Essays on Corporate Ownership Structure, Insider Trading, and Index Fund Voting Patterns

Author:
Zhang, Xueting

Publication Date:
2020

DOI:
https://doi.org/10.26190/unsworks/3917

Essays on Corporate Ownership Structure, Insider Trading, and Index Fund Voting Patterns

Xueting Zhang

A thesis in fulfilment of the requirements for the degree of

Doctor of Philosophy

School of Banking and Finance

UNSW Business School

March 2019

Thesis/Dissertation Sheet

Surname/Family Name	:	**Zhang**
Given Name/s	:	**Xueting**
Abbreviation for degree as give in the University calendar	:	**PhD**
Faculty	:	**UNSW Business School**
School	:	**School of Banking and Finance**
Thesis Title	:	**Essays on Corporate Ownership Structure, Insider Trading, and Index Fund Voting Patterns**

Abstract 350 words maximum: (PLEASE TYPE)

This thesis consists of three stand-alone research projects on corporate ownership structure across countries, insider trading, and passive institutional investors. The first study examines the effect of social trust on corporate ownership structure. Using a large sample of public firms across 42 countries, I find that a culture of trust in a country leads to a more dispersed corporate ownership structure. I also investigate how trust affects the evolution of ownership structure following firms' IPO and the channels through which trust leads to dispersed ownership. I show that corporate ownership is more likely to become widely held and diffuses at a faster speed in countries with a higher level of social trust. Trust also encourages the selling of block ownership by large shareholders and the use of equity financing by firms. The second study investigates whether fast economic integration but slow legal integration leads to more aggressive insider trading by foreigners in possession of material non-public information about domestic firms. Using a large sample of mergers and acquisitions (M&As) around the world, I find systematically a higher likelihood of insider trading in target firm securities before the announcements of cross-border deals compared to domestic deals. The difference is mainly driven by cross-border deals where the acquirer is from a country with high corruption and low social norms, and where the target is in a country with stricter enforcement of insider trading laws. The third study examines the role of family interest in explaining and influencing individual funds' voting behaviour. Specifically, I focus on the voting patterns of index funds in the event of corporate M&As. I find that the interest of fund families in the target is significantly positively associated with the likelihood of an affiliated index fund voting for a deal in the bidder merger approval meeting. However, an index fund's own interest in the target does not explain its voting pattern. A higher level of aggregate bidder ownership held by fund families that have greater active interest in the target is also associated with worse deal performance. Taken together, the evidence suggests that cooperation between active and index funds within fund families potentially weakens the resistance of bidder shareholders to bad mergers.

Originality Statement

‘I hereby declare that this submission is my own work and to the best of my knowledge it contains no materials previously published or written by another person, or substantial proportions of material that have been accepted for the award of any other degree or diploma at UNSW or any other educational institution, except where due acknowledgement is made in the thesis. Any contribution made to the research by others, with whom I have worked at UNSW or elsewhere, is explicitly acknowledged in the thesis. I also declare that the intellectual content of this thesis is the product of my own work, except to the extent that assistance from others in the project’s design and conception or in style, presentation and linguistic expression is acknowledged.’

Signed ……

Date …….

INCLUSION OF PUBLICATIONS STATEMENT

UNSW is supportive of candidates publishing their research results during their candidature as detailed in the UNSW Thesis Examination Procedure.

Publications can be used in their thesis in lieu of a Chapter if:

- The candidate contributed greater than 50% of the content in the publication and is the "primary author", ie. the candidate was responsible primarily for the planning, execution and preparation of the work for publication
- The candidate has approval to include the publication in their thesis in lieu of a Chapter from their supervisor and Postgraduate Coordinator.
- The publication is not subject to any obligations or contractual agreements with a third party that would constrain its inclusion in the thesis

Please indicate whether this thesis contains published material or not:

☒ This thesis contains no publications, either published or submitted for publication
(if this box is checked, you may delete all the material on page 2)

☐ Some of the work described in this thesis has been published and it has been documented in the relevant Chapters with acknowledgement
(if this box is checked, you may delete all the material on page 2)

☐ This thesis has publications (either published or submitted for publication) incorporated into it in lieu of a chapter and the details are presented below

CANDIDATE'S DECLARATION

I declare that:

- I have complied with the UNSW Thesis Examination Procedure
- where I have used a publication in lieu of a Chapter, the listed publication(s) below meet(s) the requirements to be included in the thesis.

Candidate's Name	Signature	Date (dd/mm/yy)
Xueting Zhang		

Copyright Statement

Signed …….

Date …….

Authenticity Statement

‘I certify that the Library deposit digital copy is a direct equivalent of the final officially approved version of my thesis.’

Signed ……..…...

Date …….

Acknowledgements

I would like to express my greatest appreciation to my supervisors, Professor Fariborz Moshirian and Professor Bohui Zhang, for their invaluable guidance and support in completing this thesis. I am grateful for the time and attention they have generously given me despite their busy schedules. Their ideas and attitudes on academic research will benefit me throughout my future career.

I extend my special thanks to other academic staff at UNSW including Professor Ronald Masulis and Associate Professor Jin Yu for teaching me essential and important research skills, Associate Professor Peter Pham for providing ongoing guidance and thoughtful advice, and Dr Lixiong Guo for dedicating numerous hours to discuss research ideas, techniques and results with me.

I would also like to express my heartfelt thanks to all my friends and colleagues, especially Xu Huang, Jing Kong, Xian Guan, Han Wang, Mandeep Singh, Yifei Li, Yixuan Rui, Peng Wang, Leo Liu, Tianyu Cai, Huaizhou Li and Mengzhe Zhang. Your friendship is one of the best things I have gained in this journey.

Last but not least, I would like to thank my parents and partner. Thank you for your unconditional love, encouragement and support. I am forever indebted to you. Without you I could not have come close to what I have achieved today.

Abstract

This thesis consists of three stand-alone research projects on corporate ownership structure across countries, insider trading, and passive institutional investors.

The first study examines the effect of social trust on corporate ownership structure. Using a large sample of public firms across 42 countries, I find that a culture of trust in a country leads to a more dispersed corporate ownership structure. I also investigate how trust affects the evolution of ownership structure following firms' IPO and the channels through which trust leads to dispersed ownership. I show that corporate ownership is more likely to become widely held and diffuses at a faster speed in countries with a higher level of social trust. Trust also encourages the selling of block ownership by large shareholders and the use of equity financing by firms.

The second study investigates whether fast economic integration but slow legal integration leads to more aggressive insider trading by foreigners in possession of material non-public information about domestic firms. Using a large sample of mergers and acquisitions (M&As) around the world, I find systematically a higher likelihood of insider trading in target firm securities before the announcements of cross-border deals compared to domestic deals. The difference is mainly driven by cross-border deals where the acquirer is from a country with high corruption and low social norms, and where the target is in a country with stricter enforcement of insider trading laws.

The third study examines the role of family interest in explaining and influencing individual funds' voting behaviour. Specifically, I focus on the voting patterns of index funds in the event of corporate M&As. I find that the interest of fund families in the target is significantly positively associated with the likelihood of an affiliated index fund voting

for a deal in the bidder merger approval meeting. However, an index fund's own interest in the target does not explain its voting pattern. A higher level of aggregate bidder ownership held by fund families that have greater active interest in the target is also associated with worse deal performance. Taken together, the evidence suggests that cooperation between active and index funds within fund families potentially weakens the resistance of bidder shareholders to bad mergers.

Table of Contents

List of Tables

Chapter 1

Introduction

Over the last two decades, financial markets have witnessed intensified transnational interaction and globalisation. The liberalisation of markets and rapid technological advances have inevitably affected almost every single aspect of how people do business. For example, with the great developments in transport, communications, and information-processing technology, foreign investors and financial institutions can now enter domestic markets in almost every country of the world relatively easily. National boundaries are no longer barriers to many international economic activities.

However, the movement toward a global economy has not made the business world homogeneous and uniform. Specifically, world capital market integration is not followed by harmonised structure of corporate ownership. Large differences between countries in ownership structure continue to exist. Chapter 2 enriches our understanding of this difference and reveals that globalisation is a multifaceted phenomenon containing economic, social, legal, cultural, religious, and political dimensions, all interconnected in a very complex fashion.

The extraordinary speed and depth of globalisation have also raised many concerns in financial markets. While most market participants consider globalisation as inevitable and irreversible, how best to adapt to its forces at the national or international level is still a challenge. As fast economic integration is often not accompanied by compatible legal integration, the difference offers opportunities for economic agents in one country to profit from illegal activities in another country. One implication is that foreigners can trade on private information in a country's domestic markets but face significantly lower legal risk than domestic insiders. This issue is explored in Chapter 3.

Apart from ongoing integration and globalisation, financial markets have also recently experienced rapid growth of passively managed equity funds including index funds and exchange traded funds (ETFs). In 2017, the total amount of stocks owned by mutual funds, ETFs, and institutional accounts that track an index reached nearly $US12 trillion, which accounts for about 18% of global equity market capitalisation.[1] The US financial market shows the most striking growth of index funds, as their ownership in US stocks quadrupled from just 4.5% of total stock market capitalisation in 2002 to 17% in 2018, based on data from the Thomson Reuters Mutual Fund Holdings s12 Database. As it is uncertain to what extent these funds have the capacity and interest to influence corporate decisions, the dramatic increase in ownership of corporations held by passively managed funds raises important issues for corporate governance and control, which are investigated in Chapter 4.

This thesis contributes to the literature on finance from different perspectives by investigating important issues associated with major economic trends in three standalone research studies included in three separate chapters. Each chapter contains a dedicated introduction, data description, empirical findings, and conclusion. The three chapters are summarized below.

Chapter 2 addresses the gap in our understanding about the long-standing cross-country difference in corporate ownership structure by investigating the relation between the culture of trust and ownership concentration and how trust affects the evolution of corporate ownership structure over time. The results in Chapter 2 show that firms

[1] Estimated from BlackRock Inc as reported by Thomson Reuters: https://www.reuters.com/article/us-funds-blackrock-passive/less-than-18-percent-of-global-stocks-owned-by-index-investors-blackrock-idUSKCN1C82TE

operating in countries with a higher level of trust have a less concentrated ownership structure. Concentrated newly public firms in more trusting countries also take less time to become widely held after their first listing on the stock exchange. The larger and faster drop in ownership concentration is due to the higher likelihood of share issuance and blockholders selling in countries with higher trust. The estimated effects of trust are both economically and statistically significant and continue to hold after correcting for endogeneity. These findings provide solid support for the hypothesis that a higher level of trust promotes dispersed corporate ownership structure. When the market has incomplete information about managerial actions, trusting investors assign a lower probability to the event of managers behaving opportunistically. Consequently, investors are less likely to encourage the formation of large blockholdings. A higher level of trust can also alleviate the effect of information asymmetry and lower the cost of external finance. The greater availability of external capital in the stock market potentially lowers costs in high trust countries and increases firms' likelihood of using equity financing, and thereby leads to ownership dilution.

Chapter 3 is the first to explicitly study the consequences of a divergence between fast economic integration and slow progress in legal cooperation in the globalisation process. While integration and globalisation bring more efficient allocation of capital and better risk sharing, they also give rise to opportunities for foreign insiders to possess material non-public information about domestic firms and to trade on the information in the domestic market. This chapter investigates these issues in the context of cross-border mergers and acquisitions (M&As), a fast-growing area of globalisation. Based on a comprehensive sample of announced mergers and acquisitions around the world, the results show that the level of abnormal trading in target firm stocks is significantly higher

before cross-border deal announcements than before domestic deals. The cultural and legal characteristics of the acquirer countries are also examined. The empirical results show that among cross-border M&As that take over firms in a given country, those involving acquirers from strong governance countries and from countries with social and cultural norms that are less tolerant of tax avoidance and corruption are associated with a significantly lower level of pre-announcement informed trading. Further insights into the strength of insider trading law governing the target trading markets show that the difference in the level of insider trading between cross-border and domestic deals is more significant when the target country has stricter insider trading law enforcement or stronger rule of law. The cross-sectional variation in the results provides plausible evidence that the insiders linked to foreign acquirers exploit the barriers to cross-border law enforcement to either trade on the non-public information directly or to tip others to trade on it in the target firm's securities. Overall, the evidence in this study shows an important way in which cross-border M&As have negatively affected the integrity of financial markets around the world and raises an important question for regulators to address in the era of globalisation.

Chapter 4 focuses on another important trend in financial markets, the growth of passively managed funds that aim to deliver the return of an index. The rapid expansion of these index funds has provided a few fund families with powerful ownership in corporations. With the growing dominance of these fund families in the equity market, it is common to find situations where one fund holds stock in an acquisition target, while an affiliated fund holds stock in the acquirer. This raises important concerns for the corporate governance of fund family firms because it is uncertain to what extent these centrally managed funds have the incentive to maximise fund family interest at the cost

of corporate shareholders. This chapter examines whether fund families use their index funds' voting power to improve the performance of affiliated active funds. The empirical analysis starts with regressions including deal fixed effects and family fixed effects based on different statistical models using a comprehensive dataset of mutual fund voting records. The results show that affiliated index funds in bidder firms are more likely to vote for a deal if the fund family's interest in the target is larger. However, an index fund's own interest in the target does not explain its voting pattern after controlling the fund family's interest in the target. The second part of the empirical analysis focuses on deal-level outcomes. The results find that greater aggregate bidder ownership held by fund families that benefit from holdings in the target is associated with significantly lower bidder announcement returns, less share of synergy for the bidder, and a higher probability of completion. Greater presence of such fund families is also associated with a higher likelihood of two firms merging together and a higher fraction of "for" votes for the deal in the bidder merger approval meeting. These findings raise concerns about the growth of index funds and support increased attention on the potential influence of financial institutions in corporate control.

Finally, Chapter 5 concludes this thesis.

Chapter 2

Trust and Corporate Ownership Structure

2.1. Introduction

It has been widely documented that the ownership concentration of public corporations differs very significantly across countries (La Porta, Lopez-De-Silanes, and Shleifer 1999, Claessens, Djankov, and Lang 2000, Faccio and Lang 2002). The differences in ownership structure persist although many formal barriers to international trade have fallen sharply. What can explain these differences? As national boundaries are artificial, economic forces may be expected to always work in the same way around the world. One influential explanation is national differences in regulation (La Porta et al. 1998, 1999). As well as legal institutions, cultural norms are considered another major force that determine economic activities. Culture shapes the preference and behaviour of economic agents and consequently influences the organisation and the performance of the economy. Therefore, the differences in cultural norms across countries should explain the differences between nations in terms of preferences, economic institutions and organisations. However, few studies have provided insights into the potential effect of culture on corporate ownership concentration. This study addresses this gap and investigates the relation between trust and ownership concentration and how trust affects the evolution of corporate ownership structure over time.

Trust is a key element of cultural and social capital. It is defined as the subjective probability an individual allocates to the possibility that a potential counterparty performs actions beneficial or at least not detrimental to that individual (Gambetta 2000). The formation of trust is deeply rooted in history, religion, ethnicity, education, and social backgrounds. Therefore like the other aspects of culture, trust is unlikely to fade away over time (Fukuyama 1995, Guiso, Sapienza, and Zingales 2004, 2006, 2009). Given the incompleteness of contracting and the potential for moral hazard, how much investors

"trust" corporate insiders and controlling shareholders at least partially determines how they interact with each other. Therefore, trust can play an important role in shaping corporate ownership structure.

I propose two conflicting hypotheses regarding the impact of trust on corporate ownership structure. These hypotheses are guided by two primary theories that explain the formation of block ownership: the incentive alignment view and the entrenchment view. The incentive alignment view suggests that large ownership stakes incentivise the owner managers to exert effort and not engage in sub-optimal activities that harm shareholder interests (Jensen and Meckling 1976) and motivate external equity holders to monitor and discipline management thus addressing the agency problem (Shleifer and Vishny 1986). Therefore, concentrated ownership structure is favoured among investors under this view. The entrenchment view, however, posits that dominant ownership stakes can also be associated with adverse 'entrenchment' effects as controlling shareholders have incentives to create private benefits for their own interests at the expense of other investors (Demsetz 1983, Stulz 1988, Grossman and Hart 1988). Recognising such incentives, investors rationally dislike firms with concentrated ownership and encourage firms to develop a dispersed ownership structure. Trust is closely linked to the two views which have competing predictions regarding the impact of trust on ownership structure.

On the one hand, trust may facilitate concentrated ownership. In countries with a higher level of trust, investors are more likely to believe that managers and controlling shareholders are trustworthy and hence are less concerned about the entrenchment effect of large ownership. As a result, they are less inclined to force firms to develop a dispersed ownership structure over time. These arguments suggest that trust can have a positive effect on ownership concentration.

On the other hand, a higher level of trust can promote dispersed corporate ownership structure. The level of trust in a society affects the perceived benefits of incentivising managers and controlling shareholders using equity as suggested by the incentive alignment view. When the market has incomplete information about managerial actions, trusting investors assign a lower probability to the event of managers behaving opportunistically. Consequently, they are less likely to encourage the formation of large blockholdings. Thus, firms are expected to have relatively dispersed ownership structure in countries with a higher level of trust. Trust can also influence the incentive of investors to provide funding which in turn affect firms' ownership structure. A higher level of trust can alleviate the effect of information asymmetry and lower the cost of external finance. Investors' concern about being expropriated by firm insiders makes them feel reluctant to provide capital and makes external finance costly (Myers and Majluf 1984). Guiso, Sapienza, and Zingales (2008) show that trust can explain the likelihood of stock market participation of individuals. Individuals in a more trusting society are more willing to participate in the stock market and provide capital to firms. The greater availability of external capital in the stock market at potentially lower costs in high trust countries increases firms' likelihood of using equity financing, and thereby leads to ownership dilution.

To test the above hypotheses, I follow previous studies (La Porta et al. 1997, Guiso, Sapienza, and Zingales 2008, Bloom, Sadun, and Van Reenen 2012, Pevzner, Xie, and Xin 2015) and measure the level of social trust of a country based on its residents' responses to a question in the World Values Survey (WVS) and the European Values Study (EVS) survey: "Generally speaking, would you say that most people can be trusted or that you have to be very careful in dealing with people?" I collect international

ownership information from the Osiris database of the Bureau van Dijk (BvD). For each firm, this database provides the ownership stakes and the ownership chains of each of its shareholders, which allow us to identify the ultimate owners of the firm. The large coverage of my sample provides a unique opportunity to explore how social trust affects cross-country variation in ownership structure. I define a firm's ownership structure as being concentrated if it has at least one controlling blockholder who owns more than 25% of the shares. Using a large international sample of firm-year level observations across 42 countries over the period 2000 to 2014, I find that firms in countries with a higher level of social trust have a more dispersed ownership structure. The effect is both economically and statistically significant. A one standard deviation increase in a country's trust level leads to a decrease in the ownership of the largest shareholder by 3.7%, which accounts for 15% of the sample median. These findings are consistent with the second hypothesis that a higher level of trust promotes dispersed corporate ownership structure.

Having established a negative relation between trust and ownership concentration, I further investigate how trust affects the evolution of ownership over time following a firm's initial public offering (IPO). Helwege, Pirinsky, and Stulz (2007) find that typical firms in the US start with highly concentrated ownership after first listing on the stock market and become dispersed quickly over time after the IPO. Foley and Greenwood (2010) provide international evidence and show that most newly public firms around the world have a concentrated ownership structure. Then, the systematic difference in ownership structure across countries should be a result of difference in the experience of firms following their IPOs. Given that trust facilitates a dispersed ownership structure, I

should observe a larger drop in block ownership and a shorter time for firms to become diffusely held after their IPO in countries with a higher level of trust.

To test this conjecture, I limit the sample to firms that completed an IPO during the sample period and have available ownership data after their IPO. I firstly test whether trust explains the probability that a firm will become widely held following its IPO. I require that the event of being widely held is led by a significant decrease in block ownership of at least 10% and it must occur within 10 years following the firm's IPO. I also follow the approach taken by Helwege, Pirinsky, and Stulz (2007) and use a hazard model to estimate the probability for the event of being widely held. The hazard model approach complements the first approach in that it adjusts for the potential distortion introduced by censored observations, that is sample IPO firms enter my sample at different times and some relatively young firms can still remain concentrated when the sample period ends. I further examine how trust affects the speed at which firms become widely held after their IPO. Consistent with my prediction, I find that in countries with a higher level of trust, a newly public firm starting with concentrated ownership is more likely to become diffusely held within 10 years following its IPO. Moreover, firms in more trusting countries also become widely held at a faster speed after first listing on the stock exchange. The effects are both economically and statistically significant. These results provide insights into the important role trust plays in the dynamics of ownership structure and lend support to the hypothesis that higher trust induces ownership diffusion.

I then examine what drives significant changes in blockholding share. Changes in blockholding occur either due to changes in shares outstanding, or blockholding sales. I follow Helwege, Pirinsky, and Stulz (2007) and categorise incidents of significant drop (at least 10% or more) in large shareholder ownership into two groups: those that are due

to changes in large shareholder ownership and those that are due to share issuance. I find that both blockholder sales and new share issues are more pronounced in countries where trust among citizens is higher. The results imply that firms in countries with higher trust appear to be more likely to issue new shares, thereby diluting ownership. Blockholders of these firms are also more willing to sell shares and reduce their holdings.

One of the main challenges of these findings is that specific national or regional factors, such as legal origins, primary education, the quality of institutions, or economic development, could influence both trust and ownership structure. It is thus difficult to conclude that it is trust that leads to low ownership concentration. To exclude the possibility that the effect of trust on ownership structure I found is due to these observable and unobservable country-level characteristics and to strengthen a causal link, I employ different empirical approaches. First, inspired by Algan and Cahuc (2010), I extract trust that US descendants have inherited from their predecessors who immigrated from different countries to detect inherited trust in the countries of origin. Since it is a natural tendency that parents pass their social capital to their children (Guiso, Sapienza, and Zingales 2006), the trust level of immigrants reflects the fairly unchanged component of trust that is inherited from previous generations. At the same time, the inherited component of trust is free from the influence of concurrent economic, political, cultural, and social environments in the countries of origin. I estimate inherited trust based on the US General Social Survey (GSS), which provides information about the trust of US descendants of immigrants and immigration information about their parents and grandparents. This method allows us to more directly identify the causal nature of the relation between trust and ownership concentration.

I conduct a battery of additional robustness tests using alternative specifications and measures. First, I calculate country-level ownership measures and test the main results using country-level data. I obtain the same results. Second, I include additional variables to control for other dimensions of culture and investor protection measures. When I insert these controls, the effect of trust remains unchanged. Third, to validate the trust measure, I construct alternative trust measures using different methods and the findings continue to hold. Fourth, the results are not driven by the disproportionate presence of firms in the US, UK, and Japan. I find similar results after excluding these countries from the sample. Last, the results are similar when I use alternative specifications to construct ownership evolution variables.

Finally, I provide additional findings on the effect of trust. I find that the effect of trust on ownership dispersion is more pronounced in industries that have greater dependence on external equity finance. I also find that firms in high trust countries have more dispersed ownership in the year of the IPO or the year after the IPO.

To the best of my knowledge, this chapter provides the first empirical evidence on identifying social trust as a new factor that can help explain cross-country variations in the ownership concentration of public corporations. The findings provided in this study imply that corporate ownership structure is not only affected by a country's legal institutions (e.g. La Porta et al. 1998, 1999), but also by national culture, in particular social trust. Two studies are closely related to this study. Guiso, Sapienza, and Zingales (2008) use individual-level data from Holland and Italy and find that more trusting individuals are more likely to participate in the stock market. They also use cross-sectional country-level data and find a negative correlation between trust and the fraction of stock market capitalisation that is closely held in a country. Holderness (2014) finds

that egalitarianism, which captures a societal preference for the equal as opposed to hierarchical treatment of individuals in a country, is associated with more concentrated ownership structure. This study provides insight into how trust affects the evolution of ownership structure following firms' IPO and the channels through which trust leads to dispersed ownership using a large panel data of public firms around the world and employing several approaches to address potential endogeneity concerns. I show that a culture of trust encourages selling of block ownership by large shareholders and the use of equity financing by firms, which together lead to a more dispersed ownership structure. Public firms in trusting countries also start with a lower level of ownership concentration when they first list on the stock exchange.

In addition, this study contributes to the existing literature on how trust affects various economic activities and exchanges. A higher level of trust has been shown to promote economic growth and social efficiency (La Porta et al. 1997, Knack and Keefer 1997, Algan and Cahuc 2010), facilitate financial development and stock market participation (Guiso, Sapienza, and Zingales 2004, 2008), encourage international trade and investment (Guiso, Sapienza, and Zingales 2009), increase the likelihood of obtaining funding (Duarte, Siegel, and Young 2012; Bottazzi, Rin, and Hellmann 2016), increase investor earnings announcement reaction (Pevzner, Xie, and Xin 2015), and encourage innovation (Xie, Zhang, and Zhang 2016). The findings that trust has a strong effect on ownership dispersion have important implications for the efficiency of capital markets. When the market has incomplete information, trust is important in establishing credibility between investors and corporations. This potentially leads to a lower cost of capital and more efficient capital markets.

The remainder of the chapter is organised as follows. Section 2.2 describes the construction details of the sample and variables. Section 2.3 shows the empirical specifications and results. Section 2.4 addresses the endogeneity concerns. Section 2.5 presents the results for additional robustness tests. Section 2.6 provides additional findings on the variation in the effect of trust and the ownership structure of new IPO firms. Section 2.7 concludes.

2.2. Sample and Variable Description

2.2.1. Data and Sample

I conduct the analysis in this study by pooling data from a number of databases, including the Osiris database for corporate ownership information, the World Values Survey (WVS) for the trust measures, the Datastream/Worldscope database for variables on firm characteristics, the World Bank for country-level variables, and the Securities Data Company (SDC) platinum for IPO information. I construct two different samples: the whole sample and the IPO sample. I use the "whole" sample to study the effect of trust on overall ownership concentration across firms. The sample spans from 2000 to 2014 due to the availability of the ownership data. Firms from financial industries (SIC code between 6000 and 6999 inclusive) and utility industries (SIC code between 4900 and 4999 inclusive) are excluded from the sample as they are subject to heavy government regulations. For data at the country level, I require countries to be covered by the WVS to construct trust variables. I also require countries in my sample to have available information on the countries' GDP, Gini index, and the Antidirector Rights Index from La Porta et al. (1998). At the firm level, I require all sample firms to have ownership data

available in the Osiris database and stock market and accounting information available on Datastream and Worldscope.

I use the "IPO" sample to investigate how corporate ownership evolves as firms mature. The IPO sample is a subset of the whole sample and only includes firms in which I can track ownership of the firm from the time of their IPO onward. To be included in the sample, I require firms to have ownership data for within two years of the listing date. I further require that each firm has at least five consecutive years of data. As this study is interested in how firms with concentrated ownership evolve over time to become widely held, I exclude firms that are already widely held at the time of their IPO. By construction, this sample therefore includes firms that completed their IPO during the period from 1998 to 2009. I track ownership patterns for firms after IPO for a minimum of 5 years and a maximum of 10 years. I consolidate "issue date" from the SDC and the Datastream "base date" to identify a firm's listing date.[2]

I end up with a large firm-year panel dataset that has 31,242 public firms from 42 countries for the whole sample. The IPO sample includes 14,087 firm-years, comprising 2,700 unique firms newly listed during the period 1998–2009. For each firm in both samples, I have the detailed cash flow rights and voting rights of its largest shareholders and its firm- and country-level characteristics. Compared with samples used in previous research studying cross-country ownership structure, my sample covers longer periods,

[2] The "issue date" in the SDC has many missing observations. Combining IPO date information in Datastream expands the sample by 11% compared to only using SDC data. Results obtained using just SDC data are not materially different.

more countries, and a greater number of firms. The construction of the main variables and controls is described in more detail in the following subsections.

2.2.2. Measuring Ownership

The worldwide firm-level ownership data in this study come from the Osiris database of the Bureau van Dijk (BvD). Osiris gathers detailed and up-to-date ownership information on publicly listed companies from a variety of information sources such as annual reports, direct communication with firms, news, websites of the concerned companies, and stock exchanges. The database collects information regarding shareholders' direct voting rights as well as indirect voting rights and identifies the ultimate controlling shareholders at the 25% and 50% voting right levels. Osiris also provides shareholder information including the name, stake, and type of each shareholder.

However, although Osiris can identify a comprehensive list of shareholders' identities and stakes, it fails to construct ownership linkages between companies that belong to a business group or pyramidal corporate structure. Prior studies have documented that many business groups exercise their control rights through a pyramidal structure. Therefore, it is important to identify the ownership links between firms in order to accurately identify the ultimate owners of a firm. Using all the shareholder links contained in the database, I construct business group and cross-holding linkages between firms by using a recursive algorithm. After the adjustment, the controlling ownership of the ultimate owners of the sample firms can then be accurately identified. I am thus able to construct a panel of controlling ownership data with a near-complete list of shareholders' identities and stakes.

Two primary ownership variables are constructed based on the ownership data. The first variable (*LargeOwn*) is defined as the total percentage of voting rights held by the largest shareholder. The second variable (*Block*) is a dummy variable that equals one if a firm has at least one blockholder with 25% or higher voting rights, and zero otherwise. To measure voting rights, I sum a shareholder's direct control rights through shares registered directly under the shareholder's name and indirect control rights through shares held by entities that the shareholder in turn controls.

Based on the IPO sample, I construct two main measures to capture the evolution of ownership. The first measure, *Exit*, is an indicator variable that equals one if a firm develops into a widely held firm (with no shareholders owning greater than 25% of the shares) within 10 years after IPO and there is a significant drop (of at least 10%) in the ownership of the largest shareholder during the 10-year period. A second requirement is used to avoid including firms that start with relatively less concentrated ownership (shareholders owning slightly above 25%) at the time of IPO. Where a firm's block ownership is only slightly above 25% at the time of IPO, then a fall in ownership below 25% does not indicate a faster rate of ownership diffusion. To examine the process of ownership changes following IPO, it is more appropriate to focus on large changes in insider ownership for firms that have high insider ownership. I thus focus on firms that evolve from being concentrated to being diffusely held after experiencing material changes in ownership. The second measure I construct is *Timespan*, which is calculated as the number of years a firm takes to develop a dispersed ownership structure after IPO. This variable takes a maximum value of 10 for firms that remain concentrated for more than 10 years after IPO. The two measures capture different dimensions of ownership

evolution. While *Exit* reflects the frequency of large changes in ownership structure, *Timespan* reflects the speed of changes in ownership structure.

2.2.3. Measuring Trust

Data on trust are from the World Values Survey (WVS) for most countries around the world and the European Values Study (EVS) for the countries of Europe. The WVS and EVS are the largest international longitudinal surveys on cultural values. The WVS has been carried out in six main waves since 1972. The EVS is a connected research network that focuses on Europe. It includes four main waves since 1981. Since the ownership data is only available from 2000, I use responses from the most recent three waves in the WVS, 1999–2004, 2005–2009, and 2010–2014, and the third and fourth waves in the EVS, 1999–2001 and 2008–2010. I measure societal trust in each country year based on the following question from the WVS: "*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*" I code the response to this question as equal to one if the respondent answers "Most people can be trusted" and zero if the respondent answers "Need to be very careful/Can't be too careful". I then take the average of responses in each country over years as the measure of trust. Following previous studies, I match the most recent trust measures to firm-level variables in my sample.

This is the most commonly used measure of trust in the literature.[3] The worldwide survey-based measure of trust has also been proven to be correlated with trusting behaviour. A few papers provide evidence that measures of cultural values based on WVS

[3] See for example La Porta et al. (1997), Guiso, Sapienza, and Zingales (2008), Aghion et al. (2010), Ahern, Daminelli, and Fracassi (2015), Pevzner, Xie, and Xin (2015) and more.

are good predictors of actual values in experimental settings. Johnson and Mislin (2012) assess the validity of the WVS trust question using data on experimental trust across countries and provide strong support that the WVS question captures trust. Sapienza, Toldra-Simats, and Zingales (2013) use specially designed experiments and show that the WVS question captures the "belief-based component of trust."

2.2.4. Control Variables

I control for a wide array of country and firm characteristics that may potentially affect trust and corporate ownership structure using data from a variety of sources. More precisely, the country-level controls I use include the following variables. Following La Porta et al. (1998b), I control for the natural logarithm of Gross Domestic Product per capita (*GDP per cap*) as richer countries may potentially have different ownership patterns; the natural logarithm of total GDP as larger economies are more likely to have larger firms, which might therefore have a lower ownership concentration; the Gini index for a country's income inequality as a higher level of inequality in a society may be associated with higher ownership concentration; an indicator of common law system (*Comlaw*) as ownership concentration can vary by legal origin; and the Antidirector Rights Index (*ADRI*) from La Porta et al. (1998b). Data on national GDP and Gini index are obtained from the World Bank.

I also employ a number of variables to control for firm-level characteristics that might affect corporate ownership structure. Following Holderness (2009), I control for the following firm characteristics. Firm size (*Size*) is the natural logarithm of the market value of the firm. *Age* is the number of years the firm is covered by Worldscope. *PPE* is the ratio of total property, plant, and equipment to sales of the firm. Cash flow (*Cashflows*)

is the ratio of operating income to sales. Stock return volatility (*Volatility*) is the standard deviation of a firm's monthly return. In addition, I also control for firm leverage which is defined as total debts relative to total assets, market to book ratio (*MB*) measured as the sum of the book value of debt and market value of common equity divided by the book value of assets, firm investment (*Capex*) measured as the ratio of capital expenditure to total property, plant, and equipment, and research and development expenditure (*RD*). For all tests on ownership evolution, I include the ownership of the largest shareholder in the year of the IPO to control for the difference in initial ownership concentration immediately after IPO.

2.2.5. Sample Distribution and Summary Statistics

Table 2.1 reports the distribution of the average holdings of the largest shareholders, the proportion of concentrated firms, and social trust scores by country. Panel A shows the statistics for the full sample, while Panel B shows statistics for the IPO sample. As shown in Panel A, ownership concentration exhibits large cross-country variation. Argentina has the highest corporate ownership concentration among all countries, followed by Russia, Peru, and the Philippines, while Taiwan, Japan, the United Kingdom (UK), and Australia have the lowest ownership concentration. Specifically, the average holding of the largest shareholders in Argentina is 56.4%, in contrast to 16.3% in Taiwan and 17.6% in Japan. In Argentina 93.5% of firms have controlling shareholders holding greater than 25% of shares, while it is only 19.6% of firms in Taiwan and 29.5% in Japan. Trust also varies largely across countries. The Philippines and Brazil have the lowest level of trust with scores of 0.0355 and 0.072, while Norway and Denmark have the highest trust scores of 0.534 and 0.554.

Panel B of Table 2.1 reports the average percentage of IPO firms that evolve into widely held firms within 10 years after IPO, the average years it takes for the ownership of newly public firms to become diffusely held, and the number of IPOs by country. Again, IPO firms across countries display large variations in terms of how their ownership structure evolves over time. More firms in Israel (57.1%), the UK (54.9%), and Australia (53.8%) experience a large drop in block ownership and become dispersed within 10 years after their IPO. Newly public firms in Canada and Australia take on average 6.2 years and 6.3 years to become widely held, the fastest among all countries followed by the UK and the US. These figures are consistent with the general ownership concentration patterns in these countries, suggesting that firms in these countries are more likely to experience a drop in block ownership and quickly become diffusely held after IPO. On the contrary, almost all newly public firms in Chile, Peru, and the Philippines stay concentrated over time. Chilean firms also take the longest time on average to become widely held at 8.83 years.

Table 2.1: Sample Distribution

This table reports the sample distribution of the average holdings of the largest shareholders, the proportion of concentrated firms, and social trust by country. The sample includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014.

Panel A: Full Sample Distribution by Country

Country	LargeOwn (%)	Block	Trust	N
Argentina	56.4	0.935	0.208	704
Australia	24.3	0.327	0.527	15,032
Austria	47.2	0.804	0.361	1,075
Belgium	40.5	0.723	0.334	1,891
Brazil	42.4	0.722	0.072	1,739
Canada	26.7	0.388	0.41	15,536
Chile	42.5	0.726	0.13	1,488
China	37.4	0.729	0.583	22,082
Denmark	31.8	0.554	0.743	1,973
Finland	27.9	0.464	0.616	1,598
France	47	0.779	0.242	10,355
Germany	43.5	0.722	0.383	9,850
Greece	40.8	0.736	0.217	2,847
Hong Kong	44.8	0.808	0.464	10,393
India	30.2	0.484	0.31	13,405
Indonesia	47.6	0.814	0.411	3,233
Ireland	25.4	0.407	0.384	632
Israel	37.8	0.621	0.23	2,475
Italy	46.5	0.807	0.302	3,281
Japan	17.6	0.295	0.362	27,990
Malaysia	31.7	0.576	0.0862	8,666
Mexico	34.9	0.608	0.135	978
Netherlands	32.1	0.486	0.574	1,704
New Zealand	32.9	0.512	0.549	1,078
Norway	30.7	0.534	0.746	2,308
Pakistan	34.4	0.566	0.241	1,229
Peru	50.4	0.801	0.0783	1,211
Philippines	48.9	0.887	0.0355	1,987
Poland	43.3	0.762	0.222	1,689
Portugal	44.9	0.766	0.163	808
Russia	50.9	0.828	0.279	2,391
Singapore	37.5	0.66	0.353	6,218
South Africa	33.7	0.577	0.216	3,177
South Korea	28.5	0.51	0.296	20,245
Spain	34.9	0.548	0.238	2,033
Sweden	27.9	0.462	0.665	3,855
Switzerland	36.1	0.575	0.532	2,934
Taiwan	16.3	0.196	0.284	14,427
Thailand	28.4	0.48	0.355	2,578
Turkey	48.8	0.817	0.107	2,261
United Kingdom	22.8	0.323	0.362	19,324
United States	25.2	0.371	0.385	85,334
Total	29.8	0.484	0.373	334,014

Table 2.1 *Continued*: Sample Distribution

This table reports the sample distribution by country. The sample includes firms that went public between 1998 and 2009. I require sample firms to have concentrated ownership (i.e. LargeOwn >= 25%) when they enter the sample and have ownership data available for at least five years after IPO. All variables are defined in the Appendix.

Panel B: IPO Sample Distribution by Country

Country	Exit	Timespan (Years)	No. of IPOs
Argentina	0	7.8	5
Australia	0.538	6.28	173
Austria	0.286	7.52	21
Belgium	0.294	7.71	51
Brazil	0.238	6.95	21
Canada	0.5	6.2	82
Chile	0	8.83	6
China	0.32	8.55	547
Denmark	0.381	7.38	21
Finland	0.45	7.8	20
France	0.263	7.95	270
Germany	0.329	7.79	258
Greece	0.182	8.65	66
Hong Kong	0.15	7.78	160
India	0.188	7.5	101
Indonesia	0.0952	7.19	63
Ireland	0.2	7	5
Israel	0.571	7.71	7
Italy	0.168	7.86	95
Japan	0.37	6.9	165
Malaysia	0.309	8.14	97
Mexico	0.5	7	2
Netherlands	0.353	7.94	17
New Zealand	0.333	7.67	15
Norway	0.475	7.15	40
Pakistan	0	8.4	10
Peru	0.059	7.88	17
Philippines	0.059	7.53	17
Poland	0.414	7.38	29
Portugal	0.125	8.38	8
Russia	0.244	6.53	131
Singapore	0.248	7.91	133
South Africa	0.313	6.75	16
South Korea	0.375	7.52	530
Spain	0.31	7.14	29
Sweden	0.339	7.29	59
Switzerland	0.455	7.15	33
Taiwan	0.163	7.63	104
Thailand	0.313	7.63	16
Turkey	0.0769	7.69	13
United Kingdom	0.549	6.35	195
United States	0.464	6.42	823
Total	0.347	7.36	4,471

Table 2.2 Panel A reports the summary statistics of all main variables. The largest blockholders on average hold 29.8% of shares. Almost half (49.8%) of firms have controlling shareholders of at least 25% of shares. The standard deviations of the two variables are large. The mean of trust is 0.373 with a standard deviation of 0.125. Panel B of Table 2.2 shows the Pearson correlation matrix of the key variables and country-level control variables. The correlation between *LargeOwn* and *Block* is high at 0.828. More importantly, the correlations between trust and the two ownership variables, *LargeOwn* and *Block*, are -0.093 and -0.066 respectively, which are both negative and significant at the 1% level. Trust also has a positive and significant correlation with *Ln(GDP per cap)* and *Ln(GDP)*, consistent with prior literature.

Table 2.2: Summary Statistics

This table reports the summary statistics of all control variables. The sample includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. All variables are defined in the Appendix.

Panel A: Descriptive Statistics

Variables	Mean	SD	Min	p5	Median	p95	Max	N
LargeOwn	29.8	22.4	0	0	23.9	73.3	95	334,014
Block	0.484	0.5	0	0	0	1	1	334,014
Trust	0.373	0.125	0.0283	0.125	0.382	0.627	0.76	334,014
Ln(GDP per cap)	10.1	1.08	6.22	7.31	10.6	10.9	11.5	319,587
Ln(GDP)	28.5	1.45	24.7	26.1	28.5	30.4	30.5	319,587
Gini Index	37.5	5.75	25.5	30.1	36.2	46.1	64.8	281,653
ADRI	3.64	1.08	1	1	3.5	5	5	334,014
Comlaw	0.554	0.497	0	0	1	1	1	334,014
Ln(Size)	11.8	2.26	3.14	8.19	11.8	15.7	19.4	297,020
Ln(Age)	2.42	0.77	0	1.1	2.56	3.56	3.93	332,190
PPE	3.25	49.5	0	0.0128	0.262	5.11	5880	284,069
Cashflows	-1.66	23	-1454	-2.01	0.0331	0.309	677	286,117
Volatility	0.233	11.1	0	0.0383	0.119	0.409	5773	318,992
Leverage	0.314	1.49	0	0	0.18	0.665	46	297,576
MB	3.58	30.7	0.0172	0.642	1.19	5.05	1690	294,420
RD	0.0618	0.574	0	0	0	0.131	112	334,013

Panel B: Correlation Matrix of Country-level Variables

	LargeOwn	Block	Trust	Ln(GDP per cap)	Ln(GDP)	Gini Index	ADRI
LargeOwn	1						
Block	0.828	1					
Trust	-0.093	-0.066	1				
Ln(GDP per cap)	-0.161	-0.181	0.187	1			
Ln(GDP)	-0.165	-0.154	0.238	0.377	1		
Gini Index	0.041	0.046	-0.307	-0.253	0.150	1	
ADRI	-0.131	-0.141	-0.425	0.060	-0.345	-0.248	1
Comlaw	-0.192	-0.212	-0.099	0.178	0.269	0.310	0.261

2.3. Empirical Results

2.3.1. Baseline Results

I estimate the following baseline regression model using the whole sample to study the effect of trust on corporate ownership structure:

$$Ownership\ Concentration_{i,c,t} = \beta_0 + \beta_1 Trust_{c,t} + \beta_2 Country\ Level\ Controls_{c,t} + \beta_3 Firm\ Level\ Controls_{i,c,t} + Industry\ Dummies + Year\ Dummies + \varepsilon_{i,c,t} \quad (2.1)$$

$Ownership\ Concentration_{i,c,t}$ represents the two ownership measures, *LargeOwn* and *Block*, for firm *i* from country *c* in year *t*. $Trust_{c,t}$ is the average trust in country *c* in year *t* derived from the WVS. When the dependent variable is *Block*, I use logistic regression models. I control for a set of country-level variables and a set of firm-level variables. I include industry fixed effects using Fama-French 48 industry classification in all regressions to absorb any unobservable determinants of ownership at the industry level. I also include year fixed effects to control for time-varying macroeconomic conditions. The standard errors of all estimates are clustered by country.

Table 2.3 presents the estimation results of the baseline models. Columns (1) and (2) report the results using *LargeOwn* as the dependent variable controlling for country-level characteristics only and both country- and firm-level characteristics. I find that trust has a significant and negative effect on measures of ownership concentration in all specifications. The effect of trust is not only statistically significant but also economically meaningful. For example, in Column (2), the estimated coefficient on trust is -28.47 with a *t*-statistic of -3.58 significant at the 1% level. Based on this coefficient, holding everything else equal, a one standard deviation increase in a country's trust level leads to

a 3.7% decrease in the ownership of the firm's largest shareholder which accounts for 15% of the sample median. In Columns (3) and (4), I use *Block* as the dependent variable and present the estimation results using logistic regression models. I find essentially the same results as in Columns (1) and (2). Trust has a significant and negative effect on the likelihood of having a dominant controlling shareholder in a firm.

With respect to control variables, the signs of the coefficients for control variables are generally consistent with previous literature. For example, both *Ln(GDP per cap)* and *Ln(GDP)* have a negative effect on ownership concentration, suggesting that larger and richer countries have lower ownership concentration. *ADRI* also has a significant and negative effect on ownership, which implies that countries with stronger legal protection on shareholder rights have a relatively dispersed corporate ownership structure. These results are consistent with those presented by La Porta et al. (1998a). In terms of firm characteristics, I find that larger, older, and less risky firms have less concentrated ownership structure. In addition, *MB* has a positive and significant association with ownership concentration suggesting that high growth firms tend to have a more concentrated ownership structure.

Taken together, the empirical results of the baseline regressions reported in Table 2.3 confirm my conjecture that a higher level of trust promotes dispersed corporate ownership structure in a country.

Table 2.3: Trust and Ownership Structure

This table presents regression estimates with *Trust* as the independent variable and ownership measures as dependent variables. The sample includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Dependent Variables	LargeOwn		Block	
	(1)	(2)	(3)	(4)
Trust	**-32.125*** **	**-28.470*** **	**-2.313*** **	**-2.035*** **
	(-3.70)	**(-3.58)**	**(-3.52)**	**(-3.24)**
Ln(GDP per cap)	-0.838*	-1.482***	-0.147***	-0.193***
	(-1.75)	(-2.92)	(-5.21)	(-7.10)
Ln(GDP)	-3.004**	-3.203***	-0.250***	-0.282***
	(-2.39)	(-3.04)	(-3.35)	(-4.35)
Gini Index	-0.179	-0.160	-0.008	-0.006
	(-1.05)	(-1.00)	(-0.71)	(-0.55)
ADRI	-5.170**	-5.024***	-0.467***	-0.442***
	(-2.47)	(-2.82)	(-3.48)	(-3.63)
Comlaw	-3.913	-5.664	-0.473*	-0.738***
	(-0.83)	(-1.42)	(-1.77)	(-3.21)
Ln(Size)		-0.872**		-0.117***
		(-2.68)		(-3.11)
Ln(Age)		-1.434*		-0.157**
		(-1.77)		(-2.16)
PPE		-0.002		-0.000
		(-0.97)		(-1.59)
Cashflows		-0.001		0.000
		(-0.36)		(0.25)
Volatility		0.081***		0.103***
		(6.19)		(3.82)
Leverage		0.146		0.018
		(1.21)		(1.28)
MB		0.036***		0.004***
		(5.13)		(4.54)
RD		-0.687***		-0.098***
		(-3.17)		(-4.42)
Observations	279,871	229,325	279,871	229,325
R-squared	11.7%	16.6%	13.6%	13.6%
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes

2.3.2. Ownership Evolution

To examine the dynamic effect of trust on ownership concentration, I use the IPO sample and test the following regression specification:

$$Ownership\ Evolution_{i,c,t} = \beta_0 + \beta_1 Trust_{c,t} + \beta_2 Country\ Level\ Controls_{c,t} + \beta_3 Firm\ Level\ Controls_{i,c,t} + \beta_2 LargeOwn\_First_{i,c} + Industry\ Dummies + Year\ Dummies + \varepsilon_{i,c,t} \quad (2.2)$$

$Ownership\ Evolution_{i,c,t}$ represents the two measures of ownership evolution, namely *Exit* and *Timespan*, for firm *i* from country *c* in year *t*. In addition to the control variables included in equation (1), I also control for $LargeOwn\_First_{i,c,t}$, which is defined as the proportion of shares held by the largest shareholder of firm *i* from country *c* in the first year following IPO. I include this variable in all specifications to account for the difference in initial ownership concentration across firms at the time of IPO.

I employ logistic regression model to examine the likelihood of ownership diffusion and ordinary least squares (OLS) model to estimate the effect of trust on the time taken to become widely held. In addition, I follow Helwege, Pirinsky, and Stulz (2007) and estimate the conditional probability for the event of being widely held with a proportional hazard function. This approach complements the logistic regression analysis in that it adjusts for the potential distortion introduced by firms that do not have complete data, i.e. censored observations. In my sample, firms' data are censored mainly due to the ending of the sample period. For firms that went public during the years towards the end of the sample period, complete data on their ownership patterns over a longer period of time are not available. Thus, I cannot properly estimate these firms' subsequent chances of becoming widely held. The hazard model, to some extent, addresses this issue. It

estimates how trust affects the probability of becoming diffusely held in a given year conditional on the firm not having already become diffusely held in a previous year.

I report the regression results in Table 2.4. Columns (1) and (2) present results for the likelihood that a firm becomes widely held within 10 years after IPO, while Columns (3) and (4) provide results of a hazard model estimation for the event of being widely held. The results show that *Trust* has a positive and significant association with the likelihood of becoming widely held. Specifically, the 2.055 coefficient (with *t*-statistic 3.68) on *Trust* in Column (2) implies that holding all variables at their mean, a one standard deviation increase in a country's trust increases the likelihood of firms becoming widely held by 5.5%. In Columns (3) and (4), the hazard model produces similar results. Columns (5) and (6) of Table 2.4 present results for the number of years a firm stays concentrated after IPO. The negative and significant coefficients on *Trust* suggest that firms in more trusting countries take less time to become widely held after first listing on the stock exchange. Collectively, these results suggest that ownership diffuses following an IPO in countries with high trust and lend support to the hypothesis that higher trust induces a dispersed ownership structure.

Table 2.4: Trust and Ownership Evolution

This table reports how social trust affects the evolution of corporate ownership. The sample includes firms that went public between 1998 and 2009. I require sample firms to be concentrated (i.e. *LargeOwn* >= 25%) when they enter the sample. I also require firms to have ownership data available for at least five years after IPO. IPO information is obtained from the SDC Platinum. Columns (1) and (2) show results for the likelihood that a firm becomes dispersed within 10 years after IPO. Columns (3) and (4) show the results of a hazard model estimation for the event of being widely held. Columns (5) and (6) present results for the number of years a firm stays concentrated after IPO. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Dependent Variables	Exit		Hazard Model		Timespan	
	(1)	(2)	(3)	(4)	(5)	(6)
Trust	**2.306*** **	**2.055*** **	**1.510*** **	**1.399*** **	**-0.228** **	**-0.249** **
	(4.33)	**(3.68)**	**(4.43)**	**(3.90)**	**(-2.14)**	**(-2.19)**
LargeOwn_First	-0.024***	-0.025***	-0.015***	-0.015***	0.003***	0.004***
	(-7.88)	(-8.25)	(-6.65)	(-6.58)	(7.11)	(7.43)
Ln(GDP per cap)	0.151***	0.137***	0.117***	0.095**	-0.055***	-0.039***
	(4.11)	(3.02)	(2.59)	(2.02)	(-5.50)	(-4.07)
Ln(GDP)	0.105**	0.093*	0.072**	0.056	-0.035***	-0.022**
	(2.28)	(1.75)	(2.09)	(1.52)	(-3.06)	(-2.12)
Gini Index	0.051***	0.050***	0.033***	0.033***	-0.004	-0.005
	(3.70)	(3.58)	(2.86)	(2.67)	(-1.32)	(-1.51)
ADRI	0.108	0.120	0.076	0.094*	-0.005	-0.023*
	(1.11)	(1.24)	(1.46)	(1.71)	(-0.36)	(-1.72)
Comlaw	0.351**	0.355**	0.169	0.180	-0.041	-0.047*
	(2.19)	(2.32)	(1.48)	(1.49)	(-1.28)	(-1.83)
Ln(Size)		0.047		0.027		-0.011*
		(1.47)		(1.15)		(-1.86)
Ln(Age)		-0.054		-0.196**		0.342***
		(-0.63)		(-2.38)		(18.76)
PPE		0.001		0.000		0.000*
		(0.72)		(0.23)		(1.82)
Cashflows		-0.012		-0.005		0.002**
		(-1.33)		(-1.49)		(2.37)
Volatility		0.050		0.016		-0.037
		(0.21)		(0.08)		(-1.21)
Leverage		0.273*		0.218		-0.102**
		(1.73)		(1.28)		(-2.56)
MB		0.002		0.001		0.001
		(0.06)		(0.06)		(0.20)
RD		0.105		0.032		0.002
		(0.77)		(0.70)		(0.16)
Observations	2,421	2,199	2,419	2,200	2,420	2,200
R-squared	10.1%	10.1%			25.3%	36.4%
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes			Yes	Yes

2.3.3. Channels through which Large Ownership Changes Take Place

This section examines what drives changes in block ownership. By definition, changes in the ownership share of large shareholders occur due to the increase in the number of shares outstanding and/or due to a fall in blockholder ownership. I follow Helwege, Pirinsky, and Stulz (2007) and decompose the percentage change in the ownership share of controlling shareholders at time *t* as follows:

$$\Delta\,\%\,Blockholding_t = \Delta\left(\frac{Blockholding_t}{N_t}\right)$$

$$= \frac{\Delta Blockholding_t}{N_{t-1}} - \frac{Blockholding_t}{N_t} \times \frac{\Delta N}{N_{t-1}}$$

$Blockholding_t$ represents the split-adjusted number of shares held by blockholders in year *t*. N_t represents the number of shares outstanding in year *t*. $\frac{\Delta Blockholding_t}{N_{t-1}}$ captures changes in the ownership share of blockholders due to blockholder sales of stocks. $\frac{Blockholding_t}{N_t} \times \frac{\Delta N}{N_{t-1}}$ captures changes in the ownership share of blockholders due to share issuance.

Using the IPO sample, I sort incidents of ownership diffusion, i.e. firms becoming widely held with 10% or more drop in blockholding within 10 years after IPO (*Exit*), into two groups: those brought about by changes in blockholder ownership share and those by share issuance. I generate a dummy variable that equals one if there is an incident of ownership diffusion and $\frac{\Delta Blockholding_t}{N_{t-1}}$ is greater than 10%. This dummy variable captures decreases in ownership concentration that are driven by substantial change in blockholder ownership. I also generate another dummy variable that equals one if $\frac{\Delta N}{N_{t-1}}$, i.e. the

percentage change in shares outstanding, is greater than 10%. This dummy thus captures a reduction in ownership concentration driven by significant new share issuance. I use the IPO sample and test the following regression specification:

$$Channels_{i,c,t} = \beta_0 + \beta_1 Trust_{c,t} + \beta_2 Country\ Level\ Controls_{c,t} + \beta_3 Firm\ Level\ Controls_{i,c,t} + \beta_2 LargeOwn\_First_{i,c} + Industry\ Dummies + Year\ Dummies + \varepsilon_{i,c,t} \quad (2.3)$$

$Channels_{i,c,t}$ represents the two dummy variables described above.

Because of the reduced need for blockholder monitoring and higher stock market participation (Guiso, Sapienza, and Zingales 2008) in countries with higher trust, firms will find it easier to float their stock and blockholders will be more willing to sell shares. With respect to share issuance, firms should also be more likely to issue capital to finance investments. Consistent with my prediction, as shown in Table 2.5, trust is associated with a significantly higher likelihood of large blockholding sales as well as a higher likelihood of substantial share issuance. The results suggest that decreases in ownership concentration that involve block sales and share issuance are both more common in countries with a higher level of trust. In addition, the magnitude and significance of the coefficients on ownership changes (shown in Columns (1) and (2)) is larger and more significant compared to those for share issuance (shown in Columns (3) and (4)). This, to some extent, reflects that decreases in blockholding shares that are a consequence of blockholder sales are marginally more common than share issuance.

Table 2.5: Channels of Large Drop in Ownership

This table shows how social trust is associated with channels through which firms become dispersed. The dependent variables indicate whether a large drop in blockholder ownership is due to the number of shares they own falling or the number of shares outstanding for the corporation increasing. I follow Helwege, Pirinsky, and Stulz (2007) to construct these variables. Detailed construction procedures are described in Section 3.3. The sample includes firms that went public between 1998 and 2009. I require sample firms to be concentrated (i.e. LargeOwn >= 25%) when they enter the sample. I also require firms to have ownership data available for at least five years after IPO. IPO information is obtained from the SDC Platinum. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Dependent Variables	Due to Change in Ownership		Due to Share Issuance	
	(1)	(2)	(3)	(4)
Trust	**2.052*** **	**1.837*** **	**1.857** **	**1.642** **
	(3.42)	**(2.75)**	**(2.56)**	**(2.07)**
LargeOwn_First	-0.005	-0.008**	0.000	0.005
	(-1.15)	(-2.15)	(0.03)	(1.33)
Ln(GDP per cap)	0.105*	0.090	0.216***	0.191***
	(1.76)	(1.47)	(4.08)	(3.36)
Ln(GDP)	0.195***	0.152**	-0.093	-0.055
	(2.92)	(2.10)	(-1.57)	(-0.99)
Gini Index	0.056***	0.047***	0.016	0.021
	(4.18)	(3.44)	(0.69)	(0.68)
ADRI	0.117	0.142	0.049	-0.054
	(1.34)	(1.53)	(0.46)	(-0.38)
Comlaw	-0.013	0.106	0.886***	0.878***
	(-0.07)	(0.61)	(3.62)	(2.80)
Ln(Size)		0.175***		-0.266***
		(5.34)		(-5.79)
Ln(Age)		-0.181**		0.085
		(-2.06)		(0.95)
PPE		-0.000		0.002**
		(-0.03)		(2.10)
Cashflows		-0.012		-0.013**
		(-1.45)		(-2.18)
Volatility		-0.327		-0.146
		(-0.58)		(-0.56)
Leverage		0.088		0.895***
		(0.37)		(3.32)
MB		-0.036		0.032
		(-1.11)		(1.39)
RD		-0.307*		0.390***
		(-1.66)		(3.70)
Observations	2,421	2,199	2,405	2,178
R-squared	14.5%	14.5%	14.5%	14.5%
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes

2.4. Addressing Endogeneity

A typical concern for cross-country studies, such as this, is that the effect of trust on ownership structure I found may be due to a potential omitted variable problem. Many observable and unobservable country-level characteristics that are uncontrolled or imperfectly controlled can be potentially related to both trust and ownership structure because it is difficult to adequately control for all of the factors that influence the formation and accumulation of trust. This section directly addresses the endogeneity concern by employing various empirical approaches. In Section 2.4.1, I use inherited trust passed on by the predecessors of US migrants as a measure of trust in the countries of origin. In Section 2.4.2, I employ a two-stage least squares regression framework to further validate the causal relation between trust and ownership dispersion.

2.4.1. Inherited Trust

It has been widely established that parents have a natural tendency to pass their social capital to their children (Guiso, Sapienza, and Zingales 2006). I can thus model trust of an individual as:

$$Trust_{i,c,t} = \alpha_0 + \alpha_1 X_{i,c,t} + \alpha_2 Y_{i,c,t} + \varphi_c + \varepsilon_{i,c,t} \quad (2.4)$$

$Trust_{i,c,t}$ is the level of trust of individual *i* from country *c* in year *t*. $X_{i,c,t}$ is a vector of country characteristics such as economic conditions, education standard, social welfare, and legal institutions. $Y_{i,c,t}$ is a vector of individual characteristics such as age, gender, education, income, employment status, and religious belief. φ_c is the time-invariant social component of trust in country *c* inherited by the migrant.

The problem with Equation (4) is that $X_{i,c,t}$ contains potentially endogenous variables that are likely to be correlated with ownership structure. To address the endogeneity issue, I aim to capture the inherited component of trust, i.e. φ_c. Inspired by Algan and Cahuc (2010), I extract the trust that US descendants have inherited from their predecessors who immigrated from different countries to detect inherited trust in the countries of origin. The trust level of US migrants should carry some of the unchanged component of trust that is inherited from previous generations. Moreover, this component of trust is free from the influence of concurrent economic conditions, education standard, social welfare, and legal institutions in the countries of origin because the respondents are born and raised in the US. Therefore, inherited trust should serve as a good measure in controlling endogeneity issues.

I estimate inherited trust of a country as the corresponding estimated coefficient of the country's indicator variable from a regression specification of the contemporaneous trust of US descendants of immigrants. The specification has as its independent variables each respondent's individual characteristics including age, gender, education, income, employment status, and religious belief; and dummy variables indicating the country of origin of the respondent. The data are from the General Social Survey (GSS) Data Explorer.

GSS is an influential survey that focuses on social issues in the US and has been conducted nationwide almost every year since 1972. A particularly useful aspect of this survey is it includes a trust question which is the same as that used in the WVS. This allows us to directly compare trust measures from the two sources. The survey also provides detailed information about participants' country of origin and immigration information about their parents and grandparents. The question for the country of origin

asks: "*From what countries or part of the world did your ancestors come?*" Respondents are allowed to write more than one country. I use the GSS ethnic variable that captures the country of origin to which the respondent feels the closest to address this issue. I use the immigration information about the respondents' parents and grandparents to determine which generation Americans they are. I only focus on second-generation US migrants in the analysis because I believe their trust attitudes are the most closely related to those of the home country. Second-generation Americans are those who have at least one parent born abroad.

I obtain a large dataset that tracks inherited trust for 24 countries around the world. Table 2.6 Panel A reports the inherited trust measures by country. All the values are relative to the US, so a positive inherited trust indicates a higher level of trust compared to the US and a negative value indicates lower trust than the US. The inherited trust estimated from the above model has a fairly high correlation of about 0.6 with the trust measure based on WVS. I report the regression results using inherited trust as the main explanatory variable in Panel B. I find results consistent with previous sections. Columns (1) and (2) show that inherited trust has a significant and negative effect on ownership concentration. Results in Columns (3)–(5) support that the incidents of ownership diffusion following an IPO occur more frequently and faster in countries with higher inherited trust. Columns (6) and (7) show that decreases in ownership concentration that involve block sales and share issuance are both more common in countries with a higher level of inherited trust. The larger and more significant coefficient of inherited trust (4.382 with *t*-statistic 4.53) in Column (6) compared to that in Column (7) (3.702 with *t*-statistic 1.77) reflects that decreases in blockholding shares that are a consequence of blockholder sales are more common than share issuance.

Table 2.6: Inherited Trust

This table uses the level of trust inherited by US immigrants based on their responses to the GSS. Panel A shows the sample distribution by country. All variables are defined in the Appendix.

Panel A: Sample Distribution

Country	Inherited Trust (relative to US)	N
Austria	0.114	1,075
Belgium	0.0933	1,891
Canada	0.00455	15,536
China	-0.164	22,082
Denmark	0.212	1,973
Finland	0.23	1,598
France	-0.0348	10,355
Germany	-0.0568	9,850
Greece	-0.107	2,847
India	-0.201	13,405
Ireland	0.0764	632
Italy	-0.0324	3,281
Japan	0.111	27,990
Mexico	-0.0761	978
Netherlands	0.057	1,704
Norway	0.2	2,308
Philippines	-0.0112	1,987
Poland	0.017	1,689
Portugal	-0.102	808
Russia	0.126	2,391
Spain	-0.115	2,033
Sweden	0.082	3,855
Switzerland	0.092	2,934
United Kingdom	0.0758	19,324
Total	-0.00531	152,526

Table 2.6 *Continued*: Inherited Trust

This table uses the level of trust inherited by US immigrants based on their responses to the GSS as the main explanatory variable. Panel B shows the regression results. The sample used for Columns (1) and (2) includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. For tests on ownership evolution and channels (Columns (3)–(7)), the sample used includes firms that went public between 1998 and 2009. I require sample firms to be concentrated (i.e. LargeOwn >= 25%) when they enter the sample. I also require firms to have ownership data available for at least five years after IPO. IPO information is obtained from the SDC Platinum. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Panel B: Regression Results

	Ownership Concentration		Ownership Evolution			Channels	
Dependent Variables	LargeOwn	Block	Exit	Hazard Model	Timespan	Due to Change in Ownership	Due to Share Issuance
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Inherited Trust	**-78.179*** **	**-5.046*** **	**4.368*** **	**2.766*** **	**-0.426** **	**4.382*** **	**3.702***
	(-3.03)	**(-2.82)**	**(4.74)**	**(3.20)**	**(-2.78)**	**(4.53)**	**(1.77)**
LargeOwn_First			-0.028***	-0.018***	0.004***	-0.014***	0.004
			(-6.54)	(-5.99)	(5.83)	(-3.05)	(0.63)
Observations	129,378	129,378	1,523	1,528	1,528	1,523	1,472
R-squared	16.1%	12.1%	8.9%		35.7%	12.7%	12.7%
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes

2.4.2. Instrumental Variable Approach

I also employ a two-stage least squares (2SLS) regression framework to further address the endogeneity concern. Following Pevzner, Xie, and Xin (2015), I use a country's primary religion as an instrumental variable for trust. Information on a country's primary religion is obtained from Stulz and Williamson (2003). I create six dummy variables to represent the six religious denominations in my sample: Catholic, Muslim, Buddhist, Judaism, Hindu, and Protestant. I include five of these indicator variables in the first-stage regression with Protestant being excluded.

Table 2.7 shows the results for the 2SLS regressions. Panel A presents the results for the relation between trust and ownership concentration using the whole sample, while Panel B shows the results for ownership evolution and the channels through which firms become dispersed using the IPO sample. The results of the first-stage regressions as reported in Column (1) in Panel A and Panel B show that compared to countries where Protestant is the primary religion, trust is significantly lower in Catholic, Muslim or Judaism countries. The significant coefficients on religion indicators show that these instruments satisfy the relevance condition. Although it is not very clear whether religion can play a role in shaping corporate ownership structure, Holderness (2014) finds that Roman Catholic religion, the world's largest religion, is not significantly related to ownership concentration. This evidence should provide some support that religion satisfies the exclusion restriction.

Columns (2) and (3) in Panel A and Columns (2)–(6) in Panel B report the second-stage regression results. In all columns, *Trust* is the predicted value from the corresponding first-stage regressions. Consistent with previous findings, I find that trust

continues to have significantly negative effects on ownership concentration and how ownership evolves over time after IPO. This provides further evidence that these findings are robust to correcting for the endogeneity of trust.

2.5. Additional Robustness Tests

In this section, I conduct various robustness checks to ensure the results are not driven by alternative explanations, nor potential sample section issues, nor measure of trust.

2.5.1. Country-level Analysis

Thus far, the analyses are focused on the effect of trust on firm-level ownership structure. In this subsection, I examine the effect of trust on the average level of ownership concentration in a country. I take the annual average of all ownership variables at the country level and present the regression results in Table 2.8. I include the same set of country-level control variables at the country average in all specifications. Columns (1) and (2) show the results using the median of ownership held by the largest shareholders and the proportion of firms with the largest shareholders holding greater than 25% shares in each year in a country as the dependent variables. The aggregation of data at country level results in a sample of 511 country-year observations. I control for year fixed effect and cluster standard errors by country. The negative and significant coefficients on *Trust* are consistent with earlier findings.

To study ownership evolution of IPO firms at the country level, I calculate the proportion of concentrated IPO firms that become dispersed within 10 years after IPO and the median number of years a firm stays concentrated after its IPO in a country. This

gives rise to a small sample of cross-sectional data with 30 observations. I present the results in Columns (3) and (4). I find that a significantly larger proportion of firms become widely held within 10 years following their IPO in countries with a higher level of trust. An average concentrated IPO firm in trusting countries also takes a significantly shorter time to become widely held.

These findings provide further evidence in support of a negative effect of trust on ownership concentration. The country-level setting also addresses the unbalanced sampling issue with firm-level data. Due to data availability and economic development, the number of firm-level observations in each country is very different. Observations from countries such as the US and the UK are disproportionately present in the sample. This may lead to assigning a heavier weight to countries with larger economies and more public firms when estimating the effect of trust. Although country-level data is subject to the limited observation problem, it solves the unbalanced sampling issue as the country aggregate analysis only includes one observation for each country-year. In Section 2.5.4, I also use different samples to further validate the results on this issue.

Table 2.7: Two-stage Least Squares Regression

This table reports the two-stage least squares regression results using two sets of instruments: 1) indicators of a country's primary religion and 2) a country's ethnic homogeneity. Panel A presents the results for the effect of trust on ownership structure. The sample includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. Religion data are obtained from Stulz and Williamson (2003). Information on the ethnicity of a country's citizens is obtained from the WVS. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Panel A: Trust and Ownership Structure

	1st Stage	2nd Stage	
Dependent Variables	Trust	LargeOwn	Block
	(1)	(2)	(3)
Trust		**-41.706****	**-0.649****
		(-2.58)	**(-2.65)**
Buddhism	**-0.049**		
	(-1.09)		
Catholic	**-0.156*****		
	(-3.00)		
Muslim	**-0.220*****		
	(-3.81)		
Judaism	**-0.177*****		
	(-2.73)		
Hindu	**-0.142**		
	(-1.28)		
Observations	229,325	229,325	229,325
R-squared	61.3%	16.2%	17.2%
Control Variables	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes

Table 2.7 *Continued*: Two-stage Least Squares Regression

This table reports the two-stage least squares regression results using two sets of instruments: 1) indicators of a country's primary religion and 2) a country's ethnic homogeneity. Panel B presents the results for ownership evolution and channels through which firms become dispersed. To examine the channels, I follow Helwege, Pirinsky, and Stulz (2007) to capture whether a large drop in blockholder ownership is due to the number of shares they own falling or the number of shares outstanding for the corporation increasing. Detailed construction procedures are described in Section 2.3.3. The sample used includes firms that went public between 1998 and 2009. I require sample firms to be concentrated (i.e. LargeOwn >= 25%) when they enter the sample. I also require firms to have ownership data available for at least five years after IPO. IPO information is obtained from the SDC Platinum. Religion data are obtained from Stulz and Williamson (2003). Information on the ethnicity of a country's citizens is obtained from the WVS. t-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Panel B: Ownership Evolution and Channels of Ownership Drop

	1st Stage	2nd Stage				
		Ownership Evolution			Channels	
Dependent Variables	Trust	Exit	Hazard Model	Timespan	Due to Change in Ownership	Due to Share Issuance
	(1)	(2)	(3)	(4)	(5)	(6)
Trust		**0.347****	**1.388****	**-0.335****	**0.270**	**0.162***
		(2.39)	**(2.39)**	**(-2.51)**	**(1.59)**	**(1.94)**
Buddhist	**-0.014**					
	(-0.33)					
Catholic	**-0.151*****					
	(-3.11)					
Muslim	**-0.219*****					
	(-3.66)					
Judaism	**-0.155****					
	(-2.05)					
Hindu	**-0.292***					
	(-1.99)					
LargeOwn_First	0.000	-0.005***	-0.015***	0.003***	-0.002*	0.001
	(0.91)	(-8.11)	(-6.54)	(7.46)	(-2.01)	(1.42)
Observations	2,200	2,200	2,200	2,200	2,200	2,200
R-squared	65.7%	12.8%		36.4%	9.2%	12.9%
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes	Yes	Yes

Table 2.8: Country-level Ownership Structure

This table presents the results for the main specifications using country-level data. The dependent variables in Columns (1)–(4) are the median of ownership held by the largest shareholders in a country, the proportion of firms with the largest shareholders holding greater than 25% shares in a country, the proportion of concentrated IPO firms that become dispersed within 10 years after IPO, and the median number of years a firm stays concentrated after its IPO in a country, respectively. The sample used for Columns (1) and (2) includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. For Columns (3) and (4), the sample used includes firms that went public between 1998 and 2009. I require sample firms to be concentrated (i.e. LargeOwn >= 25%) when they enter the sample. I also require firms to have ownership data available for at least five years after IPO. IPO information is obtained from the SDC Platinum. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

	Ownership Concentration		Ownership Evolution	
Dependent Variables	LargeOwn	%Block	Exit	Timespan
	(1)	(2)	(3)	(4)
Trust	**-23.314*** **	**-0.337*** **	**0.442*** **	**-0.310***
	(-4.59)	**(-4.24)**	**(3.26)**	**(-1.82)**
LargeOwn_First			-0.012***	-0.003
			(-3.50)	(-0.40)
Ln(GDP per cap)	-1.102*	-0.031***	0.050***	-0.037*
	(-1.77)	(-3.37)	(3.27)	(-1.74)
Ln(GDP)	-1.606	-0.028*	0.006	-0.018
	(-1.56)	(-1.79)	(0.40)	(-1.05)
Gini Index	0.093	0.002	0.010**	-0.009*
	(0.84)	(1.00)	(2.34)	(-1.98)
ADRI	-2.370*	-0.050***	-0.012	-0.035
	(-2.00)	(-2.86)	(-0.58)	(-1.25)
Comlaw	-10.278***	-0.184***	0.048	-0.077
	(-4.84)	(-5.33)	(0.94)	(-1.28)
Observations	511	511	30	30
R-squared	64.1%	69.3%	67.9%	41.2%
Year FE	Yes	Yes	No	No
Cluster country	Yes	Yes	No	No

2.5.2. Additional Control Variables

I also insert several additional country-level cultural and regulatory control variables in Equations (1), (2), and (3). First, I control for variables that capture the other dimensions of culture. Trust only captures one dimension of national culture, which could be correlated with the other dimensions. I consider three cultural dimensions: egalitarianism, hierarchy, and individualism. I include egalitarianism because Holderness (2014) finds that a societal preference for the equal as opposed to hierarchical treatment of individuals, that is a country's attitude toward egalitarianism, is associated with more concentrated corporate ownership structure. National attitudes toward hierarchy and individualism have been widely documented to influence economic outcomes.

I obtain measure of egalitarianism from Siegel, Licht, and Schwartz (2011). National attitudes toward hierarchy versus egalitarianism are calculated using the following question from the WVS:

"*People have different ideas about following instructions at work. Some say that one should follow one's superior's instructions even when one does not fully agree with them. Others say that one should follow one's superior's instructions only when one is convinced that they are right. With which of these two opinions do you agree?*"

Countries where people are more likely to follow instructions are considered hierarchical. I code the response to this question as equal to one if the respondent answers "Should follow instructions" and zero if the respondent answers "Must be convinced first". I take the average of rescaled responses of participants in each country year to measure the degree of hierarchy in a society.

I measure individualism based on the following question from the WVS:

"How would you place your views on this scale? 1 means you completely agree with statement (1); 10 means you agree completely with statement (2); and if your views fall somewhere in between, you can choose any number in between."

1. Incomes should be made more equal

2. We need larger income differences as incentives for individual effort

Countries where people believe individual effort should be additionally awarded are considered individualistic. Similar to how I construct hierarchy, I rescale the responses to this question and calculate the average of rescaled responses in each country year. Table 2.9 Panel A reports the results including egalitarianism, hierarchy, and individualism. Similar to the findings in Holderness (2014), the coefficients of egalitarianism are consistent with egalitarianism inducing a more concentrated ownership structure. Interestingly, the results also show that blockholders with a societal preference for the equal treatment of individuals are less willing to give up their block ownership, as proven by the negative and significant coefficient of egalitarianism in Column (6). Because there is no theory on how egalitarianism might affect equity issuance, the coefficient of egalitarianism is insignificant. More importantly, the effect of trust, although becoming slightly weaker, is still significant in most specifications after controlling for this dimension of culture.

I also use alternative measures of cultural dimensions, specifically Hofstede's culture indices. I include the four dimensions: power distance index (PDI), individualism (IDV), masculinity (MAS), and uncertainty avoidance index (UAI). Panel B of Table 2.9 shows the results including the four Hofstede cultural dimensions. I find that the effect of

trust remains significant indicating that the findings are unlikely to be driven by these national culture values.

I then control for alternative legal and governance measures, including a country's disclosure requirements from La Porta, Lopez-de-silanes, and Shleifer (2006) and the anti-self-dealing index from Djankov et al. (2008). Panel C of Table 2.9 shows the results. Again, the results show that trust continues to have a consistently significant effect on corporate ownership structure suggesting that the results are also robust to additional regulatory factors.

Table 2.9: Robustness Tests for Additional Control Variables

This table presents robustness test results for additional control variables. Panel A controls for additional cultural variables. The sample used for Columns (1) and (2) includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. For tests on ownership evolution and channels (Columns (3)–(7)), the sample used includes firms that went public between 1998 and 2009. I require sample firms to be concentrated (i.e. LargeOwn >= 25%) when they enter the sample. I also require firms to have ownership data available for at least five years after IPO. IPO information is obtained from the SDC Platinum. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Panel A: Controlling for Additional Culture Variables

	Ownership Concentration		Ownership Evolution			Channels	
Dependent Variables	LargeOwn	Block	Exit	Hazard Model	Timespan	Due to Change in Ownership	Due to Share Issuance
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trust	**-12.918****	**-0.874****	**1.972*****	**1.395*****	**-0.176**	**2.111*****	**1.663**
	(-2.11)	**(-2.23)**	**(2.97)**	**(2.99)**	**(-1.39)**	**(3.84)**	**(1.61)**
Egalitarianism	26.247***	1.843***	-0.982**	-0.634**	0.137*	-1.044***	0.391
	(6.13)	(6.70)	(-2.34)	(-2.18)	(1.88)	(-3.49)	(0.60)
Individual	-4.016	-0.184	-0.334	-0.467	0.044	-0.675	1.244**
	(-0.41)	(-0.30)	(-0.68)	(-0.99)	(0.38)	(-1.34)	(2.09)
Hierarchy	8.069	-0.006	-1.070**	-0.919	0.123	-0.650	0.014
	(1.23)	(-0.01)	(-1.99)	(-1.34)	(1.08)	(-0.88)	(0.02)
LargeOwn_First			-0.027***	-0.016***	0.004***	-0.012***	0.005
			(-7.90)	(-6.43)	(6.81)	(-2.92)	(1.04)
Observations	196,841	196,841	1,876	1,877	1,877	1,876	1,861
R-squared	21.6%	16.4%	12.0%	12.0%	12.0%	12.0%	12.0%
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 2.9 *Continued*: Robustness Tests for Additional Control Variables

This table presents robustness test results for additional control variables. Panel B controls for four of Hofstede's cultural dimensions: power distance index (PDI), individualism (IDV), masculinity (MAS), and uncertainty avoidance index (UAI) (http://geerthofstede.com/). The sample used for Columns (1) and (2) includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. For tests on ownership evolution and channels (Columns (3)–(7)), the sample used includes firms that went public between 1998 and 2009. I require sample firms to be concentrated (i.e. LargeOwn >= 25%) when they enter the sample. I also require firms to have ownership data available for at least five years after IPO. IPO information is obtained from the SDC Platinum. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Panel B: Controlling for Hofstede's Cultural Dimensions

	Ownership Concentration		Ownership Evolution			Channels	
Dependent Variables	LargeOwn	Block	Exit	Hazard Model	Timespan	Due to Change in Ownership	Due to Share Issuance
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trust	**-31.075*** **	**-2.550*** **	**2.161*** **	**1.574*** **	**-1.223** **	**1.889** **	**2.276*** **
	(-2.98)	**(-3.25)**	**(3.52)**	**(3.25)**	**(-2.58)**	**(2.50)**	**(2.76)**
PDI	-0.002	0.003	0.003	0.002	0.005	-0.001	0.011
	(-0.03)	(0.41)	(0.56)	(0.46)	(1.64)	(-0.23)	(1.54)
IDV	0.196***	0.013***	-0.003	-0.001	-0.005	-0.014**	0.019**
	(3.26)	(2.94)	(-0.43)	(-0.25)	(-1.06)	(-2.01)	(2.24)
MAS	-0.126**	-0.005	0.002	0.003	-0.001	0.001	0.001
	(-2.12)	(-1.17)	(0.68)	(0.91)	(-0.49)	(0.14)	(0.23)
UAI	-0.033	-0.006	-0.000	-0.001	-0.001	-0.002	-0.001
	(-0.43)	(-0.99)	(-0.11)	(-0.37)	(-0.19)	(-0.48)	(-0.25)
LargeOwn_First			-0.020***	-0.014***	0.014***	-0.008**	0.002
			(-6.85)	(-6.78)	(6.41)	(-2.00)	(0.43)
Observations	227,689	227,689	2,906	2,906	2,906	2,906	2,873
R-squared	0.190	0.142	0.133	0.133	0.133	0.133	0.133
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 2.9 *Continued*: Robustness Tests for Additional Control Variables

This table presents robustness test results for additional control variables. Panel B reports results controlling for additional legal and governance variables. The sample used for Columns (1) and (2) includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. For tests on ownership evolution and channels (Columns (3)–(7)), the sample used includes firms that went public between 1998 and 2009. I require sample firms to be concentrated (i.e. LargeOwn >= 25%) when they enter the sample. I also require firms to have ownership data available for at least five years after IPO. IPO information is obtained from the SDC Platinum. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***). All variables are defined in the Appendix.

Panel C: Controlling for Additional Regulatory Variables

	Ownership Concentration		Ownership Evolution			Channels	
Dependent Variables	LargeOwn	Block	Exit	Hazard Model	Timespan	Due to Change in Ownership	Due to Share Issuance
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trust	**-27.014****	**-2.359*****	**2.058*****	**1.293*****	**-0.429*****	**1.863****	**1.775****
	(-2.20)	**(-2.80)**	**(4.02)**	**(2.77)**	**(-3.19)**	**(2.50)**	**(2.24)**
Disclosure	-20.881	-1.166	0.592	0.322	0.039	0.696	0.238
	(-1.65)	(-1.32)	(1.29)	(0.81)	(0.40)	(1.42)	(0.36)
ASDI	-5.145	-0.327	-0.057	-0.236	-0.061	-0.272	0.373
	(-0.55)	(-0.51)	(-0.09)	(-0.40)	(-0.62)	(-0.33)	(0.48)
LargeOwn_First			-0.023***	-0.014***	0.004***	-0.005	0.002
			(-6.55)	(-5.30)	(6.18)	(-1.06)	(0.36)
Observations	205,161	205,161	1,700	1,706	1,706	1,681	1,673
R-squared	17.0%	12.4%	15.6%	15.6%	15.6%	15.6%	15.6%
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes

2.5.3. Alternative Trust Measures

While the trust measure I use throughout this study has been widely used in the literature, one could still question the construction of the variable or argue that the average residents in a country might not be representative of the stock market participants in that country, and therefore the results could be biased by potential measurement issues. To alleviate these concerns, I construct three alternative measures of trust in a country. The first alternative measure I use is the Trust Index measured for each country as 100 plus (% of participants who respond "most people can be trusted") minus (% of participants who respond "can't be too careful"). The second measure is based on another trust question in the WVS which asks participants: "*Do you have a lot of confidence, quite a lot of confidence, not very much confidence, no confidence at all in the following: Major companies?*" I recode the responses to this question and then calculate the mean of the responses in each country year. The last trust measure is constructed based only on the responses of survey participants with above-country-level-median (deciles 6–10) incomes. Individuals who are in the higher income group are more likely to participate in the stock market (Guiso, Sapienza, and Zingales 2008), thus the trust measure constructed based on wealthier individuals should be more representative of stock market participants in a country.

Table 2.10 reports the results using the three alternative trust measures. Panel A presents the results for the effect of trust on ownership structure, Panel B presents the results for ownership evolution using the IPO sample, while Panel C presents the results for channels through which firms become dispersed. The results are consistent with previous findings and reinforce the evidence based on the country average trust measure.

Table 2.10: Alternative Trust Measures

This table reports the results using alternative measures of trust. Panel A presents the results for the effect of trust on ownership structure. The sample includes public firms in countries covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. Panel B presents the results for ownership evolution. The sample used includes firms that went public between 1998 and 2009. I require sample firms to be concentrated (i.e. LargeOwn >= 25%) when they enter the sample. I also require firms to have ownership data available for at least five years after IPO. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Panel A: Trust and Ownership Structure

Dependent Variables	LargeOwn	Block	LargeOwn	Block	LargeOwn	Block
	(1)	(2)	(3)	(4)	(5)	(6)
Trust Index	**-0.150*** **	**-0.012*** **				
	(-3.44)	**(-3.40)**				
Trust in Companies			**-28.085*** **	**-1.628** **		
			(-3.34)	**(-2.27)**		
Trust_Income					**-23.756*** **	**-1.831*** **
					(-2.99)	**(-2.92)**
Observations	228,270	228,270	230,339	230,339	230,339	230,339
R-squared	16.9%	13.3%	17.1%	13.6%	16.7%	13.4%
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Trust and Ownership Evolution

Dependent Variables	Exit	Hazard Model	Timespan	Exit	Hazard Model	Timespan	Exit	Hazard Model	Timespan
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Trust Index	**0.010*** **	**0.008*** **	**-0.007*** **						
	(4.69)	**(4.88)**	**(-3.78)**						
Trust in Companies				**1.065** *	**0.844** **	**-0.361**			
				(1.86)	**(2.08)**	**(-0.59)**			
Trust_Income							**1.975*** **	**1.516*** **	**-1.375*** **
							(4.42)	**(4.82)**	**(-3.67)**
LargeOwn_First	-0.020***	-0.014***	0.014***	-0.020***	-0.014***	0.013***	-0.020***	-0.014***	0.013***
	(-6.87)	(-6.81)	(6.34)	(-6.55)	(-6.71)	(6.06)	(-6.66)	(-6.75)	(6.17)
Observations	2,915	2,915	2,915	2,921	2,921	2,921	2,921	2,921	2,921
R-squared	9.2%		28.1%	9.7%		28.5%	9.7%		28.5%
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 2.10 *Continued*: Alternative Trust Measures

This table reports the results using alternative measures of trust. Panel C presents the results for channels through which firms become dispersed. The dependent variables indicate whether a large drop in blockholder ownership is due to the number of shares they own falling or the number of shares outstanding for the corporation increasing. I follow Helwege, Pirinsky, and Stulz (2007) to construct these variables. Detailed construction procedures are described in Section 2.3.3. The sample used includes firms that went public between 1998 and 2009. I require sample firms to be concentrated (i.e. LargeOwn >= 25%) when they enter the sample. I also require firms to have ownership data available for at least five years after IPO. IPO information is obtained from the SDC Platinum. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Panel C: Channels of Large Drop in Ownership

Dependent Variables	Due to Change in Ownership	Due to Share Issuance	Due to Change in Ownership	Due to Share Issuance	Due to Change in Ownership	Due to Share Issuance
	(1)	(2)	(3)	(4)	(5)	(6)
Trust Index	**0.011*** **	**0.009*** **				
	(4.49)	**(2.63)**				
Trust in Companies			**1.163***	**0.824**		
			(1.74)	**(1.08)**		
Trust_Income					**2.080*** **	**1.773*** **
					(4.11)	**(2.74)**
LargeOwn_First	-0.008**	0.001	-0.008*	0.002	-0.008**	0.002
	(-2.06)	(0.27)	(-1.94)	(0.43)	(-1.97)	(0.41)
Observations	2,915	2,882	2,921	2,888	2,921	2,888
R-squared	12.8%	12.8%	13.1%	13.1%	13.1%	13.1%
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes	Yes	Yes

2.5.4. Alternative Sample Selections

Given the large number of firm-year observations from the US, the UK and Japan that disproportionately present in the sample, I re-estimate Equations (1)–(3) excluding the US alone and the US, the UK, and Japan all together in Table 2.11. Panel A shows the results excluding the US, while Panel B shows the results excluding the US, the UK and Japan. The significant coefficients of *Trust* with consistent signs reduce the concern that the results in this study are driven by one of these countries. They also suggest that the results are not sensitive to alternative samples.

2.5.5. Alternative Specifications for Ownership Evolution

Finally, I provide robust results for Equations (2) and (3) using alternative definitions for *Exit*, *Timespan*, and *Channels*. Instead of defining these variables based on incidents of becoming widely held within 10 years after IPO, I use 5 years and 3 years as the cut-off points and examine whether trust affects how ownership diffuses within 5 years and 3 years following IPO. Table 2.12 shows the results, which further confirm earlier findings and suggest that the results are not sensitive to alternative definitions of the key ownership variables.

Table 2.11: Alternative Sample Selections

This table reports robust results excluding the major markets. Panel A shows the results excluding the US. Panel B shows the results excluding the US, the UK and Japan. The sample used for Columns (1) and (2) includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. For tests on ownership evolution and channels (Columns (3)–(7)), the sample used includes firms that went public between 1998 and 2009. I require sample firms to be concentrated (i.e. LargeOwn >= 25%) when they enter the sample. I also require firms to have ownership data available for at least five years after IPO. IPO information is obtained from the SDC Platinum. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Panel A: Excluding the US

	Ownership Concentration		Ownership Evolution			Channels	
Dependent Variables	LargeOwn	Block	Exit	Hazard Model	Timespan	Due to Change in Ownership	Due to Share Issuance
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trust	**-30.003*** **	**-2.217*** **	**2.090*** **	**1.420*** **	**-0.256** **	**2.037*** **	**1.555***
	(-3.49)	**(-3.41)**	**(3.83)**	**(3.90)**	**(-2.39)**	**(3.57)**	**(1.94)**
LargeOwn_First			-0.026***	-0.017***	0.003***	-0.010**	0.005
			(-6.93)	(-6.18)	(6.33)	(-2.16)	(0.96)
Observations	167,995	167,995	1,871	1,873	1,873	1,871	1,832
R-squared	14.8%	11.3%	9.7%		37.5%	16.9%	16.9%
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Excluding the US, the UK, and Japan

	Ownership Concentration		Ownership Evolution			Channels	
Dependent Variables	LargeOwn	Block	Exit	Hazard Model	Timespan	Due to Change in Ownership	Due to Share Issuance
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Trust	**-30.003*** **	**-2.217*** **	**2.090*** **	**1.420*** **	**-0.256** **	**2.037*** **	**1.555***
	(-3.49)	**(-3.41)**	**(3.83)**	**(3.90)**	**(-2.39)**	**(3.57)**	**(1.94)**
LargeOwn_First			-0.026***	-0.017***	0.003***	-0.010**	0.005
			(-6.93)	(-6.18)	(6.33)	(-2.16)	(0.96)
Observations	167,995	167,995	1,871	1,873	1,873	1,871	1,832
R-squared	14.8%	11.3%	9.7%		37.5%	16.9%	16.9%
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 2.12: Alternative Specifications for Ownership Evolution

This table reports robustnees test results using alternative definitions for ownership evolution. Panel A shows the results using 5 years as the cut-off point for the length of time concentrated IPO firms take to become dispersed after IPO, while Panel B presents the results using 3 years as the cut-off point. The sample used for Columns (1) and (2) includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. For tests on ownership evolution and channels (Columns (3)–(7)), the sample used includes firms that went public between 1998 and 2009. I require sample firms to be concentrated (i.e. LargeOwn >= 25%) when they enter the sample and become dispersed (LargeOwn < 25% and drop by more than 10%) within 5 years. I also require firms to have ownership data available for at least five years after IPO. IPO information is obtained from the SDC Platinum. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Panel A: Dispersed within 5 years

	Ownership Evolution			Channels	
Dependent Variables	Exit	Hazard Model	Timespan	Due to Change in Ownership	Due to Share Issuance
	(1)	(2)	(3)	(4)	(5)
Trust	**3.417*** **	**2.161*** **	**-0.445*** **	**2.627** **	**3.095*** **
	(6.14)	**(4.16)**	**(-3.89)**	**(2.46)**	**(3.76)**
LargeOwn_First	-0.024***	-0.014***	0.003***	0.009**	-0.009*
	(-5.83)	(-4.00)	(4.00)	(2.46)	(-1.66)
Observations	979	990	990	931	979
R-squared	14.2%	14.2%	33.5%	14.2%	14.2%
Control Variables	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes	Yes

Panel B: Dispersed within 3 years

	Ownership Evolution			Channels	
Dependent Variables	Exit	Hazard Model	Timespan	Due to Change in Ownership	Due to Share Issuance
	(1)	(2)	(3)	(4)	(5)
Trust	**3.417*** **	**2.161*** **	**-0.445*** **	**2.627** **	**3.095*** **
	(6.14)	**(4.16)**	**(-3.89)**	**(2.46)**	**(3.76)**
LargeOwn_First	-0.024***	-0.014***	0.003***	0.009**	-0.009*
	(-5.83)	(-4.00)	(4.00)	(2.46)	(-1.66)
Observations	979	990	990	931	979
R-squared	14.2%	14.2%	33.5%	14.2%	14.2%
Control Variables	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes	Yes

2.6. Additional Findings

This section presents additional analyses to further test the effect of trust. I examine whether the effect of trust is stronger in industries with greater equity finance dependence. I also test whether the ownership structure of newly public firms in countries with a higher level of trust is different from those in countries with a lower level of trust.

2.6.1. Variation in the Effect of Trust with Equity Finance Dependence

As I have shown, firms in trusting countries are more likely to raise equity financing thereby reducing ownership concentration. Given that social trust alleviates investors' concerns about being cheated by the management and hence allows firms to float their shares more easily, companies which require funding will be more likely to issue shares. Consequently, I should expect to see a stronger effect of trust on ownership structure in industries where firms have greater external equity finance dependence.

To test this conjecture, I empirically test how the results vary with the level of equity finance dependence among firms in an industry by interacting the trust measure with a measure of industry level equity finance dependence. Following Rajan and Zingales (1996), the amount of external finance used by all firms is measured using that of US firms in an industry. Under the assumption that technological differences cause some industries to depend more on external finance than others and such differences persist across countries, using data on US firms allows us to exogenously identify an industry's technological demand for external financing. Specifically, the dependence on external equity finance is defined as the ratio of the net amount of equity issues (Sale of Common and Preferred Stock minus Purchase of Common and Preferred Stock) to capital expenditures. I first calculate a firm's dependence on external finance by taking the sum

of the firm's use of external finance over the sample period and then dividing by the sum of capital expenditure over the sample period. I then take the industry median to summarise firm level ratios at industry level.

I add the measure of equity finance dependence and the interaction term between equity finance dependence and trust to Equation (1) and present the results in Table 2.13. The sample I use for this analysis excludes firms from the US. I find that the coefficients on the interaction term are negative and significant, confirming my conjecture that the effect of trust on ownership dispersion is more pronounced in industries that have greater dependence on external equity finance.

2.6.2. Trust and the Ownership Concentration of Newly Public Firms

As most firms start their lives with concentrated ownership, it is interesting to test whether young firms in countries with a higher level of trust start with a more dispersed ownership than young firms in less trusting countries. To analyse this question, I use ownership data in the IPO year of the sample firms or the year following if ownership information in the IPO year is not available. Table 2.14 shows the regression results on the effect of trust on the initial ownership structure of newly public firms. Panel A uses the trust measure based on WVS, while Panel B uses the inherited trust measure. I find that firms in high trust countries have more dispersed ownership in the IPO year. This finding suggests that firms become relatively diffusely held at an early stage of their lives in countries with a higher level of trust.

Table 2.13: Variation in the Effect of Trust with Equity Finance Dependence

This table shows results with trust interaction with equity finance dependence (EFD). The sample includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. US firms are excluded from the sample. *t*-statistics in parentheses are adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) level. All variables are defined in the Appendix.

	(1)	(2)
Dependent Variables	LargeOwn	Block
Trust	-7.673	-0.449
	(-0.557)	(-0.307)
Trust × EFD	**-3.987***	**-0.483****
	(-1.755)	**(-2.080)**
EFD	1.001	0.090
	(0.849)	(0.826)
Ln(GDP per cap)	-20.139	-1.661
	(-1.435)	(-1.254)
Ln(GDP)	15.449	1.171
	(1.180)	(0.963)
Gini Index	-0.070	-0.016
	(-0.305)	(-0.681)
ADRI	-13.483*	-1.738**
	(-1.965)	(-2.554)
Comlaw	52.517	2.057
	(1.029)	(1.214)
Ln(Size)	-0.219	-0.051
	(-0.601)	(-1.395)
Ln(Age)	0.125	-0.031
	(0.123)	(-0.348)
PPE	-0.002**	-0.000***
	(-2.107)	(-4.782)
Cashflows	0.002	0.000**
	(1.253)	(2.038)
Volatility	0.148	-0.016
	(0.291)	(-0.343)
Leverage	-0.012	0.114
	(-0.010)	(1.101)
MB	0.022*	-0.000
	(1.862)	(-0.224)
RD	-0.729***	-0.099***
	(-3.235)	(-2.715)
Observations	168,509	168,509
R-squared	20.4%	13.1%
Industry FE	Yes	Yes
Year FE	Yes	Yes
Cluster Country	Yes	Yes

Table 2.14: Trust and the Ownership Concentration of Newly Public Firms

This table presents regression estimates using data in the IPO year of the sample firms or the year following IPO if information during the IPO year is not available. Panel A reports the results using the primary measure of trust. The sample includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. IPO information is collected for the SDC Platinum. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Panel A: Trust

	(1)	(2)	(3)	(4)
Dependent Variables	LargeOwn		Block	
Trust	**-26.881*** **	**-22.344*** **	**-2.958*** **	**-2.511*** **
	(-4.62)	**(-4.25)**	**(-5.65)**	**(-5.79)**
Ln(GDP per cap)	-0.302	-0.536	-0.037	-0.071
	(-0.46)	(-0.83)	(-0.63)	(-1.38)
Ln(GDP)	-0.871	-1.224**	-0.095**	-0.121***
	(-1.37)	(-2.10)	(-1.97)	(-2.87)
Gini Index	-0.411**	-0.407***	-0.044***	-0.044***
	(-2.56)	(-2.73)	(-2.99)	(-3.32)
ADRI	-4.840***	-4.639***	-0.500***	-0.486***
	(-4.22)	(-4.63)	(-5.35)	(-6.37)
Comlaw	-5.473**	-5.812**	-0.607***	-0.628***
	(-2.11)	(-2.71)	(-3.16)	(-4.46)
Ln(Size)		-0.848***		-0.116***
		(-2.78)		(-3.67)
Ln(Age)		-1.567**		-0.119**
		(-2.50)		(-2.36)
PPE		-0.005		-0.001
		(-0.39)		(-0.60)
Cashflows		-0.037***		-0.003**
		(-2.93)		(-2.51)
Volatility		0.165***		0.014***
		(4.88)		(2.65)
Leverage		3.435***		0.298***
		(5.98)		(3.17)
MB		0.039***		0.025***
		(3.23)		(2.98)
RD		-0.780*		-0.083**
		(-1.73)		(-2.40)
Observations	7,082	6,028	7,082	6,026
R-squared	15.7%	17.7%	13.4%	13.4%
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes

Table 2.14 *Continued*: Trust and the Ownership Concentration of Newly Public Firms

This table presents regression estimates using data in the IPO year of the sample firms or the year following IPO if information during the IPO year is not available. Panel B reports the results using inherited trust. The sample includes public firms in countries jointly covered by the BvD Osiris database, the WVS, and Datastream/Worldscope between 2000 and 2014. IPO information is collected for the SDC Platinum. *t*-statistics in parentheses are robust values adjusted for heteroskedasticity. All continuous variables are winsorized at 1st and 99th percentile. Standard errors are clustered by country. Statistical significance is indicated at the 10% (*), 5% (**) and 1% (***) levels. All variables are defined in the Appendix.

Panel B: Inherited Trust

	(1)	(2)	(3)	(4)
Dependent Variables	LargeOwn		Block	
Inherited Trust	**-27.615***	**-25.074***	**-2.377***	**-2.339****
	(-1.92)	**(-1.88)**	**(-1.76)**	**(-2.03)**
Ln(GDP per cap)	1.275	1.135	0.073	0.056
	(1.12)	(1.10)	(0.71)	(0.64)
Ln(GDP)	-2.359	-2.066	-0.206	-0.183
	(-1.69)	(-1.54)	(-1.53)	(-1.51)
Gini Index	0.418	0.319	0.031	0.018
	(0.95)	(0.68)	(0.75)	(0.44)
ADRI	0.321	-0.523	-0.018	-0.114
	(0.21)	(-0.31)	(-0.12)	(-0.79)
Comlaw	-12.038***	-10.969***	-1.195***	-1.093***
	(-3.49)	(-3.16)	(-4.17)	(-4.00)
Ln(Size)		-1.009*		-0.138***
		(-1.93)		(-2.60)
Ln(Age)		-1.374		-0.090
		(-1.31)		(-1.02)
PPE		-0.076***		-0.013*
		(-2.84)		(-1.96)
Cashflows		-0.018		-0.002
		(-0.76)		(-0.38)
Volatility		0.473*		0.192
		(1.88)		(0.85)
Leverage		3.243**		0.426**
		(2.35)		(2.00)
MB		0.157		0.016
		(0.34)		(0.43)
RD		-0.485***		-0.066
		(-3.54)		(-1.60)
Observations	4,024	3,446	4,021	3,444
R-squared	18.6%	20.5%	14.3%	14.3%
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Cluster Country	Yes	Yes	Yes	Yes

2.7. Conclusion

This study examines whether social trust affects corporate ownership structure. Using a large sample of firm-level ownership data from 42 countries around the world, I analyse the effect of trust on ownership concentration. More importantly, I also examine the impact of trust on how ownership evolves over time following a firm's IPO.

I find robust evidence that a higher level of trust promotes dispersed corporate ownership structure in a country. In addition, in countries with a higher level of trust, a newly public firm starting with concentrated ownership is more likely to become diffusely held following IPO and they also become widely held at a faster speed. This is consistent with the conjecture that trust mitigates investors' concerns about agency issues and discourages the formation of ownership blocks as incentivising managers and controlling shareholders using equity is no longer necessary. To provide insight into what drives changes in block ownership, I classify incidents of ownership diffusion into two groups: those due to changes in blockholder ownership share and those due to share issuance. I find that block sales and share issuance are both more common in countries with a higher level of trust.

I address the endogeneity concern in this study using trust that US descendants have inherited from their predecessors who immigrated from different countries. I also employ a two-stage least square regression framework. These approaches allow us to point to a causal interpretation of our results that trust affect the structure of corporate ownership and promotes ownership dispersion. Overall, to the best of my knowledge, this study is the first to identify a dynamic effect of trust on ownership diffusion. This study

shows that trust has an important implication in shaping a country's corporate ownership structure and helps explain the large variation in ownership structure across countries.

Appendix: Variable Definitions

Variable	Definition	Data Source
Trust	Based on responses to the WVS question: "*Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?*" I recode the response to this question to 1 if a survey participant reports that most people can be trusted and 0 otherwise and then calculate the mean of the response in each country year. Higher index values correspond to higher trust.	World Values Survey
Inherited Trust	Inherited trust of a country is estimated as the corresponding estimated coefficient of the country's indicator variable from a regression specification of the contemporaneous trust of US descendants of immigrants. The specification has as its independent variables each respondent's individual characteristics including age, gender, education, income, employment status, and religious belief; and dummy variables indicating the country of origin of the respondent.	General Social Survey Data Explorer
Trust Index	Trust index measured for each country as 100 plus (% of participants who respond "most people can be trusted") minus (% of participants who respond "can't be too careful").	World Values Survey
Trust_Income	Country-year average of rescaled responses to the WVS question of respondents with above median (deciles 6–10) income level.	World Values Survey
Trust in Companies	Based on the responses to the WVS question: "*Do you have a lot of confidence, quite a lot of confidence, not very much confidence, no confidence at all in the following: Major companies?*" I recode the responses to this question and then calculate the mean of the response in each country year. Higher index values correspond to higher trust.	World Values Survey
LargeOwn	The proportion of shares owned by the largest shareholder of a firm in a year.	The Osiris database of the Bureau van Dijk (BvD)
Block	Equal to one if the ownership of the largest shareholder is greater than 25%.	The Osiris database
Exit	Equal to one if a firm becomes dispersed by having no shareholders owning more than 25% of the shares	The Osiris database

	within 10 years after IPO and the decrease in largest shareholder ownership is greater than 10%.	
Timespan	The number of years a firm stays concentrated with the largest shareholder owning greater than 25% of shares after IPO.	The Osiris database
LargeOwn_first	Ownership of the largest shareholder in the first year after IPO.	The Osiris database
GDP per cap	Log of GDP per capita.	World Bank
GDP	Log of GDP.	World Bank
Gini Index	Gini coefficient for income inequality in each country.	World Bank
Comlaw	Equal to one if a country has common law system.	(La Porta et al. 1998b)
ADRI	Shareholder right index that measures how strongly a country's legal system protects minority shareholders against managers or powerful shareholders in the corporate decision-making process, including the voting process.	(La Porta et al. 1998b)
Size	Log of market capitalisation of a firm.	Datastream and Worldscope
Age	Log of the number of years since a firm incorporates.	Datastream and Worldscope
PPE	The ratio of total property, plant, and equipment to sales of a firm.	Datastream and Worldscope
Cashflows	The ratio of operating income to sales.	Datastream and Worldscope
Volatility	The standard deviation of monthly return.	Datastream
Leverage	The ratio of total debts to total assets.	Datastream and Worldscope
MB	The sum of the book value of debt and market value of common equity divided by the book value of assets.	Datastream and Worldscope
RD	Research and development expenditure.	Datastream and Worldscope

Egalitarianism	An index of "*the belief that all people are of equal worth and should be treated equally by society*." The opposite of egalitarianism is hierarchy, which "*refers to a cultural emphasis on obeying role obligations within a legitimately unequal distribution of power, roles, and resources*."	(Siegel, Licht, and Schwartz 2011)
Individualism	The average of the rescaled response in each country year to the WVS question: "*How would you place your views on this scale? 1 means you completely agree with statement (1); 10 means you agree completely with statement (2); and if your views fall somewhere in between, you can choose any number in between.*" *1. Incomes should be made more equal* *2. We need larger income differences as incentives for individual effort*	World Values Survey
Hierarchy	The average of the rescaled response in each country year to the WVS question: *People have different ideas about following instructions at work. Some say that one should follow one's superior's instructions even when one does not fully agree with them. Others say that one should follow one's superior's instructions only when one is convinced that they are right. With which of these two opinions do you agree?* *1. Should follow instructions* *2. Must be convinced first*	World Values Survey
PDI	Power Distance Index as one of the dimensions of national culture by Hofstede.	http://geerthofstede.com/research-and-vsm/dimension-data-matrix/
IDV	Individualism as one of the dimensions of national culture by Hofstede.	http://geerthofstede.com/research-and-vsm/dimension-data-matrix/
MAS	Masculinity Index as one of the dimensions of national culture by Hofstede.	http://geerthofstede.com/research-and-vsm/dimension-data-matrix/
UAI	Uncertainty Avoidance Index as one of the dimensions of national culture by Hofstede.	http://geerthofstede.com/research-and-vsm/dimension-data-matrix/
Disclosure	A country's index of disclosure requirements calculated as the average of the following five proxies: insiders' compensation, ownership by large shareholders, inside ownership, contracts outside the normal course of business, and transactions with related parties.	(La Porta, Lopez-de-silanes, and Shleifer 2006)

ASDI	Anti-self-dealing index.	(Djankov et al. 2008)
EFD	A measure of an industry's external equity finance dependence. Following Rajan and Zingales (1996), the amount of external finance used by all firms is measured using that of US firms in an industry. The dependence on external equity finance is defined as the ratio of the net amount of equity issues (Sale of Common and Preferred Stock minus Purchase of Common and Preferred Stock) to capital expenditures. I sum the firm's use of external finance over the sample period and then divide by the sum of capital expenditure over the sample period to get the firm's dependence on external finance. To derive a measure at the industry level, I use the industry median.	Compustat and (Rajan and Zingales 1998)

Chapter 3

Globalisation and Insider Trading: Evidence from Cross-Border Mergers and Acquisitions

3.1. Introduction

Globalisation has accelerated in the past two decades which has greatly increased the reach and impact of individuals, companies, and legal institutions in one country on economic activities in other countries. However, one prominent feature of the current globalisation process is that legal integration significantly lags economic integration. Thus, while country borders are no longer barriers to many economic activities around the world, they still play an important role in defining the effective reach of each country's law. Enforcing one country's law on economic agents located in another country faces significant challenges. This combination of fast economic integration and slow legal integration could increase the likelihood of economic agents in one country profiting from illegal activities in another country. However, the literature offers little understanding about the prevalence of such activities as well as their determinants and impacts on financial markets around the world.

In this study, I provide novel evidence on these issues in the context of cross-border mergers and acquisitions (M&As), a fast-growing area of globalisation. This setting offers several clear advantages for studying this issue. First, the cross-country economic link and the relevant legal institutions are clearly identified in a cross-border acquisition. Second, M&A deals are known to be susceptible to insider trading due to the enormous return. Third, insider trading is illegal in almost all countries around the world and is considered one of the biggest threats to financial markets by securities regulators around the world.[4]

[4] SEC Fast Answers for Insider Trading: "Because insider trading undermines investor confidence in the fairness and integrity of the securities markets, the SEC has treated the detection and prosecution of insider trading violations as one of its enforcement priorities."

In most countries, insiders have a fiduciary duty to keep material, non-public information confidential and not to profit from it themselves or tip others to profit from it.[5] However, insider trading is difficult to prove in general and most prosecutions depend on circumstantial evidence. The challenge to a domestic regulator is even greater when the deal is a cross-border deal. This is because, by definition, half of the insiders in a cross-border deal are in a foreign country. Insider trading or leakage of information can originate from the foreign country. When foreign insiders or any tippees living in the target country trade on non-public information in the target country's financial markets, even though the domestic regulator in the target country has the jurisdiction to prosecute them, it faces more challenges in collecting evidence. This can significantly increase the difficulty of the domestic regulator in collecting evidence on the passage of the inside information. [6] Cooperation by foreign authorities is inevitably needed but such cooperation may not always be readily available and sometimes can be difficult to obtain. This leads to reduced likelihood of being found guilty of illegal insider trading and less severe punishment.[7] Knowing this, insiders linked to foreign acquirers and their tippees may become more aggressive in exploiting their inside information on the target country's financial markets. This can lead to more prevalent and aggressive insider trading in the target company securities before the announcement of a cross-border deal than a comparable domestic deal *ceteris paribus*.

[5] This includes corporate insiders, such as top executives and directors, and "constructive insiders", such as investment bankers, lawyers, accountants, etc. hired by the target or acquirer to work on the deal.
[6] For example, the US authorities used court-authorised wiretaps to implicate the billionaire hedge fund manager Raj Rajaratnam of Galleon Group in the largest hedge fund insider trading case in US history. Such techniques are not usually available when collecting evidence from a foreign country.
[7] Even if a domestic regulator detects insider trading related to foreign insiders, the regulator is less likely to pursue criminal charges and more likely to opt for civil settlements, because criminal charges usually have a higher burden for evidence, which may be difficult for the regulator to obtain from a foreign country.

However, on the other hand, insiders linked to the foreign acquirer may be unfamiliar with the domestic financial market of the target firm or face higher costs of cross-border trading, which can significantly limit their incentive to profit from their inside information in the domestic market. Whether the divergence in economic and legal integration has significantly increased pre-bid insider trading in the target firm securities when the acquirer is from a foreign country relative to when the acquirer is a domestic firm is ultimately an empirical question investigated in this study.

I start with a comprehensive sample of announced mergers and acquisitions around the world on the Thomson Reuters SDC database from 1990 to 2017. The final sample consists of 10,600 mergers and acquisitions with target firms from 33 countries and acquirer firms from 65 countries around the world. To measure informed trading activity, I follow Acharya and Johnson (2010) and rely on broader statistics that are indicative of suspicious activities in the target firm securities. Like Acharya and Johnson (2010), I postulate that these statistics are monotonically related with the intensity of insider trading given that a bid did occur. The main market I examine is the stock market because it is a basic venue for insider trading and it is a market that is understood by most people who want to trade on inside information. Another practical constraint is that, in the international sample, only a small fraction of target firms have exchange-traded options (most of them are in the US), which leaves the stock market as the main venue to examine for evidence of insider trading. However, prior evidence does show that insiders also trade on the options market (Acharya and Johnson 2010, Augustin, Brenner, and Subrahmanyam 2015). Hence, I also test my hypotheses on the options market but only in the subsample of deals involving US target firms with traded options.

On the stock markets, I expect target firms to exhibit unusually large stock returns and volume on insider trading days compared to non-insider trading days. Since I do not have knowledge of when insiders trade, I examine several pre-specified pre-bid windows. The results are similar across different windows. To save space, I only report results for the (-5 day, -1 day), and (-10 day, -1 day) window, where the announcement day is day 0. Following Acharya and Johnson (2010), I construct two measures of unusually large return (volume) using the daily standardised residuals from a first stage regression which establishes the "normal" level of daily stock return (volume). The first measure, *Max*, equals the maximum daily standardised residual over the pre-bid window. The second measure, *Sum*, equals the sum of the positive daily standardised residuals over the pre-bid window. The two measures complement each other in capturing different types of insider trading patterns. The first measure might miss trades by strategic insiders who split and spread their trades over time to minimise price impact, while the second measure might miss trades by competitive insiders whose trades tend to cluster on one day.

On the options market, I construct a *Max* and a *Sum* measure of unusual call volume in a similar fashion. Since a target firm can have a few series of options traded with different maturities and strike prices, I aggregate the number of calls traded each day into a single daily volume measure. Then, I follow similar procedures to construct the *Max* and *Sum* measures. I only consider calls because buying calls generate higher returns than selling puts when the underlying stock price goes up. If a trader has accurate inforamtion about the timing of the public announcement of the deal, then short-dated options that expire shortly after the announcement date should be preferred to long-dated options. Hence, I only include options that expire within 60 days.

I find that both the *Max* and *Sum* measures of abnormal stock return and volume are significantly higher before the announcement of cross-border deals than before

domestic deals in the full sample of international M&As. The same is true for abnormal call option volume in the subsample of cross-border and domestic deals involving US targets with traded options. The results hold for all pre-bid windows of insider trading that I examine: (-5 day, -1 day) and (-10 day, -1 day) though the results are in general stronger the closer to the announcement date. The results hold in both univariate tests and regressions where I control for target country fixed effects, year fixed effects and other factors that can result in differences in the level of informed trading in cross-border deals and domestic deals.

One concern over this result is that foreign acquirers may target different types of target firms than domestic acquirers in a country. For example, target firms in cross-border deals may be larger and in different industries. Although I control for the size and industry of the target firm in the regression analysis, this may not completely eliminate the effect of firm size and industry. Other unobservable factors may also contaminate the results. To address these concerns, I conduct a series of robustness tests. I first match each cross-border deal with a similar domestic deal by target firm and deal charateristics. The results remain the same. I then explore a country's entry into the IOSCO Multilateral Memorandum of Understanding Concerning Consultation and Cooperation and the Exchange of Information (MMoU) as an empirical identification to test whether better coordination between financial regulators corresponds to less informed trading in cross-border deals. I find that cross-border deals between MMoU signatories are associated with significantly less suspicious pre-announcement trading activities. I also estimate the difference in the pre-announcement run-up ratio between cross-border deals and domestic deals and find that the average fraction of the total event impact that is realised in the stock price in advance of the merger announcement is significantly larger in cross-border deals than in domestic deals. To further validate the measures of insider trading, I perform

a validity test to examine whether the measures differ with different levels of insider trading restriction across countries and confirm these measures to be reasonable proxies of insider trading. I also directly gauge the concern that cross-border deals endogenously exhibit a different level of pre-announcement insider trading by performing a falsification test. I look at annual earnings announcements, which also convey important corporate information and often lead to large price movement that potentially induce insider trading and find no difference in the level of insider trading depending on earnings news before earnings announcements between cross-border deals and domestic deals. Overall, I find overwhelming evidence that the level of informed trading is significantly higher before cross-border deals than before domestic deals.

To provide more evidence on the insider trading activities before merger announcements, I further investigate factors that influence the incentives of insiders linked to foreign acquirers to trade or tip others to trade on the confidential information they have and its effect on insider trading in target firm securities before cross-border M&As. The key channel I explore is that the greater level of informed trading before the announcement of cross-border deals than domestic deals is driven by information leaked from the foreign acquirer side of the deal. However, this difference could also be driven by the leakage of non-public material information by insiders associated with the target firm. For example, cross-border deals may involve more lawyers, investment bankers, or other professionals in the target country than domestic deals and these insiders can trade or tip others to trade on the confidential information but they are located in the target country.[8] In addition, it may take a longer time to negotiate cross-border deals than

[8] This concern is partially addressed in the regression analysis because I control for the total number of advisors for both the bidder and the target. However, the control may not be perfect because the number of advisors may not be perfectly correlated with the number of other professionals involved.

domestic deals because of the complexity of cross-border deals, which increases the likelihood of information leakage and the number of people in the target country with non-public material information about the forthcoming bids. All of this could result in a higher level of inside trading before the announcement of cross-border deals compared to domestic deals. To answer this question, ideally, I would like to know the source of all trades in the pre-announcement window and then show that these informed trades mainly come from foreign insiders or their tippees. However, such information is not available. With this data constraint in mind, I answer this question by examining the cross-sectional relation between the level of informed trading in the pre-bid window and acquirer- and target-country characteristics.

Specifically, I first explore how insider trading law and cultural norms in the acquirer country could affect the level of pre-bid insider trading in the target's stock market. In terms of the strictness of insider trading law, countries with weak law and institutions are less likely to, or not be able to, participate in international cooperation. Moreover, citizens in these countries often lack legal awareness and autonomy regarding insider trading. Consequently, M&A transactions initiated by acquirers from weak governance countries may provide a breeding ground for information leakage and cross-border insider trading. In terms of social and cultural norms, an emerging literature on the role of culture suggests that cultural norms have significant influence on a person's intrinsic motivation to engage in illicit activities. Thus, cultural norms may affect insider trading in the target firm securities by acquirer insiders, especially considering that insider trading is a secret individual activity so personal values and social norms are likely to be important determinants of individuals' actions. These insiders are not restricted to top executives and board members in the acquiring firm. Instead, they include everyone who gets access to the confidential information, such as lawyers, investment bankers,

financiers, or even financial printers, the so called “constructive insiders”. This circle expands quickly as the deal announcement date draws closer and the chance of a leakage increases exponentially. Hence, cultural norms can also have a greater impact on the likelihood of insider trading than internal governance of the acquiring firm. Using a sample of cross-border deals and proxies for country-level insider trading law and cultural norms, I find that cross-border deals involving acquirers from countries with weak law, poor tax morale, and strong corruption are associated with greater intensity of insider trading. This provides further evidence that some of the trades on the target country’s financial market are driven by inside information leaked from foreign acquirers.

On the target side, I also examine how the difference in the level of informed trading between cross-border and domestic deals varies with the legal institutions that restrict insider trading in the target country. In target countries with strong insider trading law enforcement, the law is likely to be strictly binding for domestic insiders but less so for foreign insiders due to barriers to cross-border enforcement. This creates a clear gap in the incentives of domestic and foreign insiders to trade on their inside information, making the difference between cross-border and domestic deals easier to detect and statistically more significant. Consistent with this conjecture, I find that the difference in informed trading is significantly larger when the target firm is in a country with stricter inside trading law.

Lastly, comparing the level of informed trading in cross-border deals between countries that are closely connected, specifically the US and Canada, I find that cross-border deals between the US and Canada are not associated with higher levels of insider trading, while cross-border deals involving acquirers from other parts of the world exhibit a significantly higher level of informed trading.

Overall, these patterns suggest that the difference in the level of insider trading is at least partially driven by information leakage from the acquirer side due to the barriers to legal integrity. Although I do not have direct evidence to support my hypothesis due to data constraints, the results suggest that it would be difficult to reconcile these cross-sectional variations with alternative explanations I illustrate above. The cross-sectional variations are also interesting on their own because they help understand the determinants of the level of informed trading before the announcement of cross-border deals and such information can be very useful for regulators that monitor insider trading.

This study is related to several strands of literature. First, it is linked to a large insider trading literature that documents significant abnormal trading before major corporate announcements. Most of these studies focus on insider trading in US firms. This study contributes to this literature by providing evidence of abnormal trading in target firm securities in 52 countries. Similar to this study, Griffin, Hirschey, and Kelly (2011) also examine insider trading using an international sample of takeovers but they focus on the cross-country differences in inside trading within each country. To the best of my knowledge, this is the first study to compare the level of abnormal trading before cross-border deals and domestic deals. Although barriers to cross-border law enforcement have the potential to lead to more insider trading before the announcement of cross-border deals than before domestic deals as I argue in this study, foreign insiders may face other constraints in cross-border trading or cross-border tipping. Hence, it is an empirical question as to whether this is actually happening systematically in practice. The evidence in this study suggests that it is, which raises an important red flag for regulators and policy makers. In addition, most of the existing studies of trading on inside information use US data and have focused on various US insiders, such as registered corporate insiders, wealthy individuals, and institutional investors (Bodnaruk, Massa, and Simonov 2009,

Agrawal and Nasser 2012, Cohen, Frazzini, and Malloy 2008, Griffin, Shu, and Topaloglu 2012). Although I do not have data to identify the actual insiders who trade before the acquisition announcement, the empirical evidence suggests that in cross-border deals a significant number of insider trades could potentially be traced to foreign insiders and their tippees.

Second, this study contributes to the stream of research that examines the effectiveness of insider trading law and enforcement actions in the US (Seyhun 1992, Agrawal and Jaffe 1995, Bhattacharya et al. 2000, Guercio, White, and Ready 2015). In general, these studies find both public and private enforcement of insider trading laws has some deterrence effects on insider trading. Guercio, White, and Ready (2015) find that the more aggressive SEC public enforcement of insider trading laws in recent periods in the US has significantly reduced the prevalence of insider trading prior to earnings and takeover announcements relative to the 1980s. These studies either focus on trades by registered insiders in US firms or implicitly assume that the deterrence effect of insider trading law in the US is the same for domestic and foreign insiders. In contrast, evidence in this suggests that insider trading law and enforcement actions have a weaker deterrence effect on foreign insiders than domestic insiders.

Third, this study is linked to the literature on cross-country spillovers. A number of studies show that cross-listing on foreign exchanges with stricter corporate governance and disclosure requirements bond a firm to higher governance standards and thus causes a positive governance spillover to the cross-listing firm (Reese and Weisbach 2002, Doidge 2004). In parallel, some studies document a positive corporate governance spillover through cross-border mergers and acquisitions (e.g. Rossi and Volpin 2004, Bris, Brisley, and Cabolis 2008, Martynova and Renneboog 2008). Overall, these studies document a positive impact of cross-border transactions on the internal governance of

firms. In contrast, this study shows that, in terms of financial markets, cross-border mergers and acquisitions can have a negative effect on the integrity of financial markets globally and the negative effect varies with the social and cultural norms of the acquirer country and the ease of cross-border trading in the acquirer country.

Fourth, this study contributes to an emerging literature on how social and cultural norms affect economic behaviour. Fisman and Miguel (2007) show that corruption norms are positively related to parking violations by UN diplomats in New York City. DeBacker, Heim, and Tran (2012) find US firms with foreign owners from countries with higher corruption norms evade more taxes. This study shows that social and cultural norms that are more tolerant of illicit activities and corruption are also related to more exploitation and leakage of inside information about forthcoming mergers.

The rest of the chapter is organised as follows: Section 3.2 describes the data and sample; Section 3.3 presents the baseline results and robustness tests; Section 3.4 provides additional analyses; and Section 3.5 concludes.

3.2. Data and Sample

3.2.1. Constructing the Sample

The international M&A sample of this study is collected from Thomson Reuters Securities Data Corporation (SDC) database and includes deals announced between 1991 and 2014 around the world. I require the percentage of shares sought by the acquirer in the target to be greater than 50% and the deal value paid by the acquirer, excluding fees and expenses, to be greater than US$1 million. I further exclude leverage buyouts (LBOs), spinoffs, recapitalisations, self-tender offers, exchange offers, repurchases, partial equity

stake purchases, acquisitions of remaining interest, and privatisations. All target firms in the sample are publicly listed firms with available stock trading data in the Datastream database. Either the target or the bidder could be listed in one country and operated and managed in another country. Following my hypothesis, I define the target country as the target company's stock trading country, where informed trading took place. The acquirer country is defined as the country where the acquirer's headquarters is located. I conjecture that the bidder's headquarters country is where the merger decisions are made, hence the place where leaks of information are likely to occur.

For the same target company, multiple M&A announcements can be made within a short period of time either due to more than one bidder competing for the target or changes in M&A terms and conditions with the same bidder. These events may contaminate the informed trading measures. Therefore, I omit M&A deals that are preceded by other M&A announcements made for the same target firm within 12 months. I also exclude deals with less than 60 non-zero trading days in the target stocks before the announcement. As the main focus of the analyses is on the pre-announcement trading activities in the targets' stock market, I need to make sure there are enough domestic and cross-border deals within a target country for comparison. I therefore exclude target trading markets with less than five domestic deals and cross-border deals from the sample.

The final sample includes 10,600 mergers and acquisitions covering 14,510 firms across 33 target countries and 65 acquirer countries. The financial data for all sample firms are obtained from Datastream and Worldscope. Table 3.1 describes the total number and value of cross-border deals in the sample by year. Overall, about a quarter of M&As in the sample are cross-border deals both in terms of number and deal value. There is a clear increasing trend in the number and value of cross-border deals over time. Comparing 1991 and 2017, the relative percentage of cross-border deals has tripled from 11.11% to

34.7% and the relative percentage deal value more than tripled from 9.46% to 34.54%. Table 3.2 reports the distribution of cross-border deals by country. Different countries vary significantly in the M&A market. The US, Canada, and the UK are the top three most active bidder countries acquiring foreign firms as well as the most popular targets by foreign acquirers. In total, 32 countries, including China, Ireland, and others have less than five public firms being targeted by foreign firms over the sample period. However, they are active buyers of foreign investments.

Table 3.1: Distribution of Cross-border Deals by Year

This table presents the number and total value (in millions of US$) of cross-border deals and their proportions in the total number and value of both domestic and cross-border deals by year. The data are obtained from the SDC database from 1990 to 2017. Cross-border deals are defined as M&A deals where the bidder and the target are from different countries, while domestic deals are defined as those where the bidder and the target are in the same country.

	Number of Deals			Deal Value		
Year	All	Cross-border Deals	% Cross-border Deals	All	Cross-border Deals	% Cross-border Deals
1990	53	13	24.53%	13,426.90	3,866.40	28.80%
1991	72	8	11.11%	14,827.77	1,402.61	9.46%
1992	61	6	9.84%	15,064.59	1,204.19	7.99%
1993	60	7	11.67%	12,308.15	671.58	5.46%
1994	72	9	12.50%	14,768.85	2,080.65	14.09%
1995	154	24	15.58%	34,342.45	5,771.02	16.80%
1996	138	13	9.42%	32,612.40	3,205.04	9.83%
1997	246	39	15.85%	83,559.72	13,220.42	15.82%
1998	445	63	14.16%	104,730.16	17,251.86	16.47%
1999	661	101	15.28%	151,888.60	23,114.38	15.22%
2000	552	113	20.47%	118,247.59	23,678.20	20.02%
2001	448	92	20.54%	74,074.30	22,178.79	29.94%
2002	368	67	18.21%	59,335.96	14,612.49	24.63%
2003	451	68	15.08%	75,229.23	11,496.88	15.28%
2004	418	74	17.70%	83,747.53	17,995.99	21.49%
2005	518	110	21.24%	101,809.61	26,049.50	25.59%
2006	609	137	22.50%	131,097.89	29,833.64	22.76%
2007	645	179	27.75%	151,756.55	49,184.07	32.41%
2008	565	151	26.73%	103,177.40	34,447.27	33.39%
2009	515	116	22.52%	69,917.23	18,116.72	25.91%
2010	530	140	26.42%	96,993.78	22,326.57	23.02%
2011	491	133	27.09%	97,649.43	33,184.10	33.98%
2012	465	124	26.67%	87,340.43	24,256.35	27.77%
2013	408	116	28.43%	69,516.58	22,597.52	32.51%
2014	418	123	29.43%	85,408.76	31,839.59	37.28%
2015	453	155	34.22%	81,976.05	31,046.56	37.87%
2016	398	141	35.43%	87,375.12	28,989.96	33.18%
2017	386	132	34.20%	83,614.49	28,882.40	34.54%
Total	10,600	2,454	23.15%	2,135,797.50	542,504.75	25.40%

Table 3.2: Sample Distribution by Country

This table presents the number of targets (bidders) of all deals (i.e. domestic and cross-border combined) and the number of targets (bidders) of only cross-border deals by country in the sample. The sample covers the period 1990–2017. M&A deals data are obtained from SDC.

	Targets		Bidders	
Country	N of All	N of Cross-Border	N of All	N of Cross-Border
United States	4,466	726	4,240	500
Canada	866	382	846	362
United Kingdom	1,022	299	957	234
Australia	685	209	547	71
Germany	187	83	188	84
France	228	79	232	83
Singapore	197	71	195	69
Sweden	195	69	179	53
Hong Kong	242	65	286	109
Norway	128	57	87	16
Japan	942	36	971	65
Malaysia	188	35	177	24
Netherlands	88	34	149	95
Denmark	63	30	52	19
Poland	75	29	49	3
Switzerland	53	27	74	48
India	144	26	142	24
New Zealand	53	23	40	10
South Africa	100	20	104	24
Belgium	34	16	52	34
Finland	34	16	35	17
Taiwan	108	15	103	10
Thailand	92	15	78	1
Israel	20	14	50	44
Italy	69	13	82	26
South Korea	158	13	155	10
Indonesia	18	11	17	10
Spain	34	10	52	28
Greece	26	9	19	2
Brazil	24	7	28	11
Austria	15	5	22	12
Chile	17	5	13	1
Philippines	29	5	30	6
China			150	150
Ireland			41	41
Luxembourg			36	36
Mexico			16	16
United Arab Emirates			15	15
Iceland			12	12
Cyprus			11	11
Mauritius			11	11
Russia			11	11
Bahamas			5	5
Colombia			5	5

Qatar	5	5
Argentina	3	3
Turkey	3	3
Bahrain	2	2
Kazakhstan	2	2
Lithuania	2	2
Malta	2	2
Papua New Guinea	2	2
Saudi Arabia	2	2
Vietnam	2	2
Bulgaria	1	1
Egypt	1	1
Estonia	1	1
Ghana	1	1
Jamaica	1	1
Morocco	1	1
Nigeria	1	1
Peru	1	1
Portugal	1	1
Romania	1	1
Slovak	1	1

3.2.2. Measuring Insider Trading Activity

To test my hypotheses and capture informed trading activities, I collect daily stock returns and trading volume of the sample firms from the Datastream database. I hypothesise that the suspicious trading activities should be reflected in both the return and volume of the target firm stocks prior to the deal announcement.

Following Acharya and Johnson (2010)[9], I implement a two-step procedure to construct measures of abnormal return and trading volume in the target firm stocks prior to the deal announcement. In the first step, I estimate a regression model to establish the normal level of return and volume. The specification has as its independent variables a constant, lagged volume and returns, day-of-week dummies, and contemporaneous volume and returns of local stock market index from Datastream International using daily data 90 days prior to the announcement date for each target firm. Standardised daily residuals are extracted from the regression to identify individual day abnormal trading. In the second step, I use the standardised daily residuals from the first step to construct two measures of suspicious stock trading activity in two windows, (-5, -1), and (-10, -1) before the announcement day which is Day 0, for each series (return and volume). I choose the short window (-5, -1) and the longer window (-10, -1) with the intention to test informed trading activity in different time periods preceding the announcements.

The first measure, *Sum*, is a summation of positive daily standardised residuals in a particular pre-event window. The second measure, *Max*, is the maximum of the daily standardised residuals in a particular pre-event window. The *Sum* measure is expected to identify informed traders who try to hide their trading activities by splitting trades across

[9] I have also constructed abnormal trading measures using the CAR model and the constant model with similar results.

different days, while the *Max* measure is expected to capture single-day aggressive trading by informed parties, for example, when one or more informed traders try to compete and buy before other informed traders drive the price up. The two measures complement each other by detecting different trading styles of informed traders. Since I do not have information on which trading style is employed by informed traders in each deal, using both measures increase the likelihood of detecting any form of informed trading that is present in the data. It is worthwhile to note that I use these measures to identify cross-sectional variation in the likelihood of suspicious trading across deals, not to assess the occurrence of such trading in any particular firm.

3.2.3. Measuring Country-level Law and Institutions against Insider Trading

To identify the effect of country-level insider trading law on the level of informed trading activity in domestic and cross-border deals, I use three main indices to proxy for the strictness of a nation's insider trading law. All the three measures have been widely adopted in both law and finance literature. The first measure is the insider trading restriction index (*IT Restriction*) from the 1996, 1998 and 1999 Global Competitiveness Report based on the following question: "Insider trading is not common in the domestic market (1 = strongly disagree, 7 = strongly agree)". Following Denis and Xu (2013), I take the average of all executive responses in a given country as the country's index value. Larger values of the index indicate greater insider trading restriction within the country. The second measure is the insider trading law index (*IT Law*) obtained from Beny (2005) which ranges from 0 to 4. It measures the strictness of insider trading laws in a country. This index is calculated by adding one for each of the four statements if which is true : 1) insiders are prohibited from tipping outsiders about material non-public information and/or encouraging them to trade on such information for private gain; 2) tippees are

prohibited from trading on material non-public information they have received from corporate insiders; 3) monetary penalties are expected to be greater than the insiders' trading profits; and 4) violation of the insider trading law is a criminal offence.[10]

The third measure is Rule of Law. I extract this measure from the Worldwide Governance Indicators (WGI), which is constructed and updated annually by the World Bank. It measures, as described in the WGI dataset, "perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence". Rule of Law measures the power of legal institutions in a country that restricts insider trading in general. Higher values of this index indicate greater strength. Unlike the first two measures which are time-invariant, the Rule of Law index allows for time-varying changes in the scores of each country and is more up-to-date. The values of these indices for each country are presented in the Appendix Table A3.2.

3.2.4. Measuring Acquirer Country Cultural and Social Norms

I employ two measures to capture individuals' tendency to participate in unethical activities in a country. The first measure is the annual Corruption Perception Index (CPI) published by Transparency International. It is computed annually based on the informed views of analysts, business people and experts from different countries. Countries with higher levels of corruption have lower CPI values. To make interpretation easier, I reverse the CPI scale so a higher corruption index corresponds to a higher level of corruption.

[10] Detailed definition and construction of the public enforcement index are described in Beny (2005).

The second measure uses a dataset, the World Values Survey (WVS), which provides detailed survey responses from representative national samples of at least 1,000 individuals within a country across more than 80 countries and over several years. The survey collects comparative data on values and belief systems among peoples around the world. All surveys are conducted through face-to-face interviews at the respondents' homes and in their respective national languages. Survey data from the WVS have been widely used in the finance and economic literature (e.g. La Porta et al. 1997, Dyck and Zingales 2004, Alm and Torgler 2006, Pevzner, Xie, and Xin 2015).

I measure the tendency of people to disobey rules and laws based on the following question from the WVS:

Please tell me for each of the following actions whether you think it can always be justified, never be justified, or something in between (on a ten-point scale where 1 = never and 10 = always): Cheating on taxes if you have a chance.

Survey respondents are asked to choose a score from a ten-point scale. Due to the qualitative nature of this question, the natural cut-off would be at the value of one. Thus, I recode the responses to the question to one if a survey participant reports that the action can never be justifiable and zero otherwise. I then calculate a country-level measure by aggregating and averaging the recoded responses within each country. A summary of index values for each country is reported in the Appendix Table A3.2.

3.2.5. Other Variable Definitions

In the multivariate analyses, I control for other determinants of the abnormal trading activities in the target's securities addressed in previous literature by including a number of control variables in the regression analysis. Following (Acharya and Johnson 2010), I control for several variables at firm level including target firm size, leverage, book-to-

market ratio, stock volatility stock liquidity measures including turnover and Amihud (2002), and target firm beta. I also control for several deal characteristics including bid premium, cash deal, the number of advisors, and rumour deals. A larger bid premium implies greater potential benefits to be made from trading on private information and hence increases the incentive of insiders and their tippees to use insider information. Augustin, Brenner, and Subrahmanyam (2015) find that informed trading is more pervasive in cases of target firms receiving cash offers. Acharya and Johnson (2010) show that the more insiders involved in a deal, the more insider trading activities in private buyout deals. Cross-border deals may have more professionals involved, such as investment bankers, lawyers or auditors, than domestic deals. I therefore control for the number of insiders involved by the number of advisors involved on both sides (acquirer and target) of the deal to make sure that the difference in the number of insiders does not drive the results. Reported rumours about upcoming deals can influence market reaction to deal announcements. When some investors infer pending deals from rumours, the run-ups in trading activity can merely reflect their anticipation of future deals, rather than insider trading. I expect at least some of these variables to be associated with the level of insider trading activity. All variables are winsorized at the 1% and 99% level.

I present the summary statistics of all control variables in Table 3.3 by deal type. Cross-border deals, as I expected, are highly statistically different from domestic deals in terms of almost all target and deal characteristics. This highlights the importance of including these variables in the multivariate analyses. Cross-border mergers and acquisitions on average involve more cash settlements. On average, 63.6% of cross-border deals have the majority (greater than 50%) of transaction value paid in cash, compared to 51.2% of domestic deals. Moreover, cross-border deals in general involve larger target firms and pay a higher premium compared to domestic deals. Consistent with

my consideration, cross-border deals on average also have more advisors (4.012) compared to domestic deals (3.341).

Table 3.3: Target and Deal Characteristics by Deal Type

This table reports summary statistics of target and deal characteristics by whether the bidder is from the same country as the target or not. For each deal, the target's country of stock trading is considered to be the home country. If the bidder is from the target firm's country, the deal is defined as a domestic deal. Otherwise the deal is defined as a cross-border deal. The last two columns show results from t-tests for differences in means and Wilcoxon rank-sum tests for differences in medians between domestic and cross-border deals. The sample period is 1990–2017. M&A data are obtained from the SDC database. Firm-level financial data are from Datastream and Worldscope. All variables are defined in the Appendix Table A3.1. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	Domestic Deals				Cross-border Deals				Domestic vs. Cross	
	Mean	Median	SD	N	Mean	Median	SD	N	Diff. in Mean	Diff. in Median Rank Test
Target Characteristics										
Size (US$ Millions)	174.671	82.63	231.397	8102	207.546	102.616	280.37	2443	-32.875***	-5.429***
Leverage	0.217	0.16	0.224	8146	0.189	0.119	0.223	2454	0.028***	7.348***
BM	1.865	1.292	3.396	8146	2.157	1.429	3.373	2454	-0.292***	-4.618***
Volatility	0.005	0.002	0.008	8146	0.006	0.003	0.01	2454	-0.001***	-9.254***
Turnover	1.259	0.714	1.846	8145	1.174	0.635	2.034	2454	0.085*	4.989***
Amihud	0.007	0	0.035	8146	0.009	0	0.044	2454	-6.690***	-1.686*
Beta	0.515	0.412	0.472	8146	0.554	0.449	0.499	2454	-0.039***	-3.742***
Deal Characteristics										
Premium	34.032	27.39	47.995	8146	40.721	32.065	56.101	2454	-0.125***	-6.13***
Cash	0.512	1	0.5	8146	0.636	1	0.481	2454	-0.002***	-10.854***
Advisors	3.341	3	2.309	8146	4.012	4	2.748	2454	-0.671***	-9.904***
Rumour	0.033	0	0.178	8146	0.037	0	0.189	2454	-0.004	-1.004
Toehold	0.232	0	0.422	8146	0.235	0	0.424	2454	-0.003	-0.345

3.3. Empirical Results

In this section, I present the empirical tests for my hypotheses. I first present results for the baseline analyses comparing the levels of abnormal stock returns and volume between domestic deals and cross-border deals prior to M&A announcements. The results for both univariate and regression analyses are presented. I then conduct several robustness checks to validate the baseline findings.

3.3.1. Baseline Analyses

Table 3.4 shows the results for the baseline tests. Panel A reports univariate comparisons of level of abnormal stock returns and volume in event windows (-5, -1) and (-10, -1) respectively between domestic deals and cross-border deals. On average, the abnormal stock returns and volume before both domestic and cross-border M&A announcements are significantly positive, suggesting that both types of deals are preceded by some information leakage. More importantly, the difference in means between domestic and cross-border deals is significant at the 1% level for both *Sum* and *Max* measures of abnormal return and abnormal volume in both windows. For instance, the first column of the table shows that the mean value of *Sum* for stock returns during the five days immediately before cross-border deal announcements is 4.7% higher than that before domestic deal announcements (2.375 vs. 2.268). The results provide evidence that cross-border M&A deals are associated with a higher level of informed trading activity compared to domestic deals.

Although the univariate results are supportive of my hypothesis, the difference in insider trading between cross-border and domestic deals can be due to systematic differences in country-, firm-, or deal-level differences between the two types of deals.

To control for these differences, I estimate multivariate regressions to better isolate the effect of cross-border deals on the level of informed trading. The dependent variable is one of the measures of informed trading. The key independent variable, *Cross*, is a dummy variable which equals one if the deal is cross-border and zero if the deal is domestic. I control for target firm size, deal premium, method of payment, target firm book-to-market ratio, target firm leverage, target stock volatility, target firm beta, target stock liquidity, number of advisors, toehold dummy, and rumour dummy as control variables. In all specifications, I include target country and year interaction fixed effects to control for time-varying macroeconomic and target country specific factors. I also include Fama-French 48 industry fixed effects to control for time-invariant industry unobservable variables that may correlate with informed trading activity and cross-border deal. I double-cluster standard errors by target country and year in all specifications to account for within-country-year correlation. If cross-border deals are associated with greater level of informed trading, I expect the coefficient of the cross-border deal indicator to be positive and significant.

Panel B reports the multivariate regression results. I find that the coefficients on the cross-border deal indicator are positive and statistically significant for both the *Sum* and *Max* measures of abnormal return and volume in both event windows. Consistent with the univariate test results, these findings indicate that cross-border deals are associated with a higher level of suspicious stock trading, and they support my hypothesis that cross-border deals are more prone to informed trading activity. In terms of control variables, pre-announcement abnormal trading is significantly positively related to target size. Stock volatility is associated with significantly lower abnormal return and volume which is consistent with Acharya and Johnson (2010). Greater level of suspicious trading is also significantly associated with higher deal premium. Moreover, in all specifications,

rumour deals are associated with significantly higher *Sum* and *Max*. The relation between these controls and trading activity prior to deal announcements is generally consistent with informed trading behaviours. This lends additional confidence that the measures of suspicious trading used in this study are representative of trading by informed agents. Later in this chapter, I provide other evidence to further validate these measures of informed trading.

Table 3.4: Cross-border Deal and Abnormal Trading Prior to Deal Announcement

This table presents results from univariate and multiple regression analyses of level of informed trading before domestic and cross-border deals. The sample period is 1990–2017. International M&A deals are obtained from SDC. Firm-level financial data are from Datastream and Worldscope. I examine four measures of informed trading following Acharya and Johnson (2010). Two are based on abnormal returns and the other two are based on abnormal volumes. Detailed definitions of all variables are reported in the Appendix Table A3.1. Panel A reports results of univariate comparisons. Panel B reports results from multiple regressions. In all columns of Panel B, I include target country and year interaction fixed effects and industry fixed effects. Standard errors are two-way clustered by country and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

Panel A: Univariate Comparisons of Insider Trading Metrics between Cross-Border and Domestic Deals

	Window (-5, -1)				Window (-10, -1)			
	Return		Volume		Return		Volume	
	Sum	Max	Sum	Max	Sum	Max	Sum	Max
Domestic	2.268***	1.466***	1.998***	1.369***	4.081***	1.918***	3.466***	1.898***
Cross-border	2.375***	1.518***	2.159***	1.471***	4.248***	1.992***	3.730***	2.033***
Dom. - Cross.	-0.107***	-0.052*	-0.161***	-0.102***	-0.167***	-0.075***	-0.264***	-0.136***
T-stats	-2.339	-1.717	-2.701	-2.464	-2.879	-2.402	-3.261	-3.044

Panel B: Multivariate Regression Analyses

	Window (-5, -1)				Window (-10, -1)			
	Return		Volume		Return		Volume	
	Sum	Max	Sum	Max	Sum	Max	Sum	Max
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cross	0.173***	0.080**	0.240***	0.150***	0.240***	0.095**	0.330***	0.157***
	(2.828)	(1.988)	(3.229)	(2.835)	(3.258)	(2.407)	(3.527)	(3.018)
Size	0.106***	0.057***	0.115***	0.073***	0.133***	0.044***	0.163***	0.074***
	(5.362)	(4.453)	(4.465)	(3.960)	(4.792)	(3.188)	(4.611)	(3.782)
Leverage	0.076	0.024	0.302**	0.205**	0.201*	0.067	0.555***	0.259***
	(0.763)	(0.344)	(2.424)	(2.410)	(1.732)	(0.940)	(3.107)	(2.636)
BM	-0.007	-0.006	-0.013*	-0.010*	-0.007	-0.008*	-0.021**	-0.011**
	(-0.944)	(-1.165)	(-1.710)	(-1.830)	(-1.044)	(-1.778)	(-2.161)	(-2.258)
Volatility	-11.839***	-5.450***	-10.630***	-7.216***	-20.653***	-4.537*	-16.353***	-7.990***
	(-3.570)	(-2.686)	(-2.893)	(-2.849)	(-4.878)	(-1.943)	(-3.181)	(-2.853)
Turnover	-0.004	-0.010	0.005	0.001	-0.007	-0.010	-0.011	-0.004
	(-0.293)	(-1.138)	(0.288)	(0.117)	(-0.434)	(-1.238)	(-0.455)	(-0.312)
Amihud	1.104*	1.011**	0.523	0.656	1.394	0.920*	0.197	0.562
	(1.717)	(2.220)	(0.658)	(0.984)	(1.603)	(1.885)	(0.150)	(0.725)
Beta	-0.051	-0.062**	0.009	0.003	0.068	-0.031	0.090	0.014
	(-1.186)	(-2.297)	(0.162)	(0.081)	(1.169)	(-1.002)	(1.124)	(0.298)
Premium	0.005***	0.003***	0.005***	0.003***	0.009***	0.003***	0.008***	0.003***
	(9.000)	(7.432)	(7.171)	(6.525)	(11.977)	(8.862)	(8.294)	(7.321)
Cash	-0.034	-0.013	0.140**	0.094**	-0.077	-0.032	0.185**	0.079*
	(-0.709)	(-0.409)	(2.115)	(2.077)	(-1.419)	(-1.005)	(2.390)	(1.962)
Advisers	-0.010	-0.009	0.014	-0.004	-0.026**	-0.016**	0.006	-0.014
	(-0.970)	(-1.343)	(1.085)	(-0.471)	(-2.116)	(-2.277)	(0.348)	(-1.493)
Rumour	0.535***	0.441***	0.742***	0.560***	0.598***	0.484***	0.979***	0.587***
	(3.588)	(3.935)	(4.140)	(4.325)	(3.609)	(4.552)	(4.257)	(4.372)
Toehold	-0.172***	-0.100***	-0.150*	-0.079	-0.166**	-0.083**	-0.181*	-0.035
	(-3.391)	(-3.055)	(-1.946)	(-1.494)	(-2.319)	(-2.321)	(-1.686)	(-0.586)
Observations	10,464	10,464	10,464	10,464	10,464	10,464	10,464	10,464
Adj. R-squared	0.051	0.039	0.052	0.042	0.063	0.044	0.055	0.038

3.3.2. Robustness Checks

Although the baseline results are consistent with foreign insiders being more aggressive in inside trading than domestic insiders, the results have to be interpreted with caution because the difference can be driven by other unobserved differences between domestic and cross-border deals. I conduct several robustness checks to provide complementary evidence to support the main findings discussed above. Results from these robustness tests are summarised below.

3.3.2.1. Matched Sample Tests

It is possible that firms being targeted in cross-border deals are systematically different from those in domestic deals and the results are driven by these differences. To mitigate this concern, I matched each cross-border deal in the sample with a similar domestic deal. Specifically, I use the propensity score matching (PSM) procedure, where matching is based on all target- and deal-characteristics controlled in the baseline model. Within the same industry and trading country of the target firm, I match each cross-border deal with a domestic deal that has a difference in propensity scores no larger than 0.1. Cross-border deals without matched domestic deals are excluded from the sample. Summary statistics of the matched sample are presented in the Appendix Table A3.3. Most of the target and deal characteristics are similar with low difference in means and median after matching except target size, book-to-market ratio and volatility.

Table 3.5 presents the baseline regression results using the matched sample.[11] In both event windows, the relation between cross-border deals and suspicious stock trading

[11] All the regression results presented in the remainder of the chapter are based on the matched sample. I repeated all the tests using the full sample and the results are similar.

activity is positive and statistically significant. Comparing cross-border deals with matched domestic deals, on average there is a significantly higher level of abnormal stock trading before the announcements of cross-border deals. These results are consistent with the baseline results, showing that the results are robust to matched sample tests.

3.3.2.2. The Effect of Improved Cross-border Coordination among Financial Regulators

While the cross-border nature of an M&A creates a barrier to the host country's financial regulators enforcing insider trading laws outside its country, it has to rely heavily on international cooperation. I conjecture that the higher level of insider trading before cross-border deals than domestic deals is at least partly due to the difficulty of cross-border cooperation. I expect that improvement in cooperation among regulators around the world would reduce the intensity of insider trading before cross-border M&A announcements.

In 2002, the International Organization of Securities Commissions (IOSCO) initiated the Multilateral Memorandum of Understanding Concerning Consultation and Cooperation and the Exchange of Information (MMoU), which is the first global multilateral arrangement for enforcement cooperation among securities regulators around the world. The MMoU sets a standardised process for cross-border cooperation and facilitates information exchange between signatories in the process of investigating offences relating to illegal activities in the securities markets.[12] Signatories can make requests to one another for information and documents held in files or transaction records in bank and brokerage accounts to be used in civil or administrative proceedings. A person's statement or testimony could also be taken if required. Distinct from the other

[12] Information requests can be made in the process of investigating a list of offences relating to insider dealing, market manipulation, the issuance and sale of securities and derivatives, market intermediaries and exchanges. A full list of the specific types of offences is set out in Paragraph 4 of the MMoU.

cross-border arrangements initiated previously, the MMoU rigorously reviews the ability of a legal authority to cooperate before it can officially become a signatory and creates incentives for jurisdictions that are unable to engage in effective information sharing to change legislation to gain the ability. According to the IOSCO website, the number of information requests made under the MMoU has increased dramatically from only 56 requests in 2003 to 4,803 requests in 2017.

As entry into the MMoU offers the ability to obtain information with lower barriers worldwide, it should strengthen the power of securities regulators to enforce and secure compliance with their laws and regulation. Consequently, I expect joining the MMoU to increase the probability of enforcement on foreign offenders by regulators. If the prevalence of insider trading before the announcement of cross-border M&As is due to the difficulty of regulatory coordination, joining the MMoU should dampen illicit trading activities of foreign insiders. The MMoU offers a good empirical setting to test whether better coordination between financial regulators corresponds to less informed trading in cross-border deals. The timing of entry into the MMoU varies across countries, which allow us to clearly identify shocks to bilateral cooperative capacity. For example, the Securities and Exchange Commission (SEC) in the United States and the Australian Securities and Investments Commission (ASIC) were among the first regulators to join the MMoU in 2002, while the Financial Conduct Authority (FCA) in the United Kingdom joined in 2003, the China Securities Regulatory Commission (CSRC) in China in 2007 and the Financial Services Agency (FSA) in Japan in 2011.[13] Moreover, the decision to enter the MMoU is generally made by government officials, hence is exogenous to individual deal and target characteristics. The multilateral nature of the arrangement also

[13] See a full list of IOSCO MMoU signatories and their formal signing dates here, and the MMoU document here.

to some extent mitigates the concern that certain unobservable bilateral trade and political relations may affect both the occurrence of cross-border deals and the level of insider trading.

To test the effect of the MMoU, I interact the cross-border dummy with an indicator variable, MMoU, which is equal to one when both the target and the acquirer countries have officially become signatories of the arrangement. Table 3.6 shows the regression results including this interaction term. The coefficients of the interaction term in most specifications are negative and statistically significant, suggesting that cross-border deals between MMoU signatories are associated with significantly fewer suspicious pre-announcement trading activities.

Table 3.5: Matched Sample

This table reports the results for the baseline tests using the matched sample. I match each cross-border deal in the sample with a domestic deal using a propensity score matching (PSM) procedure, where matching is based on all target- and deal-characteristics controlled in the baseline model. Specifically, within the same industry and trading country of the target firm, I match each cross-border deal with a domestic deal that has the difference in propensity scores within 0.1. Cross-border deals with no matched domestic deals are excluded from the sample. The sample covers the period 1990–2017. International M&A deals are obtained from SDC. Firm-level financial data are from Datastream and Worldscope. The dependent variables are measures of suspicious heavy trade or unusually large positive price movement following Acharya and Johnson (2010). Detailed definitions of all variables are included in the Appendix Table A3.1. All regression specifications include target country-year fixed effects and industry fixed effects. Standard errors are two-way clustered by country and year. All specifications include target-country-year fixed effects. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	Window (-5, -1)				Window (-10, -1)			
	Return		Volume		Return		Volume	
	Sum	Max	Sum	Max	Sum	Max	Sum	Max
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cross	0.274***	0.150***	0.226***	0.128**	0.334***	0.158***	0.371***	0.141**
	(4.340)	(3.541)	(2.784)	(2.239)	(4.275)	(3.596)	(3.373)	(2.266)
Size	0.116***	0.052**	0.121***	0.088***	0.165***	0.040*	0.197***	0.100***
	(3.597)	(2.411)	(2.909)	(3.012)	(4.125)	(1.760)	(3.504)	(3.116)
Leverage	-0.080	-0.086	0.076	0.083	0.123	-0.039	0.568**	0.123
	(-0.494)	(-0.790)	(0.363)	(0.566)	(0.613)	(-0.341)	(2.011)	(0.766)
BM	-0.008	-0.001	-0.030**	-0.018**	0.007	-0.002	-0.026	-0.011
	(-0.874)	(-0.105)	(-2.492)	(-2.110)	(0.562)	(-0.258)	(-1.588)	(-1.136)
Volatility	-7.016	-2.436	-10.264	-5.386	-18.837***	-0.937	-17.586*	-10.129*
	(-1.310)	(-0.678)	(-1.493)	(-1.107)	(-2.844)	(-0.251)	(-1.884)	(-1.912)
Turnover	-0.005	-0.007	0.056*	0.040*	-0.021	-0.001	0.099**	0.065***
	(-0.208)	(-0.420)	(1.879)	(1.867)	(-0.712)	(-0.061)	(2.418)	(2.820)
Amihud	2.620**	2.469***	2.257	2.291**	2.730*	1.464*	-0.164	1.649
	(2.116)	(2.974)	(1.420)	(2.037)	(1.783)	(1.694)	(-0.076)	(1.346)
Beta	-0.039	-0.013	-0.120	-0.120*	0.017	-0.031	-0.139	-0.123*
	(-0.518)	(-0.268)	(-1.262)	(-1.769)	(0.188)	(-0.606)	(-1.071)	(-1.669)
Premium	0.005***	0.003***	0.005***	0.003***	0.009***	0.004***	0.009***	0.004***
	(7.692)	(6.149)	(5.555)	(4.611)	(11.740)	(8.121)	(7.663)	(6.377)
Cash	-0.057	-0.016	0.117	0.128*	-0.196**	-0.049	-0.002	0.075
	(-0.769)	(-0.316)	(1.228)	(1.911)	(-2.144)	(-0.952)	(-0.017)	(1.026)
Advisers	0.008	-0.002	0.034*	0.013	-0.027	-0.008	-0.011	-0.024
	(0.496)	(-0.160)	(1.681)	(0.897)	(-1.370)	(-0.754)	(-0.385)	(-1.504)
Rumour	0.458**	0.443***	1.334***	0.925***	0.438*	0.452***	1.479***	0.846***
	(2.514)	(3.623)	(5.703)	(5.589)	(1.946)	(3.552)	(4.658)	(4.697)
Toehold	-0.087	-0.052	-0.015	-0.036	0.111	0.026	0.156	0.107
	(-1.034)	(-0.927)	(-0.141)	(-0.474)	(1.070)	(0.451)	(1.064)	(1.289)
Observations	4,147	4,147	4,147	4,147	4,147	4,147	4,147	4,147
Adj. R-squared	0.070	0.061	0.104	0.101	0.091	0.070	0.105	0.093

Table 3.6: Change in Informed Trading around a Shock in Cross-border Enforcement Cooperation

This table examines how an increase in cross-border cooperation among regulators after the entry into the IOSCO Multilateral Memorandum of Understanding Concerning Consultation and Cooperation and the Exchange of Information (MMoU) affects the level of informed trading before cross-border M&A announcements. The MMoU is a global multilateral arrangement that facilitates information exchange between signatories in the process of investigating offences relating to illegal activities for the purpose of regulatory enforcement in the securities markets. The sample covers the period 1990–2017. Each cross-border deal in the sample is matched with a domestic deal using the propensity score matching (PSM) procedure. International M&A deals are obtained from SDC. Firm-level financial data are from Datastream and Worldscope. The dependent variables are measures of suspicious heavy trade or unusually large positive price movement following Acharya and Johnson (2010). MMoU is a dummy variable that indicate the years since both the target and acquirer countries' financial regulatory authorities have officially become signatories of the IOSCO MMoU. Detailed definitions of all variables are included in the Appendix Table A3.1. All regression specifications include target country and year interaction fixed effects and industry fixed effects. Standard errors are two-way clustered by country and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	Window (-5, -1)				Window (-10, -1)			
	Return		Volume		Return		Volume	
Variables	Sum	Max	Sum	Max	Sum	Max	Sum	Max
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Cross*MMoU	-0.326**	-0.188**	-0.125	-0.055	-0.282***	-0.145***	-0.274	-0.176*
	(-2.722)	(-2.529)	(-0.653)	(-0.448)	(-3.689)	(-3.000)	(-1.402)	(-1.795)
Cross	0.532***	0.296***	0.329	0.177	0.570***	0.280***	0.598***	0.282***
	(6.356)	(7.919)	(1.357)	(1.158)	(5.924)	(3.353)	(3.376)	(3.278)
MMoU	0.624**	0.350	0.241	0.138	0.606***	0.339***	0.557**	0.335**
	(2.085)	(1.645)	(1.202)	(0.850)	(4.000)	(4.459)	(2.551)	(2.537)
Size	0.128***	0.062***	0.117**	0.087***	0.165***	0.048	0.176***	0.094***
	(5.123)	(3.640)	(2.654)	(3.460)	(4.130)	(1.543)	(3.855)	(4.155)
Leverage	-0.098	-0.067	0.023	0.049	0.042	-0.034	0.371	0.063
	(-0.535)	(-0.665)	(0.175)	(0.606)	(0.245)	(-0.383)	(1.561)	(0.397)
BM	-0.010	-0.003	-0.030**	-0.018*	0.008	-0.003	-0.021	-0.009
	(-0.956)	(-0.344)	(-2.732)	(-1.977)	(0.784)	(-0.548)	(-1.399)	(-0.980)
Volatility	-7.299	-2.829	-7.829*	-3.526	-18.632***	-1.172	-13.126**	-7.692**
	(-0.973)	(-0.577)	(-1.710)	(-1.047)	(-3.826)	(-0.362)	(-2.305)	(-2.113)
Turnover	-0.005	-0.006	0.051	0.036	-0.014	0.003	0.094**	0.063***
	(-0.177)	(-0.320)	(1.520)	(1.507)	(-0.371)	(0.157)	(2.179)	(4.000)
Amihud	2.764*	2.559***	2.527*	2.413**	2.817	1.524	-0.006	1.653
	(1.778)	(3.086)	(1.857)	(2.296)	(1.700)	(1.684)	(-0.004)	(1.391)
Beta	-0.051	-0.030	-0.066	-0.087**	0.014	-0.050	-0.035	-0.085
	(-0.438)	(-0.381)	(-1.408)	(-2.401)	(0.193)	(-1.308)	(-0.432)	(-1.461)
Premium	0.005***	0.003***	0.004***	0.003***	0.009***	0.004***	0.008***	0.004***
	(5.706)	(3.412)	(3.653)	(3.042)	(10.658)	(3.960)	(4.695)	(3.041)
Cash	-0.030	0.006	0.007	0.042	-0.165*	-0.013	-0.143	-0.006
	(-0.475)	(0.197)	(0.064)	(0.613)	(-1.849)	(-0.294)	(-1.304)	(-0.120)
Advisors	0.005	-0.004	0.034	0.012	-0.025	-0.010	-0.005	-0.023
	(0.198)	(-0.478)	(1.594)	(0.768)	(-0.828)	(-0.631)	(-0.201)	(-1.252)
Rumour	0.394	0.400	1.299***	0.907***	0.372	0.395	1.446***	0.831***
	(0.876)	(1.033)	(4.483)	(5.112)	(1.011)	(1.187)	(5.801)	(8.455)
Toehold	-0.089	-0.057	-0.037	-0.053	0.073	0.015	0.122	0.090
	(-1.055)	(-0.836)	(-0.274)	(-0.572)	(0.799)	(0.214)	(0.711)	(0.907)
Observations	4,147	4,147	4,147	4,147	4,147	4,147	4,147	4,147
Adj. R-squared	0.072	0.062	0.085	0.082	0.091	0.070	0.096	0.084

3.3.2.3. Price Run-up before M&A Announcements

Pre-announcement stock price run-up is another natural proxy for insider trading activity used in the literature. It captures the magnitude of pre-announcement abnormal return relative to the total informational impact of the event on stock prices. If some people trade private information in advance of public announcements, their trades will cause larger anticipatory price movement before the announcement and smaller reactions at the time of public announcements. Following Del Guercio, Odders-White, and Ready (2017), I use a two-stage regression model to estimate the difference in the run-up ratio between cross-border deals and domestic deals. In the first stage, I estimate the expected value of the total return impact of the merger event by regressing cumulative abnormal stock returns from 20 days prior to the announcement to 1 day after the announcement, on the cross-border dummy, the same set of target firm characteristics and deal characteristics used in the baseline model. I also include year and country fixed effects in the model to control for any time effect and differences in stock trading markets. Cumulative abnormal stock return for each deal over the 22 trading days around the announcement is calculated as the sum of the daily residual returns from a market-model regression using daily returns 146 days to 21 days prior to the announcement with corresponding trading market index as the market return. Daily trading data used in the estimation are cleaned and filtered following Del Guercio, Odders-White, and Ready (2017).

In the second-stage regression, I obtain the estimated difference in the run-up ratio between cross-border deals and domestic deals. The dependent variable is the cumulative market-adjusted pre-announcement run-up returns over the 20 days to 1 day prior to the announcement. The independent variables include the expected total return impact of the merger estimated as the factor weighted average of the realised total event return and the

expected total event return estimated from the first-stage regression. The weighting factor is calculated as the ratio of the residual variance from the pre-announcement market-model regressions to the sum of residual variance in returns over the 20-day pre-announcement period and the 2-day announcement period from the first-stage regression. The main explanatory variable of interest is the interaction of this weighted average total event impact with the cross-border dummy. I also control for the interaction of the weighted average total event impact with each of the control variables. The unexpected total return, which is calculated as the difference between the realised total event return and the expected total event return, is also controlled to account for any unexpected price reaction not explained by observable information. I also include year and country fixed effects. The estimated coefficient on the weighted average total event impact can be interpreted as the average run-up ratio, i.e. the average fraction of the total event impact that is realised in the stock price in advance of the merger announcement. The estimated difference in the run-up ratio between cross-border deals and domestic deals is given by the coefficient on the interaction of the cross-border dummy and the weighted average total event impact.

This two-stage estimation approach adjusts for measurement error in the traditional run-up ratio. As used in a few studies (e.g. Keown and Pinkerton 1981, Jarrell and Poulsen 1989, Meulbroek 1992), run-up ratio is measured as the ratio of pre-announcement abnormal returns to total abnormal returns in the pre-announcement and the announcement period. However, potential measurement errors in the denominator due to noise or other information in prices can sometimes offset the event impact, causing the ratio to explode (with the denominator being close to zero) or flip sign. Del Guercio, Odders-White, and Ready (2017)'s approach addresses this measurement error by estimating the expected impact of the event controlling for observable information.

Table 3.7 reports the results of the second-stage regression using both the full sample and the matched sample. As shown in Column (1) which is based on the full sample, the coefficient on the expected total return impact, i.e. the average run-up ratio is 0.416, suggesting that on average about 41.6% of the information in the merger is incorporated into stock prices during the 20-day period prior to the announcement. Part of the pre-announcement run-up might be attributable to illegal insider trading. The estimated difference in the run-up ratio between cross-border deals and domestic deals is given by the coefficient on the interaction of the cross-border dummy and the weighted average total event impact, which is positive and statistically significant at the 1% level. The run-up before the announcement of cross-border deals is on average 15.6% (0.065/0.416) higher than domestic deals relative to the mean run-up, which is economically significant. When using the matched sample as constructed in Section 3.3.2.1, the results are even stronger suggesting an average of 17% (0.084/0.495) higher level of pre-announcement run-up in cross-border deals compared to domestic deals.

Table 3.7: Price Run-up before M&A Announcements

This table reports the results of the second-stage regression for price run-up following Del Guercio, Odders-White, and Ready (2017) using the full sample and the matched sample. The dependent variable is the cumulative market-adjusted pre-announcement run-up returns over the 20 days to 1 day prior to the announcement. Run-up Ratio is the coefficient of a factor weighted average of the realised total event return and the expected total event return (the expected total return impact) estimated from the first-stage regression. The weighting factor is calculated as the ratio of the residual variance from the pre-announcement market-model regressions to the sum of residual variance in returns over the 20-day pre-announcement period and the 2-day announcement period from the first-stage regression. All variables in the regression are interacted with the weighted average total event impact. Unexpected Total Return is the difference between the realised total event return and the expected total event return estimated using the residuals from the first-stage regression. The sample covers the period 1990–2017. International M&A deals are obtained from SDC. Firm-level financial data are from Datastream and Worldscope. Detailed definitions of all variables are included in the Appendix Table A3.1. All regression specifications include target-country and year fixed effects. Standard errors are two-way clustered by country and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	(1)	(2)
Cross	0.065***	0.084***
	(5.249)	(5.686)
Expected Total Return Impact (Run-up Ratio)	0.416***	0.495***
	(8.402)	(6.355)
Size	-0.031***	-0.041***
	(-6.681)	(-5.841)
Leverage	0.101***	0.163***
	(4.443)	(4.499)
BM	-0.001	0.002
	(-0.627)	(0.880)
Turnover	0.021***	0.018***
	(7.335)	(4.504)
Amihud	0.713***	1.945***
	(5.649)	(9.201)
Beta	0.091***	0.111***
	(7.524)	(6.723)
Volatility	-0.599	-6.348***
	(-1.642)	(-9.861)
Premium	0.000	0.000***
	(0.008)	(9.189)
Cash	-0.116***	-0.101***
	(-9.848)	(-5.582)
Advisors	-0.023***	-0.012***
	(-8.612)	(-3.302)
Rumour	0.286***	0.330***
	(7.501)	(6.878)
Toehold	-0.038**	-0.055**
	(-2.361)	(-2.484)
Unexpected Total Return	0.446***	0.398***
	(35.774)	(22.557)
Sample	Full	Matched
Observations	10,009	4,031
Adj. R-squared	0.385	0.447

3.3.2.4. Validity of Informed Trading Measures

To further validate the measures of insider trading, I examine whether the measures differ with different levels of insider trading restriction across countries. In countries with stronger insider trading laws that curtail insider trading activities, proxies for insider trading should be lower to reflect less intensity of illegal insider trading prior to merger announcements. I conduct the validity test by estimating regressions of the *Sum* and *Max* measures of returns and volume on three insider trading law indices, IT restriction, IT law and Rule of Law, and a series of control variables as well as target- country-year fixed effect and industry fixed effects. I use a sample of only domestic deals to test for cross-country differences in these measures. A higher value of insider trading law indices should be associated with a lower level of insider trading proxies. I report the results for window (-5, -1).[14] The regression results in Table 3.8 show a negative and significant relation between the measures of insider trading and country-level insider trading law indices in most specifications, indicating that *Sum* and *Max* measures of returns and volume are valid proxies for insider trading activities.

[14] To avoid prolixity, I only present test results for the (-5, -1) window in the reminder of the chapter. Results for the (-10, -1) window are materially indifferent.

Table 3.8: Validity of the Informed Trading Measures

This table reports the regression results of the informed trading measures on country-level insider trading law indices. The sample includes only domestic deals and covers the period 1990–2017. Data on M&A deals are obtained from SDC. Firm-level financial data are from Datastream and Worldscope. The dependent variables are measures of suspicious heavy trade or unusually large positive price movement following Acharya and Johnson (2010). Detailed definitions of all variables are included in the Appendix Table A3.1. All regression specifications include target-country-year fixed effects and industry fixed effects. Standard errors are two-way clustered by country and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	Window (-5, -1)											
	Return		Volume		Return		Volume		Return		Volume	
Variables	Sum	Max	Sum	Max	Sum	Max	Sum	Max	Sum	Max	Sum	Max
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Rule of Law	-0.311***	-0.134***	-0.546***	-0.315***								
	(-4.795)	(-3.251)	(-5.715)	(-5.003)								
IT Restriction					-0.226***	-0.098*	-0.377***	-0.185***				
					(-2.801)	(-1.806)	(-3.633)	(-2.595)				
IT Law									-0.089*	-0.082**	-0.098	-0.041
									(-1.679)	(-2.307)	(-1.438)	(-0.885)
Size	0.095***	0.051***	0.102***	0.065***	0.128***	0.064***	0.104***	0.070***	0.128***	0.062***	0.109***	0.074***
	(4.704)	(4.102)	(3.678)	(3.341)	(4.172)	(3.113)	(2.643)	(2.598)	(4.158)	(2.994)	(2.774)	(2.716)
Leverage	0.070	0.011	0.390***	0.281***	-0.041	-0.078	0.498***	0.313**	-0.035	-0.081	0.516***	0.326**
	(0.668)	(0.150)	(3.229)	(3.275)	(-0.276)	(-0.773)	(2.588)	(2.365)	(-0.236)	(-0.805)	(2.678)	(2.459)
BM	-0.005	-0.005	-0.010	-0.009	-0.005	-0.003	-0.011	-0.012	-0.005	-0.003	-0.011	-0.012
	(-0.660)	(-0.866)	(-1.139)	(-1.306)	(-0.568)	(-0.568)	(-1.037)	(-1.613)	(-0.578)	(-0.555)	(-1.023)	(-1.595)
Volatility	-16.012***	-8.410***	-16.404***	-11.006***	-11.972*	-7.526*	-12.953	-7.415	-12.561**	-7.295*	-13.895*	-7.945
	(-4.265)	(-3.772)	(-3.839)	(-3.719)	(-1.886)	(-1.765)	(-1.589)	(-1.323)	(-1.972)	(-1.710)	(-1.697)	(-1.413)
Turnover	-0.002	-0.009	0.001	-0.001	0.006	-0.005	-0.013	-0.007	0.017	0.002	-0.007	-0.004
	(-0.129)	(-1.157)	(0.061)	(-0.082)	(0.257)	(-0.293)	(-0.405)	(-0.320)	(0.681)	(0.142)	(-0.227)	(-0.202)

Amihud	1.762***	1.374***	1.673*	1.382*	2.663	1.664	2.933	1.886	3.162	1.822	3.716	2.292
	(2.939)	(3.426)	(1.732)	(1.811)	(1.307)	(1.216)	(1.121)	(1.049)	(1.558)	(1.340)	(1.424)	(1.279)
Beta	-0.093*	-0.086***	0.013	-0.001	-0.153*	-0.122**	0.073	0.059	-0.130	-0.115**	0.126	0.087
	(-1.948)	(-2.853)	(0.202)	(-0.032)	(-1.814)	(-2.154)	(0.672)	(0.788)	(-1.556)	(-2.062)	(1.173)	(1.183)
Premium	0.005***	0.003***	0.005***	0.003***	0.006***	0.003***	0.006***	0.003***	0.006***	0.003***	0.006***	0.003***
	(10.491)	(9.130)	(7.678)	(6.949)	(7.911)	(6.425)	(6.347)	(5.403)	(7.989)	(6.562)	(6.442)	(5.462)
Cash	-0.058	-0.028	0.103	0.076	-0.164**	-0.085*	-0.000	0.018	-0.149**	-0.069	0.017	0.028
	(-1.195)	(-0.899)	(1.400)	(1.501)	(-2.480)	(-1.913)	(-0.002)	(0.302)	(-2.224)	(-1.542)	(0.200)	(0.472)
Advisors	-0.021*	-0.016**	-0.016	-0.022**	-0.005	-0.001	0.018	-0.005	-0.010	0.001	0.004	-0.013
	(-1.935)	(-2.237)	(-1.078)	(-2.107)	(-0.285)	(-0.102)	(0.839)	(-0.304)	(-0.565)	(0.101)	(0.172)	(-0.862)
Rumour	0.339***	0.394***	0.416***	0.328***	0.210	0.362***	0.246	0.155	0.155	0.315***	0.183	0.128
	(2.782)	(4.176)	(2.693)	(2.857)	(1.186)	(3.034)	(1.080)	(0.989)	(0.866)	(2.622)	(0.795)	(0.811)
Toehold	-0.139***	-0.078**	-0.077	-0.045	-0.112	-0.030	-0.038	-0.019	-0.140	-0.071	-0.053	-0.030
	(-2.586)	(-2.242)	(-0.945)	(-0.794)	(-1.327)	(-0.528)	(-0.347)	(-0.256)	(-1.623)	(-1.220)	(-0.474)	(-0.395)
Observations	8,145	8,145	8,145	8,145	4,381	4,381	4,381	4,381	4,363	4,363	4,363	4,363
Adj. R-squared	0.040	0.031	0.032	0.025	0.035	0.025	0.032	0.023	0.034	0.026	0.030	0.022

3.3.2.5. Falsification Test

Although I try to account for the difference in target firms between cross-border deals and domestic deals by including a series of target characteristics as controls and fixed effects, the results may still be driven by certain unobservable factors that affect both the choice of target firms by foreign acquirers and pre-announcement abnormal stock trading in these target firms. In this sub-section, I directly gauge this concern by performing a falsification test. If target firms of cross-border deals endogenously exhibit a different level of pre-announcement insider trading, I would observe such pattern before not only merger announcements but also before other corporate announcements.

To test this, I look at annual earnings announcements, which also convey important corporate information and often lead to large price movement that potentially induces insider trading. Specifically, for each target firm in the sample, I construct the insider trading proxies in advance of the firm's annual earnings announcements one year prior to the merger announcements. Unlike merger announcements which are mostly positive news for the target, price reaction to earnings announcements could be either positive or negative depending on good or bad earnings news. Insider trading would mostly occur according to how much unexpected information the earnings figures contain, i.e. earnings news unanticipated by the market. Therefore, I regress the insider trading measure with the interaction of the cross-border dummy and proxy for earnings surprise to compare the levels of insider trading activities corresponding to earnings surprise before public earnings announcements. Earnings surprise is measured as the difference between the median of analysts' earnings forecast and the actual annual earnings per share (EPS), scaled by the closing price on the announcement day. I control for the same set of target characteristics and fixed effects as in the baseline model as well as variables

commonly used in the earnings announcement literature, including the inverse of the closing stock price one month before the earnings announcement, the number of analyst forecasts for annual EPS before the earnings announcement, negative earnings indicator, and the number of days between the fiscal year end and the earnings announcement date. Data on analyst forecasts and earnings announcements are obtained from the I/B/E/S database.

Table 3.9 reports the results of the falsification test. Columns (1)–(4) show the results using the *Sum* and *Max* measures of insider trading as the dependent variables. The coefficients of Cross×Surprise in all specifications are statistically insignificant and their magnitudes are close to zero. In Column (5), I perform the two-stage regression model for price run-up in advance of earnings announcements and report the second-stage regression results. The coefficient on *Cross* remains statistically insignificant, suggesting that target firms of cross-border deals do not show a significantly different level of insider trading depending on earnings news before earnings announcements compared to domestic deals. Therefore, the baseline finding is unlikely driven by potentially unobservable features in cross-border targets that endogenously affect the level of insider trading.

the firm's daily insiders do not contribute to insider

trading, so this test in fact suggests that the M&A results come from the

external parties such as investment bankers.

Table 3.9: Falsification Tests

This table reports the results from a falsification test. The sample covers the period 1990–2017. Each cross-border deal in the sample is matched with a domestic deal using a propensity score matching (PSM) procedure. Earnings announcement and forecast data are from the I/B/E/S database. International M&A deals are obtained from SDC. Firm-level financial data are from Datastream and Worldscope. I construct measures of suspicious heavy trade or unusually large positive price movement following Acharya and Johnson (2010) and price run-up following Del Guercio, Odders-White, and Ready (2017). All specifications include target country and year interaction fixed effects and industry fixed effects. Standard errors are two-way clustered by country and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	Window (-5, -1)				
	Return		Volume		Runup
Variables	Sum	Max	Sum	Max	
	(1)	(2)	(3)	(4)	(5)
Cross × Surprise	-0.007	-0.002	-0.004	-0.002	
	(-1.139)	(-0.763)	(-1.075)	(-0.684)	
Cross	0.155	0.060	0.032	0.038	0.004
	(1.062)	(1.189)	(0.281)	(0.476)	(0.064)
Run-up Ratio					1.289*
					(1.951)
Unexpected Total Return					0.955***
					(20.465)
Surprise	-0.000***	-0.000***	-0.000***	-0.000***	0.005
	(-14.522)	(-24.171)	(-14.997)	(-16.632)	(1.167)
Size	-0.142*	-0.042	-0.071	-0.017	0.068
	(-1.949)	(-1.306)	(-0.901)	(-0.314)	(1.290)
Leverage	0.494	0.134	-0.565*	-0.301	0.463**
	(1.497)	(0.951)	(-1.956)	(-1.482)	(2.092)
BM	-0.002	0.004	0.005	0.022**	0.007
	(-0.121)	(0.672)	(0.385)	(1.988)	(1.183)
Volatility	0.112	-0.214	1.047	1.096	0.618*
	(0.173)	(-0.826)	(0.895)	(1.093)	(1.731)
Turnover	-0.009	-0.010**	-0.015	-0.011	-0.019
	(-1.226)	(-2.120)	(-1.221)	(-1.567)	(-0.913)
Amihud	-19.594	-11.736*	-4.385	-12.335	12.296
	(-1.371)	(-1.745)	(-0.247)	(-1.333)	(0.668)
Price	0.013**	0.001	-0.008	-0.012**	-0.005
	(2.070)	(0.136)	(-1.046)	(-2.120)	(-1.168)
Beta	-0.087	0.029	0.066	0.156	-0.021
	(-0.659)	(0.506)	(0.412)	(1.121)	(-0.265)
Estimates	0.049*	-0.002	0.031	-0.003	-0.007
	(1.968)	(-0.142)	(1.315)	(-0.255)	(-0.653)
Loss	-0.325*	-0.142*	-0.211	-0.128	0.187**
	(-1.801)	(-1.943)	(-1.395)	(-1.195)	(2.334)
Reporting Lag	-0.005*	-0.000	0.001	0.001	0.000
	(-1.700)	(-0.037)	(0.368)	(0.356)	(0.129)
Observations	2,785	2,785	2,764	2,764	2,498
Adj. R-squared	0.126	0.114	0.113	0.099	0.753

3.4. Additional Analyses

After establishing robust evidence that the level of pre-announcement insider trading is significantly higher in cross-border deals than in domestic deals, I perform additional analyses to explore the key channels behind this finding and provide additional evidence that further supports the results. I first examine the cross-sectional relation between the level of informed trading in the pre-bid period and acquirer- and target-country characteristics. I compare the level of informed trading activity in countries with strong and weak insider trading law. I also test how acquirer country social and cultural norms may affect insider trading activities in cross-border deals. I then compare the level of informed trading activity in US-Canada cross-border deals and that in cross-border deals between either the US or Canada and other countries. Lastly, I examine informed option trading activity prior to the announcement of cross-border deals in the US option market before M&A announcements.

3.4.1. Acquirer Country Insider Trading Law

Cross-border prosecution puts a host country's regulator in a passive position as it has to rely heavily on international cooperation; however, such cooperation is likely to be particularly difficult to achieve from countries with a weak regulatory framework. As many emerging economies may suffer from a poor legal environment as well as weak enforcement of existing laws, it is likely that they have either very weak or no insider trading laws, thus making international cooperation less feasible. Consequently, M&A transactions initiated by acquirers from weak governance countries may provide a breeding ground for information leakage and cross-border insider trading. Furthermore, although insider trading mostly takes place in the target trading market, which is outside

the acquirer regulator's jurisdiction, strong insider trading law and frequent enforcement in a country generally promote legal awareness and autonomy regarding insider trading among its citizens. Therefore, I expect cross-border deals with acquirers from countries with strong insider trading law to have a significantly lower level of insider trading compared to those with acquirers from weak governance countries.

Using a sample of cross-border M&A deals around the world, I regress each insider trading measure as the dependent variable on three acquirer country law indices extensively used in the literature. The first measure is the Insider Trading Restriction Index (*IT Restriction*) constructed based on the survey responses from the 1996, 1998 and 1999 Global Competitiveness Report. The second is the Insider Trading Law Index (*IT Law*) from Beny (2005). Unfortunately, up-to-date data for both indices are not available. Thus, the two indices may not correctly reflect the strictness of insider trading law for recent years, especially for countries that introduced legislative reform regarding insider trading. To address this concern, I limit the sample period up to 2006 for the tests. For robustness, I use a third measure of country-level law quality, the Rule of Law as reported by the World Bank. The Rule of Law has been frequently updated until recently which allows us to use the whole period of the sample for the analyses. I include target-country-year fixed effects and industry fixed effects in all specifications.

As reported in Table 3.10, the coefficients of all indices are negative and statistically significant, which is consistent with the conjecture. Among cross-border M&As targeting firms in a country, those involving acquirers from strong governance countries are associated with a lower level of pre-announcement informed trading, compared to those involving acquirers with weaker country-level insider trading law.

Table 3.10: Abnormal Trading Activities before Cross-border Deal Announcement and Acquirer Country Insider Trading Law

This table reports the regression results of informed trading measures on acquirer country law indices including Rule of Law, Insider Trading Restriction Index constructed based on the survey responses from the Global Competitiveness Report, and the Insider Trading Law Index from Beny (2005). The sample includes only cross-border M&A deals. Columns (1)–(8) use the sample for the period 1990–2006, while Columns (9)–(12) cover the full sample period 1990–2017. International M&A deals are obtained from SDC. Firm-level financial data are from Datastream and Worldscope. I construct measures of suspicious heavy trade or unusually large positive price movement following Acharya and Johnson (2010). All regression specifications include target-country-year fixed effects and industry fixed effects. Standard errors are two-way clustered by country and year. Standard errors are two-way clustered by country and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	Window (-5, -1)											
	Return		Volume		Return		Volume		Return		Volume	
Variables	Sum	Max	Sum	Max	Sum	Max	Sum	Max	Sum	Max	Sum	Max
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
IT Restriction	-0.290**	-0.184**	-0.514***	-0.374***								
	(-2.276)	(-2.219)	(-3.410)	(-4.345)								
IT Law					-0.281***	-0.188***	-0.149	-0.137				
					(-3.366)	(-4.380)	(-0.908)	(-1.197)				
Rule of Law									-0.184***	-0.148***	-0.245**	-0.141**
									(-3.721)	(-3.619)	(-2.572)	(-2.503)
Size	0.228***	0.113***	0.217*	0.159***	0.218**	0.097**	0.244*	0.151**	0.135***	0.065*	0.177***	0.112***
	(2.981)	(3.108)	(2.008)	(2.841)	(2.515)	(2.447)	(2.017)	(2.364)	(2.887)	(2.017)	(3.060)	(3.220)
Leverage	-0.026	-0.072	-0.033	-0.133	-0.185	-0.144	0.072	-0.046	0.024	-0.032	0.139	0.071
	(-0.093)	(-0.381)	(-0.117)	(-1.081)	(-0.652)	(-0.760)	(0.262)	(-0.324)	(0.113)	(-0.224)	(0.551)	(0.440)
BM	0.017	0.003	-0.011	-0.008	0.016	0.002	-0.024	-0.015	-0.003	-0.003	-0.020**	-0.009*
	(0.685)	(0.215)	(-0.489)	(-0.667)	(0.637)	(0.165)	(-1.037)	(-1.202)	(-0.284)	(-0.442)	(-2.575)	(-1.935)
Volatility	-32.435***	-10.454	-23.026**	-7.520*	-33.968***	-11.984	-26.132***	-7.650*	-10.312*	-2.723	-1.091	0.637
	(-3.147)	(-1.595)	(-2.492)	(-1.920)	(-2.992)	(-1.688)	(-3.914)	(-1.992)	(-2.048)	(-0.781)	(-0.339)	(0.303)
Turnover	-0.004	-0.014	-0.190***	-0.115***	-0.002	-0.010	-0.183***	-0.102***	-0.026	-0.022	-0.005	-0.004
	(-0.074)	(-0.449)	(-5.898)	(-6.819)	(-0.028)	(-0.304)	(-5.989)	(-7.121)	(-0.835)	(-1.600)	(-0.099)	(-0.101)
Amihud	2.241	3.044	-5.528	3.808	2.095	2.967	-7.535	2.497	-0.321	-0.101	-1.773	-1.203
	(0.333)	(1.160)	(-0.352)	(0.415)	(0.305)	(0.983)	(-0.505)	(0.287)	(-0.605)	(-0.250)	(-1.577)	(-1.678)
Beta	-0.078	-0.092	0.078	0.032	-0.098	-0.100	0.131	0.044	0.019	-0.004	-0.075	-0.069

	(-0.447)	(-0.751)	(0.486)	(0.299)	(-0.563)	(-0.788)	(0.781)	(0.368)	(0.183)	(-0.049)	(-0.723)	(-0.855)
Premium	0.011***	0.006***	0.010***	0.006***	0.011***	0.006***	0.010***	0.006***	0.004***	0.002***	0.004***	0.002***
	(8.113)	(6.189)	(7.972)	(5.923)	(7.188)	(5.442)	(7.149)	(5.710)	(7.760)	(5.269)	(6.582)	(3.442)
Cash	0.213	0.119	0.109	0.112	0.177	0.088	0.029	0.053	-0.025	-0.051	0.044	0.037
	(1.297)	(1.361)	(0.523)	(1.072)	(0.920)	(0.869)	(0.165)	(0.637)	(-0.297)	(-0.884)	(0.305)	(0.570)
Advisors	-0.040	-0.010	0.015	0.011	-0.019	0.006	0.003	0.016	-0.021	-0.015	0.013	0.000
	(-0.918)	(-0.376)	(0.201)	(0.203)	(-0.465)	(0.233)	(0.035)	(0.292)	(-1.003)	(-1.328)	(0.365)	(0.017)
Rumour	1.095***	0.738*	1.929***	1.363***	1.101***	0.740**	1.881***	1.331***	0.617	0.501	1.604***	1.180***
	(3.014)	(2.033)	(4.136)	(5.238)	(3.110)	(2.097)	(3.800)	(4.623)	(1.653)	(1.572)	(4.156)	(4.930)
Toehold	-0.373	-0.138	-0.632**	-0.341*	-0.379*	-0.158	-0.625**	-0.324	-0.143	-0.077	-0.087	-0.046
	(-1.586)	(-1.072)	(-2.216)	(-1.775)	(-1.849)	(-1.366)	(-2.208)	(-1.690)	(-1.339)	(-1.141)	(-0.497)	(-0.364)
Observations	819	819	819	819	774	774	774	774	2,253	2,253	2,253	2,253
Adj. R-squared	0.095	0.080	0.139	0.123	0.101	0.084	0.134	0.115	0.072	0.072	0.098	0.090

3.4.2. Acquirer Country Social Norms

I further examine whether differences in values, social norms, and attitudes across acquirer countries affect the frequency and intensity of insider trading among cross-border M&A deals within the same legal environment of the target country. Besides legal considerations, the incentives of foreign acquirer insiders to trade or tip others to trade on the confidential information they have are also influenced by social or cultural factors. As related parties in the acquirer country, either corporate insiders or other agents such as lawyers, consultants, and investment bankers, start to possess confidential information, the decision of whether to profit from the non-public information is usually bounded by the behavioural standards that their society adopts and follows as a whole. According to the theory of norms and the law proposed by Cooter (2000), violations of laws are not only legal and economic decisions but also involve social and ethical considerations. Within a society, social norms basically take the form of approval or disapproval from the other members of the society, and it usually guides an individual's feelings of pride or shame. When a social norm has been internalised in an individual's own value system, behaviour following or against the norm will also result in feelings of self-respect or guilt. Therefore, norms can impact individuals' decisions on whether to comply with the law, especially legal requirements that are not consistent with norms. In the case of insider trading, although it is illegal, norms may fail to consider insider trader to be unethical. Societies that collectively place less importance on stopping insider trading behaviour can simultaneously have weak anti-insider-trading social norms. If market participants' values are influenced by cultural norms, then cross-cultural differences may be an important determinant of market participants' compliance with the insider trading law and other forms of behaviour even in the same legal environment.

Therefore, market participants from countries where insider trading behaviour is collectively considered acceptable may exhibit a lower level of compliance with the insider trading law in a foreign country. Although I do not have a direct measure of a country's attitudes towards insider trading, I adopt two measures that capture individuals' tendency to disobey rules and laws in a country from different perspectives. The first measure is the annual Corruption Perception Index (*CPI*) published by Transparency International. It measures the corruption level of a country. I reverse the CPI scale, so a higher corruption index corresponds to higher levels of corruption. Corruption social norms can also reflect individuals' tendency to participate in illicit or unethical activities. (Fisman and Miguel 2007) study parking violations among United Nations diplomats living in New York City and show that diplomats from countries with a high level of corruption accumulated significantly more unpaid parking violations. (DeBacker, Heim, and Tran 2012) find that corporations with owners from high corruption countries evade more tax in the US. The *CPI* is one of the most commonly used indicators of corruption worldwide and has been employed in several academic studies (e.g. Djankov et al. 2002, Barth et al. 2009, DeBacker, Heim, and Tran 2015).

The second measure, *Cheat on Tax*, is from the World Values Survey (WVS). It measures the tendency of people in a country to disobey rules and laws based on their attitude toward cheating on tax. I choose this cultural value because it is closely related to the behaviour of informed trading. Similar to insider trading, illegal tax evasion is not universally accepted as highly unethical. Tax morale generally reflects an individual's social norm of compliance in a country. Alm, Sanchez, and De Juan (1995) use experimental methods and find that higher tax compliance can be attributable to a higher "social norm" of compliance. Dyck and Zingales (2004) use this question to measure a country's rate of tax compliance and establish a negative association between tax

compliance and private benefits of control. Therefore, the level of tax morale in a society should to some extent be positively correlated with the extent to which insiders linked to foreign acquirers obey their fiduciary duty to the shareholders in their firm. I expect that, among all cross-border deals targeting firms in a given country, the intensity of insider trading before cross-border deal announcements should be higher if the acquirer is from a country with social and cultural norms that are more tolerant of illicit activities.

I perform the same regression model as in the previous section but replace the main explanatory variable with the culture indices and present the regression results in Table 3.11. Columns (1)–(4) report the results using *CPI* as the key independent variable, while Columns (5)–(8) show the results for *Cheat on Tax*. As shown in the table, the coefficients on both *CPI* and *Cheat on Tax* are positive and significant, suggesting that acquirers from countries with heavier corruption and lower tax morale are involved in a significantly higher level of insider trading prior to the merger announcements compared to other cross-border deals targeting the same country.

Table 3.11: Abnormal Trading Activities before Cross-border Deal Announcement and Acquirer Country Social Norms

This table reports the regression results of informed trading measures on two measures of social norms: tax morale value and Corruption Perception Index (CPI) in acquirer country. The sample covers the period 1990–2017 and includes only cross-border M&A deals. International M&A deals are obtained from SDC. Firm-level financial data are from Datastream and Worldscope. I construct measures of suspicious heavy trade or unusually large positive price movement following Acharya and Johnson (2010). All regression specifications include target-country-year fixed effects and industry fixed effects. Standard errors are two-way clustered by country and year. Standard errors are two-way clustered by country and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	Window (-5, -1)							
	Return		Volume		Return		Volume	
Variables	Sum	Max	Sum	Max	Sum	Max	Sum	Max
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CPI	0.005***	0.004***	0.008***	0.005***				
	(3.193)	(3.178)	(2.926)	(2.951)				
Cheat on Tax					0.996*	0.753*	1.071*	0.937**
					(1.802)	(1.946)	(1.935)	(2.591)
Size	0.135***	0.065*	0.175***	0.111***	0.144***	0.069**	0.186***	0.117***
	(2.918)	(2.043)	(3.045)	(3.198)	(2.899)	(2.168)	(3.498)	(3.779)
Leverage	0.030	-0.027	0.149	0.077	-0.077	-0.072	0.034	-0.023
	(0.143)	(-0.187)	(0.590)	(0.476)	(-0.358)	(-0.493)	(0.141)	(-0.156)
BM	-0.003	-0.003	-0.019**	-0.008*	-0.005	-0.006	-0.023***	-0.011**
	(-0.246)	(-0.399)	(-2.434)	(-1.795)	(-0.477)	(-0.819)	(-2.893)	(-2.324)
Volatility	-10.284**	-2.696	-1.172	0.576	-10.176	-2.267	3.498	4.375**
	(-2.053)	(-0.781)	(-0.358)	(0.269)	(-1.655)	(-0.559)	(1.218)	(2.608)
Turnover	-0.027	-0.023	-0.006	-0.005	-0.042	-0.030***	-0.013	-0.014
	(-0.845)	(-1.612)	(-0.122)	(-0.122)	(-1.492)	(-2.877)	(-0.263)	(-0.421)
Amihud	-0.326	-0.106	-1.750	-1.187	-0.570	-0.190	-2.279**	-1.401*
	(-0.614)	(-0.264)	(-1.538)	(-1.641)	(-1.049)	(-0.428)	(-2.080)	(-1.927)
Beta	0.020	-0.003	-0.074	-0.068	0.033	-0.003	-0.043	-0.045
	(0.191)	(-0.040)	(-0.705)	(-0.839)	(0.320)	(-0.035)	(-0.445)	(-0.585)
Premium	0.004***	0.002***	0.004***	0.002***	0.004***	0.002***	0.004***	0.002***
	(7.699)	(5.271)	(6.547)	(3.421)	(7.493)	(5.386)	(7.199)	(3.761)
Cash	-0.021	-0.048	0.043	0.035	0.024	-0.020	0.089	0.063
	(-0.258)	(-0.832)	(0.297)	(0.553)	(0.261)	(-0.333)	(0.685)	(1.187)
Advisors	-0.020	-0.015	0.013	0.001	-0.017	-0.012	0.023	0.009
	(-1.003)	(-1.334)	(0.394)	(0.041)	(-0.798)	(-1.030)	(0.693)	(0.360)
Rumour	0.618	0.502	1.609***	1.184***	0.597	0.480	1.624***	1.195***
	(1.637)	(1.555)	(4.149)	(4.904)	(1.624)	(1.542)	(3.912)	(4.640)
Toehold	-0.139	-0.073	-0.086	-0.047	-0.147	-0.084	-0.093	-0.070
	(-1.320)	(-1.109)	(-0.512)	(-0.377)	(-1.373)	(-1.192)	(-0.553)	(-0.615)
Observations	2,253	2,253	2,253	2,253	2,168	2,168	2,168	2,168
Adj. R-squared	0.072	0.072	0.099	0.091	0.070	0.064	0.095	0.089

3.4.3. Target Country Law and Institutions against Insider Trading

I next examine how the difference in the level of informed trading between cross-border and domestic deals varies with the legal institutions that restrict insider trading in the target country. I postulate that most insiders and their tippees would trade target firm stocks on the target country's financial markets due to the generally large and positive announcement returns. Consequently, the jurisdiction over insider trading law violations lies in the hand of the target country regulators. If barriers to cross-border enforcement of insider trading law drive the difference in informed trading between cross-border and domestic deals, I expect the difference to vary with the strictness of insider trading law in the target country. In target countries with strong insider trading law enforcement, the law is likely to be strictly binding for domestic insiders but less so for foreign insiders due to barriers to cross-border enforcement. This creates a clear gap in the incentives of domestic and foreign insiders to trade on their inside information, making the difference between cross-border and domestic deals easier to detect and statistically more significant. In contrast, countries with weak insider trading law lack strong incentives or the necessary power, means, and tools to prosecute insider trading in the markets. As a result, insider trading law does not impose a clear constraint on domestic insiders, which makes the barrier to cross-border law enforcement a less important factor in determining the level of informed trading by insiders. Hence, the difference in informed trading between cross-border and domestic deals is likely to be more difficult to detect and statistically less significant.

To test this prediction, I interact the cross-border dummy with the country-level insider trading law proxies and present the regression results in Table 3.12. Each cross-border deal in the sample is matched with a domestic deal by target- and deal-

characteristics using the propensity score matching (PSM) procedure. Cross-border deals with no matched domestic deals are excluded from the sample. Columns (1)–(8) report the results for IT Restriction and IT Law for the sample period 1990–2006, while Columns (9)–(12) for the Rule of Law using the full sample period 1990–2017. I obtain consistently positive and significant coefficients on the interaction terms of *Cross* and the three law proxies, suggesting that the difference in the level of informed trading between cross-border and domestic deals is significantly larger in target countries with stricter laws that restrict insider trading. These results are consistent with my hypothesis that the wedge in the threat of insider trading law in the target country to domestic insiders and foreign insiders is larger in target countries with stronger insider trading law enforcement than in those countries with weaker insider trading law enforcement.

Table 3.12: Variation by Target Country Insider Trading Law

This table reports the regression results of interacting cross-border dummy with different proxies of target country insider trading law indices using the matched sample. I match each cross-border deal in the sample with a domestic deal using the propensity score matching (PSM) procedure, where matching is based on all target- and deal-characteristics controlled in the baseline model. Specifically, within the same industry and trading country of the target firm, I match each cross-border deal with a domestic deal that has a difference in propensity scores within 0.1. Cross-border deals with no matched domestic deals are excluded from the sample. Columns (1)–(8) use the sample for the period 1990–2006, while Columns (9)–(12) cover the full sample period 1990–2017. International M&A deals are obtained from SDC. Firm-level financial data are from Datastream and Worldscope. Detailed definitions of all variables are included in the Appendix Table A3.1. All regression specifications include target country-year fixed effects and industry fixed effects. Standard errors are two-way clustered by country and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	Window (-5, -1)											
	Return		Volume		Return		Volume		Return		Volume	
Variables	Sum	Max	Sum	Max	Sum	Max	Sum	Max	Sum	Max	Sum	Max
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Cross × IT Restriction	0.098***	0.077**	0.082	0.094**								
	(2.884)	(2.818)	(1.640)	(2.742)								
Cross × IT Law					0.148***	0.104***	0.142**	0.144***				
					(3.352)	(2.982)	(2.282)	(3.674)				
Cross × Rule of Law									0.094**	0.043*	0.123*	0.053
									(2.611)	(2.027)	(1.961)	(1.675)
Cross	0.188	0.098	0.400*	0.203	-0.012	-0.115	-0.083	-0.255	-0.033	-0.088	-0.159	-0.279
	(1.136)	(1.163)	(1.923)	(1.606)	(-0.050)	(-0.639)	(-0.239)	(-1.121)	(-0.155)	(-0.610)	(-0.477)	(-1.361)
Size	0.116***	0.052***	0.120***	0.088***	0.198***	0.095***	0.197**	0.136**	0.198***	0.096***	0.198**	0.137**
	(4.961)	(3.179)	(2.846)	(3.731)	(4.363)	(3.216)	(2.226)	(2.615)	(4.353)	(3.221)	(2.238)	(2.637)
Leverage	-0.085	-0.089	0.086	0.088	0.266	0.173	0.142	0.026	0.263	0.175	0.148	0.032
	(-0.508)	(-0.848)	(0.768)	(1.079)	(1.212)	(0.934)	(0.464)	(0.148)	(1.203)	(0.938)	(0.494)	(0.188)
BM	-0.008	-0.001	-0.030***	-0.018*	0.016	0.011	-0.014	-0.018*	0.016	0.011	-0.014	-0.017
	(-0.932)	(-0.094)	(-2.796)	(-1.881)	(1.445)	(1.020)	(-1.062)	(-1.737)	(1.449)	(1.026)	(-1.013)	(-1.647)
Volatility	-7.001	-2.427	-10.294**	-5.399*	-15.187*	-0.444	-30.562**	-16.174	-14.792*	-0.256	-30.056*	-15.778
	(-0.997)	(-0.484)	(-2.539)	(-1.814)	(-2.055)	(-0.111)	(-2.127)	(-1.719)	(-1.963)	(-0.063)	(-2.043)	(-1.644)
Turnover	-0.005	-0.007	0.057*	0.040*	0.005	0.016	0.085*	0.049	0.004	0.015	0.082*	0.047
	(-0.191)	(-0.405)	(1.794)	(1.845)	(0.291)	(1.340)	(1.976)	(1.515)	(0.217)	(1.245)	(1.878)	(1.422)

Amihud	2.604*	2.460***	2.289*	2.304**	5.409	2.463	21.058*	16.522*	5.333	2.424	21.019*	16.480*
	(1.722)	(2.819)	(1.888)	(2.485)	(1.442)	(1.486)	(1.857)	(1.995)	(1.425)	(1.449)	(1.860)	(2.007)
Beta	-0.038	-0.013	-0.122**	-0.120***	-0.035	-0.089	0.108	0.058	-0.037	-0.089	0.109	0.059
	(-0.258)	(-0.144)	(-2.501)	(-3.267)	(-0.330)	(-1.128)	(0.846)	(0.516)	(-0.340)	(-1.138)	(0.839)	(0.514)
Premium	0.005***	0.003***	0.005***	0.003***	0.007***	0.003***	0.005***	0.004***	0.007***	0.003***	0.005***	0.004***
	(6.470)	(3.790)	(4.397)	(3.703)	(7.603)	(4.729)	(4.318)	(7.340)	(7.637)	(4.770)	(4.325)	(7.492)
Cash	-0.062	-0.019	0.126	0.133**	-0.054	-0.034	0.160	0.085	-0.051	-0.030	0.160	0.088
	(-1.168)	(-0.651)	(1.029)	(2.111)	(-0.701)	(-0.784)	(1.248)	(0.854)	(-0.680)	(-0.704)	(1.283)	(0.887)
Advisors	0.008	-0.002	0.035*	0.013	0.008	0.022	0.040	0.024	0.008	0.022	0.041	0.025
	(0.331)	(-0.193)	(1.865)	(0.992)	(0.252)	(0.983)	(0.767)	(0.708)	(0.245)	(0.977)	(0.790)	(0.728)
Rumour	0.459	0.443	1.332***	0.924***	0.544	0.516*	1.023***	0.658***	0.544	0.514*	1.025***	0.657***
	(0.998)	(1.105)	(4.510)	(5.221)	(1.639)	(1.798)	(4.712)	(3.755)	(1.649)	(1.803)	(4.833)	(3.812)
Toehold	-0.088	-0.053	-0.012	-0.035	0.104	0.234**	-0.355	-0.128	0.100	0.231*	-0.359	-0.132
	(-1.128)	(-0.837)	(-0.100)	(-0.410)	(0.642)	(2.105)	(-1.459)	(-0.777)	(0.608)	(2.063)	(-1.477)	(-0.804)
Observations	4,147	4,147	4,147	4,147	1,359	1,359	1,359	1,359	1,355	1,355	1,355	1,355
Adj. R-squared	0.070	0.061	0.104	0.101	0.060	0.039	0.057	0.062	0.061	0.040	0.058	0.063

3.4.4. Informed Trading Activity within and outside the US-Canada Group

In this section, I examine the level of informed trading in cross-border deals between countries that are closely connected, specifically the United States (US) and Canada. I expect that cross-border deals between these two countries should not display significantly higher informed trading activity compared to domestic deals given the extensive regulatory cooperation between the two countries. Due to geographic and historical conditions, the US and Canada share not only the longest international border but are also deeply integrated economies in the world. They enjoy the largest bilateral trade and the closest investment relationship in the world. For example, there has been no tariff on most goods passed between the two countries since 1987. More than US$1.8 billion bilateral trade a day in goods and services takes place across the border of the US and Canada. The two countries also work closely from the federal level to the local level in security and law enforcement. However, cross-border deals between the US-Canada group and the rest of the world do not enjoy this integrated regulatory relationship and I should observe more frequent informed trading activity in these cross-border deals.

To test this conjecture, I limit the sample to deals with targets from either the US or Canada. I create two indicator variables to represent deals within and outside the US–Canada group. Specifically, *US_CA_Group* is a dummy variable equal to one if a deal is a cross-border deal and the foreign acquirer is from the US or Canada, and zero otherwise. *Non_US_CA_Cross* equals one if a deal is a cross-border deal in which the target is from the US or Canada and the foreign acquirer is from other non-US non-Canada countries, and zero otherwise. I estimate the coefficients of these two variables on abnormal trading activity. Table 3.13 shows the regression results of this analysis. Consistent with my prediction, the results show that cross-border deals between the US and Canada are not

associated with higher abnormal trading activity, while cross-border deals involving acquirers from other parts of the world exhibit a significantly higher level of informed trading. This finding provides further evidence that closer legal integration diminishes the extent of informed trading activity.

3.4.5. Informed Option Trading in US Target Firms

Prior to M&A announcements, insider trading may also exist in the equity option market. This subsection examines if cross-border deals are associated with a higher level of suspicious option trading prior to the deal announcement. I obtain daily option trading data from the OptionMetrics database, which is only available for US firms. I match this data with all deals that target US public firms. Of the 4,466 M&A deals targeting US firms in the sample, only 1,209 deals have available option trading data. Thus, the subsample for this analysis covers 1,209 deals with available option trading data from 1990 to 2017. I focus on the daily trading volume of all call options with maturity less than or equal to 60 days. I only consider calls because buying calls generate higher returns than selling puts when the underlying stock price goes up. If a trader has accurate information about the timing of the public announcement of the deal, then short-dated options that expire shortly after the announcement date should be preferred to long-dated options. Hence, I only include options that expire within 60 days.[15] Following Acharya and Johnson (2010), I run a regression specification with a constant, lagged option volume, lagged volume and returns of the underlying stock, and contemporaneous market volume using daily data 90 days prior to the announcement date. Similar to the stock data, I calculate *Sum*, the summation of the estimated daily standardised residuals, and *Max*, the

[15] I have also investigated trading activities for options with maturity less than 30 days, 90 days, one year, and all types of options. I obtain very similar results.

maximum of the standardised residuals in windows (-5, -1). I also employ a second measure that scales option volume by delta and calculate *Sum* and *Max* for delta scaled option volume. The data for delta is from the OptionMetrics database using end-of-day pricing and implied volatilities based on a binomial model.

Table 3.14 reports the regression results for informed option trading. The results are similar to those on the stock markets. Cross-border deals are linked to significantly higher level of suspicious option trading activity compared to domestic deals, controlling for a number of control variables and fixed effects. This indicates that informed traders also take advantage of their private information by trading call options in the option market and they trade more heavily before the announcements of cross-border deals.

Table 3.13: Informed trading activity within and outside the US–Canada Group

This table reports the results comparing US–Canada cross-border deals and the other cross-border deals with US and Canada targets. The sample includes all deals with targets from either the US or Canada. Each cross-border deal is matched with a domestic deal using the propensity score matching (PSM) procedure. *US_CA_Group* equals one if a deal is a cross-border deal between the US and Canada, and zero otherwise. *Non_US_CA_Cross* equals one if a deal is a cross-border deal between a US or Canada target and non-US non-Canada foreign acquirer, and zero otherwise. The sample covers the period 1990–2017. International M&A deals are obtained from SDC. Firm-level financial data are from Datastream and Worldscope. I construct measures of suspicious heavy trade or unusually large positive price movement following Acharya and Johnson (2010). All specifications include interacted target country-year fixed effects and industry fixed effects. Standard errors are two-way clustered by country and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	Window (-5, -1)			
	Return		Volume	
Variables	Sum	Max	Sum	Max
	(1)	(2)	(3)	(4)
US_CA_Group	0.235*	0.145	0.044	0.009
	(1.700)	(1.654)	(0.275)	(0.083)
Non_US_CA_Cross	0.483***	0.258***	0.417**	0.244*
	(4.738)	(4.491)	(2.505)	(1.989)
Size	0.076	0.020	0.084	0.078
	(1.228)	(0.514)	(1.119)	(1.622)
Leverage	-0.118	-0.143	0.035	0.034
	(-0.603)	(-1.107)	(0.103)	(0.150)
BM	-0.002	0.001	-0.034*	-0.026**
	(-0.128)	(0.121)	(-2.006)	(-2.082)
Volatility	-13.921*	-7.126	-10.797	-5.317
	(-1.733)	(-1.221)	(-1.092)	(-0.765)
Turnover	-0.034	-0.020	0.008	0.009
	(-1.251)	(-1.017)	(0.179)	(0.298)
Amihud	3.618*	3.190**	1.099	1.385
	(1.773)	(2.015)	(0.449)	(0.705)
Beta	0.159	0.117*	-0.076	-0.101
	(1.598)	(1.796)	(-0.604)	(-0.941)
Premium	0.004***	0.002***	0.004**	0.002*
	(3.818)	(3.217)	(2.430)	(1.917)
Cash	-0.143	-0.054	0.055	0.094
	(-1.196)	(-0.730)	(0.322)	(0.772)
Advisors	-0.003	-0.001	0.059**	0.027
	(-0.116)	(-0.051)	(2.525)	(1.535)
Rumour	-0.283	-0.165	1.554**	0.971**
	(-1.078)	(-0.979)	(2.277)	(2.215)
Toehold	-0.041	0.016	0.135	0.064
	(-0.300)	(0.201)	(0.651)	(0.488)
Observations	2,126	2,126	2,126	2,126
Adj. R-squared	0.073	0.061	0.093	0.103

Table 3.14: Abnormal Option Trading Activities

This table reports the regression results for abnormal option trading activity. The sample covers deals with US targets that have available option trading data from OptionMetrics for the period 1996–2017. International M&A deals are obtained from SDC. Firm-level financial data are from Datastream and Worldscope. I focus on the daily trading volume of all call options with maturity less than or equal to 60 days. Similar to the stock data, I follow Acharya and Johnson (2010) and run a regression specification with a constant, lagged option volume, lagged volume and returns of the underlying stock, and contemporaneous market volume using daily data 90 days prior to the announcement date. All regression specifications include target country-year fixed effects and industry fixed effects. Standard errors are two-way clustered by country and year. Standard errors are two-way clustered by country and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	Window (-5, -1)			
	Option Volume		Option Volume Delta	
Variables	Sum	Max	Sum	Max
	(1)	(2)	(3)	(4)
Cross	0.270**	0.220*	0.220*	0.175
	(2.265)	(1.923)	(1.886)	(1.582)
Size	0.298***	0.207***	0.212***	0.139**
	(5.124)	(4.515)	(3.079)	(2.487)
Leverage	-0.290**	-0.252**	-0.178	-0.114
	(-2.304)	(-2.440)	(-1.471)	(-1.309)
BM	0.000**	0.000**	0.000**	0.000*
	(2.300)	(2.226)	(2.497)	(2.045)
Turnover	0.016	0.013	0.009	0.008
	(1.182)	(1.161)	(0.721)	(0.947)
Amihud	-0.007	-0.008	-0.679*	-0.604*
	(-0.294)	(-0.402)	(-1.885)	(-2.078)
Beta	0.238*	0.192**	0.197	0.147
	(1.941)	(2.153)	(1.526)	(1.582)
Volatility	-7.596	-7.369	-7.420	-7.252
	(-1.264)	(-1.486)	(-0.852)	(-1.063)
Premium	0.002**	0.001*	0.003	0.002
	(2.325)	(1.796)	(1.507)	(1.303)
Cash	-0.093	-0.066	-0.030	-0.027
	(-0.631)	(-0.585)	(-0.205)	(-0.243)
Advisors	0.006	0.016	0.008	0.015
	(0.208)	(0.687)	(0.307)	(0.689)
Rumour	0.692**	0.542**	0.543**	0.376
	(2.477)	(2.181)	(2.146)	(1.439)
Toehold	-0.173	-0.092	-0.114	-0.022
	(-1.179)	(-0.773)	(-0.724)	(-0.159)
Observations	1,209	1,209	1,113	1,113
Adj. R-squared	0.134	0.103	0.140	0.122

3.5. Conclusions

The combination of cross-border M&As and barriers to cross-border law enforcement creates a situation where insiders linked to a foreign acquirer can trade on insider information in target firm securities without the same level of fear as insiders linked to a domestic acquirer. In this chapter, I examine whether this has led to more aggressive insider trading activities before the announcement of cross-border deals than before domestic deals. Using a sample of 10,600 mergers and acquisitions covering 14,510 firms across 33 target countries and 65 acquirer countries from 1990 to 2017, I find that the level of abnormal trading in target firm stocks is significantly higher before cross-border deal announcements than before domestic deals. This finding is robust to a batch of robustness tests. I argue that this is driven by the insiders linked to foreign acquirers exploiting the barriers to cross-border law enforcement to either trade on non-public information directly or to tip others to trade on it in the target firm securities.

To trace the higher level of insider trading to trading or tipping by insiders linked to foreign acquirers, I examine cross-sectional variations in the level of insider trading between cross-border and domestic deals with target and acquirer country characteristics. Consistent with law and culture affecting the incentives of insiders to conduct illicit trading activities, I find that among cross-border M&As targeting firms in a country, those involving acquirers from strong governance countries and from countries with social and cultural norms that are less tolerant of tax avoidance and corruption are associated with a significantly lower level of pre-announcement informed trading.

When looking at the strength of insider trading law governing the target trading markets, I argue that in target countries with strict insider trading law enforcement, the insider trading law is likely to be strictly binding for domestic insiders but clearly less so

for foreign insiders due to barriers to cross-border law enforcement. This creates a clear gap in the incentives of domestic and foreign insiders to trade on their inside information, making the difference between cross-border and domestic deals easier to detect and statistically more significant. Consistent with this, I find the difference in level of insider trading between cross-border and domestic deals is more significant when the target country has stricter insider trading law enforcement or stronger rule of law.

When comparing the level of informed trading in cross-border deals between the US and Canada, I find that cross-border deals between the two closely connected countries do not show significantly more informed trading compared to domestic deals given the extensive regulatory cooperation between them, while cross-border deals between the US–Canada group and the rest of the world exhibit more frequent informed trading activities.

I finally test whether such difference also exists in the option market using a smaller sample of M&A deals with target companies from the US where detailed option trading data are available. Similar to the stock markets, I find evidence that cross-border deals are linked to a significantly higher level of suspicious call option trading activity compared to domestic deals. This indicates that insider market participants also take advantage of their inside information by trading call options in the option market and they trade more heavily before the announcements of cross-border deals.

Overall, the results are consistent with an equilibrium outcome where foreign insiders have greater incentives than domestic insiders to trade directly or tip others to trade on inside information before the announcement of M&A deals due to barriers to cross-border law enforcement. The evidence shows an important way in which cross-border M&As have negatively affected the integrity of financial markets around the world and raises an important question for regulators to address in the era of globalisation.

To the best of my knowledge, this study is the first study to explicitly study the consequences of a divergence between fast economic integration and slow progress in legal cooperation in the globalisation process. Insider trading before the announcement of cross-border M&As is just one manifestation of potentially many other negative consequences that are not systematically known yet. Future research can expand on the framework in this study and identify other activities that regulators and policy makers should pay close attention to and devise solutions for in the process of globalisation.

Appendix

Table A3.1: Variable Definitions

Variable Name	Definition
Informed Trading Measures	
Sum	The summation of the daily standardised residuals obtained from a regression specification with a constant, lagged volume and returns, day-of-week dummies, and contemporaneous market volume and returns index using daily data 90 days prior to the merger announcement date following Acharya and Johnson (2010).
Max	The maximum of the standardised residuals from the same regression specification.
Target Firm Characteristics	
Size	The natural logarithm of market capitalisation in US dollars.
Leverage	Total debts relative to total assets.
BM	The book value of assets divided by market capitalisation.
Volatility	The standard deviation of monthly returns during the previous 12 months before the announcement.
Turnover	The cumulative monthly trading volume during the year divided by the total number of shares outstanding at the beginning of the corresponding period.
Amihud	Log of the average of the Amihud (2002) illiquidity ratio over a one-year period 90 days prior to the M&A announcement.
Beta	The firm beta with respect to country index estimated using daily stock returns over a one-year period 90 days prior to the M&A announcement.
Deal Characteristics	
Cross	A dummy variable equal to one if the acquirer and target of a deal come from different countries, and zero otherwise.
Premium	The bid premium defined as the percentage difference between bid price and the target's stock price four weeks prior to announcement.
Cash	A dummy variable indicating whether the majority (greater than 50%) of the deal proceeds are paid by cash.
Advisor	The total number of advisors worked for the target and acquirer firms in a deal.
Rumour	A dummy variable indicating whether there are rumours about the deal prior to the announcement.
Toehold	A dummy variable equal to one if the acquirer has a toehold in the target prior to the announcement of the deal, and zero otherwise.
Country Indices	
Insider Trading Restriction Index	Insider trading restriction index from the 1996, 1998 and 1999 Global Competitiveness Report based on the following question: "Insider trading is not common in the domestic market (1 = strongly disagree, 7 = strongly agree)".
Insider Trading Law Index	Insider trading law index from Beny (2005).
Rule of Law	Time-varying measure of the power of legal institutions in a country that restricts insider trading in general extracted from the Worldwide Governance Indicators (WGI) constructed by the World Bank last updated in 2013.
Cheat on Tax	The tendency of people to evade tax in a country based on the following question from the World Values Survey (WVS): "Please tell me for each of the following actions whether you think it can always be justified, never be justified, or

	something in between (on a scale from 1 to 10): Cheating on taxes if you have a chance".
CPI	The annual Corruption Perception Index published by Transparency International.
Other Variables	
Surprise	The earnings announcement surprise defined as the absolute value of the deviation between the most recent median analysts' earnings forecast and the actual annual earnings per share (EPS), scaled by the most recent closing price.
Price	The inverse of the closing stock price one-month before the earnings announcement.
Estimates	The number of analyst forecasts for annual EPS before the earnings announcement.
Loss	A dummy variable equal to one if annual EPS for the company is negative, and zero otherwise.
Reporting Lag	The number of days between the fiscal year end and the earnings announcement date as reported by the I/B/E/S.

Table A3.2: Country Indices

Country Index	Insider Trading Restriction	Insider Trading Law Index	Rule of Law	Corruption Perceptions Index	Tax Morale Level
Argentina	3.71	NA	-0.30	95	0.23
Australia	5.30	3	1.77	11	0.33
Austria	4.71	2	1.87	23	0.41
Bahamas	NA	NA	1.01	24	NA
Bahrain	NA	NA	0.30	52	NA
Belgium	4.92	3	1.33	16	0.60
Brazil	3.55	2	-0.19	66	0.48
Bulgaria	3.47	NA	-0.07	66	0.37
Canada	5.01	4	1.79	10	0.31
Chile	4.43	NA	1.37	22	0.34
China	3.41	NA	-0.37	89	0.42
Colombia	3.58	NA	-0.42	85	0.23
Cyprus	NA	NA	1.05	31	0.29
Denmark	5.69	3	1.91	1	0.33
Egypt	3.67	NA	-0.18	85	0.26
Estonia	NA	NA	1.36	27	0.49
Finland	5.12	3	1.98	3	0.43
France	4.58	4	1.41	27	0.50
Germany	5.13	3	1.67	13	0.41
Ghana	NA	NA	-0.34	56	0.16
Greece	3.46	2	0.73	66	0.52
Hong Kong	4.14	3	1.51	19	0.38
Iceland	4.14	NA	1.88	13	0.41
India	3.15	2	0.02	78	0.48
Indonesia	3.24	2	-0.59	95	0.21
Ireland	5.06	3	1.70	19	0.42
Israel	3.98	NA	0.96	36	NA
Italy	3.73	3	0.56	66	0.41
Jamaica	NA	NA	-0.48	78	NA
Japan	5.05	2	1.34	16	0.17
Kazakhstan	NA	NA	-0.55	109	0.45
Lithuania	NA	NA	0.79	38	0.62
Luxembourg	5.74	3	1.83	9	0.51
Malaysia	3.59	2	0.53	47	0.59
Malta	NA	NA	1.21	41	0.19
Mauritius	3.68	NA	0.92	44	NA
Mexico	3.39	1	-0.57	92	0.34
Morocco	NA	NA	0.24	72	0.17
Netherlands	4.82	3	1.80	8	0.42
New Zealand	5.41	NA	1.87	2	0.38
Nigeria	NA	NA	-1.08	115	0.47
Norway	4.33	1	1.92	6	0.50
Papua New Guinea	NA	NA	-0.92	120	NA
Peru	3.80	NA	-0.66	78	0.40
Philippines	3.20	2	-0.40	78	0.59
Poland	3.94	NA	0.72	34	0.47
Portugal	4.20	3	1.17	31	0.43

Qatar	NA	NA	0.91	27	NA
Romania	NA	NA	-0.01	66	0.38
Russia	3.03	NA	-0.89	115	0.56
Saudi Arabia	NA	NA	0.20	52	NA
Singapore	5.41	3	1.66	7	0.42
Slovak	NA	NA	0.47	49	0.45
South Africa	3.79	2	0.11	62	0.52
South Korea	3.88	4	0.96	41	0.28
Spain	4.25	3	1.15	36	0.41
Sweden	5.14	3	1.88	4	0.46
Switzerland	4.92	3	1.88	6	0.42
Taiwan	3.23	3	1.02	34	0.37
Thailand	3.59	3	-0.01	78	0.53
Turkey	3.61	NA	-0.03	59	0.13
United Kingdom	5.32	3	1.69	14	0.38
United States	5.13	4	1.55	19	0.32
United Arab Emirates	NA	NA	0.48	25	NA
Vietnam	6.35	NA	-0.42	103	0.19
Mean	4.29	2.73	0.71	46	0.39
Standard deviation	0.84	0.76	0.92	33	0.12

Table A3.3: Descriptive Statistics of the Matched Sample

This table reports summary statistics of target and deal characteristics by whether the bidder is from the same country as the target or not using a matched sample. I use the propensity score matching (PSM) procedure, where matching is based on all target- and deal-characteristics controlled in the baseline model. Within the same industry and trading country of the target firm, I match each cross-border deal with a domestic deal that has a difference in propensity scores no larger than 0.1. Cross-border deals without matched domestic deals are excluded from the sample. All variables are defined in the Appendix Table A3.1. The last two columns show results from t-tests for differences in means and Wilcoxon rank-sum tests for differences in medians between domestic and cross-border deals. The sample period is 1990–2017. M&A data are obtained from the SDC database. Firm-level financial data are from Datastream and Worldscope. All variables are defined in the Appendix. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	Domestic Deals				Cross-border Deals				Domestic vs. Cross	
	Mean	Median	Stdev	N	Mean	Median	Stdev	N	Diff. in Mean	Diff. in Median Rank Test
Target Characteristics										
Size ($USMillions)	175.412	85.943	219.113	2136	196.146	99.033	262.89	2138	-20.734***	-2.539**
Leverage	0.176	0.104	0.205	2143	0.182	0.112	0.215	2143	-0.007	-0.373
BM	2.369	1.537	3.696	2143	2.11	1.425	3.121	2143	0.258**	2.699***
Volatility	0.006	0.003	0.009	2143	0.006	0.003	0.008	2143	0.000*	-1.833*
Turnover	1.12	0.738	1.335	2143	1.15	0.651	1.697	2143	-0.03	3.198***
Amihud	0.009	0	0.034	2143	0.008	0	0.031	2143	-0.414	-0.26
Beta	0.541	0.427	0.517	2143	0.557	0.448	0.506	2143	-0.016	-1.219
Deal Characteristics										
Premium	40.107	30.43	52.31	2143	40.522	31.73	55.785	2143	-0.034**	-0.799
Cash	0.595	1	0.491	2143	0.629	1	0.483	2143	0.001	-2.257**
Advisors	3.845	4	2.453	2143	3.929	4	2.632	2143	-0.084	-0.473
Rumour	0.039	0	0.194	2143	0.038	0	0.191	2143	0.001	0.238
Toehold	0.229	0	0.42	2143	0.23	0	0.421	2143	-0.001	-0.073

Chapter 4

Fund Family Influence and Index Fund Voting Patterns: Evidence from Mergers and Acquisitions

4.1. Introduction

One of the stylised features about the equity financial market is the prevalence of large fund families. Although there are thousands of mutual funds investing in the equity market, most of them belong to a few fund families and most fund families centralise and coordinate their voting decisions. This implies that affiliated fund managers do not work simply for their funds' investors, but rather for the benefit of an organisation of funds. Several studies have found that mutual fund families have a strong incentive to strategically transfer performance across funds to maximise the group's benefits (e.g. Nanda, Wang, and Zheng 2004b, Gaspar, Massa, and Matos 2006, Kacperczyk, Sialm, and Zheng 2008, Bhattacharya, Lee, and Pool 2013). In particular, the striking growth of index-tracking funds during recent years has enabled a few financial families to become very large, controlling trillions of dollars of equity ownership in large corporations. For example, the ownership of three fund families – State Street, Vanguard, and BlackRock – in S&P 500 firms has increased from 4.3% in 2004 to 15.2% in 2016. The three fund families together have become the top shareholder of 88% of S&P 500 corporations (Fichtner, Heemskerk, and Garcia-Bernardo 2017).

The rapid expansion of index funds has given fund families powerful ownership positions in firms. If fund managers coordinate their actions to favour firms held by high value funds at the cost of firms held by index funds, shareholders' value in these firms can be hurt. With the growing dominance of fund families in the equity market, it is common to find situations where one affiliated fund holds stock in an acquisition target, while another fund holds stock in the acquirer; or one fund holds stock in a customer firm, while another holds its major supplier. This raises important concerns for the corporate governance of firms in these funds' portfolio because it is uncertain to what extent these

centrally managed funds have the incentive to maximise family benefit at the cost of corporate shareholders. However, the literature fails to investigate whether and how cooperation across funds within a fund family may affect important decisions made by firms in their portfolio and these firms' performance. This study investigates the following questions: Do fund families use their index funds' voting power to benefit affiliated active funds' performance? Does this incentive affect the performance of corporate mergers and acquisitions?

Gaspar, Massa, and Matos (2006) find that mutual fund families strategically transfer performance from low value member funds to those funds considered most valuable to the fund family to increase overall family profits. Following the same idea, index funds could be exposed more to the incentives to help affiliated funds in the same families for the following reasons. Firstly, index funds contribute less profits per dollar inflow to a family compared to other funds. A family's total profits are a function of fee income and assets managed. Depending on the level of fees charged and potential growth, different funds can contribute unequally to the total profit of their family. Actively managed funds usually charge a significantly higher level of fee compared to an index fund. For example, according to BlackRock Inc.'s official website, *Equity Dividend Fund*, an actively managed fund of BlackRock Inc. charges a management fee of 0.528%, while *iShares S&P 500 Index Fund*, an index-linked fund, only charges a 0.04% fee. Given the large difference in the fees, a one-dollar increase in flow to the active fund can generate 13.2 times higher income to the fund family than one dollar to the index fund.

Secondly, the investment objective of index funds is very different from an active fund. An active fund that generates superior performance not only increases the amount of fee earned for the fund family (as many active funds' fee is tied to performance), but

also attracts new inflows to the fund. A good performing active fund can also have an additional spillover effect on other funds in the same family (Nanda, Wang, and Zheng 2004a), and may allow the family to promote its brand name and open new funds (Khorana and Servaes 1999). However, the investment goal of index funds is to deliver the returns of a market index by seeking to minimise deviations from the market index weights. In other words, index-adjusted performance by index funds is not rewarded by investors nor does it attract inflows.

Finally, the concept of underperformance does not apply to index funds as closely tracking the index weights always ensures they do not perform worse than the market index returns even though stocks in their portfolio generate low returns. Therefore, fund families may have a strong incentive to prop up the performance of active mutual funds at the expense of index funds. Specifically, families may use the ownership of index funds to influence corporate decision of firms held in their portfolio, especially for important corporate events, to affect the returns of stocks held by affiliated active funds.

This study examines whether family interest plays a role in explaining and influencing individual funds' voting behaviours. Specifically, I focus on the voting patterns of index funds in the event of corporate mergers and acquisitions (M&As). Holding equity position in a firm that becomes a takeover target often generates large returns as target stocks are often sold at a premium. Because the returns to a fund family largely depend on the aggregate holdings of its active funds in the acquirer or the target, but not so much on the holdings of its index funds as argued above, I expect that an index fund's decision to approve or disapprove a merger would largely depend on the fund family's interest rather than the index fund's own interest. If an index fund holds a substantial amount of ownership in the bidder firm, while the active funds belonging to

the same fund family are holding shares in the target firm, the index fund has a strong incentive to approve the deal to benefit the fund family as a whole even if it is not in the best interest of the bidder firm.[16] In this case, although the index fund is a shareholder of the bidder firm, its interest is not aligned with the shareholders of the bidder.

I term fund families that benefit more from holdings in the target than in the bidder through actively managed funds as "misaligned fund families". To test the influence of misaligned fund families on the voting behaviour of index funds, I obtain mutual fund vote records in bidder merger approval meetings over the period from 2003 to 2016. I combine the vote data with the M&A data from the SDC Platinum Database and the mutual fund holdings data from Thomson Reuters S12 File. Based on a large sample that includes 31,807 mutual fund voting records, I first find that funds managed by the same fund family are significantly more likely to vote in the same direction. I then examine the voting of index funds and find that affiliated index funds in bidder firms are more likely to vote for a deal if the fund family's interest in the target is larger. Decomposing the total fund family ownership in the target into the amount held by active funds and index funds from the same family reveals that only active funds' interest in the target are significantly positively associated with the likelihood of an index fund favouring a deal. I further decompose index fund ownership into the target ownership held by the index fund itself and that of the other index funds from the same family. An index fund's own interest in the target does not explain its voting pattern in the bidder merger approval meeting. The results in this study are robust to using different statistical models and including deal fixed effects or both deal and family fixed effects.

[16] Note that in this case the index fund itself also suffers a worse return, however the costs are mostly borne by investors not the fund family.

Additional analyses of the voting data show that fund family ownership in a target firm only has a positive and significant effect on index funds' voting in the subsample of deals with negative bidder announcement returns. Using a sample of mutual funds that do not own any shares in the target, I find that index funds are significantly more likely to vote with fund family interest than active funds. To address potential endogeneity issues, I explore the famous merger between BlackRock and Barclays Global Investors (Barclays) in 2009. The event exogenously increased passive fund holdings of BlackRock in many firms. I believe that the event provides a good empirical setting to investigate changes in the voting behaviour of the iShares index fund before and after the event. I find that Barclays index funds are significantly more likely to vote for a deal following BlackRock's interest after the merger, compared to its own voting pattern before the merger.

I next examine the externality of misaligned fund family ownership on deal outcomes. Using a comprehensive sample of M&A deals involving public targets and bidders over the period from 1980 to 2016, I find that greater misaligned ownership is significantly associated with lower bidder announcement returns, less share of synergy for the bidder, and a higher probability of completion. Greater presence of misaligned fund families is also associated with a higher likelihood of the two firms merging together and a higher fraction of "for" votes for the deal in the bidder merger approval meeting.

The results may be explained by the difference in investment horizon between index fund and the other shareholders. It is argued that index funds have a longer investment horizon because their investment follows a benchmark index and they are not allowed to actively buy or sell portfolio firms (Appel, Gormley, and Keim, 2016). In addition, active ownership in the target by fund family may provide superior information

which helps the index funds better assess the long-term performance of the deal. In this case, differential in index fund voting behaviour can also correlate with fund family holdings. I address this concern using a sample of deals with bad long-term performance. I find that fund family interest still significantly affects index fund voting among these deals. Higher bidder ownership by fund families that put more weight on the target is associated with worse long-term deal performance.

Another possible explanation is that entrenched managers may leak information to certain powerful fund families or certain funds obtain private information through other channels before the deal announcement. In this case, the voting pattern of index funds I find could be due to affiliated active funds buying the target shares right before the deal announcement. I directly gauge this concern by excluding funds that start holding the target or bidder shares less than 6 months before deal announcements from the sample and reconstruct all the main variables. The results remain consistent with previous findings.

These results suggest that index funds whose affiliated active funds have interests in target firms would use their shareholdings to facilitate the approval of the deals even though they are not in the best interest of the bidders. This cooperation between funds within fund families potentially weakens the resistance of bidder shareholders to bad mergers. The findings in this study add to the growing literature that studies the effect of passive ownership on corporations. The dramatic growth of index funds during recent years has drawn significant attention from both the media and academic researchers. Appel, Gormley, and Keim (2016a) find that index fund ownership plays a positive role in governing firms. Exploring an exogenous shock to index fund ownership, the authors find that passive mutual fund ownership leads to an improvement of basic corporate

governance characteristics, such as an increase in board independence, the removal of anti-takeover mechanisms and more equal voting rights. Schmidt and Fahlenbrach (2017), however, find that increases in index fund ownership result in stronger CEO power, fewer appointments of new independent directors, and worse M&As. The authors argue that index fund ownership increases agency problems that require more costly monitoring efforts.

This study also contributes to the literature that examines the effects of common institutional ownership on the interaction between companies. Family affiliation can potentially benefit investors by offering lower cost investment and better asset management skills through the potential for economies of scale and scope. The established branding and market reputation of large mutual fund families may also lower the search costs for investors. However, mutual fund families can also cause distortions to the incentives of fund managers. The potential to coordinate actions across funds in the same family can create divergence of interests between mutual fund families and fund shareholders. Prior studies have pointed out that common ownership by institutions in two firms affects the outcomes of mergers and acquisitions (Hansen and Lott 1996, Matvos and Ostrovsky 2008, Harford, Jenter, and Li 2011), industry competition (He and Huang 2014, Azar, Raina, and Schmalz 2016, Azar, Schmalz, and Tecu 2017), trade relationship, and CEO pay incentives (Anton et al. 2017). Cheng, Massa, and Zhang (2017) show that index ETFs often engage in active investments that deviate from their benchmark and cross-trade with open-ended funds belonging to the same families at the cost of their own performance.

The most closely related studies to this study are those examining the effect of common institutional ownership on M&A outcomes. Matvos and Ostrovsky (2008)

address that institutional investors holding equity investments in both firms on the opposite sides of a merger focus on the return to their aggregate position rather than performance of their individual components and such distorted incentives could increase the frequency of bad acquisitions. Harford, Jenter, and Li (2011) argue that few shareholders have influential equity stakes in both target and acquirer. In other words, investors with large stakes in the bidder (target) tend to have only small stakes in the target (bidder). Hence, common holders either care little about target value or have little ownership to affect M&A outcomes. I argue that although the direct ownership can be small, financial groups can use affiliated index fund ownership to influence M&A decisions. Most bidder firms are larger and are more likely to be included in a market index compared to target firms. Thus, bidders are commonly held by index funds and the ownership can be influential.

The findings in this study are closely related to the literature on fund family strategy. Nanda, Wang, and Zheng (2004a) identify that fund families have the incentive to create star funds to attract investor flows and such star-creating strategies can be value destroying. Gaspar, Massa, and Matos (2006) find evidence of strategic cross-fund performance reallocation within mutual fund families. Golez and Marin (2015) find affiliates can engage in suboptimal portfolio allocation if it benefits their parent holding company. Bodnaruk and Rossi (2016) demonstrate that cooperation across affiliated mutual funds holding equity and debt of target companies (dual ownership) is associated with less valued deals. All these studies illustrate practices that can represent a breach of fiduciary duty to the assets separately entrusted to each mutual fund manager. This study shows that funds standing on the opposite sides of a merger may not fight for the best interest of their own investors when they are under common management. This practice

can also harm minority shareholders of firms held by low value funds of fund families. However, despite the potential costs, centralisation and coordination of voting decisions within fund families is well-known but has attracted little regulatory attention. I propose that institutions with misaligned incentives should be differentiated and their voting power should be constrained, especially for important corporate events.

The rest of the chapter is structured as follows. Section 4.2 provides the details of the construction of the mutual fund voting data and examines the effect of mutual fund family interest on the voting pattern of index funds. Section 4.3 describes data on deal characteristics and examines the externality of fund cooperation on M&A outcomes. Section 4.4 addresses alternative explanations for the results. Section 4.5 concludes.

4.2. Cooperation within Mutual Fund Families on Voting

This section examines whether mutual funds coordinate their votes within fund families for M&As in the acquirer's shareholder meeting. I first investigate if funds within a family are more likely to vote in the same direction. I then examine the effect of family interest on the voting behaviour of index funds. The interests of the fund family in the target significantly affect the likelihood of "for" votes by index funds belonging to the same fund family.

4.2.1. Data and Sample Construction

I start with the mergers and acquisitions data from Thomson Financial Securities Data Company (SDC) database. I include all US deals, both completed and withdrawn, announced between 1980 and 2016 from the SDC database. I require that all the deals are classified as a merger, an acquisition of majority interest, or an acquisition of assets in

SDC. I keep the deals in which both bidder and target are public firms. Additionally, I only keep deals if the bidder owns less than 50% of the target before the deal and is seeking to own greater than 50% after the deal. I also exclude deals involving firms that have multiple classes of shares.

Individual mutual fund voting data on the sample deals are from the Institutional Shareholder Services (ISS) Voting Analytics database. Since I am interested in the conflict of interest in bidder firms, I extract the voting records in the bidders' merger approval meetings. The sample starts in 2003, when mutual funds are first required to publicly disclose their voting records via filing with the US Securities and Exchange Commission (SEC), and ends in 2017. Starting from 2003, the SEC requires all mutual funds to disclose their votes in N-PX and N-PX/A filings. The ISS extracts mutual fund voting records from these filings and makes the data available via Wharton Research Data Services (WRDS).

To determine the ownership of mutual funds in the target and acquirer firms, I obtain mutual fund holdings data from the Thomson Reuters Mutual Fund Holdings s12 Database. The database includes holdings information of all mutual funds registered with the SEC on a quarterly basis. I only include mutual fund holdings of ordinary common shares (with Center for Research in Security Prices (CRSP) share codes 10 or 11). Mutual funds often issue multiple classes of shares based on the same pool of securities, the same portfolio manager, and the same returns to provide different expenses and loads for investors. However, different mutual fund classes are classified as separate funds in the CRSP dataset. I also exclude multiple classes of the same fund following Gaspar, Massa, and Matos (2006). To obtain refined mutual fund names, I use fund names from the CRSP mutual fund data by merging the dataset with the Thomson Reuters data using the

MFLINK table available from WRDS. Due to a lack of common fund identifier across the voting data and the holdings data, I match them using a name-matching procedure. I first match fund families and then match individual funds within the matched fund families. Because fund names can be written in many different forms, I manually match funds that cannot be matched reliably using a computing algorithm. I compute mutual fund ownership in a stock as a percent of its market capitalisation.

To identify affiliation among funds, I classify funds into a family using management company information provided in the CRSP mutual fund database. However, in many cases, this information is either missing or the management company is only a subsidiary, not the ultimate owner of the funds. For these cases, I manually check fund ownership information from searching on the companies' websites and fund prospectus.

To classify a mutual fund as either an index fund or actively managed fund, I regard a fund as passively managed if the CRSP Mutual Fund Database classifies the fund as an index fund. I also complement the CRSP index fund classification by scanning fund names to find a string that identifies it as an index fund[17], following Busse and Tong (2012), Iliev and Lowry (2015), and Appel, Gormley, and Keim (2016).

Combining the datasets results in a final sample that includes 31,807 mutual fund voting records. The sample contains 326 merger approval meeting votes cast by 6,616 unique mutual funds belonging to 356 fund families. Of all the sample funds, 1,408 (21%) funds are classified as index funds. The sample period spans from 2003 to 2016 due to the availability of the voting data. Table 4.1 summarises fund votes by bidder

[17] The strings I used to identify index funds are: *Index, Idx, Indx, Ind_* (where_ indicates a space), *Russell, S & P, S and P, S&P, SandP, SP, DOW, Dow, DJ, MSCI, Bloomberg, KBW, NASDAQ, NYSE, STOXX, FTSE, Wilshire, Morningstar, 100, 400, 500, 600, 900, 1000, 1500, 2000*, and *5000.*

announcement returns. Most funds vote "for" a deal. The percentage of "for" votes in deals with negative bidder announcement returns, 96.83%, is slightly lower than that of deals with positive bidder announcement returns, 97.62%.

4.2.2. Fund Family and the Likelihood of Two Funds Voting in the Same Direction

I use a pairwise setting to test whether belonging to the same fund family explains the tendency of two funds to vote in the same direction. To do so, I construct a sample that includes all combinations of fund-pairs voting for a deal. For each voting event, I pair all voting funds with each other and compare their voting results and management companies. This procedure results in a large sample of 12,279,060 fund-pair observations. I test the following fund-pair level model:

$$Same\ Vote_{i,j,k} = \alpha + \beta \times Same\ Family_{i,j} + Deal\ FE + \epsilon \qquad (4.1)$$

where $Same\ Vote_{i,j,k}$ is an indicator variable equal to one if fund *i* votes in the same direction as fund *j* in the bidder's shareholder meeting for the approval of deal *k*, and zero otherwise. $Same\ Fund\ Family_{i,j}$ is an indicator variable equal to one if fund *i* and fund *j* belong to the same fund family, and zero otherwise.

Table 4.2 reports the regression results for the pairwise test by estimating the linear probability model, the logit model, and the marginal effect of the logit model. As reported in Column (1), funds belonging to the same fund family are 2.4% more likely to vote in the same direction. The results from logit models confirm this effect. The coefficients of the same fund family dummy are positive and statistically significant at the 1% level in all three models.

Table 4.1: Distributions of Mutual Fund Votes

The sample contains fund-level vote records for M&A approval decisions in acquirer firms during the period from 2003 to 2016 provided by the ISS Voting Analytics Database by *Bidder CAR3*, which is bidder abnormal announcement return over days (-1, +1). The bidders and targets are both publicly listed with deal information from SDC's Mergers and Acquisitions database. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target.

Vote	Negative Bidder CAR3		Positive Bidder CAR3	
	No. of "For" Votes	%	No. of "For" Votes	%
Abstain	508	1.24%	231	0.84%
Against	792	1.93%	424	1.54%
For	39,666	96.83%	26,823	97.62%
Total	40,966	100%	27,478	100%

Table 4.2: Fund Family and the Likelihood of Two Funds Voting in the Same Direction

The sample consists of all combinations of fund-pairs voting for deals in the sample. For each voting event, I pair all funds with each other and compare their voting results. The dependent variable is a dummy equal to one if the two funds vote in the same direction for the deal and zero otherwise. The independent variable is a dummy equal to one if the two funds belong to the same fund family and zero otherwise. Data on fund-level vote records for M&A approval decisions in acquirer firms are for the period from 2003 to 2016 and obtained from the ISS Voting Analytics Database. Deal information is from SDC's Mergers and Acquisitions database. I require both the bidders and targets to be publicly listed. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target. Detailed definitions of all variables are included in the Appendix. Standard errors are clustered by deal. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	(1)	(2)	(3)
	Linear Probability Model	Logit Model	Logit Model: Marginal Effect
Same Family	0.024***	0.919***	0.017***
	(4.363)	(65.916)	(101.586)
Observations	12,279,060	10,617,372	10,617,372
R-squared	0.142		
Deal FE	Yes	Yes	Yes

4.2.3. Fund Family Interest and the Voting behaviour of Index Funds

In this section, I focus the analysis on the voting behaviour of index funds.

4.2.3.1. Fund Family Interest and the Likelihood of "For" Votes by Index Funds

I expect that affiliated index funds in bidder firms are more likely to vote for a deal if the fund family's interest in the target is higher. To test this hypothesis, I restrict the sample to the votes of index funds and test the following specification:

$$Votefor_{i,k} = \alpha + \beta \times Ownership\ in\ Target\ by\ Fund\ Family_{i,k} + Deal\ FE + Family\ FE + \epsilon \quad (4.2)$$

where the dependent variable, $Votefor$, is a dummy variable that takes the value of one if index fund *i* votes "for" in the bidder approval meeting for deal *k*, and zero otherwise; the independent variable, $Ownership\ in\ Target\ by\ Fund\ Family_k$, is the fraction of ownership in the target of deal *k* held by all funds of the fund family that manages index fund *i*.

I also decompose the total fund family ownership in the target into the amount held by active funds and index funds from the same family. I estimate the separate effects of the other funds' ownership on the index fund's voting pattern. Additionally, I further decompose index fund ownership into the target ownership held by the index fund itself and that of the other index funds from the same family.

Panel A of Table 4.3 reports the estimates of the linear probability model, while Panel B reports the logit model and Panel C reports the marginal effect of the logit model. All three panels present similar results. I perform all the specifications in two sets,

including only deal fixed effects or both deal and family fixed effects to control for variations in deal characteristics and fund family characteristics. As reported in Panel A, the effect of fund family's total interest is about 23%, which is positive and statistically significant. After decomposing family interest into active funds and index funds interests, only active funds' interest in the target is significantly positively associated with the likelihood of an index fund favouring a deal. More importantly, an index fund's own interest in the target does not explain its voting pattern in the bidder merger approval meeting.

4.2.3.2. Fund Family Interest and the Likelihood of "For" Votes by Index Funds, by Bidder Announcement Returns

For good mergers, fund family interest should not have an effect as the incentives of the family are aligned with the other bidder shareholders. Therefore, I expect that the effect on mergers should only be significant in bad deals. This conjecture is confirmed in Table 4.4. For brevity, I only report the estimates from the logit model.[18] Fund family ownership in the target firm only has a positive and significant effect on index funds' voting in the subsample of deals with negative bidder announcement returns (*CAR3*). *CAR3* is the bidder abnormal announcement return over days (-1, +1). Daily abnormal stock returns are computed using the market model and the value-weighted CRSP index. The estimation window is over the period from 200 days to 60 days prior to the acquisition announcement date.

[18] To save space, I only present results from the logit model for all the tests in the remainder of the chapter. The linear probability model produces very similar results.

Table 4.3: Fund Family Interest and the Likelihood of "For" Votes by Index Funds

The sample consists of the votes cast by index funds for acquirer firms' M&A approval decisions. Data on fund-level vote records are for the period from 2003 to 2016 and obtained from the ISS Voting Analytics Database. Deal information is from SDC's Mergers and Acquisitions database. Mutual fund holdings data are from the Thomson Reuters Mutual Fund Holding s12 Database. I require both the bidders and targets to be publicly listed. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target. Detailed definitions of all variables are included in the Appendix. Standard errors are clustered by deal. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	(1)	(2)	(3)	(4)	(5)	(6)
	Panel A: Linear Probability Model					
Ownership in Target by Fund Family	0.230**			0.231*		
	(2.258)			(1.953)		
Ownership in Target by Active Funds from Same Family		0.121**	0.110*		0.138**	0.136**
		(2.097)	(1.953)		(2.212)	(2.194)
Ownership in Target by Index Funds from Same Family		0.113	0.107		0.132	0.133
		(0.830)	(0.804)		(0.870)	(0.873)
Ownership in Target			0.137			0.244
			(1.374)			(1.175)
Observations	21,117	21,117	21,117	21,111	21,111	21,111
R-squared	0.428	0.428	0.428	0.469	0.469	0.469
Deal FE	Yes	Yes	Yes	Yes	Yes	Yes
Family FE	No	No	No	Yes	Yes	Yes
	Panel B: Logit Model					
Ownership in Target by Fund Family	33.101***			59.145***		
	(5.594)			(5.193)		
Ownership in Target by Active Funds from Same Family		55.625***	53.510***		97.995***	94.541***
		(5.658)	(5.160)		(5.363)	(5.237)
Ownership in Target by Index Funds from Same Family		6.234	5.994		9.042	8.453
		(0.799)	(0.768)		(1.012)	(1.280)
Ownership in Target			27.524			58.959
			(0.551)			(0.956)
Observations	7,056	7,056	7,056	6,267	6,267	6,267
Deal FE	Yes	Yes	Yes	Yes	Yes	Yes
Family FE	No	No	No	Yes	Yes	Yes

Panel C: Logit Model: Marginal Effect						
Ownership in Target by Fund Family	0.526***			0.215***		
	(2.749)			(2.669)		
Ownership in Target by Active Funds from Same Family		0.826***	0.796***		0.305***	0.295***
		(4.547)	(4.094)		(2.731)	(2.709)
Ownership in Target by Index Funds from Same Family		0.093	0.089		0.075	0.073
		(0.789)	(0.758)		(1.620)	(1.599)
Ownership in Target			0.410			0.184
			(0.547)			(0.906)
Observations	7,056	7,056	7,056	6,267	6,267	6,267
Deal FE	Yes	Yes	Yes	Yes	Yes	Yes
Family FE	No	No	No	Yes	Yes	Yes

Table 4.4: Fund Family Interest and the Likelihood of "For" Votes by Index Funds, by Bidder Announcement Returns

The sample consists of the votes cast by index funds for acquirer firms' M&A approval decisions. Data on fund-level vote records are for the period from 2003 to 2016 and obtained from the ISS Voting Analytics Database. Deal information is from SDC's Mergers and Acquisitions database. Mutual fund holdings data are from the Thomson Reuters Mutual Fund Holding s12 Database. I require both the bidders and targets to be publicly listed. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target. The sample is divided by acquirer announcement abnormal returns over the window (-1, +1). Detailed definitions of all variables are included in the Appendix. Standard errors are clustered by deal. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	(1)	(2)	(3)	(4)	(5)	(6)
	Negative CAR3	Positive CAR3	Negative CAR3	Positive CAR3	Negative CAR3	Positive CAR3
Ownership in Target by Fund Family	93.650***	-1.334				
	(4.117)	(-0.059)				
Ownership in Target by Active Funds from Same Family			35.483**	2.847	35.220**	4.772
			(2.334)	(0.060)	(2.315)	(0.099)
Ownership in Target by Index Funds from Same Family			8.376	-4.110	9.088	-5.845
			(0.455)	(-0.116)	(0.641)	(-0.162)
Ownership in Target					93.129	-20.889
					(0.892)	(-0.246)
Observations	3,470	1,306	3,470	1,306	3,470	1,306
Deal FE	Yes	Yes	Yes	Yes	Yes	Yes
Family FE	Yes	Yes	Yes	Yes	Yes	Yes

4.2.3.3. Fund Family Interest and the Likelihood of "For" Votes – Index Funds vs Active Funds

I then investigate the effect of fund family interest on all funds' voting in the bidder. I also compare the difference in the effect between index funds and active funds that do not have their own interest in the target. The regression specification I adopt is as follows:

$$\begin{aligned} Votefor_{i,k} = \alpha &+ \beta_1 \times Ownership\ in\ Target\ by\ Fund\ Family_{i,k} \\ &+ \beta_2 \times Index\ Fund\ Dummy_i \\ &+ \beta_3 \times Ownership\ in\ Target\ by\ Fund\ Family_{i,k} \\ &\times Index\ Fund\ Dummy_i + Deal\ FE + Family\ FE + \epsilon \end{aligned} \quad (4.3)$$

where $Index\ Fund\ Dummy_i$ is an indicative variable equal to one if fund i is classified as an index fund, and zero otherwise.

Table 4.5 Columns (1) and (4) show the effect of fund family interest on all funds' likelihood to vote for a merger controlling for deal fixed effects or deal and family fixed effects. On average, both index funds and active funds holding the bidder are more likely to vote for a merger when their fund family has more interest in the target. Results in Columns (2) and (5) show that the voting of funds that do not own any shares in the target is also affected by their fund family's interest. Columns (3) and (6) show the results of the above regression specifications. The interaction term of family interest and index fund dummy is positive and statistically significant, suggesting that among funds that only hold shares in the bidder, index funds are significantly more likely to vote for a merger than active funds.

Table 4.5: Fund Family Interest and the Likelihood of "For" Votes – Active Funds vs Index Funds

The sample consists of mutual fund votes for acquirer firms' M&A approval decisions. Data on fund-level vote records are for the period from 2003 to 2016 and obtained from the ISS Voting Analytics Database. Deal information is from SDC's Mergers and Acquisitions database. Mutual fund holdings data are from the Thomson Reuters Mutual Fund Holding s12 Database. I require both the bidders and targets to be publicly listed. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target. Detailed definitions of all variables are included in the Appendix. Standard errors are clustered by deal. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	(1)	(2)	(3)	(4)	(5)	(6)
	Full Sample	Funds with no holdings in target		Full Sample	Funds with no holdings in target	
Ownership in Target by Fund Family (a)	22.211***	15.909***	5.787*	40.061***	39.806***	15.072**
	(7.228)	(4.103)	(1.921)	(9.033)	(7.472)	(2.357)
Index Dummy (b)			0.729***			0.355**
			(5.999)			(2.043)
a*b			10.684*			13.465*
			(1.811)			(1.732)
Observations	31,807	17,918	17,911	28,879	14,531	14,526
Deal FE	Yes	Yes	Yes	Yes	Yes	Yes
Family FE	No	No	No	Yes	Yes	Yes

4.2.3.4. The Merger of Barclays with BlackRock

The results may be subject to potential endogeneity issues. For example, other conflict of interests among shareholders such as different risk attitudes, tax situation, and time horizons could also lead to similar results. To address the endogeneity issue, I explore the merger between BlackRock and Barclays Global Investors (Barclays) in 2009. To recover from the 2008 financial crisis, Barclays had to sell its global leading ETF product iShares to strengthen its bank capital ratio and cover large loan losses. On 16 March 2009, Barclays first announced its intention to sell iShares. On 9 April 2009, Barclays announced the sale of iShares to private equity group CVC Capital (CVC) for US$4.4 billion. However, the "go shop" provision in this deal allowed another bidder to make a higher offer within 45 days with an additional US$175 million break-up fee for CVC. On 11 June 2009, BlackRock triggered the "go shop" provision and made an announcement that it had agreed to acquire Barclays for US$13.5 billion. Without a counter-offer from CVC, the "go-shop" provision expired on 18 June 2009. Finally, the completion of the merger was announced on 1 December 2009.

This event provides several advantages for the test. First, a large number of stocks were directly affected by this event. Massa, Schumacher, and Wang (2016) point out that over 60% of the world market capitalisation was held in both BlackRock and Barclays portfolios before the occurrence of the event, which makes this event very significant. Second, this merger is exogenous to the characteristics of the stocks held in the portfolio of BlackRock and Barclays funds. Barclays sold its leading global ETF products (iShares) in order to avoid the risk of bailout by the UK government and recover from the 2008 financial crisis. BlackRock acquired iShares in order to aggressively expand assets under management and develop unique products with combined active, quantitative and index

strategies for clients. Therefore, this merger-induced increase in index fund ownership for BlackRock should be exogenous to firm and deal characteristics, which allows us to investigate the difference of the voting behaviour of the iShares index fund before and after the merger event.

To explore this event, I firstly identify all BlackRock funds as the funds with ultimate parent "BlackRock Inc" and Barclays funds as the funds with ultimate parent "Barclays PLC" following Mass, Schumacher, and Wang (2016). I identify Barclays funds that are involved in the event if the funds are with ultimate owner "Barclays PLC" in December 2009 and changed parent company and appear to be with ultimate owner "BlackRock Inc" afterwards. My objective is to investigate the voting behaviour of these Barclays funds before and after the event. Using a sample of votes cast by Barclays funds that changed ownership around this event, I estimate the specification shown as follows:

$$\begin{aligned} Votefor_{i_{BGI},k} = \alpha &+ \beta_1 \times Ownership\ in\ Target\ by\ Blackrock_k \\ &+ \beta_2 \times Post \\ &+ \beta_3 \times Ownership\ in\ Target\ by\ Blackrock_k \times Post \\ &+ \beta_4 \times Ownership\ in\ Target_{i_{BGI}} + \beta_5 \times Bidder\ CAR3_k \\ &+ \beta_6 \times Proportion\ of\ \text{For}Votes_k + deal\ FE + year\ FE + \epsilon \end{aligned} \quad (4.4)$$

where $Ownership\ in\ Target\ by\ Blackrock_k$ is the total ownership of BlackRock funds in the target of deal k. $Post$ is a dummy variable to indicate the years after the event, i.e. after 2009. The coefficient of the interaction term is the main interest, which captures the change in the voting behaviour of Barclays funds corresponding to BlackRock's interest before and after the event. I also include a few control variables including: $Ownership\ in\ Target_{i_{BGI}}$, which is Barclays index fund i's ownership in the target;

bidder announcement return of deal k, $Bidder\ CAR3_k$; and the proportion of "for" votes cast by all voting shareholders for deal k.

As shown in Table 4.6, BlackRock's interest in the target does not affect the voting pattern of Barclays index funds in the bidder on average. However, the coefficient on the interaction term is positive and significant, indicating that Barclays index funds are more likely to vote for a deal following BlackRock's interest after the merger, compared to the index funds' own voting pattern before the merger.

Table 4.6: The Merger of BlackRock and Barclays

The sample consists of the votes cast by Barclays Global Investors (Barclays) index funds for acquirer firms' M&A approval decisions. Data on fund-level vote records are for the period from 2003 to 2016 and obtained from the ISS Voting Analytics Database. Deal information is from SDC's Mergers and Acquisitions database. I require both the bidders and targets to be publicly listed. Mutual fund holdings data are from the Thomson Reuters Mutual Fund Holding s12 Database. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target. Detailed definitions of all variables are included in the Appendix. Standard errors are clustered by deal. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	(1)	(2)
Ownership in Target by BlackRock (a)	57.608	-44.736
	(1.202)	(-0.709)
Post-Merger Dummy (b)		-4.435
		(-1.614)
a*b		227.637*
		(1.837)
Ownership in Target	115.357	207.125
	(0.372)	(0.507)
Bidder CAR3	-3.021	-0.440
	(-0.605)	(-0.064)
Proportion of "For" Votes	16.096***	18.416***
	(4.680)	(3.846)
Observations	2,119	2,119

4.3. The Externality of Fund Cooperation on M&A Outcomes

In this section, I examine the effect of misaligned fund ownership on M&A outcomes. If the holdings of misaligned fund families weaken shareholder resistance to bad mergers, then M&A deals with a greater presence of misaligned funds should on average have worse performance. Using a sample of deals covering a longer time period from 1980 to 2016, I find that deals with a greater presence of misaligned fund families have inferior performance. Targets and bidders held by misaligned fund families are more likely to merge together. A higher level of ownership by misaligned fund families in the acquirer firm also significantly affects the fraction of "for" votes for the deal.

4.3.1. Data and Sample Construction

To conduct the analysis at the deal level, I use sample deals announced between 1980 and 2016. I include all US deals, both completed and withdrawn, announced between 1980 and 2016 from the SDC database. I require that all the deals are classified as a merger, an acquisition of majority interest, or an acquisition of assets in SDC. I keep the deals in which both bidder and target are public firms. Additionally, I only keep deals if the bidder owns less than 50% of the target before the deal and is seeking to own greater than 50% after the deal. I also exclude deals involving firms that have multiple classes of shares. I further obtain data on stock prices and returns from CRSP, deal characteristics from the SDC and firm characteristics from Compustat.

Considering that a fund family could have active funds holding both the bidder and the target at the same time, misaligned interest in the bidder would only arise if the fund family benefits more from holdings in the target than in the bidder through actively managed funds. I identify fund families with misaligned interest by comparing holdings

of the fund families in the bidder and the target. Following Harford, Jenter, and Li (2011), considering an active fund who owns α_B percent of the equity of a bidder and α_T percent of the equity of a target, its affiliated passive funds hold β_B percent of the equity of the bidder and β_T percent of the equity of a target, then the wealth change for the active fund in a deal can be calculated as follows:

$$\Delta W_{pre-to-post-deal} = \alpha_B(\Delta bidder\ value) + \alpha_T(takeover\ premium)$$

$$= (\alpha_B + \alpha_T)(\frac{\alpha_B}{\alpha_B + \alpha_T}(\Delta bidder\ value)$$

$$+ \frac{\alpha_T}{\alpha_B + \alpha_T}(takeover\ premium))$$

where $\frac{\alpha_B}{\alpha_B+\alpha_T}$ and $\frac{\alpha_T}{\alpha_B+\alpha_T}$ capture the weight on bidder value and target value, respectively. The higher the weight in the target, the less likely the interests of these funds are aligned with the shareholders of the bidder but more with the target. Therefore, I identify a fund family as having misaligned interest in the bidder if the aggregate weight of its active funds on target value (i.e. $\frac{\alpha_T}{\alpha_B+\alpha_T}$) is greater than 30%. I also change the threshold from 30% to 50% for a robustness check.

After identifying all misaligned fund families in the bidder firm, I then aggregate the bidder ownership held by all funds belonging to these families to capture their voting power in the bidder. I also separately aggregate the ownership of all index funds or active funds managed by misaligned fund families. I use these measures as the main explanatory variables in the deal-level regression analyses. I expect that the higher the value of these variables, the greater the ability of these misaligned fund families to influence the deal outcomes. For deals that do not have misaligned fund families as defined above, I set these variables to zero.

The final sample contains 5,749 deals in which both the bidders and targets have data on institutional holdings in the quarter-end before the deal. Table 4.7 presents descriptive statistics for deal and bidder characteristics of the sample deals. The average three-day abnormal bidder announcement return (CAR3) is -1%, with a median of -0.8%. This large negative bidder announcement return is typical and consistent with previous literature. Over three-quarters (77%) of the sample deals are completed deals.

Table 4.7: Summary Statistics for Bidder and Deal Characteristics

The sample consists of M&A deals announced during the period from 2003 to 2016. The bidders and targets are publicly listed and have institutional holding data in the Thomson Reuters Mutual Fund Holding s12 Database. Deal information is from SDC's Mergers and Acquisitions database. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target. I require both bidder and target firms to be publicly listed.

Variable	N	Mean	Median	Standard deviation
Bidder CAR3	6286	-0.01	-0.008	0.072
Bidder CAR5	6286	-0.01	-0.009	0.082
Synergy	6188	-1.032	-0.346	3.176
Complete	6359	0.771	1	0.42
MB	6218	2.046	1.223	2.508
Market Capitalisation	6350	13.963	13.978	2.219
Stock Return	6333	0.264	0.165	0.584
ROA	6344	0.022	0.036	0.131
Leverage	6316	0.396	0.388	0.272
Stock Only	6359	0.343	0	0.475
Cash Only	6359	0.274	0	0.446
Competing Deal	6359	0.081	0	0.272
Same Industry	6359	0.353	0	0.478
Relative Size	6343	0.395	0.174	0.639
Institutional Ownership	6359	0.489	0.511	0.283

4.3.2. Misaligned Fund Family Ownership and Deal Performance

4.3.2.1. Bidder Announcement Returns

I measure bidder abnormal announcement returns using CAR3 and CAR5. CAR3 is bidder abnormal announcement return over days (-1, +1), and CAR5 is over days (-2, +2). Daily abnormal stock returns are computed using the market model and the value-weighted CRSP index. The estimation window is over the period from 200 days to 60 days prior to the acquisition announcement date. I control for several deal and bidder characteristics that could affect the announcement return following Masulis, Wang, and Xie (2007). Deal characteristics that I control include a stock only dummy which equals one if only stocks are used to pay for the acquisition, a cash only dummy which equals one if only cash is used to pay for the acquisition, a competing deal dummy which equals one if there are multiple bids for the same target within one year, a same industry dummy which equals one if the bidder and target are from the same industry, and relative size between the bidder and the target calculated as the ratio between the deal value and market value of bidder. Bidder characteristics include total institutional ownership, total index fund ownership, market capitalisation, leverage, market-to-book ratio, ROA, and prior year stock return. I also include industry-year fixed effects.

In Table 4.8, bidder ownership held by misaligned fund families is negatively and statistically significantly related to bidder CAR3. The results suggest that the market reacts negatively to deals involving greater presence of misaligned fund families in the bidder. In addition, a higher level of bidder ownership held by index funds managed by misaligned fund families is associated with worse CAR3. In contrast, bidder ownership held by active funds that are managed by misaligned fund families does not have a

significant relation with CAR3. The results are similar when I use CAR5 to measure bidder announcement returns.

4.3.2.2. Bidder Share of Synergy

Due to lack of incentive to vote on behalf of the bidder by misaligned fund families, I would expect the bidder to share less of the deal synergy. For deals with positive total synergy, I define bidder share of synergy as the abnormal value increase in bidder value over (-1, +1) divided by the dollar value of total synergy. For deals with negative total synergy, bidder share of synergy is defined as negative one times the abnormal value increase in bidder value over (-1, +1) divided by the dollar value of total synergy. Total synergy is calculated as the sum of the abnormal increases in bidder and target value over the days (-1, +1), adjusted for any target shares held by the bidder before the bid announcement. Table 4.9 reports the regression results using the share of synergy by the bidder as the dependent variable. A higher level of bidder ownership by misaligned fund families is associated with significantly lower bidder share of synergy.

Table 4.8: Misaligned Fund Family Ownership and Bidder Announcement Returns

The sample consists of 5,749 M&A deals announced during the period from 1980 to 2016. Deal information is from SDC's Mergers and Acquisitions database. Mutual fund holdings data are from the Thomson Reuters Mutual Fund Holding s12 Database. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target. I require both bidder and target firms to be publicly listed and only keep the deals with negative bidder announcement returns. The dependent variable in Columns (1)–(4) is *Bidder CAR3*, which is bidder abnormal announcement return over days (-1, +1), and *Bidder CAR5* in Columns (5)–(8) over days (-2, +2). Daily abnormal stock returns are computed using the market model and the value-weighted CRSP index. The estimation window is days (200, 60) prior to the acquisition announcement date. The independent variable is the fraction of bidder shares held by fund families that put more than 30% or 50% weight on the target value. All regressions include industry and year fixed effects. Standard errors are two-way clustered by industry and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	Bidder CAR3				Bidder CAR5			
Ownership in Bidder by Misaligned Fund Families_30%	-0.051				-0.096**			
	(-1.356)				(-2.213)			
Bidder Ownership by Distorted Index Funds_30%		-0.220**				-0.222**		
		(-2.176)				(-2.122)		
Bidder Ownership by Active Funds_30%		-0.018				-0.074		
		(-0.435)				(-1.493)		
Ownership in Bidder by Misaligned Fund Families_50%			-0.114**				-0.192***	
			(-2.159)				(-3.312)	
Bidder Ownership by Distorted Index Funds_50%				-0.270**				-0.325***
				(-2.155)				(-2.661)
Bidder Ownership by Active Funds_50%				-0.058				-0.142*
				(-0.904)				(-1.963)
MB	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(-1.405)	(-1.384)	(-1.392)	(-1.369)	(-0.905)	(-0.796)	(-0.890)	(-0.785)
Market Capitalisation	-0.000	-0.000	-0.000	-0.000	-0.001	-0.001	-0.001	-0.001
	(-0.251)	(-0.195)	(-0.056)	(-0.168)	(-1.048)	(-0.983)	(-0.853)	(-0.926)
Stock Return	-0.010***	-0.010***	-0.010***	-0.010***	-0.016***	-0.016***	-0.016***	-0.016***
	(-6.262)	(-3.904)	(-6.341)	(-3.894)	(-6.354)	(-4.956)	(-6.416)	(-4.963)
ROA	-0.005	-0.005	-0.004	-0.004	0.014	0.014	0.014	0.014
	(-0.347)	(-0.337)	(-0.328)	(-0.307)	(1.239)	(1.015)	(1.271)	(1.059)
Leverage	0.010*	0.010*	0.010*	0.010*	0.015**	0.015**	0.015**	0.015**
	(1.949)	(1.704)	(1.930)	(1.730)	(2.357)	(2.269)	(2.333)	(2.301)
Institutional Ownership	-0.017***	-0.018***	-0.018***	-0.018***	-0.017**	-0.017***	-0.017***	-0.018***
	(-2.782)	(-3.073)	(-2.945)	(-3.092)	(-2.643)	(-2.673)	(-2.919)	(-2.812)
Index Fund Ownership	-0.025	0.020	-0.012	0.016	-0.023	0.010	-0.005	0.018
	(-0.375)	(0.268)	(-0.187)	(0.222)	(-0.297)	(0.108)	(-0.074)	(0.209)
Stock Only	-0.008**	-0.008***	-0.008**	-0.008***	-0.009***	-0.009***	-0.009***	-0.009***

	(-2.708)	(-2.797)	(-2.708)	(-2.794)	(-2.884)	(-2.625)	(-2.883)	(-2.619)
Cash Only	0.019***	0.019***	0.019***	0.019***	0.016***	0.016***	0.016***	0.017***
	(6.105)	(6.691)	(6.031)	(6.654)	(3.836)	(5.191)	(3.786)	(5.189)
Competing Deal	-0.010**	-0.010***	-0.010**	-0.010***	-0.006	-0.006	-0.006	-0.006
	(-2.335)	(-2.620)	(-2.310)	(-2.597)	(-1.371)	(-1.355)	(-1.328)	(-1.317)
Same Industry	0.005**	0.005**	0.005**	0.005**	0.006***	0.006**	0.006***	0.006**
	(2.273)	(2.067)	(2.311)	(2.126)	(2.851)	(2.368)	(2.890)	(2.432)
Relative Size	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002
	(1.305)	(1.415)	(1.361)	(1.456)	(0.782)	(0.936)	(0.789)	(0.922)
Observations	5,749	5,749	5,749	5,749	5,749	5,749	5,749	5,749
Industry*Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.072

Table 4.9: Misaligned Fund Family Ownership and Bidder Share of Synergy

The sample consists of M&A deals announced during the period from 1980 to 2016. Deal information is from SDC's Mergers and Acquisitions database. Mutual fund holdings data are from the Thomson Reuters Mutual Fund Holding s12 Database. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target. I require both bidder and target firms to be publicly listed and only keep the deals with negative bidder announcement returns. The dependent variable is bidder share of synergy. For deals with positive total synergy, bidder share of synergy is defined as the abnormal value increase in bidder value over (-1, +1) divided by the dollar value of total synergy. For deals with negative total synergy, bidder share of synergy is defined as negative one times the abnormal value increase in bidder value over (-1, +1) divided by the dollar value of total synergy. Total synergy is calculated as the sum of the abnormal increases in bidder and target value over the days (-1, +1), adjusted for any target shares held by the bidder before the bid announcement. The independent variable is the fraction of bidder shares held by fund families that put more than 30% or 50% weight on the target value. All regressions include industry and year fixed effects. Standard errors are two-way clustered by industry and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	(1)	(2)	(3)	(4)
Ownership in Bidder by Misaligned Fund Families_30%	-4.203***			
	(-3.338)			
Ownership in Bidder by Misaligned Index Funds_30%		-11.436**		
		(-2.359)		
Ownership in Bidder by Misaligned Active Funds_30%		-3.030*		
		(-1.706)		
Ownership in Bidder by Misaligned Fund Families_50%			-8.215***	
			(-3.999)	
Ownership in Bidder by Misaligned Index Funds_50%				-9.401*
				(-1.681)
Ownership in Bidder by Misaligned Active Funds_50%				-7.967***
				(-2.661)
Observations	5,662	5,662	5,662	5,662
Controls	Yes	Yes	Yes	Yes
Industry*Year FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.014	0.014	0.014	0.014

4.3.2.3. The Likelihood of Deal Completion

To investigate the effect of misaligned fund family ownership on the likelihood of deal completion, I estimate logit models using the deal completion dummy as the dependent variable. Table 4.10 shows the regression results. Consistent with the voting results, bidder ownership by misaligned fund families significantly increases the probability of deal completion. More importantly, this effect is mainly due to holdings of index funds not active funds managed by misaligned fund family ownership. This result indicates that index funds work more closely with fund family interests.

4.3.3. Misaligned Fund Family Ownership and Target Selection

If misaligned fund families could affect deal outcomes through index funds' ownership in the bidder, it could affect managers' decisions on selecting acquisition targets. To test this conjecture, I match each target with a control target and pair the control target with the actual bidder to produce a set of pseudo deals. Control targets are firms with the closest size, book-to-market ratios and prior year stock returns in the same industry to the actual target. I require the difference in size, book-to-market ratios and prior year stock returns between the actual target and the control target to be less than 25%. Deals with targets that do not have a close match are excluded from the sample. The sample includes 4,641 actual deals and 4,641 pseudo deals.

I estimate a logit model including the actual target indicator as the dependent variable to predict which of the two similar target firms will be selected by the bidder. The main explanatory variables are again bidder ownership held by misaligned fund families. I control for various target firm characteristics and the difference in firm characteristics between the bidder and the actual or control targets. The results from Table

4.11 show that higher misaligned fund family ownership in the bidder significantly increases the likelihood of the actual target being chosen by the bidder.

4.3.4. Misaligned Fund Family Ownership and the Fraction of "For" Votes

Using the fraction of "for" votes cast by all bidder shareholders as the dependent variable, I examine the effect of misaligned fund family ownership on the voting results at deal level. I merge the sample deals with company vote results data from the ISS Voting Analytics to obtain vote results in the bidder merger approval meetings cast by all bidder shareholders. This results in 326 deals with available vote results data and deal characteristics data from the SDC. The regression results are reported in Table 4.12. I control for various deal and bidder characteristics as well as year fixed effects. In Columns (1) and (2), misaligned fund families are defined as those whose active funds put more than 30% weight on target value. Columns (3) and (4) repeat the same regression specifications but change the weight threshold to 50%. The results suggest that deals involving bidders owned by misaligned fund families are associated with a significantly higher fraction of "for" votes.

Table 4.10: Misaligned Fund Family Ownership and the Likelihood of Deal Completion

The sample consists of M&A deals announced during the period from 1980 to 2016. Deal information is from SDC's Mergers and Acquisitions database. Mutual fund holdings data are from the Thomson Reuters Mutual Fund Holding s12 Database. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target. I require both bidder and target firms to be publicly listed and only keep the deals with negative bidder announcement returns. The dependent variable is a completion dummy that equals one if a deal is completed after announcement. The independent variable is the fraction of bidder shares held by fund families that put more than 30% or 50% weight on the target value. I perform logistic regressions including industry and year fixed effects. Standard errors are two-way clustered by industry and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	(1)	(3)	(2)	(4)
Ownership in Bidder by Misaligned Fund Families_30%	4.136***			
	(3.251)			
Ownership in Bidder by Misaligned Index Funds_30%		4.759***		
		(3.163)		
Ownership in Bidder by Misaligned Active Funds_30%		2.696		
		(0.515)		
Ownership in Bidder by Misaligned Fund Families_50%			3.289	
			(1.589)	
Ownership in Bidder by Misaligned Index Funds_50%				4.888*
				(1.922)
Ownership in Bidder by Misaligned Active Funds_50%				-1.540
				(-0.264)
Observations	4,768	4,768	4,768	4,768
Controls	Yes	Yes	Yes	Yes
Industry*Year FE	Yes	Yes	Yes	Yes

Table 4.11: Misaligned Fund Family Ownership and the Likelihood of Being Target

The sample consists of actual deals announced during the period from 1980 to 2016 as well as pseudo deals with actual acquirers and control targets. Deal information is from SDC's Mergers and Acquisitions database. Mutual fund holdings data are from the Thomson Reuters Mutual Fund Holding s12 Database. Each actual target is matched with a control target by closest institutional ownership from similar market capitalisation (within 25%) firms in the same industry. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target. I require both bidder and target firms to be publicly listed and only keep the deals with negative bidder announcement returns. The dependent variable is an actual target dummy that equals one if the observation is an actual deal. The independent variable is the fraction of bidder shares held by fund families that put more than 30% or 50% weight on the target value. I perform logistic regressions including bidder fixed effects. Standard errors are two-way clustered by industry and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	(1)	(2)	(3)	(4)
Ownership in Bidder by Misaligned Fund Families_30%	10.526***			
	(10.200)			
Ownership in Bidder by Misaligned Index Funds_30%		13.526***		
		(10.763)		
Ownership in Bidder by Misaligned Active Funds_30%		-1.814		
		(-0.581)		
Ownership in Bidder by Misaligned Fund Families_50%			14.216***	
			(9.639)	
Ownership in Bidder by Misaligned Index Funds_50%				19.980***
				(10.447)
Ownership in Bidder by Misaligned Active Funds_50%				0.456
				(0.128)
Target ROA	-1.977***	-1.974***	-1.999***	-1.992***
	(-8.316)	(-8.299)	(-8.339)	(-8.310)
Target Leverage	-0.007	-0.004	-0.004	0.001
	(-0.176)	(-0.103)	(-0.111)	(0.025)
Target MB	-0.004	-0.004	-0.004	-0.005
	(-0.612)	(-0.659)	(-0.660)	(-0.772)
Target Market Capitalisation	-1.966***	-1.964***	-1.974***	-1.966***
	(-10.154)	(-10.133)	(-10.182)	(-10.124)
Target Institutional Ownership	-0.174***	-0.176***	-0.172***	-0.174***
	(-16.290)	(-16.372)	(-16.114)	(-16.208)
Target Stock Return	0.185***	0.182***	0.187***	0.184***
	(4.559)	(4.485)	(4.631)	(4.550)
Diff. in Size	0.055**	0.067***	-0.013	-0.011
	(2.366)	(2.827)	(-0.555)	(-0.454)
Diff. in ROA	-2.164***	-2.166***	-2.185***	-2.178***
	(-7.931)	(-7.927)	(-7.945)	(-7.913)
Diff. in MB	-0.017**	-0.017**	-0.016**	-0.016**
	(-2.483)	(-2.461)	(-2.442)	(-2.409)
Diff. in Stock Return	-0.201***	-0.197***	-0.201***	-0.198***
	(-4.739)	(-4.646)	(-4.735)	(-4.664)
Diff. in Institutional Ownership	0.134***	0.135***	0.132***	0.132***
	(12.212)	(12.277)	(12.067)	(12.067)
Observations	9,282	9,282	9,282	9,282
Bidder FE	Yes	Yes	Yes	Yes

Table 4.12: Misaligned Fund Family Ownership and the Fraction of "For" Votes

The sample consists of 326 deals with available mutual fund vote records for the period from 2003 to 2016 from the ISS Voting Analytics Database. The dependent variable is the fraction of "for" votes cast by all voting shareholders in the bidder's merger approval meeting. The independent variables are the fraction of bidder shares held by funds managed by a fund family that puts more than 30% or 50% weight on target value. Deal information is from SDC's Mergers and Acquisitions database. Mutual fund holdings data are from the Thomson Reuters Mutual Fund Holding s12 Database. I require both the bidders and targets to be publicly listed. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target. Detailed definitions of all variables are included in the Appendix. Standard errors are clustered by deal. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

	(1)	(2)	(3)	(4)
Ownership in Bidder by Misaligned Fund Families_30%	0.082*			
	(1.677)			
Ownership in Bidder by Misaligned Index Funds_30%		0.125*		
		(1.699)		
Ownership in Bidder by Misaligned Active Funds_30%		0.046		
		(0.901)		
Ownership in Bidder by Misaligned Fund Families_50%			0.152**	
			(2.365)	
Ownership in Bidder by Misaligned Index Funds_50%				0.246*
				(1.811)
Ownership in Bidder by Misaligned Active Funds_50%				0.097
				(1.012)
MB	0.000	0.000	0.000	0.001
	(0.253)	(0.212)	(0.346)	(0.467)
Market Capitalisation	-0.001	-0.001	-0.004	-0.004
	(-0.490)	(-0.560)	(-1.235)	(-1.250)
Stock Return	0.009	0.009	0.008	0.008
	(1.105)	(1.097)	(1.112)	(1.067)
ROA	0.075	0.075	0.071	0.070
	(1.059)	(1.055)	(1.024)	(1.022)
Leverage	0.014	0.013	0.016	0.016
	(1.176)	(1.096)	(1.183)	(1.193)
Institutional Ownership	0.031	0.029	0.020	0.021
	(1.337)	(1.165)	(0.860)	(0.911)
Index Fund Ownership	-0.293***	-0.280**	-0.358***	-0.383***
	(-3.339)	(-2.232)	(-3.425)	(-3.021)
Stock Only	0.005	0.005	0.003	0.003
	(0.479)	(0.468)	(0.305)	(0.316)
Cash Only	0.041*	0.042*	0.045*	0.044*
	(1.978)	(1.991)	(2.071)	(2.047)
Competing Deal	-0.006	-0.005	-0.003	-0.003
	(-0.540)	(-0.446)	(-0.277)	(-0.283)
Same Industry	0.003	0.003	0.002	0.002
	(0.356)	(0.349)	(0.251)	(0.230)
Relative Size	-0.005	-0.005	-0.007	-0.008
	(-0.886)	(-0.923)	(-1.303)	(-1.348)
Observations	326	326	326	326
R-squared	0.527	0.526	0.528	0.528
Year FE	Yes	Yes	Yes	Yes

4.4. Ruling Out Alternative Explanations

In this section, I try to rule out alternative explanations to the results.

4.4.1. Long-term Investment Horizon of Index Funds

It is argued that index funds have a longer investment horizon because their investment follows a benchmark index and they are not allowed to actively buy or sell portfolio firms (Appel et al. 2016). If index funds consider the long-term performance of a deal, their voting pattern might deviate from the other generally short-term bidder shareholders. In addition, active ownership in the target by fund family may provide superior information which helps the index funds better assess the long-term performance of the deal. In this case, differential in index fund voting behaviour can also correlate with fund family holdings.

To address this concern, I first examine index funds' voting in deals with bad long-term performance. If index funds' voting behaviour is independent from fund family interest, but depends on the long-term performance of the deal, index funds would be more likely to vote against deals with bad long-term performance regardless of fund family interest.[19] I measure the long-term deal performance of a deal 1 year (BHAR1) or 3 years (BHAR3) after deal announcement as the 1-year or 3-year abnormal buy-and-hold returns relative to control firm returns, following Chen, Harford, and Li (2007). Table 4.13 Panel A shows that the effect of fund family interest on the likelihood of "for" votes by index funds is still positive and significant, which does not support this alternative explanation. I further examine the effect of misaligned fund family ownership

[19] I assume that index funds could, to some extent, identify deals that generate long-term benefits for the bidder.

and the long-term performance of all deals in the sample. The results, as reported in Panel B of Table 4.13, show that higher bidder ownership by fund families that put more weight on the target is associated with worse long-term deal performance.

4.4.2. Information Exchange within Fund Family

It is possible that managers could be entrenched with powerful fund families and leak information about the deal prior to the announcements in return for support from these funds in the future. In this case, the voting pattern of index funds I find could be due to affiliated active funds buying the target shares before the deal announcement. This explanation is still in line with the fund cooperation theory but would make it implausible to argue that the index funds' voting is influenced by the fund family's interest in the target.

I directly gauge this concern by excluding all funds that start holding the target or bidder shares less than 6 months before deal announcements from the sample and reconstruct all the main variables. I repeat the analyses on index fund voting and deal performance using this sample of relatively long-term holder funds and report the results in Table 4.14. Panel A reports the results for the effect of fund family interest on index funds' voting pattern. Panels B, C, and D present the results for the effect of misaligned fund family ownership on bidder announcement returns, bidder share of synergy, and the likelihood of deal completion, respectively. All the results are consistent with the previous findings.

Table 4.13: Robustness Tests – Long-term Deal Performance

Panel A uses a sample that consists of the votes cast by index funds for a subsample of deals with negative long-term performance three years after the announcement of the deal from 2003 to 2016. Panel B uses a sample that consists of M&A deals announced during the period from 1980 to 2016. Long-term deal performance 1 year or 3 years after deal announcement is measured as the 1-year or 3-year abnormal buy-and-hold returns relative to control firm returns, following Chen, Harford, and Li (2007). Deal information is from SDC's Mergers and Acquisitions database. Mutual fund holdings data are from the Thomson Reuters Mutual Fund Holding s12 Database. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target. I require both bidder and target firms to be publicly listed and only keep the deals with negative bidder announcement returns. Standard errors are two-way clustered by industry and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

Panel A: Fund Family Interest and the Likelihood of "For" Votes by Index Funds in Deals with Bad Long-term Performance

	(1)	(2)	(3)	(4)	(5)	(6)
Ownership in Target by Fund Family	40.452**			32.868		
	(2.190)			(1.374)		
Ownership in Target by Active Funds from Same Family		42.340*	46.944*		177.803**	175.644**
		(1.869)	(1.890)		(2.341)	(2.325)
Ownership in Target by Index Funds from Same Family		35.183	35.949		-11.770	-12.334
		(0.921)	(0.935)		(-0.481)	(-0.475)
Ownership in Target			-39.923			-38.064
			(-0.649)			(-0.641)
Observations	2,376	2,376	2,376	1,205	1,205	1,205
Deal FE	Yes	Yes	Yes	Yes	Yes	Yes
Family FE	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Misaligned Fund Family Ownership and Long-term Deal Performance

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variables	BHAR1				BHAR3			
Ownership in Bidder by Misaligned Fund Families_30%	-0.110*				-3.263**			
	(-1.867)				(-2.054)			
Ownership in Bidder by Misaligned Index Funds_30%		-0.341*				-14.108*		
		(-1.955)				(-1.905)		
Ownership in Bidder by Misaligned Active Funds_30%		-0.016				-1.897		
		(-0.208)				(-0.741)		
Ownership in Bidder by Misaligned Fund Families_50%			-0.165**				-11.779***	
			(-2.029)				(-3.675)	
Ownership in Bidder by Misaligned Index Funds_50%				-0.247**				-13.337*
				(-2.027)				(-1.672)
Ownership in Bidder by Misaligned Active Funds_50%				-0.094				-11.398*
				(-1.210)				(-1.921)
Observations	4,230	4,230	4,230	4,230	4,230	4,230	4,230	4,230
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry*Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.052	0.052	0.052	0.052	0.149	0.149	0.149	0.149

Table 4.14: Robustness Tests – Information Exchange within Fund Family

I exclude all funds that hold target or bidder shares less than 6 months before deal announcements from the sample and reconstruct all the main variables. Panel A uses a sample that consists of the bidder merger approval votes cast by index funds from 2003 to 2016. Panel B uses a sample that consists of M&A deals announced during the period from 1980 to 2016. Deal information is from SDC's Mergers and Acquisitions database. Mutual fund holdings data are from the Thomson Reuters Mutual Fund Holding s12 Database. I keep an acquisition if the bidder owns less than 50% of the target prior to the bid and is seeking to own greater than 50% of the target. I require both bidder and target firms to be publicly listed and only keep the deals with negative bidder announcement returns. Standard errors are two-way clustered by industry and year. Statistical significance is indicated at the 10% (*), 5% (**) and 1% levels (***).

Panel A: Fund Family Interest and the Likelihood of "For" Votes by Index funds

	(1)	(2)	(3)	(4)
Ownership in Target by Fund Family	26.384***		63.474***	
	(3.898)		(4.221)	
Ownership in Target by Active Funds from Same Family		7.532		25.135*
		(0.846)		(1.767)
Ownership in Target by Index Funds from Same Family		51.591***		151.621***
		(3.859)		(4.401)
Observations	2,202	2,202	1,697	1,697
Deal FE	Yes	Yes	Yes	Yes
Family FE	Yes	Yes	Yes	Yes

Panel B: Misaligned Fund Family Ownership and Bidder Announcement Returns

	(1)	(3)	(2)	(4)
Ownership in Bidder by Misaligned Fund Families_30%	-0.051			
	(-1.356)			
Ownership in Bidder by Misaligned Index Funds_30%		-0.220**		
		(-2.176)		
Ownership in Bidder by Misaligned Active Funds_30%		-0.018		
		(-0.435)		
Ownership in Bidder by Misaligned Fund Families_50%			-0.114**	
			(-2.159)	
Ownership in Bidder by Misaligned Index Funds_50%				-0.270**
				(-2.155)
Ownership in Bidder by Misaligned Active Funds_50%				-0.058
				(-0.904)
Observations	5,749	5,749	5,749	5,749
Controls	Yes	Yes	Yes	Yes
Industry*Year FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.068	0.068	0.068	0.068

Panel C: Misaligned Fund Family Ownership and Bidder Share of Synergy

	(1)	(3)	(2)	(4)
Ownership in Bidder by Misaligned Fund Families_30%	-4.203***			
	(-3.338)			
Ownership in Bidder by Misaligned Index Funds_30%		-11.436**		
		(-2.359)		
Ownership in Bidder by Misaligned Active Funds_30%		-3.030*		
		(-1.706)		
Ownership in Bidder by Misaligned Fund Families_50%			-8.215***	
			(-3.999)	
Ownership in Bidder by Misaligned Index Funds_50%				-9.401*
				(-1.681)
Ownership in Bidder by Misaligned Active Funds_50%				-7.967***
				(-2.661)
Observations	5,662	5,662	5,662	5,662
Controls	Yes	Yes	Yes	Yes
Industry*Year FE	Yes	Yes	Yes	Yes
Adj. R-squared	0.014	0.014	0.014	0.014

Panel D: Misaligned Fund Family Ownership and Deal Completion

	(1)	(3)	(2)	(4)
Ownership in Bidder by Misaligned Fund Families_30%	3.913***			
	(3.167)			
Ownership in Bidder by Misaligned Index Funds_30%		4.796***		
		(3.192)		
Ownership in Bidder by Misaligned Active Funds_30%		1.335		
		(0.289)		
Ownership in Bidder by Misaligned Fund Families_50%			3.078	
			(1.540)	
Ownership in Bidder by Misaligned Index Funds_50%				4.881*
				(1.920)
Ownership in Bidder by Misaligned Active Funds_50%				-1.785
				(-0.330)
Observations	4,768	4,768	4,768	4,768
Controls	Yes	Yes	Yes	Yes
Industry*Year FE	Yes	Yes	Yes	Yes

4.5. Conclusion

In recent years, there has been a dramatic increase in the assets of passively managed mutual funds. According to an estimate by the Thomson Reuters Financial, at the end of 2014, passive funds accounted for more than a third of mutual fund assets. As a result, fund families that manage passive funds, such as Vanguard, BlackRock, and State Street, are becoming an increasingly important component of US stock ownership. However, passive funds may not work simply for their funds' investors, but rather for the benefit of the fund families that manage these funds. The potential cooperation among passive and active funds within the same fund family could generate benefits for these fund families at the expense of other shareholders. This study identifies misaligned fund families as those that could benefit more from active holdings in target firms and these fund families are expected to have stronger incentive to influence fund voting behaviour when is comes to mergers.

I find that misaligned fund families use their index funds' voting power to benefit affiliated active funds' performance and such activity has negative externalities on merger performance. Specifically, I directly investigate the voting behaviour of index funds in the event of mergers and acquisitions where the interest of individual funds is supposed to vary depending on their holdings in the acquirer or the target. I find that index funds are more likely to support deals involving targets that are held by the fund families. In addition, only active funds' interest in the target is significantly positively associated with the likelihood of an index fund favouring a deal. An index fund's own interest in the target does not explain its voting pattern in the bidder merger approval meeting. In terms of merger outcomes, I find that greater misaligned ownership is significantly associated with lower bidder announcement returns, less share of synergy for the bidder, and a higher

probability of completion. Greater presence of misaligned fund families is also associated with a higher likelihood of the two firms merging together and a higher fraction of "for" votes for the deal in the bidder merger approval meeting. The results indicate that passive funds in the bidder firms are allies of their affiliated active funds that have interest in the target firms. The cooperation among these funds could have a negative impact on other shareholders in bidder firms.

Appendix: Variable Definitions

Variable	Definition
Same Family	Dummy variable equal to one if the two funds in a fund pair belong to the same fund family, zero otherwise
Ownership in Target by Fund Family	The total fraction of ownership in the target held by all funds of a fund family
Ownership in Target by Active Funds from Same Family	The total fraction of ownership in the target held by all active funds from the same fund family of the index fund
Ownership in Target by Index Funds from Same Family	The total fraction of ownership in the target held by all index funds from the same fund family of the index fund
Ownership in Target	The fraction of ownership in the target held by the fund
Index Dummy	Dummy variable equal to one if the fund is an index fund, zero otherwise
Ownership in Bidder by Misaligned Fund Families_30%	The fraction of ownership in the bidder held by all fund families that put at least 30% weight on target value
Ownership in Bidder by Misaligned Index Funds_30%	The fraction of ownership in the bidder held by index funds belonging to families that put at least 30% weight on target value
Ownership in Bidder by Misaligned Active Funds_30%	The fraction of ownership in the bidder held by active funds belonging to families that put at least 30% weight on target value
Ownership in Bidder by Misaligned Fund Families_50%	The fraction of ownership in the bidder held by all fund families that put at least 50% weight on target value
Ownership in Bidder by Misaligned Index Funds_50%	The fraction of ownership in the bidder held by index funds belonging to families that put at least 50% weight on target value
Ownership in Bidder by Misaligned Active Funds_50%	The fraction of ownership in the bidder held by active funds belonging to families that put at least 50% weight on target value
Bidder CAR3	Three-day cumulative abnormal return over days (-1, +1), calculated using a market model with the CRSP equally weighted return as the market index
Bidder CAR5	Five-day cumulative abnormal return over days (-2, +2), calculated using a market model with the CRSP equally weighted return as the market index
Synergy	The sum of the abnormal increases in bidder and target market value over days (-1, +1), adjusted for any target shares held by the bidder before the bid announcement

Complete	Dummy variable equal to one if the deal is completed, zero otherwise
MB	Market value of assets over book value of assets
Market Capitalisation	Log of market capitalisation
Stock Return	Prior year stock return
ROA	EBIT over book value of total assets
Leverage	Book value of debt over book value of total assets
Institutional Ownership	Fraction of bidder's shares held by institutional investors
Index Fund Ownership	Fraction of bidder's shares held by index funds
Stock Only	Dummy variable equal to one if only stocks are used to pay for acquisition, zero otherwise
Cash Only	Dummy variable equal to one if only cash is used to pay for acquisition, zero otherwise
Competing Deal	Dummy variable equal to one if there are multiple bids for the same target within one year, zero otherwise
Same Industry	Dummy variable equal to one if the bidder and target are from the same industry, zero otherwise
Relative Size	The transaction value of the deal divided by the market value of bidder
Target ROA	The target's return on assets
Target Leverage	The target's leverage ratio
Target MB	The target's market-to-book ratio
Target Market Capitalisation	Log of target's market capitalisation
Target Institutional Ownership	Fraction of the target's shares held by institutional investors
Target Stock Return	Prior year stock return of the target

Chapter 5

Conclusion

This thesis contributes to the finance literature by investigating three important issues related to major economic trends: corporate ownership structure across countries, cross-border insider trading, and index fund voting patterns.

Chapter 2 investigates the relation between the culture of trust and ownership concentration and how trust affects the evolution of corporate ownership structure over time. Using a large international sample of 334,014 firm-year observations for public firms across 42 countries over the period 2000–2014, the empirical results show that a one standard deviation increase in a country's trust level leads to a decrease in the ownership of the largest shareholder by 3.7%, which accounts for 15% of the sample median. Moreover, firms in more trusting countries become widely held at a faster speed after first listing on the stock exchange and are more likely to issue shares. These findings are consistent with a higher level of trust promoting dispersed corporate ownership structure.

Chapter 3 provides novel evidence on a prominent feature of the current globalisation process, the gap between legal and economic integration, in the context of cross-border mergers and acquisitions. Using a large sample of 10,600 mergers and acquisitions around the world between 1990 and 2017, this study finds that, controlling for the differences in deal and firm characteristics, the abnormal stock return and volume are significantly higher before the announcement of cross-border deals than before domestic deals. Further analyses on cross-sectional variations in the level of insider trading between cross-border and domestic deals with target and acquirer country characteristics show results that are consistent with insider trading. The evidence in this study suggests that the combination of globalisation and barriers to cross-border law enforcement has led to more aggressive insider trading on securities markets around the

world and maintaining integrity in domestic securities markets requires global cooperation.

Chapter 4 focuses on the striking growth of index-tracking funds in recent decades and examines whether this growth allows large fund families to achieve benefits by influencing individual index funds' voting behaviour. The results show that affiliated index funds in bidder firms are more likely to vote for a deal if the fund family's interest in the target is larger. After decomposing the total fund family ownership, the results reveal that only active funds' interest in the target influences the likelihood of an index fund voting for a deal in the bidder merger approval meeting, while the index fund's own interest in the target does not explain its voting pattern. When looking at deal performance, higher bidder ownership held by fund families that put more weight on the target is associated with worse deal performance and higher likelihood of jointly held firms merging together. This is the first study that investigates the implication of the recent rapid growth of index fund growth on corporate mergers and acquisition decisions.

References

Acharya, V. V., and T. C. Johnson. 2010. More Insiders, More Insider Trading: Evidence from Private-Equity Buyouts. *Journal of Financial Economics* 98:500–523.

Aghion, P., Y. Algan, P. Cahuc, and A. Shleifer. 2010. Regulation and Distrust. *Quarterly Journal of Economics* 125:1015–49.

Agrawal, A., and J. F. Jaffe. 1995. Does Section 16b Deter Insider Trading by Target Managers? *Journal of Financial Economics* 39:295–319.

Agrawal, A., and T. Nasser. 2012. Insider Trading in Takeover Targets. *Journal of Corporate Finance* 18:598–625.

Ahern, K. R., D. Daminelli, and C. Fracassi. 2015. Lost in Translation? The Effect of Cultural Values on Mergers around the World. *Journal of Financial Economics* 117:165–89.

Algan, Y., and P. Cahuc. 2010. Inherited Trust and Growth. *American Economic Review* 100:2060–92.

Alm, J., I. Sanchez, and A. DE Juan. 1995. Economic and Noneconomic Factors in Tax Compliance. *Kyklos* 48:1–18.

Alm, J., and B. Torgler. 2006. Culture Differences and Tax Morale in the United States and in Europe. *Journal of Economic Psychology* 27:224–46.

Anton, M., M. Gine, M. C. Schmalz, and M. Schmalz. 2017. Common Ownership, Competition, and Top Management Incentives. *SSRN Electronic Journal* .

Appel, I., T. A. Gormley, and D. B. Keim. 2018. Standing on the Shoulders of Giants: The Effect of Passive Investors on Activism. *SSRN* .

Appel, I. R., T. A. Gormley, and D. B. Keim. 2016. Passive Investors, Not Passive Owners. *Journal of Financial Economics* 121:111–41.

Augustin, P., M. Brenner, and M. Subrahmanyam. 2015. Informed Options Trading Prior to M&A Announcements: Insider Trading? *Available at SSRN …* .

Azar, J., S. Raina, and M. C. Schmalz. 2016. Ultimate Ownership and Bank Competition. *Working Paper* .

Azar, J., M. C. Schmalz, and I. Tecu. 2017. Anti-Competitive Effects of Common Ownership. *SSRN Electronic Journal* .

Barth, J. R., C. Lin, P. Lin, and F. M. Song. 2009. Corruption in Bank Lending to Firms: Cross-Country Micro Evidence on the Beneficial Role of Competition and Information Sharing. *Journal of Financial Economics* 91:361–88.

Beny, L. N. 2005. Do Insider Trading Laws Matter? Some Preliminary Comparative Evidence. *American Law and Economics Review* 7:144–83.

Bhattacharya, U., H. Daouka, B. Jorgensonb, and C.-H. Kehrc. 2000. When an Event Is Not an Event: The Curious Case of an Emerging Market. *Journal of Financial Economics* 55:69–101.

Bhattacharya, U., J. H. Lee, and V. K. Pool. 2013. Conflicting Family Values in Mutual Fund Families. *Journal of Finance* 68:173–200.

Bloom, N., R. Sadun, and J. Van Reenen. 2012. The Organization of Firms Across Countries. *The Quarterly Journal of Economics* 127:1663–1705.

Bodnaruk, A., M. Massa, and A. Simonov. 2009. Investment Banks as Insiders and the Market for Corporate Control. *Review of Financial Studies* 22:4989–5026.

Bodnaruk, A., and M. Rossi. 2016. Dual Ownership, Returns, and Voting in Mergers. *Journal of Financial Economics* 120:58–80.

Bottazzi, L., M. Da Rin, and T. Hellmann. 2016. The Importance of Trust for Investment: Evidence from Venture Capital. *Review of Financial Studies* :1–36.

Bris, A., N. Brisley, and C. Cabolis. 2008. Adopting Better Corporate Governance: Evidence from Cross-Border Mergers. *Journal of Corporate Finance* 14:224–40.

Bris, A., and C. Cabolis. 2008. The Value of Investor Protection: Firm Evidence from Cross-Border Mergers. *Review of Financial Studies* 21:605–48.

Busse, J. A., and Q. Tong. 2012. Mutual Fund Industry Selection and Persistence. *Review of Asset Pricing Studies* 2:245–74.

Chen, X., J. Harford, and K. Li. 2007. Monitoring: Which Institutions Matter? *Journal of Financial Economics* 86:279–305.

Cheng, S., M. Massa, and H. Zhang. 2017. The Unexpected Activeness of Passive Investors : A World-Wide Analysis of ETFs.

Claessens, S., S. Djankov, and L. H. . Lang. 2000. *The Separation of Ownership and Control in East Asian Corporations*. *Journal of Financial Economics* . Vol. 58.

Cohen, L., A. Frazzini, and C. Malloy. 2008. The Small World of Investing: Board Connections and Mutual Fund Returns. *Journal of Political Economy* 116:951–79.

Cooter, R. D. 2000. Three Effects of Social Norms on Law: Expression, Deterrence, and Internalization. *Oregon Law Review* 79:1–22.

DeBacker, J., B. T. Heim, and A. Tran. 2012. Importing Corruption Culture from Overseas: Evidence from Corporate Tax Evasion in the United States. *Journal of Financial Economics* 117:122–38.

Demsetz, H. 1983. The Structure of Ownership and the Theory of the Firm. *The Journal of Law & Economics* 26:375–90.

Denis, D. J., and J. Xu. 2013. Insider Trading Restrictions and Top Executive Compensation. *Journal of Accounting and Economics* 56:91–112.

Djankov, S., R. La Porta, F. Lopez-de-Silanes, and A. Shleifer. 2002. The Regulation of Entry. *The Quarterly Journal of Economics* 117:1–37.

Djankov, S., R. La Porta, F. Lopez-de-Silanes, and A. Shleifer. 2008. The Law and Economics of Self-Dealing. *Journal of Financial Economics* 88:430–65.

Doidge, C. 2004. U.S. Cross-Listings and the Private Benefits of Control: Evidence from Dual-Class Firms. *Journal of Financial Economics* 72:519–53.

Duarte, J., S. Siegel, and L. Young. 2012. Trust and Credit: The Role of Appearance in Peer-to-Peer Lending. *Review of Financial Studies* 25:2455–83.

Dyck, A., and L. Zingales. 2004. Private Benefits of Control: An International Comparison. *Journal of Finance* 59:537–600.

Faccio, M., and L. H. P. Lang. 2002. The Ultimate Ownership of Western European Corporations. *Journal of Financial Economics* 65:365–95.

Fichtner, J., E. M. Heemskerk, and J. Garcia-Bernardo. 2017. Hidden Power of the Big Three? Passive Index Funds, Re-Concentration of Corporate Ownership, and New Financial Risk. *Business and Politics* 19:298–326.

Fisman, R., and E. Miguel. 2007. Corruption, Norms, and Legal Enforcement: Evidence from Diplomatic Parking Tickets. *Journal of Political Economy* 115:1020–48.

Foley, C. F., and R. Greenwood. 2010. The Evolution of Corporate Ownership after IPO: The Impact of Investor Protection. *Review of Financial Studies* 23:1231–60.

Fukuyama, F. 1995. Trust: The Social Virtues and the Creation of Democracy.New York: The Free Press.

Gambetta, D. 2000. Can We Trust Trust. *Trust: Making and breaking cooperative relations* 13:213–37.

Gaspar, J.-M., M. Massa, and P. Matos. 2006. Favoritism in Mutual Fund Families? Evidence on Strategic Cross-Fund Subsidization. *Journal of Finance* 61:73–104.

Golez, B., and J. M. Marin. 2015. Price Support by Bank-Affiliated Mutual Funds. *Journal of Financial Economics* 115:614–38.

Griffin, J. M., N. H. Hirschey, and P. J. Kelly. 2011. How Important Is the Financial Media in Global Markets? *Review of Financial Studies* 24:3941–92.

Griffin, J. M., T. Shu, and S. Topaloglu. 2012. Examining the Dark Side of Financial Markets: Do Institutions Trade on Information from Investment Bank Connections? *Review of Financial Studies* 25:2155–88.

Grossman, S. J., and O. D. Hart. 1988. One Share-One Vote and the Market for Corporate Control. *Journal of Financial Economics* 20:175–202.

Guercio, D. Del, E. R. Odders-White, and M. J. Ready. 2017. The Deterrent Effect of the Securities and Exchange Commission's Enforcement Intensity on Illegal Insider Trading: Evidence from Run-up before News Events. *The Journal of Law and Economics* 60:269–307.

Guercio, D. Del, E. R. O. White, and M. J. Ready. 2015. An Analysis of the Price and Liquidity Effects of Illegal Insider Trading. *SSRN Working Paper Series* .

Guiso, L., P. Sapienza, and L. Zingales. 2003. People's Opium? Religion and Economic Attitudes. *Journal of Monetary Economics* 50:225–82.

Guiso, L., P. Sapienza, and L. Zingales. 2004. The Role of Social Capital in Financial Development. *American Economic Review* 94:526–56.

Guiso, L., P. Sapienza, and L. Zingales. 2006. Does Culture Affect Economic Outcomes? *The Journal of Economic Perspectives* 20:23–48.

Guiso, L., P. Sapienza, and L. Zingales. 2008. Trusting the Stock Market. *Journal of Finance* 63:2557–2600.

Guiso, L., P. Sapienza, and L. Zingales. 2009. Cultural Biases in Economic Exchange? *Quarterly Journal of Economics* 124:1095–1131.

Hansen, R. G., and J. R. Lott. 1996. Externalities and Corporate Objectives in a World with Diversified Shareholder/Consumers. *The Journal of Financial and Quantitative Analysis* 31:43.

Harford, J., D. Jenter, and K. Li. 2011. Institutional Cross-Holdings and Their Effect on Acquisition Decisions. *Journal of Financial Economics* 99:27–39.

He, J., and J. Huang. 2014. Product Market Competition in a World of Cross Ownership: Evidence from Institutional Blockholdings. *Working Paper* .

Helwege, J., C. Pirinsky, and R. M. Stulz. 2007. Why Do Firms Become Widely Held? An Analysis of the Dynamics of Corporate Ownership. *Journal of Finance* 62:995–1028.

Holderness, C. G. 2009. The Myth of Diffuse Ownership in the United States. *Review of Financial Studies* 22:1377–1408.

Holderness, C. G. 2014. Culture and the Ownership Concentration of Public Corporations around the World. *Journal of Corporate Finance* .

Iliev, P., and M. Lowry. 2015. Are Mutual Funds Active Voters? *Review of Financial Studies* 28:446–85.

Jarrell, G., and A. Poulsen. 1989. Stock Trading before the Announcement of Tender Offers: Insider Trading or Market Anticipation ? *Journal of Law, Economics, & Organization* 5:225–48.

Jensen, M. C., and W. H. Meckling. 1976. Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics* 3:305–60.

Johnson, N. D., and A. Mislin. 2012. How Much Should We Trust the World Values Survey Trust Question? *Economics Letters* 116:210–12.

Kacperczyk, M., C. Sialm, and L. Zheng. 2008. Unobserved Actions of Mutual Funds. *Review of Financial Studies* 21:2379–2416.

Keown, A., and J. Pinkerton. 1981. Merger Announcements and Insider Trading Activity: An Emprical Investigation. *Journal of Finance* 36:855–69.

Khorana, A., and H. Servaes. 1999. The Determinants of Mutual Fund Starts. *Review of Financial Studies* 12:1043–74.

Knack, S., and P. Keefer. 1997. Does Social Capital Have an Economic Payoff? A Cross-Country Investigation. *The Quarterly Journal of Economics* 112:1251–88.

Martynova, M., and L. Renneboog. 2008. A Century of Corporate Takeovers: What Have We Learned and Where Do We Stand? *Journal of Banking & Finance* 32:2148–77.

Massa, M., D. Schumacher, and Y. Wang. 2015. Who Is Afraid of BlackRock ? *SSRN Working Paper* 31:0–58.

Masulis, R. W., C. Wang, and F. Xie. 2007. Corporate Governance and Acquirer Returns Corporate Governance and Acquirer Returns. *Journal of Finance* 62:1851–89.

Matvos, G., and M. Ostrovsky. 2008. Cross-Ownership, Returns, and Voting in Mergers. *Journal of Financial Economics* 89:391–403.

Meulbroek, L. K. 1992. An Empirical Analysis of Insider Trading. *Journal of Finance* 47:1661–99.

Myers, S. C., and N. S. Majluf. 1984. Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have. *Journal of Financial Economics* 13:187–221.

Nanda, V., Z. J. Wang, and L. Zheng. 2004a. Family Values and the Star Phenomenon: Strategies of Mutual Fund Families. *Review of Financial Studies* 17:667–98.

Nanda, V., Z. J. Wang, and L. Zheng. 2004b. Family Values and the Star Phenomenon: Strategies of Mutual Fund Families. *Review of Financial Studies* 17:667–98.

Pevzner, M., F. Xie, and X. Xin. 2015. When Firms Talk, Do Investors Listen? The Role of Trust in Stock Market Reactions to Corporate Earnings Announcements. *Journal of Financial Economics* 117:190–223.

Porta, R. L. A., F. Lopez-de-silanes, and A. Shleifer. 2006. What Works in Securities Laws? *Journal of Finance* 61:1–32.

Porta, R. La, F. Lopez-De-Silanes, and A. Shleifer. 1999. Corporate Ownership Around the World. *The Journal of Finance* 54:471–517.

Porta, R. La, F. Lopez-de-Silanes, A. Shleifer, and R. W. Vishny. 1997. Trust in Large Organizations. *AEA Papers and Proceedings* 87:333–38.

Porta, R. La, F. Lopez-de-Silanes, A. Shleifer, and R. W. Vishny. 1998a. Law and Finance. *Journal of Political Economy* 106:11131–55.

Porta, R. La, F. Lopez-de-Silanes, A. Shleifer, and R. W. Vishny. 1998b. Law and Finance. *Journal of Political Economy* 106:1113–55.

Rajan, R. G., and L. Zingales. 1998. Financial Dependence and Growth. *The American Economic Review* 88:559–86.

Reese, W. A., and M. S. Weisbach. 2002. Protection of Minority Shareholder Interests, Cross-Listings in the United States, and Subsequent Equity Offerings. *Journal of Financial Economics* 66:65–104.

Rossi, S., and P. F. Volpin. 2004. Cross-Country Determinants of Mergers and Acquisitions. *Journal of Financial Economics* 74:277–304.

Sapienza, P., A. Toldra-Simats, and L. Zingales. 2013. Understanding Trust. *The Economic Journal* 123:1313–32.

Schmidt, C., and R. Fahlenbrach. 2017. Do Exogenous Changes in Passive Institutional Ownership Affect Corporate Governance and Firm Value? *Journal of Financial Economics* 124:285–306.

Seyhun, H. N. 1992. The Effectiveness of The Insider-Trading Sanctions. *Journal of Law & Economics* 35:149–82.

Shleifer, A., and R. W. Vishny. 1986. Large Shareholders and Corporate Control. *Journal of Political Economy* 94:461.

Siegel, J. I., A. N. Licht, and S. H. Schwartz. 2011. Egalitarianism and International Investment. *Journal of Financial Economics* 102:621–42.

Stulz, R. M. 1988. Managerial Control of Voting Rights. Financing Policies and the Market for Corporate Control. *Journal of Financial Economics* 20:25–54.

Stulz, R. M., and R. Williamson. 2003. Culture, Openness, and Finance. *Journal of Financial Economics* 70:313–49.

Xie, F., B. Zhang, and W. Zhang. 2016. Trust , Innovate , and Grow.