Firm*	*CL_Firm*	*CL_NMarket*	*CL_NMarket*	*CL_NMarket*
Model	*Logit*	*Logit*	*Logit*	*Poisson*	*Poisson*	*Poisson*
Post × Treatment	**0.453** **	**1.287*** **	**1.508*** **	**0.184**	**0.936*** **	**1.193*** **
	(2.519)	**(8.187)**	**(9.815)**	**(1.147)**	**(6.665)**	**(8.487)**
Post	-0.341***	1.333***	-1.277***	-0.265***	0.684***	-0.685**
	(-3.377)	(6.443)	(-3.468)	(-3.019)	(4.365)	(-2.180)
Treatment	0.258	0.004	0.026	0.150	-0.002	0.034
	(1.411)	(0.022)	(0.155)	(0.917)	(-0.012)	(0.226)
All other controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
Observations	255,752	60,834	30,174	255,752	60,834	30,174
Pseudo-R^2	0.450	0.387	0.375	0.352	0.327	0.317

This table presents the regression results for the effect of Olympics hosting on the cross-listing propensity and cross-listing intensity of firms domiciled in the host country using the sample of Olympics-hosting countries. The treatment group consists of the Olympics-hosting cities and the control group consists of the non-Olympics-hosting cities within the same Olympics-hosting countries. The *t*-values based on robust standard errors adjusted for clustering by firm and home country are reported in brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix C.

Table 3.7. Cross-Sectional Tests: OG Achievement, Summer vs Winter OG, Domestic vs Foreign Firms

	(1)	(2)	(3)	(4)	(5)	(6)
Sample Period	*Full Sample*	*Full Sample*	*Full Sample*	*Full Sample*	*Full Sample*	*Full Sample*
Treatment Group	Firms in *Olympics-Hosting Countries*					
Control Group	Firms in *All Non-Olympics-Hosting Countries*					
Cross-Sectional Var (CS)	***OG Achievement***		***Summer OG***		***Domestic Firms***	
Dep. Var.	*CL_Firm*	*CL_NMarket*	*CL_Firm*	*CL_NMarket*	*CL_Firm*	*CL_NMarket*
Model	*Logit*	*Poisson*	*Logit*	*Poisson*	*Logit*	*Poisson*
Post × Treatment × CS	**0.969*** **	**0.948*** **	**0.746*** **	**0.766*** **	**0.839** **	**1.133*** **
	(7.931)	**(9.095)**	**(5.401)**	**(6.378)**	**(2.273)**	**(4.397)**
CS	0.679***	0.299***	0.452***	0.439***	-0.402	-0.552***
	(9.538)	(4.825)	(8.058)	(9.156)	(-1.212)	(-2.624)
Post	-0.109*	-0.129**	-0.284***	-0.227***	-0.661***	-0.478***
	(-1.702)	(-2.479)	(-5.610)	(-5.192)	(-2.595)	(-2.965)
Treatment	-6.066***	-4.896***	-7.803***	-5.557***	-9.384***	-6.958***
	(-7.461)	(-7.768)	(-9.672)	(-8.705)	(-10.547)	(-10.383)
Post × CS	-0.279***	-0.167**	-0.141**	-0.200***	0.316	0.177
	(-3.187)	(-2.406)	(-2.490)	(-4.187)	(1.222)	(1.079)
Treatment × CS	-0.318***	-0.170*		0.026	1.361***	0.665**
	(-3.068)	(-1.821)		(0.224)	(3.359)	(2.481)
Post × Treatment	-0.011	-0.060	0.776***	0.562***	-0.097	-0.496**
	(-0.106)	(-0.697)	(8.437)	(6.737)	(-0.271)	(-1.986)
All other controls	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES
Observations	559,492	559,492	559,492	559,492	559,492	559,492
Pseudo-R^2	0.404	0.323	0.403	0.323	0.404	0.322

This table presents the regression results for the cross-sectional tests of the relationship between Olympics hosting and cross-listing activities. Columns 1 and 2 present the results of the effect of *Olympic Achievement*. A country's Olympic achievement is computed as the total number of gold medals received by the country in a Summer (Winter) Olympics less the total number of gold medals received by the country in the previous Summer (Winter) Olympics, scaled by the total number of gold medals received by the country in the previous Summer (Winter) Olympics. Columns 3 and 4 present the results for the differential effect of hosting the Summer versus the Winter Olympics. *Summer* Olympics is an indicator variable that equals one if the Olympics hosted by the country is a Summer Olympics and equals zero otherwise. The interaction term *Treatment × CS* is omitted in Columns 3−6 because it is a linear combination of country fixed effects, i.e., there is no within-country variation for *Treatment* and *Summer* Olympics (in Columns 3 and 4). Columns 5 and 6 present the results for the differences in the effect of hosting the Olympics on cross-listing activities between domestic and foreign firms. To do so, I define an indicator variable *Domestic Firms*, which equals one if a firm is headquartered and incorporated in the same country and equals zero otherwise. The *t*-values based on robust standard errors adjusted for clustering by firm and home country are reported in brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix C.

Table 3.8: Olympic Games Hosting and Cross-Listing Country Choices

	(1)	(2)	(3)	(4)
Sample Period	*[t-2, t+2]*	*[t-1, t+1]*	*[t-2, t+2]*	*[t-1, t+1]*
Treatment Group	Firms in *Olympics-Hosting Countries*			
Control Group	Firms in *All Non-Olympics-Hosting Countries*			
Dep. Var.	*Comleg*	*Comleg*	*Distw*	*Distw*
Model	*OLS*	*OLS*	*OLS*	*OLS*
Post ×Treatment	**0.132***	**0.224*****	**0.076***	**0.118****
	(1.780)	**(3.192)**	**(1.67)**	**(2.16)**
Post	-0.034	-0.033	-0.050*	-0.076**
	(-0.936)	(-0.923)	(-1.93)	(-2.33)
Treatment	0.727*	-0.537	0.028	0.813*
	(1.813)	(-0.856)	(0.08)	(1.76)
Relative Size	0.048	0.018	-0.098**	-0.034
	(0.979)	(0.481)	(-2.42)	(-0.72)
ROA	-0.202**	-0.060	0.058	0.020
	(-2.221)	(-0.366)	(1.58)	(0.19)
Sales Growth	0.073	0.008	0.027	-0.058
	(1.300)	(0.123)	(0.70)	(-0.97)
Leverage	-0.101	0.045	0.098**	0.064
	(-1.594)	(0.508)	(2.07)	(0.99)
Interest	0.192*	0.064	-0.008	0.681**
	(1.701)	(0.148)	(-0.10)	(2.03)
Insider	-0.007	0.077	-0.081	-0.107
	(-0.077)	(0.735)	(-1.17)	(-1.34)
IO	-0.006	-0.011	-0.042	-0.120
	(-0.034)	(-0.064)	(-0.58)	(-1.39)
Accruals	0.014	0.013	-0.004	-0.001
	(1.061)	(0.709)	(-1.01)	(-0.20)
Cash	0.309**	0.524***	-0.034	-0.040
	(2.159)	(3.052)	(-0.34)	(-0.33)
MTB	-0.014***	-0.024***	-0.001	-0.002
	(-2.740)	(-4.074)	(-0.62)	(-0.77)
CAPEX	0.006	1.042**	0.299	0.258
	(0.017)	(2.351)	(1.14)	(0.71)
Analyst	-0.110*	-0.104	0.099**	0.114**
	(-1.761)	(-1.556)	(2.23)	(2.15)
Big4Auditor	0.021	0.084*	0.007	-0.025
	(0.492)	(1.807)	(0.24)	(-0.59)
Geographic Segment	-0.043	-0.067**	0.001	-0.006
	(-1.335)	(-2.151)	(0.06)	(-0.20)
Wrd Competition	-0.007	0.020	-0.052	-0.046
	(-0.054)	(0.140)	(-0.60)	(-0.47)
Ind Competition	-0.643	-0.222	0.158	0.289
	(-1.372)	(-0.577)	(0.72)	(1.08)
HiTech	-0.011	0.024	0.107**	0.130**
	(-0.106)	(0.271)	(2.07)	(2.04)
GDP	-0.008	0.004	-0.001	-0.010*
	(-1.281)	(0.447)	(-0.16)	(-1.84)
CGR	-0.043	-0.029	-0.046	-0.114**
	(-0.664)	(-0.420)	(-1.04)	(-2.00)
IFRS	-0.064	-0.163**	0.173***	0.228***
	(-0.770)	(-1.990)	(2.85)	(3.20)
Rule of law	-0.266	0.251	0.052	-0.277
	(-1.245)	(0.635)	(0.34)	(-1.02)
Investor Protection	0.358	0.545**	-0.067	-0.191
	(1.014)	(2.078)	(-0.23)	(-0.77)
Constant	-0.033	-0.360	0.619**	0.926***
	(-0.091)	(-1.480)	(2.26)	(4.42)
Year FE	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES
Country FE	YES	YES	YES	YES
Observations	839	430	818	447
Pseudo-R^2	0.3511	0.5663	0.6961	0.7097

This table examines the effect of hosting the Olympics on the cross-listing choices of firms domiciled in the host country. The *t*-values based on robust standard errors adjusted for clustering by firm and home country are reported in brackets. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All variables are defined in Appendix C.

Chapter 4. Foreign Media Coverage and the Pricing of Accounting Information

4.1. Introduction

The literature shows that news media serve as important information intermediaries in a firm's information environment. They disseminate information to a wide audience, and also generate private information through journalistic activities such as the interpretation and investigation of events (e.g., Bushee et al. 2010; Drake et al. 2014; Miller and Skinner 2015; Coyne et al. 2019). At the macro-level, news media play a crucial role in capital market development and efficient assets allocation (Cao et al. 2020). The news media industry has been reshaped in recent decades by the increasing globalization of economies and financial markets, and by technological advances in the dissemination of information. As a result, recent decades have witnessed a substantial growth in the presence of foreign media, which increases the international flow of news.[44]

The increasingly important role played by news media has motivated extensive research on the various capital market consequences of media coverage (e.g. Miller 2006; Tetlock 2007; Dyck et al. 2008; Fang and Peress 2009; Bushee et al. 2010; Griffin et al. 2011; Drake et al. 2014; Hillert et al. 2014; Dai et al. 2015; Rogers et al. 2016). A higher level of media coverage is generally believed to facilitate the aggregation of public opinion of earnings announcements and to improve trading and pricing activities, particularly due to the media's role as an information distributor (e.g., Bushee et al. 2010; Drake et al. 2014). It is unclear, however, whether foreign news media play a similar role to that of domestic news media in the price discovery process following earnings announcements. Yet, it is important to understand this question because although foreign media outlets now represent a non-trivial segment of the full spectrum of media, their role in the financial market remains unexplored. While some might

[44] A report from Pew Research Center shows that in 2008 there were 796 foreign media outlets (from 113 countries and territories) represented by at least one correspondent in Washington, which was an increase of 57% from 507 media outlets (from 59 countries and territories) in 1994 (Pew Research Center 2009).

argue that foreign media act as new sources of information that reduce information asymmetry between firms and their investors, others might argue that they simply add noise to the seemingly overloaded information environment.[45] I therefore believe that the answer to the research question is of great interest to regulators, practitioners, and academics.

In this study, I examine the capital market impact of foreign media coverage relative to domestic media coverage in terms of their effects on the pricing of accounting information following earnings announcements in the US market. I choose earnings announcements as my research setting because it represents one of the most common and important channels of communication between a firm's insiders and outside investors (e.g., Ball and Brown 1968; Beaver 1968; Landsman and Maydew 2002; DeFond et al. 2007; Pevzner et al. 2015; Beaver et al. 2018; Beaver et al. 2019). Previous studies show that the media play an important role in stock price reactions to corporate news announcements (e.g., Griffin et al. 2011; Drake et al. 2017; Kong et al. 2017; Huang et al. 2018; Bonsall IV et al. 2019). Research also suggests that managers are very concerned about the market response to earnings announcements released through the media (e.g., Michaely et al. 2016; Huang et al. 2018).

On one hand, foreign media outlets might be at an information disadvantage relative to domestic media outlets to the extent that they face greater information acquisition costs. Such costs could stem from the geographical, language, cultural, and legal differences between USfirms and the home countries of foreign media outlets. Prior studies suggest that concerns about information acquisition and production costs may restrict foreign media outlets' access to local information sources and result in some foreign journalists borrowing news from domestic media (Ghorpade 1984; Archetti 2013). The Pew Research Center (2009) reports that

[45] For example, recent studies argue that information in the Internet era is available at little cost, which results in information overload, and that this issue is exacerbated by increasingly technology-enabled media (e.g., Drake et al. 2017; Chapman et al. 2019). See "Corporate Disclosure Effectiveness: Ensuring a Balanced System that Informs and Protects Investors and Facilitates Capital Formation", by Centre for Capital Markets (available at http://www.centerforcapitalmarkets.com/wpcontent/uploads/2014/07/CCMC_Disclosure_Reform_Final_7-28-20141.pdf). See also "The Importance of Independence" by Mary Jo White (available at https: //www.sec.gov/news/speech/spch100113mjw).

foreign journalists find accessing key decision-makers difficult, hindering their ability to break exclusive stories. Pérez's (2017) interviews also show that journalists and editors acknowledge the significant obstacles that political and cultural distances present for foreign journalists to a deep understanding of what they are reporting on.[46]

Conversely, domestic media outlets are likely to play more of a role in information collection, dissemination, and creation. This is due to their greater familiarity with domestic firms and their higher likelihood of having more informal information channels such as private communication with firm management and access to domestic social networks. Together, these discussions suggest that the media coverage provided by foreign outlets could play a less important/informative role in capital markets relative to that of domestic media coverage, in their coverage of corporate earnings news, and thus lead to a lower stock market response to firms' earnings announcements. I term this prediction the "*foreign media information disadvantage*" hypothesis.

On the other hand, those who view firms' media coverage through the lens of economic and political incentives argue that media outlets vary regarding how news stories are written. Several studies show that media outlets tend to provide more favorable coverage to firms to which they are geographically close or with business connection; such media bias can affect investor sentiment and trading activity (e.g., Dougal et al. 2012; Gurun and Butler 2012). Kim et al. (2019) present additional evidence suggesting that local media outlets can sometimes be compromised in their coverage because of pressure exerted by local governments. It is therefore possible that foreign media outlets are more independent and objective than domestic media outlets because domestic outlets are more likely to have business relationships with the covered firms and/or be subject to higher political pressure. These discussions suggest that foreign media outlets would thus provide news coverage on firms in a more objective manner.

[46] Analogous to this argument, various country-level institutional differences have been shown to increase foreign entities' costs of information acquisition and production in the context of institutional investors and financial analysts (e.g., Mian 2006; Bae et al. 2008; Giannetti and Yafeh 2012; Baik et al. 2013).

I predict that if this view is correct, then foreign media coverage of firm earnings news is more informative to capital market participants than the media coverage from domestic media outlets. I term this prediction the '*foreign media independence*' hypothesis.

We test these two competing hypotheses using a novel hand-collected dataset that incorporates the headquarters locations of 1,126 media outlets from 48 countries and which covers 100,000 quarterly earnings announcements of firms listed in the US stock exchanges during 2007-2017. First, I find that foreign media coverage is associated on average with a weaker stock market reaction to firms' earnings announcements than domestic media coverage is. Second, and more importantly, I investigate whether the differential impact on market responses to earnings announcements between foreign and domestic media coverage is conditional on the nature of the news in the earnings announcement. I find that while *foreign media coverage* increases the stock market reaction to earnings announcements that convey *bad* news, *domestic media coverage* increases the stock market reaction to earnings announcements that convey *good* news. These findings are surprising, because although the unconditional results from my first analysis appear to lend support to the '*foreign media information disadvantage*' hypothesis, the findings from my subsequent investigation, i.e., that the reaction is conditional on the type of earnings announcement, are more supportive of the '*foreign media independence*' hypothesis.

I perform a battery of additional analyses to mitigate the concern that the documented difference between foreign and domestic media coverage is endogenous. I first apply different strategies to identify foreign and domestic media to ensure my findings are robust to alternative measurements of media coverage. I then conduct several tests to alleviate the concern that my findings are driven by fundamental differences between the firms that are covered by news media. These tests include controlling for firm fixed effects, using a constant sample of firms followed by both domestic and foreign media, and a propensity-score-matched sample based on firm characteristics. The results from these analyses further confirm my findings.

Through additional cross-sectional analyses, my evidence further indicates that the relation between foreign media coverage and stock market responses to negative earnings news is stronger when the media outlets are located in countries with low economic, political, and cultural proximity to the firms' countries. These findings lend further support to the argument that foreign media outlets, which are less likely to have business relationships with firms that they are covering, are more independent. This in turn enables them to play a more important role in incorporating negative earnings news into stock prices. Lending further support to this argument, in further analysis, I find that foreign media coverage tends to be less positive (more negative) when covering good (bad) corporate earnings news.

I perform several additional analyses to further my understanding of the long-term impact of foreign media coverage. Accepting the position that foreign media coverage is likely to be more objective in covering, interpreting, and disseminating earnings news, I expect current stock returns to incorporate more information about future earnings from foreign media. This is especially so when the potential for firms having negative earnings news in the future is high. In addition to my examination of the relationship between foreign media coverage and stock market reactions to earnings news during a short event window (i.e., earnings response coefficient, ERC), I further examine the relationship between foreign media coverage, current stock returns, and future earnings (i.e., future ERC). I find evidence consistent with my prediction. My findings suggest that greater levels of foreign media coverage appear to accelerate the incorporation of future earnings information into the current stock price when firms' future earnings are expected to be negative.

Recent studies on the role of news media have provided insights into the corporate governance role of the media in financial markets (e.g., Miller 2006; Dyck et al. 2010; Dai et al. 2015; Rogers et al. 2016). Following these studies, I further investigate whether and how domestic and foreign media coverage differ in their ability to constrain managers' behavior. My study's primary findings support the important role of foreign media in disseminating

negative earnings news to the stock markets. I therefore ask in this further investigation whether foreign media are more effective than domestic media in reducing managerial tendencies to withhold negative earnings news.[47] I again find evidence that foreign media constrain corporate managers. Specifically, using firms' stock price crash risks as a proxy for managers' bad-news withholding (Hutton et al. 2009; Kim et al. 2011; Aman 2013), my results show that foreign (domestic) media coverage is negatively (positively) associated with firms' stock price crash risks. These results provide collaborative evidence that the greater level of independence associated with foreign media contributes to the difference in the capital market impacts of foreign and domestic news media.

Finally, I attempt to identify the additional channels through which foreign media influence firms' information environments and managers' disclosure behaviors. I document a significantly positive relation between foreign media coverage and foreign institutional ownership. This finding is consistent with the well-documented role of foreign institutional investors in fostering better corporate governance practices in general (Ferreira and Matos 2008; Aggarwal et al. 2011) and in firms' disclosure policies in particular (Lel 2019; Tsang et al. 2019). This evidence also suggests a viable channel through which foreign media coverage leads to improvements in the incorporation of negative earnings news in stock prices and in constraining managerial tendencies toward withholding bad news.

My study contributes to the literature in two ways. First, a growing body of research has documented the significant capital market benefits of media coverage such as reduced information asymmetry, increased investor response to information, better analyst forecast accuracy, and reduced mispricing (Bushee et al. 2010; Engelberg and Parsons 2011; Drake et al. 2014; Cao et al. 2020). My study extends this literature by examining the differential role of foreign versus domestic media in capital markets. The literature offers evidence that media

[47] Managers typically possess superior private information (for example, they can better anticipate earnings surprises in their future earnings announcements) relative to other major capital market participants. Research suggest that managers are more likely to withhold bad news than good news (Kothari et al. 2009; Baginski et al. 2018).

outlets vary regarding their professionalism, transmission medium, and political connection. Each of these variables has a different implication for market participants (e.g., Drake et al. 2017; Blankespoor et al. 2018; You et al. 2018). I add to this strand of research by showing how the role of media coverage also varies with the media outlet's country of origin.

Second, previous studies show that within the context of one country, media outlets with less geographical proximity to firms tend to be more objective and provide less positively slanted coverage of those firms (e.g., Gurun and Butler 2012; Kim et al. 2019). My study extends this literature to a large number of media outlets beyond the national border. I show that foreign media, due to their greater level of independence, appear to play a more effective role than domestic media in facilitating the incorporation of negative earnings news into stock prices. Unlike prior studies that predominantly focus on media outlets from a single country (Graf-Vlachy et al. 2020), my cross-country examination of foreign news media also allow me to explore the heterogeneity in their effects across many countries with different institutional characteristics including a foreign country's economic, political, and cultural proximity to the US.

Finally, this paper also adds to the growing literature on the determinants of firm-specific stock price crash risk. Research indicates that various external capital market participants including, for instance, institutional investors (Callen and Fang 2013), auditors (Robins and Zhang 2015), financial analysts (Kim et al. 2019b) and foreign investors (Kim et al. 2019a) can have a significant influence in firm's stock price crash risk. Yet, despite the crucial role of media in general as both corporate monitor and information intermediary in the capital market, existing studies pay relatively little attention to the role of media in firm's stock price crash risk. My study thus provides a further understanding of the role of media, especially foreign media, in firms' future stock price crash risk.

The remainder of this paper is organized as follows. Section 2 reviews the literature and develops the hypothesis. Sections 3 describes my sample and research design. Sections 4 and 5 present the main empirical results and additional analyses, respectively. Section 6 concludes.

4.2. Related Literature and Hypothesis Development

An increasing number of studies have recognized news media as important information intermediaries in the capital markets. Collectively, news media act as a firm-level mechanism that improves the general information environment and corporate governance (Core et al. 2008; Fang and Peress 2009; Bushee et al. 2010; Miller and Skinner 2015). This mechanism works through the media's function of collecting and disseminating corporate information to market participants and/or supplying new information via original investigations and analyses. Studies generally find that by broadly disseminating information to capital market participants, media can significantly influence investors' decision-making processes (e.g., Huberman and Regev 2001; Tetlock 2007; Peress 2008; Tetlock et al. 2008; Bushee et al. 2010; Tetlock 2011; Chen et al. 2013; Solomon et al. 2014; Drake et al. 2014). However, existing studies further suggest that these media functions are not performed uniformly by all media organizations, because different media may face varying economic and political incentives (Brunetti and Weder 2003; Druckman and Parkin 2005; Mullainathan and Shleifer 2005).

We contend in this study that there is a fundamental distinction between foreign and domestic media outlets. The distinction means that foreign media may have a discrete impact on investors' responses to earnings news: an impact that is not subsumed by that of domestic media. On the one hand, foreign media outlets may be at an information disadvantage compared with their domestic counterparts. They tend to face higher information collection and production costs arising from unfamiliarity with the domestic environment (Brennen and Cao 1997; Coval and Moskowitz 2001; Dvořák 2005; Tsang et al. 2019). Anecdotal evidence lends support to the argument that foreign news media may be subject to an information

disadvantage compared to their domestic counterparts. Survey and interview evidence shows that foreign journalists find access to key decision-makers difficult, affecting their ability to break exclusive stories. Foreign journalists also face significant obstacles to a deep understanding of the events that they are reporting on due to political and cultural differences (Pew Research Center 2009; Pérez 2017). In addition, some foreign journalists tend to work on tight budgets and have limited mobility, forcing them to rely heavily on materials provided by domestic media. This constraint limits their abilities to pursue exclusive news-story angles (Ghorpade 1984; Archetti 2013).

In contrast, domestic media outlets may have better access to information through both formal and informal channels given their proximity to local firms. For example, domestic media may benefit from private communication with firm management and have better access to social networks in the local community, giving them an information edge over foreign media outlets that are less likely to be affiliated with domestic firms.[48] If domestic media outlets are informationally advantaged, they are likely to play a greater role than foreign media outlets in creating and synthesizing new information on earnings announcements. This in turn allows domestic media to better assist investors in analyzing earnings news and leads to larger market responses to earnings announcements covered by domestic media than by foreign media. I term this conjecture the '*foreign media information disadvantage*' hypothesis.

On the other hand, the literature suggests that journalists often face personal incentives when deciding how a news story is reported, which hinders their ability to function as an effective watchdog (Ellman and Germano 2009). This literature shows that media outlets connected to a firm have incentives to portray that firm in a more positive light. Supporting this view, Reuter and Zitzewitz (2006) and Gurun and Butler (2012) find that media outlets

[48] This notion is supported by the evidence showing that proximity to a firm can lead to an information advantage in the context of analyst forecasts. Bae et al. (2008) find that domestic analysts have easier access to firm specific information than foreign analysts, allowing them to produce more precise earnings forecasts. Du et al. (2017) find that analysts' ethnicity affects their information generation and that those who share the same cultural background as the firm produce more accurate forecasts.

that are geographically close to a firm use significantly fewer negative words in articles about that firm; they attribute this slant to the advertising relationship between local media outlets and firms. Other study shows that government-controlled newspapers that concentrate on political goals use a significantly more positive tone when covering politically connected firms (Piotroski et al. 2017). Survey evidence consistent with these empirical findings shows that financial journalists are often confrontationally contacted by a firm's media relation officers when they write an unfavorable article about the firm (Call et al. 2018). To the extent that domestic media outlets are more likely to have business and political connections and to develop private networks with local firms, they may be more beholden to the firm to maintain these connections and networks. Their independence and objectivity are thus compromised.

Given that foreign media outlets are less likely to have business relationships with local firms, they may have fewer incentives to engage in slanted reporting. Foreign media could therefore be more independent and provide news coverage in a more objective manner than domestic media, leading to a greater price reaction to unexpected earnings.[49] I label this conjecture the '*foreign media independence*' hypothesis.

Given my discussion of the possible differences between domestic and foreign media outlets, I state the following two competing hypotheses.

Hypothesis 1a: *Relative to domestic media coverage, foreign media coverage tends to be associated with a* ***weaker*** *stock market reaction to corporate earnings announcements.*

Hypothesis 1b: *Relative to domestic media coverage, foreign media coverage tends to be associated with a* ***stronger*** *stock market reaction to corporate earnings announcements.*

In the cross-section of firms' media coverage, the discussion above suggests that one might expect homogeneous effect of media coverage (either foreign or domestic media

[49] In addition, foreign journalists may be subject to a higher level of scrutiny than their domestic counterparts. Previous studies show that journalists working as foreign correspondents are required to comply with local journalistic standards and at the same time produce news that meets their home country's expectations (Hellmueller 2017). To make news content more accessible and meaningful for multinational audiences from diverse cultures and societies, foreign journalists are required to adhere to standards of reporting that are acceptable across a wide range of audiences (Atad 2017). Such higher standards encourage foreign journalists to focus on demonstrably factual information (Moon 2019).

coverage) in the stock market reaction to corporate earnings announcements. However, given the wide variations in the earnings surprises contained in corporate earnings announcements, the capabilities that the media coverage affects stock market reaction to corporate earnings announcements are likely heterogeneous across the direction of earnings surprises. In line with this view, prior study (e.g., Kothari et al. 2009) suggests that the effect of the disclosures from business press on cost of capital and return volatility varies with the nature of the disclosures (e.g., positive versus negative disclosure on press). Following this discussion, I state my next hypothesis as the following.

Hypothesis 2*: The role of foreign or domestic media coverage in the stock market reaction to corporate earnings announcements varies according to the direction of earnings surprises contained in earnings announcements.*

The above discussion also suggests that the impact of foreign media on the pricing of accounting information may differ from that of domestic media due to their lower proximity to local firms. I consider next whether or how heterogeneity across foreign media might affect their role. Research on institutional proximity consistently shows that cross-country similarities in economic, political, and socio-cultural environments facilitate communication between domestic and foreign parties (Sarkissian and Schill 2004; Du et al. 2017; Ceron et al. 2019). Following this logic, if the differential role of foreign and domestic media in the capital markets is attributable to differences in information accessing and processing costs, I expect that such a difference would be more pronounced for foreign media domiciled in countries with less economic, political, and cultural proximity to the U.S.[50] This discussion suggests that news media from countries with greater (less) proximity to the US tend to face lower (higher) information costs, or likely be less (more) independent in producing news reports. I therefore propose the following hypothesis.

Hypothesis 3*: The role of foreign media coverage in the stock market reaction to corporate earnings announcements varies according to the institutional proximity between the US and a foreign media outlet's home country.*

[50] In a similar vein, the literature shows that sharing the same institutional logic complements international business relationships and nurtures networking between parties across the globe (Abdi and Aulakh 2012).

4.3. Research Design

4.3.1. Data and Sample

Our sample construction starts with publicly traded firms on US stock exchanges with available quarterly earnings announcements between 2007 and 2017.[51] I collect the data on media coverage of these firms from the RavenPack News Analytics database, which tracks hundreds of thousands of articles written daily about publicly listed firms from various worldwide media providers.[52] I then hand-collect information on the media outlets' domicile countries based on information about their official canonical names provided by RavenPack.[53]

There are 1,611 news media outlets covered by RavenPack during my sample period. I search for each news media outlet's name on Google to obtain the link to their official website; from the website I obtain information on the outlet's headquartered country. I identify 1,126 unique media outlets from 48 countries through this process. Appendix D provides a short-listed representative sample of major news media outlets and their corresponding country locations as identified. I define a media outlet as domestic (foreign) if its headquarter is (not) domiciled in the US. When constructing my measures of media coverage, I require all news articles to have a relevance score of 100 to ensure that the news story is predominantly about a specific firm.[54] I exclude press releases from the measures of media coverage, but use them to construct a control variable, as they represent news articles generated by firms.

Other data are obtained from the following databases. I obtain data on stock returns and financial variables from CRSP and Compustat, respectively. Data on analyst earnings forecasts

[51] I remove foreign firms that are listed in the U.S. to ensure that I am examining the stock market reaction to the earnings news of U.S. firms.
[52] I use the RavenPack Full Edition, which is the union of RavenPack Dow Jones, Web, and Press Release Editions. my sample starts in 2007 because this is the year when RavenPack Web Edition starts its coverage.
[53] RavenPack categorizes the general type of each media source into "*news*," "*blog*," "*journal*," and "*other*." To keep my manual classification tractable, I focus only on media sources with a publication type of "news." This is because they produce approximately 97% of all of the articles in RavenPack during my sample period and the country of origin for other publication types is difficult to ascertain.
[54] RavenPack assigns a relevance score to each of the articles, which ranges from 0 (not relevant) to 100 (very relevant), to indicate the level of relevance of an article to a firm.

and corresponding announced earnings are from the I/B/E/S, and data on institutional ownership are from FactSet/LionShares. Lastly, I eliminate firm-quarters with a share price of less than $1 following prior studies (e.g., Kang et al. 2017; Chi and Shanthikumar 2017; Huang et al. 2018). The intersection of my RavenPack sample with data obtained from these databases yields a final sample of 141,648 firm-quarter observations for 6,679 unique firms during the 2007−2017 period. These sample firms are covered by 625 domestic media outlets and 448 foreign media outlets from 48 countries.

Table 4.1 presents the distribution of my sample across years and industries; the average level of domestic media coverage is consistently greater than that of foreign media coverage for all years and industries in my sample. Over the 2-day ([0,1]) earnings announcement window, firms are covered on average by 10-24 (2-7) news articles from domestic (foreign) media outlets across years and industries.

[INSERT TABLE 4.1 HERE]

4.3.2. Empirical Models and Variable Measurements

To test Hypotheses 1a and 1b comparing the influence of domestic and foreign media on market responses to earnings announcements, I estimate the following regression of short-window abnormal returns, with firm and quarter subscripts omitted for parsimony.

$$ABRET[0,1] = \beta_0 + \beta_1 {}^{R}SUE + \beta_2 {}^{R}DMC[0,1] + \beta_3 {}^{R}FMC[0,1] + \beta_4 {}^{R}SUE \times {}^{R}DMC[0,1] + \beta_5 {}^{R}SUE \times {}^{R}FMC[0,1] + \Sigma\beta\gamma\ Controls + \Sigma\beta_\delta {}^{R}SUE \times Controls + \Sigma\beta_\vartheta\ FE + \varepsilon$$

Equation (1)

where *ABRET[0,1]* is the cumulative abnormal stock return over the two-day period beginning on the earnings announcement date. It is computed as the difference between the raw return from CRSP and the return on a portfolio of firms matched on 5×5 sorts of size and book-to-market ratio, following Chi and Shanthikumar (2017).[55] Following previous studies (e.g., Chi and Shanthikumar 2017; Huang et al. 2018; Ferri et al. 2018), I define standardized unexpected

[55] I find my inferences unchanged when I use alternative measures of benchmark returns, including CRSP value-weighted market returns and CRSP equally weighted market returns.

earnings (*SUE*) as the difference between announced quarterly earnings per share (EPS) from I/B/E/S and the median consensus of the latest individual analyst forecast, scaled by the price per share at the beginning of the quarter.[56] ${}^{R}SUE$ is the quarterly decile rank of the standardized unexpected earnings.

Regarding media coverage variables, I first accumulate all of the news articles written about a firm (i.e., total media coverage, *TMC*) in the same event period in which abnormal stock return is calculated. Then I split total media coverage into domestic media coverage (*DMC[0,1]*) and foreign media coverage (*FMC[0,1]*) in accordance with their domicile country. *DMC* (*FMC*) is defined as the total number of articles written by media outlets located in (outside of) the US. To facilitate the economic interpretation and comparison, I rank these two variables into deciles, denoted as ${}^{R}DMC$ and ${}^{R}FMC$ and normalized to range from zero to one.[57] My variables of interest are the two interaction terms, ${}^{R}SUE \times {}^{R}DMC[0,1]$ and ${}^{R}SUE \times {}^{R}FMC[0,1]$, which represent the estimated impact of domestic and foreign media coverage on investors' responses to earnings news, respectively.

To test Hypothesis 2, I partition my sample into two groups based on whether the earnings surprises contained in the earnings announcement is positive or negative. If the finding from the full sample (if any) is generalizable to both samples, it will lend support to an unconditional role of foreign media coverage relative to domestic media coverage in its role in stock market reaction to earnings announcements. Alternatively, to the extent that domestic and foreign media coverage plays different role in stock market reaction to earnings announcements containing positive versus negative earnings surprises, my finding would suggest that the role of foreign media coverage relative to domestic media coverage can be conditional on the nature of earnings surprises.

[56] The results remain quantitatively similar when unexpected earnings are scaled by the stock price at the end of the quarter.

[57] My results are also consistent when I use raw counts or natural log transformation to measure DMC and FMC.

To test Hypothesis 3, I partition foreign media outlets into two groups based on whether they domicile in countries with high/low institutional proximity to the US. My measure of institutional proximity has three dimensions: economic, political, and cultural. Following previous studies (e.g., Sarkissian and Schill 2004; Kanagaretnam et al. 2020), economic proximity is measured by the volume of exports between two countries. I define a foreign media outlet as having high (low) economic proximity to a firm if the percentage of the media country's exports to the US is greater (less) than the median level of the media country's exports to all of the countries. I define each media and firm country pair as having high political proximity if the two countries have a high level of bilateral trust (Guiso et al. 2009; Spring and Grossmann 2016). A foreign media outlet is defined as having high (low) political proximity to the firms in the US if the level of bilateral trust of the news media outlet's country to the US is greater (less) than the median level of the bilateral trust of the media outlet's country to all countries. Lastly, a foreign media outlet is defined as having high (low) cultural proximity to the firms in the US if the primary religion of the media's country is the same as (different from) that of the US (Stulz and Williamson 2003; Tsang et al. 2019).[58]

Drawing on the literature (e.g. Bushee et al. 2010; Drake et al. 2012; Chi and Shanthikumar 2017; Ferri et al. 2018; Coyne et al. 2019), I incorporate a set of control variables that may concurrently affect the market response to earnings. These comprise firm size (*LNSIZE*), measured as the natural logarithm of the market value of equity at the end of the quarter; market to book ratio (*MB*); leverage (*LEV*), measured as total liabilities divided by total assets at the end of the quarter; earnings volatility (*EV*) and persistence (*EP*) over the past four years; institutional ownership (*IO*), defined as the percentage of a firm's shares held by all types of institutional investors at the end of the quarter; number of analysts following (*ANALYST*); S&P 1500 membership (*SP1500*), whether earnings news is announced on Fridays

[58] I obtain the information on export volume, the level of bilateral trust, and each country's primary religion from the World Trade Organization, World Values Survey Database, and Stulz and Williamson (2003), respectively.

(DellaVigna and Pollet 2009; Hirshleifer et al. 2009); a loss indicator (*LOSS*); whether earnings surprises are negative (*BADNEWS*); and the total number of press release (*PRESS*) to proxy for firms' information disclosure.

Following Drake et al. (2017), I also control for media coverage during pre-announcement periods in an attempt to capture the normal amount of foreign and domestic media coverage that the company receives. I include two variables, *DMC_PRE* and *FMC_PRE*. These are measured by the natural logarithm of one plus the number of articles written by domestic and foreign media outlets, respectively, during the 30 days prior to the earnings announcement date. I also include prior abnormal returns (*ABRET_PRE*) measured over the 30-day period prior to earnings announcement dates to control for investor attention (Li et al. 2011). Finally, I control for industry and year-quarter fixed effects in all of the regressions and estimate standard errors with two-dimensional clustering by firm and quarter.[59]

Table 4.2 provides the summary statistics of the variables used in the main analyses. To mitigate the potential influence of outliers, I winsorize all of the continuous financial variables, except for abnormal stock returns, in the top and bottom one percentile.[60] The statistics (*DMC[0,1]* and *FMC[0,1]*) show that more than 90% of the earnings announcements in my sample receive some form of media coverage. As expected, earnings announcements receive more coverage from domestic than foreign media outlets, with an approximate average of 20 total news articles per firm in the first two days after earnings are announced. Out of the 20 articles, approximately 15 articles are provided by domestic media and 5 articles by foreign media.

An average firm in my sample has a market value of equity of about 1.1 billion, a market to book ratio of 2.90, 58.2% of total outstanding shares held by institutional investors, and is

[59] My results are insensitive to clustering standard errors by firm or by earnings announcement dates.

[60] I do not winsorize the stock return data because previous studies show that, given the skewness of returns, winsorization may lead to spurious estimated return predictability (e.g., Kothari et al. 2005; Teoh and Zhang 2011; Leone et al. 2019). I find, nonetheless, that my results and inferences are unaffected when the abnormal stock return variable (*ABRET*) is winsorized at the 1st and 99th percentiles.

followed by approximately six financial analysts. The distributions of all of the control variables are comparable to those reported in prior earnings response coefficient (ERC) literature (e.g., Drake et al. 2016; Drake et al. 2017; Ferri et al. 2018).

[INSERT TABLE 4.2 HERE]

4.4. Main Empirical Results

4.4.1. Results of Testing Hypotheses 1 and 2

4.4.1.1. Baseline Results

I begin my investigation by comparing the impact of domestic versus foreign media coverage on the relation between stock market returns and earnings surprises during the earnings announcement period (i.e., ERC). Panel A of Table 4.3 reports the main regression results. Column 1 reports the results of the baseline model, which regresses *ABRET[0,1]* on decile ranked standardized unexpected earnings (^{R}SUE) and the total level of media coverage ($^{R}TMC[0,1]$). I find that ^{R}SUE is positive and significantly associated with the 2-day earnings announcement period return, and that the level of media coverage has a positive impact on ERC. This is consistent with previous studies (e.g., Peress 2008; Drake et al. 2014; Chi and Shanthikumar 2017; Ferri et al. 2018; Huang et al. 2018).

Column 2 includes my variables of interest, $^{R}DMC[0,1]$ and $^{R}FMC[0,1]$, and their interactions with ^{R}SUE to estimate the incremental effects of domestic and foreign media coverage on ERC. I include control variables in column 3. I find that the estimated coefficients on the two interaction terms, $^{R}SUE\times{}^{R}DMC[0,1]$ and $^{R}SUE\times{}^{R}FMC[0,1]$, are all positive and statistically significant, which suggests that investors' responses to earnings news increase with the level of both domestic and foreign media coverage. The results in column 3 suggest that an

interquartile increase in DMC (FMC) is associated with an increase in abnormal return by 5.4% (1.8%) for the top decile relative to the bottom decile.[61]

More importantly, I find a significant difference in the impact of media coverage between domestic and foreign media on ERC, as indicated by a within-regression F-test showing that the coefficient of $^{R}SUE\times^{R}DMC[0,1]$ is significantly larger than that of $^{R}SUE\times^{R}FMC[0,1]$. These findings suggest first that the coverage from foreign media outlets has an incremental impact on increasing market reaction to unexpected earnings after controlling for domestic media coverage; second that the effect of foreign media coverage is on average smaller than that of domestic media coverage supporting H1a.

The coefficients on the interaction terms between control variables and earnings surprises are generally in line with the literature (e.g., Collins and Kothari 1989; Easton and Zmikewski 1989; Basu 1997; Dellavigna and Pollet 2009; Hirshleifer et al. 2009; Drake et al. 2016; Ferri et al. 2018). I find that large, highly leveraged, and loss-making firms are associated with lower ERC, while firms followed by more analysts, with higher institutional ownership, and more persistent earnings are associated with higher ERC. I also find that Friday earnings announcements are associated with less immediate market responses.

[INSERT TABLE 4.3 HERE]

4.4.1.2. Good News versus Bad News

In my previous investigation, I do not differentiate the direction of earnings surprises contained in earnings announcement. I find that foreign media coverage is generally associated with a weaker stock market reaction to firms' earnings announcements than domestic media coverage is. I investigate next whether the impact of domestic and foreign media coverage on market responses to earnings news varies with earnings announcements containing good news versus those containing bad news (H2). If the lower ERC associated with foreign media

[61] The coefficient on $^{R}SUE\times^{R}DMC$ is 0.005, which suggests an increase in *ABRET* by 5.4%, i.e., [0.005*(10-1)]*100%, while the coefficient on $^{R}SUE\times^{R}FMC$ is 0.001, which suggests an increase in *ABRET* by 1.8%, i.e., [0.002*(10-1)]*100%.

coverage is driven by foreign media's information disadvantage, then I would expect the difference between the impact of domestic and foreign media coverage on ERC to persist regardless of the type of news. Conversely, if media independence plays a role in explaining the differential impact, the more independent foreign media outlets might play a greater role in covering bad news. Investors typically find it hard to understand bad news and demand more information because bad news is more complicated to articulate and managers tend to withhold it (Li 2008; Bloomfield 2008; Kothari et al. 2009).

To test these conjectures, I split my sample into subsamples based on whether the earnings surprises are negative (bad news) or non-negative (good news), and re-estimate *Equation 1* for these two subsamples. Columns 4 and 5 of Table 4.3 report the results. Column 4 shows that the coefficient for $^{R}SUE\times^{R}DMC[0,1]$ is significantly larger than that for $^{R}SUE\times^{R}FMC[0,1]$ for good news earnings surprises, despite the coefficients for both interaction terms are positively significant. The results for bad news earnings surprises reported in column 5 show the opposite pattern; the coefficient for $^{R}SUE\times^{R}FMC[0,1]$ is larger than $^{R}SUE\times^{R}DMC[0,1]$ in both magnitude and statistical significance. These results taken together suggest that the effect of foreign and domestic media coverage on market responses to earnings news is asymmetric. Foreign (domestic) media coverage increases the stock market reaction to earnings announcements that convey bad (good) news, thus supporting the '*foreign media independence*' hypothesis.

In other words, I find that while *foreign media coverage* increases the stock market reaction to earnings announcements that convey *bad* news, *domestic media coverage* increases the stock market reaction to earnings announcements that convey *good* news. These findings are surprising, given the unconditional results from my first analysis which appear to lend support to the '*foreign media information disadvantage*' hypothesis. Yet, the finding from the conditional results from my second analysis are more supportive of the '*foreign media independence*' hypothesis. Taken together, these findings also suggest that it is important to

take the nature of earnings announcement (e.g., good versus bad news) into consideration in examining the role of media coverage in capital markets.

4.4.1.3. Alternative Measures of Media Coverage

I take several precautions to ensure the validity of my measures of DMC and FMC. First, the quality of information that media provide is largely determined by their level of credibility, and this credibility also affects how journalists inform and influence audiences. I might conjecture therefore that if the foreign media outlets captured in my sample are systematically of low credibility, the credibility difference between foreign and domestic media outlets could account for the observed difference between their media coverage. To alleviate this concern, I re-estimate *Equation 1* by excluding non-credible media sources from the computation of *DMC[0,1]* and *FMC[0,1]*. I rely on the ranking of influence and trustworthiness of media outlets provided by RavenPack, which ranges from 1 (fully accountable, reputable and impartial) to 10 (unverifiable and fabricating). I retain only media sources with a credibility rank of 1, 2, or 3 to measure the volume of media coverage; they are more representative of credible media outlets.[62]

Second, many media outlets, especially large ones, have branches located in multiple countries. Including such global media outlets in my analyses might lead to measurement errors in DMC and FMC. To address this concern, I calculate the number of unique countries covered by each of the media outlets in the RavenPack population, and define a media outlet to be global (non-global) if the number of countries it covers is greater or equal to (less than) the median level across all outlets. Because global media outlets are more likely to have worldwide branches and therefore to cover firms worldwide, I re-estimate my main regression by excluding them when computing the DMC and FMC of each firm.

[62] RavenPack classifies media outlets with a credibility ranking of 1 as *fully accountable, reputable, and impartial*; 2 as *official, reliable, and honest*; and 3 as *acknowledged, formal, and credible*.

Next, because well-known firms are more likely to draw media attention prior to earnings announcements, the attention effect of media coverage may not be adequately controlled for by including firm size as a control variable. I therefore re-estimate the main regression by using a measure of excess or abnormal media coverage. I define the abnormal DMC (FMC) as the difference between the mean daily number of news articles written by domestic (foreign) media during my test window and the mean daily number of news articles written by domestic (foreign) media during the 30 days prior to the earnings announcement date, similar to Liu et al. (2014).[63] I then re-estimate *Equation 1* using abnormal *DMC[0,1]* and *FMC[0,1]*.

The results of the above tests are reported in Panel A of Table 4.4, and I find my results are robust to all these measures of DMC and FMC. Overall, I find consistent evidence supporting the notion that *foreign (domestic) media coverage* increases the stock market reaction to earnings announcements that convey *bad* (*good*) news.

[INSERT TABLE 4.4 HERE]

4.1.4. Accounting for Endogeneity

I include many control variables in my main regression to capture factors that may concurrently affect the market's reaction to earnings. Despite this, my findings might be driven by other unobservable factors that are correlated with my variables of interest. I therefore perform a set of analyses to address this concern. First, to control for potential time-invariant cross-firm heterogeneity that affects both media coverage and market reaction to earnings news, I augment my regressions with firm-fixed effects.

Second, because some earnings announcements in my sample received coverage from only domestic or only foreign media, the observed difference between DMC and FMC could merely reflect different firm characteristics. Domestic and foreign media outlets might selectively choose which firms' earnings announcements to cover. To mitigate this concern, I

[63] I similarly calculate the abnormal measure of DMC (FMC) as the residual of the regression of the amount of domestic (foreign) media coverage during the earnings announcement window and the amount of domestic (foreign) media coverage during the 30 days before earnings being announced. I find consistent results using this alternative measurement.

perform an additional analysis by restricting my sample to firm-quarters with both domestic and foreign media coverages, and I accordingly compare the effect of DMC and FMC on market responses to the same earnings announcements.

Third, to corroborate the aforementioned tests, I also repeat my analyses on a propensity-score matched (PSM) sample to address further the concern that firms with high level of media coverage are not comparable to other firms regarding key characteristics that might affect market responses to earnings news. I therefore match each earnings announcement of a firm covered by foreign media (treatment) to the earnings announcement of another firm that has domestic media coverage but does not receive any foreign media coverage (control) on all firm-level controls in the same year. To minimize the distance between the two groups, I apply the nearest-neighbor matching technique with no replacement. My untabulated results of testing the differences in covariates across treatment and control samples show that the matching is effective, as no significant difference is found in the observed firm characteristics of the two groups. The results of these additional analyses are reported in Panel B of Table 4.4. Again, I find that my main inferences are quantitatively similar.

Lastly, I specify an alternative model similar to that of Mian and Sankaraguruswamy (2012) to further ensure my findings' robustness. I first define two indicator variables, *UP* and *DOWN*, where *UP* (*DOWN*) is an indicator that equals one if the earnings surprises are non-negative (negative), and zero otherwise, and multiply my measure of earning surprises (^{R}SUE) with *UP* and *DOWN* to yield $^{R}SUE\_UP$ and $^{R}SUE\_DOWN$, respectively. I then regress *ABRET[0,1]* on $^{R}SUE\_UP$, $^{R}SUE\_UP$ and their interactions with my variables of interest and other controls. Panel C of Table 4.4 reports the results, and I continue to observe that *foreign (domestic) media coverage* increases the stock market reaction to earnings announcements that convey *bad* (*good*) news. These results collectively suggest that my findings are robust to various endogeneity concerns.

4.4.2. Results of Testing Hypothesis 3

Hypothesis 3 predicts that the differential effect of coverage from foreign and domestic media outlets on the market reaction to earnings announcements varies according to institutional proximity between the US and the home countries of the foreign media outlets. Table 4.5 presents the regression results. I find, consistent with my prediction, that the relation between foreign media coverage and ERC is stronger for foreign media outlets from countries that have low economic, political, and cultural proximity to the firms' countries. Such impact is also more pronounced for bad news. If foreign media from countries that have low economic, political, and cultural proximity to the US have less incentive to promote US firms, these findings provide supporting evidence that media independence is the underlying mechanism through which foreign media coverage affects market responses to earnings news.

[INSERT TABLE 4.5 HERE]

4.5. Additional Analyses

My analysis so far suggests that foreign media tends to propagate more informative bad news than domestic media, lending support for the '*foreign media independence'* hypothesis. In this section, I conduct several additional analyses to provide more corroborative evidence.

4.5.1. Tests on the News Selectivity and Timeliness of News Coverage

I first examine whether there is any systematic difference between foreign and domestic media in terms of the likelihood of covering corporate bad news. The '*foreign media independence'* hypothesis predicts that foreign media outlets are less likely to shy away from covering negative news than their domestic media outlets, and therefore I expect that foreign media are more likely to provide coverage on negative earnings announcements than domestic media. To test this conjecture, I accumulate all of the news articles released by both domestic and foreign media over the 2-day period starting on the earnings announcement date in my sample. I then estimate a logistic regression using *BADNEWS* as the dependent variable, and

regress it on the test variable *FMC_IND*, which is an indicator variable that equals one if an article is written by a foreign media outlet, and zero if it is written by a domestic media outlet, together with other control variables specified in Section 4.3.2. Column 1 of Table 4.7 presents the results on this test, which shows a positive and significant coefficient on *FMC_IND*.

[INSERT TABLE 4.6 HERE]

I also employ the same article-level panel data and estimate another logistic regression to test the possible difference in the timeliness of coverage between foreign and domestic media. If the 'foreign *media information disadvantage*' hypothesis holds, domestic media, given their information advantage, are expected to provide more timely coverage on earnings announcement than foreign media. To test this, I create an indicator variable, *COV_DAY1*, that equals one if the media outlet provides coverage of earnings announcement on the first day of earnings announcement, and zero if it provides coverage of earnings announcement on the second day of earnings announcement. I then regress it on a test variable, *FMC_IND* and other control variables. Column 2 of Table 4.7 presents the results and show that the coefficient of *FMC_IND* is statistically insignificant. Collectively, the results in Table 4.6 lend more support for the '*foreign media independence'* hypothesis than for the '*foreign media information disadvantage*' hypothesis.

4.5.2. Tests on Price Informativeness of Future Earnings

To shed more light on foreign media's informational role, I also examine whether the quantity of foreign media coverage affects the degree of price informativeness concerning firms' future earnings. If foreign media outlets are more independent than their domestic counterparts, they may be able to communicate information about a firm's future prospects more effectively to investors, thereby increasing the informativeness of stock prices regarding future earnings. This idea is supported by the importance of historical and future-oriented news coverage to the overall information environment, both of which allow investors to better predict firms' future earnings. To test this conjecture, I specify the future earnings response coefficient

(FERC) model (with firm subscript omitted for parsimony) following Collins et al. (1994) and Lundholm and Myers (2002):

$$RET_t = \beta_0 + \beta_1 E_{t-1} + \beta_2 E_t + \beta_3 E_{t+1,t+3} + \beta_4 RET_{t+1,t+3} + \beta_5 DMC\_ANN_t + \beta_6 DMC\_ANN_t \times E_{t-1} + \beta_7 DMC\_ANN_t \times E_t + \beta_8 DMC\_ANN_t \times E_{t+1,t+3} + \beta_9 DMC\_ANN_t \times RET_{t+1,t+3} + \beta_{10} FMC\_ANN_t + \beta_{11} FMC\_ANN_t \times E_{t-1} + \beta_{12} FMC\_ANN_t \times E_t + \beta_{13} FMC\_ANN_t \times E_{t+1,t+3} + \beta_{14} FMC\_ANN_t \times RET_{t+1,t+3} + \Sigma\beta\gamma Controls + \Sigma\beta_\delta FE + \varepsilon$$

Equation (2)

where RET_t is the annual buy-and-hold returns for a firm in year t. $E_{t-1,}$ and E_t represent the income before extraordinary items divided by market value of equity for a firm in year *t-1* and *t*, respectively. $E_{t+1,\,t+3}$ is the sum of net income before extraordinary items for the three years following the current year (i.e., for years *t+1*, *t+2*, and *t+3*), scaled by the market value of equity. $RET_{t+1,\,t+3}$ represents the future returns, which are the buy-and-hold returns for the three-year period following the current year.

Because the model is estimated at the firm-year level, I use the annual measure of domestic and foreign media coverage when testing their impacts on FERC. Specifically, I construct two variables, *DMC_ANN* and *FMC_ANN*, which denote the natural logarithm of one plus the number of articles written about a firm by domestic and foreign media outlets in a year, respectively. I restrict my sample period for this test to the 2008 to 2014 period, as the FERC model requires information on one-year lagged earnings and three-year ahead returns and earnings. I also include the set of control variables used in my main tests (all in annual term) to control for firm-level characteristics and their respective interactions with E_{t-1}, E_t, $E_{t+1,t+3}$, and $RET_{t+1,\,t+3}$.

Table 4.7 presents the results. Column 1 shows that the signs and significance levels for the four basic variables in the traditional FERC model are consistent with those reported in previous studies (e.g., Lundholm and Myers 2002; Dhaliwal et al. 2012; Drake et al. 2015). More importantly, columns 2 and 3 show that the coefficient on the interaction term $FMC\_ANN_t \times E_{t+1,t+3}$ is positive and significant, while the coefficient on $DMC\_ANN_t \times E_{t+1,t+3}$ is insignificant as a predictor of returns. I also test the impact of foreign and domestic media

coverage on FERC for good and bad news in the future. Columns 4 and 5 present the results and show that the positive impact of foreign media coverage on FERC is primarily driven by the bad news subsample, which suggests that foreign media convey more future firm-specific bad news. I also test the impact of foreign and domestic media coverage on the incorporation of current year earnings news into prices, conditional on whether the firm has positive or negative surprises when announcing the annual earnings. The results (reported in columns 6 and 7) show that foreign media coverage has a larger impact on the incorporation of current earnings into stock price when firms have negative earnings surprises. Overall, the results from the FERC test suggest that foreign media coverage facilitates better incorporation of future earnings information into current stock prices relative to domestic media coverage, especially for future bad earnings news.

[INSERT TABLE 4.7 HERE]

4.5.3. Tests on Stock Price Crash Risks

Our findings show that relative to domestic media coverage, foreign media coverage plays a greater role in incorporating corporate bad news into stock prices. One possible explanation is that foreign media act as a more effective governance mechanism due to their greater level of independence: they place disciplining pressure on managers to release bad news in a timelier and more precise manner.

According to the literature, there are two major causes of stock price crash risks. The literature suggests that managers tend to withhold negative information; when such withholding accumulates so that all the accumulated bad news is released at once, the stock price is likely to crash (e.g., Hutton et al. 2009; Kothari et al. 2009; Kim et al 2011; Aman 2013). Another one is the heterogeneity of investors (Hong and Stein 2003). It argues that if the stock price only reveals information from optimistic investors but not the information from pessimistic investors, then when the latter surfaces, stock price would fluctuate substantially. If foreign media coverage fulfils a disciplinary role, I expect greater coverage to attenuate

managers' withholding behaviors regarding bad news and/or reduce the heterogeneity in opinion among investors and so reduce the stock price crash risk.

To test this conjecture, I measure firms' crash risks by the likelihood and frequency of crashes and positive jumps. The crash likelihood, *CRASH*, is an indicator variable that equals one if a firm experiences one or more firm-specific weekly returns falling 3.09 or more standard deviations below the mean firm-specific weekly return for the year.[64] The frequency of crashes, *CRASH_FEQ*, is measured by the number of firm-specific weekly returns falling 3.09 or more standard deviations below the mean firm-specific weekly return within the year. *JUMP* is an indicator variable that equals one if a firm experiences one or more firm-specific weekly returns falling 3.09 or more standard deviations above the mean firm-specific weekly return within the year, and zero otherwise. *JUMP_FEQ* denotes the number of firm-specific weekly returns falling 3.09 or more standard deviations above the mean firm-specific weekly return within the year.

I then regress the 1-year ahead *CRASH* and *JUMP* (*CRASH_FEQ* and *JUMP_FEQ*) on domestic and foreign media coverage of a firm during the year (i.e., *DMC_ANN* and *FMC_ANN*) and other firm-level control variables using a Logit (Poisson) regression. Following Hutton et al. (2009), I include a firm's information opacity, *ACCOPQ*, and contemporaneous return on assets (ROA) as additional controls in the model. *ACCOPQ* is measured by the 3-year moving sum of absolute discretionary accruals obtained from the Modified Jones model (Dechow et al. 1995).

Table 4.8 presents the results and shows that the coefficient on *FMC_ANN* (*DMC_ANN*) is negatively (positively) significant across all models. These results suggest that greater foreign media coverage is associated with a lower crash risk, while greater domestic media coverage induces more stock price crashes. The findings are consistent with my conjecture that

[64] I use 3.09 as the cutoff because a firm-specific weekly return that is 3.09 standard deviations below the mean should occur at a frequency of 0.01% in a normal distribution (Hutton et al. 2009).

foreign media coverage attenuates managers' bad news withholding behavior. Domestic media, conversely, assists management in hoarding bad news due to its heightened conflict of interest.[65]

[INSERT TABLE 4.8 HERE]

4.5.4. Tests on Foreign Institutional Ownership

Foreign media coverage may also indirectly discipline managers' bad news disclosures by attracting more foreign institutional investors. Prior research reports that foreign institutional investors play a significant role in shaping firms' reporting behaviors (Lel 2018; Tsang et al. 2019), despite facing high monitoring costs arising from information asymmetry (Aggarwal et al. 2011; Kim et al. 2019). As foreign media coverage conveys information about local firms to the international market, it could be an effective mechanism for attracting foreign institutional investors. It could furthermore improve foreign investors' monitoring efficiency by reducing information asymmetry between them and the firms, which in turn improves earnings informativeness.

I test this possibility empirically by examining the effect of foreign media coverage received by a firm in a year (i.e. *FMC_ANN*) on 1-year ahead foreign institutional ownership, *FIO*. Table 4.9, column 1 presents the results. Controlling for the effect of domestic news media coverage (*DMC_ANN*), I find that foreign news media coverage is positively associated with foreign institutional ownership. I repeat this analysis on domestic institutional ownership to ensure that the observed increase in foreign institutional ownership is not simply reflective of an overall increase in institutional holdings. The results (reported in column 2) show that the level of foreign media coverage is negatively associated with domestic institutional ownership, and I can therefore exclude this alternative explanation. These results support my conjecture

[65] Alternatively, it is possible that managers are more likely to withhold bad news when the level of domestic media coverage is high with the concern that greater level of media exposure of corporate earnings news might exacerbate stock market reaction to negative earnings news (Hyung and Tsang 2019).

that foreign media coverage is an effective mechanism for attracting foreign institutional ownership.

[INSERT TABLE 4.9 HERE]

4.5.5. Tests on Media Tone

Previous studies show that the impact of media on investors' behaviors is due not only to the volume of coverage, but also to how news articles are worded (i.e., the tone in which the stories are written) (e.g., Tetlock 2007; DellaVigna and Kaplan 2007; Bushman et al. 2017). Thus, a possible conjecture which is likely attributable to my finding that *foreign (domestic) media coverage* increases the stock market reaction to earnings announcements that convey *bad* (*good*) news is the difference in tones of different media. To test the possibility that the tone embedded in the articles could lead to the differential impact of domestic and foreign media on ERC, I accumulate all of the news articles released by both domestic and foreign media over the 2-day period starting on the earnings announcement date in my sample. I then compare the average tone expressed by foreign and domestic media outlets for good and bad news, respectively.[66]

Results reported on Table 4.10 show that news articles provided by foreign media tends to have lower level of tones (or sentiment) than news articles from domestic media on average. Further analyses by separating the full news article sample into news articles related to earnings announcements containing positive versus negative earnings surprises suggest that such a finding is mainly driven by a lower level of sentiment of foreign media articles associated with earnings announcements containing negative earnings surprises. In other words, I find that relative to domestic media coverage, foreign media coverage tends to be more negative in tone when covering bad earnings news. Although I also find that foreign media coverage tends to

[66] Following previous studies (e.g., Bushee et al. 2019; von Beschwitz et al. 2020), I measure media tone using RavenPack's event sentiment score (ESS). ESS uses a proprietary algorithm to assign each article a sentiment score ranging from 0 to 100, where 50 indicates a neutral tone. I construct a market-adjusted measure of media tone by subtracting the ESS (i.e., the level of tone) for each article from the average ESS of all articles in the same day to mitigate the concern that my measure of tone simply proxies for market sentiment in general.

be less positive in tone when covering good earnings news, such a finding is only marginally significant. Taken together, the findings from this section lend support to the underlying assumption that foreign media are likely to be more independent and objective in interpreting corporate earnings news.[67]

[INSERT TABLE 4.10 HERE]

4.5.6. Tests on Alternative Explanations

The literature shows that domestic investors tend to be less attentive to information regarding firms' foreign operations, leading to a delay in the incorporation of foreign information (e.g., Huang 2015). My findings that foreign media coverage is associated with greater market responses to negative earnings surprises could therefore be attributable to foreign media's greater tendency to cover information about the firms' foreign operations. To test this possibility, I repeat my main analysis using a split sample approach to examine whether the effect of foreign media coverage on market responses to earnings differs between firms with and without foreign operations. If foreign media tend to provide more information about firms' foreign operations, their impact on market responses should be greater for firms with more foreign exposure (i.e., with foreign operations). Untabulated results do not support this alternative explanation, as there is no significant difference in the effect of foreign media coverage across these two groups.

Lastly, previous studies show that media coverage is associated with greater capital market benefits during periods of high macro-economic uncertainty (e.g., Bonsall IV et al. 2019). This uncertainty is more likely to increase following bad news than good news (Williams 2015). It is therefore plausible that the greater impact of foreign media coverage for bad news is attributable to the role it plays during high market uncertainty periods. I therefore

[67] Albeit with significant finding, I advocate a cautious interpretation of this finding given the limited number of media articles included in this short event window.

conduct an analysis to examine whether the impact of foreign media coverage on investors' responses to earnings news varies between high and low market uncertainty periods.

Following Williams (2015) and Bonsall IV et al. (2019), I use the average level of the Chicago Board Options Exchange Volatility Index (*VIX*) during a quarter as the measure of market uncertainty. I define a quarter as a period of high uncertainty if the index is greater than the average level in my sample period. I then repeat my main analyses for the high and low uncertainty groups. My untabulated results show no significant difference in the impact of foreign media coverage on ERC with respect to good and bad news across the two groups, suggesting that foreign media coverage plays an equally important role during periods with different degrees of market uncertainty.

4.6. Chapter 4 Conclusion

Using a novel hand-collected dataset of country locations of media outlets around the world and controlling for the effect of domestic media coverage, I find that foreign media coverage tends to play an incrementally important role in stock market reactions to earnings news. I also find that the impact of foreign media coverage on market responses to corporate earnings announcement is smaller (larger) in the case of good (bad) news relative to that of domestic media coverage. These results hold across various specifications, including alternative identifications of foreign media, controlling for firm fixed effects, and using alternative samples with similar firm characteristics.

I further investigate the channels underlying this differential impact, and find that such results are more pronounced when foreign media are domiciled in countries with low economic,

political, and cultural proximity to the US. Finally, I observe that foreign media coverage is positively associated with the informativeness of stock prices with respect to future earnings and negatively associated with firms' stock price crash risks, and also that foreign media coverage tends to increase foreign institutional ownership. The evidence documented in this paper suggests that the role of media coverage on capital markets varies systematically with the domicile countries of the media outlets.

Appendix D. Examples of Media Outlets Included in my Sample (Chapter 4)

	Country	Media Outlet Examples
1	Australia	*The Australian; Australian Financial Review*
2	Bahrain	*Bahrain News Agency; Trade Arabia; Gulf Daily News*
3	Bangladesh	*New Age Bangladesh*
4	Belgium	*New Europe*
5	Botswana	*Botswana Gazette; Botswana Guardian; Botswana Daily News*
6	Canada	*Globe and Mail; National Post*
7	China	*Xinhua News Agency; People's Daily*
8	Denmark	*The Copenhagen Post*
9	Egypt	*Daily News Egypt; Al-Ahram*
10	Ethiopia	*Ethiopia News Agency; Addis Fortune*
11	France	*France24; Euronews*
12	Germany	*Deutsche Welle*
13	Ghana	*Ghana News Agency; News Ghana*
14	Hong Kong	*The Standard; Asia Cargo News*
15	Hungary	*The Budapest Sun; The Budapest Business Journal*
16	India	*The Times of India; The Economic Times*
17	Indonesia	*Antara; The Jakarta Post*
18	Iran	*Financial Tribune; Islamic Republic News Agency*
19	Ireland	*Irish Independent; RTÉ Ireland*
20	Israel	*The Jerusalem Post; YNET News*
21	Italy	*La Repubblica; Il Sole 24 Ore*
22	Japan	*The Japan Times; Nikkei*
23	Jordan	*Al Bawaba; The Jordan Times*
24	Kenya	*Daily Nation; Kenya News Agency*
25	Malaysia	*Bernama; Free Malaysia Today*
26	Maldives	*Haveeru Daily; Minivan Daily*
27	Namibia	*Namibia Economist; Namibia Press Agency*
28	Netherlands	*Dutchnews; NRC Handelsblad*
29	New Zealand	*New Zealand Herald, 1 News*
30	Nigeria	*Financial Nigeria; News Agency of Nigeria; The Osun Defender*
31	Norway	*Oslo Bors News*
32	Oman	*Oman Daily Observer; Times of Oman*
33	Pakistan	*AAJ News; The Frontier Post*
34	Philippines	*The Philippine Daily Inquirer; The Manila Bulletin*
35	Qatar	*Qatar Tribune; Gulf Times*
36	Russia	*Moscow Times; Russia Today*
37	Saudi Arabia	*Al Arabiya; Saudi Gazette*
38	Singapore	*Channel News Asia; The Asian Banker; Arab News*
39	South Africa	*Cape Times; Business Day*
40	South Korea	*The Korea Herald; JoongAng Daily*
41	Spain	*Agencia EFE; Expatica Spain;*
42	Sri Lanka	*The Daily FT*
43	Thailand	*The Bangkok Post; The Nation*
44	Turkey	*The Cihan News Agency; Cumhuriyet*
45	Uganda	*The Daily Monitor; The Independent Uganda; The Weekly Observer*
46	United Arab Emirates	*The National; Emirates247*
47	United Kingdom	*Financial Times; The Independent; The Times*
48	United States of America	*Dow Jones; Wall Street Journal; The News York Times*

Appendix E. Variable Definition (Chapter 4)

Variable	*Definition*	*Data Source*
Media Variables		
TMC[0,1]	Total media coverage is the total number of news articles specifically related to a firm provided by *all* media outlets over the earnings announcements window [0,1].	Self-construction based on data from RavenPack
DMC[0,1]	Domestic media coverage is the total number of news articles specifically related to a firm provided by *domestic* media outlets over the earnings announcements window [0,1]. A media outlet is defined as domestic if its headquarters is domiciled in the U.S.	As above
FMC[0,1]	Foreign media coverage is the total number of news articles specifically related to a firm provided by *foreign* media outlets over the earnings announcements window [0,1]. A media outlet is defined as foreign if its headquarters is not domiciled in the U.S.	As above
^{R}*TMC[0,1]*	The decile rank of *TMC[0,1]*.	As above
^{R}*DMC[0,1]*	The decile rank of *DMC[0,1]*.	As above
^{R}*FMC[0,1]*	The decile rank of *FMC[0,1]*.	As above
^{LN}*DMC_ANN*	The natural logarithm of one plus the total number of news articles specifically related to a firm provided by *domestic* media outlets for a given year.	As above
^{LN}*FMC_ANN*	The natural logarithm of one plus the total number of news articles specifically related to a firm provided by *foreign* media outlets for a given year.	As above
FMC_IND	An indicator variable that equals one if an article is written by a foreign media outlet, and zero if it is written by a domestic media outlet.	As above
TONE	Media tone embedded in an article, measured by RavenPack's event sentiment score (ESS).	As above
Mktadj_TONE	Market adjusted media tone, measured by subtracting an article's ESS from the average ESS of all articles in the same day.	As above
DMC_PRE	The natural logarithm of one plus the total number of news articles specifically related to a firm provided by *domestic* media outlets during the 30 days before the earnings announcement date.	As above
FMC_PRE	The natural logarithm of one plus the total number of news articles specifically related to a firm provided by *foreign* media outlets during the 30 days before the earnings announcement date.	As above
Institutional Proximity Variables		
Economic Proximity	Economic proximity is measured by the volume of exports between two countries. A foreign media outlet is classified as having high (low) economic proximity to the firm if the percentage of the media country's exports to the USis greater (less) than the median level of the media country's exports to all countries.	World Trade Organization
Political Proximity	Political proximity is measured by level of bilateral trust between two countries. A foreign media outlet is classified as having high (low) political proximity to the firm if the level of bilateral trust of the news media outlet' country to the USis greater (less) than the median level of the bilateral trust of the media outlet's country to all countries.	World Values Survey
Cultural Proximity	Cultural proximity is measured by whether the primary religions are the same between two countries. A foreign media outlet is classified as having high (low) political proximity to the firm if the primary religion of the media's country is the same as (different from) that of the U.S.	Stulz and Williamson (2003)
Other Variables		
ABRET[0,1]	The size and book-to-market ratio-adjusted cumulative abnormal returns over the earnings announcements window [0,1].	CRSP
SUE	A measure of earnings surprise defined as the announced earnings per share from I/B/E/S minus the median consensus of the most recent earnings forecasts of individual analysts, scaled by stock price per share at the beginning of the current quarter.	I/B/E/S, Compustat/CRSP Merged
^{R}*SUE*	The decile rank of the standardized unexpected earnings.	I/B/E/S, Compustat/CRSP Merged

$^{R}SUE\_UP$	A measure of good news earnings surprises. Specifically, $^{R}SUE\_UP$ equals the ^{R}SUE if ^{R}SUE is non-negative.	I/B/E/S, Compustat/CRSP Merged
$^{R}SUE\_DOWN$	A measure of bad news earnings surprises. Specifically, $^{R}SUE\_DOWN$ equals the ^{R}SUE if ^{R}SUE is negative.	I/B/E/S, Compustat/CRSP Merged
LNSIZE	The natural logarithm of a firm's market value of equity at the end of the quarter.	Compustat/CRSP Merged
LEV	The leverage ratio, defined as long-term debt plus debt in current liabilities, divided by total assets.	Compustat/CRSP Merged
EV	Earnings volatility, defined as the standard deviation of quarterly earnings over the past four years.	Compustat/CRSP Merged
EP	Earnings persistence, defined as quarterly earnings persistence over the past four years, estimated using the following regression $\text{Earnings}_{(q)} = \beta_0 + \beta_1 \text{Earnings}_{(q-1)} + \epsilon$	Compustat/CRSP Merged
MB	Market value of equity divided by book value of equity at the end of the quarter.	Compustat/CRSP Merged
IO	Percent of shares held by institutional investors at the end of the quarter.	Factset
ANALYST	The natural logarithm of one plus the number of analysts that provide quarterly forecasts for a firm.	I/B/E/S
SP1500	An indicator variable that equals one if the firm is a member of S&P1500 index, and zero otherwise.	Compustat/CRSP Merged
FRIDAY	An indicator variable that equals one if the earnings announcement is released on Friday, and zero otherwise.	Compustat/CRSP Merged
BADNEWS	Indicator variable that equals one if earnings surprises are less than zero, and zero otherwise.	Compustat/CRSP Merged
LOSS	Indicator variable that equals one if the firm's net income before extraordinary items is less than zero, and zero otherwise.	Compustat/CRSP Merged
$^{R}PRESS$	Decile ranked number of press release of the firm over the earnings announcements window [0,1].	RavenPack
ABRET_PRE	The size and BM adjusted cumulative abnormal returns over the 30 days before the earnings announcement date.	CRSP
$RET_{(t)}$	A firm's annual buy-and-hold return in year *t*.	CRSP
$E_{(t)}$	A firm's income before extraordinary items divided by the market value of equity in year *t*.	Compustat/CRSP Merged
$E_{(t-1)}$	A firm's scaled income before extraordinary items in year *t-1*.	Compustat/CRSP Merged
$E_{(t+1,t+3)}$	A firm's total scaled net income over the three years from year *t+1* to year *t+3*.	Compustat/CRSP Merged
$RET_{(t+1,t+3)}$	A firm's buy-and-hold returns calculated over the three years from year *t+1* to year *t+3*.	CRSP
CRASH	An indicator variable equal to one if a firm experiences one or more firm-specific weekly returns falling 3.09 or more standard deviations below the mean firm-specific weekly return within the year, and zero otherwise.	CRSP
CRASH_CNT	The total number of firm-specific weekly returns falling 3.09 or more standard deviations below the mean firm-specific weekly return within the year.	CRSP
JUMP	An indicator variable equal to one if a firm experiences one or more firm-specific weekly returns falling 3.09 or more standard deviations above the mean firm-specific weekly return within the year, and zero otherwise.	CRSP
JUMP_CNT	The total number of firm-specific weekly returns falling 3.09 or more standard deviations above the mean firm-specific weekly return within the year.	CRSP
ROE	A firm's income before extraordinary items divided by the book value of equity.	Compustat/CRSP Merged
ACCOPQ	A firm's previous three-year moving sum of absolute abnormal accruals; the abnormal accruals are calculated by a modified Jones model.	Compustat/CRSP Merged
FIO	Percentage of shares (end-of-year) held by all foreign institutional investors.	Factset
DIO	Percentage of shares (end-of-year) held by all domestic institutional investors.	Factset

Table 4.1 Sample Distribution

Panel A By Year

Year	*N*	*%*	*DMC[0,1]*	*FMC[0,1]*
2007	12,682	8.95	10.352	2.711
2008	13,160	9.29	11.204	2.971
2009	13,181	9.31	10.533	3.290
2010	12,927	9.13	11.127	3.154
2011	12,451	8.79	14.094	4.126
2012	12,372	8.73	16.614	6.175
2013	12,519	8.84	14.872	6.521
2014	12,891	9.10	15.796	6.153
2015	13,236	9.34	22.555	5.866
2016	13,275	9.37	23.340	5.472
2017	12,954	9.15	15.681	4.374
Total	***141,648***	***100***	***15.134***	***4.612***

Panel B By Industry (Fama-French 12)

Industry	*N*	*%*	*DMC[0,1]*	*FMC[0,1]*
Consumer NonDurables	5,402	3.81	21.274	5.443
Consumer Durables	2,991	2.11	18.434	6.521
Manufacturing	11,768	8.31	15.679	3.922
Oil, Gas, and Coal Extraction	7,619	5.38	11.991	5.618
Chemicals and Allied Products	3,106	2.19	16.878	5.293
Business Equipment	24,872	17.56	18.521	6.848
Telephone and Television Transmission	3,186	2.25	18.076	6.353
Utilities	4,475	3.16	13.172	2.087
Wholesale, Retail, and Some Services	11,556	8.16	24.001	4.174
Healthcare, Medical Equipment, and Drug	17,559	12.40	12.529	3.998
Finance	30,801	21.74	11.433	2.950
Other -- Mines, Constr, BldMt, Trans	18,313	12.93	11.944	4.902
Total	***141,648***	***100***	***15.135***	***4.612***

Panels A and B present sample distribution by year and industry, respectively. In Panel B industry classification is based on Fama-French 12 industry classification.

Table 4.2 Summary Statistics (N = 141,648)

Variables	*Mean*	*S.D.*	*p10*	*p25*	*p50*	*p75*	*p90*
DMC[0,1]	15.134	19.955	0	5	11	19	31
FMC[0,1]	4.612	11.676	0	0	1	4	12
DMC_PRE	13.801	26.896	0	1	8	18	31
FMC_PRE	4.578	18.007	0	0	1	3	10
DMC_ANN	256.301	412.886	3	75	170	313	518
FMC_ANN	76.274	242.194	3	8	20	49	162
PRESS	3.702	4.141	0	2	3	4	8
ABRET[0,1]	0.000	0.084	-0.086	-0.034	0.000	0.035	0.086
SUE	-0.006	0.086	-0.011	-0.002	0.000	0.003	0.009
LNSIZE	6.982	1.805	4.706	5.679	6.898	8.164	9.440
LEV	0.557	0.265	0.200	0.360	0.552	0.744	0.899
EV	0.446	0.629	0.059	0.112	0.226	0.502	1.041
EP	0.188	0.388	-0.256	-0.069	0.142	0.444	0.704
MB	2.896	4.795	0.720	1.148	1.889	3.350	6.117
IO	0.582	0.350	0	0.290	0.680	0.890	0.993
ANALYST	1.886	0.733	0.693	1.386	1.946	2.485	2.890
SP1500	0.442	0.497	0	0	0	1	1
FRIDAY	0.069	0.253	0	0	0	0	0
BADNEWS	0.403	0.490	0	0	0	1	1
LOSS	0.281	0.449	0	0	0	1	1
ABRET_PRE	-0.001	0.112	-0.107	-0.045	0.000	0.044	0.103

This table provides summary statistics for variables used in my main regression analyses. I report the distribution for the total number of coverage provided by DMC and FMC over the earnings announcements window [0,1], during the 30 days before the earnings announcement date and for the entire year. All of the variables are defined in Appendix E.

Table 4.3 Foreign Media Coverage and ERC

Panel A Main Results

	(1)	(2)	(3)	(4)	(5)
	Full Sample	***Full Sample***	***Full Sample***	***SUE>=0***	***SUE<0***
Dep. Var.	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*
^{R}SUE	0.004***	0.004***	0.009***	0.010***	0.008***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$^{R}TMC[0,1]$	-0.034***				
	(0.000)				
$^{R}SUE \times {}^{R}TMC[0,1]$	**0.005*** **				
	(0.000)				
$^{R}DMC[0,1]$		-0.031***	-0.036***	-0.022***	-0.024***
		(0.000)	(0.000)	(0.000)	(0.000)
$^{R}SUE \times {}^{R}DMC[0,1]$		**0.005*** **	**0.006*** **	**0.004*** **	**0.002**
		(0.000)	**(0.000)**	**(0.000)**	**(0.221)**
$^{R}FMC[0,1]$		-0.009***	-0.014***	-0.006	-0.017***
		(0.000)	(0.000)	(0.139)	(0.000)
$^{R}SUE \times {}^{R}FMC[0,1]$		**0.001*** **	**0.002*** **	**0.001***	**0.004*** **
		(0.000)	**(0.000)**	**(0.062)**	**(0.000)**
LNSIZE			0.004***	0.005***	0.002***
			(0.000)	(0.000)	(0.000)
LEV			0.011***	0.006	0.011***
			(0.000)	(0.163)	(0.000)
EV			-0.000	-0.001	0.001
			(0.870)	(0.510)	(0.373)
EP			-0.003**	0.003	-0.003
			(0.024)	(0.259)	(0.230)
MB			-0.001***	-0.000	-0.000
			(0.000)	(0.921)	(0.118)
IO			-0.010***	-0.017***	-0.003
			(0.000)	(0.000)	(0.315)
ANALYST			-0.006***	-0.004**	-0.009***
			(0.000)	(0.040)	(0.000)
SP1500			-0.007***	-0.005	-0.004
			(0.000)	(0.123)	(0.133)
FRIDAY			0.013***	0.008**	0.012***
			(0.000)	(0.027)	(0.000)
RPRESS			0.000	0.000	0.000
			(0.489)	(0.509)	(0.955)
BADNEWS			-0.004**		
			(0.014)		
LOSS			-0.001	0.016***	-0.007***
			(0.271)	(0.000)	(0.000)
DMC_PRE			0.006***	0.003***	0.003***
			(0.000)	(0.005)	(0.000)
FMC_PRE			0.003***	-0.001	0.004***
			(0.000)	(0.626)	(0.000)
ABRET_PRE			-0.007	-0.054***	0.007
			(0.265)	(0.000)	(0.428)
$^{R}SUE \times LNSIZE$			-0.001***	-0.001***	-0.001***
			(0.000)	(0.000)	(0.000)
$^{R}SUE \times LEV$			-0.001***	-0.001*	0.000
			(0.000)	(0.065)	(0.866)
$^{R}SUE \times EV$			0.000	0.000	-0.000
			(0.681)	(0.514)	(0.781)
$^{R}SUE \times EP$			0.001***	-0.000	0.001
			(0.008)	(0.455)	(0.427)
$^{R}SUE \times MB$			0.001***	0.000	-0.000
			(0.000)	(0.144)	(0.205)
$^{R}SUE \times IO$			0.003***	0.004***	0.000
			(0.000)	(0.000)	(0.721)

$^{R}SUE \times ANALYST$			0.001***	0.001***	0.003***
			(0.000)	(0.001)	(0.000)
$^{R}SUE \times SP1500$			0.001***	0.001	0.000
			(0.000)	(0.154)	(0.936)
$^{R}SUE \times FRIDAY$			-0.002***	-0.001***	-0.002***
			(0.000)	(0.003)	(0.007)
$^{R}SUE \times RPRESS$			-0.001	-0.000	-0.000
			(0.752)	(0.783)	(0.757)
$^{R}SUE \times BADNEWS$			0.001		
			(0.495)		
$^{R}SUE \times LOSS$			-0.003***	-0.005***	-0.000
			(0.000)	(0.000)	(0.880)
$^{R}SUE \times DMC\_PRE$			-0.001***	-0.001***	-0.000
			(0.000)	(0.000)	(0.521)
$^{R}SUE \times FMC\_PRE$			-0.001***	-0.000	-0.001**
			(0.000)	(0.981)	(0.015)
$^{R}SUE \times ABRET\_PRE$			-0.005***	0.002	-0.013***
			(0.000)	(0.290)	(0.000)
Constant	-0.037***	-0.022***	-0.040***	-0.052***	-0.042***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Year-Quarter Fixed	YES	YES	YES	YES	YES
Industry Fixed	YES	YES	YES	YES	YES
Observations	141,648	141,648	141,648	84,616	57,032
R^2	0.053	0.056	0.071	0.042	0.034
Diffs b/w coefficients		***Dif***	***Dif***	***Dif***	***Dif***
$^{R}SUE \times {}^{R}DMC[0,1]$-$^{R}SUE \times {}^{R}FMC[0,1]$		0.004***	0.004***	0.003***	-0.002
F-statistics		76.18	32.75	8.13	1.93
P-value		0.000	0.000	0.004	0.165

This table presents the main regression results for testing the effect of foreign media coverage on earnings responses coefficients, based on 141,618 firm-quarter observations. Columns 1 to 3 report the results of the pooled sample; Columns 4 and 5 presents the results when the sample is split into good news (*SUE>=0*) and bad news (*SUE<0*). *p*-values based on robust standard errors adjusted for clustering by firm and quarter are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All of the variables are defined in Appendix E.

Table 4.4 Foreign Media Coverage and ERC: Alternative Measurements and Tests on Endogeneity

Panel A Alternative Measurements of DMC&FMC

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Full Sample	***SUE>=0***	***SUE<0***	***Full Sample***	***SUE>=0***	***SUE<0***	***Full Sample***	***SUE>=0***	***SUE<0***
Dep. Var.	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*
		Credible DMC&FMC			***Non-Global DMC&FMC***			***Abnormal DMC&FMC***	
^{R}SUE	0.009***	0.010***	0.008***	0.010***	0.010***	0.008***	0.009***	0.009***	0.007***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
^{R}DMC	-0.036***	-0.023***	-0.024***	-0.020***	-0.012***	-0.013***	-0.035***	-0.022***	-0.024***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)
$^{R}SUE \times {}^{R}DMC[0,1]$	**0.006*** **	**0.004*** **	**0.002**	**0.003*** **	**0.002*** **	**0.001**	**0.005*** **	**0.004*** **	**0.002**
	(0.000)	**(0.000)**	**(0.233)**	**(0.000)**	**(0.000)**	**(0.202)**	**(0.000)**	**(0.000)**	**(0.199)**
^{R}FMC	-0.014***	-0.006	-0.017***	-0.005**	0.004	-0.008***	-0.014***	-0.007*	-0.016***
	(0.000)	(0.147)	(0.000)	(0.017)	(0.333)	(0.009)	(0.000)	(0.077)	(0.000)
$^{R}SUE \times {}^{R}FMC[0,1]$	**0.002*** **	**0.001***	**0.004*** **	**0.001*** **	**-0.001**	**0.003*** **	**0.002*** **	**0.001** **	**0.004*** **
	(0.000)	**(0.066)**	**(0.000)**	**(0.003)**	**(0.678)**	**(0.009)**	**(0.000)**	**(0.027)**	**(0.000)**
LNSIZE	0.004***	0.005***	0.002***	0.004***	0.005***	0.002***	0.004***	0.005***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LEV	0.011***	0.006	0.011***	0.011***	0.008*	0.010***	0.011***	0.006	0.011***
	(0.000)	(0.163)	(0.000)	(0.000)	(0.063)	(0.000)	(0.000)	(0.169)	(0.000)
EV	-0.000	-0.001	0.001	-0.000	-0.001	0.001	-0.000	-0.001	0.001
	(0.871)	(0.510)	(0.373)	(0.654)	(0.487)	(0.531)	(0.851)	(0.519)	(0.394)
EP	-0.003**	0.003	-0.003	-0.003**	0.004	-0.003	-0.003**	0.003	-0.003
	(0.023)	(0.258)	(0.228)	(0.043)	(0.226)	(0.210)	(0.024)	(0.246)	(0.225)
MB	-0.001***	-0.000	-0.000	-0.001***	-0.000	-0.000	-0.001***	-0.000	-0.000
	(0.000)	(0.920)	(0.115)	(0.000)	(0.917)	(0.130)	(0.000)	(0.916)	(0.110)
IO	-0.010***	-0.017***	-0.003	-0.012***	-0.020***	-0.004	-0.009***	-0.017***	-0.002
	(0.000)	(0.000)	(0.313)	(0.000)	(0.000)	(0.152)	(0.000)	(0.000)	(0.367)
ANALYST	-0.006***	-0.004**	-0.009***	-0.008***	-0.005***	-0.010***	-0.006***	-0.004**	-0.009***
	(0.000)	(0.040)	(0.000)	(0.000)	(0.010)	(0.000)	(0.000)	(0.036)	(0.000)
SP1500	-0.007***	-0.005	-0.004	-0.009***	-0.005*	-0.005*	-0.007***	-0.005	-0.004
	(0.000)	(0.124)	(0.133)	(0.000)	(0.075)	(0.052)	(0.000)	(0.114)	(0.124)
FRIDAY	0.013***	0.008**	0.012***	0.012***	0.007**	0.012***	0.013***	0.008**	0.012***
	(0.000)	(0.028)	(0.000)	(0.000)	(0.036)	(0.000)	(0.000)	(0.028)	(0.000)
RPRESS	0.000	0.000	0.000	-0.000**	-0.000	-0.000	0.000	0.000	0.000
	(0.494)	(0.503)	(0.957)	(0.031)	(0.780)	(0.103)	(0.421)	(0.431)	(0.912)
BADNEWS	-0.004**			-0.004**			-0.004**		
	(0.014)			(0.023)			(0.014)		

LOSS	-0.001	0.016***	-0.007***	-0.002	0.016***	-0.007***	-0.001	0.016***	-0.007***
	(0.273)	(0.000)	(0.000)	(0.199)	(0.000)	(0.000)	(0.258)	(0.000)	(0.000)
PreDMC	0.006***	0.003***	0.003***	0.004***	0.002**	0.002***	0.006***	0.003***	0.003***
	(0.000)	(0.004)	(0.000)	(0.000)	(0.027)	(0.004)	(0.000)	(0.007)	(0.000)
Pre_FMC	0.003***	-0.001	0.005***	0.003***	-0.002	0.004***	0.002***	-0.001	0.004***
	(0.000)	(0.611)	(0.000)	(0.000)	(0.201)	(0.000)	(0.000)	(0.510)	(0.000)
ABRET_PRIOR	-0.007	-0.054***	0.007	-0.007	-0.054***	0.008	-0.007	-0.055***	0.007
	(0.267)	(0.000)	(0.426)	(0.315)	(0.000)	(0.346)	(0.253)	(0.000)	(0.436)
Constant	-0.040***	-0.052***	-0.038***	-0.042***	-0.051***	-0.041***	-0.042***	-0.050***	-0.036***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
^{R}SUE × Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year-Quarter Fixed	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry Fixed	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm Fixed	NO	NO	NO	NO	NO	NO	NO	NO	NO
Observations	141,648	84,616	57,032	141,648	84,616	57,032	141,648	84,616	57,032
R^2	0.072	0.042	0.034	0.069	0.042	0.030	0.069	0.042	0.034
Diffs b/w coefficients									
$^{R}SUE \times {}^{R}DMC[0,1]$- $^{R}SUE \times {}^{R}FMC[0,1]$	0.004***	0.003***	-0.002	0.002***	0.003***	-0.002	0.003***	0.003***	-0.002
F-statistics	32.56	8.51	2.15	22.31	9.15	0.72	32.47	7.57	2.05
P-value	0.000	0.004	0.143	0.000	0.003	0.396	0.000	0.006	0.152

Panel B Tests on Endogeneity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Full Sample	***SUE>=0***	***SUE<0***	***Full Sample***	***SUE>=0***	***SUE<0***	***Full Sample***	***SUE>=0***	***SUE<0***
Dep. Var.	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*
	Including Firm Fixed Effects			***Firm-Qtr Covered by both DMC and FMC***			***PSM Matched Sample***		
^{R}SUE	0.009***	0.015***	0.009***	0.010***	0.010***	0.004	0.010***	0.010***	0.006***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.103)	(0.000)	(0.000)	(0.003)
^{R}DMC	-0.040***	-0.031***	-0.029***	-0.020***	-0.023***	-0.026***	-0.038***	-0.026***	-0.024***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)
$^{R}SUE \times {}^{R}DMC[0,1]$	**0.006*** **	**0.005*** **	**0.001**	**0.003*** **	**0.004*** **	**0.001**	**0.006*** **	**0.004*** **	**0.002**
	(0.000)	**(0.000)**	**(0.439)**	**(0.000)**	**(0.000)**	**(0.814)**	**(0.000)**	**(0.000)**	**(0.333)**
^{R}FMC	-0.015***	-0.010**	-0.022***	-0.005**	-0.009	-0.018***	-0.019***	-0.014***	-0.018***
	(0.000)	(0.027)	(0.000)	(0.017)	(0.140)	(0.000)	(0.000)	(0.010)	(0.000)
$^{R}SUE \times {}^{R}FMC[0,1]$	**0.002*** **	**0.002*** **	**0.005*** **	**0.001*** **	**0.002***	**0.005*** **	**0.003*** **	**0.002*** **	**0.004*** **

	(0.000)	**(0.009)**	**(0.000)**	**(0.003)**	**(0.060)**	**(0.004)**	**(0.000)**	**(0.005)**	**(0.003)**
LNSIZE	-0.012***	-0.008***	-0.014***	0.004***	0.004***	0.002**	0.005***	0.006***	0.003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.040)	(0.000)	(0.000)	(0.000)
LEV	0.002	0.023***	-0.011**	0.011***	0.005	0.010***	0.009***	0.004	0.009***
	(0.403)	(0.000)	(0.020)	(0.000)	(0.340)	(0.009)	(0.000)	(0.479)	(0.008)
EV	-0.001	-0.001	-0.003	-0.000	-0.002	0.003	-0.001	-0.002	0.000
	(0.181)	(0.668)	(0.160)	(0.654)	(0.476)	(0.157)	(0.399)	(0.410)	(0.875)
EP	-0.005***	-0.003	-0.004	-0.003**	0.001	-0.003	-0.001	0.005	0.002
	(0.002)	(0.430)	(0.132)	(0.043)	(0.760)	(0.378)	(0.739)	(0.188)	(0.449)
MB	-0.001***	-0.001***	-0.000	-0.001***	-0.000	-0.000	-0.001***	0.000	-0.000
	(0.000)	(0.006)	(0.515)	(0.000)	(0.762)	(0.535)	(0.000)	(0.728)	(0.540)
IO	-0.001	-0.024***	0.006	-0.012***	-0.019***	-0.001	-0.010***	-0.017***	-0.001
	(0.801)	(0.000)	(0.246)	(0.000)	(0.000)	(0.815)	(0.000)	(0.000)	(0.777)
ANALYST	-0.007***	-0.011***	-0.007***	-0.008***	0.002	-0.012***	-0.007***	-0.006**	-0.010***
	(0.000)	(0.000)	(0.001)	(0.000)	(0.517)	(0.000)	(0.000)	(0.031)	(0.000)
SP1500	-0.010***	-0.005	-0.005	-0.009***	-0.001	-0.001	-0.009***	-0.008*	-0.006*
	(0.000)	(0.227)	(0.273)	(0.000)	(0.797)	(0.747)	(0.000)	(0.058)	(0.064)
FRIDAY	0.012***	0.013***	0.012***	0.012***	0.006	0.010***	0.014***	0.009*	0.013***
	(0.000)	(0.003)	(0.000)	(0.000)	(0.181)	(0.008)	(0.000)	(0.062)	(0.000)
RPRESS	0.000	0.000	0.001	-0.000**	0.000	0.000	0.000*	0.001	0.001
	(0.293)	(0.353)	(0.127)	(0.031)	(0.568)	(0.685)	(0.054)	(0.107)	(0.154)
BADNEWS	0.001			-0.004**			-0.002		
	(0.615)			(0.023)			(0.378)		
LOSS	-0.004***	0.018***	-0.012***	-0.002	0.016***	-0.009***	-0.002	0.020***	-0.009***
	(0.003)	(0.000)	(0.000)	(0.199)	(0.001)	(0.001)	(0.294)	(0.000)	(0.000)
PreDMC	0.006***	0.006***	0.003**	0.004***	0.002	0.003**	0.005***	0.003*	0.002*
	(0.000)	(0.000)	(0.013)	(0.000)	(0.398)	(0.035)	(0.000)	(0.065)	(0.087)
Pre_FMC	0.003***	-0.003*	0.005***	0.003***	0.002	0.005***	0.002**	-0.003*	0.003**
	(0.000)	(0.089)	(0.000)	(0.000)	(0.163)	(0.000)	(0.037)	(0.099)	(0.019)
ABRET_PRIOR	-0.018***	-0.050**	-0.003	-0.007	-0.051**	-0.004	-0.006	-0.060***	0.006
	(0.005)	(0.010)	(0.773)	(0.315)	(0.026)	(0.739)	(0.466)	(0.004)	(0.616)
Constant	0.079***	0.041***	0.094***	-0.042***	-0.063***	-0.015	-0.041***	-0.056***	-0.033***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.156)	(0.000)	(0.000)	(0.001)
^{R}SUE × Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year-Quarter Fixed	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry Fixed	NO	NO	NO	YES	YES	YES	YES	YES	YES
Firm Fixed	YES	YES	YES	NO	NO	NO	NO	NO	NO
Observations	141,648	84,616	57,032	80,289	49,529	30,760	75,316	44,272	31,044

R^2	0.140	0.158	0.199	0.075	0.042	0.038	0.075	0.047	0.036
Diffs b/w coefficients									
^{R}SUE × ^{R}DMC[0,1]-^{R}SUE × ^{R}FMC[0,1]	0.004***	0.003***	-0.006**	0.003***	0.002	-0.006	0.003***	0.002*	-0.006
F-statistics	35.77	8.17	4.09	16.07	2.12	2.33		3.21	0.88
P-value	0.000	0.004	0.043	0.000	0.145	0.127		0.073	0.348

Panel C Alternative Specification

	(1)	(2)
	Full Sample	***Full Sample***
Dep. Var.	*ABRET[0,1]*	*ABRET[0,1]*
^{R}SUE_UP	0.008***	0.008***
	(0.000)	(0.000)
^{R}SUE_DOWN	0.009***	0.008***
	(0.000)	(0.000)
^{R}DMC	-0.021***	-0.028***
	(0.000)	(0.000)
^{R}SUE_UP × ^{R}DMC[0,1] --A	**0.003*** **	**0.004*** **
	(0.000)	**(0.000)**
^{R}SUE_DOWN × ^{R}DMC[0,1] --B	**0.001**	**0.001**
	(0.602)	**(0.238)**
^{R}FMC	-0.011***	-0.011***
	(0.000)	(0.000)
^{R}SUE_UP × ^{R}FMC[0,1] --C	**0.001*** **	**0.002*** **
	(0.000)	**(0.000)**
^{R}SUE_DOWN × ^{R}FMC[0,1] --D	**0.003*** **	**0.003*** **
	(0.001)	**(0.001)**
Controls	YES	YES
^{R}SUE_UP × Controls	YES	YES
^{R}SUE_DOWN × Controls	YES	YES
Year-Quarter Fixed	YES	YES
Industry Fixed	YES	**NO**
Firm Fixed	**NO**	YES
Observations	141,648	141,648
R^2	0.077	0.139
Diffs b/w coefficients	***Dif*** ***F-stat*** ***P-val***	***Dif*** ***F-stat*** ***P-val***

A - B	0.002***	12.10	0.000	0.003***	8.66	0.003
C - D	-0.002**	4.33	0.038	-0.001**	4.63	0.031
A – C	0.002***	9.38	0.002	0.002***	11.91	0.001
B - D	-0.002	1.78	0.183	-0.002	0.86	0.354

This table presents the regression results on robustness tests for testing the effect of foreign media coverage on earnings responses coefficients.

Panel A reports the results when using the alternative measurements of DMC and FMC. Columns 1-3 report the results using an alternative measure of foreign and domestic media coverage by restricting to media sources that are more credible (defined as media sources with credibility rank of 1, 2 or 3 assigned by RavenPack) in the computation of *DMC[0,1]* and *FMC[0,1]*. Columns 4-6 report the results using an alternative measure of foreign and domestic media coverage by restricting to media sources providing lower level of global news coverage (defined based on the number of countries covered by the news media outlet is less than the median level across all outlets) in the computation of *DMC[0,1]* and *FMC[0,1]*. Column 7-9 report the results using the abnormal measures of *DMC[0,1]* and *FMC[0,1]*, which are defined as the difference between mean daily number of news articles written by domestic (foreign) media during my test window and the mean daily number of news articles written by domestic (foreign) media during the 30 days prior to earnings announcement date.

Panel B reports the results using various techniques to address the endogeneity concern of foreign news media. Columns 1-3 report the results when I argument the main regression with firm-fixed effects. Columns 4-6 report the results using a sample of observations with both domestic and foreign media coverages. Columns 7-9 reports the results using a propensity-score-matched sample, which is obtained by matching each earnings announcement of a firm covered by foreign media (treatment) to the announcement of another firm that has domestic media coverage but does not receive any foreign media coverage (control) on observable firm characteristics in the same year using the nearest-neighbour matching technique with no replacement.

Panel C reports the results using an alternative model similar to that used in Mian and Sankaraguruswamy (2011):

$$ABRET[0,1]=\beta0+\beta1^{R}SUE\_UP+\beta2^{R}SUE\_DOWN+\beta3^{R}DMC[0,1]+\beta4^{R}SUE\_UP\times^{R}DMC[0,1]+\beta5^{R}SUE\_DOWN\times^{R}DMC[0,1] + \beta6^{R}FMC[0,1] + \beta7\ ^{R}SUE\_UP\times FMC[0,1]+\beta8\ ^{R}SUE\_DOWN\times FMC[0,1] + \Sigma\beta\gamma\ Controls + \Sigma\beta\delta\ ^{R}SUE\_DOWN\times Controls + \Sigma\beta\theta\ ^{R}SUE\_DOWN\times Controls + FE+\varepsilon$$

p-values based on robust standard errors adjusted for clustering by firm and quarter are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All of the variables are defined in Appendix E.

Table 4.5 The Impact of Institutional Proximity on the Relation between Foreign Media Coverage and ERC

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Full Sample	***SUE>=0***	***SUE<0***	***Full Sample***	***SUE>=0***	***SUE<0***	***Full Sample***	***SUE>=0***	***SUE<0***
Dep. Var.	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*	*ABRET[0,1]*
	Economic Proximity			***Political Proximity***			***Cultural Proximity***		
^{R}SUE	0.009***	0.010***	0.008***	0.009***	0.010***	0.008***	0.009***	0.013***	0.007***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
^{R}DMC	-0.038***	-0.022***	-0.028***	-0.038***	-0.023***	-0.028***	-0.038***	-0.027***	-0.026***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
$^{R}SUE \times {}^{R}DMC[0,1]$	**0.006*** **	**0.004*** **	**0.002**	**0.006*** **	**0.004*** **	**0.002***	**0.006*** **	**0.005*** **	**0.002**
	(0.000)	**(0.000)**	**(0.122)**	**(0.000)**	**(0.000)**	**(0.092)**	**(0.000)**	**(0.000)**	**(0.157)**
$^{R}FMC\_high$	-0.002	0.002	-0.003	-0.002	-0.002	-0.000	-0.001	-0.005	0.006
	(0.218)	(0.645)	(0.286)	(0.394)	(0.637)	(0.989)	(0.758)	(0.490)	(0.270)
$^{R}SUE \times {}^{R}FMC\_high[0,1]$	**0.001**	**-0.001**	**0.001**	**0.001**	**0.000**	**0.001**	**0.001**	**0.001**	**-0.003**
	(0.110)	**(0.708)**	**(0.175)**	**(0.182)**	**(0.536)**	**(0.740)**	**(0.444)**	**(0.325)**	**(0.176)**
$^{R}FMC\_low$	-0.014***	-0.014***	-0.018***	-0.013***	-0.008**	-0.018***	-0.010***	-0.010**	-0.012***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.028)	(0.000)	(0.000)	(0.026)	(0.000)
$^{R}SUE \times {}^{R}FMC\_low[0,1]$	**0.002*** **	**0.002*** **	**0.003*** **	**0.002*** **	**0.001** **	**0.004*** **	**0.002*** **	**0.001** **	**0.003*** **
	(0.000)	**(0.000)**	**(0.001)**	**(0.000)**	**(0.018)**	**(0.000)**	**(0.000)**	**(0.016)**	**(0.002)**
Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
$^{R}SUE \times$ Controls	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year-Quarter Fixed	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry Fixed	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	141,648	84,616	57,032	141,648	84,616	57,032	141,648	84,616	57,032
R^2	0.071	0.042	0.043	0.071	0.042	0.034	0.070	0.040	0.033
Diffs b/w coefficients	***Dif***	***Dif***	***Dif***	***Dif***	***Dif***	***Dif***	***Dif***	***Dif***	***Dif***
$^{R}SUE \times {}^{R}FMC\_low[0,1] - {}^{R}SUE \times {}^{R}FMC\_high[0,1]$	0.001***	0.001	0.002	0.001	0.001	0.003	0.001	0.000	0.006
F-statistics	13.15	10.06	1.95	13.74	1.51	6.85	2.89	0.10	6.42
P-value	0.000	0.003	0.162	0.000	0.220	0.009	0.089	0.752	0.011

This table presents the results for testing how economic, political and cultural proximity between a media outlet's country and the USaffects the relation between foreign media coverage and ERC. I define a foreign media outlet to have high (low) economic proximity with the firm, if the percentage of the media country's exports to the USis greater (less) than the median level of the country's overall exports to all other countries. I define a foreign media outlet to have high (low) political proximity with the firm, if a country's level of bilateral trust to the US is greater (less) than the median level of the country's bilateral trust to all other countries. I define a foreign media outlet to have high (low) cultural proximity if the primary religion of the media's country is the same as (different from) the US. *p*-values based on robust standard errors adjusted for clustering by firm and quarter are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All other variables are defined in Appendix E.

Table 4.6 News Selectivity and Timeliness of News Coverage

	(1)	(2)
	Full Sample	***Full Sample***
Dep. Var.	*BADNEWS*	*COV_DAY1*
FMC_IND	**0.070*** **	**-0.151**
	(0.000)	**(0.574)**
LNSIZE	-0.086***	-0.020
	(0.000)	(0.354)
LEV	0.079	0.280***
	(0.112)	(0.000)
EV	0.010	-0.052***
	(0.666)	(0.000)
EP	-0.004	-0.128***
	(0.887)	(0.000)
MB	-0.007***	-0.007***
	(0.002)	(0.000)
IO	-0.239***	0.118***
	(0.000)	(0.001)
ANALYST	-0.107***	-0.196***
	(0.000)	(0.000)
SP1500	-0.000	0.056
	(0.999)	(0.150)
FRIDAY	0.060	1.943***
	(0.185)	(0.000)
LOSS	0.804***	-0.127***
	(0.000)	(0.000)
Constant	0.314	2.737***
	(0.292)	(0.000)
Year-Quarter Fixed	YES	YES
Industry Fixed	YES	YES
Observations	2,780,513	2,780,513
R-squared	0.066	0.042

This table presents the results testing the likelihood of covering corporate bad news and the timeliness of earnings announcement coverage between foreign and domestic media. COV_DAY1 is an indicator variable that equals one if the media outlet provides coverage of earnings announcement on the first day of earnings announcement, and zero if it provides coverage of earnings announcement on the second day of earnings announcement. *p*-values based on robust standard errors adjusted for clustering by firm and year are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All other variables are defined in Appendix E.

Table 4.7 Foreign Media Coverage and Future ERC

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Full Sample	***Full Sample***	***Full Sample***	***$EARN_{(t+1,t+3)}>=$***	***$EARN_{(t+1,t+3}<0$***	***SUE>=0***	***SUE<0***
Dep. Var.	$RET_{(t)}$	$RET_{(t)}$	$RET_{(t)}$	$RET_{(t)}$	$RET_{(t)}$	$RET_{(t)}$	$RET_{(t)}$
E_{t-1}	-0.805***	-0.394**	-0.346**	-0.488**	-0.157	0.071	-0.745***
	(0.000)	(0.011)	(0.049)	(0.020)	(0.482)	(0.694)	(0.002)
E_t	0.405***	0.303**	0.359**	0.221	0.222	0.323	0.296**
	(0.000)	(0.013)	(0.022)	(0.289)	(0.185)	(0.134)	(0.037)
$E_{t+1,t+3}$	0.101***	0.102***	0.197***	0.449	0.012	0.170***	0.063
	(0.000)	(0.004)	(0.001)	(0.124)	(0.760)	(0.002)	(0.143)
$RET_{t+1,t+3}$	-0.086***	0.174	0.101	0.285	0.078	0.047	0.278*
	(0.005)	(0.163)	(0.554)	(0.153)	(0.630)	(0.807)	(0.081)
DMC_ANN		0.027***	0.044***	0.013	0.037***	0.031***	0.015**
		(0.000)	(0.001)	(0.810)	(0.001)	(0.000)	(0.037)
DMC_ANN × E_{t-1}		-0.011	-0.013	-0.008	-0.031	-0.048	0.020
		(0.774)	(0.735)	(0.838)	(0.583)	(0.319)	(0.700)
DMC_ANN × E_t		0.017	0.001	-0.025	0.028	0.031	0.015
		(0.483)	(0.999)	(0.727)	(0.423)	(0.548)	(0.514)
***DMC_ANN* × $E_{t+1,t+3}$**		**0.003**	**-0.009**	**-0.034**	**0.005**	**-0.004**	**0.004**
		(0.568)	**(0.355)**	**(0.425)**	**(0.357)**	**(0.614)**	**(0.544)**
DMC_ANN × $RET_{t+1,t+3}$		-0.012	-0.021	-0.016	0.008	-0.028	0.019
		(0.637)	(0.513)	(0.698)	(0.804)	(0.518)	(0.483)
FMC_ANN		-0.011***	-0.053***	-0.012	-0.009	-0.007	-0.020***
		(0.003)	(0.000)	(0.204)	(0.386)	(0.177)	(0.000)
FMC_ANN × E_{t-1}		-0.086***	-0.104***	-0.092**	-0.072	-0.020	-0.187***
		(0.006)	(0.002)	(0.046)	(0.107)	(0.602)	(0.000)
FMC_ANN × E_t		0.042**	0.011	-0.011	0.076***	0.013	0.064***
		(0.022)	(0.637)	(0.742)	(0.001)	(0.684)	(0.006)
***FMC_ANN* × $E_{t+1,t+3}$**		**0.015*** **	**0.026*** **	**0.075**	**0.015*** **	**0.002**	**0.022*** **
		(0.004)	**(0.001)**	**(0.114)**	**(0.007)**	**(0.795)**	**(0.000)**
FMC_ANN × $RET_{t+1,t+3}$		0.013	-0.011	-0.006	0.017	0.056**	-0.024
		(0.498)	(0.663)	(0.853)	(0.499)	(0.039)	(0.357)
Controls	YES	YES	YES	YES	YES	YES	YES
Controls × E_{t-1}	YES	YES	YES	YES	YES	YES	YES
Controls × E_t	YES	YES	YES	YES	YES	YES	YES
Controls × $E_{t+1,t+3}$	YES	YES	YES	YES	YES	YES	YES
Controls × $RET_{t+1,t+3}$	YES	YES	YES	YES	YES	YES	YES
Year Fixed	YES	YES	YES	YES	YES	YES	YES

Industry Fixed	YES	YES	**NO**	YES	YES	YES	YES
Firm Fixed	**NO**	**NO**	YES	**NO**	**NO**	**NO**	**NO**
Observations	17,582	17,582	17,582	12,770	4,812	10,573	7,009
R^2	0.258	0.365	0.503	0.343	0.411	0.354	0.393

This table presents the regression results for testing the impact of foreign media coverage on the future earnings response coefficient (FERC), based on 17,582 firm year observations during 2008-2014. The sample period is reduced because the model requires data on three-year ahead earnings and stock returns, and one-year lagged earnings. Column 1 presents the results of baseline FERC model. Columns 2 and 3 report the results when industry and year fixed effects and firm and year fixed effects are included respectively. Columns 4 and 5 report the results when I split the sample into good news future earnings ($E_{t+1,t+3}>=0$) and bad news future earnings ($E_{t+1,t+3}<0$). Columns 6 and 7 report the results when I split the sample into non-negative current year earnings surprises ($SUE>=0$) and negative current year earnings surprises ($SUE<0$). *p*-values based on robust standard errors adjusted for clustering by firm and year are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All of the variables are defined in Appendix E.

Table 4.8 Foreign Media Coverage and Stock Price Crash Risks

	(1)	(2)	(3)	(4)
Dep. Var.	$CRASH_{t+1}$	$CRASH\_CNT_{t+1}$	$JUMP_{t+1}$	$JUMP\_CNT_{t+1}$
Model	*Logit*	*Poisson*	*Logit*	*Poisson*
DMC_ANN	**0.348*** **	**0.314*** **	**0.305*** **	**0.275*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**
FMC_ANN	**-0.189*** **	**-0.164*** **	**-0.112*** **	**-0.101*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**
LNSIZE	0.057***	0.037***	-0.101***	-0.086***
	(0.000)	(0.001)	(0.000)	(0.000)
LEV	-0.187**	-0.156**	0.225***	0.162**
	(0.015)	(0.010)	(0.003)	(0.012)
EV	-0.103***	-0.088***	0.015	0.015
	(0.002)	(0.001)	(0.615)	(0.583)
EP	0.009	0.014	0.058	0.047
	(0.835)	(0.704)	(0.210)	(0.255)
MB	0.003	0.001	0.007*	0.005
	(0.482)	(0.715)	(0.055)	(0.124)
ROE	-0.116	-0.077	-0.036	-0.022
	(0.288)	(0.376)	(0.733)	(0.808)
ACCOPQ	2.406***	1.758***	2.091***	1.575***
	(0.000)	(0.000)	(0.000)	(0.000)
Constant	-3.100***	-2.921***	-2.782***	-2.806***
	(0.000)	(0.000)	(0.000)	(0.000)
Year Fixed	YES	YES	YES	YES
Industry Fixed	YES	YES	NO	NO
Observations	32,774	32,774	32,774	32,774
R^2	0.152	0.129	0.138	0.120

This table presents the regression results for testing the impact of foreign media coverage on stock price crash risks, based on 32,774 firm year observations during 2007-2016. The sample period is reduced because of the use of one-year forwarded dependent variables. *p*-values based on robust standard errors adjusted for clustering by firm and year are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All of the variables are defined in Appendix E.

Table 4.9 Foreign Media Coverage and Foreign Institutional Ownership

	(1)	(2)	(3)	(2)	(5)	(6)
	Full Sample	***SUE<0***	***SUE>=0***	***Full Sample***	***SUE<0***	***SUE>=0***
Dep. Var.	*FIO* $_{t+1}$	*FIO* $_{t+1}$	*FIO* $_{t+1}$	*DIO* $_{t+1}$	*DIO* $_{t+1}$	*DIO* $_{t+1}$
DMC_ANN	**-0.044*** **	**-0.024*** **	**-0.036*** **	**0.071*** **	**0.065*** **	**0.075*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
FMC_ANN	**0.012*** **	**0.024*** **	**0.030*** **	**-0.051*** **	**-0.046*** **	**-0.054*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
LNSIZE	0.006***	0.000	0.003***	-0.002*	0.001	-0.005***
	(0.000)	(0.985)	(0.009)	(0.070)	(0.644)	(0.005)
LEV	-0.013***	-0.007	0.008*	-0.034***	-0.044***	-0.028***
	(0.000)	(0.129)	(0.065)	(0.000)	(0.000)	(0.002)
EV	0.002***	-0.004***	-0.002	0.011***	0.010**	0.012***
	(0.000)	(0.006)	(0.240)	(0.000)	(0.033)	(0.000)
EP	0.005***	-0.005**	-0.002	-0.006*	-0.008	-0.005
	(0.000)	(0.046)	(0.523)	(0.079)	(0.158)	(0.274)
MB	0.018***	0.000	0.001***	0.001**	0.001*	0.001
	(0.000)	(0.200)	(0.000)	(0.042)	(0.073)	(0.186)
ANALYST	0.001	0.036***	0.040***	0.076***	0.086***	0.068***
	(0.552)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
SP1500	-0.003	0.012***	0.017***	0.142***	0.146***	0.139***
	(0.122)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
LOSS	-0.001***	-0.003	-0.010***	-0.040***	-0.035***	-0.037***
	(0.002)	(0.185)	(0.000)	(0.000)	(0.000)	(0.000)
Constant	0.018	0.031**	0.001	0.259***	0.099*	0.397***
	(0.116)	(0.024)	(0.936)	(0.000)	(0.082)	(0.000)
Year Fixed	YES	YES	YES	YES	YES	YES
Industry Fixed	YES	YES	YES	YES	YES	YES
Observations	33,125	13,330	19,795	33,125	13,330	19,795
R^2	0.306	0.274	0.333	0.462	0.444	0.471

This table presents the regression results for testing the impact of foreign media coverage on foreign and domestic institutional ownership, based on 33,125 firm year observations during 2007-2016. The sample period is reduced because of the use of one-year forwarded dependent variables. *p*-values based on robust standard errors adjusted for clustering by firm and year are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All of the variables are defined in Appendix E.

Table 4.10 Tone of Foreign Media Coverage

	(1)	(2)	(3)
	Full Sample	***SUE<0***	***SUE>=0***
Dep. Var.	*Tone (ESS-50)*	*Tone (ESS-50)*	*Tone (ESS-50)*
FMC_IND	**-0.235*** **	**-0.065***	**-0.540*** **
	(0.000)	**(0.056)**	**(0.000)**
LNSIZE	0.079***	0.155***	-0.126***
	(0.000)	(0.000)	(0.000)
LEV	0.039	0.163***	-0.437***
	(0.410)	(0.006)	(0.000)
EV	-0.233***	-0.181***	-0.287***
	(0.000)	(0.000)	(0.000)
EP	0.261***	0.848***	-0.706***
	(0.000)	(0.000)	(0.000)
MB	0.091***	0.097***	0.065***
	(0.000)	(0.000)	(0.000)
IO	0.845***	1.232***	0.457***
	(0.000)	(0.000)	(0.000)
ANALYST	-0.420***	0.063**	-1.140***
	(0.000)	(0.016)	(0.000)
SP1500	-0.707***	-0.782***	-0.624***
	(0.000)	(0.000)	(0.000)
FRIDAY	-0.070*	0.138**	-0.498***
	(0.099)	(0.011)	(0.000)
BADNEWS	-6.345***		
	(0.000)		
LOSS	-8.074***	-8.619***	-7.493***
	(0.000)	(0.000)	(0.000)
Constant	8.269***	6.106***	5.673***
	(0.000)	(0.000)	(0.000)
Year-Quarter Fixed	YES	YES	YES
Industry Fixed	YES	YES	YES
Observations	2,780,513	1,816,972	963,541
R-squared	0.085	0.048	0.053

This table presents the regression results for testing the association between foreign media coverage and media coverage tone. *FMC_IND* is an indicator on whether an article is written by foreign media. Because this test is examined on all news articles, the number of observations is different from that of the other tables. *FMC* equals to zero means an article is written by domestic media. *p*-values based on robust standard errors adjusted for clustering by firm and year are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. All of the variables are defined in Appendix E.

Chapter 5. Conclusion

5.1. Summary and Implications of the Thesis

The three studies comprising this thesis explore the factors that affect the constraints of cross-border capital supply. The first study investigates whether the reduced regulatory requirements initiated by Rule 12h-6 affects corporate innovation, an important driver of national and international long-term economic growth. The study finds that cross-listed firms, on average, experience a significant reduction in firm innovation in the post–Rule 12h-6 period compared with non-cross-listed domestic firms, suggesting that the implementation of Rule 12h-6 impedes firm innovation. This negative impact of Rule 12h-6 on firm innovation is more pronounced for firms in countries with low investor protection, low regulatory quality, and greater accounting differences from the US GAAP and less pronounced for firms in countries with more liberalized stock markets. Finally, the study reveals that Rule 12h-6 reduces the benefit of using cross-listing to attract sophisticated US investors.

This study has important implications. First, my finding identifies firm innovation as an important channel through which Rule 12h-6 affects firm value. Second, my finding suggests that cross-listing in a market with more stringent regulatory requirements can promote non-US firms' innovation activities. Third, this study contributes to the line of research related to the determinants of cross-border institutional investments. The easier deregistration of cross-listed firms initiated by Rule 12h-6, which has had a negative impact on the US institutional ownership of these firms, suggests that imposing stringent regulatory requirements is an important institutional feature that facilitates cross-border capital flow.

The second study seeks to determine whether and how hosting the Olympics affects the decisions of firms domiciled in the host country regarding the cross-listing of securities in foreign countries. The study finds that compared with firms domiciled in non-host countries, those domiciled in hosting countries increase the propensity and intensity of their cross-listing

activities in the years following the Olympics. Additional results reveal that the positive impact of hosting the Olympics on firms' cross-listing activities is more pronounced when the host country performs better in the Olympics compared with its previous performance, when the country hosts the Summer Olympics, and for domestic firms (vs. foreign firms). Moreover, I find that cross-listing firms domiciled in a host country tend to cross-list in foreign countries with a greater institutional distance from the host country following the Olympics. Overall, these findings suggest that hosting the Olympics improves the international reputation of the host country, in turn helping firms domiciled in that country to reduce the liability of foreignness when cross-listing overseas.

This study contributes to the literature in several ways. First, given that cross-listing is an important corporate decision that may bring substantial economic benefits to firms and the countries in which they are located, my findings suggest an important and previously undocumented economic consequence of hosting the Olympics for the host country. Second, this study adds to the literature related to the determinants of cross-listing in an international setting (Sarkissian and Schill 2004; Chen et al. 2015; Chen et al. 2019; Liao et al. 2021; Tsang et al. 2021) by investigating the effect of hosting the Olympics on the cross-listing activities of firms domiciled in the host country. My study complements the emerging line of research on the effects of seemingly value-irrelevant sporting events on capital market participants (Edmans et al. 2007; Palomino et al. 2009; Martins and Serra 2011; Ehrmann and Jansen 2016; Drake et al. 2016). My findings suggest that the increased visibility of a country arising from hosting the Olympics can significantly affect the behaviors of capital market participants.

The third study examines whether foreign and domestic news media outlets play similar roles in the price discovery process following earnings announcements. This study compares the effects of foreign and domestic media coverage on the pricing of accounting information following earnings announcements, which represent one of the most important channels of

communication between firm insiders and outside investors in the US market (Ball and Brown 1968; Beaver 1968; Landsman and Maydew 2002; DeFond et al. 2007; Pevzner et al. 2015; Beaver et al. 2018; Beaver et al. 2019). Using a novel dataset comprising news items from 1,126 media outlets in 48 countries, I examine the impact of foreign media coverage on the stock market reaction to corporate earnings news. I find that compared with domestic media coverage, foreign media coverage of good (bad) news earnings announcements is associated with a weaker (stronger) stock market reaction. The stronger stock market reaction to bad earnings news is driven mainly by media outlets in countries that have less economic, political, and cultural proximity to the US. Further analyses show that foreign media coverage (i) facilitates the incorporation of future earnings news into current stock prices when the future earnings news is bad, (ii) reduces firms' stock price crash risks, and (iii) increases foreign institutional ownership. Additionally, I find that foreign media coverage tends to be less positive (more negative) when covering good (bad) earnings news. Taken together, these findings suggest that the role of media coverage on capital markets varies systematically with the media outlet's country of origin. This study contributes to the extant literature in the following ways. First, it adds to this strand of research by showing how the role of media coverage varies with the media outlet's country of origin. Second, it extends this literature to a large number of media outlets beyond the national border. Given their greater level of independence, foreign media outlets appear to play a more effective role than domestic media outlets in facilitating the incorporation of negative earnings news into stock prices. Unlike prior studies that predominantly focus on media outlets within a single country (Graf-Vlachy et al. 2020), the cross-country examination of foreign news media allows the examination of the heterogeneity of their effects across many countries with different institutional characteristics, including their economic, political, and cultural proximity to the US.

5.2. Limitations and Future Suggestions

My research is not without its limitations. First and most importantly, as with other studies in the accounting literature, the endogeneity concern is a caveat worth acknowledging. Findings from the first two studies may suffer from a potential concern found in most cross-national studies; that is, they may partially be the result of changes in cross-listing activities arising from changes in country-level institutions other than those controlled for in my study. Although it is unlikely that any changes in country-level institutions would systematically bias the results, and despite my efforts to conduct numerous additional analyses in both studies to mitigate this concern, I acknowledge that this potential weakness cannot be eliminated in full and leave this as an open question for possible future research. I also encourage future studies to explore other effects of Rule 12h-6 and hosting the Olympics.

In addition, although the finding from the third study could show a strong correlation between foreign media coverage and stock price responses, it is challenging to establish the causality of this relationship because there may still be unobservable factors that could influence both media coverage decisions and investor behaviors. Therefore, I urge future researchers to identify other settings, preferably more exogenous ones, to further understand the causal impact of foreign media. Moreover, because this study primarily focuses on the effects of the professional media (e.g., newspapers and business press) on the capital market, it would be of interest to examine whether these effects extend to nonprofessional intermediaries (e.g., social networks, blogs).

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