# Essays on Corporate Decisions in Asian Emerging Economies

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# Thesis Abstract

This thesis consists of three essays on corporate decisions in Asian Emerging economies. This thesis studies corporate decisions in different dimensions. The first chapter focuses on bond issuance decisions, the second chapter looks at corporate cash holding decisions, and the third chapter considers trade credit decisions. The thesis goal is to highlight what changes corporate decisions, transmission mechanisms, and how firms deal with them.

The first empirical chapter (chapter 2) studies whether social trust can influence a decision to issue corporate bonds and how this impact changes when the country has a better governance environment by using a set of bond-firm matched data across eight emerging economies from 1997 to 2018. On the relationship impact between social trust and country governance contexts, there are two noteworthy results. One, companies that are located in areas with a high degree of social trust are more likely to issue bonds when the country's government is more effective. Two, firms locating in areas with a high degree of social trust are less likely to issue domestic currency-denominated bonds when the country's governance environment is more effective. The findings reveal that the complementary impact of social trust and country governance conditions encourages corporate bond issuance, whereas their substitution effect encourages a company to issue bonds in its own currency.

The second empirical chapter (chapter 3) studies whether political uncertainty can affect corporate behaviour in eight Asian emerging economies by using national elections data and financial statement data between 1990 and 2018. This chapter divides the sample into two groups: a presidential or legislative electoral system, and an assembly-elected presidential electoral system. The group of a presidential or legislative electoral system is consist of Indonesia, Korea, Malaysia, the Philippines, Singapore, Thailand and Taiwan (China). The other group is only China. The results show the evidence that national electoral system influences cash holdings and asset growth. The cash flow sensitivity of cash during election periods is assessed by estimating panel models with fixed effects. In addition, this chapter employs the first-difference Generalized Method of Moments technique to evaluate the impact of the availability of internal finance on asset growth during election periods. The line of discussion builds upon the motivation theory of cash

holdings introduced by Keynes (1936) and the internal finance theory of growth. The findings show that the magnitude of cash holdings varies with the national electoral system adopted in the country and firm size. The findings also suggest that firms residing in a country with a presidential or legislative electoral system are more sensitive to political uncertainty than those residing in a country with an assembly-elected presidential electoral system. During election periods, firms residing in a country with a presidential or legislative electoral system tend to hold more cash during election periods due to being precautionary against the uncertainty that may occur. While large firms residing in a country with an assembly-elected presidential electoral system lessen a grabbing hand problem by holding a smaller amount of cash reserves, small firms in a country with a presidential or legislative electoral system tend to use internal funds to grow during election periods.

The third empirical chapter (chapter 4) aims to examine the effect of customer's market power and information asymmetry on trade credit decision. Using data from nine Asian emerging economies, this chapter finds that customers with a high market share can obtain more trade credit. If there is an information asymmetry between their vendors and themselves, they will be given less trade credit; new, young, and R&D companies are the most likely to face this problem. Small and young businesses take less trade credit in low-social-trust markets, which is more noticeable. Furthermore, the findings suggest that firms in high-social trust economies earn more trade credit when they spend in R&D to support a trading partnership, a practice known as a relationship-specific investment (RSI). These findings are unaffected by market share and RSI calculations. This chapter confirms that high social trust will improve the relationship between trade credit offered and a customer's market share.

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# Author's Declaration

"I declare that, except where explicit reference is made to the contribution of others, that this dissertation is the result of my own work and has not been submitted for any other degree at the University of Glasgow or any other institution."

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# 1 Chapter 1: Introduction

Financing decision-making is an essential managerial role to help firms achieve their goals, and with optimal capital structures firm could increase shareholder wealth. Therefore, the optimal financing decision could enhance performance and growth of firms. It also affects the firm's investment policy. The empirical approach highlights on three aspects of corporate financing decisions: cash holdings, bond issuance and trade credit. The thesis investigates determinants of financing decision, both internal and external, in Asian emerging economies.

Asian emerging economies are overgrowing. In 2021, they are expected to accelerate to 7.0 per cent (ADB, 2021), while global growth is predicted to rise to 5.6 per cent that the strength of major economies is the United States and China. Moreover, before financial crises, political and economic ties in Asian emerging economies have become more important in resource distribution because they relied on banks. While Asian emerging economies' strong fiscal balances are creditable, they are vulnerable to the expansion of government bond markets. The takeaway was that Asian countries require more diverse financial institutions, particularly deep and liquid bond markets, to support their banking systems. Financial markets that are more diverse would minimise financial instability and improve capital allocation efficiency (Eichengreen and Luengnaruemitchai, 2004). After the 1997 financial crisis, the 2008 global financial crisis mainly had similar impacts on both industrial countries and emerging Asian economies. Since Asian countries have more substantial economic and financial interdependence, particularly with the United States, the present global recession might substantially influence Asian economies than previous global downturns (Fidrmuc and Korhonen, 2010).

Corporate cash holding relates to financing and investment decisions of firms. Some firms realise that cost of external financing is more expensive than using an internal financing because of an asymmetric information. Thus, such firms tend to retain more cash as a source of investment (Myers and Majluf, 1984). Firms that hold more cash are able to use its to invest and build their asset growth even among the crisis, thus they can survive the crisis and have a fast recovery (Guariglia and Mizen, 2012). In order to maximise shareholder wealth, as there is a cost of holding cash, the level of firm cash holding should be optimal to balance the marginal cost and marginal benefit of cash holdings. Keynes (1934) explains the benefits and reasons of holding cash which are transaction motive and

precautionary motive. This thesis focuses on corporate decision of holding cash as precautionary motive.

According to the pecking order theory proposed by Myers and Majluf (1984), if firms run out of cash or retained earnings then they should finance through external funds. As cost of debt financing is lower than cost of equity issuance, management or manager would prefer to use debt as a source of financing rather than equity issuance and they will choose equity financing as the last source of funds. Although Myers and Majluf (1984) state that firms would rather use bank loan than bond issuance, firms using bank financing are able to face the bank risks such as bank run and banking crisis whereas firms using bond financing are tend to be safe or have less impact from the crisis (Bolton and Freixas, 2008). Spaliara and Tsoukas (2010) explore the relationship between bond issuance and survival of firms in Asia emerging economies during 1997 Asian crisis. Firms that issue bonds are more likely to survive the crisis than non-issuer firms. In addition, local currency bond issuers tend to be safer during the crisis. The currency mismatch is the underlying cause of the 1997 Asian crisis because Asian countries were highly reliant on foreign borrowing. Thus, following the crisis, there is a cooperation in Asian counties in order to develop the domestic markets. The improvement of the Asian domestic market leads to an increasing in bond issuance both in local market and local currency.

Some firms, for example small firms and financially constrained firms, could not access traditional financing nor issue bond. They will finance through alternative financing such as trade credit. Trade credit is a short-term financing which is normally provided by trading partners. Thus, it will be a source of fund for financially constrained firms. Petersen and Rajan, 1997 discover that firms are more likely to use trade credit when the access to bank financing is restricted. While their trading partners, which are their suppliers, will have a financing advantage from trade credit, so they are also likely to offer trade credit to financially constrained firms.

The purposes of this thesis are to understand whether, how and why firms' financing decisions change and to investigate the drivers of corporate financing decisions, both internal and external. The thesis also provides suggestions on financing decisions for firms in responding to uncertainty by focusing on uncertainty in national level. In addition, the thesis also suggests how policy makers can develop emerging financial markets in Asia. There is a growing literature on corporate financing decisions but few studies on Asian

emerging economies. Asian emerging economies, however, are attractive because they are fast-growing and have a competitive advantage. After 1997 Asian crisis, policy makers placed importance on the development of domestic markets in order to decrease a dependent on foreign borrowing and attract more investors to Asian markets. There is a cooperation between Asian countries in the establishment of Asian Bond Fund (ABF) in 2003, following with ABF-2 in 2005 with the purposes to develop bond markets in the regions (Bose et al., 2016). The improvement and deeper of Asian bond market have resulted in an increase in bond issuance by firms in Asian emerging economies, both in domestic market and in local currency. Mizen et al. (2018) explore that there is a sharply increase of domestic bond issuance of firms in Asian emerging economies after 1997 Asian crisis. Such firms issue more in domestic markets compared to foreign markets and this exists for a decade after 1997 Asian crisis (Mizen et al., 2018). It is interesting to understand the probability of domestic currency denominated bond issuance in Asian emerging economies after bond market development. Moreover, there is intuitive that firms residing in Asian emerging economies would present different corporate behaviours. Comparing to western markets, Cheung et al. (2010) explain the characteristic of Asian business that management and ownership are rarely separated, and the chairperson of the board of directors is frequently the chief executive officer. In addition, Asian equities markets and debt markets are relatively illiquid. There are times when the market is deregulated and redesigned (Hasen et al.,2009; Tsoukas, 2011). Thus, data limitations and the noteworthiness of Asian emerging economies arouse interest in this market. This thesis explores corporate cash-holding decisions, bond issuance decisions, and trade credit decisions by focusing on Asian emerging economies, comprise of China, Hong Kong SAR (China), Indonesia, South Korea, Malaysia, the Philippines, Singapore, Taiwan (China), and Thailand, and it provides essential contributions to many studies on corporate financing decisions. The thesis thus highlights the determination of corporate financing decisions and indicates transmission mechanisms reflected in corporate behaviours.

As Asian emerging economies have shifted from bank centered to equity and bond markets in recent years (Tsoukas, 2011), chapter 2 studies how social trust affects bond issuance decisions, as well as the impact of the country governance environment. Chapter 3 investigates corporate cash-holding decisions and growth during periods of political uncertainty to analyse whether and when firms spend or hoard cash. Chapter 4 explores the impact of firms' market power and asymmetric information on the amount of trade credit

firms take, which plays an important role in weak financial institutions, particularly Asian emerging economies (Fisman and Love, 2003).

Chapter 2 examines how social trust affects corporate bond issuance decisions and its interaction with country governance, a formal institution, to address their effect on corporate bond issuance. The results show that high social trust motivates firms to issue domestic currency bonds, but this social trust impact is diminished in countries with a good country governance environment. Although there is a growing amount of literature on currency choice in debt financing with concentrations on firm characteristics and macroeconomic environments, this chapter considers social trust. Domestic currency bond issuance is in our interest because it used to be the pain point in Asian emerging countries. As Eichengreen and Hausmann (1999) state, it is original sin. This chapter uses a corporate bond issuances dataset of eight Asian emerging countries from 1997 to 2018 to address how bond issuance behavior changes with different social trust levels and highlights the interaction between social trust and the country's governance environment.

The main findings of chapter 2 indicate that high social trust drives corporate bond issuances and motivates firms to issue bonds in its domestic currency. Also, the influence of social trust on corporate bond issuance depends on the country's governance environment. This chapter uses six-country governance indicators (control of corruption, government effectiveness, political stability, regulatory quality, rule of law, and voice and accountability) to interact with social trust, which is an informal institution. The results show an interesting relationship between informal and formal institutions on corporate bond issuance decisions and their role in driving away the original sin at the firm level. Social trust and country governance environment present a complementary effect on corporate bond issuance, which is in line with Bjørnskov and M´eon (2015) McCannon (2018) and Cruz-Garc´ıa and Peiro´-Palomino (2019) with the exception of voice and accountability. Among a strong voice and accountability (for example, substantial liberty rights, political participation, and media freedom), the influence that high social trust has in driving bond issuance is diminished because voice and accountability could motivate investors and firms to invest in the bond market. Considering corporate bond issuance in domestic currency, social trust and country governance environment play a substitution effect. The impact of high social trust on encouraging firms to issue bonds in their local currency is diminished in a robust country governance environment. Consequently, strong informal institutions play an essential role in alleviating original sin in Asian emerging

economies by facilitating domestic currency bond issuances even if solid formal institutions diminish this impact.

Chapter 3 builds on the theory of cash-holding motivations and the internal financing theory of growth. It highlights how firms respond to political uncertainty by focusing on cash holdings and firms' financing behavior. Firms in countries with presidential and legislative elections are more likely to retain more cash during election periods as a precaution. Whereas firms in China, which has an assembly-elected president, may have different behavior in holding cash during election periods because some firms in China have a close relationship with the local government and this affects the firm's cash holdings, specifically small firms. This chapter extends previous works of literature relating to political uncertainty and cash holdings. Based on the fact that there is a difference between countries with the constitutional norm and a transitional economy that influences national elections, this chapter demonstrates that different national elections bring about a different response to corporate behavior. The sample is divided into two groups: firms in countries with presidential and legislative elections (Indonesia, Korea, Malaysia, the Philippines, Singapore, Thailand and Taiwan (China)) and firms in countries with assembly-elected presidents (China). For the period between 1990 and 2018, this chapter analyses financial statements and elections. This chapter provides remarkable corporate behavior differences in response to the political uncertainty between firms in countries with presidential and legislative elections and assembly-elected presidential elections.

Chapter 3 provides two main findings. First, this chapter determines the national election effect on corporate cash holding using panel regressions with fixed effects and the first difference Generalized Method of Moments. This chapter uses the concept of cashflow sensitivity of cash to analyse corporate cash holdings. The result suggests the level of corporate cash holdings during election periods varies according to national election systems and firm size. Firms in countries with presidential and legislative elections are more sensitive to political uncertainty because they retain more cash during election periods for precautionary reasons compared to firms in countries with assembly-elected presidents. The underlying reason is China's unique political system, which has assembly-elected presidents and 30 years of good performance that leads to less political uncertainty. China is one of many countries such as India, Russia, Brazil, and Mexico that has a strong local government. The local government plays an important role in the economy and also

has an impact on firm's financial decision. The thesis study firms in China and finds large firms are likely to retain less cash during election periods. The result is consistent with the study of Xu et al. (2016) that firms in China are likely to hold less cash as a precautionary reason in response to the political uncertainty. This is because of the politicians or local government connections of firms which influence firm's decisions and business transactions. Another main finding is related to firms' asset growth with internal funding during election periods. Using the first difference Generalized Method of Moments technique, the result shows that only small firms in a country with presidential and legislative elections use internal funds for asset growth during election periods. This is because other firms can access external funding during political uncertainty.

Chapter 4 focuses on informal finance, which is trade credit. Using data from firms in Asian emerging countries between 1988 and 2018, this chapter studies how firms' market share and asymmetric information risk between firms and their suppliers affect the amount of trade credit firms take. It highlights that low market share leads to lower trade credit use, whereas firms with a higher risk of asymmetric information, such as small firms, young firms, and R&D firms, get less trade credit from suppliers. This chapter also addresses the interesting roles of social trust on trade credit in aspects different from previous literature by investigating how social trust affects the relationship between market share, asymmetric information risk, and trade credit. Moreover, this chapter considers a relationship-specific investment (RSI). This chapter extends previous literature on RSI by dividing a sample into low and high social trust economies and finding which economies benefit from investing in RSI.

The findings of chapter 4 address the determinants of firms' trade credit in several aspects relating to social trust level. First, the results indicate that firms with high market share are likely to get more trade credit, and this effect tends to be remarkable in low social trust economies. Second, firms are likely to get less trade credit if they are small, young, and R&D firms, because these firms tend to have a high risk of asymmetric information as Zhang (2006), Baxamusa et al. (2016), and Li et al. (2019) find. Nevertheless, the asymmetric information problem is not a barrier for firms in high social trust economies to get trade credit. Considering the role of RSI together with social trust, this chapter finds that investment in RSI helps firms with high market share get more trade credit, and only in high social trust economies. Overall, this indicates the essential roles of social trust in boosting trade credit, because high social trust could raise a customer's creditworthiness in

the supplier's view (Levine et al., 2018). This chapter also contributes significant suggestions to minimize the trade credit issue for firms with a high risk of asymmetric information. As social trust and RSI play an essential role in trade credit, implementing proactive policies to boost firms' RSI investment and increasing trust in a country helps firms access trade credit.

# 2 Chapter 2: Trust and corporate bond issuance in Asian emerging economies

## 2.1 Introduction

In small countries, some firms may suffer from difficulties in raising sufficient funds through domestic money and capital markets so they have to borrow from foreign banks or attract funds from foreign investors by issuing foreign currency-denominated bonds. As a result, they are exposed to either currency or maturity mismatch which, in some extreme cases, can lead to a bankruptcy of the borrowing firm. An inability of firms to borrow aboard in its local currency or even to borrow domestic long-term debt is commonly known as "original sin" (Eichengreen and Hausmann, 1999). To mitigate such problem, institutional development, a structural reform and the adoption of some policies may be required (Hausmann and Panizza, 2011, Hale et al., 2016 and Mizen et al., 2018). In addition, Hausmann and Panizza (2011), Hale et al. (2016) and Mizen et al. (2018) document that firm characteristics, global financial market conditions and characteristics of bond markets can affect the ability of firms to borrow aboard in local currency or to access a domestic, long-term fund. Even though a substantial amount of literature in economics and finance studies original sin, most of them employ the country-level data; original sin at firm level remains unexplored. This chapter fills a gap in the literature by, following Mizen and Tsoukas (2014), assessing whether trust helps reducing any difficulties in corporate bond issuance, especially for domestic currency-denominated bonds.

The decision on corporate bond issuance and denomination is associated with perspectives on economic outlooks such as interest rate (Cohen, 2005), monetary policy (Duca et al., 2016), policy initiatives (Mizen and Tsoukas, 2014; Bose et al., 2019) and bond market development (Ayala et al., 2016). This research extends the literature on corporate bond market by looking at the effect of trust on bond issuance and how trust interplays with country governance on bond issuance especially for local currency-denominated bond after controlling for firm and country effects. The motivation of this research stems from the fact that higher level of trust affects corporate decisions. Earlier research shows that the level of trust relates to the country's economic growth (Zak and Knack, 2001), financial development (Guiso et al., 2004), stock market (Guiso et al., 2008;

Georgarakos and Pasini, 2001) and cost of debt (Hasan et al., 2017; Meng and Ying, 2019). Trust is a dimension of social capital and it has two different notions. The first notion of trust is "personal trust" relating to beliefs about a specific firm or individual and the second notion is "societal trust" (social trust) relating to beliefs about a group of firms or people (Dudley and Zhang, 2016). Social trust may originate from beliefs in firm's competence, benevolence, integrity and predictability (McKnight and Chervany, 2000). It is driven by culture, institutional setting, economic and social outcomes, and performance of entities (OECD, 2013; Kye, 2020). Social trust can be an important factor of bond issuance and bond investment. In other words, firms in the economy with a high level of social trust are more likely to raise fund through a debt market. Following Meng and Ying (2019), this chapter focuses on how social trust relates to domestic and foreign currency-denominated bond issuance.

Theoretically, whether the firm will prefer bond financing to other financing alternatives partly depends on the level of social trust and good country governance. Law and culture can create trust because law enforcement and the government's accountability can shape individual behaviour and culture can create professionalism and connection in a community (Carlin et al., 2009). Country governance including an enforcement of law and financial regulations and a high quality of regulatory supervision, market depth as well as market liquidity can make the market more attractive to both bond investors and bond issuers. The impact of social trust may become more pronounce in firms located in the country with a better country governance environment which tends to have more participants in the debt market. It should be that in an economy with a high level of social trust and good country governance, the original sin effect is low so firms may raise funds through the domestic bond market. Therefore, there are high volumes of bond trading and investment in the economy with a high level of social trust and good country governance (McCannon, 2018), resulting in an easier access to domestic fund.

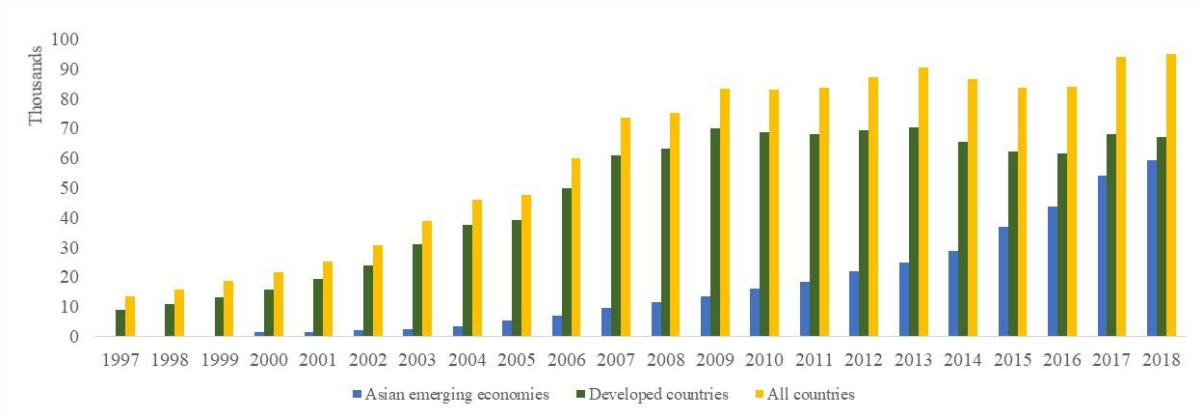
To investigate the impact of social trust on corporate bond issuance, this chapter uses 15,268 observations from 1,202 firms in eight emerging economies, namely China, Hong Kong SAR (China), Indonesia, Korea, Malaysia, Philippines, Singapore, and Thailand covering the period between 1997 and 2018. The data of corporate bond issuance are taken from Bloomberg which covering the information about the currency of denomination, and the firms' experiences in bond issuance in domestic and foreign

markets. The accounting information is collected from Compustat in Wharton Research Data Service.

This chapter follows previous studies (La Porta et al., 1997; Guiso et al., 2008; Sapienza et al., 2013; Dudley and Zhang, 2016) to measure trust by using the question of "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" from the World Values Survey (WVS). Following Kaufman et al. (2009), Dudley and Zhang (2016), and Meng and Ying (2019), this chapter employs the Worldwide Governance Indicator obtained from the World Bank Database to represent country governance.

The Asian emerging economies is interesting because an increasing in corporate bond issuances during the two decades as shown in the figure 2.1, especially those in local currency in both domestic and international markets. The shift from the foreign currency-denominated bond to local currency-denominated bond in emerging economies has contradicted the "original sin" hypothesis that a country, especially emerging countries, cannot borrow abroad in its own currency (Eichengreen and Hausman, 1999). It is notable that this could be a result of the Asian Bond Market Initiative which is a financial co-operation between the Association of Southeast Asian Nation (ASEAN), China including Hong Kong SAR (China), South Korea and Japan (known as ASEAN+3) beginning in 2000 to tackle with the "original sin" issue and to promote the local currency-denominated bond market in Asia. However, only few existing studies focus on debt issuance in Asian emerging economies and the remarkable increase in bond financing within Asian emerging economies arouses an interest in this market.

Figure 2-1: Total debt securities issuance of Asian emerging economies, developed countries, and all countries



An inspection of the dataset of the observations highlights that there is a significant difference between China and the other seven emerging countries. Firms in Asian emerging markets issue domestic bonds in the onshore market and issue international bonds in the offshore market, but Chinese firms issue Chinese Renminbi bonds in both onshore and offshore markets. In this sample, 649 Chinese Renminbi-denominated bonds issued in overseas. Among these, 296 firms issued Dim Sum bonds which are issued in Hong Kong (China).

Two key findings are as follows. First, firms in the economy have a high level of social trust are more likely to issue bonds. One of the mechanisms is by an increase in the average level of trust prevailing. As debt capital markets transactions are trust-intensive transaction, bond participants in high level of social trust economy may trust each other more. This leads to higher bond markets liquidity which is associated with increases in bond issuance. Second, the result suggests that a high level of trust and strong country governance except voice and accountability are complements in motivating firms to issue bonds. The effect of trust on the decision to issue bonds in domestic currency is positively correlated to all country governance indicators, with the control of corruption, government effectiveness, and regulatory quality having relatively less impacts than political stability, rule of law, and voice and accountability. This implies that building trust can be a tool of boosting domestic currency-denominated bond issuance and this tool can become more effective when there is a control of corruption, government effectiveness, political stability, regulatory quality, rule of law, and voice and accountability. However, the results note that there is a substitution effect between trust and all country governance in the issuance of domestic currency-denominated bonds.

This chapter mainly contributes to three strands of literature. First, it contributes to the literature on debt financing by considering the role of social trust. Trust is a fundamental organising principle (McEvily et al., 2003) and it is a type of informal institutions that shape formal institutions (Casson et al., 2010). Hasan et al. (2017) shows that firms locating in a high-trust culture have lower interest spreads when they get a loan from banks. Recently, Meng and Yin (2019) highlight that increasing trust can reduce the cost of debt and alleviate a negative shock from financial crises. Similarly, Brockman et al. (2020) report that the borrowing cost of cross-border debt contracts is higher when there is a low level of informal social trust. Unlike the aforementioned studies, this chapter investigates

whether trust has any impacts to corporate bond issuance. The result confirms previous findings on the benefits of trust to corporate debt financing.

Second, this chapter contributes to governance literature by investigating how interactions between trust and country governance affect Asian corporates' behaviour. Guiso et al. (2004), Dudley and Zhang (2016) and Meng and Yin (2019) propose that informal institutions (trust) and formal institutions (country governance, institution frameworks, legal enforcement) are substitutes. In contrast, North (1990) argue "formal rules can complement and increase the effectiveness of informal constraints". The latter argument is also supported by Bjørnskov and Méon (2015); McCannon (2018); Cruz-García and Peiró-Palomino (2019).

Finally, this chapter contributes to a growing literature on the currency denomination decision. As a cause of the 1997-8 Asian financial crisis, the incompleteness of Asian emerging financial markets or original sin led to a currency mismatch or a maturity mismatch in debt financing which finally resulted in financial fragility. Regarding the choice of currency denominations, unlike previous studies which mainly consider firm characteristics, economic environment and institutions (Siegfried et al., 2007), this chapter focuses on the effects of informal institutions.

The chapter is structured as follows. Section 2.2 reviews the literature on original sin including the way to escape original sin, the denomination of bonds, and social trust. Section 2.3 outlines the empirical methodology and Section 2.4 describes econometric background of probit model. Section 2.5 analyses the data and provides preliminary descriptive statistics. Section 2.6 reports empirical results. Section 2.7 presents the robustness check. Section 2.8 provides conclusion and Section 2.9 shows tables.

# 2.2 Literature review

## 2.2.1 The curse of original sin in emerging economies

### 2.2.1.1 Theoretical background

The word "original sin" was first used in economics literature by Eichengreen and Hausman in 1999. They study a relationship between the exchange rate and financial fragility by analysing three related hypotheses: moral hazard, commitment problem, and original sin. "Original sin" is a state that one country is unable to borrow overseas in its

local currency, so foreign borrowing can lead to currency and maturity mismatches. They document that original sin is one of the causes of financial fragility and crisis in developing countries. More specifically, they find that the fragility and crisis relate to economic prospects, market openness and the inability of a local currency to be used for borrowing abroad and even in domestic for long maturities which, together with the financial market's incompleteness, results in local firms or government being unavoidably exposed to a currency mismatch or a maturity mismatch. Eichengreen et al. (2003) extend the study of original sin by focusing on currency mismatch incidence during the period from 1993 to 2001. Data of bonds issued in abroad during such period have been collected and analysed for each of the following groups of issuers: major financial centres (the U.S., the U.K., Japan, and Switzerland); Euroland countries; the remaining developed countries; developing countries; and international financial institutions. They find that a high level of volatility of economic growth and capital flow, lower credit ratings, and less exchange rate flexibility are associated with currency mismatch. They also find that country size is strongly related to original sin and there is a relationship between past inflation and original sin. In Asian emerging markets, they suffered from the curse of original sin in 1997 and this curse results in the currency mismatch and led to the Asian financial crisis.

Hausmann and Panizza (2003) extend the study of Eichengreen et al. (2002) by exploring original sin in two dimensions: international original sin and domestic original sin. International original sin is the inability of the country to borrow abroad in local currency while domestic original sin is the inability to borrow long term in local currency at home. They investigate the determinants of international and domestic original sin by using the same data as Eichengreen et al. (2002) but exclude the period of 1999 – 2001 which covers the years of introducing "Euro" which can remove original sin. Similarly, they find a relationship between original sin and size of economy as well as inflation. Only the size of economy strongly relates (negative correlation) to international original sin. Regarding the investigation of domestic original sin, there is no association between the size of economy and domestic original sin. A low average inflation rate, an imposition of capital controls and floating exchange rates can reduce domestic original sin but have no impact on international original sin. Moreover, they report a weak relationship between international and domestic original sin since, in some countries such as Chile, Hungary, India, Israel, Philippines, the Slovak Republic, and Thailand, there is international original sin but no significant evidence of domestic original sin. This suggests that a decrease in

domestic original sin does not imply to the ability of the countries to borrow abroad in local currency.

In the context of policy implementation, the poor implementation of policies can bring original sin into a country. Hausmann and Panizza (2003) suggest that credit market imperfections and poor contract enforcement are one of the determinants of original sin. Since there is a correlation between currency depreciation and default risk, in the case of sequentially lending, firms tend to borrow in foreign currency after borrowing in local currency. By doing this, firms are able to transfer a portion of the residual value of the defaulted company from old lenders lending in local currency to new lenders who lend in foreign currency. Thus, strong contract enforcement is important in order to give seniority to domestic-currency lenders. They test such a proposition and find that the rule of law is negatively correlated with international original sin. However, the correlation is not robust when including economic size variable (as measured by GDP).

#### 2.2.1.2 Empirical evidence

From the theoretical background, the main reason for why original sin arises is an inability of a local currency to be borrowed abroad or domestic in long term maturities (Eichengreen and Hausman, 1999). This inability is also related to country size (Eichengreen et al., 2002). In particular, larger countries have more potential to borrow abroad in their own currency compare with smaller countries. Likewise, Hausmann and Panizza (2003) confirm that the size of economy has a negative correlation with international original sin. Credit market imperfections and poor contract enforcement such as rule of law are also related to international original sin. They further suggest that low average inflation rate, imposition of capital controls and floating exchange rate could reduce domestic original sin.

Several later studies report similar conclusions to support this concept. Jingjing (2016) studies a sample of nine Asian emerging economies for the period 1994 – 2013 and explains that an increase in Asian currency-denominated bond issuance in international markets is in accordance with a decrease in original sin for many Asian emerging countries in the sample after the recent global financial crisis. Furthermore, the author finds that economic growth, strengthening of institutions and the development of financial markets can drive the ability of Asian emerging countries to borrow abroad in their local currencies. This is consistent with Burger et al. (2006) who find that policy initiative and legal

institutions can affect the development of the local bond market. In particular, countries including emerging economies with the strong rule of law tend to have a more developed local bond market and bond issuers in such countries tend to issue bonds in local currency rather than in foreign currency. Engle and Park (2017) also find that a lack of the law enforcement may cause a breach of debt contracts which can induce original sin to the country. They also show that a country with a more disciplined monetary policy is able to borrow in either local or foreign currency, and such country is likely to borrow in local currency because of its hedging benefit.

Eichengreen and Hausman (1999) and Eichengreen et al. (2002) demonstrate the critical role of international initiatives in order to remove original sin. The international initiative may begin with developing a domestic bond market index for developing countries, especially emerging countries. Thus, it is evident that original sin reduces as the local bond market becomes more developed. Several recent studies suggest the solution to mitigate the original sin problem. Mizen et al. (2018) use a sample of bonds issued by firms in Asian emerging economies during the period between 1995 and 2012 which covers the development phase of the regional bond market, known as the Asian Bond Market Initiative. They report unseasoned bond issuance firms can issue onshore for their first issuance if there is a well-developed local bond market. They find that original sin strongly associates with structural change such that original sin can be removed if there is a well-developed onshore market. Likewise, Burger et al. (2006) demonstrate that the key of emerging economies to escape from original sin is the development of local bond markets which can be done by regional initiatives and legal institutions. Emerging economies are not predetermined to face original sin if they have strong policy performance and legal institutions. Thus, they suggest that the best way to escape original sin is to improve policy performance and to strengthen legal institutions, leading to the development of local currency bond market which will reduce the currency mismatch problem.

The existence of foreign investors who are willing to hold or invest in local currency-denominated bonds is also essential for overcoming original sin in emerging economies. To select the countries for their investment, foreign investors consider economic fundamentals of the countries. Burger et al. (2014) document that a large portion of U.S. investors' fund is reallocated to bonds of emerging economies that have more current account surplus, less volatile inflation, and higher economic growth. Stable economic conditions could therefore foster growth in local currency bonds in emerging

markets. Nevertheless, Eichengreen and Hausman (1999) suggest that to build a demand for long term or local currency denominated securities seems to be difficult after the liberalisation of financial markets. Australia is one of the countries that could remove original sin before the financial liberalisation by improving the depth and liquidity of the domestic market to attract investors. It also introduced new market regulations in order to promote the transparency and creditability in the market.

Apart from aforementioned endogenous factors of original sin, each country may face exogenous factors. Bordo et al. (2003) find some major shocks playing an important role in eliminating original sin in the U.S., and the four countries of the British Commonwealth, namely Canada, Australia, New Zealand and South Africa. World War I and the breakdown of the Bretton Woods System are the factors that push the Commonwealth countries to set up a local currency debt market and issue bonds abroad in their local currency. They also explain that the incidence of original sin in today's emerging countries is more severe than the incidence in the U.S. and the Commonwealth countries back then. The reasons are that the five countries had more credible fiscal institutions and monetary regimes, and were less exposed to the risk of maturity and currency mismatch.

### 2.2.2 Currency denomination issuance

The choice of currency denomination in international bond issuance is influenced by investor's and issuer's preferences which may depend on interest rates, exchange rates and inflation. Issuing bonds in currencies with low nominal interest rates are preferable while the issuers will avoid issuing bonds in currencies which are expected to depreciate shortly. Additionally, risk management and borrowing costs also play an essential role. Regarding risk management, both borrowers and investors would like to match the currency of their liability and asset flows (Cohen, 2005; Habib and Joy, 2010; Frank and Shen, 2016). In addition, managing exchange rate risks, the size of currency hedging, interest rate differentials, the exemption of withholding taxes for foreign investors, collateral, and credit rating are also important factors for deciding whether the firms should issue bond onshore or offshore. However, Kedia and Mozumdar (2003), who analyse the determinants of large U.S. firms' bond issuance in 10 major currencies, point out that tax arbitrage, liquidity and legal regimes cannot influence foreign currency bond issuance decisions in large U.S. firms while foreign operations, which is measured by a fraction of foreign subsidiaries, and asymmetric information, which is measured by firm size and credit rating, can affect the decision to issue bonds in foreign currency. More specifically,

U.S firms with more foreign operations or with large size and good credit rating (less asymmetric information) are likely to issue debts in foreign currency.

After the introduction of Euro, the main incentives of non-financial firms in developed countries to issue bonds in a particular currency are hedging foreign exchange exposure and cost minimisation. Moreover, firm characteristics, institutional environments, locations of bond issuance and market idiosyncrasies are significant factors of currency choice decision (Siegfried et al., 2007).

In the view from corporate finance, there are five theories in capital structure which are static trade-off theory, agency cost theory, pecking order theory, market depth hypothesis and risk management theory, which explain the choice of firms to issue bonds in domestic or foreign markets (Frank and Goyal, 2009; Mizen et al., 2012). Using previous findings and capital structure theories, Allayannis et al. (2003) examine a large sample of East Asian non-financial corporations and identify the determinants of local and foreign currency debt holdings. They find that the choice of currency denomination is driven by the ability to manage currency risk with existing risk management tools and asset types, which in line with an agency theory. Moreover, the higher the difference in interest rates, the higher the use of foreign currency debt, which is consistent with the static trade-off theory. They illustrate that foreign currency-denominated debt will be preferred if local currency-denominated debt is insufficient. Thus, debt instruments in local currency and in foreign currency are used as complements.

Noticeably, a decrease in the role of global currencies in the international bond market leads to a rise in the share of local currency-denominated debt in advanced economies (Chinn and Frankel, 2008; Hale and Spiegel, 2012). The issuance of bonds in emerging economies surges significantly in the aftermath of the crisis (Mizen and Tsoukas, 2014). Furthermore, the presence of a local currency bond market enhances the financial stability of the country, reduce currency mismatch, and lengthens the duration of debt. This could enhance an ability to survive a crisis and resilient to shocks of firms. There are several studies that support this view. Peiris (2010) and Park et al. (2017) suggest that well-developed local bond markets lead to a more diversified and stable financial system which can make the market be more resilient to shocks. In the same way, Spaliara and Tsoukas (2017) find that the currency denomination of bonds had a significant impact on the firms' survival chances during the Asian financial crisis. They report that foreign currency-

denominated bond issuers are more likely to default during the Asian financial crisis compared to domestic currency-denominated bond issuers. Thus, the enhancement of market depth and liquidity should be brought to the principal agenda of policymakers since the access to the domestic bond market could protect emerging economies from the failure or external shocks. Apart from firm survival, there is also has a significant impact on the cross-border bond investment. It is worth noting that home bias in international portfolios seems to be at least in part due to a home currency bias (Burger et al., 2018). Moreover, the local currency-denominated bond issuances also enable firms to achieve economies of scale and to reduce the anomalies of yield curves in less-developed markets (Spiegel, 2009; Hale et al., 2016).

## 2.2.3 The role of formal and informal institutions on financing activity

### 2.2.3.1 The role of formal and informal institutions

The third stream of literature relevant to our study focuses on the role of formal and informal institutions and their interaction effects on financing activities. Formal institutions are a framework of rules and policies while informal institutions are a framework of socially shared rules which is related to culture and social capital. The early researches mainly study the role of formal institutions on financing activity. La Porta et al. (1997) demonstrate the ability of firms to access external finance through either debt or equity in different legal environments using data from 49 countries. They report that countries using common law such as Australia, the UK, and the U.S. are more accessible to debt finance than countries using civil law such as France, Germany, and Norway. In addition, a good rule of law could protect market participants against expropriation. La Porta et al. (1998) further find that countries with weak investor protections are suffered from small debt and equity markets. They also note that laws and law enforcement can affect investor protection and countries with poor investor protection may develop substitute mechanisms such as good accounting standard and shareholder protection. Pistor et al. (2000) broaden the scope of La Porta et al. (1998) and were among the first to study changes in legal shareholder and creditor rights protection and their influences on a firm's decision to use external finance. They present that the shareholder and creditor rights protection are essential for the debt market and these laws therefore have a considerable positive influence on the investment of foreign investors in the domestic market.

The following researches supports theoretical evidence that the effectiveness of formal institutions could enhance firms' activities through the external finance. Beck et al. (2002) explain that legal protection and enforcement especially for foreign investors can enhance opportunities for firms to access external funding and for new firms to access to finance. Moreover, their study in 2005 also suggest that the most effective solution to facilitate small firms' access to external finance is the development of financial systems and legal institutions (Beck et al., 2005). Allen et al. (2005) was among the first study of the relationships among China's law, finance and economic growth. They find evidence which support La Porta et al. (1998) that countries with inadequate investor protection would develop a substitute mechanism. With under-developed legal and financial systems, China has its own strategy to drive good management and corporate governance. This strategy is a key system of thought in China and is called Confucianism, which comprises family, social orders and trust. This is an underlying reason why China has the highest economic growth rate even without well-developed legal and financial systems. Mu et al. (2013) study government securities and corporate bond markets in Sub-Saharan Africa and highlights that law and order have a strong positive effect on government securities markets.

Recent studies have provided considerable empirical evidence that the level of social trust, which is an informal institution, has a significant effect on the cost of transaction. Gupta et al. (2018) explore the U.S. firms and find that firms in a state with a higher level of social trust can reduce the cost of equity for firms. This relationship is more pronounced only in firms that trade in the market with a low level of competition. They further state that social trust acts as a social monitoring mechanism such as board quality, the number of analysts, and market competition. Meng and Yin (2019) find similar results on the study of corporate debt financing in 22 countries across several continents. They find that a higher level of social trust reduces agency cost, monitoring cost, and transaction cost, providing incentives to investors to participate in the debt market. Moreover, the increase in financing costs in high-social trust countries is smaller than that in low-social trust countries during a financial crisis, suggesting that a high level of social trust acts as a buffer against financial crisis effects and help maintaining the financial stability of businesses. These could be concluded that social trust has a positive effect on financial markets as same as the formal institutions.

### 2.2.3.2 The interaction effect of formal and informal institutions

In addition, the study of the relationship between formal and informal institutions has a long history in economics, finance and social science. Several previous studies have investigated the effect of formal and informal institutions on various settings. As a pioneer study, North (1990) states "formal rules can complement and increase the effectiveness of informal constraints (p.46)". In line with North (1990), McCanon et al. (2018) find that trust and contract enforcement are complements rather than substitutes. Strong contract enforcement increases the probability of successful agreement with a larger amount of investment, and the level of trust encourages individuals to involve in a contract.

In contrast, the other branch of literature shows the existence of substitution effects between formal and informal institutions. Aghion et al. (2010) report that the demand for government regulation comes from distrust. To increase trust and reduce monitoring cost, people in low-trust countries require more detailed regulations from corrupted government. On the other hand, regulations inhibit the creation of trust. In recent study, Cline and Williamson (2016) explore that trust plays a substitute effect on formal institutions because trust is an alternative mechanism for shareholder protection.

In an early study of Carlin et al. (2009), who develop a theoretical model to examine the link between trust and the legal environment, find this relationship could be both substitute and complement. It depends on the value of social capital. When social capital is valuable, trust and legal environment are substitutes and a well-established legal environment can displace trust from the market. Whereas trust and legal environment become complements when social capital is less valuable, strong regulations will facilitate trust-building in the market. Similarly, Cline and Williamson (2020) provide evidences supporting both substitutive and complimentary relationships. This relationship depends on level of regulation. Trust can be substitute to formal rules in highly regulated countries but it can be a complement in less regulated countries. They document two benefits of trust; one is that trust improves a contracting environment, which is support the study of McCanon et al. (2018), and another is that trust can act as a substitute for a contract regulation.

The most recent studies consider the effect of social trust in the bond market. Focusing on cross-border bond issuance, Brockman et al. (2020) examine how informal institutions (social trust) can affect restrictive covenants (the restrictions for financing,

investment, and pay-out activities of firms) in bond indenture by focusing on Yankee bond issuance in 31 countries. The result shows that bond investors require fewer restrictive covenants for bonds issued by firms in a high-trust country. Their study also indicates a substitution effect between social trust and formal institutions on bond issuance activity of firms. They find that the relationship between social trust and restrictive covenants tends to become weak in the country with strong formal institutions, both at country and firm levels; thus, formal institutions seem to act as a substitute for social trust. They also suggest that it may be difficult to improve social trust in one country, so improving formal institutions and corporate governance can be an easier solution for reducing the need for bond covenants. Moreover, they investigate the effect of social trust on the cost of debt and find that social trust and the use of bond covenants can lower the cost of debt. The role of bond covenants in lowering the cost of debt is essential especially for issuing firm who residing in a low-social trust country.

## 2.3 Empirical methodology

This chapter empirically explores whether social trust (informal institution) and country governance environment (formal institution) operate as complements or substitutes. Social trust and country governance environment are inextricable and intrinsically related in economy. Informal institutions refer to implicit value norms in society. People's dependence on formal institutions is lessening in a society where social trust is high, and demand for institutions, which refers to society's implicit value norms, is weakening. When the government is unwilling or unable to offer adequate protection for private property or contract enforcement, the informal institution might compensate for the lack of legal institutions. However, stronger property rights protection, effective management of privileged people's power, and a generally stable social and institutional environment will aid individuals in reaching agreements and compromises, lowering reliance on informal institutions. On the other hand, formal institution cannot completely eliminate interpersonal dangers, necessitating the use of social trust as a supplement. Social trust and formal institutions can work together to resolve many disagreements and conflicts in society, especially in more intricate and unpredictable settings (Cui, 2017). This chapter shows that an increase in social trust can promotes bond issuance and the development of country governance environment is beneficial to bond market.

The purpose of this chapter is to find the determinants of bond issuance especially for bond issuance in domestic currency, using a Probit model (Equation 1). The dependent variable of the model is $Bond_{ijt}$, a dummy variable being a proxy for bond issuance. The value of $Bond_{ijt}$ is equal to one if firm $i$ issues a bond in country $j$ in year $t$, and zero otherwise. In order to examine the factors affecting the firm's choice on currency denomination (local or foreign currency), another Probit model (Equation 2) is estimated. When a firm decides to issue, it is interesting to understand how the firm chooses currency choices and to what extend social trust and country governance environment influence the decision. The dependent variable in Equation 2 is $LCY_{ijt}$, a dummy variable being a proxy for local currency denomination. The value of $LCY_{ijt}$ equals one if firm $i$ issues a bond in domestic currency in country $j$ in year $t$, and zero otherwise. Equation 1 and Equation 2 are as follows:

$$Pr(BOND_{ijt} = 1) = \alpha_1 + \beta_1 HighTrustDummy_{jt} + \beta_3 FIN_{ijt-1} + \beta_4 Z_{jt} + \upsilon_t + \varepsilon_{ijt} \quad (1)$$

$$Pr(LCY_{ijt} = 1) = \alpha_1 + \beta_1 HighTrustDummy_{jt} + \beta_3 FIN_{ijt-1} + \beta_4 Z_{jt} + \upsilon_t + \varepsilon_{ijt} \quad (2)$$

where $i$ = 1, 2, . . . , N refers to the cross-section of units (firms), $j$ = 1, 2, . . . , N refers to the cross-section of units (countries), and $t$ = 1, 2, . . . , T refers to the time period. $HighTrustDummy$ is a dummy variable representing the level of social trust in the country where the firm is located. It is equals to one if a firm is residing in a country with the level of social trust being higher than the median value in the sample, and zero otherwise. The sign of the coefficient for this dummy variable is expected to be positive as social trust is expected to have a positive impact on bond issuance.

To control for the firm effects, this chapter considers ten firm-level variables in the vector of $FIN_{ijt-1}$ which are Firm Size, Growth, Leverage, Profitability, Liquidity, Collateral, Age, PrevIssue Dummy, PrevDom Dummy, and PrevFor Dummy. The first lag of these variables are used in the model to avoid a potential endogeneity problem. Moreover, this chapter adds country, $Z_{jt}$, and time specific effects, $\upsilon_t$, and $\varepsilon_{ijt}$ is an error term.

In order to control for the effects of firm characteristics and economic condition, the model includes these 10 firm-level factors as controlling factors. $Firm\,Size$ is measured by the natural logarithm of total assets (Mizen et al., 2012, 2018; Spaliara and Tsoukas, 2017). Firm size is related to an ability to access an external finance (Beck et al., 2005) and it can also affect currency denominated of bond issuance. Large firms are likely to issue bonds in foreign currency (Kedia and Mozumdar, 2003). $Growth$ represents sales growth (Mizen and Tsoukas, 2010). Growth is likely to have a positive effect on decision of bond issuance because growing firms need more external fund. Thus, they tend to issue bonds to raise fund for their investment opportunity. $Leverage$ can determine the indebtedness of firm and is measured by the ratio of long-term debt to total assets (Bougheas et al., 2006; Spaliara and Tsoukas, 2017; Hale et al., 2020). Previous studies reports both negative and positive effect of leverage on the probability of bond issuance. High leverage firms are difficult to raise funds from external finance because their financial health seems to be not good in banks and investors' aspect. On the other hand, high leverage firms could be firms that experience in external funding and this can be indicated that they have a good credit (Mizen and Tsoukas, 2010). In this case, leverage has a positive impact on the probability of bond issuance. $Profitability$ indicates the ability of the firm to generate profit. It is measured as earnings before interest and taxes relative to total assets (Mizen et al., 2012, 2018). Firms with more profit tend to issue bonds because it is feasible for them to raise funds through bond issuance (Dennis and Mihov, 2003). $Liquidity$ is defined as the ratio of current assets to total liabilities (Guariglia and Poncet, 2008; Mizen et al., 2012). Liquidity may negatively affect bond issuance. Firms with more liquidity may not need to issue bonds because they could finance through their internal funds (Hale and Santos, 2008; Mizen and Tsoukas, 2010). $Collateral$ is a proxy for the firm's ability to pledge collateral for debt finance (Mizen and Tsoukas, 2010), which is measured as the total value of property, plant, and equipment relative to total assets. As high collateral firms are more easily to access external finance because banks and investor would be more secure in the event of firms' default, thus it is expected that high collateral firms are more likely to issue bonds. $Age$ is measured by the number of years that a firm has been registered in the stock market since its first Initial Public Offering (Mizen and Tsoukas, 2010). An experience in the stock market could also have an impact on bond issuance, so this should be controlled in the model. As same as experience in stock market, firms that used to issue bonds in the past may issue bonds again in the future. A "$PrevIssue$" dummy variable is

a proxy for the firm's experience in issuing bonds in any currency, it equals to one if a firm has ever issued a bond in domestic currency in the past, and 0 otherwise. A firm with being previous issuers is more likely to issue bond again because economies of scale occur in the cost of bond issuance. A "$PrevDom$" dummy variable is a proxy for the firm's experience in issuing bonds in domestic currency. The value of "$PrevDom$" is equal to one if a firm has ever issued a bond in domestic currency in the past, and 0 otherwise. A firm with being previous domestic currency issuers tends to issue bond in the same currency. A "$PrevFor$" dummy variable is a proxy for the firm's experience in issuing bonds in foreign currency. It equals to one if a firm has ever issued a bond in foreign currency in the past, and 0 otherwise. A firm with experience of issuing foreign currency bond tends to issue bond in foreign currency (Spaliara and Tsoukas, 2017).

Moreover, this chapter includes country level control variables, $Z_{jt}$, to control for differences among economies. Country control variables are GDP and Onsratio. $GDP$ represents GDP growth which is included in the model to control for the effect of economic condition (Spaliara and Tsoukas, 2017). GDP growth could encourage firms to issue bond to finance the growing investment opportunity (Mizen and Tsoukas, 2010). The relative size of the onshore market is "$Onsratio$". The size of the onshore market relative to the offshore market is also an essential determinant of the decision to issue bonds onshore with domestic currency denomination because the findings of Mizen et al., (2012) shows that the decision of bond issuance is positively related to market size and liquidity. The depth and size of onshore market could encourage firms to issue onshore

The estimation of probit model may cause endogenous, mismeasured and country heterogeneity. To mitigate these potential concerns, this chapter follows literature. This chapter lags all time-varying and firm-specific variables by one period to avoid concerns about endogeneity (Mizen et al., 2018), and also adds country fixed effects that can control for unobserved country heterogeneity (Cruz-Gonzalez et al., 2017).

Firms tend to issue more domestic currency bonds if the onshore market is large and deep. In other words, the development of the domestic bond market can lead to an increase in domestic currency-denominated bond issuance. The development of the market is a key solution to escape original sin, which is an inability of one country to borrow abroad in its domestic currency and can lead to currency mismatch (Burger and Warnock, 2006). Social trust is a part of mechanism in the development of bond markets. Social trust

encourages key players to participate in the bond market because social trust helps reducing the effect of information asymmetry between two parties. In a high-social trust culture, bond issuers and bond investors perceive the bond market as more trusted, reliable and credible, and they are willing to participate in debt markets (Pevzer et al., 2015). In Asian emerging bond markets, a higher level of trust will increase bond issuance, especially domestic currency-denominated bonds, and promote the investment in local bond markets. To increase the attractiveness of bond issuance, cost of debt financing should be analysed. In addition, Meng and Yin (2019) propose significant evidence that social trust can reduce transaction cost in the society, agency cost of debt and monitoring cost, resulting in an increase in investment in the bond market. The sign of the coefficient for $HighTrustDummy$ is expected to be positive as social trust is expected to have a positive impact on domestic currency-denominated bond issuance.

To capture variations in the trust effect on bond issuance and domestic currency-denominated bond issuance affected by country governance, Equation 1 and 2 are modified by adding an interaction term between the country governance variable ($CountryGovernanceIndicator$) and $HighTrustDummy$ variable (Dudley and Zhang, 2016; Meng and Ying, 2019). Equation 1 and 2 are extended as follows:

$$\begin{aligned} Pr(BOND_{ijt} = 1) = {} & \alpha_1 + \beta_1 CountryGovernanceIndicator_{jt} + \beta_2 HighTrustDummy_{jt} \\ & + \beta_3 CountryGovernanceIndicator_{jt} \times HighTrustDummy_{jt} \\ & + \beta_4 FIN_{ijt-1} + \beta_5 Z_{jt} + \upsilon_t + \varepsilon_{ijt} \quad (3) \end{aligned}$$

$$\begin{aligned} Pr(LCY_{ijt} = 1) = {} & \alpha_1 + \beta_1 CountryGovernanceIndicator_{jt} + \beta_2 HighTrustDummy_{jt} \\ & + \beta_3 CountryGovernanceIndicator_{jt} \times HighTrustDummy_{jt} \\ & + \beta_4 FIN_{ijt-1} + \beta_5 Z_{jt} + \upsilon_t + \varepsilon_{ijt} \quad (4) \end{aligned}$$

Following Kaufamnn et al. (2009) and Meng and Ying (2019), this research considers six dimensions of country governance which are the standard of investor protection in control of corruption (CC) , government effectiveness (GE), political stability (PS), regulatory quality (RQ), rule of law (RL), and voice and accountability (VA). These factors are added into Equations 3 and 4. These dimensions of corporate governance are represented by the six relevant corporate governance indicators obtained from the World-wide Governance Indicator (the World Bank). Thus, the investigation considers both

formal and informal institutions as well as their interactions with social trust. With formal institutions, there is a channel for trust to be maintained and for distrust to be received a penalty. Consequently, the impact of social trust on bond issuance can be more pronounced in an economy with strong formal institutions (Meng and Yin, 2019). Unlike the substitution effect between formal and informal institutions in the cost of debt financing, formal and informal institutions are expected to be complements here because a firm need to consider both formal and informal institutions when making decision to issue bonds. McCannon et al. (2018) address that strong formal institutions bring a higher probability of an agreement being reached and a larger amount of investment being made. In contrast, a high level of trust in weak formal institutions leads to disproportionately benefit from amended contract enforcement.

## 2.4 Econometric background of Probit model

Cameron and Trivedi (2005) and Wooldridge (2010) present that binary outcome data the dependent variable, $y$, is two possible outcomes. To estimate the dummy dependent variable, the probability of one outcome is $p$, and the probability of another is $1 - p$. Without loss of generality, it can be defined by

$$y = \begin{cases} 1 \; with \; probability \; p, \\ 0 \; with \; probability \; 1 - p. \end{cases}$$

In addition, a regression model is formed by parameterising the probability $p$ to depend on a regressor vector $x$ where $x$ is 1 × K and a K × 1 parameter vector β. With conditional probability, the model of single-index form can be written as the following:

$$Pr[y_i = 1 | \, x] = \; F(X_i'\beta) \; \equiv p(x')$$

where $F(.)$ is a specified function which the response probability is between 0 and 1. There is natural to specify $F(.)$ to be a cumulative distribution function and it also takes on values in the open unit interval: $0 < \; F(.) < 1$ for all $z \; \in$ R. Furthermore, an index model presents that the response probability depends on $x'$ because $p(x')$ is a function of $x'$ and the function F maps the index into the response probability

In addition, the marginal effect is the effect on the dependent variable which comes from a change in an independent variable by a small amount. The measurement of marginal effects is the change in the conditional mean of $y$ when regressors $x$ change by one unit.

In the linear regression model, $\mathrm{E}[y|x] = x'\beta$ indicates $\partial \mathrm{E}[y|x] / \partial x = \beta$. Hence, the coefficient interprets directly as the marginal effect. In contrast, the nonlinear regression model is no longer possible to interpret.

According to the probit model, the marginal effect of the change in a regressor on the conditional probability that $y = 1$. According to the general probability model and change in the $j^{th}$ regressor, it is represented as:

$$\frac{\partial \Pr[\, y_i = 1|X_i]}{\partial X_{ij}} = F(X_i'\beta)\beta_j \,,$$

where $F'(z) = \partial F(z)/\partial z$. In any nonlinear model, the marginal effects differ with the point of evaluation $X_i$ and differ with different choices of $F(.)$ (Cameron and Trivedi, 2005; Wooldridge, 2010).

## 2.5 Data and summary statistics

### 2.5.1 Data collection

This dataset is obtained from three primary sources which are Wharton Research Data Services, Bloomberg and World Bank Open Data. The data on firm-specific characteristics are retrieved from companies' balance sheet and profit and loss account. The initial data was made up to 66,160 observations in total from eight emerging economies, namely China, Hong Kong SAR (China), Indonesia, Korea, Malaysia, Philippines, Singapore, and Thailand. The period of data analysed is between 1997 and 2018. These three sources of data contain different datasets. Compustat IQ in Wharton Research Data Services and Bloomberg contain different firm-level datasets. The sample in this chapter needs to have data from both sources. This is the reason why the number of observations shrinks. After merging data from three sources and also removing the 1% upper and lower tails of the distribution, the number of matched samples reduces from 66,160 observations to 15,268 observations.

Table 2.1 is comprised of a total of 15,268 annual observations on 1,202 firms: 4,820 observations in China; 233 observations in Hong Kong SAR (China); 890 observations in Indonesia; 5,844 observations in Korea; 1,182 observations in Malaysia; 351 observations in the Philippines; 958 observations in Singapore; and 990 observations in Thailand. Table 2.2 shows the correlation matrix of all explanatory variables.

The data in this chapter are provided by Compustat in Wharton Research Data Service. Compustat is a financial database that collects income statement, balance sheet, statement of cash flows, and supplemental data items on companies around the world.

Bloomberg terminal is an online database and it delivers current and historical financial data including descriptive information and research in firm-level and country-level. In addition, Bloomberg terminal has a special feature to present information on government and corporate bonds. This chapter merges data of corporate bond issuances with financial statements from Compustat. Following previous studies, this chapter excludes the data of firms with less than three years of consecutive observations and firms with incomplete records of explanatory variables.

To measure the level of social trust in each economy, this chapter follows previous work such as La Porta et al. (1997); Guiso et al. (2008); Sapienza et al. (2013); Dudley and Zhang (2016) by using survey data from the World Values Survey (WVS). In particular, the responses to the question "Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?" are used to measure the level of social trust. Following earlier studies (Kaufman et al., 2009, Dudley and Zhang, 2016; Meng and Ying, 2019), this chapter measures country governance by using the indicator dataset from the Worldwide Governance Indicator from the World Bank.

### 2.5.2 Summary statistics

Summary of statistics for all variables are provided in Table 2.1 for the whole sample and in Table 2.4 for each country. As shown in Table 2.1, the sample includes bond issuers (21%) and non-issuers (79%). Bond issuers are consisting of domestic currency-denominated bond issuers (94%) and foreign currency-denominated bond issuers (6%). Table 2.2 shows correlation coefficients of all independent variables used in the empirical analysis. As a result of high correlation between some variables (social trust and alternative trust (0.86), six dimensions of country governance (above 0.59), profitability and cash flow (0.96), and dummy variables in previous bond issuance and previous issuance of bonds in domestic currency (0.96)), this chapter uses these variables in separate regressions.

Table 2.3 highlights that firm characteristics of (domestic currency) bond issuers are statistically different from those of non-issuers. Larger firms have more leverage than smaller firms, and bond issuers (0.60) are significantly more levered as compared to non-issuers (0.55). This finding supports Mizen and Tsoukas (2014) that firms with a higher

capacity to borrow have a higher degree of leverage. 74% of bond issuers are not the first-time issuers while 1% of non-issuers have experienced in issuing bond. This explains that having more tangible assets and experience in bond issuances is advantageous to bond issuers in terms of a lower cost of entry. Comparing domestic currency-denominated bond issuers and foreign currency-denominated bond issuers in columns 6 and 7, 72% (34%) of domestic (foreign) currency-denominated bond issuers have an experience in issuing bonds in local currency and 4% (52%) of domestic (foreign) currency-denominated bond issuers have an experience in issuing bonds in foreign currency. This result indicates that issuers are more likely to issue new bonds in the same currency as their previous issuances.

Table 2.4 shows summary statistics for all variables by country. It presents some differentiation among bond issuance and domestic currency bond issuance across eight emerging economies. The lowest proportion of bond issuance is in China (Mainland), and the highest proportion of bond issuance is in Thailand. As expected, firms are more likely to issue domestic currency bonds when they decide to issue bonds. This chapter finds the limitation of domestic currency bond issuance in Hong Kong (China) because Hong Kong is the offshore Renminbi market. Considering high social trust and alternative trust, China (Mainland) and Hong Kong (China) have a high level of social trust, and Malaysia and the Philippines have a low level of social trust.

## 2.6 Empirical results

### 2.6.1 Baseline model

To explore the effect of social trust on firms' access to external finance, this chapter follows previous studies (Mizen and Tsoukas, 2010; 2014; Mizen et al., 2018) using Probit models to assess whether characteristics of firms and countries can explain corporate bond issuance and bond issuance in domestic currency.

The samples applied in the estimations of Equation 1 and Equation 2 are different. This chapter uses the whole sample to estimate Equation 1 and only bond issuer observations to estimate Equation 2. The results are reported in Table 2.5. Columns 1 and 2 in Table 2.5 report the estimates of Equation 1 and marginal effects of variables on bond issuance (*Bond*), respectively. Likewise, Columns 2 and 3 in Table 2.5 show the estimates of Equation 2 and marginal effects which highlight the impact on domestic currency-denominated bond issuance ($LCY$). The empirical results are presented in terms of average

marginal effects on the probabilities on the occurrence of *Bond* = 1 and *LCY* = 1.

**[Table 2.5 is here]**

Column 2 in Table 2.5 shows the marginal effects that are consistent with expectations. The main variable of interest, $HighTrustDummy$, has a positive coefficient, indicating the positive relationship between social trust and corporate bond issuance. Similarly, there is a positive relationship between social trust and corporate bond issuance in domestic currency as can be seen in Column 4. This implies that the location of firm matters for debt financing. Compared to a low-social trust economy, a high-social trust economy has a 3.1% higher probability of bond issuance and a 3% higher probability of bonds being issued in domestic currency; these marginal effects are statistically significant at 1% level. It may be because trust influences important decisions in economic and finance particularly in transactions between unfamiliar parties (Guiso et al., 2006). This result supports the evidence provided by Meng and Ying (2019) that social trust can significantly decrease a firm's cost of debt issuing because a higher level of social trust reduces transaction cost and monitoring cost, and eliminates agency problem, which in turn improve business efficiency (Zak and Knack, 2001; Guiso et al., 2006; Pevzner et al., 2015; Dudley and Zhang, 2016).

Regarding control variables, the results show that firm size is important to the decision to issue bonds and, in particular, domestic currency-denominated bonds. Positive and significant coefficients for firm size in column 2 and 4 show that larger firms are more likely to issue bond and they are more likely to issue bond in foreign currency. More specifically, a one percent increase in firm size will increase the probability of bond issuance (domestic currency-denominated bond issuance) by 0.4% (0.2%). Moreover, the result presents that bond issuers are more likely to be more leveraged, less profitable, and highly liquid; they also hold less assets that can be used as collaterals. Although they are relatively new, they have an experience in bond issuance. However, bond issuers who decide to issue bonds in domestic currency tend to be new firms that hold more assets that can be used as collaterals. Having an experience in domestic (foreign) currency-denominated bond issuance increases the probability that the firms will issue bonds in domestic currency again by 37.5% (14.2%). Due to a high fixed cost of entry to the market, experienced issuers have less cost than new issuers (Mizen et al., 2018).

### 2.6.2 Are trust and country governance complements or substitutes?

This section examines how the effect of social trust on the firm's decision in bond issuance and domestic currency-denominated bond issuance varies with different country governance environments. There are two empirical propositions from the literature. First, the impact of social trust on a decision in bond issuances especially for bonds in domestic currency should be more pronounced in a good country governance environment. Second, High social trust has a substitution effect for good country governance. (Meng and Ying, 2019). To investigate these propositions, the interaction terms between high social trust and country governance indicators are added. To capture country governance environment, this research follows recent studies (Dudley and Zhang, 2016; Meng and Ying, 2019) investigating six dimensions of country governance: control of corruption (CC), government effectiveness (GE), political stability (PS), regulatory quality (RQ), rule of law (RL), and voice and accountability (VA).

**[Table 2.6 is here]**

The results of Equation 1 are displayed in Table 2.6. The results present that high social trust and six dimension of country governance have a positive effect on the decision of bond issuance at the 1% significant level. The estimated marginal effects show that one percent increase in government effectiveness causes a 10.2% growth in the probability of bond issuance, which is the highest increase among these six dimensions.

**[Table 2.7 is here]**

Table 2.7 shows the estimates of Equation 3 which assesses how the effect of social trust on a decision to issue bond varies with the levels of control of corruption (CC), government effectiveness (GE), political stability (PS), regulatory quality (RQ), rule of law (RL), and voice and accountability (VA). The coefficients are presented in odd columns of Table 2.6 and marginal effects are in even columns. The interaction effects between social trust and country governance are statistically significant at the 1% level. The predictabilities of these factors on the decisions in bond issuance, measured by Pseudo R-squared, are in the range between 0.576 and 0.582.

In column 2 of Table 2.7, the estimated marginal effects indicate that one percent increase in control of corruptions leads to a 6.6%[1] rise in the probability of bond issuance by firms located in a high-social trust country. Similarly, one percent increase in government effectiveness, political stability, regulatory quality and rule of law can raise the probability of bond issuance by firms located in a high-social trust country by 8.6%, 11.1%, 4.8% and 7.4%, respectively. However, the results in Table 2.7 highlight that social trust has an insignificant impact on bond issuance decision when government effectiveness and its interaction effect with social trust are taken in to account. These results suggest that a decision to issue a bond of firms located in a high-social trust culture is driven by better control of corruptions, political stability, regulatory quality, rule of law, and voice and accountability, supporting previous findings that formal institutions and trust are complementary (Bjørnskov and Méon, 2015; McCannon, 2018; Cruz-García and Peiró-Palomino, 2019). That is, firms believe that investors will invest more in their bonds if there is a good combination of a high level of social trust and better functions of politics and legal systems. By contrast, the coefficient for the interaction between social trust and the level of voice and accountability is negative[2]. In other words, the effect of strong informal institution on the decision to issue bonds becomes weaker when voice and accountability are improved. It implies that a higher level of liberty rights, political participation and freedom of media, which are collectively known as "voice and accountability", motivate firms and investors to participate in the debt market and then the effect of social trust becomes lessened.

According to control variables, firm size, leverage, liquidity, experiences of bond issuance, and the onshore market size are positively associated with the probability of bond issuance. To control for other factors that may influence the probability of bond issuance, Table 2.7 captures the onshore market size and finds that firms tend to issue bond when the onshore market size is liquid and depth.

**[Table 2.8 is here]**

In Table 2.8, this chapter estimates Equation 2 to capture the effects of social trust and country governance environment on the decision of domestic currency bond issuance. The coefficients confirm that firms tend to issue domestic currency bond in higher social

[1] The coefficient for the product of $HihgTrustDummy$ variable and CC variable (control of corruptions) (i.e. 0.066).
[2] The marginal effect is -0.067 in column 12.

trust economies and better country governance. However, the coefficients of voice and accountability are negative and insignificant. These are consistent with Table 2.6., which presents that higher social trust and better country governance encourage firms to issue bond except in voice and accountability.

**[Table 2.9 is here]**

Table 2.9 presents the estimates of Equation 4, reporting how social trust and country governance relate to firms' decision to issue bonds in domestic currency. This chapter highlights the nature of original sin at firm-level which is "an inability to issue onshore, at least not in size and not at long maturities"(Allayannis et al., 2003; Mizen et al., 2018). More specifically, Table 2.9 examines whether strong formal and/or informal institutions can eliminate an inability to issue bonds in domestic currency. Country governance environments are expected to have influences on a domestic currency bond issuance decision of firms located in high-social trust economies. This extends the finding of previous research which suggests that the development of bond markets reduces the degree of original sin, given that the difficulties in issuing bonds in Asian emerging markets have high fixed cost for the first-time issuance and there is illiquidity in the onshore market (Mizen et al., 2018).

Although all specifications include the same set of control variables as in Table 2.7, the result in Table 2.9 are different. The marginal effects calculated at the mean value of explanatory variables are reported in even columns of Table 2.9. It is interesting that the interaction terms all have negative coefficients. These negative and significant interaction effects imply that the presence of better country governance reduces the effect of social trust on the issuance of bonds in domestic currency. In particular, one percent increase in control of corruptions, government effectiveness, regulatory quality and rule of law will decrease the probability that a firm located in a high-social trust economy will issue bonds in domestic currency by 2.3%, 2.1%, 0.7%, 2.8%, and 2.5%, respectively. When voice and accountability increase by one percent, the effect of high social trust on the probability that firms will issue bonds in domestic currency decreases by 11.5%.

Furthermore, the result in Table 2.9 suggests that social trust is positively associated with the probability of domestic currency bond issuance and the impact of social trust is

less prominent in a better country governance environment[3] since the effects of formal institutions are lessened for an economy with a strong informal institution (Meng and Ying, 2019). Although the results show no evidence of an increase in the probability of domestic currency-denominated bond issuance for firms located in high-social trust economies when politics are more stable, this finding is consistent with Guiso et al. (2004), Dudley and Zhang (2016) and Meng and Ying (2019) who show that informal and formal institutions are substitutes.

In conclusion, the results suggest that better informal institution (a higher level of social trust) increases the possibility that firms will decide to issue bonds in their local currency, implying that firms in Asian emerging economies have more ability to issue bonds in their own currency and onshore if there is a high level of social trust. Nevertheless, it is worth noting that this effect is weaker in economies where formal institutions (country governance environment) are stronger.

## 2.7 Robustness check

### 2.7.1 Alternative Specification

To confirm that the above results are not driven by using a dummy variable as a proxy for social trust, an alternative measurement of social trust, which has continuous values, is applied to replace the dummy variable and then Equations 1-4 are re-estimated. Next, the results of re-estimations are shown in Tables 2.7 and 2.9. Following prior studies (Pevzer et al., 2015 and Brockman et al., 2020), this alternative social trust is calculated for each economy as Alternative Trust = 100+ (% most people can be trusted) – (% can't be too careful).

**[Table 2.10 is here]**

Table 2.10 shows that Alternative Trust, country governance indicators and their interactions have positive and significant impacts on corporate bond issuance decision except for government effectiveness (GE), and voice and accountability (VA). This confirms the results reported earlier that the probability that a firm will issue bonds in its local currency increases when social trust and country governance environments are better.

[3] The result in Table 7 shows a positive coefficient for $HighTrustDummy$ and negative coefficients for the interaction terms.

The negative coefficient for the interaction term between social trust and voice and accountability in Columns 11-12 indicates that the impact of trust on the probability of bond issuance is significantly less pronounced in the country with better voice and accountability.

In addition, in the sample for China, there are both private and state-owned firms. Ding et al. (2010) explain that profitability is important for private businesses in China, but not for state-owned businesses, which are still operating under tight budget restraints. These two types of firms have different objectives and management. To address this issue, this chapter follows Mizen and Tsoukas (2014) to substitute profitability with cash flow, which is calculated as the sum of the firm's net income and depreciation divided by total assets. Investment and cash flow are added and profitability is dropped; the results are shown in Table 2.10 and Table 2.11.

**[Table 2.11 is here]**

Further, in Table 2.11, social trust has a positive coefficient but country governance indicators and their interactions have negative and significant coefficients, with the exception of political stability. This supports the findings that the impact of social trust on bond issuance decision is less salient when country governance environment is better. Hence, it can be confirmed that the results in Section 2.5 are robust to social trust measurements.

### 2.7.2 Excluding China from the sample

In order to alleviate country heterogeneity problem, China is a unique country and 32% of the sample comes from China. This section excludes all bond issuance in China. These additional robustness checks contain estimation of empirical models with different sample selection in Table 2.12 and Table 2.13. These tables confirm that main findings are upheld. To control for unobserved heterogeneity, this section also employs the random effect probit model with an alternative sample in Table 2.14 and Table 2.15.

## 2.8 Conclusion

The original sin is an inability to borrow money abroad in local currency or borrow long term from domestic sources. This is a critical problem for emerging economies especially during crises. The chapter thus aims to study the role of social trust in firms'

debt issuance decision. To investigate original sin in Asian emerging economies, this chapter uses a unique panel data of firms in eight Asian emerging economies, China, Hong Kong SAR (China), Indonesia, Korea, Malaysia, Philippines, Singapore, and Thailand. The period of data is between 1997 and 2018.

There are three interesting findings. Firstly, there is a positive relationship between social trust and a decision of bond issuance, suggesting that firms located in a high-social trust country are more likely to issue bonds, particularly domestic currency-denominated bonds, than those in a low-social trust country since firms in higher-social trust economies have lower agency cost, monitoring cost, and transaction cost as well as less information asymmetry between bond issuers and bond investors. This relationship remains robust after considering an alternative measurement of social trust and adding more controlling factors. Therefore, it can be concluded that social trust plays an important role in reducing the effects of original sin in Asian emerging economies and also encouraging emerging economies to escape from original sin.

Secondly, there are some mechanisms through which the relationship between social trust and country governance environments causes a higher probability to issue bonds. The results present that the positive impact of social trust on a firm's decision on bond issuance becomes more pronounced in economies with better country governance environments. This supports previous studies (North, 1990; Bjørnskov and Méon, 2015; McCannon, 2018; Cruz-García and Peiró-Palomino, 2019) that formal and informal institutions are complements. Firms decide to issue bonds in economies with effective formal institutions and good informal institutions (McCannon, 2018), implying a complementary relationship between social trust and formal institutions. Therefore, with high levels of social trust and good country governance environments, firms and investors are more confident to enter Asian bond markets.

Finally, the effect of social trust on domestic currency-denominated bond issuance depends upon country governance environment. This finding is different from the effect on the decision to issue bonds such that the effect on domestic currency-denominated bond issuance is less prominent when country governance environment is more effective. As a result of imperfect institutions, the impact of social trust on a decision in domestic bond issuance can show itself through various channels and social trust becomes more important in corporate decisions when a formal institution is weak (Helmke and Levitsky, 2004;

Meng and Yin, 2019). This is consistent with studies of Guiso et al. (2004), Dudley and Zhang (2016) and Meng and Yin (2019).

The findings in this chapter have provided some policy implications for removing original sin in Asian emerging economies; for example, it suggests that the government could improve social trust to encourage the development of bond markets. Moreover, Bjørnskov (2009) documents that the level of education and social trust are related, suggesting that investing in school education will increase the level of social trust.

## 2.9 Tables

Table 2.1: Summary of descriptive statistics

| Variables | Observations | Mean | Standard Deviation | Min | Max | P25 | P50 | P75 |
|---|---|---|---|---|---|---|---|---|
| BOND | 15,268 | 0.21 | 0.41 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| LCY | 3,217 | 0.94 | 0.23 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| High Social Trust | 15,268 | 0.43 | 0.50 | 0.00 | 1.00 | 0.00 | 0.00 | 1.00 |
| Alternative Trust | 15,268 | 74.21 | 32.53 | 11.75 | 127.56 | 59.58 | 60.83 | 104.47 |
| CC | 15,268 | 0.28 | 0.67 | -0.76 | 2.32 | -0.27 | 0.31 | 0.60 |
| GE | 15,268 | 0.89 | 0.53 | -0.05 | 2.27 | 0.48 | 1.08 | 1.18 |
| PS | 15,268 | 0.15 | 0.59 | -1.78 | 1.62 | -0.26 | 0.24 | 0.54 |
| RQ | 15,268 | 0.60 | 0.71 | -0.23 | 2.26 | -0.14 | 0.68 | 1.09 |
| RL | 15,268 | 0.57 | 0.76 | -0.55 | 1.86 | -0.20 | 0.62 | 1.24 |
| VA | 15,268 | -0.21 | 0.97 | -1.45 | 0.80 | -1.45 | -0.06 | 0.80 |
| Firm Size | 15,268 | 10.96 | 3.27 | 4.24 | 17.79 | 8.39 | 10.81 | 13.20 |
| Growth | 15,268 | 0.14 | 0.40 | -0.65 | 2.61 | 0.00 | 8.00 | 0.04 |
| Leverage | 15,268 | 0.56 | 0.19 | 0.10 | 1.14 | 0.43 | 0.56 | 0.68 |
| Profitability | 15,268 | 0.01 | 0.10 | -0.53 | 0.22 | 0.00 | 0.03 | 0.06 |
| Liquidity | 15,268 | 0.14 | 0.11 | 0.01 | 0.60 | 0.06 | 0.11 | 0.18 |
| Collateral | 15,268 | 0.36 | 0.22 | 0.01 | 0.87 | 0.19 | 0.35 | 0.52 |
| Age | 15,268 | 13.71 | 12.66 | 1.00 | 71.00 | 1.00 | 14.00 | 23.00 |
| PrevIssue Dummy | 15,268 | 0.17 | 0.37 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| PrevDom Dummy | 15,268 | 0.15 | 0.36 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| PrevFor Dummy | 15,268 | 0.02 | 0.11 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 |
| Investment | 15,268 | 0.45 | 0.31 | 0.00 | 1.00 | 0.17 | 0.45 | 0.71 |
| Cash flow | 15,268 | -0.02 | 0.10 | -0.56 | 1.62 | -0.03 | 0.00 | 0.03 |
| GDP | 15,268 | 4.68 | 3.39 | -14.35 | 13.64 | 2.52 | 3.84 | 6.76 |
| Onsratio | 15,268 | 0.86 | 0.21 | 0.00 | 1.00 | 0.88 | 0.90 | 0.97 |

The table presents number of observations, mean, standard deviation, minimum, maximum, 25th percentile, median and 75th percentile for firm-specific and country-specific indicators. $BOND$ is a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise. $LCY$ is a dummy variable of which the value is equal to one if firm $i$ issues domestic currency-denominated bond in year $t$, and zero otherwise. $High\ Social\ Trust$ is a dummy variable of which the value is equal to one if social trust in country $j$ and year $t$ is high, and zero otherwise. Social trust is high in year $t$ if the mean of response in the country in year $t$ is greater than the median value of responses in the sample. $Alternative\ Trust$ is an index calculated for country $j$ (100+ (% people is trustful) – (% people is not trustful)). $CC$ represents the World Bank's governance indicator for control of corruption, $GE$ for government effectiveness, $PS$ for political stability, RQ for regulatory quality, $RL$ for rule of law, and $VA$ for voice and accountability. $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Profitability$ is measured as the ratio of earnings before interest and taxes relative to total assets. $Liquidity$ is measured as the ratio of total debt to total assets. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $Investment$ is the ratio of investments to total assets. $PrevIssue\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in any currency, and zero otherwise. $PrevDom\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in domestic currency, and zero otherwise. $PrevFor\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in foreign currency, and zero otherwise. $Investment$ is the ratio of investments to total assets. $Cash\ Flow$ is the sum of net income and depreciation over total assets. $GDP$ represents GDP growth. $Onsratio$ is the onshore market size relative to the offshore market size.

Table 2.2: Correlation matrix of firm characteristic variables

| Variables | High social Trust | Alternative Trust | CC | GE | PS | RQ | RL | VA | Firm Size | Growth | Leverage | Profitability | Liquidity | Collateral | Age | PrevIssue Dummy | PrevDom Dummy | PrevFor Dummy | Investment | Cash Flow | GDP | Onsratio |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| High Social Trust | 1.00 | | | | | | | | | | | | | | | | | | | | | |
| Alternative Trust | 0.86 | 1.00 | | | | | | | | | | | | | | | | | | | | |
| CC | -0.42 | -0.47 | 1.00 | | | | | | | | | | | | | | | | | | | |
| GE | -0.48 | -0.49 | 0.98 | 1.00 | | | | | | | | | | | | | | | | | | |
| PS | -0.45 | -0.40 | 0.95 | 0.98 | 1.00 | | | | | | | | | | | | | | | | | |
| RQ | -0.60 | -0.60 | 0.96 | 0.96 | 0.93 | 1.00 | | | | | | | | | | | | | | | | |
| RL | -0.67 | -0.58 | 0.91 | 0.94 | 0.93 | 0.98 | 1.00 | | | | | | | | | | | | | | | |
| VA | -0.76 | -0.67 | 0.60 | 0.59 | 0.62 | 0.75 | 0.80 | 1.00 | | | | | | | | | | | | | | |
| Firm Size | -0.37 | -0.15 | 0.08 | 0.06 | 0.13 | 0.22 | 0.30 | 0.59 | 1.00 | | | | | | | | | | | | | |
| Growth | 0.12 | 0.11 | -0.07 | -0.07 | -0.07 | -0.10 | -0.11 | -0.14 | -0.09 | 1.00 | | | | | | | | | | | | |
| Leverage | -0.05 | -0.04 | 0.00 | -0.01 | -0.01 | 0.02 | 0.02 | 0.08 | 0.20 | -0.03 | 1.00 | | | | | | | | | | | |
| Profitability | 0.19 | 0.12 | -0.13 | -0.15 | -0.16 | -0.17 | -0.20 | -0.23 | 0.01 | 0.15 | -0.28 | 1.00 | | | | | | | | | | |
| Liquidity | 0.10 | 0.11 | -0.02 | -0.01 | 0.01 | -0.05 | -0.05 | -0.09 | -0.17 | 0.07 | -0.30 | 0.04 | 1.00 | | | | | | | | | |
| Collateral | 0.04 | 0.00 | -0.05 | -0.07 | -0.07 | -0.06 | -0.06 | -0.01 | 0.13 | -0.07 | 0.09 | 0.05 | -0.40 | 1.00 | | | | | | | | |
| Age | 0.32 | 0.02 | -0.26 | -0.29 | -0.38 | -0.34 | -0.45 | -0.46 | -0.40 | 0.05 | -0.05 | 0.15 | -0.03 | 0.05 | 1.00 | | | | | | | |
| PrevIssue Dummy | -0.10 | -0.03 | 0.01 | 0.00 | 0.00 | 0.04 | 0.05 | 0.09 | 0.25 | -0.09 | 0.12 | -0.08 | -0.08 | 0.00 | -0.07 | 1.00 | | | | | | |
| PrevDom Dummy | -0.12 | -0.04 | -0.04 | -0.04 | -0.04 | 0.00 | 0.02 | 0.08 | 0.25 | -0.08 | 0.10 | -0.08 | -0.07 | -0.01 | -0.07 | 0.96 | 1.00 | | | | | |
| PrevFor Dummy | 0.05 | 0.00 | 0.16 | 0.14 | 0.12 | 0.15 | 0.12 | 0.06 | 0.06 | -0.03 | 0.06 | 0.00 | -0.03 | 0.04 | 0.00 | 0.27 | 0.02 | 1.00 | | | | |
| Investment | -0.04 | -0.15 | 0.08 | 0.04 | -0.01 | 0.07 | 0.02 | 0.06 | 0.20 | -0.04 | 0.08 | 0.15 | -0.14 | 0.24 | 0.18 | 0.20 | 0.17 | 0.11 | 1.00 | | | |
| Cash flow | 0.21 | 0.14 | -0.13 | -0.14 | -0.16 | -0.18 | -0.22 | -0.27 | -0.06 | 0.17 | -0.28 | 0.96 | 0.09 | -0.07 | 0.15 | -0.09 | -0.09 | 0.00 | 0.11 | 1.00 | | |
| GDP | 0.56 | 0.55 | -0.41 | -0.40 | -0.35 | -0.52 | -0.52 | -0.63 | -0.33 | 0.15 | -0.07 | 0.18 | 0.10 | 0.03 | 0.17 | -0.15 | -0.14 | -0.06 | -0.15 | 0.19 | 1.00 | |
| Onsratio | 0.11 | 0.22 | -0.63 | -0.57 | -0.54 | -0.58 | -0.50 | -0.34 | -0.09 | 0.04 | -0.11 | 0.05 | 0.07 | -0.04 | 0.11 | 0.02 | 0.07 | -0.15 | -0.14 | 0.06 | 0.22 | 1.00 |

Table 2.3: Summary of descriptive statistics for firms-specific variables by bond issuance decisions

| Variables | Bond = 1 (1) | Bond = 0 (2) | Diff (3) | LCY =1 (4) | LCY = 0 (5) | Diff (6) |
|---|---|---|---|---|---|---|
| Firm Size | 12.46 | 10.58 | 0.00 | 12.45 | 12.75 | 0.00 |
| | (3.09) | (3.20) | | (3.07) | (3.34) | |
| Growth | 0.07 | 0.15 | 0.00 | 0.07 | 0.07 | 0.00 |
| | (0.31) | (0.42) | | (0.30) | (0.32) | |
| Leverage | 0.60 | 0.55 | 0.00 | 0.59 | 0.63 | 0.00 |
| | (0.15) | (0.19) | | (0.15) | (0.17) | |
| Profitability | 0.00 | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 |
| | (0.11) | (0.10) | | (0.10) | (0.10) | |
| Liquidity | 0.13 | 0.14 | 0.00 | 0.13 | 0.12 | 0.00 |
| | (0.10) | (0.11) | | (0.10) | (0.06) | |
| Collateral | 0.37 | 0.36 | 0.00 | 0.36 | 0.35 | 0.00 |
| | (0.23) | (0.22) | | (0.23) | (0.23) | |
| Age | 11.60 | 14.29 | 0.00 | 11.33 | 16.33 | 0.00 |
| | (12.60) | (12.65) | | (12.47) | (13.72) | |
| PrevIssue Dummy | 0.74 | 0.01 | 0.00 | 0.75 | 0.55 | 0.00 |
| | (0.44) | (0.08) | | (0.44) | (0.49) | |
| PrevDom Dummy | 0.69 | 0.01 | 0.00 | 0.72 | 0.34 | 0.00 |
| | (0.46) | (0.08) | | (0.44) | (0.18) | |
| PrevFor Dummy | 0.09 | 0.00 | 0.00 | 0.04 | 0.52 | 0.00 |
| | (0.28) | (0.02) | | (0.19) | (0.50) | |
| Cash Flow | -0.04 | -0.02 | 0.00 | -0.03 | -0.02 | 0.00 |
| | (0.11) | (0.10) | | (0.11) | (0.10) | |
| Observations | 3,217 | 12,051 | | 3,043 | 174 | |

The table presents sample means with standard deviations reported in parentheses. $BOND$ is a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise. $LCY$ is a dummy variable of which the value is equal to one if firm $i$ issues domestic currency-denominated bond in year $t$, and zero otherwise. The 'Diff' column shows the p value of a test for the equality of means. $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Profitability$ is measured as the ratio of earnings before interest and taxes relative to total assets. $Liquidity$ is measured as the ratio of current assets and total liabilities. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $PrevIssue\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in any currency, and zero otherwise. $PrevDom\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in domestic currency, and zero otherwise. $PrevFor\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in foreign currency, and zero otherwise. $Cash\ Flow$ is the sum of net income and depreciation over total assets.

# Table 2.4: Summary statistics for all variables by country

| Variables | China (Mainland) (1) | Hong Kong (China) (2) | Indonesia (3) | South Korea (4) | Malaysia (5) | Philippines (6) | Singapore (7) | Thailand (8) |
|---|---|---|---|---|---|---|---|---|
| Bond | 0.13 | 0.23 | 0.27 | 0.26 | 0.17 | 0.20 | 0.22 | 0.29 |
| | (0.34) | (0.42) | (0.44) | (0.44) | (0.38) | (0.40) | (0.42) | (0.46) |
| LCY | 0.89 | 0.23 | 0.90 | 0.96 | 0.98 | 0.81 | 0.87 | 0.96 |
| | (0.33) | (0.42) | (0.29) | (0.18) | (0.12) | (0.39) | (0.33) | (0.19) |
| High Social Trust | 1.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.45 | 0.22 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.50) | (0.41) |
| Alternative Trust | 114.06 | 86.72 | 90.58 | 59.39 | 17.45 | 15.10 | 51.07 | 61.21 |
| | (10.60) | (6.55) | (6.79) | (1.60) | (0.27) | (3.25) | (23.33) | (9.97) |
| CC | -0.27 | 1.68 | -0.25 | 0.60 | 0.31 | -0.55 | 2.17 | -0.40 |
| | (0.00) | (0.04) | (0.00) | (0.00) | (0.01) | (0.02) | (0.01) | (0.01) |
| GE | 0.48 | 1.89 | 0.18 | 1.18 | 1.08 | 0.05 | 2.23 | 0.35 |
| | (0.00) | (0.06) | (0.00) | (0.01) | (0.00) | (0.01) | (0.01) | (0.00) |
| PS | -0.26 | 0.80 | -0.53 | 0.54 | 0.24 | -1.13 | 1.51 | -0.73 |
| | (0.00) | (0.05) | (0.00) | (0.00) | (0.00) | (0.05) | (0.02) | (0.02) |
| RQ | -0.14 | 2.19 | -0.07 | 1.09 | 0.68 | 0.04 | 2.13 | 0.11 |
| | (0.00) | (0.06) | (0.00) | (0.01) | (0.00) | (0.02) | (0.01) | (0.01) |
| RL | -0.20 | 1.76 | -0.31 | 1.24 | 0.62 | -0.48 | 1.84 | 0.02 |
| | (0.00) | (0.07) | (0.00) | (0.01) | (0.00) | (0.01) | (0.02) | (0.00) |
| VA | -1.45 | 0.47 | 0.18 | 0.80 | -0.08 | 0.04 | -0.06 | -1.00 |
| | (0.00) | (0.04) | (0.00) | (0.00) | (0.01) | (0.01) | (0.01) | (0.04) |
| Firm Size | 8.87 | 10.09 | 13.92 | 13.58 | 7.72 | 11.74 | 7.61 | 10.22 |
| | (1.79) | (2.78) | (3.50) | (2.19) | (1.92) | (1.55) | (2.40) | (1.63) |
| Growth | 0.22 | 0.16 | 0.10 | 0.08 | 0.11 | 0.15 | 0.13 | 0.11 |
| | (0.45) | (0.58) | (0.25) | (0.35) | (0.42) | (0.42) | (0.44) | (0.35) |
| Leverage | 0.53 | 0.49 | 0.61 | 0.57 | 0.54 | 0.60 | 0.55 | 0.59 |
| | (0.18) | (0.24) | (0.20) | (0.18) | (0.21) | (0.13) | (0.17) | (0.18) |
| Profitability | 0.04 | -0.00 | 0.03 | -0.02 | 0.01 | 0.04 | 0.03 | 0.04 |
| | (0.06) | (0.12) | (0.09) | (0.12) | (0.10) | (0.05) | (0.09) | (0.08) |
| Liquidity | 0.16 | 0.14 | 0.11 | 0.13 | 0.12 | 0.13 | 0.14 | 0.08 |
| | (0.12) | (0.12) | (0.09) | (0.11) | (0.10) | (0.08) | (0.11) | (0.07) |
| Investment | 0.36 | 0.60 | 0.64 | 0.40 | 0.56 | 0.67 | 0.61 | 0.58 |
| | (0.30) | (0.35) | (0.29) | (0.27) | (0.31) | (0.27) | (0.29) | (0.30) |
| Collateral | 0.36 | 0.30 | 0.45 | 0.35 | 0.37 | 0.39 | 0.35 | 0.39 |
| | (0.24) | (0.25) | (0.21) | (0.19) | (0.24) | (0.22) | (0.24) | (0.23) |
| Age | 17.78 | 26.28 | 20.17 | 2.72 | 29.47 | 31.91 | 17.25 | 21.58 |
| | (7.37) | (10.53) | (9.51) | (5.05) | (12.86) | (21.43) | (11.15) | (10.86) |
| PrevIssue Dummy | 0.09 | 0.16 | 0.23 | 0.20 | 0.12 | 0.13 | 0.12 | 0.32 |
| | (0.29) | (0.37) | (0.42) | (0.40) | (0.33) | (0.34) | (0.32) | (0.47) |
| PrevDom Dummy | 0.09 | 0.01 | 0.21 | 0.19 | 0.12 | 0.13 | 0.04 | 0.32 |
| | (0.29) | (0.09) | (0.41) | (0.39) | (0.33) | (0.34) | (0.19) | (0.47) |
| PrevFor Dummy | 0.00 | 0.16 | 0.29 | 0.01 | 0.00 | 0.00 | 0.08 | 0.01 |
| | (0.00) | (0.37) | (0.17) | (0.10) | (0.00) | (0.00) | (0.27) | (0.09) |
| Cash Flow | 0.01 | -0.02 | -0.02 | -0.06 | -0.02 | 0.01 | 0.00 | 0.01 |
| | (0.06) | (0.12) | (0.10) | (0.12) | (0.10) | (0.05) | (0.10) | (0.08) |
| GDP | 8.24 | 2.63 | 3.58 | 2.98 | 2.79 | 3.47 | 3.16 | 3.00 |
| | (2.00) | (3.05) | (2.35) | (2.04) | (3.24) | (1.96) | (3.76) | (2.68) |
| Onsratio | 0.98 | 0.54 | 0.79 | 0.83 | 0.94 | 0.93 | 0.38 | 0.97 |
| | (0.03) | (0.11) | (0.13) | (0.23) | (0.04) | (0.14) | (0.16) | (0.02) |
| Observations | 4,820 | 233 | 890 | 5,845 | 1,181 | 351 | 958 | 990 |

The table presents sample means with standard deviations reported in parentheses. $BOND$ is a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise. $LCY$ is a dummy variable of which the value is equal to one if firm $i$ issues bond in domestic currency in year $t$, and zero otherwise. $High\ Social\ Trust$ is a dummy variable of which the value is equal to one if social trust in country $j$ and year $t$ is high, and zero otherwise. Social trust is high in year $t$ if the mean of response in the country in year $t$ is greater than the median value of responses in the sample. $Alternative\ Trust$ is an index calculated for country $j$ (100+(% people is trustful) – (% people is not trustful)). $CC$ represents the World Bank's governance indicator for control of corruption, $GE$ for government effectiveness, $PS$ for political stability, $RQ$ for regulatory quality, $RL$ for rule of law, and $VA$ for voice and accountability. $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Profitability$ is measured as the ratio of earnings before interest and taxes relative to total assets. $Liquidity$ is measured as the ratio of current assets to total liabilities. $Investment$ is the ratio of investments to total assets. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $PrevIssue\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in any currency, and zero otherwise. $PrevDom\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in domestic currency, and zero otherwise. $PrevFor\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in foreign currency, and zero otherwise. $Cash\ Flow$ is the sum of net income and depreciation over total assets. $GDP$ represents GDP growth. $Onsratio$ represents the onshore market size relative to the offshore market size.

Table 2.5: Decisions of bond issuance and domestic currency bond issuance

| | Bond issuance | | Domestic currency bond issuance | |
|---|---|---|---|---|
| | Coeff. | M.E. | Coeff. | M.E. |
| | (1) | (2) | (3) | (4) |
| High Social Trust | 0.258*** | 0.031*** | 0.261*** | 0.030*** |
| | (0.04) | (0.01) | (0.05) | (0.01) |
| Firm Size | 0.037*** | 0.004*** | 0.021*** | 0.002*** |
| | (0.01) | (0.00) | (0.01) | (0.00) |
| Growth | -0.060 | -0.007 | -0.047 | -0.005 |
| | (0.04) | (0.01) | (0.04) | (0.01) |
| Leverage | 0.174** | 0.020** | 0.166* | 0.019* |
| | (0.09) | (0.01) | (0.09) | (0.01) |
| Profitability | -0.311* | -0.036* | -0.319** | -0.036** |
| | (0.16) | (0.02) | (0.16) | (0.02) |
| Liquidity | 0.616*** | 0.071*** | 0.619*** | 0.070*** |
| | (0.16) | (0.02) | (0.16) | (0.02) |
| Collateral | -0.215** | -0.025** | -0.088 | -0.010 |
| | (0.09) | (0.01) | (0.09) | (0.01) |
| Age | -0.005*** | -0.001*** | -0.009*** | -0.001*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| PrevIssue Dummy | 3.301*** | 0.381*** | | |
| | (0.05) | (0.01) | | |
| PrevDom Dummy | | | 3.311*** | 0.375*** |
| | | | (0.05) | (0.01) |
| PrevFor Dummy | | | 1.252*** | 0.142*** |
| | | | (0.10) | (0.01) |
| GDP | -0.047*** | -0.005*** | -0.044*** | -0.005*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Onsratio | -0.247*** | -0.028*** | -0.217*** | -0.025*** |
| | (0.07) | (0.01) | (0.07) | (0.01) |
| Constant | -1.635*** | | -1.542*** | |
| | (0.12) | | (0.12) | |
| Observations | 15,268 | 15,268 | 15,268 | 15,268 |
| Number of firms | 1,202 | 1,202 | 1,202 | 1,202 |
| Pseudo R-squared | 0.574 | | 0.569 | |
| Log − likelihood | -3352.694 | | -3288.125 | |

The table reports the estimates of Equation 1 and Equation 2. It shows the regressions of the probability of bond issuance and domestic currency-denominated bond issuance. Coefficients and marginal effects are reported in odd columns and even columns, respectively. The dependent variable in columns 1 and 2 is $BOND$, a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise, and the dependent variable in column 3 and 4 is $LCY$, a dummy variable of which the value is equal to one if firm $i$ issues domestic currency-denominated bond in year $t$, and zero otherwise. Time and country effects are included in the specifications. The values in parentheses are standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. $High\ Social\ Trust$ is a dummy variable of which the value is equal to one if social trust in country $j$ and year $t$ is high, and zero otherwise. Social trust is high in year $t$ if the mean of response in the country in year $t$ is greater than the median value of responses in the sample. $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Profitability$ is measured as the ratio of earnings before interest and taxes relative to total assets. $Liquidity$ is measured as the ratio of current assets to total liabilities. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $PrevIssue\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in any currency, and zero otherwise. $PrevDom\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in domestic currency, and zero otherwise. $PrevFor\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in foreign currency, and zero otherwise. $GDP$ represents GDP growth. $Onsratio$ represents the onshore market size relative to the offshore market size.

Table 2.6: The effect of trust and country governance on the probability of bond issuance

| | CC | | GE | | PS | | RQ | | RL | | VA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| High Social Trust | 0.380*** | 0.094*** | 0.426*** | 0.106*** | 0.396*** | 0.098*** | 0.455*** | 0.113*** | 0.471*** | 0.118*** | 0.419*** | 0.104*** |
| | (0.05) | (0.01) | (0.05) | (0.01) | (0.05) | (0.01) | (0.05) | (0.01) | (0.05) | (0.01) | (0.05) | (0.01) |
| Country Governance Indicator | 0.327*** | 0.079*** | 0.424*** | 0.102*** | 0.364*** | 0.088*** | 0.328*** | 0.079*** | 0.296*** | 0.072*** | 0.175*** | 0.042*** |
| | (0.04) | (0.01) | (0.05) | (0.01) | (0.04) | (0.01) | (0.04) | (0.01) | (0.04) | (0.01) | (0.04) | (0.01) |
| Firm Size | 0.049*** | 0.012*** | 0.053*** | 0.013*** | 0.048*** | 0.012*** | 0.043*** | 0.010*** | 0.040*** | 0.010*** | 0.020*** | 0.005*** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) |
| Growth | -0.054 | -0.013 | -0.054 | -0.013 | -0.054 | -0.013 | -0.056 | -0.013 | -0.056 | -0.014 | -0.058 | -0.014 |
| | (0.04) | (0.01) | (0.04) | (0.01) | (0.04) | (0.01) | (0.04) | (0.01) | (0.04) | (0.01) | (0.04) | (0.01) |
| Leverage | 0.258*** | 0.062*** | 0.261*** | 0.063*** | 0.262*** | 0.064*** | 0.274*** | 0.066*** | 0.274*** | 0.066*** | 0.239** | 0.058** |
| | (0.10) | (0.02) | (0.10) | (0.02) | (0.10) | (0.02) | (0.10) | (0.02) | (0.10) | (0.02) | (0.10) | (0.02) |
| Profitability | -0.298* | -0.072* | -0.285 | -0.069 | -0.230 | -0.056 | -0.237 | -0.057 | -0.187 | -0.045 | -0.131 | -0.032 |
| | (0.18) | (0.04) | (0.18) | (0.04) | (0.18) | (0.04) | (0.18) | (0.04) | (0.18) | (0.04) | (0.18) | (0.04) |
| Liquidity | 0.614*** | 0.148*** | 0.628*** | 0.152*** | 0.607*** | 0.147*** | 0.635*** | 0.153*** | 0.643*** | 0.156*** | 0.604*** | 0.146*** |
| | (0.17) | (0.04) | (0.17) | (0.04) | (0.17) | (0.04) | (0.17) | (0.04) | (0.17) | (0.04) | (0.17) | (0.04) |
| Collateral | -0.185** | -0.045** | -0.183** | -0.044** | -0.185** | -0.045** | -0.179** | -0.043** | -0.177** | -0.043** | -0.204** | -0.049** |
| | (0.08) | (0.02) | (0.08) | (0.02) | (0.08) | (0.02) | (0.08) | (0.02) | (0.08) | (0.02) | (0.08) | (0.02) |
| Age | -0.003* | -0.001* | -0.002 | -0.000 | -0.000 | -0.000 | -0.003* | -0.001* | -0.001 | -0.000 | -0.004** | -0.001** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| PrevIssue Dummy | 3.354*** | 0.809*** | 3.363*** | 0.812*** | 3.386*** | 0.820*** | 3.353*** | 0.808*** | 3.361*** | 0.813*** | 3.358*** | 0.813*** |
| | (0.06) | (0.02) | (0.06) | (0.02) | (0.06) | (0.02) | (0.06) | (0.02) | (0.06) | (0.02) | (0.06) | (0.02) |
| GDP | -0.037*** | -0.009*** | -0.039*** | -0.009*** | -0.042*** | -0.010*** | -0.035*** | -0.009*** | -0.038*** | -0.009*** | -0.038*** | -0.009*** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) |
| Onsratio | 0.378*** | 0.091*** | 0.316*** | 0.076*** | 0.244** | 0.059** | 0.309*** | 0.075*** | 0.186* | 0.045* | -0.095 | -0.023 |
| | (0.11) | (0.03) | (0.11) | (0.03) | (0.10) | (0.02) | (0.11) | (0.03) | (0.10) | (0.02) | (0.08) | (0.02) |
| Constant | -2.602*** | | -2.904*** | | -2.450*** | | -2.642*** | | -2.491*** | | -1.721*** | |
| | (0.17) | | (0.19) | | (0.15) | | (0.17) | | (0.17) | | (0.12) | |
| Observations | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 |
| Number of firms | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 |
| Pseudo R-squared | 0.579 | | 0.579 | | 0.579 | | 0.578 | | 0.578 | | 0.575 | |
| Log − likelihood | -3312.073 | | -3308.851 | | -3310.769 | | -3316.078 | | -3321.266 | | -3342.161 | |

The table reports the estimates of Equation 1 and Equation 2. It shows the regression of the probability of bond issuance. Coefficients and marginal effects are reported in odd columns and even columns, respectively. The dependent variable is $BOND$, a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise. The six dimensions of country governance indicator: control of corruption ($CC$), government effectiveness ($GE$), political stability ($PS$), regulatory quality ($RQ$), rule of law ($RL$), and voice and accountability ($VA$) are considered separately. Time and country effects are included in the specifications. The values in parentheses are standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. $High\ Social\ Trust$ is a dummy variable of which the value is equal to one if social trust in country $j$ and year $t$ is high, and zero otherwise. Social trust is high in year $t$ if the mean of response in the country in year $t$ is greater than the median value of responses in the sample. $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Profitability$ is measured as the ratio of earnings before interest and taxes relative to total assets. $Liquidity$ is measured as the ratio of current assets to total liabilities. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $PrevIssue\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in any currency, and zero otherwise. $GDP$ represents GDP growth. $Onsratio$ represents the onshore market size relative to the offshore market size.

Table 2.7: The effect of trust and country governance on the probability of bond issuance (with an interaction)

| | CC | | GE | | PS | | RQ | | RL | | VA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| High Social Trust | 0.273*** | 0.067*** | 0.088 | 0.021 | 0.352*** | 0.086*** | 0.303*** | 0.074*** | 0.293*** | 0.072*** | 0.389*** | 0.097*** |
| | (0.05) | (0.01) | (0.08) | (0.02) | (0.05) | (0.01) | (0.07) | (0.02) | (0.06) | (0.02) | (0.06) | (0.01) |
| Country Governance Indicator | 0.177*** | 0.042*** | 0.225*** | 0.054*** | 0.190*** | 0.046*** | 0.191*** | 0.046*** | 0.125** | 0.030** | 0.343*** | 0.083*** |
| | (0.05) | (0.01) | (0.06) | (0.01) | (0.05) | (0.01) | (0.06) | (0.01) | (0.05) | (0.01) | (0.06) | (0.01) |
| High Social Trust x Country Governance Indicator | 0.277*** | 0.066*** | 0.359*** | 0.086*** | 0.460*** | 0.110*** | 0.198*** | 0.048*** | 0.308*** | 0.074*** | -0.277*** | -0.067*** |
| | (0.06) | (0.01) | (0.07) | (0.02) | (0.07) | (0.02) | (0.06) | (0.02) | (0.06) | (0.02) | (0.07) | (0.02) |
| Firm Size | 0.050*** | 0.012*** | 0.055*** | 0.013*** | 0.055*** | 0.013*** | 0.044*** | 0.011*** | 0.046*** | 0.011*** | 0.015** | 0.004** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) |
| Growth | -0.048 | -0.011 | -0.049 | -0.012 | -0.045 | -0.011 | -0.053 | -0.013 | -0.052 | -0.012 | -0.063 | -0.015 |
| | (0.04) | (0.01) | (0.04) | (0.01) | (0.04) | (0.01) | (0.04) | (0.01) | (0.04) | (0.01) | (0.04) | (0.01) |
| Leverage | 0.285*** | 0.068*** | 0.282*** | 0.068*** | 0.289*** | 0.069*** | 0.283*** | 0.068*** | 0.283*** | 0.068*** | 0.251** | 0.061** |
| | (0.10) | (0.02) | (0.10) | (0.02) | (0.10) | (0.02) | (0.10) | (0.02) | (0.10) | (0.02) | (0.10) | (0.02) |
| Profitability | -0.308* | -0.074* | -0.311* | -0.075* | -0.307* | -0.073* | -0.259 | -0.062 | -0.259 | -0.062 | -0.024 | -0.006 |
| | (0.18) | (0.04) | (0.18) | (0.04) | (0.18) | (0.04) | (0.18) | (0.04) | (0.18) | (0.04) | (0.19) | (0.05) |
| Liquidity | 0.675*** | 0.162*** | 0.683*** | 0.163*** | 0.674*** | 0.161*** | 0.674*** | 0.162*** | 0.694*** | 0.166*** | 0.565*** | 0.137*** |
| | (0.17) | (0.04) | (0.17) | (0.04) | (0.17) | (0.04) | (0.17) | (0.04) | (0.17) | (0.04) | (0.17) | (0.04) |
| Collateral | -0.175** | -0.042** | -0.172** | -0.041** | -0.172** | -0.041** | -0.175** | -0.042** | -0.172** | -0.041** | -0.201** | -0.049** |
| | (0.08) | (0.02) | (0.08) | (0.02) | (0.08) | (0.02) | (0.08) | (0.02) | (0.08) | (0.02) | (0.08) | (0.02) |
| Age | -0.004** | -0.001** | -0.003* | -0.001* | -0.002 | -0.000 | -0.004** | -0.001** | -0.003** | -0.001** | -0.001 | -0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| PrevIssue Dummy | 3.313*** | 0.793*** | 3.318*** | 0.795*** | 3.322*** | 0.794*** | 3.321*** | 0.797*** | 3.312*** | 0.795*** | 3.422*** | 0.830*** |
| | (0.06) | (0.02) | (0.06) | (0.02) | (0.06) | (0.02) | (0.06) | (0.02) | (0.06) | (0.02) | (0.06) | (0.02) |
| GDP | -0.031*** | -0.007*** | -0.035*** | -0.008*** | -0.036*** | -0.009*** | -0.032*** | -0.008*** | -0.032*** | -0.008*** | -0.045*** | -0.011*** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) |
| Onsratio | 0.481*** | 0.115*** | 0.412*** | 0.099*** | 0.473*** | 0.113*** | 0.336*** | 0.081*** | 0.294*** | 0.071*** | -0.173** | -0.042** |
| | (0.12) | (0.03) | (0.11) | (0.03) | (0.11) | (0.03) | (0.11) | (0.03) | (0.10) | (0.03) | (0.08) | (0.02) |
| Constant | -2.650*** | | -2.809*** | | -2.693*** | | -2.552*** | | -2.477*** | | -1.699*** | |
| | (0.17) | | (0.19) | | (0.16) | | (0.18) | | (0.17) | | (0.12) | |
| Observations | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 | 15,268 |
| Number of firms | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 | 1,202 |
| Pseudo R-squared | 0.580 | | 0.581 | | 0.582 | | 0.579 | | 0.579 | | 0.576 | |
| Log − likelihood | -3299.047 | | -3295.873 | | -3286.208 | | -3311.216 | | -3309.477 | | -3334.190 | |

The table reports the estimates of Equation 1 and Equation 2. It shows the regression of the probability of bond issuance. Coefficients and marginal effects are reported in odd columns and even columns, respectively. The dependent variable is $BOND$, a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise. The six dimensions of country governance indicator: control of corruption ($CC$), government effectiveness ($GE$), political stability ($PS$), regulatory quality ($RQ$), rule of law ($RL$), and voice and accountability ($VA$) are considered separately. Time and country effects are included in the specifications. The values in parentheses are standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. $High\ Social\ Trust$ is a dummy variable of which the value is equal to one if social trust in country $j$ and year $t$ is high, and zero otherwise. Social trust is high in year $t$ if the mean of response in the country in year $t$ is greater than the median value of responses in the sample. $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Profitability$ is measured as the ratio of earnings before interest and taxes relative to total assets. $Liquidity$ is measured as the ratio of current assets to total liabilities. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $PrevIssue\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in any currency, and zero otherwise. $GDP$ represents GDP growth. $Onsratio$ represents the onshore market size relative to the offshore market size.

Table 2.8: The effect of trust and country governance on the probability of domestic currency bond issuance

| | CC | | GE | | PS | | RQ | | RL | | VA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| High Social Trust | 0.475*** | 0.036** | 0.459*** | 0.034** | 0.312* | 0.022 | 0.535*** | 0.041*** | 0.471*** | 0.035** | 0.512*** | 0.039** |
| | (0.18) | (0.02) | (0.18) | (0.02) | (0.18) | (0.01) | (0.17) | (0.02) | (0.18) | (0.02) | (0.18) | (0.02) |
| Country Governance Indicator | 0.239** | 0.015** | 0.355*** | 0.023*** | 0.505*** | 0.032*** | 0.084 | 0.005 | 0.223** | 0.014** | -0.160 | -0.010 |
| | (0.11) | (0.01) | (0.12) | (0.01) | (0.11) | (0.01) | (0.11) | (0.01) | (0.10) | (0.01) | (0.11) | (0.01) |
| Firm Size | -0.099*** | -0.006*** | -0.098*** | -0.006*** | -0.097*** | -0.006*** | -0.105*** | -0.007*** | -0.108*** | -0.007*** | -0.087*** | -0.006*** |
| | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) |
| Growth | 0.080 | 0.005 | 0.080 | 0.005 | 0.098 | 0.006 | 0.077 | 0.005 | 0.078 | 0.005 | 0.075 | 0.005 |
| | (0.16) | (0.01) | (0.16) | (0.01) | (0.16) | (0.01) | (0.16) | (0.01) | (0.16) | (0.01) | (0.16) | (0.01) |
| Leverage | -0.018 | -0.001 | 0.024 | 0.002 | 0.077 | 0.005 | -0.011 | -0.001 | 0.058 | 0.004 | -0.116 | -0.007 |
| | (0.35) | (0.02) | (0.35) | (0.02) | (0.35) | (0.02) | (0.35) | (0.02) | (0.35) | (0.02) | (0.36) | (0.02) |
| Profitability | -0.401 | -0.026 | -0.344 | -0.022 | -0.243 | -0.015 | -0.331 | -0.021 | -0.215 | -0.014 | -0.579 | -0.038 |
| | (0.66) | (0.04) | (0.66) | (0.04) | (0.66) | (0.04) | (0.65) | (0.04) | (0.65) | (0.04) | (0.67) | (0.04) |
| Liquidity | 0.414 | 0.027 | 0.444 | 0.028 | 0.449 | 0.028 | 0.424 | 0.027 | 0.443 | 0.028 | 0.431 | 0.028 |
| | (0.64) | (0.04) | (0.64) | (0.04) | (0.65) | (0.04) | (0.63) | (0.04) | (0.64) | (0.04) | (0.63) | (0.04) |
| Collateral | 0.779*** | 0.050*** | 0.815*** | 0.052*** | 0.820*** | 0.051*** | 0.763*** | 0.049*** | 0.804*** | 0.052*** | 0.747*** | 0.048*** |
| | (0.25) | (0.02) | (0.25) | (0.02) | (0.25) | (0.02) | (0.25) | (0.02) | (0.25) | (0.02) | (0.25) | (0.02) |
| Age | -0.009** | -0.001** | -0.008* | -0.001* | -0.005 | -0.000 | -0.010** | -0.001** | -0.008* | -0.000* | -0.011*** | -0.001*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| PrevDom Dummy | 1.948*** | 0.125*** | 1.964*** | 0.126*** | 2.009*** | 0.126*** | 1.930*** | 0.125*** | 1.958*** | 0.126*** | 1.901*** | 0.123*** |
| | (0.17) | (0.01) | (0.17) | (0.01) | (0.18) | (0.01) | (0.17) | (0.01) | (0.17) | (0.01) | (0.17) | (0.01) |
| PrevFor Dummy | -1.369*** | -0.088*** | -1.370*** | -0.088*** | -1.363*** | -0.085*** | -1.352*** | -0.088*** | -1.359*** | -0.087*** | -1.342*** | -0.087*** |
| | (0.13) | (0.01) | (0.13) | (0.01) | (0.13) | (0.01) | (0.13) | (0.01) | (0.13) | (0.01) | (0.13) | (0.01) |
| GDP | 0.129*** | 0.008*** | 0.138*** | 0.009*** | 0.163*** | 0.010*** | 0.105*** | 0.007*** | 0.133*** | 0.009*** | 0.067** | 0.004** |
| | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.03) | (0.00) |
| Onsratio | 0.741** | 0.048** | 0.760*** | 0.049*** | 0.961*** | 0.060*** | 0.377 | 0.024 | 0.541** | 0.035** | 0.194 | 0.013 |
| | (0.32) | (0.02) | (0.28) | (0.02) | (0.27) | (0.02) | (0.29) | (0.02) | (0.26) | (0.02) | (0.22) | (0.01) |
| Constant | 0.685 | | 0.342 | | 0.351 | | 1.136** | | 0.817* | | 1.421*** | |
| | (0.52) | | (0.54) | | (0.47) | | (0.51) | | (0.48) | | (0.41) | |
| Observations | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 |
| Number of firms | 854 | 854 | 854 | 854 | 854 | 854 | 854 | 854 | 854 | 854 | 854 | 854 |
| Pseudo R-squared | 0.440 | | 0.443 | | 0.453 | | 0.437 | | 0.441 | | 0.438 | |
| Log − likelihood | -378.699 | | -376.707 | | -370.334 | | -380.874 | | -378.521 | | -380.189 | |

The table reports the estimates of Equation 1 and Equation 2. It shows the regression of the probability of domestic currency bond issuance. Coefficients and marginal effects are reported in odd columns and even columns, respectively. The dependent variable is $BOND$, a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise. The six dimensions of country governance indicator: control of corruption ($CC$), government effectiveness ($GE$), political stability ($PS$), regulatory quality ($RQ$), rule of law ($RL$), and voice and accountability ($VA$) are considered separately. Time and country effects are included in the specifications. The values in parentheses are standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. $High\ Social\ Trust$ is a dummy variable of which the value is equal to one if social trust in country $j$ and year $t$ is high, and zero otherwise. Social trust is high in year $t$ if the mean of response in the country in year $t$ is greater than the median value of responses in the sample. $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Profitability$ is measured as the ratio of earnings before interest and taxes relative to total assets. $Liquidity$ is measured as the ratio of current assets to total liabilities. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $PrevDom\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in domestic currency, and zero otherwise. $PrevFor\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in foreign currency, and zero otherwise. $GDP$ represents GDP growth. $Onsratio$ represents the onshore market size relative to the offshore market size.

Table 2.9: The effect of trust and country governance on the probability of domestic currency bond issuance (with an interaction)

| | CC | | GE | | PS | | RQ | | RL | | VA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| High Social Trust | 0.505*** | 0.038** | 0.625*** | 0.049*** | 0.293 | 0.020 | 0.714*** | 0.057*** | 0.532*** | 0.040** | 0.297* | 0.020 |
| | (0.18) | (0.02) | (0.19) | (0.02) | (0.19) | (0.01) | (0.18) | (0.02) | (0.18) | (0.02) | (0.17) | (0.01) |
| Country Governance Indicator | 0.499*** | 0.032*** | 0.551*** | 0.035*** | 0.556*** | 0.035*** | 0.399*** | 0.025*** | 0.418*** | 0.026*** | 0.640*** | 0.039*** |
| | (0.17) | (0.01) | (0.15) | (0.01) | (0.14) | (0.01) | (0.15) | (0.01) | (0.12) | (0.01) | (0.16) | (0.01) |
| High Social Trust x Country Governance Indicator | -0.361** | -0.023** | -0.332** | -0.021** | -0.104 | -0.007 | -0.450*** | -0.028*** | -0.392*** | -0.025*** | -1.894*** | -0.115*** |
| | (0.16) | (0.01) | (0.14) | (0.01) | (0.17) | (0.01) | (0.14) | (0.01) | (0.14) | (0.01) | (0.31) | (0.02) |
| Firm Size | -0.109*** | -0.007*** | -0.117*** | -0.007*** | -0.099*** | -0.006*** | -0.128*** | -0.008*** | -0.127*** | -0.008*** | -0.107*** | -0.006*** |
| | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) |
| Growth | 0.080 | 0.005 | 0.085 | 0.005 | 0.098 | 0.006 | 0.085 | 0.005 | 0.088 | 0.006 | 0.080 | 0.005 |
| | (0.16) | (0.01) | (0.16) | (0.01) | (0.16) | (0.01) | (0.16) | (0.01) | (0.16) | (0.01) | (0.17) | (0.01) |
| Leverage | 0.044 | 0.003 | 0.161 | 0.010 | 0.089 | 0.006 | 0.137 | 0.009 | 0.172 | 0.011 | -0.013 | -0.001 |
| | (0.35) | (0.02) | (0.36) | (0.02) | (0.36) | (0.02) | (0.36) | (0.02) | (0.36) | (0.02) | (0.36) | (0.02) |
| Profitability | -0.167 | -0.011 | 0.054 | 0.003 | -0.187 | -0.012 | 0.159 | 0.010 | 0.192 | 0.012 | 0.137 | 0.008 |
| | (0.66) | (0.04) | (0.67) | (0.04) | (0.66) | (0.04) | (0.66) | (0.04) | (0.66) | (0.04) | (0.66) | (0.04) |
| Liquidity | 0.434 | 0.027 | 0.478 | 0.030 | 0.459 | 0.029 | 0.419 | 0.026 | 0.456 | 0.029 | 0.355 | 0.022 |
| | (0.65) | (0.04) | (0.65) | (0.04) | (0.65) | (0.04) | (0.65) | (0.04) | (0.65) | (0.04) | (0.66) | (0.04) |
| Collateral | 0.841*** | 0.053*** | 0.862*** | 0.054*** | 0.833*** | 0.052*** | 0.822*** | 0.052*** | 0.842*** | 0.053*** | 0.771*** | 0.047*** |
| | (0.25) | (0.02) | (0.25) | (0.02) | (0.25) | (0.02) | (0.25) | (0.02) | (0.25) | (0.02) | (0.25) | (0.02) |
| Age | -0.005 | -0.000 | -0.003 | -0.000 | -0.004 | -0.000 | -0.003 | -0.000 | -0.003 | -0.000 | -0.001 | -0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| PrevDom Dummy | 1.985*** | 0.126*** | 1.990*** | 0.125*** | 2.019*** | 0.126*** | 1.966*** | 0.124*** | 1.982*** | 0.124*** | 2.143*** | 0.131*** |
| | (0.18) | (0.01) | (0.18) | (0.01) | (0.18) | (0.01) | (0.18) | (0.01) | (0.18) | (0.01) | (0.19) | (0.01) |
| PrevFor Dummy | -1.342*** | -0.085*** | -1.341*** | -0.084*** | -1.356*** | -0.085*** | -1.303*** | -0.082*** | -1.311*** | -0.082*** | -1.128*** | -0.069*** |
| | (0.13) | (0.01) | (0.13) | (0.01) | (0.13) | (0.01) | (0.13) | (0.01) | (0.13) | (0.01) | (0.14) | (0.01) |
| GDP | 0.142*** | 0.009*** | 0.157*** | 0.010*** | 0.164*** | 0.010*** | 0.124*** | 0.008*** | 0.138*** | 0.009*** | 0.025 | 0.002 |
| | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.03) | (0.00) |
| Onsratio | 0.453 | 0.029 | 0.345 | 0.022 | 0.865*** | 0.054*** | -0.072 | -0.005 | 0.040 | 0.003 | -0.284 | -0.017 |
| | (0.34) | (0.02) | (0.32) | (0.02) | (0.31) | (0.02) | (0.32) | (0.02) | (0.31) | (0.02) | (0.23) | (0.01) |
| Constant | 0.822 | | 0.466 | | 0.451 | | 1.241** | | 1.163** | | 1.780*** | |
| | (0.52) | | (0.54) | | (0.50) | | (0.52) | | (0.49) | | (0.42) | |
| Observations | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 | 3,217 |
| Number of firms | 854 | 854 | 854 | 854 | 854 | 854 | 854 | 854 | 854 | 854 | 854 | 854 |
| Pseudo R-squared | 0.444 | | 0.448 | | 0.453 | | 0.445 | | 0.447 | | 0.475 | |
| Log − likelihood | -376.126 | | -373.749 | | -370.156 | | -375.796 | | -374.600 | | -355.194 | |

The table reports the estimates of probit models (Equations 1 and 2) which shows the determinants of the decision to issue domestic currency-denominated bonds. Coefficients and marginal effects are reported in odd columns and even columns, respectively. The dependent variable is $BOND$, a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise. Six dimensions of country governance indicator: control of corruption ($CC$), government effectiveness ($GE$), political stability ($PS$), regulatory quality ($RQ$), rule of law ($RL$), and voice and accountability ($VA$) are investigated separately. Time and country effects are included in the specifications. The values in parentheses are standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. $High\ Social\ Trust$ is a dummy variable of which the value is equal to one if social trust in country $j$ and year $t$ is high, and zero otherwise. Social trust is high in year $t$ if the mean of response in the country in year $t$ is greater than the median value of responses in the sample. $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Profitability$ is measured as the ratio of earnings before interest and taxes relative to total assets. $Liquidity$ is measured as the ratio of current assets to total liabilities. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $PrevDom\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in domestic currency, and zero otherwise. $PrevFor\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in foreign currency, and zero otherwise. $GDP$ represents GDP growth. $Onsratio$ represents the onshore market size relative to the offshore market size.

Table 2.10: The effect of trust and country governance on the probability of bond issuance (Robustness: Alternative measurement of social trust)

| | CC | | GE | | PS | | RQ | | RL | | VA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Alternative Trust | 0.006*** | 0.001*** | 0.001 | 0.000 | 0.007*** | 0.002*** | 0.006*** | 0.001*** | 0.006*** | 0.001*** | 0.002** | 0.001** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Country Governance Indicator | 0.541*** | 0.126*** | 0.685*** | 0.159*** | 0.826*** | 0.191*** | 0.390*** | 0.091*** | 0.430*** | 0.100*** | 0.091* | 0.021* |
| | (0.06) | (0.01) | (0.07) | (0.02) | (0.07) | (0.02) | (0.05) | (0.01) | (0.05) | (0.01) | (0.05) | (0.01) |
| Alternative Trust x Country Governance Indicator | 0.005*** | 0.001*** | 0.007*** | 0.002*** | 0.010*** | 0.002*** | 0.002** | 0.000** | 0.004*** | 0.001*** | -0.013*** | -0.003*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Firm Size | 0.024*** | 0.005*** | 0.026*** | 0.006*** | 0.020*** | 0.005*** | 0.020*** | 0.005*** | 0.013** | 0.003** | -0.019** | -0.004** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) |
| Growth | -0.058 | -0.014 | -0.059 | -0.014 | -0.056 | -0.013 | -0.061 | -0.014 | -0.062 | -0.014 | -0.067 | -0.015 |
| | (0.04) | (0.01) | (0.04) | (0.01) | (0.05) | (0.01) | (0.04) | (0.01) | (0.04) | (0.01) | (0.05) | (0.01) |
| Leverage | 0.343*** | 0.080*** | 0.345*** | 0.080*** | 0.368*** | 0.085*** | 0.334*** | 0.078*** | 0.345*** | 0.080*** | 0.333*** | 0.077*** |
| | (0.10) | (0.02) | (0.10) | (0.02) | (0.10) | (0.02) | (0.10) | (0.02) | (0.10) | (0.02) | (0.10) | (0.02) |
| Investment | 0.753*** | 0.175*** | 0.769*** | 0.179*** | 0.794*** | 0.184*** | 0.766*** | 0.179*** | 0.789*** | 0.184*** | 0.866*** | 0.199*** |
| | (0.06) | (0.01) | (0.06) | (0.01) | (0.06) | (0.01) | (0.06) | (0.01) | (0.06) | (0.01) | (0.06) | (0.01) |
| Cash Flow | -0.346** | -0.081** | -0.338* | -0.079* | -0.281 | -0.065 | -0.306* | -0.071* | -0.252 | -0.059 | 0.031 | 0.007 |
| | (0.17) | (0.04) | (0.18) | (0.04) | (0.18) | (0.04) | (0.17) | (0.04) | (0.18) | (0.04) | (0.19) | (0.04) |
| Liquidity | 0.598*** | 0.139*** | 0.610*** | 0.142*** | 0.581*** | 0.134*** | 0.595*** | 0.139*** | 0.609*** | 0.142*** | 0.427** | 0.098** |
| | (0.17) | (0.04) | (0.17) | (0.04) | (0.17) | (0.04) | (0.17) | (0.04) | (0.17) | (0.04) | (0.18) | (0.04) |
| Collateral | -0.367*** | -0.085*** | -0.361*** | -0.084*** | -0.355*** | -0.082*** | -0.367*** | -0.086*** | -0.364*** | -0.085*** | -0.354*** | -0.081*** |
| | (0.09) | (0.02) | (0.09) | (0.02) | (0.09) | (0.02) | (0.09) | (0.02) | (0.09) | (0.02) | (0.09) | (0.02) |
| Age | -0.004** | -0.001** | -0.003 | -0.001 | -0.001 | -0.000 | -0.003* | -0.001* | -0.002 | -0.000 | 0.001 | 0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| PrevIssue Dummy | 3.254*** | 0.757*** | 3.256*** | 0.757*** | 3.284*** | 0.760*** | 3.254*** | 0.760*** | 3.253*** | 0.760*** | 3.389*** | 0.780*** |
| | (0.06) | (0.02) | (0.06) | (0.02) | (0.06) | (0.02) | (0.06) | (0.02) | (0.06) | (0.02) | (0.06) | (0.02) |
| GDP | -0.032*** | -0.007*** | -0.035*** | -0.008*** | -0.036*** | -0.008*** | -0.032*** | -0.008*** | -0.033*** | -0.008*** | -0.042*** | -0.010*** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) |
| Onsratio | 0.475*** | 0.111*** | 0.373*** | 0.087*** | 0.455*** | 0.105*** | 0.287*** | 0.067*** | 0.191** | 0.045** | -0.238*** | -0.055*** |
| | (0.12) | (0.03) | (0.10) | (0.02) | (0.11) | (0.02) | (0.10) | (0.02) | (0.10) | (0.02) | (0.08) | (0.02) |
| Constant | -2.425*** | | -2.820*** | | -2.338*** | | -2.327*** | | -2.160*** | | -1.625*** | |
| | (0.17) | | (0.18) | | (0.15) | | (0.16) | | (0.15) | | (0.13) | |
| Observations | 15,120 | 15,120 | 15,120 | 15,120 | 15,120 | 15,120 | 15,120 | 15,120 | 15,120 | 15,120 | 15,120 | 15,120 |
| Number of firms | 1,190 | 1,190 | 1,190 | 1,190 | 1,190 | 1,190 | 1,190 | 1,190 | 1,190 | 1,190 | 1,190 | 1,190 |
| Pseudo R-squared | 0.589 | | 0.589 | | 0.592 | | 0.587 | | 0.587 | | 0.591 | |
| Log − likelihood | -3207.704 | | -3205.016 | | -3186.003 | | -3223.351 | | -3223.853 | | -3187.852 | |

The table reports the estimates of Equation 1 and Equation 2. It shows the regression of the probability of bond issuance. Coefficients and marginal effects are reported in odd columns and even columns, respectively. The dependent variable is $BOND$, a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise. The six dimensions of country governance indicator: control of corruption ($CC$), government effectiveness ($GE$), political stability ($PS$), regulatory quality ($RQ$), rule of law ($RL$), and voice and accountability ($VA$) are considered separately. Time and country effects are included in the specifications. The values in parentheses are standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. $Alternative\ Trust$ is an index calculated for country $j$ (100+ (% people is trustful) – (% people is not trustful)). $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Investment$ is the ratio of investments to total assets. $Cash\ Flow$ is the sum of net income and depreciation over total assets. $Liquidity$ is measured as the ratio of total debt to total assets. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $PrevIssue\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in any currency, and zero otherwise. $GDP$ represents GDP growth. $Onsratio$ is the onshore market size relative to the offshore market size.

Table 2.11: The effect of trust and country governance on the probability of domestic currency bond issuance (Robustness: Alternative measurement of social trust)

| | CC | | GE | | PS | | RQ | | RL | | VA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| Alternative Trust | 0.003 | 0.000 | 0.009*** | 0.000** | 0.001 | 0.000 | 0.009*** | 0.000*** | 0.004** | 0.000* | 0.000 | 0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Country Governance Indicator | -0.087 | -0.001 | -0.013 | -0.000 | 0.281 | 0.003 | -0.253** | -0.003* | -0.176 | -0.002 | -1.741*** | -0.002 |
| | (0.14) | (0.00) | (0.16) | (0.00) | (0.17) | (0.00) | (0.13) | (0.00) | (0.14) | (0.00) | (0.52) | (0.00) |
| Alternative Trust x Country Governance Indicator | -0.010*** | -0.000** | -0.010*** | -0.000** | -0.004 | -0.000 | -0.015*** | -0.000*** | -0.011*** | -0.000** | -0.058*** | -0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.00) |
| Firm Size | -0.088*** | -0.001*** | -0.089*** | -0.001*** | -0.095*** | -0.001*** | -0.087*** | -0.001*** | -0.095*** | -0.001*** | -0.111*** | -0.000 |
| | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) |
| Growth | 0.102 | 0.001 | 0.104 | 0.001 | 0.105 | 0.001 | 0.112 | 0.001 | 0.110 | 0.001 | 0.111 | 0.000 |
| | (0.16) | (0.00) | (0.16) | (0.00) | (0.16) | (0.00) | (0.16) | (0.00) | (0.16) | (0.00) | (0.17) | (0.00) |
| Leverage | -0.206 | -0.003 | -0.153 | -0.002 | -0.091 | -0.001 | -0.193 | -0.002 | -0.102 | -0.001 | -0.137 | -0.000 |
| | (0.36) | (0.00) | (0.36) | (0.00) | (0.36) | (0.00) | (0.36) | (0.00) | (0.37) | (0.00) | (0.37) | (0.00) |
| Investment | -0.813*** | -0.010** | -0.792*** | -0.010** | -0.719*** | -0.009** | -0.796*** | -0.010** | -0.762*** | -0.009** | -0.684*** | -0.001 |
| | (0.24) | (0.00) | (0.25) | (0.00) | (0.25) | (0.00) | (0.25) | (0.00) | (0.25) | (0.00) | (0.25) | (0.00) |
| Cash Flow | -0.326 | -0.004 | -0.279 | -0.003 | -0.192 | -0.002 | -0.245 | -0.003 | -0.077 | -0.001 | 0.214 | 0.000 |
| | (0.61) | (0.01) | (0.61) | (0.01) | (0.62) | (0.01) | (0.61) | (0.01) | (0.61) | (0.01) | (0.62) | (0.00) |
| Liquidity | 0.470 | 0.006 | 0.509 | 0.006 | 0.462 | 0.006 | 0.473 | 0.006 | 0.511 | 0.006 | 0.200 | 0.000 |
| | (0.66) | (0.01) | (0.66) | (0.01) | (0.65) | (0.01) | (0.66) | (0.01) | (0.66) | (0.01) | (0.67) | (0.00) |
| Collateral | 1.015*** | 0.013*** | 1.029*** | 0.013*** | 1.009*** | 0.012*** | 1.006*** | 0.012*** | 1.024*** | 0.012*** | 0.910*** | 0.001 |
| | (0.26) | (0.00) | (0.26) | (0.00) | (0.25) | (0.00) | (0.26) | (0.00) | (0.26) | (0.00) | (0.26) | (0.00) |
| Age | -0.007* | -0.000 | -0.007* | -0.000 | -0.005 | -0.000 | -0.006 | -0.000 | -0.005 | -0.000 | -0.003 | -0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| PrevDom Dummy | 2.040*** | 0.025*** | 2.046*** | 0.025*** | 2.072*** | 0.025*** | 2.040*** | 0.024*** | 2.044*** | 0.025*** | 2.181*** | 0.003 |
| | (0.18) | (0.01) | (0.18) | (0.01) | (0.18) | (0.01) | (0.18) | (0.01) | (0.19) | (0.01) | (0.19) | (0.00) |
| PrevFor Dummy | -1.200*** | -0.015*** | -1.218*** | -0.015*** | -1.243*** | -0.015*** | -1.166*** | -0.014*** | -1.192*** | -0.014*** | -0.995*** | -0.001 |
| | (0.14) | (0.00) | (0.14) | (0.01) | (0.14) | (0.01) | (0.14) | (0.00) | (0.14) | (0.00) | (0.14) | (0.00) |
| GDP | 0.129*** | 0.002** | 0.134*** | 0.002** | 0.153*** | 0.002*** | 0.108*** | 0.001** | 0.122*** | 0.001** | 0.012 | 0.000 |
| | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.03) | (0.00) |
| Onsratio | 0.362 | 0.004 | 0.393 | 0.005 | 0.695** | 0.009* | 0.087 | 0.001 | 0.094 | 0.001 | -0.323 | -0.000 |
| | (0.33) | (0.00) | (0.30) | (0.00) | (0.30) | (0.00) | (0.29) | (0.00) | (0.28) | (0.00) | (0.24) | (0.00) |
| Constant | 1.826*** | | 1.734*** | | 1.372** | | 2.135*** | | 1.996*** | | 2.654*** | |
| | (0.59) | | (0.61) | | (0.54) | | (0.58) | | (0.54) | | (0.44) | |
| Observations | 3,197 | 3,197 | 3,197 | 3,197 | 3,197 | 3,197 | 3,197 | 3,197 | 3,197 | 3,197 | 3,197 | 3,197 |
| Number of firms | 849 | 849 | 849 | 849 | 849 | 849 | 849 | 849 | 849 | 849 | 849 | 849 |
| Pseudo R-squared | 0.457 | | 0.457 | | 0.459 | | 0.461 | | 0.460 | | 0.483 | |
| Log − likelihood | -367.206 | | -367.037 | | -365.257 | | -364.283 | | -364.969 | | -349.562 | |

The table reports the estimates of Equation 1 and Equation 2. It shows the regression of the probability of domestic currency bond issuance. Coefficients and marginal effects are reported in odd columns and even columns, respectively. The dependent variable is $BOND$, a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise. The six dimensions of country governance indicator: control of corruption ($CC$), government effectiveness ($GE$), political stability ($PS$), regulatory quality ($RQ$), rule of law ($RL$), and voice and accountability ($VA$) are considered separately. Time and country effects are included in the specifications. The values in parentheses are standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. $Alternative\ Trust$ is an index calculated for country $j$ (100+ (% people is trustful) – (% people is not trustful)). $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Investment$ is the ratio of investments to total assets. $Cash\ Flow$ is the sum of net income and depreciation over total assets. $Liquidity$ is measured as the ratio of total debt to total assets. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $PrevDom\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in domestic currency, and zero otherwise. $PrevFor\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in foreign currency, and zero otherwise. $GDP$ represents GDP growth. $Onsratio$ is the onshore market size relative to the offshore market size.

Table 2.12: The effect of trust and country governance on the probability of bond issuance (Robustness: Excluding China)

| | CC | | GE | | PS | | RQ | | RL | | VA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| High Social Trust | 0.069 | 0.020 | -0.029 | -0.008 | 0.272*** | 0.083*** | 0.111 | 0.032 | 0.175** | 0.052** | 0.420*** | 0.134*** |
| | (0.07) | (0.02) | (0.10) | (0.03) | (0.06) | (0.02) | (0.09) | (0.03) | (0.08) | (0.02) | (0.06) | (0.02) |
| Country Governance Indicator | 0.194*** | 0.055*** | 0.249*** | 0.071*** | 0.235*** | 0.067*** | 0.232*** | 0.066*** | 0.193*** | 0.055*** | 0.549*** | 0.158*** |
| | (0.05) | (0.01) | (0.06) | (0.02) | (0.05) | (0.01) | (0.06) | (0.02) | (0.05) | (0.02) | (0.06) | (0.02) |
| High Social Trust x Country Governance Indicator | 0.351*** | 0.099*** | 0.378*** | 0.107*** | 0.459*** | 0.130*** | 0.256*** | 0.073*** | 0.319*** | 0.091*** | -0.332** | -0.096** |
| | (0.06) | (0.02) | (0.07) | (0.02) | (0.07) | (0.02) | (0.07) | (0.02) | (0.07) | (0.02) | (0.13) | (0.04) |
| Firm Size | 0.046*** | 0.013*** | 0.046*** | 0.013*** | 0.045*** | 0.013*** | 0.040*** | 0.011*** | 0.038*** | 0.011*** | -0.017** | -0.005** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) |
| Growth | -0.043 | -0.012 | -0.045 | -0.013 | -0.037 | -0.011 | -0.052 | -0.015 | -0.050 | -0.014 | -0.063 | -0.018 |
| | (0.05) | (0.02) | (0.05) | (0.02) | (0.05) | (0.02) | (0.05) | (0.02) | (0.05) | (0.02) | (0.05) | (0.02) |
| Leverage | 0.234** | 0.066** | 0.230** | 0.065** | 0.241** | 0.068** | 0.238** | 0.068** | 0.240** | 0.068** | 0.223* | 0.064* |
| | (0.12) | (0.03) | (0.12) | (0.03) | (0.12) | (0.03) | (0.11) | (0.03) | (0.12) | (0.03) | (0.12) | (0.03) |
| Profitability | -0.375* | -0.106* | -0.355* | -0.101* | -0.347* | -0.098* | -0.299 | -0.085 | -0.274 | -0.078 | 0.168 | 0.048 |
| | (0.19) | (0.05) | (0.19) | (0.05) | (0.19) | (0.05) | (0.19) | (0.05) | (0.19) | (0.05) | (0.20) | (0.06) |
| Liquidity | 0.716*** | 0.203*** | 0.734*** | 0.209*** | 0.716*** | 0.203*** | 0.714*** | 0.203*** | 0.739*** | 0.210*** | 0.538*** | 0.155*** |
| | (0.20) | (0.06) | (0.20) | (0.06) | (0.20) | (0.06) | (0.20) | (0.06) | (0.20) | (0.06) | (0.20) | (0.06) |
| Collateral | -0.063 | -0.018 | -0.061 | -0.017 | -0.057 | -0.016 | -0.063 | -0.018 | -0.056 | -0.016 | -0.105 | -0.030 |
| | (0.10) | (0.03) | (0.10) | (0.03) | (0.10) | (0.03) | (0.10) | (0.03) | (0.10) | (0.03) | (0.10) | (0.03) |
| Age | -0.001 | -0.000 | -0.001 | -0.000 | 0.000 | 0.000 | -0.001 | -0.000 | -0.000 | -0.000 | 0.003 | 0.001 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| PrevIssue Dummy | 3.354*** | 0.950*** | 3.364*** | 0.955*** | 3.376*** | 0.957*** | 3.368*** | 0.958*** | 3.369*** | 0.958*** | 3.582*** | 1.033*** |
| | (0.06) | (0.03) | (0.06) | (0.03) | (0.06) | (0.03) | (0.06) | (0.03) | (0.06) | (0.03) | (0.07) | (0.03) |
| GDP | -0.002 | -0.001 | -0.002 | -0.001 | -0.000 | -0.000 | -0.004 | -0.001 | -0.003 | -0.001 | -0.010 | -0.003 |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) |
| Onsratio | 0.452*** | 0.128*** | 0.392*** | 0.111*** | 0.485*** | 0.138*** | 0.326*** | 0.093*** | 0.289*** | 0.082*** | -0.123 | -0.035 |
| | (0.12) | (0.03) | (0.12) | (0.03) | (0.12) | (0.03) | (0.11) | (0.03) | (0.11) | (0.03) | (0.09) | (0.03) |
| Constant | -2.713*** | | -2.847*** | | -2.752*** | | -2.651*** | | -2.590*** | | -1.615*** | |
| | (0.19) | | (0.21) | | (0.18) | | (0.19) | | (0.18) | | (0.14) | |
| Observations | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 |
| Number of firms | 822 | 822 | 822 | 822 | 822 | 822 | 822 | 822 | 822 | 822 | 822 | 822 |
| Pseudo R-squared | 0.589 | | 0.589 | | 0.591 | | 0.587 | | 0.587 | | 0.586 | |
| Log − likelihood | -2403.364 | | -2406.121 | | -2394.441 | | -2414.482 | | -2413.760 | | -2423.251 | |

The table reports the estimates of Equation 1 and Equation 2. It shows the regression of the probability of bond issuance, excluding China. Coefficients and marginal effects are reported in odd columns and even columns, respectively. The dependent variable is $BOND$, a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise. The six dimensions of country governance indicator: control of corruption ($CC$), government effectiveness ($GE$), political stability ($PS$), regulatory quality ($RQ$), rule of law ($RL$), and voice and accountability ($VA$) are considered separately. Time and country effects are included in the specifications. The values in parentheses are standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. $High\ Social\ Trust$ is a dummy variable of which the value is equal to one if social trust in country $j$ and year $t$ is high, and zero otherwise. Social trust is high in year $t$ if the mean of response in the country in year $t$ is greater than the median value of responses in the sample. $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Profitability$ is measured as the ratio of earnings before interest and taxes relative to total assets. $Liquidity$ is measured as the ratio of current assets to total liabilities. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $PrevIssue\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in any currency, and zero otherwise. $GDP$ represents GDP growth. $Onsratio$ is the onshore market size relative to the offshore market size.

Table 2.13: The effect of trust and country governance on the probability of domestic currency bond issuance (Robustness: Excluding China)

| | CC | | GE | | PS | | RQ | | RL | | VA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| High Social Trust | 0.237 | 0.020 | 0.389** | 0.033* | 0.062 | 0.005 | 0.407** | 0.035* | 0.198 | 0.016 | 0.268 | 0.022 |
| | (0.19) | (0.02) | (0.19) | (0.02) | (0.19) | (0.01) | (0.19) | (0.02) | (0.19) | (0.02) | (0.18) | (0.02) |
| Country Governance Indicator | 0.451*** | 0.035*** | 0.588*** | 0.045*** | 0.506*** | 0.039*** | 0.520*** | 0.040*** | 0.499*** | 0.038*** | 0.656*** | 0.050*** |
| | (0.15) | (0.01) | (0.14) | (0.01) | (0.13) | (0.01) | (0.15) | (0.01) | (0.12) | (0.01) | (0.16) | (0.01) |
| High Social Trust x Country Governance Indicator | -0.311** | -0.024** | -0.459*** | -0.035*** | -0.087 | -0.007 | -0.523*** | -0.040*** | -0.441*** | -0.033*** | -1.720*** | -0.130*** |
| | (0.15) | (0.01) | (0.14) | (0.01) | (0.17) | (0.01) | (0.14) | (0.01) | (0.14) | (0.01) | (0.37) | (0.03) |
| Firm Size | -0.080*** | -0.006*** | -0.091*** | -0.007*** | -0.072*** | -0.006*** | -0.100*** | -0.008*** | -0.097*** | -0.007*** | -0.108*** | -0.008*** |
| | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) |
| Growth | 0.080 | 0.006 | 0.086 | 0.007 | 0.098 | 0.007 | 0.082 | 0.006 | 0.087 | 0.007 | 0.081 | 0.006 |
| | (0.17) | (0.01) | (0.17) | (0.01) | (0.17) | (0.01) | (0.17) | (0.01) | (0.17) | (0.01) | (0.17) | (0.01) |
| Leverage | -0.145 | -0.011 | -0.002 | -0.000 | -0.088 | -0.007 | -0.034 | -0.003 | 0.000 | 0.000 | -0.011 | -0.001 |
| | (0.36) | (0.03) | (0.37) | (0.03) | (0.36) | (0.03) | (0.36) | (0.03) | (0.37) | (0.03) | (0.36) | (0.03) |
| Profitability | -0.581 | -0.045 | -0.254 | -0.019 | -0.575 | -0.044 | -0.210 | -0.016 | -0.187 | -0.014 | 0.118 | 0.009 |
| | (0.67) | (0.05) | (0.67) | (0.05) | (0.67) | (0.05) | (0.66) | (0.05) | (0.67) | (0.05) | (0.67) | (0.05) |
| Liquidity | 0.310 | 0.024 | 0.346 | 0.026 | 0.330 | 0.025 | 0.287 | 0.022 | 0.319 | 0.024 | 0.315 | 0.024 |
| | (0.66) | (0.05) | (0.67) | (0.05) | (0.66) | (0.05) | (0.66) | (0.05) | (0.67) | (0.05) | (0.66) | (0.05) |
| Collateral | 0.918*** | 0.071*** | 0.987*** | 0.075*** | 0.907*** | 0.069*** | 0.956*** | 0.073*** | 0.973*** | 0.074*** | 0.784*** | 0.059*** |
| | (0.25) | (0.02) | (0.26) | (0.02) | (0.25) | (0.02) | (0.26) | (0.02) | (0.26) | (0.02) | (0.25) | (0.02) |
| Age | -0.008* | -0.001* | -0.004 | -0.000 | -0.006 | -0.000 | -0.004 | -0.000 | -0.004 | -0.000 | -0.002 | -0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| PrevDom Dummy | 2.018*** | 0.156*** | 2.037*** | 0.155*** | 2.057*** | 0.157*** | 2.029*** | 0.155*** | 2.050*** | 0.156*** | 2.159*** | 0.164*** |
| | (0.18) | (0.01) | (0.18) | (0.01) | (0.18) | (0.01) | (0.18) | (0.01) | (0.18) | (0.01) | (0.19) | (0.01) |
| PrevFor Dummy | -1.270*** | -0.098*** | -1.239*** | -0.094*** | -1.285*** | -0.098*** | -1.216*** | -0.093*** | -1.223*** | -0.093*** | -1.132*** | -0.086*** |
| | (0.13) | (0.01) | (0.13) | (0.01) | (0.13) | (0.01) | (0.13) | (0.01) | (0.13) | (0.01) | (0.14) | (0.01) |
| GDP | 0.050 | 0.004 | 0.057 | 0.004 | 0.071* | 0.005* | 0.041 | 0.003 | 0.049 | 0.004 | 0.021 | 0.002 |
| | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.03) | (0.00) |
| Onsratio | 0.161 | 0.012 | -0.231 | -0.018 | 0.521 | 0.040 | -0.394 | -0.030 | -0.316 | -0.024 | -0.301 | -0.023 |
| | (0.34) | (0.03) | (0.33) | (0.03) | (0.32) | (0.02) | (0.32) | (0.02) | (0.31) | (0.02) | (0.23) | (0.02) |
| Constant | 1.246** | | 1.076* | | 0.902* | | 1.524*** | | 1.530*** | | 1.835*** | |
| | (0.53) | | (0.56) | | (0.51) | | (0.52) | | (0.50) | | (0.43) | |
| Observations | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 |
| Number of firms | 687 | 687 | 687 | 687 | 687 | 687 | 687 | 687 | 687 | 687 | 687 | 687 |
| Pseudo R-squared | 0.429 | | 0.437 | | 0.437 | | 0.435 | | 0.437 | | 0.444 | |
| Log − likelihood | -363.839 | | -358.722 | | -358.704 | | -360.461 | | -359.057 | | -354.708 | |

The table reports the estimates of Equation 1 and Equation 2. It shows the regression of the probability of domestic currency bond issuance, excluding China. Coefficients and marginal effects are reported in odd columns and even columns, respectively. The dependent variable is $BOND$, a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise. The six dimensions of country governance indicator: control of corruption ($CC$), government effectiveness ($GE$), political stability ($PS$), regulatory quality ($RQ$), rule of law ($RL$), and voice and accountability ($VA$) are considered separately. Time and country effects are included in the specifications. The values in parentheses are standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. $High\ Social\ Trust$ is a dummy variable of which the value is equal to one if social trust in country $j$ and year $t$ is high, and zero otherwise. Social trust is high in year $t$ if the mean of response in the country in year $t$ is greater than the median value of responses in the sample. $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Profitability$ is measured as the ratio of earnings before interest and taxes relative to total assets. $Liquidity$ is measured as the ratio of current assets to total liabilities. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $PrevDom\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in domestic currency, and zero otherwise. $PrevFor\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in foreign currency, and zero otherwise. $GDP$ represents GDP growth. $Onsratio$ is the onshore market size relative to the offshore market size.

Table 2.14: The effect of trust and country governance on the probability of bond issuance (Robustness: A random-effects probit model excluding China)

| | CC | | GE | | PS | | RQ | | RL | | VA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| High Social Trust | 0.319* | 0.086 | 0.033 | 0.008 | 0.477*** | 0.138*** | 0.183 | 0.046 | 0.240 | 0.063 | 1.147*** | 0.323*** |
| | (0.19) | (0.05) | (0.25) | (0.06) | (0.16) | (0.05) | (0.23) | (0.06) | (0.21) | (0.06) | (0.14) | (0.05) |
| Country Governance Indicator | 0.077 | 0.019 | 0.090 | 0.022 | 0.152 | 0.039 | 0.021 | 0.005 | 0.038 | 0.009 | 0.147 | 0.033 |
| | (0.14) | (0.04) | (0.18) | (0.05) | (0.14) | (0.04) | (0.18) | (0.04) | (0.17) | (0.04) | (0.42) | (0.10) |
| High Social Trust x Country Governance Indicator | 0.390*** | 0.096*** | 0.509*** | 0.126*** | 0.458*** | 0.117*** | 0.459*** | 0.110*** | 0.500*** | 0.123*** | 0.760*** | 0.172*** |
| | (0.10) | (0.03) | (0.13) | (0.04) | (0.12) | (0.03) | (0.13) | (0.03) | (0.14) | (0.04) | (0.29) | (0.07) |
| Firm Size | 0.030*** | 0.007*** | 0.030*** | 0.007*** | 0.030*** | 0.008*** | 0.030*** | 0.007*** | 0.030*** | 0.007*** | 0.029*** | 0.006** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) |
| Growth | -0.039 | -0.010 | -0.039 | -0.010 | -0.038 | -0.010 | -0.040 | -0.010 | -0.040 | -0.010 | -0.041 | -0.009 |
| | (0.06) | (0.01) | (0.06) | (0.01) | (0.06) | (0.01) | (0.06) | (0.01) | (0.06) | (0.01) | (0.06) | (0.01) |
| Leverage | 0.233** | 0.057* | 0.231* | 0.057* | 0.234** | 0.060* | 0.230* | 0.055* | 0.230* | 0.057* | 0.226* | 0.051* |
| | (0.12) | (0.03) | (0.12) | (0.03) | (0.12) | (0.03) | (0.12) | (0.03) | (0.12) | (0.03) | (0.12) | (0.03) |
| Profitability | -0.206 | -0.051 | -0.206 | -0.051 | -0.209 | -0.054 | -0.203 | -0.049 | -0.203 | -0.050 | -0.192 | -0.044 |
| | (0.21) | (0.05) | (0.21) | (0.05) | (0.21) | (0.05) | (0.21) | (0.05) | (0.21) | (0.05) | (0.21) | (0.05) |
| Liquidity | 0.555*** | 0.137*** | 0.555*** | 0.138** | 0.559*** | 0.143*** | 0.552*** | 0.133** | 0.553*** | 0.136** | 0.540*** | 0.122** |
| | (0.21) | (0.05) | (0.21) | (0.05) | (0.21) | (0.05) | (0.21) | (0.05) | (0.21) | (0.05) | (0.21) | (0.05) |
| Collateral | -0.095 | -0.023 | -0.095 | -0.024 | -0.093 | -0.024 | -0.096 | -0.023 | -0.096 | -0.023 | -0.098 | -0.022 |
| | (0.10) | (0.03) | (0.10) | (0.03) | (0.10) | (0.03) | (0.10) | (0.03) | (0.10) | (0.03) | (0.10) | (0.02) |
| Age | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 | -0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| PrevIssue Dummy | 3.564*** | 0.876*** | 3.567*** | 0.884*** | 3.560*** | 0.914*** | 3.572*** | 0.860*** | 3.572*** | 0.876*** | 3.599*** | 0.815*** |
| | (0.08) | (0.11) | (0.08) | (0.11) | (0.08) | (0.10) | (0.08) | (0.12) | (0.08) | (0.12) | (0.08) | (0.18) |
| GDP | -0.003 | -0.001 | -0.003 | -0.001 | -0.003 | -0.001 | -0.003 | -0.001 | -0.003 | -0.001 | -0.003 | -0.001 |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) |
| Onsratio | 0.460*** | 0.113*** | 0.458*** | 0.114*** | 0.466*** | 0.120*** | 0.454*** | 0.109*** | 0.454*** | 0.111*** | 0.439*** | 0.099*** |
| | (0.13) | (0.03) | (0.13) | (0.04) | (0.13) | (0.04) | (0.13) | (0.03) | (0.13) | (0.04) | (0.13) | (0.04) |
| Constant | -2.681*** | | -2.722*** | | -2.653*** | | -2.672*** | | -2.664*** | | -2.845*** | |
| | (0.25) | | (0.31) | | (0.22) | | (0.30) | | (0.27) | | (0.30) | |
| Observations | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 | 10,448 |
| Number of firms | 822 | 822 | 822 | 822 | 822 | 822 | 822 | 822 | 822 | 822 | 822 | 822 |
| Log − likelihood | -2369.846 | | -2369.659 | | -2369.270 | | -2370.404 | | -2370.182 | | -2374.000 | |

The table reports the random effect of Equation 1 and Equation 2. It shows the regression of the probability of bond issuance, excluding China. Coefficients and marginal effects are reported in odd columns and even columns, respectively. The dependent variable is $BOND$, a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise. The six dimensions of country governance indicator: control of corruption ($CC$), government effectiveness ($GE$), political stability ($PS$), regulatory quality ($RQ$), rule of law ($RL$), and voice and accountability ($VA$) are considered separately. Time and country effects are included in the specifications. The values in parentheses are standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. $High\ Social\ Trust$ is a dummy variable of which the value is equal to one if social trust in country $j$ and year $t$ is high, and zero otherwise. Social trust is high in year $t$ if the mean of response in the country in year $t$ is greater than the median value of responses in the sample. $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Profitability$ is measured as the ratio of earnings before interest and taxes relative to total assets. $Liquidity$ is measured as the ratio of current assets to total liabilities. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $PrevIssue\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in any currency, and zero otherwise. $GDP$ represents GDP growth. $Onsratio$ is the onshore market size relative to the offshore market size.

Table 2.15: The effect of trust and country governance on the probability of domestic currency bond issuance (Robustness: A random-effects probit model excluding China)

| | CC | | GE | | PS | | RQ | | RL | | VA | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. | Coeff. | M.E. |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| High Social Trust | 0.569 | 0.066 | 0.813* | 0.092* | 0.420 | 0.047 | 0.767* | 0.088* | 0.731* | 0.083* | 0.780** | 0.099* |
| | (0.41) | (0.05) | (0.42) | (0.05) | (0.37) | (0.04) | (0.41) | (0.05) | (0.40) | (0.05) | (0.31) | (0.05) |
| Country Governance Indicator | -0.047 | -0.005 | 0.141 | 0.013 | 0.087 | 0.009 | -0.008 | -0.001 | 0.070 | 0.007 | -0.023 | -0.003 |
| | (0.30) | (0.03) | (0.36) | (0.03) | (0.30) | (0.03) | (0.34) | (0.03) | (0.32) | (0.03) | (0.67) | (0.07) |
| High Social Trust x Country Governance Indicator | 0.072 | 0.007 | -0.129 | -0.012 | 0.255 | 0.026 | -0.086 | -0.008 | -0.079 | -0.008 | 1.356 | 0.146 |
| | (0.24) | (0.02) | (0.23) | (0.02) | (0.29) | (0.03) | (0.24) | (0.02) | (0.26) | (0.02) | (1.01) | (0.13) |
| Firm Size | -0.085*** | -0.009*** | -0.085*** | -0.008*** | -0.083*** | -0.009*** | -0.085*** | -0.008*** | -0.085*** | -0.008*** | -0.084*** | -0.009** |
| | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) | (0.02) | (0.00) |
| Growth | 0.203 | 0.021 | 0.200 | 0.019 | 0.207 | 0.021 | 0.201 | 0.020 | 0.200 | 0.019 | 0.238 | 0.026 |
| | (0.18) | (0.02) | (0.18) | (0.02) | (0.18) | (0.02) | (0.18) | (0.02) | (0.18) | (0.02) | (0.18) | (0.02) |
| Leverage | 0.111 | 0.011 | 0.103 | 0.010 | 0.110 | 0.011 | 0.105 | 0.010 | 0.104 | 0.010 | 0.142 | 0.015 |
| | (0.38) | (0.04) | (0.38) | (0.04) | (0.38) | (0.04) | (0.38) | (0.04) | (0.38) | (0.04) | (0.39) | (0.04) |
| Profitability | 0.008 | 0.001 | 0.018 | 0.002 | -0.030 | -0.003 | 0.025 | 0.002 | 0.019 | 0.002 | -0.044 | -0.005 |
| | (0.69) | (0.07) | (0.69) | (0.07) | (0.69) | (0.07) | (0.69) | (0.07) | (0.69) | (0.07) | (0.70) | (0.07) |
| Liquidity | 0.352 | 0.036 | 0.345 | 0.033 | 0.333 | 0.034 | 0.353 | 0.035 | 0.348 | 0.034 | 0.277 | 0.030 |
| | (0.68) | (0.07) | (0.68) | (0.06) | (0.68) | (0.07) | (0.68) | (0.07) | (0.68) | (0.07) | (0.68) | (0.07) |
| Collateral | 0.694*** | 0.071** | 0.725*** | 0.069** | 0.677** | 0.069** | 0.717*** | 0.070** | 0.716*** | 0.070** | 0.678** | 0.073** |
| | (0.27) | (0.03) | (0.27) | (0.03) | (0.27) | (0.03) | (0.27) | (0.03) | (0.27) | (0.03) | (0.27) | (0.03) |
| Age | 0.003 | 0.000 | 0.004 | 0.000 | 0.003 | 0.000 | 0.004 | 0.000 | 0.004 | 0.000 | 0.004 | 0.000 |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) |
| PrevDom Dummy | 2.127*** | 0.219*** | 2.136*** | 0.203*** | 2.122*** | 0.217*** | 2.132*** | 0.209*** | 2.135*** | 0.207*** | 2.091*** | 0.225*** |
| | (0.20) | (0.04) | (0.20) | (0.04) | (0.20) | (0.04) | (0.20) | (0.04) | (0.20) | (0.04) | (0.20) | (0.06) |
| PrevFor Dummy | -1.142*** | -0.118*** | -1.141*** | -0.109*** | -1.152*** | -0.118*** | -1.138*** | -0.111*** | -1.140*** | -0.111*** | -1.155*** | -0.124*** |
| | (0.14) | (0.02) | (0.14) | (0.02) | (0.14) | (0.03) | (0.14) | (0.02) | (0.14) | (0.03) | (0.14) | (0.04) |
| GDP | 0.031 | 0.003 | 0.030 | 0.003 | 0.035 | 0.004 | 0.028 | 0.003 | 0.030 | 0.003 | 0.031 | 0.003 |
| | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) | (0.04) | (0.00) |
| Onsratio | -0.156 | -0.016 | -0.189 | -0.018 | -0.053 | -0.005 | -0.215 | -0.021 | -0.184 | -0.018 | -0.148 | -0.016 |
| | (0.39) | (0.04) | (0.39) | (0.04) | (0.40) | (0.04) | (0.39) | (0.04) | (0.39) | (0.04) | (0.38) | (0.04) |
| Constant | 0.960 | | 0.755 | | 0.915 | | 0.939 | | 0.866 | | 0.704 | |
| | (0.67) | | (0.76) | | (0.63) | | (0.72) | | (0.68) | | (0.68) | |
| Observations | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 | 2,587 |
| Number of firms | 687 | 687 | 687 | 687 | 687 | 687 | 687 | 687 | 687 | 687 | 687 | 687 |
| Log − likelihood | -347.181 | | -347.060 | | -346.682 | | -347.140 | | -347.177 | | -346.008 | |

The table reports the random effects of Equation 1 and Equation 2. It shows the regression of the probability of domestic currency bond issuance, excluding China. Coefficients and marginal effects are reported in odd columns and even columns, respectively. The dependent variable is $BOND$, a dummy variable of which the value is equal to one if firm $i$ issues bond in year $t$, and zero otherwise. The six dimensions of country governance indicator: control of corruption ($CC$), government effectiveness ($GE$), political stability ($PS$), regulatory quality ($RQ$), rule of law ($RL$), and voice and accountability ($VA$) are considered separately. Time and country effects are included in the specifications. The values in parentheses are standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively. $High\ Social\ Trust$ is a dummy variable of which the value is equal to one if social trust in country $j$ and year $t$ is high, and zero otherwise. Social trust is high in year $t$ if the mean of response in the country in year $t$ is greater than the median value of responses in the sample. $Firm\ Size$ is natural logarithm of total assets. $Growth$ represents growth in sales. $Leverage$ is measured as the ratio of total debt to total assets. $Profitability$ is measured as the ratio of earnings before interest and taxes relative to total assets. $Liquidity$ is measured as the ratio of current assets to total liabilities. $Collateral$ represents the asset holding of firms that can be a pledge for debt agreements; it is measured as the ratio of tangible assets to total assets. $Age$ represents the firm's business experience which is the number of years in the stock market. $PrevDom\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in domestic currency, and zero otherwise. $PrevFor\ Dummy$ is a dummy variable of which the value is equal to one if firm $i$ has an experience in issuing bonds in foreign currency, and zero otherwise. $GDP$ represents GDP growth. $Onsratio$ is the onshore market size relative to the offshore market size.

# 3 Chapter 3:Cash is king or trash? The review of political uncertainty and corporate behaviour

## 3.1 Introduction

The relationship between politics and economics has been widely explored for several decades. The electoral system can shape the future of the country. In particular, the leadership of the country can have influences on government policy and economic growth. With some uncertainty in electoral outcomes, the country might suffer from economic instability such as a reduction of public and corporate investment (Darby et al., 2004). Specific to the impacts on the private sector, political uncertainty can deter investment decisions; firms prefer to delay their investment if facing uncertain circumstances and may change their financial strategies in the light of new financial regulations and economic policies. In other words, firms may change their business strategy in order to make themselves resilient to any uncertainty faced during election periods.

Several studies have investigated corporate cash holdings behaviour and reasons for holding cash. Although there is an opportunity cost of holding cash on the balance sheet, firms prefer to retain cash for two main reasons or benefits: (i) transaction motive and (ii) precautionary motive. Regarding the transaction motive, cash reserves is a firm's internal fund that could help save costs possibly incurred from fund raising and avoid brokerage costs and information asymmetry effects of external finance. Moreover, there is no need to liquidate assets if firms have enough cash in their balance sheet. The second reason for cash holdings is the precautionary motive. Firms hold some cash for being used in unpredictable or unforeseen circumstances, so cash reserves can act as a contingency. For this reason, firms can use their cash reserves when lacking for other financing sources. The precautionary motive is the essential underlying rationale for corporate cash holdings; firms should be prepared for the uncertainty including cash flow volatility. When firms see an investment opportunity but their cash flows are too low, their stock of cash will enable them to make the investment (Keynes, 1936; Han and Qiu, 2007). To shed light on political uncertainty, Julio and Yook (2012) point out that, for the precautionary motive, firms are likely to reduce their investment and hold more cash during an election period. They will hold cash until the uncertainty has been resolved in order to lessen the impact of uncertainty. Thus, this chapter studies how firms in Asia deal with political uncertainty and its influences on firms' growth.

This chapter bridges previous literature on political uncertainty and cash holdings. The primary goal of this chapter is to investigate whether political uncertainty influences changes in corporate behaviour. In particular, it examines the effects of elections and cash flow on cash holdings and asset growth. Specifically, the line of discussion builds upon the theory of demand for money introduced by Keynes (1936) and a theory suggests that the growth of small firms often depends on internal finance (Butters and Lintner,1945; Carpenter and Peterson, 2000). The data of financial statements and elections are collected for eight Asian economies, which are China (Mainland), Indonesia, Korea, Malaysia, the Philippines, Singapore, Thailand and Taiwan (China). The analysis covers the period from 1990 to 2018.

There are four contributions of this chapter to the literature. First, this chapter provides the new evidence that the national election can affect corporate cash holdings in Asian companies. Unlike previous studies on uncertainty (Julio and Yook, 2012; Baker et al., 2016; Xu et al., 2016; Jens, 2017), this chapter is among the first to examine whether different electoral systems have different impacts on corporate behavioural changes. In comparative terms, China is a unique country with a large size of population and it is totally different from its neighbours in many aspects. The political system in China has unique features because "China is a federal state in form and a unitary state in essence (Bo, 2010, p.108)" and "the legislature in China is neither one-chamber nor bicameral (Bo, 2010, p.106)". Although the National People's Congress (NPC) is dominated by the Chinese Communist Party with regard to its economic performance in the past three decades, China has become moderately more democratic. Contributing to the literature, this chapter compares the effects of presidential and legislative elections and assembly-elected presidential elections on corporate behaviour.

Second, this chapter builds on the extant literature of corporate cash holdings and its sensitivity to cash flow (Almeida et al., 2004) by examining whether elections influence a firm's propensity to reserve cash out of its cash inflows. To go one step further, this chapter highlights the differential effect of cash flow on the magnitude of the election-year cash holdings cycle and the effects of elections on corporate behaviour. This chapter documents that the impact of cash flow on cash holdings is more pronounced during election periods for the firms located in the country with a presidential and legislative electoral system. In particular, small firms are likely to hold a larger amount of cash during election periods no matter which election system is adopted in their country. In addition, large firms in the country with an assembly-elected presidential electoral system tends to hold less cash during election periods. This finding is consistent with the results reported

by Xu et al. (2016) that the grabbing hand hypothesis, which argues that the government acts in their self-interest, holds in the first year of a new city government official's appointment in China, encouraging firms to hold less cash as a strategic response.

Third, this chapter investigates whether the use of available internal finance can boost asset growth during election periods. The motivation behind this study originates from the literature on the internal finance theory of growth (Carpenter and Petersen, 2002; Guariglia et al., 2011, Guariglia and Mizen, 2012). Guariglia and Mizen (2012) show that Asian firms are more likely to use internal funds to generate investment and growth. Internal finance help lower the amount of debt in Asian firms and thus improving firms' resilience to a recent financial shock. Although output growth in Asia suffered from the 2007-8 financial crisis, growth in fixed investment using internal funds was a vital contributing factor to the recovery from the recession. Like financial crises, elections bring about uncertainty. This chapter assesses the impact of political uncertainty caused by an election and internal finance on corporate growth. The findings add to the body of knowledge that elections can negatively affect asset growth in large firms, and that the growth of small firms in presidential and legislative group relies on their own ability to generate profits.

Forth, this chapter contributes to the discussion on the precautionary motive for cash holdings and financially constrained firms (Han and Qiu, 2007; Chen et al., 2012). This chapter contributes to previous literature by delivering the first empirical work that the cash flow sensitivity of cash during election periods supports the precautionary hypothesis. This chapter sheds light on the financial constraint channel that the cash flow sensitivity of cash in small firms (financially constrained firms) is more salient than the sensitivity in large firms (financially unconstrained firms).

There are reasons for why the research in this chapter should be conducted. To start with, this research will help firms to understand the underlying rationale for cash holdings. Next, it shows how corporate cash holdings behaviour varies with the electoral system adopted in the country. Lastly, this chapter makes an effort to raise awareness of the importance of cash reserve in small firms with limited financial access because internal finance can help small firms to stimulate corporate growth and increase the survival rate during uncertainty.

The chapter is structured as follows: Section 2 reviews the literature on political uncertainty and cash holdings. Section 3 identifies the empirical methodology of this study. Section 4 explains the data employed and reports descriptive statistics. Section 5 describes

empirical results of which the robustness is tested in Section 6. Section 7 provides concluding remarks.

## 3.2 Literature review

### 3.2.1 Political uncertainty

#### 3.2.1.1 Theoretical background

Politics have an effect on economic behavior through an uncertainty. The previous studies demonstrate two main uncertainties related politics: an uncertainty from policy change (policy uncertainty) and an uncertainty from a change of national leader or national election. The political uncertainty, both from policy and national leadership changes, definitely related to future regulation for industry, monetary and trade policy, taxation and it may create awareness of the possibility of privatisation for private firms (Julio and Yook, 2012). Consequently, the political uncertainty influences corporate behaviors in order to deal with the outcomes of the uncertainty.

The majority of the literatures have concentrated on corporate investment decisions. As firms aware that there may be a change in policy and regulation which could affect their investment opportunity, thus firms are likely to postpone their investment until there is a clarity of policy implementation. The early studies of Bernanke (1983) and Bloom et al. (2007), who examine the relationship between uncertainty and investment, indicate that firms will more prudent when they face an uncertainty. They will delay and reduce their investment. Similarly, Rodrik (1991) and Pindyck and Solimano (1993) find that an uncertainty leads firms to reduce their investment expenditure.

To the best of knowledge, there are not many researches that study the relationship between the political uncertainty and corporate financing's decisions. The recent study of Pastor and Veronesi (2012) provide theoretical model on this relationship. They consider policy uncertainty and indicate that a policy change will have a negative impact on stock values because the discount rates will increase as a result of the uncertainty. Therefore, cost of capital tends to raise when there is a political uncertainty.

In the financial sector, banks are also affected by political uncertainty. Baum et al. (2010) evaluate the impacts of Turkish election cycles on the banking system, by focusing on loan amount and loan growth. They point out that banks reduce loans around the election year. Loan growth also decreases in the year before the election; whereas, the growth rate of deposit increases in the election year and the year after the election. Their results could

imply that the business sector might reduce its investment during the election period. Political uncertainty during the period of election leads firms to retain cash and banks to reduce their lending in order to lessen the effects of the uncertainty and unforeseeable circumstances.

#### 3.2.1.2 Empirical evidence

The theoretical researches indicate that the political uncertainty has an influence on corporate behaviors. The political uncertainty could affect both corporate financing and investment decisions through the mechanism that it will increase the cost of capital and decrease firms' investment activities.

Regarding an increasing uncertainty caused by major economic and political shocks such as terror, war, oil and economic, there has been a growing literature which discusses the relationship between political uncertainty and economic performance. One strand of the literatures reports similar results to support the concept that the political uncertainty causes firms to decrease their investment. An early study on uncertainty of Bloom (2009) uses stock market volatility as a proxy for uncertainty at firm level. He finds that uncertainty can decrease the productivity of capital and the output level. A freeze on business activities due to uncertainty leads to a plummet in investment and employment. Recently, Julio and Yook (2012) and Jens (2017) evaluate the impacts of elections used as a proxy for political uncertainty on changes in corporate investment. They report that political uncertainty around election years lead to a decrease in corporate investment; this result is associated with the so-called political uncertainty hypothesis. Julio and Yook (2012) also suggest that increasing investment in the post-election period could not offset the reduction of investment in election years; whereas, Jens (2017) explain that the rebound of investment in the post-election period depends upon whether an incumbent is re-elected. In addition, political uncertainty has a direct influence on corporate saving decisions. Thus, firms are more likely to be more cautious when making decision on investment during elections and choose to invest when political uncertainty has been resolved.

The recent study of Baker et al. (2015) who introduced an economic policy uncertainty (EPU) index, which will be explained in the next section, to measure the role of policy uncertainty also reports similar results to the findings of the previously mentioned studies that uncertainty leads to decreases in investment and employment, both in firm and country levels. Meanwhile, Gulen and Ion (2015) employ the news-based index to measure political uncertainty in the US and Canada. They also discover that the degree of political

uncertainty's influences on corporates relates to firm characteristics and the influences on investment can last up to eight quarters.

The literature also documents that political uncertainty can affect acquisition decisions. Recent studies present a significant effect of gubernatorial elections on mergers and acquisitions (M&A). Cao et al. (2017) investigate the relationship between cross-border acquisitions and political uncertainty which is represented by national elections in the countries of both targets and acquirers. They report a decrease in inbound cross-border acquisitions in the year before the national election of the target's country and an increase in outbound cross-border acquisition in the year before the national election of the acquirer's country. They explain that cross-border investment enables the acquirer to diversify their risk. The acquirer will not choose a target in a country that is going to have an election in order to avoid political uncertainty in the target country. This finding is similar to Chen et al. (2018) who suggest that an acquirer prefers to make a deal with a target in the non-election.

Another strand of the literatures focuses on the influence of the political uncertainty on corporate financing decisions. Their findings also show that the political uncertainty leads to a raising of the cost of financing. Pastor and Veronesi (2013) extend their study in 2012, which has been previously mentioned, and also focus on policy uncertainty. When the economy is bad, the government may introduce a new policy which has a lower cost but is more efficient to replace the current one. They document that political uncertainty causes an increase in risk premium, stock volatility and stock correlation, and the effects of political uncertainty become larger in an adverse economic environment. Therefore, the political uncertainty could lead to a lower of asset values due to an increase of discount rates. Whereas Waisman et al. (2015) explore the effect of political uncertainty on the cost of the US corporate bonds issued in the period between 1980 and 2012. They show that only political uncertainty at the national level affects the prices of bonds through increasing bond spreads; no matter whether Democrats or Republicans win the elections, the bond spreads are still high. Kelly et al. (2016) apply the model of Pastor and Veronesi (2013) to analyse the impact of political uncertainty on options markets. They find that the price of options is affected by political uncertainty and the options of which the maturity covers the period of political uncertainty will have a higher price.

Regarding the financial sector, the behaviour of banks during the election period might corresponds to the spending and investment behaviour of the business sector. Francis et al. (2014) also employ the EPU index to examine how political uncertainty affects the

cost of bank loans that reflect information asymmetry between the lender and the borrower. A rise of uncertainty increases costly bank loans which affect both bank-related loan demand and supply. Particularly, firms with more sensitivity to political risk suffer from the high cost of debt since banks are more likely to issue tight loan covenants to protect themselves and reduce the possibility of defaults during the financial crisis. Thus, it not only affects bank loans, which are an essential source of finance for firms, but also influences the cost of bank loans as previously mentioned.

#### 3.2.1.3 Measurement

According to the existing literatures, there are two main measures of the political uncertainty: an elections and economic policy uncertainty (EPU) index. Several literatures have used elections as a measure for the political uncertainty. The well-known literature of Julio and Yook (2012) indicates the interesting of using elections to study the effect of political uncertainty on corporate investment that national leaders normally have limited terms and new leaders might introduce new or different policies. The outcome of elections, hence, affects corporate investment decisions because it relates to an implication of future regulation, taxation, and monetary and trade policy. Furthermore, elections could dissolve the endogeneity of economic growth and political uncertainty as it is a reoccurrence event and could separate the effect of policy uncertainty from other factors. Nevertheless, the political uncertainty might not be able to measure directly by the elections and it should be noted that the political uncertainty will be high in the period before an election.

The elections has been used to study the political uncertainty in many earlier literatures. The literatures provide a similar conclusion that there is a high political uncertainty during election periods. Bernhard and Leblang (2006) examine that the volatility of exchange rates, bond yields and equity are higher during the election period. Bialkowski et al. (2008) and Boutchkova et al. (2011), who study the relationship between stock market volatility and national elections, also find similar results as Bernhard and Leblang (2006). In addition, Boutchkova et al. (2011) also report a high return volatility during election period for firms in industries that is susceptible to politics.

Recently, an index of economic policy uncertainty, so-called EPU or BBD index, has been popularly employed to measure uncertainty in the US. It was introduced by Baker et al. (2015). The index is used to measure the role of policy uncertainty, different countries and specific policies. They apply a newspaper-based approach to gauge the EPU index; this approach calculates the index using frequency counts of three terms; uncertainty, the economy and policy. The prominent points of using the newspaper are the fact that it does

exist and has been used a long time ago. It is also used around the world as well. Thus, incorporating the newspaper-based data to the computer database will provide in depth knowledge on economic and politics. The EPU index has been used in many researches on several countries, for example, Ireland (Zalla, 2016), Chile (Cerda et al., 2016) and Japan (Arbatli et al., 2019).

As this study examine eight economies in Asia which use different languages and a limitation of the EPU index that only available for large countries. Indonesia, Malaysia, the Philippines, Thailand and Taiwan (China) have not available on the EPU index. Therefore, this chapter use the elections to be a proxy for political uncertainty.

#### 3.2.1.4 Country-specific features on political uncertainty: focusing on China

This chapter considers three types of election which have been grouped into two electoral systems: a presidential and legislative electoral system (Indonesia, South Korea, Malaysia, the Philippines, Singapore, Thailand and Taiwan) and an assembly-elected presidential electoral system (China).

Unlike presidential and legislative elections, the assembly-elected presidential elections in China includes an indirect process of election to get representatives to sit in the National People's Congress (NPC). Even though China is on the path to democracy after launching village elections, which are the direct election, in 1987 (O'brien and Han, 2009) and this community-level election has been developed to a self-governance of communities. China has indirect elections which are described in the document of the National People's Congress. Deputies and the people's congresses are elected by congresses at the next lower level (The National People's Congress of the People's Republic of China, 2014).

Although China has both direct and indirect elections, the NPC has an important role in electing the President and the Vice President of the country (China Internet Information Center, 2014; Saich, 2015). This is a significant difference between the assembly-elected presidential electoral system and the presidential and legislative electoral system that leads to the difference in corporate behaviour.

Focusing on a transitional economy, An et al. (2016) discuss the relationship between corporate investment decisions and political leadership turnover at the local level in China. They find that Chinese corporate investment also declines as a result of political turnover. Unlike other countries, China has an economic system heavily dependent upon fixed asset investment and state-owned enterprises, SOEs. The Chinese government is

appointed by the Communist Party. The finding demonstrates that political turnover hinders the investment decisions of capital-intensive firms and SOEs notably. In a transitional economy like China, firms which are closed to the government are profoundly affected by political uncertainty. This concept is in line with Waisman et al. (2015) who state that the political uncertainty has a direct effect on political connections of firms which consequently affects firms' performance and firm's decision.

To illustrate how Chinese elections differ from elections in other countries, this section points out the key characteristics of China's electoral system.

A related line of research shows two main approaches to gauge political uncertainty: an index of economic policy uncertainty and national elections. Some previous studies focus on firms in one particular country (especially the US) and the others compare the impacts of political uncertainty in many countries excluding China which has a different political system. To fill this gap, this chapter employs direct and indirect national elections as a proxy for political uncertainty and the sample analysed includes Chinese companies.

### 3.2.2 Corporate cash holdings

The issue of corporate cash holdings has been discussed extensively in economics and finance literature. According to previous studies, there are four motives for firms to hold cash; transaction motive, precautionary motive, tax motive and agency motive. This chapter investigates the effects of political uncertainty, so the precautionary motive is the most relevant to this study. To explain more, firms hold more cash and liquid assets for precautionary reasons during election periods so that they can prepare themselves to be ready for any interesting investment opportunities which may be available after the announcement of the election results. To be able to secure future investment opportunities and to cope with unexpected expenditures, firms prefer to hold more cash and liquid assets in order to prevent cash shortage. Additionally, corporate cash holdings can help firms to better deal with adverse shocks because of costly external finance.

#### 3.2.2.1 Transaction motive

Keynes (1936) defined "transaction motive" as the need of cash for personal and business transactions since firms expect to minimise the transaction cost incurred from raising cash for business. Regarding the pecking order theory, firms prefer to use their internal funds such as retained earnings first (Myers, 1984). If firms exhaust their internal funds, they will prefer debt to equity because firms are aware of information asymmetry in equity issuance. Opler et al. (1999) indicate that the transaction cost of external funds is an

important determinant of cash holdings. Since external funds is costly, firms would like to hold more cash and liquid assets rather than raising funds from external sources. Nonetheless, holding cash and liquid assets has some costs such as opportunity costs.

Opler et al. (1999) explain that the optimal amount of cash holdings is the point where the marginal cost of lack of liquid assets equals the marginal cost of holding liquid assets. Firms that are prone to a shortage of liquid assets are likely to hold more cash and liquid assets. On the transaction motive basis, a low cost of external financing, a low cost of interest rate, and a low dividend payout can lead firms to hold lower amounts of liquid assets. In addition, firms that have a plenty of assets to be sold or firms that could easily sell their assets are likely to hold fewer liquid assets. On the other hand, firms that have high inventories compared to the number of sales or firms with high cash flow volatility may hold more liquid assets. Opler et al. (1999) further explain that a costly hedging transaction also induces firms to hold more liquid assets.

#### 3.2.2.2 The precautionary motive

Firms prefer to be ready for any interesting investment opportunities, so it is likely that they will hold more cash and liquid assets in order to prevent cash shortage which may impede their future investment. Information asymmetry and the agency cost of debt are the underlying reasons for precautionary holdings of cash and liquid assets. First, information asymmetry between managers and investors could increase the cost of external funds. Since investors have less information about securities than managers, investors may price the securities lower than managers. As a result, if the investment opportunity does matter to firms, managers may prefer to hold more cash and liquid assets rather than raising funds in the market in the future.

According to Opler et al. (1999), the reason for cash holdings in publicly traded U.S. firms during the period between 1971 and 1994 is strongly related to precautionary motives. They provide an evidence that in the event of excess cash, if possible, firms are likely to keep a cash holding in their balance sheet in order to make sure that they still have available funds to invest when they have a poor cash flow.

Regarding the cost and benefit of cash holdings in financially constrained and unconstrained firms, the literature reports that holding cash is costly in constrained firms since these firms have to sacrifice investment projects available now for the sake of the increasing ability to invest in future projects. Considering the level of cash on the balance sheet, Almeida et al. (2004) find that cash in constrained firms is higher than in unconstrained firms. To explain corporate liquidity, they are among the first who focus on

the sensitivity of cash holdings to cash flow, which is a firm's propensity to save cash out of cash inflows, rather than cash level, which is the amount of cash in the balance sheet. They demonstrate that sensitivities of cash to cash flow are significant and positive in constrained firms, but it is insignificant in unconstrained firms. Generally, corporate cash holdings may follow the business cycle but the propensity to cash hoarding in constrained firms increases during macroeconomic shocks. There are two main reasons; future investment being more attractive than current investment and decreasing current income flows. This implies that constrained firms' cash flow sensitivities of cash have countercyclical responses to aggregate demand shocks. While they show that the sensitivity of saving to cash flow is positive, Riddick and Whited (2009) re-examining the study of Almeida et al. (2004) hold an opposite opinion because they find that a positive productivity shock urges firms to reserve more cash for future investment opportunities. Riddick and Whited (2009) also highlight that firms will hold more precautionary cash if income uncertainty is higher or if external finance is costly.

To extend the theoretical model of Opler et al. (1999) and Almeida et al. (2004), Han and Qiu (2007) investigate whether increasing volatility of uncertainty leads to an increase in corporate cash holdings. Unlike for a financially unconstrained firm, the precautionary motive of cash holding makes a financially constrained firm decrease their current investment in order to make additional future investment. This is because it is difficult for them to access external sources of fund. Bates et al. (2009) further develop the model of cash holdings introduced by Opler et al. (1999) and find that the precautionary motive can contribute to an increase in cash ratios but the increase is not explained by the agency motive. They propose that decreasing inventories, increasing corporate cash flow risk, decreasing capital expenditures and increasing R&D expenditures are four essential reasons for an increase in the cash ratio.

#### 3.2.2.3 The tax motive

In addition to the transaction and precautionary motives, tax costs can explain the amount of cash holdings. Foley et al. (2007) study the relationship between taxes and cash holdings in the US multinational firms during the period between 1982 and 2004. The tax motivation associates with the repatriation of earnings in foreign subsidiaries to domestic parent firms. Multinational firms prefer to hold cash in a lower tax country; they will hold retain earnings in foreign subsidiaries when the tax rate for parent firms is higher than for foreign subsidiaries. With high repatriation tax burdens, the cost of repatriation is greater than the cost of cash holdings. Hence, firms are more likely to hold cash aboard and avoid

repatriating them to parent firms. However, Pinkowitz et al. (2013) compare the abnormal amount of cash holdings in US firms before and after the financial crisis.

#### 3.2.2.4 The agency motive

Considering the agency theory, conflicts of interest between shareholders and managers produce the agency motive. Managers are more likely to hold cash than pay out dividends to shareholders or repurchase stock because increasing firm growth is associated with managers' powers and compensations. Information development and financial technology help to impede agency problems. The absence of agency problems lead to a decrease in cash hoarding and precautionary demand for cash (Jensen, 1986 and Bates et al., 2009). Dittmar et al. (2003) document that the agency problem plays an important role in determining the size of cash holdings. They suggest firms to hold more cash when they are in a country with a prominent agency problem. The underlying reason is an inability of shareholders to direct the manager to use cash for increasing shareholders' wealth. According to their findings, the agency problem also has an effect on the relationship between investment opportunities and corporate cash holdings. Thus, it seems that firms' cash holding relates to firms' corporate governance. Dittmar and Mahrt-Smith (2007) find that good corporate governance especially in terms of how firms spend their money is essential in firm value creation and cash holdings. With the monitoring of investors on the governance of firms, the pressure on the management team causes efficient uses of excess cash resources, result in an increase in firm value and high operating performance. In contrast, firms with poor governance face falling excess cash reserves and low operation performance because of either rising agency problem or a lack of operational efficiency. They also highlight that poorly governed firms suffer from the higher cost of holdings excess cash.

Another reason for precautionary cash holdings is the agency cost of debt which is a difference between interest rates charged to shareholders and investors. Since the agency cost prevents firms from accessing external funds and shareholders realise that funding shortfalls may cause a loss of great investment opportunity which can be even more costly than the agency cost, shareholders will hold more cash and liquid assets. However, as the manager is not the firm's shareholder, they may use cash reserves to achieve their own objectives which may differ from shareholders' objectives.

### 3.2.3 The relationship between cash holdings and political uncertainty

In the context of uncertainty, Baum et al. (2006) demonstrate how firms' liquid asset holdings respond to economic uncertainty in US non-financial firms during the period from 1970 to 2000. They find that volatility in macroeconomic conditions has a strong influence on the decisions of the manager in liquidity strategy such as the optimal cash holdings and corporate resource allocation. By using returns on the stock market index as a proxy for uncertainty, their results show that an increase in uncertainty leads to a decrease in the dispersion of the cash-to-asset ratio. They further indicate that a sensitivity of firms to uncertainty varies with firm's characteristics, which also affects firm's cash holdings. They discover that firms experiencing considerable growth are more sensitive to uncertainty than low-growth firms. With a high level of information asymmetry, high-growth firms prefer to hold more liquid assets. In addition, it is intuitive that financially constrained firms face a higher negative effect of uncertainty since unconstrained firms do not need to hold extra cash or liquid assets (Almeida et al., 2004). In addition, capital-intensive firms are more responsive to economic uncertainty than labour-intensive firms.

In light of the effect of national elections, Julio and Yook (2012) demonstrate that cash holdings of firms temporarily increase in the election years. Their result is consistent with the view of holding cash for the precautionary purpose. They find that firms tend to hold more cash in the election years compare to the non-election years while there is a decrease in investment in the election years. The decrease in investment in the election years has about the same amount as the increase in cash holdings in the same period. Their results suggest that political uncertainty affect the cash holding behaviour of firms. Firms appear to delay their investment and hold more cash during the election period. They will delay their investment until the uncertainty is resolved.

Xu et al. (2016) study the relationship between political uncertainty and cash holdings in China during the period from 1998 to 2014. The year 1998 was the first year of a new city government official's appointment. Political uncertainty in their study is reflected by the risk of losing political connection. In their research, the helping hand hypothesis and the grabbing hand hypothesis are applied to explain the decision of corporate cash holdings. Under the helping hand hypothesis, firms need to hold more cash during political uncertainty because of government subsidies or personal connection. In contrast, firms need to hold less cash during political uncertainty under the grabbing hand hypothesis since officials take advantage of firms for monetary compensations by using political power. The results confirm that companies facing political uncertainty hold

considerably less cash if they are small or located in a city with high fiscal deficits or if they have a smaller amount of debt. In addition, they find that firms hold a smaller amount of cash when they do not have a political connection.

This chapter is closely related to Julio and Yook (2012), who investigate the effects of national elections on corporate investment and saving decisions. Unlike their study, this chapter uses fixed effects regressions to estimate the difference between corporate cash holdings in economies with presidential and parliamentary electoral systems and a country with assembly-elected presidential elections such as China.

Furthermore, this chapter sheds new light on the connection between political uncertainty and asset growth. The availability of cash is used as a proxy of internal finance which is expected to have a direct influence on corporate asset growth. Guariglia and Mizen (2012) study the relationship between asset growth and investment and explore the resilience of these firms to the recent global financial crisis. They use the firm-level data of eight Asian emerging countries, during the period 2001 – 2009, which cover the pre-crisis period (2001 – 2006) and the crisis period (2007 – 2009). Their findings show that Asian firms use internal funds to generate asset growth during the crisis and they are interesting since it implies that firms relying less on external funding are more resilient to the financial crisis. To the best of knowledge, there is no existing research on how the effect of political uncertainty on asset growth varies with the electoral system adopted in the country.

To point out this key difference between this chapter and other studies, the other closely related literature is Guariglia et al. (2011) that study Chinese firms asset growth during the period between 2000 and 2007; there have been high growth rates and high cash flow in Chinese firms during that period. They investigate the relationship between asset growth and the cash flow-to-total assets ratio. The large sample, including 79,841 Chinese firms, allow them to explore more precisely into the context of financing constraints. Their main findings are the growth of foreign firms rely on firms' cash flow while state owned enterprises and firms owned by urban or rural communities, which are called "collective firms", do not. It indicates that there is a difference in the level of dependence on internal finance among Chinese firms. State owned enterprises can normally get a loan from state owned banks. Thus, state owned enterprises face less financing constraints compared to private firms. Private firms' growth are reliant on internal finance and the firms cannot rely on funds from their parent companies alone. They further find that Chinese private firms with a high level of financing constraint and high growth tend to have high cash flow. They

suggest such firms to use their internal funds to generate their growth. Even though these firms have a restricted access to external funding; their increasing and high productivity can reflect their good management of cash flow in generating firms' growth. Thus, even facing with financing constraints, they can also survive and have high growth if they are able to generate a sufficient level of internal funds.

## 3.3 Empirical methodology

### 3.3.1 Corporate cash holdings and elections

Following some prior studies (Opler et al., 1999; Julio and Yook, 2012; Caprio, 2013; Xu et al., 2016), this chapter employs the panel regression to examine whether firms in eight Asian emerging countries change their cash holding behaviour during election periods. With the determinants of cash holdings framework (Opler et al., 1999), models can be estimated as follow:

$$\begin{aligned}\left(\frac{Cash}{TA}\right)_{ijkt} = {} & \propto_0 + \propto_1 ElectionDummy_{jt} + \propto_2 \left(\frac{Cashflow}{TA}\right)_{ijkt} + \propto_3 Size_{ijkt} \\ & + \propto_4 \left(\frac{NWC}{TA}\right)_{ijkt} + \propto_5 \left(\frac{CAPEX}{TA}\right)_{ijkt} + \propto_6 Leverage_{ijkt} + \propto_7 Q_{ijkt} \\ & + \propto_8 \sigma(Cashflow)_{kt} + \propto_9 DividendDummy_{ijkt} + \propto_{10} AcqDummy_{ijkt} \\ & + \upsilon_i + \psi_d + \gamma_j + \mu_t \\ & + \varepsilon_{ijkt} \qquad (5)\end{aligned}$$

where the subscript $i$ is for firm, $j$ for country, $k$ for industry, and $t$ for year. The dependent variable, $\left(\frac{Cash}{TA}\right)_{ijkt}$, denotes the ratio of the total value of cash, cash equivalent and short term investment to the value of net assets for firm $i$ in industry $k$ of country $j$ in year $t$. In this model, the value of $ElectionDummy_{jt}$ dummy variable is equal to one if the fiscal year $t$ has an election date and zero otherwise. Other variables are $\left(\frac{Cash}{TA}\right)_{ijkt}$ representing the value of income before extraordinary items and depreciation and amortisation relative to total assets, $Size_{ijkt}$ denoting the natural logarithm value of total assets, $\left(\frac{NWC}{TA}\right)_{ijkt}$ the value of current assets less current liabilities and cash relative to total assets, $\left(\frac{CAPEX}{TA}\right)_{ijkt}$ is the ratio of capital expenditure to total assets, and $Leverage_{ijkt}$ denoting the ratio of total debt to total assets. As Tobin's Q is difficult to construct from Compustat IQ, Bakus et al. (2009) and Bose et al. (2016) use sales growth as a proxy for Tobin's Q ($Q_{ijkt}$). This

means that listed and non-listed firms are included in the sample. Cash flow volatility, $\sigma(Cashflow)_{kt}$, is the volatility of an industry's cash flow which is the standard deviation of cash flow for each three-digit SIC over the previous 4 years. The value of $DividendDummy_{ijkt}$ dummy variable is equal to one if the firm pays dividends in year t and zero otherwise. Another dummy variable is $AcquisitionDummy_{ijkt}$ ; its value is equal to one if the firm has an acquisition activity in year $t$ and zero otherwise. The firm, industry, country and year fixed effects represented by $\upsilon_i$, $\psi_d$ , $\gamma_j$ and $\mu_t$ are also included. They capture the variations across countries and years and they control for any country-level changes in economic variables that can influence corporate behaviour. In addition, this chapter follows Gilje et al. (2016) by adding country-and-year fixed effects in the regression. The error term, $\varepsilon_{ijkt}$ , contains firm, country, industry specific and time.

The literature finds a positive association between cash holdings and cash flow. Higher-cash flow firms have more cash to retain and high cash holdings could prevent them from missing investment opportunities. Regarding the financing hierarchy model, firms with high cash flows tend to increase cash reserve or liquidity assets and they are more likely to use internal finance than external finance (Myers and Majluf, 1984; Opler et al., 1999; Ozkan and Ozkan, 2004). Almeida et al. (2004) report that the precautionary motive only matters to constrained firms which face a high cost of external finance incurred from the information asymmetry between firms and investors.

Previous studies report both positive and negative effects of firm size on cash holdings. The pecking order theory suggests that a better performance of large firms leads to a higher cash reserve. Jebran et al (2019) find a positive relationship between firm size and cash reserve in pre-crisis and crisis periods. By contrast, the transaction motive and the static trade-off model suggest that larger firms prefer to have a lower cash ratio due to economies of scale in liquid assets. Also, they have a cheaper and easier access to capital markets (Keynes, 1973; Opler et al., 1999; Ahn and Chung (2015); Bigelli and Sánchez-Vidal 2012).

Liquidity is measured by the amount of net working capital, which is the difference between current assets and current liabilities of the company, less cash divided by total assets. According to the trade-off theory, liquidity is negatively associated with cash holdings because liquid assets can be converted into cash easily. Several empirical studies find the negative association between liquidity and cash holdings (Duchin, 2010; Opler, Ozkan and Ozkan, 2004; Jebran, 2019).

Capital expenditure, which drives corporate net worth and debt capacity, is expected to have a negative impact on corporate cash holdings. Firms with higher capital expenditure have lower cash demand because they prefer investment to saving, and they are less risky and more likely to use external finance (Gualriglia and Yang, 2016; Riddick and Whited, 2009; Bates et al., 2009). However, capital expenditure is positively related to cash holdings when they are a proxy for financial distress costs or investment opportunities (Bates et al., 2009).

Corporate leverage is a proxy for the ability of the firm to debt servicing. It is expected that there will be a negative relationship between leverage and cash holdings (Opler, Ozkan and Ozkan, 2004; Guney et al., 2007) However, it depends on the level of leverage. Firms with high leverage are more likely to become constrained firms and to face financial distress. For a precautionary motive, they will accumulate more cash to reduce their own insolvency risk (Han and Qiu, 2007).

The constrained firms use the profitability of future investment to shape corporate cash holdings policy; these opportunities can be measured by Tobin's Q. Sales growth, which is used as a proxy for Tobin's Q, is expected to have a positive effect in financially constrained firms and no significant impact in unconstrained firms (Almeida et al., 2004). As consistent with the finding of Im et al. (2017) that higher investment opportunities drive firms to hold higher cash balance.

Cash flow volatility indicates idiosyncratic industry risk. Firms exposed to higher cash flow risk is expected to hold more cash, consistent with the precautionary motive (Bates et al., 2009).

According to the trade-off theory, the optimal amount of cash holdings depends on the trade-off between the marginal benefits and costs of cash holdings. The minimisation of external financing and liquidation costs is a purpose of cash reserve. The relationship between cash holdings and dividend payment should therefore be negative (Opler et al., 1999). The dividend-paying firms can rely on external finance at a lower cost as they can reduce dividend payments. In contrast, Ozkan and Ozkan (2004) argue that dividend-paying firms can hold more cash than non-dividend paying firms in order to reduce a cash shortage.

The effect of acquisition on cash holdings is expected to be negative; the level of cash reserve will decrease in the year that firms make an acquisition payment (Almeida et al., 2004). However, firms with high cash balance prefer to make acquisitions (Harford,

1999). Therefore, following to Almeida et al. (2004), this chapter controls for the acquisition effect.

Next, this chapter augments the model of Almeida et al. (2004) with the interaction between a dummy for election and cash flow, $ElectionDummy_{jt} \times \left(\frac{Cashflow}{TA}\right)_{it}$, to explore the impact of election on the cash flow sensitivity of cash. Specifically, the study estimates the following panel model:

$$\begin{aligned}\left(\frac{Cash}{TA}\right)_{ijkt} = {} & \propto_0 + \propto_1 ElectionDummy_{jt} + \propto_2 \left(\frac{Cashflow}{TA}\right)_{ijkt} \\ & + \propto_2 ElectionDummy_{jt} \times \left(\frac{Cashflow}{TA}\right)_{ijkt} + \propto_3 Size_{ijkt} \\ & + \propto_4 \left(\frac{NWC}{TA}\right)_{ijkt} + \propto_5 \left(\frac{CAPEX}{TA}\right)_{ijkt} + \propto_6 Leverage_{ijkt} + \propto_7 Q_{ijkt} \\ & + \propto_8 \sigma(Cashflow)_{kt} + \propto_9 DividendDummy_{ijkt} + \propto_{10} AcqDummy_{ijkt} \\ & + \upsilon_i + \psi_d + \gamma_j + \mu_t \\ & + \varepsilon_{ijkt} \qquad (6)\end{aligned}$$

## 3.4 Data and descriptive statistics

### 3.4.1 Data

The chapter uses the hand-collected data of political events obtained from three sources: the Database of Political Institutions from the World Bank, the Election Guide website from the International Foundation for Electoral Systems, and the Chinese Central Government's official web portal. This chapter follows Julio and Yook (2012) using the elections as a proxy for political uncertainty. Changes in the leaders and policies can delay growth and investment of businesses until the uncertainty is reduced or eliminated. Due to the transaction motive, the precautionary motive, the tax motive and the agency motive, the election may lower corporate cash holdings.

The dataset includes the data of eight economies in Asia: China (Mainland), Indonesia, Korea, Malaysia, the Philippines, Singapore, Thailand and Taiwan (China). The data spans from 1990 to 2018; this period has 46 elections in total: 6 elections in China (Mainland exclude Hong Kong, Macao and Taiwan), 3 elections in Indonesia, 6 elections in Korea, 7 elections in Malaysia, 5 elections in the Philippines, 6 elections in Singapore, 6 elections in Taiwan (China), and 8 elections in Thailand. This period of analysis is chosen

because there is the process of democratisation in Taiwan: 1992 legislative Yuan election and 1996 national presidential election. Taiwan lifted the state of martial law in 1987. In the first legislator election in 1989, the Nationalist Kuomintang (KMT) was the only party involved. In 1996, it was the first time that KMT faced the competition from the Democratic Progressive Party (DPP) and New Party Independent (Tien and Chu, 1996; Central Election Commission, 2016). However, KMT won the presidential election again with 54.8% of votes.

There are three types of elections considered: presidential elections, legislative elections and assembly-elected presidential elections. This chapter groups them into two electoral systems. One is a presidential and legislative electoral system which is adopted in Indonesia, South Korea, Malaysia, the Philippines, Singapore, Thailand and Taiwan. Another is an assembly-elected presidential electoral system or a hierarchical electoral system which is adopted in China.

Firm-level and country-level data are collected from Compustat IQ in Wharton Research Data Service, Bloomberg and World Bank Open Data. Some observations are excluded if they have incomplete records either for the dependent variable or explanatory variables, or negative values for cash and sales. In addition, the analysis excludes all firms with less than 3 years of consecutive observations. To control for the potential influence of outliers, the observations are winsorized at 1%. Finally, the unbalanced panel has 120,822 annual observations which are 41,274 observations in China, 5,627 observations in Indonesia, 15,364 observations in Korea, 14,509 observations in Malaysia, 2,520 observations in the Philippines, 9,643 observations in Singapore, 24,196 observations in Taiwan (China), and 7,689 observations in Thailand. Next, this chapter also describes the dataset and introduces key variables in the empirical study.

## 3.4.2 Summary of Statistics

This section shows preliminary analysis descriptive statistics for cash holdings, asset growth, national elections and other control variables. Political system and number of elections are presented in Table 3.1. Table 3.1 shows values for the name of country (column 1); number observations (column 2); type of Electoral systems (column 3); and number of elections from 1990 to 2018 (column 4).

**[Table 3.1 is here]**

To understand the political systems in the sample countries, Table 3.1 summarises the political system adopted and 47 national elections that were held during the period from

1990 to 2018. Column 2 presents the number of observations and shows that China is a majority of the sample, accounting for 34%[4] of the sample. Column 3 shows the type of elections which are classified as assembly-elected presidential, presidential, and legislative. Beck et al. (2001) propose that the system is characterised as assembly-elected presidential when in the system there are presidents, who were elected by the assembly. If they need a two-thirds vote to impeach, or are required to dissolve themselves in order to force out the executive. The dataset comprises one country with assembly-elected presidential elections, four economies with presidential elections, and three economies with legislative elections. The last column reports the number of political turnovers that is represented by the number of national elections in this period. National elections held every 4.77[5] years on average in eight economies, longer than the average election frequency in the study of Julio and Yook (2012) which is 3.8 years.

**[Table 3.2 is here]**

Table 3.2 provides descriptive statistics for all variables to understand firm characteristics and elections in the eight economies and it helps to clarify the estimates of models. Column 1 shows that the sample is divided into two sub-samples. The first sub-sample includes firms located in the countries with presidential or legislative elections; it comprises 79,548 observations residing in Indonesia, Korea, Malaysia, the Philippines, Singapore, Thailand and Taiwan (China). The second sub-sample includes firms located in China where there are assembly-elected presidential elections, comprising 41,274 observations. To find out whether political uncertainty affects corporate behaviour, this chapter uses two dependent variables to measure corporate behaviour (cash holdings and asset growth) and also compares the effects in the two sub-samples.

The first dependent variable, *Cash/Total assets*, is the ratio of cash and short-term investments to total assets. It presents how much a firm saves from today's cash flow and hold it as cash holdings (Duchin, 2010). Columns 4 and 5 in Table 3.2 report the mean and median values of the cash and short-term investments-to-total assets ratios in the two sub-samples. They highlight that firms in the presidential and legislative electoral system hold less cash than those in the assembly-elected presidential electoral system. The average cash holdings ratio is 17% in firms located in a country with a presidential and legislative electoral system and is 20% in firms located in a country with the assembly-elected

[4] Total observations are 120,822 observations and observations in China are 41,274. Thus, observations in China take 34.16% of the total observations (=41,274/120,822).
[5] There are 47 elections in eight economies from 1990 to 2018, which is 28 years. Hence, national elections in eight economies held every 4.77 years (28/(47/8)).

presidential electoral system, which is similar to the finding of aforementioned studies (Duchen, 2010; Gao et al.,2017). The level of cash holdings in Chinese firms is higher than those in other countries because of poor shareholder protection and political extraction. There is a positive relationship between political participation in China and cash reserve in regions with weaker institutions (Dittmar et al., 2003; Feng and Johansson, 2014; Guariglia and Yang, 2018). In addition, Lian et al. (2011) show that firms in China are precautious with their cash holdings especially during a crisis.

The second dependent variable, *Asset growth*, is the growth of companies' total assets which explains all possible use of cash flow (Guariglia et al., 2011). It seems that firms in China have had higher asset growth after China's economic reform. At the beginning of the 19th century, China started an economic reform that changed the country from a central planning economy toward a market-oriented economy. Chinese government attempts to develop the financial market and restructure the economy. It cannot be denied that high asset growth of Chinese firms is a result of the successful economic reform and its government (Mookerjee and Yu, 1995).

When firms are located in the same region and have similar characteristics, the values of some independent variables are similar such as the cash flow ratio, the capital expenditure ratio, leverage, cash flow volatility and dividend dummy variable. However, for some independent variables, there are differences between the two sub-samples. Average firm size in the first sub-sample is larger than those in the second sub-sample; in the manufacturing industry and the transportation and public industry, firms in the first sub-sample are larger than those in the second sub-sample. A higher net working capital ratio in the second sub-sample implies that firms have more funds to meet their current financial obligations. In addition, the values of Tobin's Q in both sub-samples have a right-skewed distribution. Table 3.2 shows that firms in the second sub-sample are more likely to acquire other firms than those in the first sub-sample because of business expansion strategies (Li and Qian, 2012).

Using the three-digit SIC level, there are 120,822 observations which are 709 observations in Crop and animal production, hunting and related service activities (SIC 01), 355 observations in Forestry and logging (SIC 02), 131 observations in Mining of metal ores (SIC 07), 123 observations in Other mining and quarrying (SIC 08), 142 observations in Mining support service activities (SIC 09), 888 observations in Manufacture of food product (SIC 10), 836 observations in Manufacture of tobacco products (SIC 12), 992 observations in Manufacture of textiles (SIC 13), 95 observations

in Manufacture of wearing apparel (SIC 14), 1,768 observations in Manufacture of leather and related products (SIC 15), 1,787 observations in Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials (SIC 16), 408 observations in Manufacture of paper and paper products (SIC 17), 6,289 observations in Manufacture of chemicals and chemical products (SIC 20), 133 observations in Manufacture of basic pharmaceutical products and pharmaceutical preparations (SIC 21), 2,710 observations in Manufacture of rubber and plastic products (SIC 22), 1,690 observations in Manufacture of other non-metallic mineral products (SIC 23), 1,055 observations in Manufacture of basic metals (SIC 24), 771 observations in Manufacture of fabricated metal products, except machinery and equipment (SIC 25), 1,996 observations in Manufacture of computer, electronic and optical products (SIC 26), 1,196 observations in Manufacture of electrical equipment (SIC 27), 12,013 observations in Manufacture of machinery and equipment n.e.c. (SIC 28), 735 observations in Manufacture of motor vehicles, trailers and semi-trailers (SIC 29), 3,013 observations in Manufacture of other transport equipment (SIC 30), 321 observations in Manufacture of furniture (SIC 31), 3,340 observations in Other manufacturing (SIC 32), 5,762 observations in Repair and installation of machinery and equipment (SIC 33), 12,543 observations in Electricity, gas, steam and air conditioning supply (SIC 35), 19,032 observations in Water collection, treatment and supply (SIC 36), 4,699 observations in Sewerage (SIC 37), 2,575 observations in Waste collection, treatment and disposal activities; materials recovery (SIC 38), 948 observations in Remediation activities and other waste management services (SIC 39), 458 observations in Construction of buildings (SIC 41), 587 observations in Civil engineering (SIC 42), 1,710 observations in Specialised construction activities (SIC 44), 727 observations in Wholesale and retail trade and repair of motor vehicles and motorcycles (SIC 45), 6 observations in Wholesale trade, except of motor vehicles and motorcycles (SIC 46), 1,538 observations in Retail trade, except of motor vehicles and motorcycles (SIC 47), 4,929 observations in Land transport and transport via pipelines (SIC 49), 4,074 observations in Water transport (SIC 50), 1,519 Air transport (SIC 51), 71 Warehousing and support activities for transportation (SIC 52), 1,414 observations in Postal and courier activities (SIC 53), 788 observations in Accommodation (SIC 55), 435 observations in Food and beverage service activities (SIC 56), 515 observations in Publishing activities (SIC 58), 871 observations in Motion picture, video and television programme production, sound recording and music publishing activities (SIC 59), 12 observations in Financial service activities, except insurance and pension funding (SIC 64), 65 observations in Insurance, reinsurance and pension funding, except compulsory social security (SIC 65), 53 observations in Activities auxiliary to financial services and insurance

activities (SIC 67), 1,165 observations in  Activities of head offices; management consultancy activities (SIC 70), 58 observations in Scientific research and development (SIC 72), 5,527 observations in Advertising and market research (SIC 73), 45 observations in Veterinary activities (SIC 75), 56 observations in Rental and leasing activities (SIC 76), 549 observations in Employment activities (SIC 78), 608 observations in Travel agency, tour operator and other reservation service and related activities (SIC 79), 675 observations in Security and investigation activities (SIC 80), 305 observations in Office administrative, office support and other business support activities (SIC 82), 31 observations in Public administration and defence; compulsory social security (SIC 84), 2 observations in Human health activities (SIC 86), 1,697 observations in Residential care activities (SIC 87), 37 observations in Creative, arts and entertainment activities (SIC 89), and 1,240 observations in Activities of extraterritorial organisations and bodies (SIC 99).

**[Table 3.3 is here]**

Next, Table 3.3 illustrates how firm characteristics vary with firm size. On average over the period from 1990 to 2019, the ratio of cash and short term investment to total assets in large firms is lower than the ratio in small firms for both sub-samples. For firms in the presidential and legislative electoral system, an average cash holdings ratio is 0.15 in large firms and 0.18 in small firms. In the assembly-elected presidential electoral system, large firms have an average cash holdings ratio of 0.18 which is lower than the ratio in small firms (0.22). A positively skewed distribution[6] implies that a majority of firms in each sub-sample holds a cash ratio lower than the average.

Turning to the main variable of interest in this chapter, the election dummy variable, Table 3.3 shows that there are 22% firms in the first sub-sample. Considering the second sub-sample, 13% (17%) of observations for large (small) firms are in election years. It can be seen that elections in a country with a presidential and legislative electoral system are held less often than elections in a country with an assembly-elected presidential electoral system.

The mean and median values of the cash flow ratio are insignificantly different. The mean and median values in the first sub-sample are in the range between 0.05 and 0.06. The cash flow ratio in the second sub-sample has a mean and a median of 0.06 in large firms and 0.07 in small firms. Likewise, means and medians of cash flow volatility are equal. On the other hand, the net working capital ratio, the capital expenditure ratio,

[6] The mean is higher than the median

leverage and the Q value all are positively skewed.

With regard to dividend payment, there are 38% (34%) of large (small) firms in the first sub-sample and 46% (32%) of large (small) firms in the second sub-sample paying dividend. This shows that large firms are more likely to pay a dividend to shareholders. Table 3.3 also shows that small firms in the first (second) sub-sample involve in more (fewer) acquisition activities than large firms; 6% (11%) of large (small) firms in the first sub-sample and 17% (5%) of large (small) firms in the second sub-sample acquire other firms. To test the equality of mean values, the p-values of the t-test between small and large firms within the electoral system are less than 0.01. In addition, the p-values of the t-test for the same size firms across the electoral system are zero except cash flow (0.0028). This concludes that there is the difference in the mean values of the variables statistically.

Looking into another dependent variable which is asset growth, in both sub-samples the average asset growth rate is higher in large firms, and the average asset growth rate in the first sub-sample is lower than in the second sub-sample. It suggests that asset growth in firms residing in the country with an assembly-elected presidential electoral system is higher than asset growth in other firms and this finding is consistent with Guariglia et al. (2011).

**[Table 3.4 is here]**

The mean value of corporate cash holdings around elections has been shown in table 3. Considering cash holdings in two sub-samples, the average cash holdings, which is measured by the ratio of cash to total assets, are 0.165 for the first sub-sample and 0.202 for the second sub-sample in non-election years, and 0.170 for the first sub-sample and 0.187 for the second sub-sample in election years. Comparing cash holdings in election and non-election years, the statistics show that there are a 3.03%[7] higher in cash holdings within the first sub-sample in election years and a 7.43%[8] reduction in the second sub-sample. These differences in cash holdings between non-election and election years point out that firms residing in a country with a presidential or legislative electoral system hold more cash during election periods, but firms residing in a country with an assembly-elected presidential electoral system hold less cash during election periods. These show that firms residing in a country having presidential and legislative elections become more cautionary in cash management during election periods, indicating that they are more sensitive to

[7] This is the difference between the mean of cash holdings in election years and that in non-election years divided by the mean of cash holdings in non-election years [(0.170-0.165)/0.165].
[8] Similar to the footnote 4, 7.43% = [(0.187-0.202)/0.202].

political uncertainty than those residing in a country with an assembly-elected presidential electoral system. A reason for the higher sensitivity observed in the first sub-sample can be that elections in presidential and legislative electoral systems can bring changes to countries. By contrast, a decrease in cash holdings during election periods of those residing in a country with an assembly-elected presidential election supports the grabbing hand hypothesis which suggests that firms predict the politicians winning the future election will take cash from them (Xu et al.,2016).

The second half of Table 3.4 presents that in the first (second) sub-sample the average asset growth rate is 0.068 (0.164) in non-election periods and 0.053 (0.168) in election periods. On average, asset growth in the first sub-sample decreases by 22.06%[9] during the election period relative to non-election years but in the non-election years the statistics indicate no significant pattern in asset growth in the second group. It can be concluded that political uncertainty impeded asset growth of firms residing in a country with a presidential or legislative electoral system. However, there is no evidence that firms in a country with an assembly-elected presidential electoral system will suffer or gain from political uncertainty in terms of asset growth.

**[Table 3.5 is here]**

Table 3.5 reports the averages of the cash holdings ratio and asset growth around the elections for both large and small firms in the two different electoral systems. In election years, the mean value of cash holdings in large firms (small firms) residing in a country with a presidential and legislative electoral system increases by 3.92%[10] (2.26%) compared to in non-election years. In contrast, the average cash holdings ratio in non-election years is 0.223 (0.184) in large (small) firms in China. This ratio plunges by 10.33% (7.17%) to 0.165 (0.207) in large (small) firms in election years. This finding suggests that the grabbing hand hypothesis holds in China.

Moving to asset growth around elections, table 5 summarises that, in a country with a presidential and legislative electoral system, the unconditional mean of asset growth significantly reduces by 27.06% in large firms and 14.55% in small firms during election years. In a country with an assembly-elected presidential electoral system, there is no evidence of the difference in large firms' asset growth between the election and non-

[9] 22.06% decline in the mean of asset growth in the first sub-sample is the difference between the mean value of asset growth in election years and that in non-election years relative to the mean value of asset growth in non-election years [(0.053-0.068)/0.068].

[10] According to Julio and Yook (2011), this chapter measures by using the mean of cash holdings ratio in election years less the mean of cash holdings ratio in non-election years, and over the mean of cash holdings ratio in non-election years (=(0.159-0.153)/0.153).

election period, but asset growth in small firms rises from 0.148 in non-election years to 0.162 in election years, equivalent to a 9.46% increase.

## 3.5 Empirical results

### 3.5.1 Political uncertainty and cash holdings

This section examines the relationship between cash holdings and elections and investigates whether this relationship varies with electoral systems. According to prior studies, political uncertainty motivates firms to reserve more cash. Moreover, firms in an assembly-elected presidential electoral system are expected to be less sensitive to political uncertainty than firms in a presidential and legislative electoral system. Even though the Chinese Communist Party (CCP) has a power to maintain its monopoly at provincial and country levels, it is undeniable that their work has contributed to the rapid economic growth of China over the past three decades (Bo, 1996; 2010). Furthermore, the section following Almeida et al. (2004) examines the cash flow sensitivity of cash to understand how firms' cash balance varies with cash flow.

**[Table 3.6 is here]**

Table 3.6 reports the estimation of Equation 5. The coefficients for firms residing in countries with presidential and legislative electoral systems (the first sub-sample) are shown in columns 1 and 2. Columns 3 and 4 report the results for firms residing in a country with an assembly-elected presidential electoral system (the second sub-sample). For the first sub-sample, after controlling for the effects of firm characteristics, the coefficient for *Election Year Dummy* is positive (0.020) and significant at the 1% significance level (see Column 1); the cash ratio in election years increases by 12.12%[11] relative to the average cash ratio in non-election year. By contrast, an insignificant coefficient for *Election Year Dummy* in column 3 shows that there is no significant association between political uncertainty caused by elections and changes in corporate cash holdings in a country with an assembly-elected presidential election.

With regard to the cash flow sensitivity of cash, coefficients for *cash flow to total assets* are significant and positive in all sub-samples, implying that firms tend to reserve more cash when cash flows are higher. A one-standard deviation increase in the cash flow-

[11] This magnitude is calculated by the coefficient for the election year dummy variable divided by the mean value of cash holdings in non-election years (0.020/0.165).

to-total assets ratio is associated with an increase of 0.29%[12] in the cash ratio in both sub-samples. These results are in line with the findings reported in prior studies (Almeida et al., 2004) that constrained firms facing negative shocks will increase their propensity to hold cash.

Columns 2 and 4 of Table 3.6 include the interaction between the election dummy variable and the cash flow ratio to assess the sensitivity of cash to accumulated cash flow during election periods. In particular, this result reinforces the cash flow sensitivity of cash. Column 2 presents that the interaction between the election year dummy variable and the ratio of cash flow-to-total assets has a positive and significant coefficient, indicating that the effect of cash flow on cash holdings is more pronounced during election periods. Coefficients indicates that if firms in a country with a presidential and legislative electoral system have an increase in the cash flow ratio in election years, their cash holdings will increase by 11.97%[13]. For example, a one-standard deviation increase in cash flow leads to an average increase of 14.49%[14] in cash holdings in an election year. It confirms that the marginal propensity to accumulate cash in firms residing in a country with presidential and legislative elections tend to be higher during election years. On the other hand, the negative and insignificant coefficient for the interaction between the election year dummy variable and the ratio of cash flow to total assets in Column 4 confirms that cash holdings in these firms are not significantly influenced by uncertainty caused by elections. As expected, the precautionary motive in firms residing in a country with a presidential and legislative electoral system can explain differences in the degree of the sensitivity of cash holdings to cash flow between non-election years and election years. Since firms are motivated to hold more cash from cash inflow during political uncertainty as a buffer against the uncertainty (Phan et al, 2019). In contrast, firms residing in a country with an assembly-elected presidential electoral system have lower precautionary saving motive because assembly-elected presidential election outcomes can be predicted before election outcomes are concluded.

[12] This chapter follows the calculation in the study of Phan et al. (2019). An increase of 0.2% is obtained from multiplying the coefficient for the ratio of cash flow to total assets with the standard deviation of the cash flow-to-total assets ratio. That is, a one-standard deviation increase in the cash flow-to-total asset ratio is associated with a growth of 0.286% [0.026×0.11] in cash balance in both sub-samples.

[13] Following Julio and Yook (2012), an increase of 12.03% is obtained from the sum between the product of the coefficient for the interaction between the cash flow ratio and the election dummy variable and the mean value of cash holdings and the coefficient for the election dummy variable, which is then divided by the mean value of cash holdings [((0.029×0.05)+0.019)/0.17].

[14] The sum between the mean of cash flow ratio (0.05) and its standard deviation (0.11) is multiplied by the coefficient for the interaction (0.029). Then, the coefficient for the election dummy variable (0.020) is added. Then, the total is divided by the mean of cash holdings (0.17). Thus, 14.49% comes from [((0.05+0.11)× /0.17].

Moreover, Table 3.6 reports a negative and significant effect of *firm size* on cash holdings. A one-standard deviation increase in size above its sample mean is associated with 0.022[15] and 0.013[16] percentage-point reductions in the cash ratio (see Columns 1 and 3). The result implies that firms will retain less cash when they become larger, consistent with the static trade-off theory that larger firms have a low probability of bankruptcy and are more diversified, less volatile and less vulnerable to financial distress so they can have smaller cash balance (Opler et al, 1999); Ferreira and Vilela, 2004; Al-Najjar and Belghitar, 2011).

The impact of *liquidity ratio* on the cash holdings is negative and statistically significant in both sub-samples because net working capital substitutes liquid assets and it is an internal source of finance. Because financially constrained firms will hold cash reserve for the need of future investment (Arslan et al., 2006), capital expenditure and acquisition activity have negative impacts on cash holdings as expected. The coefficients for the *capital expenditure ratio* in both sub-samples are significant and have the values in the range between –0.341 and –0.308, presenting that capital expenditure has a negative impact on corporate cash holdings. Moreover, the results point out that the economic effects of the precautionary motive on cash holdings are stronger than the investment channel (Phan et al., 2019). The coefficient *for the acquisition dummy variable* is negative and statistically significant at the 1% significance level in the second sub-sample but it is insignificant in the first sub-sample. Thus, firms in an assembly-elected presidential electoral system reduce the level of cash balance when they involve in an acquisition; whereas, in the presidential and legislative electoral system there is no significant difference in cash holdings between firms involving and not involving in an acquisition.

The effects of *leverage on the cash ratio* are negative as expected because leverage reflects the firm's ability to service their own debt and higher financial leverage can increase the likelihood of financial distress. The results support the trade-off theory that firms with high leverage use excess cash to reduce the level of debt. In other words, excess cash can be used to alleviate financial distress. (Ozkan and Ozkan, 2004; Al-Najjar and Belghitar, 2011). An increase in leverage by one standard deviation is related to a decline of 0.049% and 0.046%[17] in the cash ratio. The coefficients for *Tobin's Q* are positive and

[15] It is the product of coefficient for firm size (-0.007) and a standard deviation of firm size (3.19) (Phan et al.,2019).
[16] Similar to Footnote 15, this is a product of the coefficient for firm size (-0.009) and a standard deviation of firm size (1.39).
[17] They are the coefficients for the "leverage" variable multiplied by the standard deviation of leverage in each sub-sample, i.e. (-0.247x0.20) in the first sub-sample and (-0.271x0.17) in the second sub-sample.

significant, indicating that firms with high sales growth are more likely to have a large cash balance because of their expectation of future growth (Han and Qiu, 2007). Coefficients for *cash flow volatility* are positive and statistically significant. As a precautionary measure, firms in the industry with high idiosyncratic risk will reserve more cash. A one-standard deviation increase in cash flow volatility is associated with growth in the cash ratio of 0.784% in firms in a presidential and legislative electoral system and 1.205%[18] in firms in an assembly-elected presidential electoral system. Surprisingly, coefficients for the *dividend dummy variable* in both sub-samples are positive and significant, implying that firms with dividend payment are more likely to hold excess cash. To discuss more in-depth, this chapter divides sub-samples into four groups, as can be seen in Table 3.7.

**[Table 3.7 is here]**

In Table 3.7, the sample is split into large firms and small firms; the size of firm is classified by the median of firm size (real value) in each of the original two sub-samples. To calculate the median values, this chapter separates across economies and allows to switch size categories over time. The results for large firms are shown in columns 1 to 4 and the results for small firms are shown in columns 5 to 8. The results for firms residing in a country with a presidential and legislative electoral system are reported in columns 1-2 and 5-6; whereas, columns 3-4 and 7-8 report the results for firms residing in a country with an assembly-elected presidential electoral system. Faulkender (2002) documents that information asymmetry and costs of financial distress are key determinants of cash holdings in small firms. More precisely, the level of cash holdings in small firms is greater than in large firms due to economies of scale and a restricted access to external funds. The means of cash holdings ratio are 0.15 for large firms and 0.18 for small firms in the presidential and legislative electoral system, and are 0.18 for large firms and 0.22 for small firms in the assembly-elected presidential electoral system.

Table 3.7 confirms a positive and statistically significant effect of election uncertainty on cash holdings in firms in the presidential and legislative electoral system. The coefficient for the interaction between the election dummy variable and the cash flow ratio reported in columns 2 and 6 are statistically significant, indicating that in election years firms increase the propensity to reserve cash. More specifically, the coefficients for the interaction term imply that when firms residing in a country with a presidential and legislative electoral system and experience higher cash flow in election years, they will

[18] They are the product of the coefficient for cash flow volatility and the standard deviation of cash flow volatility, i.e. 0.779x0.01 in the first sub-sample and 1.205x0.01 in the second sub-sample.

increase the amount of cash reserve (by 10.35% for large firms and 12.86 %[19] for small firms). This result suggests that small firms residing in a country with a presidential and legislative electoral system are more likely to reserve cash from their cash flow than large firms because of precautionary reasons (Martinez-Carrascal, 2010).

In contrast, the coefficient for the election dummy variable is insignificant for the sub-sample of which firms are in an assembly-elected presidential electoral system. Interestingly, the coefficient for the cash flow ratio is positive and significant, supporting the pecking order theory that firms generating more cash flow from operation prefer to reserve a higher level of cash for future investment and precautionary motive with the exception of large firms residing in a country with an assembly-elected presidential electoral system. However, the coefficient for the cash flow ratio is positive (0.026) and significant at 10% level after adding the interaction term which has a negative and significant coefficient (-0.083). These results imply that cash holdings in large firms residing in China, on average, is not influenced by election but they would rather utilise cash flow to make investment in election years (Bao et al., 2012; Jebran et al., 2019). Xu et al. (2016) explain the helping and the grabbing hand hypotheses in China that officials help firms to seek for non-monetary compensations such as personal connection, political ties and political advancement opportunities, or they may look for monetary compensation by using their political power to take advantage from firms. As the compensation of Chinese officials is relatively lower than compensation to officials in other countries and the private industry in China, officials look for alternative compensation in monetary and non-monetary forms. The negative coefficient for the interaction term between the election dummy variable and the cash flow ratio in column 4 supports the study of Stulz (2005), Caprio et al (2013), Feng and Johansson (2014) and Xu et al. (2016) that firms in China will reserve less cash when they face political uncertainty. As cash and short-term investment are assets that can be the target of political extraction. To minimise political extraction, firms with financial instability keep small cash balance when facing political uncertainty. Firms with strong twin agency conflicts, which are associated with corporate insiders and state rulers, are more likely to hold smaller cash balance during political uncertainty periods too. This finding implies that twin agency conflicts bring about a strategic precautionary response of firms because they believe in a grabbing hand from newly appointed officials.

[19] It is the product of the coefficient for an interaction and the mean of cash flow ratio in large firms, plus the coefficient for the election dummy variable, and then divided by the mean of cash holdings in large firms.

Table 3.7 shows that coefficients for the dividend dummy variable are negative and statistically significant as can be seen in columns 1 and 2 and they are positive and statistically significant in columns 3 – 8. In contrast, small firms may reduce their dividend payment when they face cash shortage (see columns 5-6). If firms have to pay dividends, they will accumulate a large amount of excess cash to avoid cash shortage so that they can continue paying dividend and protect their own reputation among investors (Ferreira and Vilela, 2004; Saddour, 2006; Al-Najjar and Belghitar, 2011). Sher (2014) explains that dividend payments come from corporate cash holdings and they cause a short-term decline in cash holdings. Nevertheless, dividend payments generate liquidity and cash stock in the long run. For firms in the assembly-elected presidential electoral system of which results are shown in columns 3-4 and 7-8, the positive coefficients are statistically significant, proposing that dividend-paying firms in China hold less cash. Opler et al. (1999) and Wang (2009) explain that the level of cash holdings is significantly related with the level of financial access limitation; companies with a limited access to financial resources hold more cash than those without limitation in financial access. Under some restrictions such as the mandatory dividend policy in China, firms rely more on internal cash flow for financing. In the nutshell, dividend-paying firms in China need to reserve more cash due to the obligation to dividend pay-out.

## 3.6 Additional test and Robustness check

### 3.6.1 Additional test: Asset growth

With the possible endogeneity of regressors, this chapter applies the first-difference Generalized Method of Moments technique as a simple dynamic equation to examine the effect of the availability of internal finance on asset growth during election periods. According to the Arellano-Bond framework (Arellano and Bond, 1991), the data are transformed into first differences. All explanatory variables are treated as endogenous and the data add the second up to the seventh lags of the regressors as instruments in the first-difference GMM equations.

This chapter uses the Hansen J overidentification test to test the exogeneity of instruments and confirm the validity of the assumption that there is no correlation between instruments and residuals (Ductor and Grechyna, 2015).

As discussed in Carpenter and Peterson (2002), Guariglia et al. (2011), and Guariglia and Mizen (2012), the availability of internal finance can affect the growth of most small firms because they face external finance which is much more expensive than

internal finance. Moreover, Guariglia et al. (2011) and Guariglia and Mizen (2012) explain that increasing cash flow leads to a proportional rise in the amount of assets. In addition, higher-cash flow firms tend to have a higher value of collateral as they face a less difficulty to obtain loans. In the presence of a rise in cash flow, financially constrained firms can have their assets grow with a relatively higher rate. Hence, the coefficient of cash flow, $\beta_2$, should be one or slightly greater than one for small firms. In contrast, financially unconstrained firms are more likely to use external finance and the coefficient of cash flow are expected to be less than one. Unlike the previous studies, this chapter focuses on corporate resilience to political uncertainty and explores whether firms use all internal funding to boost asset growth during election periods. The model is as follows:

$$A_{ijt} = \beta_0 A_{ij,t-1} + \beta_1 Q_{ijt} + \beta_2 \left(\frac{Cashflow}{TA}\right)_{ijt} + \beta_3 ElectionDummy_{jt} + \beta_4 Size_{ijt} + \beta_5 \left(\frac{NWC}{TA}\right)_{ijt} + \beta_6 \left(\frac{CAPEX}{TA}\right)_{ijt} + \beta_7 Leverage_{ijt} + v_t + v_i + \varepsilon_{ijt} \quad (7)$$

where $A_{ijt}$ is the growth of total assets in firm $i$, which is located in country $j$, in year $t$. There are three components of residuals: $v_i$ is a firm-specific time-invariant effect that reflects the influence of firm characteristics on asset growth, $v_t$ is a time-specific effect, and $\varepsilon_{ijt}$ is an idiosyncratic component. Following Guariglia (2008, this chapter controls for $v_i$ by estimating equation in first-differences and for $v_t$ by adding time dummies in all specifications.

Moreover, the interaction term between the election dummy and the ratio of cash flow-to- total assets is added in the following equation to capture the difference in the effects of the availability of internal finance between non-election and election periods. The model is rewritten as follows:

$$A_{ijt} = \beta_0 A_{ij,t-1} + \beta_1 Q_{ijt} + \beta_2 \left(\frac{Cashflow}{TA}\right)_{ijt} + \beta_3 ElectionDummy_{jt} + \beta_4 ElectionDummy_{jt} \times \left(\frac{Cashflow}{TA}\right)_{ijt} + \beta_5 Size_{ijt} + \beta_6 \left(\frac{NWC}{TA}\right)_{ijt} + \beta_7 \left(\frac{CAPEX}{TA}\right)_{ijt} + \beta_8 Leverage_{ijt} + v_t + v_i + \varepsilon_{ijt} \quad (8)$$

### 3.6.2 Extended analysis: Political uncertainty and asset growth

According to the studies of Carpenter and Peterson (2002) and Guariglia et al. (2011), the cost of external finance is more expensive than internal finance. Financially constrained firms therefore prefer using internal finance to external finance. Banks normally use the borrowing firm's cash flow to evaluate corporate liquidity and the ability to pay debt, so firms with higher cash flow will have more opportunity to get loans. Hence, the coefficient for the cash flow ratio in Equation 7, $\beta_2$, is expected to be marginally greater than one. In contrast, firms with good financial health have easier access to external finance and a change in their internal finance does a small impact on growth.

**[Table 3.8 is here]**

Table 3.8 reports the effect of the availability of internal finance on firms' asset growth during election periods for the two sub-samples. Columns 1 and 2 report the results for firms in countries with a presidential and legislative electoral system and Columns 3 and 4 present the results for firms in China which has an assembly-elected presidential electoral system. The coefficient for asset growth in the previous period is negative for all sub-samples, but only statistically significant for the first sub-sample. Considering the coefficient for the election dummy variable, the coefficient for firms in the presidential and legislative electoral system is negative and significant whereas Chinese firms has a negative but insignificant coefficient.

The estimates for firms residing in countries with presidential and legislative elections also shows a 22.06%[20] decrease in asset growth in election periods relative to non-election periods. It can imply that political uncertainty in presidential and legislative electoral systems lead to a decrease in asset growth for firms residing in countries with such elections. The coefficient for the ratio of cash flow to total assets is significant and positive for all sub-samples. The result suggests that the use of internal finance can help firms boost the growth of their assets during election periods. The first sub-sample exhibits a larger coefficient (1.015) than another sub-sample (0.327); the result can imply that an ability to generate profit is more important for asset growth in firms residing in countries with presidential and legislative elections than in firms residing in countries with assembly-elected presidential elections.

Carpenter and Peterson (2002) explain the coefficient for the cash flow-to-total assets ratio of which value is slightly more than one that firms are likely to use their internal

[20] It is the difference between the means of asset growth in election years and non-election years divided by the mean value of asset growth in non-election years [(0.053-0.068)/0.068].

funds to generate their growth because in their view external finance is more costly than internal finance. An increase in cash flow will lead to a proportional rise of the firm's assets. However, asset growth could be slightly greater than growth in cash flow because a higher cash flow which leads to a lower difficulty of firms to obtain loans. Following Guariglia et al. (2011), this chapter tests whether there is a one-to-one relationship between firms' asset growth and the cash flow ratio. The result shows that firms residing in countries with presidential and legislative elections are more likely to use their internal funds to finance their business operation and investment. The sample of Chinese firms includes both private firms and state-owned enterprises. Considering the stated-owned Chinese firms which could receive financial support from government or state-owned banks, their growth is not likely to depend on their own profit-generating capacity as much as the growth of firms residing in countries with presidential and legislative elections (Guariglia et al., 2011). This implies that firms residing in countries with presidential and legislative elections are more likely to face financing constraints as compared to firms residing in countries with assembly-elected presidential elections.

Firm size has a positive relationship with asset growth regardless of the electoral system adopted in the country, but there is a slight difference in magnitude. For the country with assembly-elected presidential elections, the effect of firm size is larger. Likewise, the coefficient for capital expenditure is positive and significant in all sub-samples. A larger coefficient for capital expenditure in the estimate for the first sub-sample implies that investment is important for boosting asset growth in firms residing in countries with presidential and legislative elections more than in firms residing in China.

Net working capital has a significant and negative association with asset growth for firms residing in China while no such association is found for firms residing in countries with presidential and legislative elections. Net working capital is a measure of firm's liquidity; according to the trade-off theory, firms may convert liquid assets into cash which will then be used for investment (Duchin, 2010; Opler et al., 1999; Ozkan and Ozkan, 2004; Guariglia and Mizen, 2012; Jebran, 2019). Hence, the negative relationship between net working capital and asset growth implies that firms convert their liquid assets into cash and make investment that generates asset growth.

Leverage also has a significant negative effect on asset growth for firms residing in China; in contrast, such effect is insignificant for firms residing in countries with presidential and legislative elections. It may be because firms residing in countries with

presidential and legislative elections prefer using internal funds to external funds and their growth relies much on their own capability of generating profit.

Both sub-samples present a significant and positive coefficient for Tobin's Q, indicating that higher future investment opportunities can induce higher asset growth. However, the result shows a larger coefficient for firms residing in China (0.167); the coefficient for firms residing in countries with presidential and legislative elections is 0.122. The magnitude of coefficient is inconsistent with the study of Almeida et al. (2004) who find that investment opportunities only matter to constrained firms. Moreover, since there are several types of firms in China and some of them are private firms which tend to face financial constraints, and higher future investment opportunities can drive asset growth of these firms. The interaction between the election year dummy variable and cash flow is added to the model to investigate the effect of internal finance on asset growth during election periods. As reported in columns 2 and 4, the coefficient for the interaction term is insignificant.

**[Table 3.9 is here]**

In Table 3.9, the results are reported for (i) large firms in countries with presidential and legislative elections, (ii) large firms in a country with assembly-elected presidential elections, (iii) small firms in countries with presidential and legislative elections; and (iv) small firms in a country with assembly-elected presidential elections. The result exhibits a negative coefficient for asset growth in the previous period for all sub-samples; there is a significant lagged effect in small firms regardless of the electoral system adopted in their country, but the effect is insignificant for large firms in a country with assembly-elected presidential elections. The coefficient for the election year dummy variable indicates whether firms' growth is susceptible to the uncertainty during elections. The coefficient is negative for all samples but it is insignificant for small firms in a country with assembly-elected presidential elections. The results suggest that political uncertainty caused by elections affects large firms in the sample regardless of the electoral system and that the uncertainty can lower the growth of their assets. The growth of small firms is significantly affected only in presidential and legislative electoral systems.

Focusing on firm characteristics, cash flow's coefficient is positive and significant for all sub-samples. As discussed by Carpenter and Peterson (2002), small firms have a difficulty to access external finance because information asymmetry between firms and suppliers of external funds. Since corporate investment uses internal finance to increase company's growth, the growth of small firms depends on the availability of internal

finance. The cash flow's coefficient with a value of slightly more than one indicates that firms are likely to face a financial constraint and most of financially constrained firms are small firms. Interestingly, small firms in countries with presidential and legislative elections have the largest coefficient for cash flow, with a slightly more than one, (1.176 in column 5). After adding the interaction between the election year dummy variable and the cash flow ratio in column 7, the coefficient for the cash flow ratio increases to 1.245 and the coefficient for the interaction term is -0.200 which is significant at the 10% significance level. The only one subsample that has a significant coefficient for the interaction term is small firms in presidential and legislative; the use of cash flow in small firms located in countries with a presidential and legislative electoral system can build up their assets proportionately[21] in election years. Furthermore, the result can be explained by the argument of Guariglia and Mizen (2012) that a firm with cash flow's coefficient being significant and greater than one has growth reliant on the firm's ability to generate profit. For financially constrained firms, cost of external finance is more expensive than internal finance, so they prefer to use internal funds to generate their growth and the capability of generating profit is important to these firms. With the largest coefficient, smalls firms in a country with presidential and legislative elections are considered to have more financial constraint than other firms and their growth relies much on their ability to generate profit as they are more likely to use their internal funds to finance their business and investment.

Considering small firms in a country with assembly-elected presidential elections, the coefficient for cash flow is positive and small (0.243 in column 7); this might be as a result of soft budget constraint that firms residing in China may experience. Moreover, some type of firms in China (for instance, state-owned enterprises) usually get loans from state-owned banks (Guariglia et al., 2011), so these firms will not much rely on internal funds. Particularly, small firms in China have the smallest and least significant coefficient for cash flow. The coefficient for firm size is strongly significant and positive in all cases and all present a similar magnitude, suggesting that firm size is positively associated with firms' asset growth.

The coefficient for capital expenditure is significant and positive for all sub-samples and is much larger than firm size's coefficient, with the values being slightly greater than one. Hence, the impact of investment on firm growth is larger than the impact of firm size. Net working capital's coefficient has a negative sign and is only significant for small firms in a country with assembly-elected presidential elections. The result

[21] If the cash flow ratio increases by one, asset growth will change by 1.045 (=1.245+(-0.200)).

indicates that these firms tend to use their liquid assets to build their asset growth. The result is consistent with the findings of Chow and Fung (1998, 2000) who study the effect of firms' liquidity on fixed investment in small and large manufacturing firms located in Shanghai. They report an interesting finding that small firms in their sample are likely to experience less liquidity constraint as compared to larger firms. They further explain that this might be as a result of the several firm types in their sample; small firms that are non-state owned and have high growth may use their working capital to invest in order to boost their growth.

Leverage has a significant negative association with asset growth in both large and small firms residing in China whereas no significant association is found for firms in countries with presidential and legislative elections. This result confirms the previous results in Table 3.6 that growth of firms in countries with presidential and legislative elections does not depend on the ability to service debts. The coefficient associated with Tobin's Q is positive and significant for all sub-samples. Therefore, no matter firm size, higher future investment opportunities lead to higher firms' asset growth.

Columns 2, 4, 6 and 8 of Table 3.9 report coefficients for the interaction between election year dummy variable and cash flow. The coefficient is negative and significant for small firms in countries with presidential and legislative elections, but are positive and insignificant for the other three sub-samples. That is, the results show the relationship between firms' asset growth and internal finance during election periods only for small firms residing in countries with presidential and legislative elections. It implies that in election years these small firms utilise internal finance to expand their asset growth.

### 3.6.3 Alternative measures of cash holdings and addressing corporate tax issue

This section tests for the robustness of the results shown in Section 5. To confirm that the baseline results do not suffer from heterogeneity and the use of cash holdings' definition introduced by Palazzo (2012), the cash holdings variable is changed from the cash and short-term investment-to-total assets ratio to the cash-to-assets ratio.

In addition, corporate tax variable is added as another control variable. The literature documents that corporate tax affects the decision of corporates on cash holdings. If firms suffer from higher tax rates or repatriation tax, they are more likely to hold a large amount of cash rather than liquidate their assets (Hartzell et al, 2006; Foley et al., 2007; Anjum and Malik, 2013). For example, a firm affiliating in a country with a lower tax rate and a higher repatriation tax are unwilling to bring foreign profit back to domestic (Sanchez

and Yurdagul, 2013). This section employs the data on corporate tax rates over the period from 2003 to 2018 (KPMG, 2020) which can capture how fiscal policy influences cash holdings. Tax, as measured by income tax rates for each country in any given years, is expected to have a negative relationship with cash holdings.

**[Table 3.10 is here]**

The results in Table 3.10 are consistent with the aforementioned finding in Table 3.6. Firms in a presidential and legislative electoral system is more precautionary than those in an assembly-elected presidential electoral system and thus hold a larger cash balance. It is expected that the impact of elections on cash holdings remains positive and statistically significant in a presidential and legislative electoral system and insignificant in an assembly-elected presidential electoral system. Specifically, the coefficient for the interaction between the election year dummy variable and the cash flow ratio is statistically significant in both sub-samples. This confirms that firms in a presidential and legislative electoral system hold more cash when there is an increase in cash flow during election periods. Whereas, firms in an assembly-elected presidential electoral system react to political uncertainty by holding smaller cash balance. This finding supports the grabbing hand hypothesis of Xu et al. (2016) that new officials will extract resources from firms for their personal benefits. Hence, firms in an assembly-elected presidential electoral system are less likely to reserve cash during election periods. As expected, increasing tax is negatively associated with accumulation of cash holdings in firms in a presidential and legislative electoral system. Simone et al. (2019) explain that firms tend to maximise tax benefits and a growth of excess global cash is driven by changing foreign cash. In contrast, a positive relationship between cash holdings and tax in china can be explained by tax aggressiveness, which is a company's attempt to reduce its tax bill by engaging in aggressive tax planning and avoidance actions (Chen et al., 2006).payment through aggressive tax planning and avoidance activities.

**[Table 3.11 is here]**

The results in Table 3.11 are different from the results in Table 3.7. When considering large firms and small firms separately, the interaction effect is different between large and small firms in an assembly-elected presidential electoral system. However, Table 3.11 reports that results continue to be statistically significant after changing definition of cash holdings and adding corporate tax. Therefore, the main findings are robust.

### 3.6.4 Alternative measures of asset growth

In this section, alternative measures of asset growth and the first lag of the regressors as instruments are applied.

**[Table 3.12 is here]**

Following Carpenter and Peterson (2002) and Guariglia et al. (2011), cash and cash equivalents have been removed from the model in order to eliminate the effect of cash flow volatility resulting from the instability of cash and cash equivalents. In addition, there is a change in instruments of the model – that is the third up to the sixth lags of the regressors as instruments. Table 3.12 reports the results of regression of Equations (7) and (8) after removing cash and cash equivalents. The results are similar to the main findings in Table 3.8. As expected, the coefficient for the ratio of cash flow to total assets is still significant and positive with the value being greater than one for firms residing in countries with presidential and legislative elections. This confirms that firms residing in countries with presidential and legislative elections are likely to face financing constraints and use their internal funds to finance their investment. In addition, their higher cash flow could possibly lead to more than one-for-one growth in asset. The result is robust even removing cash and cash equivalents from the calculation of asset growth. The cash flow's coefficient for firms residing in China is still being significant and positive with the value less than one.

**[Table 3.13 is here]**

Unlike Table 3.12, Table 3.13 investigates the effects in large and small firms in separate models. Similar to the findings reported in Section 5, the cash flow's coefficient for small firms in a country with presidential and legislative elections is the largest and positive. This confirms the findings that small firms in a country with presidential and legislative elections are more financially constrained than other firms in the sample and they tend to use their internal funds to generate growth. Unlike small firms in a country with presidential and legislative elections, small state-owned enterprises do not much rely on internal funds as some of them are usually able to get loan from state-owned banks in China. Like the result shown in Section 5, the coefficient for cash flow has the smallest value with positive sign for small firms in China. To consider the interaction between political uncertainty and cash flow, the result shows a significant coefficient only for small firms residing in countries with presidential and legislative elections, consistent with the findings in Section 5. This indicates that small firms residing in countries with presidential and legislative elections utilize their internal funds to invest on non-current and current assets in order to generate firms' growth during election periods. This confirms that, during

election periods, only asset growth of small firms residing in countries with presidential and legislative elections is affected by the availability of internal finance.

## 3.7 Concluding remarks

Political uncertainty can be represented by economic policy uncertainty which is based on newspapers coverage frequency (Baker et al., 2016) and the electoral uncertainty. Flourish literature on political uncertainty and cash holdings has mainly considered how political uncertainty in the context of economic policy uncertainty influences cash holdings (Demir and Ersan, 2017; Duong et al., 2017; Phan et al., 2019). Following prior studies (e.g. Julio and Yook, 2012; Xu et al., 2016; Bircan and Saka, 2018), this chapter employs national election as a proxy of political uncertainty to explore whether political uncertainty can cause corporates to change their cash holdings and affect asset growth by using the data of eight countries which are China, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan (China) and Thailand. The data analysed covers the period from 1990 to 2018. Therefore, the main contributions of this chapter extend the literature on political uncertainty and corporate cash holdings and study the effect of political uncertainty on firms' asset growth.

This chapter, for the first time, compares the impacts of national elections on corporate behaviour in China and in other countries. In line with existing studies on the effects of elections (e.g. Julio and Yook, 2012) especially on the cash flow sensitivity of cash (Almeida et al., 2004), results indicate that levels of cash holdings in firms residing in Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan (China) and Thailand are more sensitive to national elections than those in China. The uncertainty of election outcomes in China is relatively less than in other sample countries. Without political uncertainty, results support the study of Almeida et al. (2004) that a financially constrained firm tends to reserve more cash from its cash flow. In addition, the empirical findings show that firms residing in Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan and Thailand hold a larger cash balance during election periods as a precaution against uncertainty. In contrast, large firms in China alleviate a grabbing hand problem by lowering the cash-to-cash flow ratio during election periods.

Unlike previous studies, this chapter bridges the ideas of political uncertainty, the cash flow sensitivity of cash and the internal finance theory of growth (Carpenter and Peterson, 2002). Considering the impact of political uncertainty on firms' asset growth, this chapter finds that only small firms residing in Indonesia, Korea, Malaysia, the

Philippines, Singapore, Taiwan and Thailand use internal finance to expand their business during election periods.

To sum up, this chapter provides shreds of evidence that the impacts of political uncertainty on corporate behaviour vary with the electoral system adopted in the country. In other words, firms will use a precautionary measure such as holding more cash when they face higher uncertainty and small firms will use internal finance to expand their business in such circumstance.

## 3.8 Tables

Table 3.1: Political systems and election types

The table presents political system and number of elections for eight economies between 1990 and 2018

| Country | Number of observations | Type of Electoral systems | Number of Elections |
|---|---|---|---|
| China (Mainland) | 41,274 | Assembly-Elected Presidential | 6 |
| Indonesia | 5,627 | Presidential | 3 |
| South Korea | 15,364 | Presidential | 6 |
| Malaysia | 14,509 | Legislative | 7 |
| Philippines | 2,520 | Presidential | 5 |
| Singapore | 9,643 | Legislative | 6 |
| Taiwan (China) | 24,196 | Presidential | 6 |
| Thailand | 7,689 | Legislative | 8 |

Table 3.2: Summary of statistics for all variables by type of electoral systems

The table presents number of observations, mean, standard deviation, minimum, maximum, 25th percentile, median and 75th percentile for firm characteristics in two types of elections.

| Type of Electoral systems | Variables | Obs. | Mean | Median | Min | Max | St.dev |
|---|---|---|---|---|---|---|---|
| Presidential and Legislative | Cash/Total assets | 79,548 | 0.17 | 0.12 | 0.00 | 0.71 | 0.15 |
| | Election Year Dummy | 79,548 | 0.22 | 0.00 | 0.00 | 1.00 | 0.42 |
| | Cash flow/Total assets | 79,548 | 0.05 | 0.06 | -0.45 | 0.32 | 0.11 |
| | Size | 79,548 | 8.61 | 7.99 | 3.09 | 15.98 | 3.19 |
| | Net working capital/Total assets | 79,548 | 0.68 | 0.66 | 0.09 | 1.68 | 0.34 |
| | Capital expenditure/Total assets | 79,548 | 0.05 | 0.03 | 0.00 | 0.30 | 0.06 |
| | Leverage | 79,548 | 0.24 | 0.21 | 0.00 | 0.87 | 0.20 |
| | Q | 79,548 | 0.12 | 0.06 | -0.73 | 2.88 | 0.45 |
| | Cash flow volatility | 79,548 | 0.03 | 0.03 | 0.01 | 0.28 | 0.01 |
| | Dividend Dummy | 79,548 | 0.36 | 0.00 | 0.00 | 1.00 | 0.48 |
| | Acquisition Dummy | 79,548 | 0.09 | 0.00 | 0.00 | 1.00 | 0.28 |
| | Asset growth | 79,548 | 0.06 | 0.04 | -0.74 | 1.19 | 0.26 |
| Assembly-Elected Presidential | Cash/Total assets | 41,274 | 0.20 | 0.16 | 0.00 | 0.71 | 0.14 |
| | Election Year Dummy | 41,274 | 0.15 | 0.00 | 0.00 | 1.00 | 0.36 |
| | Cash flow/Total assets | 41,274 | 0.07 | 0.06 | -0.45 | 0.32 | 0.08 |
| | Size | 41,274 | 7.74 | 7.60 | 3.09 | 14.70 | 1.39 |
| | Net working capital/Total assets | 41,274 | 0.73 | 0.71 | 0.09 | 1.68 | 0.32 |
| | Capital expenditure/Total assets | 41,274 | 0.06 | 0.04 | 0.00 | 0.30 | 0.06 |
| | Leverage | 41,274 | 0.20 | 0.18 | 0.00 | 0.87 | 0.17 |
| | Q | 41,274 | 0.21 | 0.13 | -0.73 | 2.88 | 0.45 |
| | Cash flow volatility | 41,274 | 0.03 | 0.03 | 0.01 | 0.20 | 0.01 |
| | Dividend Dummy | 41,274 | 0.39 | 0.00 | 0.00 | 1.00 | 0.49 |
| | Acquisition Dummy | 41,274 | 0.12 | 0.00 | 0.00 | 1.00 | 0.32 |
| | Asset growth | 41,274 | 0.16 | 0.13 | -0.74 | 1.19 | 0.27 |

Table 3.3: Summary of statistics for all variables by electoral systems and firm size

The table presents descriptive statistics for large and small firms in two different types of elections.

| Firm Size | Type of Electoral systems | Variable | Obs. | Mean | Median | Min | Max | St.dev |
|---|---|---|---|---|---|---|---|---|
| Large firms | Presidential and Legislative | Cash/Total assets | 40,171 | 0.15 | 0.12 | 0.00 | 0.71 | 0.13 |
| | | Election Year Dummy | 40,171 | 0.22 | 0.00 | 0.00 | 1.00 | 0.41 |
| | | Cash flow/Total assets | 40,171 | 0.06 | 0.06 | -0.45 | 0.32 | 0.09 |
| | | Size | 40,171 | 11.17 | 11.11 | 7.96 | 15.98 | 2.28 |
| | | Net working capital/Total assets | 40,171 | 0.67 | 0.65 | 0.09 | 1.68 | 0.32 |
| | | Capital expenditure/Total assets | 40,171 | 0.05 | 0.03 | 0.00 | 0.30 | 0.05 |
| | | Leverage | 40,171 | 0.27 | 0.26 | 0.00 | 0.87 | 0.20 |
| | | Q | 40,171 | 0.13 | 0.06 | -0.73 | 2.88 | 0.41 |
| | | Cash flow volatility | 40,171 | 0.03 | 0.03 | 0.01 | 0.22 | 0.01 |
| | | Dividend Dummy | 40,171 | 0.38 | 0.00 | 0.00 | 1.00 | 0.48 |
| | | Acquisition Dummy | 40,171 | 0.06 | 0.00 | 0.00 | 1.00 | 0.24 |
| | | Asset growth | 40,171 | 0.08 | 0.05 | -0.74 | 1.19 | 0.24 |
| Large firms | Assembly-Elected Presidential | Cash/Total assets | 21,933 | 0.18 | 0.15 | 0.00 | 0.71 | 0.13 |
| | | Election Year Dummy | 21,933 | 0.13 | 0.00 | 0.00 | 1.00 | 0.34 |
| | | Cash flow/Total assets | 21,933 | 0.06 | 0.06 | -0.45 | 0.32 | 0.06 |
| | | Size | 21,933 | 8.73 | 8.43 | 7.50 | 14.70 | 1.07 |
| | | Net working capital/Total assets | 21,933 | 0.73 | 0.71 | 0.09 | 1.68 | 0.32 |
| | | Capital expenditure/Total assets | 21,933 | 0.06 | 0.04 | 0.00 | 0.30 | 0.05 |
| | | Leverage | 21,933 | 0.23 | 0.22 | 0.00 | 0.87 | 0.17 |
| | | Q | 21,933 | 0.22 | 0.14 | -0.73 | 2.88 | 0.46 |
| | | Cash flow volatility | 21,933 | 0.03 | 0.03 | 0.01 | 0.19 | 0.01 |
| | | Dividend Dummy | 21,933 | 0.46 | 0.00 | 0.00 | 1.00 | 0.50 |
| | | Acquisition Dummy | 21,933 | 0.17 | 0.00 | 0.00 | 1.00 | 0.38 |
| | | Asset growth | 21,933 | 0.18 | 0.13 | -0.74 | 1.19 | 0.26 |
| Small firms | Presidential and Legislative | Cash/Total assets | 39,377 | 0.18 | 0.13 | 0.00 | 0.71 | 0.16 |
| | | Election Year Dummy | 39,377 | 0.22 | 0.00 | 0.00 | 1.00 | 0.42 |
| | | Cash flow/Total assets | 39,377 | 0.05 | 0.06 | -0.45 | 0.32 | 0.12 |
| | | Size | 39,377 | 6.00 | 6.26 | 3.09 | 7.95 | 1.34 |
| | | Net working capital/Total assets | 39,377 | 0.70 | 0.66 | 0.09 | 1.68 | 0.35 |
| | | Capital expenditure/Total assets | 39,377 | 0.04 | 0.02 | 0.00 | 0.90 | 0.06 |
| | | Leverage | 39,377 | 0.20 | 0.16 | 0.00 | 0.87 | 0.19 |
| | | Q | 39,377 | 0.11 | 0.04 | -0.73 | 2.88 | 0.48 |
| | | Cash flow volatility | 39,377 | 0.03 | 0.03 | 0.01 | 0.28 | 0.01 |
| | | Dividend Dummy | 39,377 | 0.34 | 0.00 | 0.00 | 1.00 | 0.48 |
| | | Acquisition Dummy | 39,377 | 0.11 | 0.00 | 0.00 | 1.00 | 0.32 |
| | | Asset growth | 39,377 | 0.05 | 0.03 | -0.74 | 1.19 | 0.28 |
| Small firms | Assembly-Elected Presidential | Cash/Total assets | 19,341 | 0.22 | 0.18 | 0.00 | 0.71 | 0.16 |
| | | Election Year Dummy | 19,341 | 0.17 | 0.00 | 0.00 | 1.00 | 0.38 |
| | | Cash flow/Total assets | 19,341 | 0.07 | 0.07 | -0.48 | 0.32 | 0.09 |
| | | Size | 19,341 | 6.62 | 6.76 | 3.10 | 7.49 | 0.66 |
| | | Net working capital/Total assets | 19,341 | 0.74 | 0.72 | 0.09 | 1.68 | 0.32 |
| | | Capital expenditure/Total assets | 19,341 | 0.06 | 0.04 | 0.00 | 0.30 | 0.06 |
| | | Leverage | 19,341 | 0.17 | 0.13 | 0.00 | 0.87 | 0.17 |
| | | Q | 19,341 | 0.19 | 0.13 | -0.73 | 2.88 | 0.44 |
| | | Cash flow volatility | 19,341 | 0.03 | 0.03 | 0.01 | 0.20 | 0.01 |
| | | Dividend Dummy | 19,341 | 0.32 | 0.00 | 0.00 | 1.00 | 0.46 |
| | | Acquisition Dummy | 19,341 | 0.05 | 0.00 | 0.00 | 1.00 | 0.22 |
| | | Asset growth | 19,341 | 0.15 | 0.13 | -0.74 | 1.19 | 0.27 |

Table 3.4: Means of cash holdings and asset growth by electoral systems

Panel A presents summary of statistics for cash holdings of firms residing in two different types of elections in both election years and non-election years. Panel B presents summary of statistics for asset growth of firms residing in two different types of elections in both election years and non-election years.

| **Panel A: Means cash holdings in election years vs non election years** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Presidential and Legislative | | | | Assembly-Elected Presidential | | | |
| | Obs | Mean | Median | Std.dev | Obs | Mean | Median | Std.dev |
| Non election years | 61,956 | 0.165 | 0.121 | 0.147 | 35,035 | 0.202 | 0.164 | 0.145 |
| Election years | 17,592 | 0.170 | 0.122 | 0.150 | 6,239 | 0.187 | 0.153 | 0.135 |
| Difference | | -0.005 | | | | 0.015 | | |
| Diff (t stat) | | -3.66 | | | | 7.62 | | |
| **Panel B: Means asset growth in election years vs non election years** | | | | | | | | |
| | Presidential and Legislative | | | | Assembly-Elected Presidential | | | |
| | Obs | Mean | Median | Std.dev | Obs | Mean | Median | Std.dev |
| Non election years | 61,956 | 0.068 | 0.041 | 0.262 | 35,035 | 0.164 | 0.127 | 0.268 |
| Election years | 17,592 | 0.053 | 0.028 | 0.257 | 6,239 | 0.170 | 0.139 | 0.258 |
| Difference | | 0.015 | | | | -0.006 | | |
| Diff (t stat) | | 7.05 | | | | -1.30 | | |

Table 3.5: Means of cash holdings and asset growth by electoral systems and firm size

Panel A presents a summary of statistics for cash holdings of large and small firms residing in two different types of electoral systems in both election years and non-election years. Panel B presents a summary of statistics for asset growth of large and small firms residing in two different types of electoral systems in both election years and non-election years.

| **Panel A: Means cash holdings in election year vs non election years** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Large firms | | | | | | | | |
| | Presidential and Legislative | | | | Assembly-Elected Presidential | | | |
| | Obs | Mean | Median | Std.dev | Obs | Mean | Median | Std.dev |
| Non election years | 31,525 | 0.153 | 0.115 | 0.133 | 18,981 | 0.184 | 0.151 | 0.128 |
| Election years | 8,646 | 0.159 | 0.117 | 0.136 | 2,952 | 0.165 | 0.137 | 0.116 |
| Difference | | -0.006 | | | | 0.019 | | |
| Diff (t stat) | | -3.56 | | | | 7.64 | | |
| Small firms | | | | | | | | |
| | Presidential and Legislative | | | | Assembly-Elected Presidential | | | |
| | Obs | Mean | Median | Std.dev | Obs | Mean | Median | Std.dev |
| Non election years | 30,431 | 0.177 | 0.129 | 0.160 | 16,054 | 0.223 | 0.184 | 0.159 |
| Election years | 8,946 | 0.181 | 0.127 | 0.162 | 3,287 | 0.207 | 0.171 | 0.147 |
| Difference | | -0.004 | | | | 0.016 | | |
| Diff (t stat) | | -1.98 | | | | 5.49 | | |
| **Panel B: Means asset growth in election years vs non election years** | | | | | | | | |
| Large firms | | | | | | | | |
| | Presidential and Legislative | | | | Assembly-Elected Presidential | | | |
| | Obs | Mean | Median | Std.dev | Obs | Mean | Median | Std.dev |
| Non election years | 31,525 | 0.081 | 0.050 | 0.001 | 18,981 | 0.178 | 0.128 | 0.261 |
| Election years | 8,646 | 0.059 | 0.032 | 0.002 | 2,952 | 0.175 | 0.136 | 0.247 |
| Difference | | 0.022 | | | | 0.003 | | |
| Diff (t stat) | | 7.71 | | | | 0.49 | | |
| Small firms | | | | | | | | |
| | Presidential and Legislative | | | | Assembly-Elected Presidential | | | |
| | Obs | Mean | Median | Std.dev | Obs | Mean | Median | Std.dev |
| Non election years | 30,431 | 0.055 | 0.030 | 0.279 | 16,054 | 0.148 | 0.126 | 0.274 |
| Election years | 8,946 | 0.047 | 0.023 | 0.277 | 3,287 | 0.162 | 0.142 | 0.267 |
| Difference | | 0.008 | | | | -0.014 | | |
| Diff (t stat) | | 2.434 | | | | -2.62 | | |

Table 3.6: Cash holdings model: sub-samples by electoral systems

The table presents the results of an OLS regression which estimates the cash flow sensitivity of cash during election periods in presidential and legislative sub-sample and assembly-elected presidential sub- sample. Country and year fixed effects are included in all specification. The parentheses show standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

| Dependent variable: The ratio of cash to total assets | | | | |
|---|---|---|---|---|
| | Presidential and Legislative | | Assembly-Elected Presidential | |
| | (1) | (2) | (3) | (4) |
| Election Year Dummy | 0.020*** | 0.019*** | -0.000 | 0.001 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Cash flow/Total assets | 0.026*** | 0.020*** | 0.026*** | 0.028*** |
| | (0.00) | (0.01) | (0.01) | (0.01) |
| Election Year Dummy × Cash flow/Total assets | | 0.029*** | | -0.023 |
| | | (0.01) | | (0.02) |
| Size | -0.007*** | -0.007*** | -0.009*** | -0.009*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Net working capital/Total assets | -0.086*** | -0.086*** | -0.111*** | -0.111*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Capital expenditure/Total assets | -0.312*** | -0.312*** | -0.341*** | -0.341*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Leverage | -0.247*** | -0.247*** | -0.271*** | -0.271*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Q | 0.004*** | 0.004*** | 0.008*** | 0.008*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Cash flow volatility | 0.779*** | 0.779*** | 1.205*** | 1.205*** |
| | (0.03) | (0.03) | (0.05) | (0.05) |
| Dividend Dummy | 0.002** | 0.003** | 0.025*** | 0.025*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Acquisition Dummy | 0.001 | 0.001 | -0.017*** | -0.017*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Constant | 0.334*** | 0.335*** | 0.374*** | 0.374*** |
| | (0.00) | (0.00) | (0.01) | (0.01) |
| Observations | 79,548 | 79,548 | 41,274 | 41,274 |
| Adjusted R-Squared | 0.271 | 0.271 | 0.306 | 0.306 |
| Fixed Effects | Country | Country | | |
| | Year | Year | Year | Year |

Table 3.7: Cash holdings model: by electoral systems and firm size

The table presents the results of an OLS regression which estimates the cash flow sensitivity of cash in large and small firms in presidential and legislative sub-sample and assembly-elected presidential electoral systems. Country and year fixed effects are included in all specifications. The parentheses show standard errors. ***, **, and * indicate the significance of coefficients at the 1%, 5%, and 10% significance level, respectively.

| Dependent variable: The ratio of cash to total assets | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Large firms | | | | Small firms | | | |
| | Presidential and Legislative | | Assembly-Elected Presidential | | Presidential and Legislative | | Assembly-Elected Presidential | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Election Year Dummy | 0.016*** | 0.013** | -0.003 | 0.002 | 0.023*** | 0.022*** | -0.006 | -0.006 |
| | (0.01) | (0.01) | (0.00) | (0.00) | (0.01) | (0.01) | (0.01) | (0.01) |
| Cash flow/Total assets | 0.058*** | 0.051*** | 0.017 | 0.026* | 0.029*** | 0.024*** | 0.038*** | 0.037*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Election Year Dummy Cash flow/Total assets | | 0.042*** | | -0.083** | | 0.023* | | 0.007 |
| | | (0.02) | | (0.04) | | (0.01) | | (0.03) |
| Size | -0.007*** | -0.007*** | -0.003*** | -0.003*** | -0.019*** | -0.019*** | -0.014*** | -0.014*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Net working capital/Total assets | -0.071*** | -0.071*** | -0.059*** | -0.059*** | -0.098*** | -0.098*** | -0.185*** | -0.185*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Capital expenditure/Total assets | -0.293*** | -0.293*** | -0.257*** | -0.257*** | -0.337*** | -0.337*** | -0.439*** | -0.439*** |
| | (0.01) | (0.01) | (0.02) | (0.02) | (0.01) | (0.01) | (0.02) | (0.02) |
| Leverage | -0.231*** | -0.231*** | -0.279*** | -0.279*** | -0.247*** | -0.247*** | -0.205*** | -0.205*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.01) |
| Q | 0.004*** | 0.004*** | 0.006*** | 0.006*** | 0.001 | 0.001 | 0.012*** | 0.012*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Cash flow volatility | 0.756*** | 0.756*** | 1.466*** | 1.466*** | 0.698*** | 0.698*** | 0.933*** | 0.933*** |
| | (0.05) | (0.05) | (0.06) | (0.06) | (0.04) | (0.04) | (0.07) | (0.07) |
| Dividend Dummy | -0.010*** | -0.010*** | 0.013*** | 0.013*** | 0.015*** | 0.015*** | 0.037*** | 0.037*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Acquisition Dummy | 0.009*** | 0.009*** | -0.011*** | -0.011*** | -0.002 | -0.002 | -0.031*** | -0.031*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Constant | 0.319*** | 0.320*** | 0.274*** | 0.273*** | 0.396*** | 0.396*** | 0.469*** | 0.469*** |
| | (0.02) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Observations | 40,171 | 40,171 | 21,933 | 21,933 | 39,377 | 39,377 | 19,341 | 19,341 |
| Adjusted R-Squared | 0.243 | 0.243 | 0.262 | 0.262 | 0.293 | 0.293 | 0.351 | 0.351 |
| Fixed Effects | Country Year | Country Year | Year | Year | Country Year | Country Year | Year | Year |

Table 3.8: Asset growth model: by electoral systems

The table presents the estimates of augmented asset growth model for firms located in countries with a presidential and legislative electoral system and in countries with an assembly-elected presidential electoral system. The estimation employs a GMM first difference specification. Industry and year fixed effects are included in all specifications. The parentheses show standard errors. ***, **, and * indicate the significance of coefficients at the 1%, 5%, and 10% significance level, respectively.

| Dependent variable: Asset growth | | | | |
|---|---|---|---|---|
| | Presidential and Legislative | | Assembly-Elected Presidential | |
| | (1) | (2) | (3) | (4) |
| Lagged asset growth | -0.033*** | -0.034*** | -0.019 | -0.019 |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Election Year Dummy | -0.014*** | -0.007 | -0.078 | -0.081 |
| | (0.00) | (0.01) | (0.08) | (0.09) |
| Cash flow/Total assets | 1.015*** | 1.060*** | 0.327*** | 0.314*** |
| | (0.09) | (0.10) | (0.12) | (0.12) |
| Election Year Dummy × Cash flow/Total assets | | -0.128 | | 0.072 |
| | | (0.09) | | (0.09) |
| Size | 0.054*** | 0.054*** | 0.088*** | 0.088*** |
| | (0.02) | (0.02) | (0.02) | (0.02) |
| Net working capital/Total assets | 0.123 | 0.121 | -0.221*** | -0.227*** |
| | (0.08) | (0.08) | (0.07) | (0.07) |
| Capital expenditure/Total assets | 2.070*** | 2.081*** | 1.829*** | 1.815*** |
| | (0.27) | (0.27) | (0.33) | (0.33) |
| Leverage | 0.069 | 0.091 | -0.555*** | -0.550*** |
| | (0.11) | (0.11) | (0.13) | (0.13) |
| Q | 0.122*** | 0.125*** | 0.167*** | 0.168*** |
| | (0.02) | (0.02) | (0.02) | (0.02) |
| Observations | 63,068 | 63,068 | 33,043 | 33,043 |
| AR1 (p-value) | 0.000 | 0.000 | 0.000 | 0.000 |
| AR2 (p-value) | 0.753 | 0.794 | 0.243 | 0.232 |
| Hansen-J (p-value) | 0.002 | 0.003 | 0.000 | 0.000 |
| Fixed Effects | Industry<br>Year | Industry<br>Year | Industry<br>Year | Industry<br>Year |

Table 3.9: Asset growth model: by electoral systems and firm size

The table presents the estimates of augmented asset growth models for large and small firms in countries with a presidential and legislative electoral system and in countries with an assembly-elected presidential electoral system. The estimation employs a GMM first difference specification. Industry and year fixed effects are included in all specifications. The parentheses show standard errors. ***, **, and * indicate the significance of coefficients at the 1%, 5%, and 10% significance level, respectively

| Dependent variable: Asset growth | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Large firms | | | | Small firms | | | |
| | Presidential and Legislative | | Assembly-Elected Presidential | | Presidential and Legislative | | Assembly-Elected Presidential | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Lagged asset growth | -0.025* | -0.025* | -0.014 | -0.014 | -0.045*** | -0.047*** | -0.040** | -0.041** |
| | (0.01) | (0.01) | (0.02) | (0.02) | (0.01) | (0.01) | (0.02) | (0.02) |
| Election Year Dummy | -0.020*** | -0.022*** | -0.110** | -0.118** | -0.008** | 0.002 | -0.315 | -0.315 |
| | (0.00) | (0.01) | (0.04) | (0.05) | (0.00) | (0.01) | (0.26) | (0.26) |
| Cash flow/Total assets | 0.385*** | 0.375*** | 0.589*** | 0.581*** | 1.176*** | 1.245*** | 0.243* | 0.218* |
| | (0.10) | (0.10) | (0.15) | (0.15) | (0.09) | (0.10) | (0.13) | (0.13) |
| Election Year Dummy × Cash flow/Total assets | | 0.037 | | 0.127 | | -0.200* | | 0.137 |
| | | (0.09) | | (0.13) | | (0.10) | | (0.12) |
| Size | 0.101*** | 0.101*** | 0.117*** | 0.116*** | 0.091*** | 0.090*** | 0.110*** | 0.111*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) | (0.02) | (0.02) | (0.02) |
| Net working capital/Total assets | 0.002 | 0.004 | -0.072 | -0.076 | 0.074 | 0.077 | -0.142* | -0.148* |
| | (0.07) | (0.07) | (0.09) | (0.09) | (0.08) | (0.08) | (0.08) | (0.08) |
| Capital expenditure/Total assets | 1.816*** | 1.818*** | 1.311*** | 1.302*** | 1.685*** | 1.752*** | 2.392*** | 2.384*** |
| | (0.25) | (0.25) | (0.33) | (0.33) | (0.31) | (0.31) | (0.39) | (0.39) |
| Leverage | -0.085 | -0.090 | -0.523*** | -0.511*** | -0.014 | 0.011 | -0.597*** | -0.592*** |
| | (0.12) | (0.12) | (0.14) | (0.14) | (0.12) | (0.12) | (0.14) | (0.14) |
| Q | 0.139*** | 0.139*** | 0.183*** | 0.184*** | 0.135*** | 0.139*** | 0.142*** | 0.144*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) | (0.02) | (0.03) | (0.03) |
| Observations | 32,576 | 32,576 | 19,577 | 19,577 | 30,492 | 30,492 | 13,466 | 13,466 |
| AR1 (p-value) | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| AR2 (p-value) | 0.418 | 0.425 | 0.008 | 0.007 | 0.737 | 0.772 | 0.612 | 0.627 |
| Hansen-J (p-value) | 0.002 | 0.002 | 0.000 | 0.000 | 0.110 | 0.144 | 0.009 | 0.008 |
| Fixed Effects | Industry Year | Industry Year | Industry Year | Industry Year | Industry Year | Industry Year | Industry Year | Industry Year |

Table 3.10: Cash holdings model (Robustness): by electoral systems

The table presents the results of an OLS regression which estimates the cash flow sensitivity of cash during election periods in presidential and legislative sub-sample and assembly-elected presidential sub- sample. Country and year fixed effects are included in all specification. The parentheses show standard errors. ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

| Dependent variable: The ratio of cash to total assets | | | | |
|---|---|---|---|---|
| | Presidential and Legislative | | Assembly-Elected Presidential | |
| | (1) | (2) | (3) | (4) |
| Election Year Dummy | 0.009*** | 0.008** | -0.004 | -0.002 |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Cash flow/Total assets | 0.064*** | 0.061*** | 0.051*** | 0.061*** |
| | (0.00) | (0.00) | (0.01) | (0.01) |
| Election Year Dummy × Cash flow/Total assets | | 0.015* | | -0.031* |
| | | (0.01) | | (0.02) |
| Size | -0.006*** | -0.006*** | -0.007*** | -0.007*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Net working capital/Total assets | -0.028*** | -0.029*** | -0.083*** | -0.083*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Capital expenditure/Total assets | -0.101*** | -0.101*** | -0.273*** | -0.274*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Leverage | -0.178*** | -0.178*** | -0.233*** | -0.233*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Q | 0.004*** | 0.004*** | 0.007*** | 0.007*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Cash flow volatility | 0.497*** | 0.497*** | 1.041*** | 1.040*** |
| | (0.03) | (0.03) | (0.05) | (0.05) |
| Dividend Dummy | 0.001 | 0.001 | 0.008*** | 0.008*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Acquisition Dummy | 0.005*** | 0.005*** | -0.010*** | -0.009*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Tax | -0.005*** | -0.005*** | 0.002*** | 0.002*** |
| | (0.00) | (0.00) | (0.00) | (0.00) |
| Constant | 0.323*** | 0.323*** | 0.239*** | 0.239*** |
| | (0.02) | (0.02) | (0.01) | (0.01) |
| Observations | 67,948 | 67,948 | 37,432 | 37,432 |
| Adjusted R-Squared | 0.211 | 0.211 | 0.258 | 0.258 |
| Fixed Effects | Country | Country | | |
| | Year | Year | Year | Year |

Table 3.11: Cash holdings model (Robustness): by electoral systems and firm size

The table presents the results of an OLS regression which estimates the cash flow sensitivity of cash in large and small firms in presidential and legislative sub-sample and assembly-elected presidential electoral systems. Country and year fixed effects are included in all specifications. The parentheses show standard errors. ***, **, and * indicate the significance of coefficients at the 1%, 5%, and 10% significance level, respectively.

| Dependent variable: The ratio of cash to total assets | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Large firms | | | | Small firms | | | |
| | Presidential and Legislative | | Assembly-Elected Presidential | | Presidential and Legislative | | Assembly-Elected Presidential | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Election Year Dummy | 0.010** | 0.008* | -0.004 | -0.007** | 0.013** | 0.010* | -0.003 | -0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.01) | (0.01) | (0.01) |
| Cash flow/Total assets | 0.089*** | 0.084*** | 0.024* | 0.011 | 0.076*** | 0.064*** | 0.059*** | 0.074*** |
| | (0.01) | (0.01) | (0.01) | (0.02) | (0.01) | (0.01) | (0.01) | (0.01) |
| Election Year Dummy × Cash flow/Total assets | | 0.027** | | 0.031 | | 0.064*** | | -0.060*** |
| | | (0.01) | | (0.02) | | (0.01) | | (0.02) |
| Size | | -0.003*** | -0.003*** | -0.002** | -0.002** | -0.013*** | -0.013*** | -0.014*** |
| | | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Net working capital/Total assets | -0.015*** | -0.015*** | -0.035*** | -0.035*** | -0.033*** | -0.034*** | -0.152*** | -0.152*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Capital expenditure/Total assets | -0.056*** | -0.057*** | -0.198*** | -0.197*** | -0.134*** | -0.135*** | -0.364*** | -0.365*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.02) | (0.02) |
| Leverage | -0.153*** | -0.153*** | -0.222*** | -0.222*** | -0.186*** | -0.187*** | -0.205*** | -0.205*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.01) |
| Q | 0.002** | 0.002** | 0.006*** | 0.006*** | 0.003** | 0.003** | 0.009*** | 0.009*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Cash flow volatility | 0.498*** | 0.498*** | 1.112*** | 1.114*** | 0.408*** | 0.406*** | 0.920*** | 0.918*** |
| | (0.04) | (0.04) | (0.06) | (0.06) | (0.04) | (0.04) | (0.07) | (0.07) |
| Dividend Dummy | -0.012*** | -0.012*** | 0.000 | 0.000 | 0.014*** | 0.014*** | 0.020*** | 0.020*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Acquisition Dummy | 0.007*** | 0.007*** | -0.007*** | -0.007*** | 0.004** | 0.004** | -0.020*** | -0.020*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Tax | -0.002* | -0.002* | 0.001* | 0.001* | -0.007*** | -0.007*** | 0.005*** | 0.005*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Constant | 0.225*** | 0.225*** | 0.190*** | 0.190*** | 0.396*** | 0.396*** | 0.266*** | 0.265*** |
| | (0.03) | (0.03) | (0.02) | (0.02) | (0.04) | (0.04) | (0.03) | (0.03) |
| Observations | 35,243 | 35,243 | 20,705 | 20,705 | 32,705 | 32,705 | 16,727 | 16,727 |
| Adjusted R-Squared | 0.186 | 0.186 | 0.198 | 0.198 | 0.231 | 0.231 | 0.303 | 0.303 |
| Fixed Effects | Country Year | Country Year | Year | Year | Country Year | Country Year | Year | Year |

Table 3.12: Asset growth model (Robustness): by electoral systems

The table presents the estimates of augmented asset growth model for firms located in countries with a presidential and legislative electoral system and in countries with an assembly-elected presidential electoral system. The estimation employs a GMM first difference specification. Industry and year fixed effects are included in all specifications. The parentheses show standard errors. ***, **, and * indicate the significance of coefficients at the 1%, 5%, and 10% significance level, respectively.

| Dependent variable: Asset growth (the growth of total assets after removing cash and cash equivalents) | | | | |
|---|---|---|---|---|
| | Presidential and Legislative | | Assembly-Elected Presidential | |
| | (1) | (2) | (3) | (4) |
| Lagged assets growth | -0.013 | -0.016 | -0.018 | -0.018 |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Election Year Dummy | -0.018*** | -0.006 | -0.216** | -0.218** |
| | (0.00) | (0.01) | (0.10) | (0.10) |
| Cash flow/Total assets | 1.209*** | 1.285*** | 0.246** | 0.243** |
| | (0.09) | (0.10) | (0.12) | (0.12) |
| Election Year Dummy × Cash flow/Total assets | | -0.213** | | 0.020 |
| | | (0.09) | | (0.10) |
| Size | 0.078*** | 0.077*** | 0.063** | 0.063*** |
| | (0.02) | (0.02) | (0.02) | (0.02) |
| Net working capital/Total assets | 0.028 | 0.023 | -0.298*** | -0.300*** |
| | (0.08) | (0.08) | (0.07) | (0.07) |
| Capital expenditure/Total assets | 1.619*** | 1.641*** | 1.755*** | 1.751*** |
| | (0.27) | (0.27) | (0.33) | (0.33) |
| Leverage | 0.166 | 0.204** | -0.581*** | -0.579*** |
| | (0.10) | (0.10) | (0.13) | (0.14) |
| Q | 0.121*** | 0.126*** | 0.167*** | 0.168*** |
| | (0.02) | (0.02) | (0.02) | (0.02) |
| Observations | 63,002 | 63,002 | 33,020 | 33,020 |
| AR1 (p-value) | 0.000 | 0.000 | 0.000 | 0.000 |
| AR2 (p-value) | 0.060 | 0.058 | 0.201 | 0.199 |
| Hansen-J (p-value) | 0.001 | 0.003 | 0.000 | 0.000 |
| Fixed effects | Industry<br>Year | Industry<br>Year | Industry<br>Year | Industry<br>Year |

Table 3.13: Asset growth model (Robustness): by electoral systems and firm size

The table presents the estimates of augmented asset growth models for large and small firms in countries with a presidential and legislative electoral system and in countries with an assembly-elected presidential electoral system. The estimation employs a GMM first difference specification. Industry and year fixed effects are included in all specifications. The parentheses show standard errors. ***, **, and * indicate the significance of coefficients at the 1%, 5%, and 10% significance level, respectively

| Dependent variable: Asset growth (the growth of total assets after removing cash and cash equivalents) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Large firms | | | | Small firms | | | |
| | Presidential and Legislative | | Assembly-Elected Presidential | | Presidential and Legislative | | Assembly-Elected Presidential | |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Lagged assets growth | -0.034*** | -0.034*** | -0.015 | -0.015 | -0.025* | -0.029** | -0.043** | -0.044** |
| | (0.01) | (0.01) | (0.02) | (0.02) | (0.01) | (0.01) | (0.02) | (0.02) |
| Election Year Dummy | -0.024*** | -0.023*** | 0.012 | 0.011 | -0.011*** | 0.003 | -0.426* | -0.433* |
| | (0.00) | (0.01) | (0.06) | (0.06) | (0.00) | (0.01) | (0.26) | (0.26) |
| Cash flow/Total assets | 0.382*** | 0.383*** | 0.478*** | 0.474*** | 1.392*** | 1.493*** | 0.244* | 0.222* |
| | (0.10) | (0.10) | (0.15) | (0.15) | (0.10) | (0.10) | (0.13) | (0.13) |
| Election Year Dummy × Cash flow/Total assets | | -0.005 | | 0.043 | | -0.288*** | | 0.136 |
| | | (0.08) | | (0.12) | | (0.11) | | (0.13) |
| Size | 0.104*** | 0.104*** | 0.116*** | 0.116*** | 0.105*** | 0.103*** | 0.085*** | 0.088*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) | (0.02) | (0.02) | (0.02) |
| Net working capital/Total assets | 0.048 | 0.047 | -0.105 | -0.107 | 0.047 | 0.049 | -0.246*** | -0.253*** |
| | (0.07) | (0.07) | (0.09) | (0.09) | (0.08) | (0.08) | (0.08) | (0.08) |
| Capital expenditure/Total assets | 1.990*** | 1.990*** | 1.439*** | 1.437*** | 1.185*** | 1.280*** | 1.957*** | 1.952*** |
| | (0.24) | (0.24) | (0.31) | (0.32) | (0.31) | (0.31) | (0.41) | (0.41) |
| Leverage | -0.234** | -0.233** | -0.646*** | -0.642*** | 0.068 | 0.104 | -0.621*** | -0.613*** |
| | (0.11) | (0.11) | (0.14) | (0.14) | (0.12) | (0.12) | (0.16) | (0.16) |
| Q | 0.177*** | 0.177*** | 0.198*** | 0.199*** | 0.124*** | 0.130*** | 0.131*** | 0.133*** |
| | (0.02) | (0.02) | (0.03) | (0.03) | (0.02) | (0.02) | (0.03) | (0.03) |
| Observations | 32,560 | 32,560 | 19,565 | 19,565 | 30,442 | 30,442 | 13,455 | 13,455 |
| AR1 (p-value) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| AR2 (p-value) | 0.10 | 0.56 | 0.40 | 0.93 | 0.04 | 0.18 | 0.01 | 0.92 |
| Hansen-J (p-value) | 0.001 | 0.001 | 0.000 | 0.000 | 0.093 | 0.219 | 0.000 | 0.000 |
| Fixed Effects | Industry Year | Industry Year | Industry Year | Industry Year | Industry Year | Industry Year | Industry Year | Industry Year |

# 4 Chapter 4:Trade credit, market power and asymmetric information

## 4.1 Introduction

Trade credit is a vital external source of finance in any firms and any industries. Unlike traditional financial institutions, suppliers can evaluate and reduce the credit risk of their customers before offering a short-term business-to-business agreement and customers can access to external finance from suppliers through account payable (Peterson and Rajan, 1997). Furthermore, trade credit allows customers to assess the quality of the product before making a payment (Long et al, 1993; Deloof and Jegers, 1996). To reduce their credit risk, suppliers prefer customers with strong financial health. Customers being financially healthy and having good reputation as well as high market power will have a higher bargaining power than their suppliers. The literature reports that the bargaining power of a customer compared to that of their suppliers is important to shape trade credit terms (Fabbri and Klapper, 2016).

The purpose of this chapter is to investigate further whether social trust can moderate the influence of customers' market power and information asymmetry on the offer of trade credit. This is important because trade credit is an alternative source of finance in Asian countries with weaker financial institutions (Fisman and Love, 2003). Trade credit is indicated to cause the redistribution of financial credit in emerging economies from strong financial health firms to weak financial health firms (Love et al., 2007). This chapter is motivated by "the bargaining power hypothesis" (Fabbri and Klapper, 2008, p.19-20) and "the reputation hypothesis" (Van Horen, 2005, p.8). The bargaining power hypothesis is a concept of Fabbri and Klapper (2012). The offer of trade credit relies on the firm's relative bargaining power. If the seller has higher bargaining power, the seller can force the buyer to make a payment immediately. In contrast, if the buyer has higher bargaining power, the seller may let the buyer delay their payment (Wilner, 2000; Fisman and Raturi, 2004; Fabbri and Klapper, 2008,2012). The reputation hypothesis shows that the relationship between buyers and sellers is needed for trade credit provision (Smith, 1987; Cunat, 2000; Wilner, 2000; Van Horen, 2005). Petersen and Rajan (1997) find that firm's age is positively related to the level of account payables, implying that small firms and young firms are less likely to obtain trade credit.

This chapter uses the data on firm characteristics from the Compustat IQ database and the data on social trust from the World Values Survey (WVS). This investigation

focuses on firms in Asian emerging economies. Here, trade credit is defined as the ratio of account payables to total assets, and firms are classified into three types: small firms, young firms, and R&D firms. As small and young firms have difficulty to accessing long-term credit, suppliers or creditors is in keeping with the fact that trade credit is more widespread in both small and young firms (Cunat, 2007). In addition, Hall and Lerner (2009) explain that the premium of the lemons market for R&D is higher than the other markets. The asymmetric information problem in the R&D setting is that the innovator has more knowledge than possible investors regarding the chances of success and nature of the proposed innovation project. With the risk of their future investments and repayment, small firms, young firms and R&D firms are associated with higher information asymmetry (Baxamusa et al., 2015).

Using a comprehensive sample with 77,241 annual observations during the period 1998-2018, this chapter finds that firms with a high market share can access trade credit easier than those with a low market share. This finding is evident in only low-social trust economies. In addition, the ratio of account payables to total assets (trade credit) is negatively associated with the level of information asymmetry. Smaller firms and younger firms are more likely to have a higher level of information asymmetry because they are less liquid and have less public disclosure of information as well as small earnings. Similar to R&D firms, they may have a high level of information asymmetry in a principal-agent setting. The results also indicate that trade credit being offered to firms with a high market share is less pronounced if firms are small, young and located in low-social trust economies. The effects of asymmetric information on trade credit is found insignificant in R&D firms and firms located in high-social trust economies. Nonetheless, corporate R&D expenses, which in this chapter is used as a proxy for the relationship-specific investment (RSI), are associated with trade credit. The result indicates that firms with a higher market share and high R&D expenses tend to obtain more trade credit if they are located in high-social trust economies because they have a higher chance of producing popular products.

This chapter contributes to the existing empirical literature in three ways. First, this chapter is related to the growing literature, focusing on the effect of customers' market power on trade credit in various social trust environments. Earlier work explains that suppliers are more likely to offer trade credit to customers with substantial market power or customers with a larger share of supplier's sales (Dass et al., 2014; Fabbri and Klapper, 2016; Mateut and Chevapatrakul, 2018). To fill the gap of literature, this chapter considers whether social trust moderates the effect of market share on trade credit. Survey data have been used in several previous studies on trade credit and market power (Fisman and Raturi,

2004; Van Horen, 2007; Fabbri and Klapper, 2016). The World Values Survey (WVS)has been collected every three years. Thus, this chapter remove such weakness of previous studies by using a single measurement and continuous data retrieved from the financial statement. In the context of the role of social trust in trade credit, prior studies show evidences that social trust affects formal and informal finance. Others are financing alternatives such as IPO (Li et al., 2019), peer-to-peer lending (Lin et al., 2013), and trade credit (Wu et al., 2014; Zhang et al., 2014; Levine et al., 2018; Amoako et al., 2020). Unlike previous studies, this chapter considers the impacts of the customer's market power in economies with different levels of social trust.

Second, this chapter contributes to the literature by examining whether social trust moderates the effect of asymmetric information on trade credit. Previous studies (e.g., Smith, 1987; Peterson and Rajan, 1997; Long et al., 1993; Van Horen, 2007; Goncalves et al., 2018; McGuiness et al., 2018) provide evidence that trade credit is a tool to verify product quality. Many studies report that suppliers are more likely to provide trade credit to firms residing in economies with high financial development (Maksimovi, 2001; Fisman and Love, 2003) and strong rule of law (Van Horen, 2007). Since social trust is a substitute for formal institutions (Guiso et al., 2004 [24]) with weak legal and institutional systems (Karlan, 2005; Wu et al., 2014 [51]), the literature explains that social trust helps firms to access trade credit and it also develops corporate resilience during the period of crisis. However, there are few empirical studies on the effect of the interaction between asymmetric information and market power on trade credit, especially in Asian emerging economies.

In line of study, this chapter complements previous studies by introducing a new mechanism that reduces the barrier of accessing trade credit in firms with an asymmetric information problem. This chapter highlights how information asymmetry influences the sensitivity of trade credit to the customer's market power by combining between the bargaining power hypothesis and the asymmetric information problem in terms of product quality. The findings are also consistent with the second hypothesis that social trust moderates the negative effect of information asymmetry on trade credit. Small firms and young firms receive less trade credit in low-social trust economies but there is an insignificant relationship between the asymmetric information problem and trade credit in high-social trust economies.

Third, this chapter builds upon previous studies (e.g., Dass et al., 2015 and Jory et al., 2020) by showing that the RSI is a key factor for receiving trade credit and its effect

varies with the level of social trust. Here, corporate R&D expenses is a proxy for the RSI as R&D will enable firms to produce distinctive products (Dass et al., 2015). Baxamusa et al. (2016) state that firms with high R&D expenditure are expected to have high information asymmetry while firms with R&D process are more likely to produce high quality products. In emerging economies, the amount of R&D investment tends to be much smaller than in the developed country. Unlike the aforementioned literature, this chapter examined whether social trust can affect the benefits of the RSI. The results show that the benefit of R&D investment in terms of trade credit received depends on social trust in the country where firms are operating. More specifically, the relationship between the RSI and trade credit varies with social trust which can be increased by improving the quality of institutions and enhancing corporate accountability as well as transparency.

The chapter proceeds as follows: Section 2 reviews the literature and develops the hypothesis for this study. Section 3 identifies the empirical methodology. Section 4 describes the data and reports descriptive statistics. Section 5 explains the empirical results. Section 6 presents the results of various robustness checks, and section 7 concludes.

## 4.2 Literature review and hypothesis development

### 4.2.1 Theoretical background of trade credit asymmetric information and market power

Usually, there is unequal knowledge between sellers and customers. That is, the supplier knows about the quality of their product more than their customer does and this information asymmetry leads to an adverse selection problem because the customer pays cash for the product but realises the quality of products after the payment. An early study of Smith (1987) refers trade credit terms as a tool that help sellers reduce their default risk, particularly when there is an information asymmetry. The author studies an intermediate product market which has three players; a buyer, a seller, and a financial institution. Conversely, the buyer concerns about the seller's performance and the buyer is pessimistic believing that the seller may deliver goods that do not meet the agreed specification. The buying firm will choose between trade credit provided by the seller and trade finance provided by the financial institution; the firm will compare the credit cost and estimate their own default risk. The buyer's decision is also affected by the seller's performance. For the seller, the design of trade credit term is based on the buyer's choice of financing. The seller realises that a low-risk buyer will choose to borrow from a financial institution. In contrast, if the buyer chooses trade credit, the seller will monitor the buyer to observe whether the buyer is prone to default or not. This can lead to the seller's decision to

terminate trade credit offer or to continue trade with a cash-on-delivery term. This indicates that sale on trade credit can promptly provide the seller an awareness of buyer's default risk.

Similarly, Long et al. (1993) introduce a trade credit model which demonstrates a role of trade credit as a product quality detector when there is a presence of asymmetric information and shows that trade credit can be used to enhance the marketability. Their model indicates that high-quality producers are likely to offer trade credit while low-quality producers are not. They also shed the light on an important role of trade credit as a product quality detector; sometimes customers do not happen to know the product's quality when making a purchase, especially if the reputation of producers is unknown in the market. On the contrary, the role of trade credit is diminished if the customers have the information about the product's quality or if the producers are well-known. They further examine several factors that can affect the trade credit policy. They find that suppliers with long production lead time are more likely to provide trade credit to their customer. They also find that hi-tech manufacturing firms will offer longer credit terms than food manufacturers because customers require a longer period of time to investigate the product quality. Small firms tend to offer more trade credit than large firms since small firms are less well-known, so they use a trade credit offer as an assurance of their product quality. This argument is inconsistent with traditional theories of trade credit, which suggest that large firms tend to offer more trade credit than small firms do. They also find that firms will purchases their raw materials on credit to finance their trade credit provided to their customer. In contrast, traditional theories suggest that firms will not buy on credit when providing trade credit to their customers. Hence, their results are consistent with a product quality theory but inconsistent with traditional theories of trade credit. They also report that firm's creditworthiness does not affect trade credit policy, contradicting traditional theories in which firms with a good credit rating will offer more trade credit. Regarding the variability of sales, they find that firms with a fluctuating demand will offer more trade credit.

In order to extend and deepen the knowledge on trade credit, Petersen and Rajan (1997) conduct a valuable study to prove trade credit theories. They investigate lending firms (suppliers) and borrowing firms (buyers). According to financing advantage theories of trade credit, the suppliers have some advantages over financial institutions in risk in credit worthiness– that is, suppliers could faster get buyers' information with lower cost as compared to financial institutions because the suppliers search for buyers' information as a business usual. Another underlying reason is the suppliers' ability to liquidate assets. In case of buying firms failing to make a payment, the suppliers could easily resell the goods

that they expropriate from buying firms with a lower transaction cost as compared to financial institutions because they have a connection with others buyers. However, this depends on the type of goods. A finished goods is more costly for the suppliers to resell than work in progress and raw materials, respectively. With regard to this issue, the authors find that firms whose inventories are raw materials tend to get more trade credit offer from suppliers. Moreover, they study characteristics of suppliers that determine trade credit offer. They find that trustful firms and firms that are able to access external funds tend to offer more trade credit to their buyers. Likewise, firms which make a loss or have a negative sales growth are likely to offer more trade credit because such firms hope to maintain their market share. Profitability and growth of buying firms also affect the amount of trade credit offer. They also investigate factors that affect a trade credit taken by buying firms, and find that the better the credit quality of firms, the more trade credit that they could get from their suppliers. However, firms with good credit quality will require less trade credit because they can obtain a loan from a financial institution. Their study, thus, argues that trade credit is normally used by firms that face difficulties in being financed by financial institutions. This indicates that trade credit is costly as compared to a loan from a financial institution.

Wilner (2000) studies on trade credit and the dependence on the bilateral relationship. His results show that a supplier (as a creditor) offers more concession to a customer during the customer's financial distress period in order to maintain their relationship. The interest rate on trade credit relies on a default risk of customer. Normally, the customer with a higher likelihood to default is more likely to be charged with a higher interest rate, and a supplier will decrease the interest rate when the probability of default becomes lower.

Even though the cost of trade credit is high, trade credit has been used widely. Fisman and Love (2003) argue that trade credit can be a substitute of bank financing because a trade credit provider (a supplier) has more information about their borrower (their customer) than formal lenders. They show that firms in countries with less developed financial markets use trade credit as an alternative funding source because trade credit is more accessible than formal financing in such countries. However, firms without good reputation or creditworthiness have difficulty in receiving trade credit, according to reputation-based theories of trade credit. Cunat (2007) proposes two key elements of trade credit. First, suppliers have a better enforceability than banks. With an overdue payment, suppliers can refuse to supply further goods to their customers. Second, suppliers support their customers by providing liquidity. So long as there is an expected surplus in the trade transaction, suppliers are willing to act as liquidity providers because they do not want to

lose their customers, and customers are willing to pay an interest rate on trade credit to maintain a good relationship because they do not want to search for new suppliers. Similar to Wilner (2000), Cunat (2007) indicates that suppliers will charge a high interest rate due to an insurance premium and a default premium. Further, suppliers with a high cost of funds are less likely to provide trade credit.

In an aspect of trade credit and market power, Petersen and Rajan (1997) show that monopoly power encourages supplier to offer more trade credit in developed countries due to a better quality of the formal financial and legal institutions. In contrast, Fisman and Raturi (2004) view that trade credit is positively related to market competition and this positive relationship is more prominent if customers and their supplier have a longer-term relationship. They further suggest that relationship-specific investments are needed to establish the creditworthiness and trust of buying firms. Relationship-specific investments are recognized as sunk cost and switching cost. With relationship-specific investments, suppliers are willing to trade on credit because of a lower chance of deliberate non-payment.

This chapter closely relates to Van Horen (2007) that explores the impact of customer market power on trade credit. The author finds evidence that customer market power is positively associated with the use of trade credit. As the exchange relationship between suppliers and customers may differ based on asymmetric information on product quality, customers reduce uncertainty regarding product quality by using their market power to buy products on credit. The use of trade credit increases a customer surplus. This customer surplus becomes larger when firms work with risky firms or are residing in a country with an undeveloped financial sector or are located in a country with a weak rule of law. This implies that the relationship between customer market power and trade credit provision is stronger when there is asymmetric information between supplier and customer. To alleviate asymmetric information problems and impede the disruptive effect of trade credit provision, the author suggests firms to use a factoring company that helps them sell accounts receivable and invoice as well as collect the debt. After selling liabilities, a factoring company takes responsibility for seeking payment, and the supplier receives a percentage of the face value.

Van Horen (2007) develops a theoretical framework explaining about trade credit and quality risk. Their model defines customer's expected value of product as follows:

$$E(V_c) = \alpha(Q_{ec}) + (1 - \alpha)(Q_{wc}) \quad (9)$$

where

$E(V_c)$ is the value of the product that a rational customer expects to get,

$Q_{ec}$ is the monetary value of the product if the quality meets the customer's expectation,

$Q_{wc}$ is the monetary value of the product if the quality is less than the customer's expectation. Thus $Q_{ec} > Q_{wc}$,

$\alpha$ is the probability of receiving the correct-quality product.

Assume the provider is a price taker in a market where prices are competitive, the price is determined by the supplier, $P = P_s$.

$$CustomerSurplus = E(V_c) - P \quad (10)$$

The customer surplus, Equation (10), is the difference between the value of product that a rational customer expects to get and the price the customer pays, which is determined by the supplier, i.e. $P = P_s$. Equation (10) indicates that the customer surplus depends on the uncertainty of product quality. To increase customer surplus, a decrease in asymmetric information between the supplier and customers can increase in the probability of receiving the correct-quality product, $\alpha$. With high asymmetric information, the supplier has more information about product quality than their customers have. The customers will have more demand for trade credit.

With regard to the supplier side, the supplier prefers selling on cash as the provision of trade credit generates cost to the supplier, $TC_s > 0$, especially in a market with many buyers. Equation (11) indicates that when the supplier sells on cash, $TC_s = 0$. If all potential customers need trade credit, the supplier will choose to sell to the customer that the cost of trade credit provision is the lowest. In addition, the supplier may charge a higher price for the customer who pays on credit.

As a result, the supplier's expected value of product sold after providing trade credit will be higher.

$$TC_s = TC_{cs} - TC_{bs}$$

$$E(V_s) = P - TC_s \quad (11)$$

where

$E(V_s)$ is the expected value of product sold after providing trade creditor the profit, $TC_s$ is the supplier's cost per unit equal to the cost of trade credit provision ($TC_{cs}$) less the benefits of trade credit provision ($TC_{bs}$).

In the case of a market with only one buyer, the customer has a demand for trade credit, $TC_{cc}$ , and the supplier provides it under the condition that $TC_{cc} < (1 - \alpha)(Q_{ec}) - (1 - \alpha)(Q_{wc})$. However, the supplier is willing to sell the product on credit so long as the producer surplus outweighs the production costs.

## 4.3 Extensive empirical literature

This section discusses the literature on trade credit in both developed and developing countries. In particular, the literature reviewed covers four important issues relevant to this study: the existence of asymmetric information on trade credit, the economic effects of market power, the relationship-specific investment and social trust.

### 4.3.1 Trade credit and asymmetric information

There are many recent literatures that support the empirical theory related to the effect of asymmetric information on trade credit. By examining the benefit of trade credit to SMEs in Europe, McGuiness et al. (2018) find that trade credit plays a more important role as an external source of funding to SMEs, as compared to bank finance, because of less information asymmetry and lower transaction costs. In particular, trade credit becomes an essential source of finance when SMEs are in highly banking-concentrated economies but face a difficulty to access a bank loan. Due to a long-lasting relationship, highly liquid firms can help financially constrained firms reduce the chance of corporate failures and financial distress by offering trade credit. Thus, trade credit helps SMEs to survive in the aftermath of a crisis. Andrieu et al. (2018) investigate that SMEs with smaller size tend to get less trade credit as compared to larger SMEs. This is because of a high asymmetric information in small firms that usually lack of credit record. They also find that manufacturing SMEs are likely to get more trade credit because they have a large amount of raw materials as an inventory which is easily for supplier to resell in case of default. Their results support Petersen and Rajan (1997). In contrast to Fisman and Love (2003), Andrieu et al. (2018) find a complementary relationship between trade credit and bank loan because supplier or bank will consider a successful application on another funding source in order to decide whether they should provide trade credit or loan to firms. Canto-Cuevas et al. (2019) study the relationship of trade credit and SMEs' life cycle. The results show that in an early stage of life cycle, firms tend to rely more on trade credit. This implies that firm's age has a negative relationship with trade credit taken. The underlying reason is a high asymmetric information in an early stage of business which cause a difficulty of firms

to access bank loans. However, there is an absence of the negative relationship in a mature stage because of supply effect of trade credit.

### 4.3.2 Trade credit and market power

Another area of the literature has argued that a strong customer-supplier relationship can increase trade credit provision. Customers with high market power have more bargaining power on setting trade credit terms and the better terms will make them have a comparative advantage over their competitors.

More specifically, customers with high market power have greater bargaining power over their small suppliers and this brings about a favourable contract term which may include a lower borrowing cost. Without price discrimination, high-market power customers take advantage of suppliers by setting a trade credit term more favourable to themselves (Klapper et al., 2012). Trade credit can also act as a warranty of product quality to customers. With a trade credit contract, customers are allowed to buy goods and pay for it later. Hence, customers have time to verify the quality of the product (Long et al., 1993; Klapper et al., 2012). Klapper et al. (2012) find that, to manage financial risk, suppliers are more likely to provide long-term trade credit to high-trust customers such as large customers and investment-grade buyers.

Fabbri and Klapper (2016) provide an in-depth study focusing on the supplier's bargaining power relative to that of their customers, which affects trade credit offers. They find that suppliers with lower bargaining power than their customers tend to offer more trade credit and long credit terms to their customers. They also report that customers who have more power over their suppliers are likely to delay their payment. Large firms, major foreign-owned firms and firms with a large number of customers tend to offer trade credit because of a longer-term relationship between them and their customer. Meanwhile, exporting firms rarely offer trade credit because it is difficult for them to chase overdue payments from overseas trading partners. In addition, they document that constrained firms with low bargaining power tend not to offer trade credit. Their study indicates a critical role of trade credit in the product market; that is, firms could use trade credit as a tool to create a competitive advantage in the market.

On customers side, Mateut and Chevapatrakul (2018) investigate a reason why firms use trade credit as a source of fund and the effect of customer's bargaining power on trade credit uptake provided by suppliers. They find that, because of financing reasons, firms use trade credit instead of using a bank loan, and the relationship is higher at a high quantile of trade credit uptake which present a relatively poor balance sheet. Such a

relationship will be higher for large firms as well. They suggest that financially weak firms tend to rely on trade credit, and trade credit plays a vital role as their primary source of funds. From the view of customer bargaining power, they find that high-market share firms within a low industry concentration receive more trade credit. Furthermore, they find that trade credit provided to firms relates to a characteristic of products used as inputs. Firms that buy a large number of unique goods present a more considerable amount of trade credit than firms that purchase a large proportion of services from suppliers since services do not have a liquidation value.

Goncalves et al. (2018) study the effects of market power on trade credit decisions during a crisis. Their results show that, during a crisis, firms with high market power decrease their net trade credit days than firms with low market power. Importantly, these effects show in both financially constrained and unconstrained firms. High market power firms reduce payable days to exploit the early payment discount and also to support financially constrained suppliers because these suppliers may reduce the quality of goods and services. Then, firms can lose their monopoly rents. This confirms theories of product quality asymmetry in Long et al. (1993) and Giannetti et al. (2011) studies. Firms with good reputation or high market power offer less trade credit if trade credit acts as a guarantee of product quality; these firms can use their reputation to affirm their product quality.

Chod et al. (2019) document that a supplier may provide trade credit to their customer, which is a retailer that faces a cash constraint. Such a cash constraint leads to a free-rider problem. By getting trade credit from the supplier, the retailer's liquidity improves and may buy products from others suppliers, which are not the supplier providing them the trade credit, instead. Thus, the benefit of offering trade credit will be shared among many suppliers and the supplier who provides trade credit bears the full cost of trade credit. They find that suppliers with a large share in retailers' purchases tend to get more benefit from providing trade credit, so they are likely to offer more trade credit. Similarly, retailers with concentrated suppliers tend to get more trade credit from their suppliers. They also suggest that the more available substitute products are, the less trade credit suppliers will provide. They further study the effect of control variables on trade credit and find that most of the results are consistent with the existing theories. The results suggest that suppliers with unconstrained financial resources, a variety of products, growing sales, and more advertising spending tend to offer more trade credit. In contrast, suppliers will provide less trade credit in an industry with few major suppliers, as consistent with the hypothesis of the supplier's market power. On the other hand, retailers requiring inputs that

are more unique, growing sales, and high market power tend to get more trade credit. Consistent with a trade credit demand theory, trade credit is highly used in retailers with no financial constraint, high leverage, and more tangible assets. However, retailers with investment-grade ratings also use more trade credit which is inconsistent with the trade credit demand theory. They further find that retailers with a higher proportion of finished goods and services in their inventories get less trade credit because it is more difficult to liquidate these types of inventories.

### 4.3.3 Trade credit and relationship-specific investment

Recent studies support Fisman and Raturi (2004) that relationship-specific investment (RSI) could encourage suppliers to provide trade credit to their customers. Using research and development expenses (R&D) as a proxy for the relationship-specific investment (RSI), Dass et al. (2014) investigate the effects of supplier's bargaining power and RSI on trade credit provision. They show that trade credit is used in an incomplete contract, where the RSI could only be recognised after a customer buys a product as a tool to create a suitable RSI. Their result indicates that supplier firms with a high level of RSI and low bargaining power tend to offer more trade credit. Since high bargaining power firms could gain more benefit, a need for trade credit as a tool to create a suitable level of RSI is low. This indicates that the positive relationship between the RSI and trade credit provision will be stronger if the supplier has low bargaining power. Considering a relationship between suppliers and customers, if they have known each other for an extended period, offering trade credit tend to be low since customers have more knowledge about suppliers' RSI. Whereas, if a customer's input depends on a single supplier, RSI will be important in order that the supplier will offer them more trade credit. Likewise, offering trade credit is important in the industry with homogeneous products and services.

Similarly, Jory et al. (2020) show that the relationship-specific investment (RSI) matters to the effect of economic policy uncertainty (EPU) on trade credit. Firms with a high (low) R&D expenditure-to-total expense ratio are more (less) likely to be firms in R&D intensive industries. The RSI is an investment that helps firms to understand the idiosyncratic demand of their customers. To meet specific customer needs, suppliers extend more trade credit periods to their customers, implying that the RSI has a positive influence on trade credit provision. The results show that only firms with low RSI decrease receivable days when facing high EPU and the positive effect of EPU on payable days is statistically significant in high-RSI firms.

### 4.3.4 Trade credit and social trust

As trust is a vital component in economic prosperity, trust captures the attention of researchers. A growing literature on trust focuses on the link between trust and growth at both firm and country levels. Fukuyama (1995) defines trust as the expectation arising within a community of cooperative behaviour based on shared norms and beliefs. In comparison, Guiso et al. (2008) show that trust reflects the possibility of being cheated and individual optimism. Giddens (2013) defines trust as confidence that people can rely on each other and systems. Previous studies focus on two types of trust. One is a personal trust which is associated with social networks and emotional bonds. The other is institutional trust (system trust) which can be improved by strong formal institutions and intermediary organisations (Amoako et al., 2020). This chapter focuses on social trust, which includes both personal trust and institutional trust.

To examine the link between trust and financial access, Guiso et al. (2004) find evidence that social capital influences financial development through increasing trust in the society. Trust becomes more important in countries with a weak efficient court system and less educated people, such as developing countries. Trust is needed for an access to informal finance; informal finance is a trust-intensive activity that credit suppliers believe that borrowers will repay their debt in the future. In addition, trust plays an essential role in emerging-market countries which suffer from asymmetric information problems.

Lin et al. (2013) indicate that trust can mitigate asymmetric information problems in lending. The credit quality of borrowers leads to a good relationship between the supplier and the customer. It leads to an increase in the success rate of funding and decreases in interest and default rates, implying that friendship building on trust can reduce the information gap between lenders and borrowers. Their results are consistent with Petersen and Rajan (1997) and Cunat (2007) that customers receive more trade credit when they have a good relationship with suppliers.

Based on mutual trust and cooperation, Zhang et al. (2014) document that good corporate social performance (CSP) improves relations between a firm and its stakeholders. The effect of CSP on stakeholders is significant in corporate social responsibility (CSR) research. Their results show that firms make relationships with stakeholders to enable themselves to obtain more trade credit and better trade credit terms from their suppliers through CSR strategies.

Social trust has been proved to have impacts on trade credit provision. Considering the effect of social trust, Wu et al. (2014) study the relationship between social trust and

the use and offering of trade credit in different provinces in China. They find that trade credit helps firms with the difficulty from the discriminations of access external finance bank, and firms with poor institutional financing ability. In addition, trade credit is more vital to non-listed firms, especially small and young firms, because it is more difficult for these non-listed firms to obtain formal finance than listed and large firms. Social trust is important to firms with lower reputation. Firms would receive more trade credit from their suppliers in the same region if they are located in most intensive-social-trust areas. Buying firms (suppliers) in higher-social trust regions receive (offer) more trade credit, and they pay (receive) their accounts payables (receivable) faster. Thus, there is a positive relationship between social trust and trade credit. In addition, they investigate that social trust is a substitute for a legal institution – that is, social trust supports trade credit when firms are located in an ineffective legal environment. They find that the impact of social trust on trade credit varies with firm characteristics. It is more significant in firms with less access to formal finance, and trade credit is a substitute for formal finance.

Levine et al. (2018) study the effect of social trust on access to informal finance during banking crises. With difficulty in accessing bank loans during a systemic banking crisis, suppliers in high-trust countries offered their customers more trade credit to their customers that could offset loan from banks partially. This could alleviate customers' financial distress in the crisis period and helps firms in high social trust countries to make themselves resilient to banking crises. Trade credit relies on social trust while formal finance depends on legal institutions. With an information advantage, suppliers are less doubtful about the trustworthiness of their customers than formal institutions.

Recently, Amoako et al. (2020) study how trust has improved the relationship of customers and suppliers in trade credit and how trust encourages entrepreneurs to extend trade credit agreements for small and medium-sized enterprises (SMEs) in Ghana. They find that norms, culture, and quality of institutions shape trust in trade credit relationships. The reputation of SMEs can be built by their trustworthiness and on-time payment. Their results suggest that SMEs' reputation can affect the offer of trade credit and trade credit extension.

### 4.3.5 Hypothesis development

Fabbri and Klapper (2008) examine the decision of trade credit offer, and find that suppliers with low market power tend to extend trade credit to their customers. This is evident that market power is an important factor affecting trade credit provision and use.

Previous studies find that customers with relatively high market power are more likely to trade credit provision and use. Following previous studies (Dass et al., 2014; Fabbri and Klapper, 2016; Mateut and Chevapatrakul, 2018), this chapter uses the Herfindahl-Hirschler index to gauge the product market competition. In addition, this chapter adds an interaction term between market share and the HHI as a control variable because a given market share provides the customer operating in a less concentrated industry a higher market power.

Another strand of the literature (Wu et al., 2014; Zhang et al., 2014; Levine et al., 2018; Amoako et al., 2020) explains that suppliers are more likely to offer and extend trade credit to customers operating in high-social trust economies. In other words, this chapter expects that customer market power is positively related to trade credit, and firms tend to receive more trade credit in high-social trust economies. This chapter compares the effect of market share on trade credit in low- and high- social trust economies. Thus, the hypothesis of this study is as follows.

**Hypothesis 1:** Social trust moderates the positive effect of market power on trade credit.

This chapter studies how asymmetric information influences the sensitivity of trade credit to customer market power. According to several evidences on the role of asymmetric information on trade credit (see, for example, Smith, 1987; Peterson and Rajan, 1997; Long et al., 1993; Van Horen, 2007; Goncalves et al., 2018; McGuiness et al., 2018), this chapter predicts that asymmetric information and market share may interact in influencing trade credit. This chapter states this prediction as to the second hypothesis.

**Hypothesis 2:** Social trust moderates the negative effect of information asymmetry on trade credit.

The literature (Dass et al., 2014 and Jory et al., 2020) finds that RSI has positive impacts on trade credit. This chapter connects two strands of literature which are RSI and social trust. This implies that positive impacts of RSI on trade credit vary with the degree of social trust in the economy. The R&D in emerging economies is behind the R&D in developed economies. This indicates that these positive impacts may not appear in all economies that have R&D investment. This chapter has the third hypothesis:

**Hypothesis 3:** RSI is positively associated with trade credit taken only in a high-social trust economy.

## 4.4 Empirical methodology

Following the methodology of Van Horen (2007) and Mateut and Chevapatrakul (2018), this chapter examines the effects of customer bargaining power on trade credit in Asian emerging economies. To test whether social trust moderates the positive effect of market power on trade credit (Hypothesis 1), this chapter splits the results into to two groups and presents these effects to low and high social trust economies by estimating the following equation:

$$TC_{it} = \propto_1 + \beta_1 Mktshare_{it} + \beta_2 HHI_{dt} + \beta_3 Mktshare_{it} \times HHI_{dt} + \beta_4' X_{it} + \delta_t + \psi_j + \varepsilon_{it} \quad (12)$$

where $i$ denotes firms, $d$ denotes industries and $t$ denotes time periods. The dependent variable, $TC_{it}$, is the ratio of account payables and total assets. $\delta_t$ denotes time specific effect, $\psi_j$ is country specific effect, and $\varepsilon_{it}$ represents the error term (Liu et al.,2016; Levine et al.,2018 and McGuinness et al.,2018). Following Levine et al. (2018) and Matuet and Chevapatrakul (2018), the model has a key explanatory variable, $Mktshare_{it}$, which is the percentage of the firm's sales in its own two-digit industry sales. If suppliers favour firms with high market share by offering more trade credit, the estimated coefficient $\beta_1$ will be significantly positive, explaining that firms with high market share take more trade credit than those with low market share.

Even though this chapter adds several control variables in models, the key important con- trol variable is the Herfindahl–Hirschman Index, $HHI_{dt}$. The Herfindahl–Hirschman Index, $HHI_{dt}$, is an indicator measuring market competition in a given industry (Cull et al., 2009; Fosu, 2013; Brezina et al., 2016; Fabbri and Klapper, 2016; Chod et al.,2019). Similar to Fabbri and Klapper (2016) and Mateut and Chevapatrakul (2018), the Herfindahl–Hirschman index is the sum of squared values of corporate's market share in industry $d$ and in year $t$. The degree of market competition plays an important role in shaping the impacts of market power on trade credit since a given market share provides the customer with a high market power when the customer is in a less concentrated industry (Fabbri and Kalapper, 2016; Mateut and Chevapatrakul, 2018). The analysis includes the interaction term to allow the control for the effect of interaction between $Mktshare_{it}$ and $HHI_{dt}$ competition level. (Lim and Nguyen, 2018). Thus, this chapter expect that $\beta_2$ and $\beta_3$ are significantly negative.

In addition, this investigation includes controls for the effects of firms characteristics, $X_{it}$. A matrix of firm-level control variables contains seven continuous variables. First, leverage is defined as total liabilities divided by total assets (Fosu, 2013; Dass et al., 2015; Chod et al.,2019). Second, liquidity is measured by cash and short term investment relative to total assets (Goncalves et al.,2018; Mateut and Chevapatrakul, 2018; Chod et al., 2019). Third, profitability is defined as net income for the period over total assets (Peterson and Rajan, 1977; El Ghoul and Zhang, 2016; Mateut and Chevapatrakul, 2018). Fourth, firm size is defined as the natural logarithm of total assets (Van Horen, 2007; Fosu, 2013; Wu et al., 2014; Dass et al., 2015; Mateut and Chevapatrakul, 2018). Fifth, bank loan is the ratio of bank borrowing- to-total assets at the end of the previous year $t-1$ (Ozkan and Ozkan, 2004; Wu et al., 2014; Mateut and Chevapatrakul, 2018). Sixth, age is natural logarithm of the number of years since the firm is listed on the stock market.

Last, $age^2$ is the squared value of age which is added into the model to allow for nonlinearities (Fisman and Raturi, 2004; Van Horen, 2007; Fosu, 2013; Wu et al., 2014; Dass et al., 2015; Mateut and Chevapatrakul, 2018; Fabbri and Klapper, 2016).

This analysis follows the studies of Maksimovic (2001), Van Horen (2007) and McGuinness et al. (2018) including macroeconomic variables which may influence trade credit taken. The $real\ GDP\ per\ capita$ variable is added control the effect of economic development, $the\ growth\ of\ real\ GDP\ per\ capita$ variable is also added control a potential impact of business cycle, and $inflation\ rate$ is added as a proxy for a willingness to prefer long-term trade credit contracts to short term ones.

Additionally, this chapter splits the sample countries into two groups; low-social trust economies of which the social trust is at the bottom 50% of the distribution and high-social trust economies of which the social trust is at the top 50% of the distribution.

Regressions are estimated by using the ordinary least squares (OLS) estimation. The standard errors are clusterd at the four-digit industry level. The model includes firm fixed effects and country fixed effects to absorbs all time-invariant firm-specific and country-specific omitted factors that can influence trade credit.

To examine how trade credit taken is affected by the existence of asymmetric information, this analysis follows previous studies (Zhang, 2006; Li et al., 2019). This chapter tests whether social trust moderates the negative effect of information asymmetry on trade credit (Hypothesis 2). To test this hypothesis, the results are divided into two groups: low and high social trust. According to the effect of information asymmetry, small firms have a higher degree of information asymmetry than large firms and young firms

have a higher degree of information asymmetry than old firms. The asymmetric information problem is more prominent in R&D firms than in non-R&D firms. $Asym_{it}$ is a dummy variable reflecting the information asymmetry. There are three possible definitions of asymmetric information: size, age, and R&D. $Small$ which is a dummy variable of which the value is equal to one if firm size is below the sample median in a given year and zero otherwise, $Young$ which is a dummy variable of which the value is one if firm age is below the sample median in a given year and zero otherwise, and $R\&D$ which is a dummy variable of which the value is equal to one if the firm has positive research and development expenses and zero otherwise (Chod et al, 2019). In this part, the analysis estimates the following model in which the interaction of $Asym_{it}$ is added (Van Horen, 2007):

$$TC_{it} = \propto_1 + \beta_1 Mktshare_{it} + \beta_2 Asym_{it} + \beta_3 HHI_{dt} + \beta_4 Mktshare_{it} \times Asym_{it} + \beta_5 Mktshare_{it} \times HHI_{dt} + \beta_6 Asym_{it} \times HHI_{dt} + \beta_7 Mktshare_{it} \times Asym_{it} \times HHI_{dt} + \beta_8' X_{it} + \delta_t + \psi_j + \varepsilon_{it} \quad (13)$$

In order to examine that customers with a high level of RSI and high market share obtain more trade credit, this chapter follows Dass et al. (2015) by replacing the asymmetric information variable with a variable called RSI. This chapter also tests whether RSI is positively associated with trade credit taken only in a high-social trust economy (Hypothesis 3) by splitting the results into low and high social trust. Whilst, this chapter considers trade credit in the customer side which is measured by an account payable. As argued by Dass et al. (2015), Goncalves et al. (2018) and Jory et al. (2020), RSI indicates investments which grow asset-specificity such buying special machinery, improving specific human resource and obtaining specific technology. With data limitation, literature uses the ratio of corporate research and development expenses to total assets as a proxy for RSI. This analysis estimates the following model to examine the effect of RSI on trade credit taken:

$$TC_{it} = \propto_1 + \beta_1 Mktshare_{it} + \beta_2 RSI_{it} + \beta_3 HHI_{dt} + \beta_4 Mktshare_{it} \times RSI_{it} + \beta_5 Mktshare_{it} \times HHI_{dt} + \beta_6 RSI_{it} \times HHI_{dt} + \beta_7 Mktshare_{it} \times RSI_{it} \times HHI_{dt} + \beta_8' X_{it} + \delta_t + \psi_j + \varepsilon_{it} \quad (14)$$

In particular, this chapter is interested in three coefficients: $\beta_1$ in Equation 12, $\beta_4$ in Equation 13 and Equation 14. The estimates for $\beta_1$ in Equation 12 measure the sensitivity of trade credit taken to firm's market share, $\beta_4$ in Equation 13 measure the effect of asymmetric information problems on trade credit taken, and $\beta_4$ in Equation 14 measure the effect of RSI on trade credit taken. A positive $\beta_1$ suggests that firms with high market share receive more trade credit because of higher bargaining power. A negative $\beta_4$ in Equation 13 implies that, with the existence of asymmetric information between supplier and customer, a high-market share customer receives less trade credit than without the existence of asymmetric information. While a positive $\beta_4$ in Equation 14 indicates that customers with high intangible assets (investment in R&D) are more likely to receive trade credit and a high level of RSI benefits to the customer in trade credit.

## 4.5 Data and summary statistics

### 4.5.1 Data

This chapter uses a panel dataset consisting of 77,241 observations from nine economies during the period from 1988 to 2018, which is obtained from two databases. First is the Compustat IQ database where the information of the balance sheet and financial data of firms in Asian emerging economies is obtained from. Second is the World Values Survey (WVS) from which the data on social trust in Asian emerging economies is retrieved. This survey contains the data of more than 85,000 respondents from several countries across the globe. Following Knack and Keefer (1997) , La Porta et al. (1997), and Levin et al. (2018), this chapter gauges the social trust in each economy by calculating the percentage of survey respondents who answer "most people can be trusted" in the question of "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?" in WVS wave 1 (1981 - 1984), WVS wave 2 (1990 - 1994), WVS wave 3 (1995 -1998), WVS wave 4 (1999 - 2004), WVS wave 5 (2005 - 2009), and WVS wave 6 (2010 - 2014). For any periods not covered by the WVS wave 1 to 6, this chapter uses the answer from the previous survey because Bjornskov (2007) and Wu et al. (2014) explain that social trust is stable over a long period.

Following previous studies, this chapter excludes firms with incomplete records and negative total assets sales. The 1% from the upper and the lower tails of the distribution are removed to get rid of the outliers. The panel dataset in this chapter has an unbalanced structure with a total of 77,241 annual observations: 34,952 observations in China, 2,303 observations in Hong Kong SAR (China), 4,079 observations in Indonesia, 1,211

observations in South Korea, 15,086 observations in Malaysia, 2,245 observations in the Philippines, 8,117 observations in Singapore, 2,243 observations in Taiwan, and 7,005 observations in Thailand.

### 4.5.2 Summary statistics

Table 4.1 provides the summary of statistics for all variables in the sample over the period from 1988 to 2018. This includes the number of observations, the mean value, the standard deviation, the minimum, the maximum and the 25th, 50th, and 75th percentiles of each variable. The sample is divided into two groups at the yearly median value in any country and industry[22]. If a size (age) of firm is lower than the median value, it is a small (young) firm.

Table 4.2 shows differences in statistics between (i) small and large firms, (ii) young and old firms, and (iii) R&D and non-R&D firms. Small firms have a higher degree of information asymmetry than large firms and young firms have a higher degree of information asymmetry than old firms. The asymmetric information problem is more prominent in R&D firms than in non R&D firms. The data are structured at the firm-country-year level.

Table 4.1 indicates that the average value of the accounts payable-to-total assets ratio in the sample is 10.6%. The accounts payable-to-total assets ratios at the 25th percentile, 50th percentile (median), 75th percentile are 3.7%, 7.9% and 14.6%, respectively. This finding is similar to the finding of Liu et al. (2016) that the average ratio of accounts payable to total assets in China is 11.02%. The finding of Levine et al. (2018) that the average trade credit ratio for manufacturing firms in 34 countries is 0.8% and the median value of the ratio is 0.3%. The ratio in this study is slightly lower than the average ratio for SMEs in European countries, 16%, (McGuinness et al., 2018). The sample shows that even at the 75th percentile the level of the market share is low (0.006). The $Market\ Share$ variable has a positively skewed distribution. Mateut and Chevapatrakul (2018) report that the average market share in French manufacturing firms is 0.084. In this chapter, the industries with the lowest market concentration, which has the Herfindahl–Hirschman Index of 0.041, are industrial machinery & equipment and instruments & related products. Whereas, the industries with the highest market concentration, which has the HHI of 0.937, are coal mining, oil & gas extraction and special trade contractors. On average, the HHI is 0.220 which is close to the average HHI for domestic private firms in

[22] Table A4.3 shows the sample, including the breakdown by industry. This table presents the four-digit industry composition of the sample and provides the number of observations in each industry.

China (0.225) reported in the study of Cull et al. (2009). Research and development in Asian emerging economies fall behind developed countries, the mean of RSI in this study is 0.004 while it is 0.092 in the United States (Dass et al., 2015). Moving to firm-level and country-level control variables, on average, leverage, liquidity, firm size, bank loan, GDP per capita and inflation have a right-skewed distribution because the median is lower than the mean. On the other hand, the data on profitability, age, the squared value of age and GDP growth are left-skewed.

With regard to asymmetric information, Table 4.2 compares the statistics between firms with the high and low degree of information asymmetry. In general, the statistics in Table 4.2 are similar to those in Table 4.1. Zhang (2006), Baxamusa et al. (2016) and Li et al. (2019) argue that small firms, relatively new firms and firms investing in R&D have a higher degree of information asymmetry between suppliers and customers compared to large, more experienced and non-R&D firms. The last column of Table 4.2 shows a significant difference in the means of variables between firms with the high and low degrees of information asymmetry at a 1% significance level, with the exception of the difference in the means of profitability and bank loan between R&D and non-R&D subsamples. Turning to trade credit taken, the small (large) firm has an average accounts payable-to-total assets ratio equal to 9.9% (11.4%). The average trade credit ratio for young (R&D) firm is lower than that for experienced (non-R&D) firms. Specifically, the preliminary statistics highlight two interesting points. First, there is a difference in trade credit taken between subsamples. Second, firms with a low degree of information asymmetry have higher market power than those with a high degree of asymmetric information because the former has better reputation, connection, and financial health. While firms with a high degree of information asymmetry are inferior in bargaining power with suppliers.

## 4.6 Empirical results

To examine the relationship between trade credit taken and market share, this chapter estimate panel regressions of the ratio of accounts payable to total asset (TC) on market share. Following Levine et al. (2018) and Chod et al. (2019), the models are designed to control for firm, country and year effects.

The baseline results from the estimation of Equation 12 with a control for the effects of firm characteristics are presented in Table 4.3. Columns 1 and 2 present the results from a simple OLS estimation and Columns 3 to 6 present the estimates using a panel regression

method. Column 7 is the p-value of the test for equality of coefficients in Column 5 and Column 6.

Using fixed effected estimation approach and standard errors are clustered at the 4 digits industry level, the model includes only firm-level control variables in Column 1, and the interaction between market share and HHI is added in Column 2. The Hausman test is conducted to test for the fixed effects model. Column 3 shows that a one-standard deviation increase in market share leads to an increase in trade credit taken by 0.34%[23]. The significant positive coefficient for market share in Column 4 supports the hypothesis that firms with a high market share are more likely to obtain trade credit. The social trust status of an economy depends on whether the value for the economy is below (above) the median of the social trust value. The result of low social trust economies is presented in Column 5 and the result of high social trust economies is presented in Column 6.

In both subsamples, the coefficients for market share are positive and significant at a 1% significance level. For the low-social trust subsample of which result is shown in Column 5, the significant negative coefficients for HHI and the interaction between market share and HHI are consistent with the results of Fisman and Raturi (2004) and Mateut and Chevapatrakul (2018). This suggests that it is more difficult for customers to obtain trade credit when they operate in an industry with higher market concentration or high HHI. Whilst, in Column 6, the effects of market concentration and its interaction with market share on trade credit taken are insignificant. Consequently, a higher market share in the perfect competitive market enables the firms to have a higher accounts payable ratio in low-social trust economies but an increase in the market share has no impact on the accounts payable ratio in high-social trust economies. To confirm the results, this chapter tests for the equality of coefficients. Column 7 in Table 4.3 shows that there are significant differences in coefficients for market share, HHI and the interaction of market share with HHI. This result rejects the null hypothesis that the effect of market share on trade credit does not depend on social trust.

Firm characteristics are expected to have influences on trade credit taken. The coefficient for leverage is negative and significant at a 1% significance level, implying that firms with a high debt level tend to use trade credit. This supports previous empirical evidence (Dass et al., 2015 and Chod et al., 2019). The coefficients for liquidity are negative and statistically significant (see Column 4 and Column 5). This result is consistent

[23] Following Li et al. (2019), an increase of 0.34% in accounts payable relative to total assets is the product of a one-standard deviation increase of market share (0.035) and the coefficient for market share (0.093).

with the literature that illiquid firms need more trade credit (Mateut and Chevapatrakul, 2018). In addition, the results indicate that higher profitability is associated with more trade credit taken, in line with Dass et al. (2015) who find that high-profit margin customers obtain more trade credit since customers' bargaining power is higher than their suppliers' bargaining power. However, this finding contradicts Mateut and Chevapatrakul (2018) who argue that firms with strong financial position tend to have lower accounts payable. Interestingly, Wu et al. (2014) show that the effects of firm size and age on trade credit are ambiguous. Large and old firms can access trade credit easier than their small and young counterparts due to their better reputation and financial records. Given that these large and old firms have a good relationship with the bank, they may less likely to rely on trade credit. Consistent with Wu et al. (2014) and Dass et al. (2015), the results in Column 4 and Column 5 show that firm size has a negative and significant effect on trade credit taken. In particular, the coefficient for firm size in the high-social trust subsample is significant and positive which supports the findings in previous studies (see, for example, Van Horen, 2007; Mateut and Chevapatrakul, 2018). The coefficient for bank loan is negative and significant, supporting the financial theory that bank loan is negatively associated with trade credit taken because trade credit is a substitute for a bank loan (Mateut and Chevapatrakul, 2018). The coefficient for age is positive but the coefficient for age2 is negative in Column 4. This result suggests that firms receive more trade credit if they are older but the influence of age is lessened as the firms have more experience. However, the nonlinearity of the age effect becomes less prominent after splitting the sample into low-social trust and high-social trust sub-samples.

Table 4.4 shows the estimates of Equation 13, which relates trade credit to asymmetric information. Equation 13 has three explanatory variables: market share, asymmetric information and the interaction between market share and asymmetric information. Firm characteristics and interaction terms are included as controlling factors. The findings show that asymmetric information in small and young firms have a negative effect on the accounts payable ratio (see, for example, Van Horen, 2007; Dass et al., 2015; Goncalves et al., 2018). The effect of asymmetric information on trade credit taken is shown in Column 1 for small firms, in Column 2 for young firms, and in column 3 for research and development firms. This section focuses on the effect of market share on trade credit taken under a high degree of information asymmetry, which is reflected in the coefficient for the interaction term between market share and asymmetric information. In Column 1 and Column 2, the coefficients for market share are positive and significant at a 1% significance level, and the coefficients for asymmetric information and its interaction

are negative and significant. The results indicate that a one-standard deviation increase in market share is associated to a decrease in accounts payable ratio by 15.53% (11.36%)[24] in small (young) firms. This indicates that the buying firm's market share has a positive impact on obtaining trade credit but this effect is negatively affected by information asymmetry. In particular, the effect of market share is less salient in small and young firms. The estimates in Column 1 and Column 2 indicate that the coefficients for asymmetric information are -0.0144 and -0.0077 in small and young firms, respectively[25]. The results in Column 3 are different from those in Column 1 and Column 2; the coefficients for market share and asymmetric information are positive and significant at a 1% significance level, but a negative coefficient for their interaction is insignificant. The insignificant coefficient for the interaction suggests that there is no significant difference in the impacts of market share on trade credit taken between R&D and non-R&D firms.

To further examine whether social trust matters to effects of asymmetric information on trade credit, this section divides the sample into two sub-samples based on the level of social trust. The results shown in Column 1 and Column 3 of Table 4.5 highlight that only coefficients for the interaction between market share and asymmetric information are statistically significant and their sign is consistent with the expectation. The results explain that the effect of market share on trade credit taken in small (young) firms differs from the effect in large (old) firms if they operate in low-social trust economies. In low-social trust economies, a one-standard deviation increase in market share is related to a reduction in accounts payable ratio by 13.21% in small firms and 7.49% in young firms. By contrast, the effects of market share on trade credit in small (young) and large (old) firms are not different in high-social trust economies. This can be explained by theories based on ambiguity aversion (Guiso et al., 2008). In an economy with a lower level of trust, there will be a higher probability that customers will cheat on suppliers who are unfamiliar with them. As a result, the suppliers tend to offer trade credit to large and old firms on which the suppliers have more information. Whereas, high social trust makes trade and exchange easier (Bhagwat and Liu, 2020). The effect is insignificantly different between R&D and non-R&D firms in both low-social trust and high-social trust economies. Consequently, the results imply that a high degree of information asymmetry between suppliers and customers reduces the effect of market share on trade credit taken in small

[24] ((0.006+0.035)*(-0.06)+(-0.014))/0.106

[25] This chapter follows Li et al. (2019) that the effects of information asymmetry on the accounts payable ratio are reflected by the sum of two coefficients for the interaction term and risk. For example, information asymmetry the accounts payable ratio in a small firm is reduced by (-0.06*0.006)+(-0.014) when the market share of the firm increases.

firms and young firms residing in low-social trust economies. In contrast, asymmetric information is not an obstacle to accessing trade credit in high-social trust economies. This finding echoes previous studies (e.g., Wu et al, 2014; Levine et al., 2018) that social trust enhances both the use of trade credit and trade credit provision. However, the insignificant coefficients for the interaction term in Column 5 and Column 6 suggest that the impact of market share on trade credit is not significantly associated with asymmetric information in the context of R&D. It is plausible that small firms, young firms and R&D firms have a high degree of information asymmetry. However, there is a different result in R&D firms. Jacobson and Von Schedvin (2015) explain that the relationship between suppliers and customers is the propagation mechanism for firms in R&D-intensive industries to obtain trade credit since these firms produce specialised goods and services.

The different finding for R&D firms could be driven by the relationship between customers and suppliers. Previous studies (Dass et al., 2015; Jacobson and Von Schedvin, 2015) suggest that relationship-specific investment (RSI) builds the vertical relationship between suppliers and customers, and generates a surplus to both parties. Thus, Equation 13 is augmented with RSI and its interaction with market share and the result is presented in Table 4.6.

The coefficients for market share and RSI in Table 4.6 have a positive sign as expected. Although the coefficient for the interaction between market share and RSI is insignificant when the analysis includes the whole sample and low-social trust sub-sample, it is positive and significant at the 5% significance level when the high-social trust sub-sample is analysed (see Column 3). In the case of the high-social trust sub-sample, the positive effect of RSI on trade credit taken is moderated by a higher market share. For the firm with an average market share, a one-unit increase in RSI leads to a 0.50[26] increase in trade credit taken. The results show that the impact of RSI on trade credit taken for the firm with the highest market share (0.35) is 34 times[27] larger than the impact for the firm with the lowest market share. The finding suggests that RSI can enhance the use of trade credit and the effect of RSI on trade credit taken is more salient for firms operating in high-social trust economies. This is consistent with the possibility that suppliers with a high level of RSI and firms with low bargaining power are more likely to provide trade credit (Dass et al., 2015). RSI relates positively to both accounts receivable and accounts payable ratios. In addition, the relative bargaining power of suppliers and customers can influence trade

[26] The coefficient for RSI plus the product of the coefficients for the interaction term and the mean of market share is (0.347 + (38.049*0.004))
[27] (0.347 + (38.049*0.345))/(0.347)

credit. For example, suppliers with low bargaining power prefer to provide trade credit to customers and customers with low bargaining power are less likely to obtain trade credit from suppliers. Firms in the research and development industry are more likely to have a higher RSI, and these RSI-intensive firms tend to invest more in research (Allen and Phillips, 2000; Jory et al., 2020). The results show that RSI is associated positively with the trade credit received from a supplier.

Overall, the results have significant implications for firms with asymmetric information problem. The negative impact of market share on the use of trade credit is more prominent for small and young firms in low-social trust economies. This negative effect is unavoidable for small firms operating in low-social trust economies but this effect can be washed away by the supplier's risk management. To reduce risk from holding account receivables, Van Horen (2004) suggests suppliers to sell trade credit contract with high-risk firms to a factoring company.

More importantly, the results confirm that a combination of RSI and high social trust results in a positive effect of market share on trade credit use. This finding shows how RSI and social trust are important for trade credit. The results support proactive policies that encourage firms to invest in RSI and increase the level of social trust. The government may offer tax relief and schemes for business which spend on RSI. Social trust not only plays an important role in accessing external finance but it is also a substitute for the weak legal and formal institution.

## 4.7 Robustness check

To test whether the results in this chapter are driven by a measurement error, four different specifications using alternative measures are examined. Firstly, this section follows Levine et al. (2018) by modifying the definition of trade credit taken which is a dependent variable. The alternative measure is the account payable-to-cost of goods sold ratio. Secondly, this section considers a different definition of market power. Following previous works (Dass et al., 2015; Goncalves et al., 2018; Mateut and Chevapatrakul, 2018), the natural log of Lerner index[28] is used as a firm's market power for all firms in the same two-digit industry. Thirdly, this section classifies small and young firms by using the 25th percentile of the distribution (Kudlyak and Sanchez, 2017). A dummy variable of small (young) takes the value one if firm size (age) is less than the 25th percentile of the distribution of all firms in the sample and zero otherwise. Lastly, this section uses free

[28] Lerner Index = (Total Revenue - Cost of Goods Sold)/Total Revenue

collateral, property, plant and equipment (PPE) less total long-term debt divided by total assets to measure the degree of interdependency in RSI. R&D-intensive firms that hold free collateral are more likely to have a high level of RSI (Goncalves et al., 2018; Luo and Yu, 2019).

Alternative measures of the use of trade credit, market power, asymmetric information and relationship-specific investment are employed to re-estimate the models in Tables 4.5 and 4.6. Table 4.7 presents the results of re-estimations. The coefficients for asymmetric information and its interaction term with the natural logarithm of the Lerner index are positive in Columns 2 and 4, implying that small and young firms with a high Lerner index obtain more trade credit if they operate in high-social trust economies. Whereas, the negative coefficients for asymmetric information and its interaction term in Columns 1, 5 and 6 show that small firms with high market power operating in low-social trust economies and R&D firms with high market power in both low- and high-social trust economies are less likely to receive trade credit. In Column 3, the interaction between $Lerner\ index$ and $Risk$ is insignificant.

To ensure the robustness of the empirical results in Table 4.6, this section uses free collateral as a proxy for RSI. The results in Table 4.8 present that the coefficients for the natural logarithm of the Lerner index are positive and significant at a 1% significance level. In Column 2, the interaction term with free collateral has a negative coefficient that is significant at a 5% significance level but in Column 3 it has a positive coefficient that is significant at a 5% significance level. This explains that market power effects on trade credit taken become weaker (stronger) when firms hold less (more) free collateral in low-social trust (high-social trust) economies. This is consistent with Dass et al. (2015) and Goncalves et al. (2018) that available collateral is positively related to the use of trade credit in firms located in high-social trust economies as trade credit is a tool for generating relationship-specific investment. The results in low and high-social trust sub-samples are different. In general, R&D expenditure and free collateral cannot be financed by trade credit. The proportion of tangible assets are by far higher comparing to intangible assets in emerging economies (Demirguc-Kunt and Maksimovic, 1999; Ng et al., 2002; Fabbri and Menichini, 2010). Therefore, the results show that suppliers in low-social trust economies offer less trade credit to firms holding a high level of free collateral.

## 4.8 Discussion and conclusion

The argument is that firms with a high market share are more likely to receive trade credit but firms with asymmetric information are less likely to obtain trade credit. This chapter investigates how social trust changes the effects of market power and asymmetric information on trade credit by examining the offer of trade credit in different levels of social trust in Asian emerging economies. The empirical analysis uses the firm-level data of 5,183 firms in nine economies covering the period from 1988 to 2018. The nine economies are China, Hong Kong SAR (China), Indonesia, South Korea, Malaysia, the Philippines, Singapore, Taiwan (China), and Thailand. The analysis results indicate that firms with a high market share are more likely to obtain trade credit from their suppliers. However, firms tend to receive lower trade credit if they have an asymmetric information problem.

An important implication of our chapter is that the level of social trust matters to trade credit because social trust can increase the trustworthiness in the credit information of customers (Levine et al., 2018). The findings are different between low and high-social trust economies. These results align with Guiso et al. (2008) and Bhagwat and Liu (2020) on the role of social trust in asymmetric information perception; lack of trust is an obstruction for doing business while more information and knowledge can help overcome this obstacle. In other words, this chapter finds that customers operating in lower-social trust economies can minimise the barrier due to low social trust by providing more information to suppliers in order to reduce the asymmetric information problem. This chapter first finds that the impact of asymmetric information on trade credit taken disappears in high-social trust economies. In addition, that results are consistent with Dass et al. (2015) and Goncalves et al. (2018). In particular, firms with a high market share tend to obtain more trade credit if they invest in the relationship-specific investment. This implies that the relationship-specific investment plays a major role in receiving trade credit and again this has happened only in high-social trust economies. The relationship between RSI and trade credit taken is affirmed. Even though this chapter documents Asian emerging economies, results are general to apply in other emerging and developing economies as well.

To sum up, this chapter confirms previous findings and complements the literature on the relationship between firm characteristics and the use of trade credit by investigating the relationship in different social trust environments. Furthermore, this chapter delivers two policy implications. First, this chapter supports Van Horen (2004) that suppliers can

eliminate their asymmetric information by selling their accounts receivable to the factoring company. Second, this chapter presents evidence that social trust is important for trade credit. Thus, social trust can be promoted by implementing some policies (such as promoting equality, eliminating corruption, and introducing citizen engagement).

## 4.9 Tables

Table 4.1: Summary of statistics

| Variables | Obs | Mean | Std | Min | Max | P(25) | P(50) | P(75) |
|---|---|---|---|---|---|---|---|---|
| Trade Credit | 77,241 | 0.106 | 0.094 | 0.000 | 0.459 | 0.038 | 0.080 | 0.146 |
| Market Share | 77,241 | 0.006 | 0.035 | 0.000 | 0.345 | 0.000 | 0.000 | 0.000 |
| Herfindahl-Hirschman Index (HHI) | 77,241 | 0.220 | 0.175 | 0.041 | 0.937 | 0.096 | 0.165 | 0.292 |
| Relationship-specific investment (RSI) | 77,241 | 0.004 | 0.018 | -0.116 | 1.895 | 0.000 | 0.000 | 0.000 |
| Leverage | 77,241 | 0.454 | 0.237 | 0.044 | 1.360 | 0.281 | 0.440 | 0.596 |
| Liquidity | 77,241 | 0.164 | 0.142 | 0.002 | 0.714 | 0.060 | 0.125 | 0.228 |
| Profitability | 77,241 | 0.026 | 0.098 | -0.515 | 0.273 | 0.007 | 0.033 | 0.068 |
| Firm Size | 77,241 | 7.583 | 2.342 | 3.020 | 15.880 | 6.149 | 7.361 | 8.628 |
| Bank Loan | 77,241 | 0.157 | 1.682 | 0.000 | 459.879 | 0.025 | 0.104 | 0.215 |
| Age | 77,241 | 2.227 | 0.861 | 0.000 | 4.277 | 1.792 | 2.398 | 2.833 |

The table presents descriptive statistics: the number of observations, mean, standard deviation, minimum, maximum, 25th percentile, median and 75th percentile. $Trade\ Credit$ is the account payables-to-total assets ratio. $Market\ Share$ is the percentage of the firm's sales in the total sales of the two-digit industry that the firm is belonged to. $HHI$ is an indicator to measure market competition in industry $d$ and year $t$. $RSI$ is the ratio of corporate research and development expenses to total asset. If the value is missing, $RSI$ will be set to equal zero. $Leverage$ is the total debt-to-total assets ratio. $Liquidity$ is cash and short-term investment relative to total assets. $Profitability$ is earnings before interest and taxes relative to total assets. $Firm\ Size$ is the natural logarithm of total assets. $Bank\ Loan$ is the ratio of bank borrowing to total assets. $Age$ is the natural logarithm of the number of years the firm is listed on the stock market.

Table 4.2: Summary of statistics for different firm-level classifications

| | Low Social Trust | | | | | | | | High Social Trust | | | | | | | | Diff. Means |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Variables** | **Obs** | **Mean** | **Std** | **Min** | **Max** | **P(25)** | **P(50)** | **P(75)** | **Obs** | **Mean** | **Std** | **Min** | **Max** | **P(25)** | **P(50)** | **P(75)** | **P-value** |
| Trade Credit | 33,586 | 0.097 | 0.091 | 0.000 | 0.459 | 0.032 | 0.071 | 0.132 | 43,655 | 0.113 | 0.095 | 0.000 | 0.459 | 0.043 | 0.087 | 0.156 | 0.000 |
| Market Share | 33,586 | 0.008 | 0.041 | 0.000 | 0.345 | 0.000 | 0.000 | 0.000 | 43,655 | 0.004 | 0.029 | 0.000 | 0.345 | 0.000 | 0.000 | 0.000 | 0.000 |
| Herfindahl-Hirschman Index | 33,586 | 0.235 | 0.179 | 0.041 | 0.937 | 0.107 | 0.185 | 0.302 | 43,655 | 0.209 | 0.171 | 0.041 | 0.937 | 0.082 | 0.148 | 0.286 | 0.000 |
| Relationship-specific Investment | 33,586 | 0.005 | 0.024 | -0.116 | 1.895 | 0.000 | 0.000 | 0.000 | 43,655 | 0.004 | 0.012 | -0.003 | 0.285 | 0.000 | 0.000 | 0.000 | 0.000 |
| Leverage | 33,586 | 0.441 | 0.240 | 0.044 | 1.360 | 0.266 | 0.424 | 0.578 | 43,655 | 0.465 | 0.234 | 0.044 | 1.360 | 0.294 | 0.452 | 0.611 | 0.000 |
| Liquidity | 33,586 | 0.150 | 0.141 | 0.002 | 0.714 | 0.046 | 0.107 | 0.210 | 43,655 | 0.176 | 0.142 | 0.002 | 0.714 | 0.072 | 0.138 | 0.240 | 0.000 |
| Profitability | 33,586 | 0.020 | 0.111 | -0.515 | 0.273 | 0.000 | 0.032 | 0.073 | 43,655 | 0.029 | 0.086 | -0.515 | 0.273 | 0.010 | 0.034 | 0.065 | 0.000 |
| Firm Size | 33,586 | 6.965 | 2.882 | 3.020 | 15.880 | 4.879 | 6.236 | 8.146 | 43,655 | 8.059 | 1.672 | 3.020 | 15.880 | 6.956 | 7.768 | 8.798 | 0.000 |
| Bank Loan | 33,586 | 0.137 | 0.255 | 0.000 | 18.326 | 0.018 | 0.082 | 0.189 | 43,655 | 0.173 | 2.227 | 0.000 | 459.879 | 0.033 | 0.123 | 0.232 | 0.003 |
| Age | 33,586 | 2.403 | 0.855 | 0.000 | 4.277 | 1.946 | 2.485 | 2.996 | 43,655 | 2.092 | 0.842 | 0.000 | 4.094 | 1.609 | 2.197 | 2.708 | 0.000 |
| | **Small firms** | | | | | | | | **Large firms** | | | | | | | | **Diff. Means** |
| **Variables** | **Obs** | **Mean** | **Std** | **Min** | **Max** | **P(25)** | **P(50)** | **P(75)** | **Obs** | **Mean** | **Std** | **Min** | **Max** | **P(25)** | **P(50)** | **P(75)** | **P-value** |
| Trade Credit | 38,611 | 0.099 | 0.088 | 0.000 | 0.459 | 0.036 | 0.075 | 0.136 | 38,630 | 0.114 | 0.099 | 0.000 | 0.459 | 0.040 | 0.085 | 0.158 | 0.000 |
| Market Share | 38,611 | 0.004 | 0.028 | 0.000 | 0.345 | 0.000 | 0.000 | 0.000 | 38,630 | 0.008 | 0.041 | 0.000 | 0.345 | 0.000 | 0.000 | 0.000 | 0.000 |
| Herfindahl-Hirschman Index | 38,611 | 0.230 | 0.189 | 0.041 | 0.937 | 0.098 | 0.171 | 0.297 | 38,630 | 0.210 | 0.160 | 0.041 | 0.937 | 0.090 | 0.157 | 0.291 | 0.000 |
| Leverage | 38,611 | 0.418 | 0.247 | 0.044 | 1.360 | 0.239 | 0.389 | 0.547 | 38,630 | 0.491 | 0.220 | 0.044 | 1.360 | 0.334 | 0.490 | 0.633 | 0.000 |
| Liquidity | 38,611 | 0.171 | 0.155 | 0.002 | 0.714 | 0.054 | 0.124 | 0.242 | 38,630 | 0.158 | 0.128 | 0.002 | 0.714 | 0.064 | 0.126 | 0.216 | 0.000 |
| Profitability | 38,611 | 0.018 | 0.111 | -0.515 | 0.273 | 0.003 | 0.033 | 0.070 | 38,630 | 0.033 | 0.082 | -0.515 | 0.273 | 0.009 | 0.033 | 0.066 | 0.000 |
| Firm Size | 38,611 | 5.859 | 1.136 | 3.020 | 7.360 | 5.008 | 6.148 | 6.822 | 38,630 | 9.306 | 1.933 | 7.361 | 15.880 | 7.924 | 8.628 | 9.971 | 0.000 |
| Bank Loan | 38,611 | 0.166 | 2.374 | 0.000 | 459.879 | 0.016 | 0.095 | 0.210 | 38,630 | 0.149 | 0.157 | 0.000 | 3.390 | 0.034 | 0.112 | 0.220 | 0.158 |
| Age | 38,611 | 2.066 | 0.922 | 0.000 | 4.277 | 1.386 | 2.197 | 2.708 | 38,630 | 2.388 | 0.762 | 0.000 | 4.277 | 1.946 | 2.485 | 2.944 | 0.000 |
| | **Young firms** | | | | | | | | **Old firms** | | | | | | | | **Diff. Means** |
| **Variables** | **Obs** | **Mean** | **Std** | **Min** | **Max** | **P(25)** | **P(50)** | **P(75)** | **Obs** | **Mean** | **Std** | **Min** | **Max** | **P(25)** | **P(50)** | **P(75)** | **P-value** |
| Trade Credit | 38,501 | 0.104 | 0.096 | 0.000 | 0.459 | 0.034 | 0.075 | 0.142 | 38,740 | 0.109 | 0.091 | 0.000 | 0.459 | 0.042 | 0.084 | 0.150 | 0.000 |
| Market Share | 38,501 | 0.005 | 0.032 | 0.000 | 0.345 | 0.000 | 0.000 | 0.000 | 38,740 | 0.007 | 0.038 | 0.000 | 0.345 | 0.000 | 0.000 | 0.000 | 0.000 |
| Herfindahl-Hirschman Index | 38,501 | 0.222 | 0.178 | 0.041 | 0.937 | 0.095 | 0.169 | 0.292 | 38,740 | 0.218 | 0.172 | 0.041 | 0.937 | 0.096 | 0.162 | 0.291 | 0.000 |
| Leverage | 38,501 | 0.436 | 0.224 | 0.044 | 1.360 | 0.271 | 0.421 | 0.572 | 38,740 | 0.473 | 0.248 | 0.044 | 1.360 | 0.292 | 0.459 | 0.621 | 0.000 |
| Liquidity | 38,501 | 0.177 | 0.150 | 0.002 | 0.714 | 0.066 | 0.136 | 0.247 | 38,740 | 0.151 | 0.133 | 0.002 | 0.714 | 0.054 | 0.116 | 0.210 | 0.000 |
| Profitability | 38,501 | 0.029 | 0.097 | -0.515 | 0.273 | 0.010 | 0.039 | 0.072 | 38,740 | 0.022 | 0.098 | -0.515 | 0.273 | 0.004 | 0.028 | 0.063 | 0.000 |
| Firm Size | 38,501 | 7.216 | 2.151 | 3.020 | 15.880 | 5.945 | 7.116 | 8.136 | 38,740 | 7.948 | 2.464 | 3.020 | 15.880 | 6.339 | 7.709 | 9.115 | 0.000 |
| Bank Loan | 38,501 | 0.153 | 0.198 | 0.000 | 9.872 | 0.029 | 0.112 | 0.224 | 38,740 | 0.162 | 2.367 | 0.000 | 459.879 | 0.022 | 0.096 | 0.207 | 0.435 |
| Age | 38,501 | 1.551 | 0.659 | 0.000 | 2.303 | 1.099 | 1.792 | 2.079 | 38,740 | 2.899 | 0.376 | 2.398 | 4.277 | 2.565 | 2.833 | 3.135 | 0.000 |
| | **R&D firms** | | | | | | | | **Non-R&D firms** | | | | | | | | **Diff. Means** |
| **Variables** | **Obs** | **Mean** | **Std** | **Min** | **Max** | **P(25)** | **P(50)** | **P(75)** | **Obs** | **Mean** | **Std** | **Min** | **Max** | **P(25)** | **P(50)** | **P(75)** | **P-value** |
| Trade Credit | 17,186 | 0.102 | 0.094 | 0.000 | 0.459 | 0.035 | 0.076 | 0.140 | 60,055 | 0.119 | 0.094 | 0.000 | 0.459 | 0.049 | 0.094 | 0.165 | 0.000 |
| Market Share | 17,186 | 0.003 | 0.023 | 0.000 | 0.345 | 0.000 | 0.000 | 0.000 | 60,055 | 0.007 | 0.038 | 0.000 | 0.345 | 0.000 | 0.000 | 0.000 | 0.000 |
| Herfindahl-Hirschman Index | 17,186 | 0.183 | 0.137 | 0.041 | 0.937 | 0.066 | 0.138 | 0.291 | 60,055 | 0.231 | 0.184 | 0.041 | 0.937 | 0.102 | 0.177 | 0.299 | 0.000 |
| Leverage | 17,186 | 0.431 | 0.206 | 0.044 | 1.360 | 0.271 | 0.420 | 0.571 | 60,055 | 0.461 | 0.245 | 0.044 | 1.360 | 0.284 | 0.446 | 0.604 | 0.000 |
| Liquidity | 17,186 | 0.195 | 0.139 | 0.002 | 0.714 | 0.093 | 0.158 | 0.264 | 60,055 | 0.156 | 0.142 | 0.002 | 0.714 | 0.051 | 0.115 | 0.216 | 0.000 |
| Profitability | 17,186 | 0.027 | 0.089 | -0.515 | 0.273 | 0.008 | 0.031 | 0.065 | 60,055 | 0.025 | 0.100 | -0.515 | 0.273 | 0.006 | 0.034 | 0.069 | 0.048 |
| Firm Size | 17,186 | 8.355 | 2.190 | 3.020 | 15.880 | 7.213 | 8.218 | 9.406 | 60,055 | 7.369 | 2.339 | 3.020 | 15.880 | 5.922 | 7.107 | 8.330 | 0.000 |
| Bank Loan | 17,186 | 0.126 | 0.142 | 0.000 | 5.466 | 0.021 | 0.093 | 0.191 | 60,055 | 0.166 | 1.904 | 0.000 | 459.879 | 0.026 | 0.107 | 0.222 | 0.005 |
| Age | 17,186 | 2.319 | 0.700 | 0.000 | 4.263 | 1.946 | 2.398 | 2.833 | 60,055 | 2.203 | 0.900 | 0.000 | 4.277 | 1.609 | 2.398 | 2.833 | 0.000 |

The table presents descriptive statistics for firms in low- and high- social trust economies, small and large firms, young and old firms, and R&D and non-R&D firms. In the last column, Diff. Means is the p-value of the test statistic for the equality of means between two sub-samples.

Table 4.3: Customer bargaining power and trade credit taken

| Dependent variable is trade credit taken (account payable/total assets) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | OLS (1) | OLS (2) | FE (3) | FE (4) | FE (Low Social Trust) (5) | FE (High Social Trust) (6) | Diff (5)-(6) (7) |
| Market Share | 0.084*** | 0.104*** | 0.097*** | 0.150*** | 0.152*** | 0.082* | 0.000 |
| | (0.01) | (0.02) | (0.01) | (0.02) | (0.02) | (0.04) | |
| HHI | -0.067*** | -0.066*** | -0.008*** | -0.006** | -0.013*** | 0.002 | 0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | |
| Market Share × HHI | | -0.047 | | -0.123*** | -0.103*** | 0.011 | 0.000 |
| | | (0.03) | | (0.03) | (0.04) | (0.08) | |
| Leverage | 0.177*** | 0.177*** | 0.123*** | 0.123*** | 0.124*** | 0.138*** | 0.612 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | |
| Liquidity | 0.069*** | 0.069*** | -0.016*** | -0.015*** | -0.022*** | 0.001 | 0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | |
| Profitability | 0.067*** | 0.067*** | 0.037*** | 0.037*** | 0.019*** | 0.047*** | 0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | |
| Firm Size | -0.001*** | -0.001*** | 0.000 | -0.000 | -0.006*** | 0.004*** | 0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | |
| Bank Loan | -0.002*** | -0.002*** | -0.001*** | -0.001*** | -0.031*** | -0.001*** | 0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | |
| Age | -0.019*** | -0.019*** | 0.005*** | 0.005*** | -0.006** | -0.004 | 0.028 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | |
| $Age^2$ | 0.027*** | 0.027*** | -0.006** | -0.006** | -0.003 | 0.007* | 0.049 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | |
| Constant | 0.039*** | 0.039*** | 0.051*** | 0.051*** | 0.116*** | 0.019*** | 0.000 |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | |
| Observations | 78,508 | 78,508 | 78,457 | 78,457 | 41,340 | 37,101 | |
| Adjusted R-squared | 0.178 | 0.178 | 0.653 | 0.653 | 0.659 | 0.673 | |
| Firm Fixed-effects | No | No | Yes | Yes | Yes | Yes | |
| Country Fixed-effects | No | No | Yes | Yes | Yes | Yes | |
| Year Fixed-effects | No | No | Yes | Yes | Yes | Yes | |

The table reports the coefficients of Equation 4; it is an OLS regression of trade credit taken (i.e. the ratio of account payable and total assets) on market share. Specifications in Columns 1 and 2 exclude fixed effects, specifications in Columns 3 and 4 include firm fixed effects, country fixed effects and year fixed effects, and a specification in Column 5 (6) is for the low-(high-) social trust sub-sample. Control variables are the interaction between $Market\ Share$ and $HHI$, $Leverage$, $Liquidity$, $Profitability$, $Firm\ Size$, $Bank\ Loan$, $Age$, and $Age^2$. Diff in column 7 presents the test for the equality of coefficients in Column 5 and 6. The parentheses show standard errors. ***, **, and * indicate the significance of coefficients at the 1%, 5%, and 10% significance level, respectively.

Table 4.4: The effects of asymmetric information on trade credit taken

| Dependent variable is trade credit taken (account payable/total assets) | | | |
|---|---|---|---|
| | Small firms | Young firms | R&D firms |
| | (1) | (2) | (3) |
| Market Share | 0.173*** | 0.193*** | 0.155*** |
| | (0.02) | (0.02) | (0.02) |
| HHI | -0.024*** | -0.020*** | -0.004* |
| | (0.00) | (0.00) | (0.00) |
| Asym | -0.014*** | -0.007*** | 0.013*** |
| | (0.00) | (0.00) | (0.00) |
| Market Share × HHI | -0.107** | -0.184*** | -0.138*** |
| | (0.05) | (0.04) | (0.03) |
| Market Share × Asym | -0.060* | -0.123*** | -0.064 |
| | (0.03) | (0.03) | (0.05) |
| HHI × Asym | 0.027*** | 0.025*** | -0.019*** |
| | (0.00) | (0.00) | (0.00) |
| Market Share × HHI × Asym | 0.005 | 0.173*** | 0.032 |
| | (0.06) | (0.05) | (0.11) |
| Leverage | 0.124*** | 0.124*** | 0.124*** |
| | (0.00) | (0.00) | (0.00) |
| Liquidity | -0.013*** | -0.013*** | -0.013*** |
| | (0.00) | (0.00) | (0.00) |
| Profitability | 0.035*** | 0.035*** | 0.035*** |
| | (0.00) | (0.00) | (0.00) |
| Firm Size | -0.002*** | -0.001* | -0.001*** |
| | (0.00) | (0.00) | (0.00) |
| Bank Loan | -0.001*** | -0.001*** | -0.001*** |
| | (0.00) | (0.00) | (0.00) |
| Age | 0.004** | 0.004** | 0.003* |
| | (0.00) | (0.00) | (0.00) |
| $Age^2$ | -0.006** | -0.004 | -0.005* |
| | (0.00) | (0.00) | (0.00) |
| Constant | 0.076*** | 0.057*** | 0.057*** |
| | (0.00) | (0.00) | (0.00) |
| Observations | 77,241 | 77,241 | 77,241 |
| Adjusted R-squared | 0.658 | 0.658 | 0.658 |
| Firm Fixed-effects | Yes | Yes | Yes |
| Country Fixed-effects | Yes | Yes | Yes |
| Year Fixed-effects | Yes | Yes | Yes |

The table reports the coefficients of Equation 5; the OLS regression is employed to examine the effect of asymmetric information (Asym) on trade credit taken. Asymmetric information is higher in three types of firms: small firms, young firms, R&D firms. The dependent variable is the ratio of account payable to total assets. The independent variable that this analysis is focused on is the interaction between $Market\ Share$ and $Asym$. Control variables are the interaction between $Market\ Share$ and $HHI$, the interaction between $HHI$ and $Asym$, a three-way interaction, $Leverage$, $Liquidity$, $Profitability$, $Firm\ Size$, $Bank\ Loan$, $Age$, and $Age^2$. All specifications include firm fixed effects, country fixed effects and year fixed effects. The parentheses show standard errors. ***, **, and * indicate the significance of coefficients at the 1%, 5%, and 10% significance level, respectively.

Table 4.5: The effects of asymmetric information on trade credit taken

| Dependent variable is trade credit taken (account payable/total assets) | | | | | | |
|---|---|---|---|---|---|---|
| | Small firms | | Young firms | | R&D firms | |
| | Low Social Trust (1) | High Social Trust (2) | Low Social Trust (3) | High Social Trust (4) | Low Social Trust (5) | High Social Trust (6) |
| Market Share | 0.248*** | 0.085** | 0.216*** | 0.112*** | 0.187*** | 0.104*** |
| | (0.04) | (0.04) | (0.03) | (0.04) | (0.03) | (0.03) |
| HHI | -0.028*** | -0.014*** | -0.020*** | -0.023*** | -0.014*** | 0.001 |
| | (0.01) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Asym | -0.004* | -0.008*** | -0.003* | -0.010*** | 0.003 | 0.014*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Market Share × HHI | -0.026 | 0.027 | -0.217*** | 0.049 | -0.200*** | 0.030 |
| | (0.09) | (0.08) | (0.05) | (0.07) | (0.04) | (0.06) |
| Market Share × Asym | -0.180*** | 0.030 | -0.087** | -0.070 | -0.079 | -0.058 |
| | (0.05) | (0.05) | (0.04) | (0.04) | (0.05) | (0.09) |
| HHI × Asym | 0.016*** | 0.022*** | 0.011*** | 0.031*** | -0.017** | -0.013** |
| | (0.01) | (0.00) | (0.00) | (0.00) | (0.01) | (0.01) |
| Market Share × HHI × Asym | -0.077 | 0.012 | 0.062 | 0.059 | 0.146 | -0.149 |
| | (0.10) | (0.10) | (0.08) | (0.08) | (0.13) | (0.18) |
| Leverage | 0.140*** | 0.130*** | 0.140*** | 0.130*** | 0.140*** | 0.131*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Liquidity | -0.022*** | 0.006** | -0.021*** | 0.006* | -0.021*** | 0.006** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Profitability | 0.016*** | 0.037*** | 0.016*** | 0.036*** | 0.016*** | 0.037*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Firm Size | -0.007*** | 0.002*** | -0.007*** | 0.002*** | -0.007*** | 0.002*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Bank Loan | -0.041*** | -0.001*** | -0.041*** | -0.001*** | -0.041*** | -0.001*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Age | -0.006** | 0.010*** | -0.007** | 0.010*** | -0.006** | 0.009*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Age $^2$ | -0.004 | -0.007** | -0.002 | -0.005 | -0.004 | -0.006* |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Constant | 0.118*** | 0.029*** | 0.114*** | 0.024*** | 0.112*** | 0.019*** |
| | (0.00) | (0.01) | (0.00) | (0.00) | (0.00) | (0.00) |
| Observations | 33,598 | 43,623 | 33,598 | 43,623 | 33,598 | 43,623 |
| Adjusted R-squared | 0.671 | 0.677 | 0.671 | 0.677 | 0.671 | 0.677 |
| Firm Fixed-effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Country Fixed-effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed-effects | Yes | Yes | Yes | Yes | Yes | Yes |

The table reports the coefficients of Equation 5; an OLS regression is employed to examine the effect of asymmetric information on trade credit taken in two sub-samples (low social trust and high social trust). There are three types of firms that reflect risk incurred by information asymmetry: small firms, young firms, R&D firms. The dependent variable is the ratio of account payable to total assets. The independent variable that is the focus of this analysis is the interaction between $Market\ Share$ and $Asym$. Control variables are the interaction between $Market\ Share$ and $HHI$, the interaction between $HHI$ and $Asym$, the three-way interaction, $Leverage$, $Liquidity$, $Profitability$, $Firm\ Size$, $Bank\ Loan$, $Age$, and $Age^2$. All specifications include firm fixed effects, country fixed effects and year fixed effects. The parentheses show standard errors. ***, **, and * indicate the significance of coefficients at the 1%, 5%, and 10% significance level, respectively.

Table 4.6: The effects of RSI on trade credit taken

| Dependent variable is trade credit taken (account payable/total assets) | | | |
|---|---|---|---|
| | All Sample | Low Social Trust | High Social Trust |
| | (1) | (2) | (3) |
| Market Share | 0.149*** | 0.184*** | 0.101*** |
| | (0.02) | (0.03) | (0.03) |
| HHI | -0.006** | -0.015*** | 0.001 |
| | (0.00) | (0.00) | (0.00) |
| RSI | 0.096*** | 0.001 | 0.347*** |
| | (0.03) | (0.03) | (0.05) |
| Market Share × HHI | -0.132*** | -0.198*** | 0.032 |
| | (0.03) | (0.04) | (0.06) |
| Market Share × RSI | -1.421 | -1.435 | 38.049** |
| | (3.12) | (3.07) | (16.48) |
| HHI × RSI | 0.307** | 0.166 | 0.584** |
| | (0.15) | (0.17) | (0.26) |
| Market Share × HHI × RSI | 17.219 | 30.819 | -197.812** |
| | (19.47) | (19.21) | (87.59) |
| Leverage | 0.124*** | 0.140*** | 0.130*** |
| | (0.00) | (0.00) | (0.00) |
| Liquidity | -0.013*** | -0.021*** | 0.007** |
| | (0.00) | (0.00) | (0.00) |
| Profitability | 0.036*** | 0.016*** | 0.037*** |
| | (0.00) | (0.00) | (0.00) |
| Firm Size | -0.001** | -0.007*** | 0.002*** |
| | (0.00) | (0.00) | (0.00) |
| Bank Loan | -0.001*** | -0.041*** | -0.001*** |
| | (0.00) | (0.00) | (0.00) |
| Age | 0.004** | -0.006** | 0.009*** |
| | (0.00) | (0.00) | (0.00) |
| $Age^2$ | -0.006** | -0.003 | -0.005 |
| | (0.00) | (0.00) | (0.00) |
| Constant | 0.054*** | 0.112*** | 0.018*** |
| | (0.00) | (0.00) | (0.00) |
| Observations | 77,241 | 33,598 | 43,623 |
| Adjusted R-squared | 0.658 | 0.671 | 0.678 |
| Firm Fixed-effects | Yes | Yes | Yes |
| Country Fixed-effects | Yes | Yes | Yes |
| Year Fixed-effects | Yes | Yes | Yes |

The table reports the coefficients of Equation 6; an OLS estimation is employed to examine the effect the relationship-specific investment (RSI) on trade credit taken for the whole sample and two sub-samples (low social trust and high social trust). The dependent variable is the ratio of account payable to total assets. The independent variable that is the focus of the analysis is the interaction between $Market\ Share$ and $RSI$. Control variables are the interaction between $Market\ Share$ and $HHI$, the interaction between $HHI$ and $RSI$, the three-way interaction, $Leverage$, $Liquidity$, $Profitability$, $Firm\ Size$, $Bank\ Loan$, $Age$, and $Age^2$. All specifications include firm fixed effects, country fixed effects and year fixed effects. The parentheses show standard errors. ***, **, and * indicate the significance of coefficients at the 1%, 5%, and 10% significance level, respectively.

Table 4.7: Robustness: The effects of asymmetric information on trade credit taken

| Dependent variable is trade credit taken (account payable/cost of goods sold) | | | | | | |
|---|---|---|---|---|---|---|
| | Small firms | | Young firms | | R&D firms | |
| | Low Social Trust | High Social Trust | Low Social Trust | High Social Trust | Low Social Trust | High Social Trust |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Lerner index | 0.085*** | 0.086*** | 0.081*** | 0.088*** | 0.083*** | 0.100*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| HHI | -0.071* | 0.059 | -0.033 | 0.088* | -0.010 | 0.002 |
| | (0.04) | (0.04) | (0.04) | (0.05) | (0.04) | (0.04) |
| Asym | -0.093*** | 0.209*** | -0.010 | 0.082*** | -0.103*** | -0.089*** |
| | (0.03) | (0.04) | (0.03) | (0.02) | (0.03) | (0.02) |
| Lerner index × HHI | -0.010 | 0.020* | -0.001 | 0.027** | 0.002 | 0.008 |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Lerner index × Asym | -0.013** | 0.041*** | 0.000 | 0.016*** | -0.020*** | -0.022*** |
| | (0.01) | (0.01) | (0.01) | (0.00) | (0.01) | (0.00) |
| HHI × Asym | 0.184*** | -0.209** | 0.149** | -0.153*** | 0.083 | 0.033 |
| | (0.06) | (0.09) | (0.06) | (0.06) | (0.09) | (0.08) |
| Lerner index × HHI × Asym | 0.038** | -0.039* | 0.025 | -0.032** | 0.023 | 0.003 |
| | (0.02) | (0.02) | (0.02) | (0.01) | (0.02) | (0.02) |
| Leverage | 0.257*** | 0.387*** | 0.258*** | 0.385*** | 0.257*** | 0.387*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Liquidity | -0.012 | -0.061*** | -0.012 | -0.063*** | -0.012 | -0.060*** |
| | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) | (0.01) |
| Profitability | -0.181*** | -0.364*** | -0.180*** | -0.370*** | -0.180*** | -0.370*** |
| | (0.01) | (0.02) | (0.01) | (0.02) | (0.01) | (0.02) |
| Firm Size | 0.008*** | 0.024*** | 0.012*** | 0.024*** | 0.012*** | 0.024*** |
| | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |
| Bank Loan | -0.063*** | -0.053*** | -0.063*** | -0.051*** | -0.063*** | -0.052*** |
| | (0.01) | (0.00) | (0.01) | (0.00) | (0.01) | (0.00) |
| Age | 0.001 | -0.032*** | -0.001 | -0.025 | 0.001 | -0.033*** |
| | (0.01) | (0.01) | (0.01) | (0.02) | (0.01) | (0.01) |
| Age $^2$ | -0.024 | 0.021 | -0.021 | 0.014 | -0.023 | 0.021 |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Constant | 0.510*** | 0.458*** | 0.455*** | 0.460*** | 0.462*** | 0.527*** |
| | (0.03) | (0.03) | (0.02) | (0.03) | (0.02) | (0.03) |
| Observations | 32,926 | 35,933 | 32,926 | 35,933 | 32,926 | 35,933 |
| Adjusted R-squared | 0.528 | 0.486 | 0.528 | 0.486 | 0.528 | 0.487 |
| Firm Fixed-effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Country Fixed-effects | Yes | Yes | Yes | Yes | Yes | Yes |

The table reports the coefficients of Equation 5; an OLS estimation is applied to examine the effect of asymmetric information on trade credit taken in two sub-samples (low social trust and high social trust). Asym is presented in three types of firms: small firms, young firms, R&D firms. The dependent variable is the ratio of account payable to cost of goods sold. The independent variable is the interaction between *Lerner index* and *Asym*. *Lerner index* is the difference between total revenue and cost of goods sold relative to total revenue. Control variables are the interaction between *Lerner index* and *HHI*, the interaction between *HHI* and *Asym*, the three-way interaction, $Leverage$, $Liquidity$, $Profitability$, $Firm\ Size$, $Bank\ Loan$, $Age$, and $Age^2$. All specifications include firm fixed effects, country fixed effects and year fixed effects. The parentheses show standard errors. ***, **, and * indicate the significance of coefficients at the 1%, 5%, and 10% significance level, respectively.

Table 4.8: Robustness: The effects of RSI on trade credit taken

| Dependent variable is trade credit taken (account payable/ cost of goods sold) | | | |
|---|---|---|---|
| | All Sample | Low Social Trust | High Social Trust |
| | (1) | (2) | (3) |
| Lerner index | 0.085*** | 0.083*** | 0.086*** |
| | (0.00) | (0.00) | (0.00) |
| HHI | -0.114*** | -0.056 | -0.061 |
| | (0.04) | (0.05) | (0.06) |
| Free collateral | -0.019 | -0.065 | 0.127** |
| | (0.04) | (0.06) | (0.07) |
| Lerner index × HHI | -0.016* | -0.011 | 0.007 |
| | (0.01) | (0.01) | (0.01) |
| Lerner index × Free collateral | -0.007 | -0.021* | 0.026** |
| | (0.01) | (0.01) | (0.01) |
| HHI × Free collateral | 0.418*** | 0.293** | 0.291 |
| | (0.11) | (0.14) | (0.18) |
| Lerner index × HHI × Free collateral | 0.079*** | 0.084** | 0.018 |
| | (0.03) | (0.04) | (0.04) |
| Leverage | 0.319*** | 0.261*** | 0.392*** |
| | (0.01) | (0.01) | (0.01) |
| Liquidity | -0.050*** | -0.007 | -0.048*** |
| | (0.01) | (0.01) | (0.01) |
| Profitability | -0.239*** | -0.177*** | -0.369*** |
| | (0.01) | (0.01) | (0.02) |
| Firm Size | 0.020*** | 0.012*** | 0.025*** |
| | (0.00) | (0.00) | (0.00) |
| Bank Loan | -0.054*** | -0.064*** | -0.052*** |
| | (0.00) | (0.01) | (0.00) |
| Age | -0.000 | 0.003 | -0.028** |
| | (0.01) | (0.01) | (0.01) |
| Age $^2$ | -0.009 | -0.026 | 0.016 |
| | (0.01) | (0.02) | (0.02) |
| Constant | 0.428*** | 0.454*** | 0.443*** |
| | (0.02) | (0.03) | (0.03) |
| Observations | 68,859 | 32,926 | 35,933 |
| Adjusted R-squared | 0.508 | 0.528 | 0.487 |
| Firm Fixed-effects | Yes | Yes | Yes |
| Country Fixed-effects | Yes | Yes | Yes |

The table reports the coefficients of Equation; an OLS estimation is employed to analyse the effect the relationship-specific investment (RSI) on trade credit taken for the whole sample and two sub-samples (low social trust and high social trust). The dependent variable is the ratio of account payable to cost of goods sold. The independent variable that is the focus of this analysis is the interaction between $Lerner\ index$ and $Free\ collateral$. $Free\ collateral$ is the difference between property, plant and equipment. Control variables are the interaction between $Lerner\ index$ and $HHI$, the interaction between $HHI$ and $Free\ collateral$, the three-way interaction, $Leverage$, $Liquidity$, $Profitability$, $Firm\ Size$, $Bank\ Loan$, $Age$, and $Age^2$. All specifications include firm fixed effects, country fixed effects and year fixed effects. The parentheses show standard errors. ***, **, and * indicate the significance of coefficients at the 1%, 5%, and 10% significance level, respectively.

## 4.10 Appendix

Table A4.1: Correlation matrix of explanatory variables

| Variables | Trade Credit | Market Share | Herfindahl-Hirschman Index | Small dummy | Young dummy | R&D dummy | Relationship-specific Investment | Leverage | Liquidity | Profitability | Firm Size | Bank Loan | Age |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Trade Credit | 1.00 | | | | | | | | | | | | |
| Market Share | 0.03 | 1.00 | | | | | | | | | | | |
| Herfindahl-Hirschman Index | -0.13 | 0.11 | 1.00 | | | | | | | | | | |
| Small dummy | -0.07 | -0.07 | 0.05 | 1.00 | | | | | | | | | |
| Young dummy | 0.03 | -0.03 | 0.00 | 0.12 | 1.00 | | | | | | | | |
| R&D dummy | 0.07 | -0.05 | -0.11 | -0.23 | 0.01 | 1.00 | | | | | | | |
| Relationship-specific Investment | 0.08 | 0.00 | -0.03 | -0.17 | -0.03 | 0.40 | 1.00 | | | | | | |
| Leverage | 0.37 | 0.05 | -0.01 | -0.14 | -0.07 | -0.06 | 0.02 | 1.00 | | | | | |
| Liquidity | -0.03 | -0.04 | -0.02 | 0.03 | 0.06 | 0.14 | 0.06 | -0.36 | 1.00 | | | | |
| Profitability | -0.09 | 0.04 | -0.01 | -0.09 | 0.01 | 0.01 | 0.03 | -0.40 | 0.19 | 1.00 | | | |
| Firm Size | 0.04 | 0.29 | -0.04 | -0.73 | -0.15 | 0.17 | 0.22 | 0.18 | -0.08 | 0.11 | 1.00 | | |
| Bank Loan | 0.01 | 0.45 | -0.02 | -0.14 | -0.05 | 0.00 | 0.05 | 0.14 | -0.08 | -0.03 | 0.44 | 1.00 | |
| Age | -0.05 | 0.03 | 0.01 | -0.16 | -0.81 | 0.02 | 0.03 | 0.08 | -0.10 | -0.04 | 0.17 | 0.05 | 1.00 |

Table A4.2: The list of economies with low and high social trust

| | The number of firms in low social trust | The number of firms in high social trust | Total |
|---|---|---|---|
| China (Mainland) | 0 | 34,952 | 34,952 |
| Hong Kong SAR (China) | 0 | 2,303 | 2,303 |
| Indonesia | 2,633 | 1,446 | 4,079 |
| South Korea | 1,211 | 0 | 1,211 |
| Malaysia | 15,086 | 0 | 15,086 |
| Phillipines | 2,245 | 0 | 2,245 |
| Singapore | 8,117 | 0 | 8,117 |
| Taiwan (China) | 2,243 | 0 | 2,243 |
| Thailand | 2,051 | 4,954 | 7,005 |
| Total | 33,586 | 43,655 | 77,241 |

Table A4.3: Industry structure

| 4-digit | SIC Title | Small firms | Large firms | Young firms | Old firms | R&D firms | Non R&D firms |
|---|---|---|---|---|---|---|---|
| 100 | Agricultural Production Crops | 388 | 296 | 225 | 459 | 114 | 570 |
| 200 | Agricultural Production Livestock and Animal Specialties | 204 | 176 | 193 | 187 | 69 | 311 |
| 700 | Agricultural Services | 46 | 20 | 55 | 11 | 27 | 39 |
| 800 | Forestry | 91 | 21 | 32 | 80 | 15 | 97 |
| 900 | Fishing, Hunting, and Trapping | 50 | 43 | 47 | 46 | 22 | 71 |
| 1000 | Metal Mining | 290 | 381 | 221 | 450 | 68 | 603 |
| 1040 | Gold and Silver Ores | 38 | 89 | 65 | 62 | 46 | 81 |
| 1090 | Miscellaneous Metal Ores | 2 | 25 | 17 | 10 | 10 | 17 |
| 1220 | Bituminous Coal and Lignite Mining | 148 | 535 | 334 | 349 | 131 | 552 |
| 1311 | Crude Petroleum and Natural Gas | 140 | 178 | 88 | 230 | 55 | 263 |
| 1381 | Drilling Oil and Gas Wells | 12 | 30 | 26 | 16 | 8 | 34 |
| 1382 | Oil and Gas Field Exploration Services | 120 | 54 | 125 | 49 | 42 | 132 |
| 1389 | Oil and Gas Field Services, Not Elsewhere Classified | 203 | 71 | 117 | 157 | 49 | 225 |
| 1400 | Mining and Quarrying of Non metallic Minerals, Except Fuels | 11 | 33 | 25 | 19 | 0 | 44 |
| 1500 | Building Construction General Contractors and Operative Builders | 513 | 212 | 308 | 417 | 47 | 678 |
| 1520 | General Building Contractors-residential | 148 | 41 | 77 | 112 | 6 | 183 |
| 1531 | Operative Builders | 45 | 24 | 10 | 59 | 0 | 69 |
| 1540 | General Building Contractors-Non residential | 173 | 69 | 101 | 141 | 8 | 234 |
| 1600 | Heavy Construction Other Than Building Construction Contractors | 429 | 627 | 540 | 516 | 188 | 868 |
| 1623 | Water, Sewer, Pipeline, and Communications and Power Line | 35 | 17 | 34 | 18 | 20 | 32 |
| 1700 | Construction Special Trade Contractors | 113 | 11 | 66 | 58 | 12 | 112 |
| 1731 | Electrical Work | 54 | 20 | 34 | 40 | 0 | 74 |
| 2000 | Food and Kindred Products | 321 | 343 | 233 | 431 | 112 | 552 |
| 2011 | Meat Packing Plants | 17 | 4 | 16 | 5 | 3 | 18 |
| 2013 | Sausages and Other Prepared Meat Products | 3 | 18 | 10 | 11 | 5 | 16 |
| 2015 | Poultry Slaughtering and Processing | 62 | 48 | 59 | 51 | 11 | 99 |
| 2020 | Dairy Products | 66 | 140 | 80 | 126 | 51 | 155 |
| 2024 | Ice Cream and Frozen Desserts | 40 | 0 | 18 | 22 | 2 | 38 |
| 2030 | Canned, Frozen, and Preserved Fruits, Vegetables, and Food Specialties | 91 | 101 | 109 | 83 | 20 | 172 |
| 2033 | Canned Fruits, Vegetables, Preserves, Jams, and Jellies | 45 | 89 | 39 | 95 | 13 | 121 |
| 2040 | Grain Mill Products | 258 | 265 | 220 | 303 | 95 | 428 |
| 2050 | Bakery Products | 39 | 14 | 27 | 26 | 6 | 47 |
| 2052 | Cookies and Crackers | 19 | 0 | 10 | 9 | 1 | 18 |
| 2060 | Sugar and Confectionery Products | 184 | 170 | 110 | 244 | 35 | 319 |
| 2070 | Fats and Oils | 556 | 314 | 322 | 548 | 100 | 770 |
| 2080 | Beverages | 13 | 59 | 27 | 45 | 20 | 52 |
| 2082 | Malt Beverages | 169 | 173 | 92 | 250 | 49 | 293 |
| 2084 | Wines, Brandy, and Brandy Spirits | 109 | 116 | 113 | 112 | 41 | 184 |
| 2085 | Distilled and Blended Liquors | 63 | 139 | 95 | 107 | 50 | 152 |
| 2086 | Bottled and Canned Soft Drinks and Carbonated Waters | 119 | 121 | 68 | 172 | 38 | 202 |
| 2090 | Miscellaneous Food Preparations and Kindred | 272 | 185 | 227 | 230 | 90 | 367 |
| 2092 | Prepared Fresh or Frozen Fish and Seafood | 93 | 148 | 101 | 140 | 15 | 226 |
| 2100 | Tobacco Products | 46 | 19 | 0 | 65 | 13 | 52 |

| 4-digit | SIC Title | Small firms | Large firms | Young firms | Old firms | R&D firms | Non R&D firms |
|---|---|---|---|---|---|---|---|
| 2111 | Cigarettes | 0 | 23 | 2 | 21 | 15 | 8 |
| 2200 | Textile Mill Products | 669 | 743 | 618 | 794 | 305 | 1,107 |
| 2211 | Broad woven Fabric Mills, Cotton | 3 | 28 | 27 | 4 | 5 | 26 |
| 2221 | Broad woven Fabric Mills, Manmade Fiber and Silk | 35 | 35 | 41 | 29 | 10 | 60 |
| 2250 | Knitting Mills | 51 | 43 | 38 | 56 | 21 | 73 |
| 2253 | Knit Outerwear Mills | 2 | 12 | 8 | 6 | 0 | 14 |
| 2273 | Carpets and Rugs | 41 | 9 | 6 | 44 | 0 | 50 |
| 2300 | Apparel and Other Finished Products Made from Fabrics and Similar Materials | 513 | 293 | 393 | 413 | 104 | 702 |
| 2320 | Men's and Boys' Furnishings, Work Clothing, and Allied Garments | 12 | 53 | 41 | 24 | 15 | 50 |
| 2340 | Women's, Misses', Children's, and Infants' Undergarments | 12 | 20 | 10 | 22 | 0 | 32 |
| 2390 | Miscellaneous Fabricated Textile Products | 37 | 17 | 39 | 15 | 10 | 44 |
| 2400 | Lumber and Wood Products, Except Furniture | 479 | 183 | 299 | 363 | 61 | 601 |
| 2421 | Sawmills and Planning Mills, General | 89 | 0 | 51 | 38 | 1 | 88 |
| 2430 | Millwork, Veneer, Plywood, and Structural Wood | 216 | 34 | 123 | 127 | 9 | 241 |
| 2452 | Prefabricated Wood Buildings and Components | 2 | 16 | 18 | 0 | 10 | 8 |
| 2510 | Household Furniture | 176 | 71 | 140 | 107 | 34 | 213 |
| 2511 | Wood Household Furniture, Except Upholstered | 204 | 4 | 126 | 82 | 24 | 184 |
| 2520 | Office Furniture | 62 | 38 | 40 | 60 | 12 | 88 |
| 2522 | Office Furniture, Except Wood | 0 | 15 | 1 | 14 | 0 | 15 |
| 2531 | Public Building and Related Furniture | 1 | 3 | 4 | 0 | 4 | 0 |
| 2590 | Miscellaneous Furniture and Fixtures | 0 | 8 | 8 | 0 | 5 | 3 |
| 2600 | Paper and Allied Products | 227 | 230 | 200 | 257 | 91 | 366 |
| 2611 | Pulp Mills | 0 | 27 | 1 | 26 | 0 | 27 |
| 2621 | Paper Mills | 8 | 75 | 37 | 46 | 15 | 68 |
| 2631 | Paperboard Mills | 31 | 89 | 74 | 46 | 17 | 103 |
| 2650 | Paperboard Containers and Boxes | 232 | 69 | 128 | 173 | 10 | 291 |
| 2670 | Converted Paper and Paperboard Products, Except Containers and Boxes | 228 | 91 | 159 | 160 | 54 | 265 |
| 2673 | Plastics, Foil, and Coated Paper Bags | 39 | 25 | 32 | 32 | 6 | 58 |
| 2700 | Printing, Publishing, and Allied Industries | 188 | 124 | 103 | 209 | 21 | 291 |
| 2711 | Newspapers Publishing, Or Publishing and Printing | 79 | 135 | 58 | 156 | 27 | 187 |
| 2721 | Periodicals Publishing, Or Publishing and Printing | 18 | 0 | 9 | 9 | 5 | 13 |
| 2731 | Books Publishing, Or Publishing and Printing | 66 | 39 | 74 | 31 | 19 | 86 |
| 2741 | Miscellaneous Publishing | 35 | 0 | 21 | 14 | 2 | 33 |
| 2750 | Commercial Printing | 226 | 57 | 142 | 141 | 45 | 238 |
| 2761 | Manifold Business Forms | 23 | 14 | 11 | 26 | 0 | 37 |
| 2780 | Blank books, Loose-leaf Binders, and Bookbinding | 23 | 0 | 9 | 14 | 0 | 23 |
| 2790 | Service Industries for The Printing Trade | 38 | 12 | 13 | 37 | 5 | 45 |
| 2800 | Chemicals and Allied Products | 367 | 477 | 447 | 397 | 175 | 669 |
| 2810 | Industrial Inorganic Chemicals | 213 | 179 | 209 | 183 | 74 | 318 |
| 2820 | Plastics Materials and Synthetic Resins, Synthetic Rubber, Cellulosic and Other Manmade Fibers, Except Glass | 184 | 288 | 240 | 232 | 121 | 351 |
| 2821 | Plastics Materials, Synthetic Resins, and Nonvulcanisable Elastomers | 189 | 223 | 196 | 216 | 86 | 326 |
| 2833 | Medicinal Chemicals and Botanical Products | 168 | 191 | 219 | 140 | 119 | 240 |
| 2834 | Pharmaceutical Preparations | 939 | 1,135 | 1,096 | 978 | 774 | 1,300 |

| 4-digit | SIC Title | Small firms | Large firms | Young firms | Old firms | R&D firms | Non R&D firms |
|---|---|---|---|---|---|---|---|
| 2835 | In Vitro and In Vivo Diagnostic Substances | 29 | 18 | 35 | 12 | 34 | 13 |
| 2836 | Biological Products, Except Diagnostic Substances | 179 | 161 | 204 | 136 | 117 | 223 |
| 2840 | Soap, Detergents, and Cleaning Preparations; Perfumes, Cosmetics, and Other Toilet Preparations | 54 | 78 | 54 | 78 | 28 | 104 |
| 2844 | Perfumes, Cosmetics, and Other Toilet Preparations | 100 | 65 | 83 | 82 | 45 | 120 |
| 2851 | Paints, Varnishes, Lacquers, Enamels, and Allied Products | 115 | 20 | 83 | 52 | 29 | 106 |
| 2860 | Industrial Organic Chemicals | 159 | 271 | 225 | 205 | 140 | 290 |
| 2870 | Agricultural Chemicals | 299 | 499 | 433 | 365 | 242 | 556 |
| 2890 | Miscellaneous Chemical Products | 182 | 173 | 264 | 91 | 115 | 240 |
| 2891 | Adhesives and Sealants | 39 | 65 | 58 | 46 | 39 | 65 |
| 2911 | Petroleum Refining | 140 | 260 | 173 | 227 | 65 | 335 |
| 2950 | Asphalt Paving and Roofing Materials | 34 | 32 | 36 | 30 | 15 | 51 |
| 2990 | Miscellaneous Products of Petroleum and Coal | 51 | 32 | 32 | 51 | 5 | 78 |
| 3011 | Tires and Inner Tubes | 49 | 211 | 96 | 164 | 37 | 223 |
| 3021 | Rubber and Plastics Footwear | 41 | 32 | 25 | 48 | 4 | 69 |
| 3050 | Gaskets, Packing, and Sealing Devices and Rubber | 44 | 20 | 46 | 18 | 15 | 49 |
| 3060 | Fabricated Rubber Products, Not Elsewhere | 140 | 64 | 94 | 110 | 15 | 189 |
| 3080 | Miscellaneous Plastics Products | 559 | 394 | 512 | 441 | 189 | 764 |
| 3081 | Unsupported Plastics Film and Sheet | 51 | 132 | 80 | 103 | 18 | 165 |
| 3086 | Plastics Foam Products | 23 | 6 | 20 | 9 | 6 | 23 |
| 3089 | Plastics Products, Not Elsewhere Classified | 350 | 88 | 246 | 192 | 78 | 360 |
| 3100 | Leather and Leather Products | 63 | 33 | 51 | 45 | 17 | 79 |
| 3140 | Footwear, Except Rubber | 43 | 69 | 48 | 64 | 12 | 100 |
| 3211 | Flat Glass | 31 | 76 | 62 | 45 | 28 | 79 |
| 3220 | Glass and Glassware, Pressed or Blown | 55 | 108 | 87 | 76 | 40 | 123 |
| 3221 | Glass Containers | 0 | 25 | 0 | 25 | 0 | 25 |
| 3231 | Glass Products, Made of Purchased Glass | 23 | 41 | 24 | 40 | 20 | 44 |
| 3241 | Cement, Hydraulic D 32 325 3250 Structural Clay Prod | 241 | 447 | 224 | 464 | 61 | 627 |
| 3250 | Structural Clay Products | 185 | 138 | 127 | 196 | 5 | 318 |
| 3260 | Pottery and Related Products | 99 | 65 | 95 | 69 | 55 | 109 |
| 3270 | Concrete, Gypsum, and Plaster Products | 337 | 148 | 199 | 286 | 61 | 424 |
| 3272 | Concrete Products, Except Block and Brick | 127 | 39 | 71 | 95 | 12 | 154 |
| 3281 | 1 Cut Stone and Stone Products | 53 | 0 | 26 | 27 | 0 | 53 |
| 3290 | Abrasive, Asbestos, and Miscellaneous | 120 | 136 | 149 | 107 | 83 | 173 |
| 3300 | Primary Metal Industries | 0 | 30 | 13 | 17 | 8 | 22 |
| 3310 | Steel Works, Blast Furnaces, and Rolling And | 171 | 523 | 386 | 308 | 123 | 571 |
| 3312 | Steel Works, Blast Furnaces (Including Coke Ovens), and Rolling Mills | 310 | 613 | 382 | 541 | 141 | 782 |
| 3317 | Steel Pipe and Tubes | 100 | 112 | 129 | 83 | 40 | 172 |
| 3320 | Iron and Steel Foundries | 49 | 4 | 25 | 28 | 10 | 43 |
| 3330 | Primary Smelting and Refining of Nonferrous Metals | 83 | 300 | 237 | 146 | 115 | 268 |
| 3334 | Primary Production Of Aluminium | 90 | 122 | 120 | 92 | 56 | 156 |
| 3341 | Secondary Smelting and Refining Of Nonferrous Metals | 27 | 38 | 38 | 27 | 24 | 41 |
| 3350 | Rolling, Drawing, and Extruding Of Nonferrous Metals | 191 | 220 | 216 | 195 | 70 | 341 |
| 3357 | Drawing and Insulating Of Nonferrous Wire | 349 | 411 | 389 | 371 | 209 | 551 |
| 3360 | Nonferrous Foundries (Castings) | 62 | 32 | 57 | 37 | 15 | 79 |

| 4-digit | SIC Title | Small firms | Large firms | Young firms | Old firms | R&D firms | Non R&D firms |
|---|---|---|---|---|---|---|---|
| 3390 | Miscellaneous Primary Metal Products | 29 | 89 | 76 | 42 | 44 | 74 |
| 3411 | Metal Cans | 92 | 26 | 35 | 83 | 3 | 115 |
| 3412 | Metal Shipping Barrels, Drums, Kegs, and Pails | 43 | 51 | 34 | 60 | 7 | 87 |
| 3420 | Cutlery, Hand tools, and General Hardware | 11 | 27 | 35 | 3 | 18 | 20 |
| 3430 | Heating Equipment, Except Electric and Warm Air; and Plumbing Fixtures | 4 | 41 | 34 | 11 | 17 | 28 |
| 3433 | Heating Equipment, Except Electric and Warm Air Furnaces | 5 | 7 | 3 | 9 | 0 | 12 |
| 3440 | Fabricated Structural Metal Products | 167 | 139 | 248 | 58 | 78 | 228 |
| 3442 | Metal Doors, Sash, Frames, Moulding, and Trim | 83 | 0 | 27 | 56 | 20 | 63 |
| 3443 | Fabricated Plate Work (Boiler Shops) | 105 | 90 | 97 | 98 | 54 | 141 |
| 3444 | Sheet Metal Work | 22 | 16 | 9 | 29 | 0 | 38 |
| 3451 | Screw Machine Products | 12 | 0 | 10 | 2 | 0 | 12 |
| 3452 | Bolts, Nuts, Screws, Rivets, and Washers | 42 | 24 | 35 | 31 | 22 | 44 |
| 3460 | Metal Forgings and Stampings | 211 | 44 | 143 | 112 | 43 | 212 |
| 3470 | Coating, Engraving, and Allied Services | 140 | 22 | 87 | 75 | 36 | 126 |
| 3480 | Ordnance and Accessories, Except Vehicles and Guided Missiles | 13 | 0 | 10 | 3 | 0 | 13 |
| 3490 | Miscellaneous Fabricated Metal Products | 248 | 178 | 246 | 180 | 156 | 270 |
| 3500 | Industrial and Commercial Machinery and Computer Equipment | 45 | 119 | 120 | 44 | 66 | 98 |
| 3510 | Engines and Turbines | 45 | 177 | 110 | 112 | 62 | 160 |
| 3523 | Farm Machinery and Equipment | 6 | 28 | 22 | 12 | 23 | 11 |
| 3530 | Construction, Mining, and Materials Handling | 86 | 162 | 170 | 78 | 86 | 162 |
| 3531 | Construction Machinery and Equipment | 99 | 149 | 147 | 101 | 82 | 166 |
| 3532 | Mining Machinery and Equipment, Except Oil and Gas Field | 17 | 36 | 46 | 7 | 28 | 25 |
| 3533 | Oil and Gas Field Machinery and Equipment | 79 | 66 | 101 | 44 | 55 | 90 |
| 3537 | Industrial Trucks, Tractors, Trailers, and Stackers | 24 | 46 | 39 | 31 | 20 | 50 |
| 3540 | Metalworking Machinery and Equipment | 235 | 198 | 283 | 150 | 193 | 240 |
| 3541 | Machine Tools, Metal Cutting Types | 45 | 20 | 36 | 29 | 21 | 44 |
| 3550 | Special Industry Machinery, Except Metalworking | 105 | 112 | 156 | 61 | 100 | 117 |
| 3555 | Printing Trades Machinery and Equipment | 3 | 5 | 8 | 0 | 5 | 3 |
| 3559 | Special Industry Machinery, Not Elsewhere Classified | 602 | 408 | 601 | 409 | 448 | 562 |
| 3560 | General Industrial Machinery and Equipment | 130 | 170 | 214 | 86 | 116 | 184 |
| 3561 | Pumps and Pumping Equipment | 3 | 6 | 9 | 0 | 4 | 5 |
| 3562 | Ball and Roller Bearings | 69 | 40 | 64 | 45 | 33 | 76 |
| 3564 | Industrial and Commercial Fans and Blowers and Air Purification Equipment | 45 | 18 | 55 | 8 | 32 | 31 |
| 3569 | General Industrial Machinery and Equipment, Not Elsewhere Classified | 83 | 28 | 67 | 44 | 19 | 92 |
| 3570 | Computer and Office Equipment | 190 | 140 | 165 | 165 | 132 | 198 |
| 3571 | Electronic Computers | 51 | 61 | 71 | 41 | 65 | 47 |
| 3572 | Computer Storage Devices | 20 | 12 | 23 | 9 | 0 | 32 |
| 3575 | Computer Terminals | 56 | 23 | 37 | 42 | 26 | 53 |
| 3577 | Computer Peripheral Equipment, Not Elsewhere Classified | 160 | 87 | 173 | 74 | 129 | 118 |
| 3578 | Calculating and Accounting Machines, Except Electronic Computers | 38 | 75 | 72 | 41 | 51 | 62 |
| 3579 | Office Machines, Not Elsewhere Classified | 14 | 8 | 19 | 3 | 22 | 0 |
| 3580 | Refrigeration and Service Industry Machinery | 37 | 52 | 68 | 21 | 49 | 40 |
| 3585 | Air-Conditioning and Warm Air Heating Equipment and Commercial and Industrial Refrigeration Equipment | 110 | 184 | 141 | 153 | 69 | 225 |

| 4-digit | SIC Title | Small firms | Large firms | Young firms | Old firms | R&D firms | Non R&D firms |
|---|---|---|---|---|---|---|---|
| 3590 | Miscellaneous Industrial and Commercial Machinery and Equipment | 55 | 28 | 49 | 34 | 23 | 60 |
| 3600 | Electronic and Other Electrical Equipment and Components, Except Computer Equipment | 240 | 216 | 283 | 173 | 162 | 294 |
| 3612 | Power, Distribution, and Specialty Transformers | 123 | 192 | 218 | 97 | 110 | 205 |
| 3613 | Switchgear and Switchboard Apparatus | 56 | 56 | 82 | 30 | 47 | 65 |
| 3620 | Electrical Industrial Apparatus | 111 | 139 | 164 | 86 | 95 | 155 |
| 3621 | Motors and Generators | 69 | 76 | 81 | 64 | 59 | 86 |
| 3630 | Motors and Generators | 205 | 283 | 241 | 247 | 185 | 303 |
| 3634 | Electric Housewares and Fans | 18 | 24 | 22 | 20 | 10 | 32 |
| 3640 | Electric Lighting and Wiring Equipment | 146 | 188 | 204 | 130 | 168 | 166 |
| 3651 | Household Audio and Video Equipment | 231 | 234 | 256 | 209 | 180 | 285 |
| 3652 | Phonograph Records and Pre-recorded Audio Tapes and Disks | 18 | 0 | 18 | 0 | 0 | 18 |
| 3661 | Telephone and Telegraph Apparatus | 46 | 68 | 56 | 58 | 42 | 72 |
| 3663 | Radio and Television Broadcasting and Communications Equipment | 286 | 390 | 451 | 225 | 305 | 371 |
| 3669 | Communications Equipment, Not Elsewhere Classified | 89 | 63 | 99 | 53 | 91 | 61 |
| 3670 | Electronic Components and Accessories | 460 | 622 | 680 | 402 | 534 | 548 |
| 3672 | Printed Circuit Boards | 360 | 161 | 314 | 207 | 128 | 393 |
| 3674 | Semiconductors and Related Devices | 480 | 938 | 936 | 482 | 930 | 488 |
| 3677 | Electronic Coils, Transformers, and Other Inductors | 0 | 21 | 7 | 14 | 11 | 10 |
| 3678 | Electronic Connectors | 16 | 71 | 65 | 22 | 66 | 21 |
| 3679 | Electronic Components, Not Elsewhere Classified | 224 | 369 | 426 | 167 | 326 | 267 |
| 3690 | Miscellaneous Electrical Machinery, Equipment, and Supplies | 192 | 159 | 208 | 143 | 96 | 255 |
| 3695 | Magnetic and Optical Recording Media | 30 | 0 | 17 | 13 | 0 | 30 |
| 3700 | Transportation Equipment | 29 | 76 | 76 | 29 | 34 | 71 |
| 3711 | Motor Vehicles and Passenger Car Bodies | 128 | 442 | 228 | 342 | 183 | 387 |
| 3713 | Truck and Bus Bodies | 28 | 92 | 59 | 61 | 36 | 84 |
| 3714 | Motor Vehicle Parts and Accessories | 540 | 569 | 707 | 402 | 413 | 696 |
| 3720 | Aircraft and Parts | 12 | 84 | 50 | 46 | 49 | 47 |
| 3721 | Aircraft | 9 | 29 | 20 | 18 | 10 | 28 |
| 3724 | Aircraft Engines and Engine Parts | 8 | 15 | 10 | 13 | 5 | 18 |
| 3728 | Aircraft Parts and Auxiliary Equipment, Not Elsewhere Classified | 14 | 0 | 8 | 6 | 0 | 14 |
| 3730 | Ship and Boat Building and Repairing | 143 | 134 | 137 | 140 | 51 | 226 |
| 3743 | Railroad Equipment | 19 | 61 | 56 | 24 | 36 | 44 |
| 3751 | Motorcycles, Bicycles, and Parts | 127 | 131 | 89 | 169 | 51 | 207 |
| 3760 | Guided Missiles and Space Vehicles and Parts | 8 | 16 | 2 | 22 | 5 | 19 |
| 3790 | Miscellaneous Transportation Equipment | 14 | 0 | 8 | 6 | 4 | 10 |
| 3812 | Search, Detection, Navigation, Guidance, Aeronautical, and Nautical Systems, Instruments | 92 | 84 | 114 | 62 | 66 | 110 |
| 3821 | Laboratory Apparatus and Furniture | 0 | 7 | 7 | 0 | 5 | 2 |
| 3822 | Automatic Controls for Regulating Residential and Commercial Environments and Appliances | 9 | 16 | 25 | 0 | 15 | 10 |
| 3823 | Industrial Instruments for Measurement, Display, and Control of Process Variables; and Related Products | 71 | 33 | 83 | 21 | 66 | 38 |
| 3824 | Totalizing Fluid Meters and Counting Devices | 31 | 3 | 7 | 27 | 24 | 10 |
| 3825 | Instruments For Measuring and Testing of Electricity and Electrical Signals | 118 | 64 | 126 | 56 | 96 | 86 |
| 3826 | Laboratory Analytical Instruments | 17 | 2 | 17 | 2 | 17 | 2 |

| 4-digit | SIC Title | Small firms | Large firms | Young firms | Old firms | R&D firms | Non R&D firms |
|---|---|---|---|---|---|---|---|
| 3827 | Optical Instruments and Lenses | 54 | 31 | 58 | 27 | 42 | 43 |
| 3829 | Measuring and Controlling Devices, Not Elsewhere Classified | 51 | 21 | 45 | 27 | 23 | 49 |
| 3841 | Surgical and Medical Instruments and Apparatus | 41 | 28 | 53 | 16 | 41 | 28 |
| 3842 | Orthopaedic, Prosthetic, and Surgical Appliances and Supplies | 82 | 45 | 87 | 40 | 48 | 79 |
| 3843 | Dental Equipment and Supplies | 0 | 8 | 7 | 1 | 6 | 2 |
| 3844 | X-ray Apparatus and Tubes and Related Irradiation Apparatus | 19 | 3 | 10 | 12 | 5 | 17 |
| 3845 | Electrometrical and Electrotherapeutic Apparatus | 52 | 31 | 70 | 13 | 36 | 47 |
| 3851 | Ophthalmic Goods | 30 | 10 | 23 | 17 | 10 | 30 |
| 3861 | Photographic Equipment and Supplies | 29 | 12 | 27 | 14 | 11 | 30 |
| 3873 | Watches, Clocks, Clockwork Operated Devices, and Parts | 29 | 9 | 17 | 21 | 5 | 33 |
| 3910 | Jewellery, Silverware, and Plated Ware | 43 | 14 | 35 | 22 | 7 | 50 |
| 3911 | Jewellery, Precious Metal | 101 | 98 | 79 | 120 | 10 | 189 |
| 3931 | Musical Instruments | 7 | 7 | 14 | 0 | 10 | 4 |
| 3942 | Dolls and Stuffed Toys | 14 | 3 | 10 | 7 | 0 | 17 |
| 3944 | Games, Toys, and Children's Vehicles, Except Dolls and Bicycles | 18 | 17 | 35 | 0 | 18 | 17 |
| 3949 | Sporting and Athletic Goods, Not Elsewhere Classified | 14 | 21 | 20 | 15 | 10 | 25 |
| 3950 | Pens, Pencils, and Other Artists' Materials | 40 | 3 | 10 | 33 | 13 | 30 |
| 3960 | Costume Jewellery, Costume Novelties, Buttons, and Miscellaneous Notions, Ecept Precious Metal | 50 | 37 | 61 | 26 | 39 | 48 |
| 3990 | Miscellaneous Manufacturing Industries | 62 | 59 | 87 | 34 | 61 | 60 |
| 4011 | Railroads, Line-haul Operating | 23 | 20 | 18 | 25 | 0 | 43 |
| 4100 | Local and Suburban Transit and Interurban Highway Passenger Transportation | 142 | 205 | 155 | 192 | 9 | 338 |
| 4210 | Trucking and Courier Services, Except Air | 121 | 65 | 107 | 79 | 12 | 174 |
| 4220 | Public Warehousing and Storage | 168 | 52 | 80 | 140 | 15 | 205 |
| 4400 | Water Transportation | 287 | 538 | 383 | 442 | 50 | 775 |
| 4412 | Deep Sea Foreign Transportation of Freight | 245 | 279 | 239 | 285 | 14 | 510 |
| 4512 | Air Transportation, Scheduled | 30 | 260 | 118 | 172 | 33 | 257 |
| 4513 | Air Courier Services | 0 | 1 | 1 | 0 | 0 | 1 |
| 4522 | Air Transportation, Non-scheduled | 6 | 7 | 10 | 3 | 0 | 13 |
| 4581 | Airports, Flying Fields, and Airport Terminal Services | 48 | 222 | 124 | 146 | 22 | 248 |
| 4610 | Pipelines, Except Natural Gas | 7 | 1 | 8 | 0 | 0 | 8 |
| 4700 | Transportation Services | 237 | 616 | 407 | 446 | 65 | 788 |
| 4731 | Arrangement Of Transportation Of Freight and Cargo | 332 | 102 | 217 | 217 | 49 | 385 |
| 4810 | Telephone Communications | 2 | 14 | 5 | 11 | 0 | 16 |
| 4812 | Radiotelephone Communications | 35 | 269 | 136 | 168 | 37 | 267 |
| 4813 | Telephone Communications, Except Radiotelephone | 4 | 112 | 53 | 63 | 37 | 79 |
| 4832 | Radio Broadcasting Stations | 15 | 8 | 6 | 17 | 0 | 23 |
| 4833 | Television Broadcasting Stations | 58 | 148 | 96 | 110 | 22 | 184 |
| 4841 | Cable and Other Pay Television Services | 29 | 124 | 70 | 83 | 26 | 127 |
| 4890 | Communications Services, Not Elsewhere Classified | 0 | 21 | 4 | 17 | 8 | 13 |
| 4899 | Communications Services, Not Elsewhere Classified | 153 | 266 | 198 | 221 | 75 | 344 |
| 4900 | Electric, Gas, and Sanitary Services | 13 | 3 | 11 | 5 | 0 | 16 |
| 4911 | Electric Services | 216 | 785 | 385 | 616 | 104 | 897 |
| 4922 | Natural Gas Transmission | 0 | 22 | 10 | 12 | 18 | 4 |
| 4923 | Natural Gas Transmission and Distribution | 44 | 108 | 65 | 87 | 25 | 127 |

| 4-digit | SIC Title | Small firms | Large firms | Young firms | Old firms | R&D firms | Non R&D firms |
|---|---|---|---|---|---|---|---|
| 4924 | Natural Gas Distribution | 32 | 26 | 31 | 27 | 2 | 56 |
| 4931 | Electric and Other Services Combined | 55 | 97 | 54 | 98 | 4 | 148 |
| 4932 | Gas and Other Services Combined | 0 | 11 | 9 | 2 | 0 | 11 |
| 4941 | Water Supply | 142 | 259 | 205 | 196 | 50 | 351 |
| 4950 | Sanitary Services | 66 | 78 | 71 | 73 | 47 | 97 |
| 4953 | Refuse Systems | 93 | 14 | 60 | 47 | 15 | 92 |
| 4959 | Sanitary Services, Not Elsewhere Classified | 30 | 15 | 34 | 11 | 17 | 28 |
| 4961 | Steam and Air-Conditioning Supply | 13 | 8 | 10 | 11 | 3 | 18 |
| 4971 | Irrigation Systems | 122 | 617 | 323 | 416 | 96 | 643 |
| 5000 | Wholesale Trade-durable Goods | 308 | 223 | 188 | 343 | 31 | 500 |
| 5010 | Motor Vehicles and Motor Vehicle Parts and Supplies | 69 | 40 | 42 | 67 | 9 | 100 |
| 5013 | Motor Vehicle Supplies and New Parts | 38 | 22 | 40 | 20 | 13 | 47 |
| 5020 | Furniture and Home Furnishings | 15 | 0 | 10 | 5 | 0 | 15 |
| 5030 | Lumber and Other Construction Materials | 43 | 26 | 26 | 43 | 0 | 69 |
| 5040 | Professional and Commercial Equipment and Supplies | 46 | 53 | 33 | 66 | 0 | 99 |
| 5045 | Computers and Computer Peripheral Equipment and Software | 162 | 90 | 149 | 103 | 51 | 201 |
| 5047 | Medical, Dental, and Hospital Equipment and Supplies | 3 | 5 | 8 | 0 | 5 | 3 |
| 5050 | Metals and Minerals, Except Petroleum | 74 | 71 | 72 | 73 | 16 | 129 |
| 5051 | Metals Service Centres and Offices | 137 | 85 | 123 | 99 | 16 | 206 |
| 5063 | Electrical Apparatus and Equipment, Wiring Supplies, and Construction Materials | 89 | 57 | 67 | 79 | 14 | 132 |
| 5064 | Electrical Appliances, Television and Radio Sets | 65 | 25 | 28 | 62 | 9 | 81 |
| 5065 | Electronic Parts and Equipment, Not Elsewhere Classified | 310 | 158 | 258 | 210 | 99 | 369 |
| 5070 | Hardware, and Plumbing and Heating Equipment | 30 | 0 | 20 | 10 | 0 | 30 |
| 5072 | Hardware | 22 | 0 | 0 | 22 | 0 | 22 |
| 5080 | Machinery, Equipment, and Supplies | 161 | 79 | 107 | 133 | 0 | 240 |
| 5082 | Construction and Mining (except Petroleum) Machinery and Equipment | 52 | 23 | 36 | 39 | 1 | 74 |
| 5084 | Industrial Machinery and Equipment | 97 | 14 | 69 | 42 | 0 | 111 |
| 5090 | Miscellaneous Durable Goods | 39 | 4 | 18 | 25 | 3 | 40 |
| 5093 | Scrap and Waste Materials | 49 | 9 | 38 | 20 | 9 | 49 |
| 5094 | Jewellery, Watches, Precious Stones, and Precious Metals | 24 | 1 | 9 | 16 | 0 | 25 |
| 5099 | Durable Goods, Not Elsewhere Classified | 28 | 24 | 8 | 44 | 18 | 34 |
| 5110 | Paper and Paper Products | 41 | 0 | 16 | 25 | 0 | 41 |
| 5122 | Drugs, Drug Proprietaries, and Druggists' Sundries | 95 | 152 | 124 | 123 | 58 | 189 |
| 5130 | Apparel, Piece Goods, and Notions | 125 | 159 | 141 | 143 | 42 | 242 |
| 5140 | Groceries and Related Products | 112 | 90 | 72 | 130 | 7 | 195 |
| 5150 | Farm-product Raw Materials | 12 | 26 | 19 | 19 | 5 | 33 |
| 5160 | Chemicals and Allied Products | 89 | 146 | 91 | 144 | 18 | 217 |
| 5171 | Petroleum Bulk Stations and Terminals | 44 | 57 | 57 | 44 | 13 | 88 |
| 5172 | Petroleum and Petroleum Products Wholesalers, Except Bulk Stations | 39 | 67 | 31 | 75 | 1 | 105 |
| 5180 | Beer, Wine, and Distilled Alcoholic Beverages | 24 | 4 | 8 | 20 | 4 | 24 |
| 5190 | Miscellaneous Non-Durable Goods | 7 | 72 | 48 | 31 | 4 | 75 |
| 5200 | Building Materials, Hardware, Garden Supply, and Mobile Home Dealers | 18 | 4 | 12 | 10 | 0 | 22 |
| 5311 | Department Stores | 418 | 611 | 393 | 636 | 30 | 999 |

| 4-digit | SIC Title | Small firms | Large firms | Young firms | Old firms | R&D firms | Non R&D firms |
|---|---|---|---|---|---|---|---|
| 5331 | Variety Stores | 35 | 38 | 25 | 48 | 0 | 73 |
| 5399 | Miscellaneous General Merchandise Stores | 139 | 163 | 121 | 181 | 8 | 294 |
| 5400 | Food Stores | 29 | 0 | 20 | 9 | 6 | 23 |
| 5410 | Grocery Stores | 27 | 83 | 50 | 60 | 8 | 102 |
| 5411 | Grocery Stores | 0 | 12 | 6 | 6 | 0 | 12 |
| 5500 | Automotive Dealers and Gasoline Service Stations | 119 | 186 | 114 | 191 | 52 | 253 |
| 5600 | Apparel and Accessory Stores | 139 | 5 | 42 | 102 | 2 | 142 |
| 5621 | Women's Clothing Stores | 23 | 0 | 3 | 20 | 0 | 23 |
| 5700 | Home Furniture, Furnishings, and Equipment Stores | 26 | 43 | 34 | 35 | 6 | 63 |
| 5712 | Furniture Stores | 16 | 0 | 10 | 6 | 0 | 16 |
| 5731 | Radio, Television, and Consumer Electronics Stores | 18 | 5 | 18 | 5 | 0 | 23 |
| 5734 | Computer and Computer Software Stores | 29 | 36 | 26 | 39 | 5 | 60 |
| 5810 | Eating and Drinking Places | 12 | 16 | 8 | 20 | 9 | 19 |
| 5812 | Eating Places | 199 | 115 | 151 | 163 | 13 | 301 |
| 5900 | Miscellaneous Retail | 105 | 59 | 54 | 110 | 1 | 163 |
| 5912 | Drug Stores and Proprietary Stores | 79 | 12 | 25 | 66 | 21 | 70 |
| 5940 | Miscellaneous Shopping Goods Stores | 87 | 16 | 38 | 65 | 8 | 95 |
| 5944 | Jewellery Stores | 123 | 0 | 55 | 68 | 17 | 106 |
| 5960 | Non store Retailers | 23 | 0 | 10 | 13 | 5 | 18 |
| 5961 | Catalogue and Mail-Order Houses | 25 | 28 | 26 | 27 | 16 | 37 |
| 5990 | Retail Stores, Not Elsewhere Classified | 83 | 0 | 35 | 48 | 3 | 80 |
| 6500 | Real Estate | 17 | 0 | 0 | 17 | 0 | 17 |
| 6510 | Real Estate Operators (Except Developers) and Lessors | 1 | 0 | 0 | 1 | 0 | 1 |
| 6552 | Land Subdivides and Developers, Except Cemeteries | 61 | 1 | 22 | 40 | 0 | 62 |
| 6799 | Investors, Not Elsewhere Classified | 11 | 0 | 0 | 11 | 0 | 11 |
| 7011 | Hotels and Motels | 632 | 493 | 297 | 828 | 41 | 1,084 |
| 7200 | Personal Services | 19 | 0 | 10 | 9 | 0 | 19 |
| 7310 | Advertising | 59 | 37 | 65 | 31 | 43 | 53 |
| 7311 | Advertising Agencies | 98 | 42 | 52 | 88 | 5 | 135 |
| 7340 | Services To Dwellings and Other Buildings | 12 | 27 | 15 | 24 | 3 | 36 |
| 7350 | Miscellaneous Equipment Rental and Leasing | 37 | 4 | 24 | 17 | 4 | 37 |
| 7359 | Equipment Rental and Leasing, Not Elsewhere Classified | 31 | 7 | 12 | 26 | 4 | 34 |
| 7370 | Computer Programming, Data Processing, and Other Computer Related Services | 818 | 586 | 878 | 526 | 514 | 890 |
| 7371 | Computer Programming Services | 64 | 0 | 37 | 27 | 13 | 51 |
| 7372 | Pre-packaged Software | 337 | 172 | 382 | 127 | 264 | 245 |
| 7373 | Computer Integrated Systems Design | 368 | 145 | 323 | 190 | 148 | 365 |
| 7374 | Computer Processing and Data Preparation and Processing Services | 96 | 33 | 92 | 37 | 74 | 55 |
| 7380 | Miscellaneous Business Services | 9 | 0 | 9 | 0 | 0 | 9 |
| 7389 | Business Services, Not Elsewhere Classified | 136 | 48 | 101 | 83 | 19 | 165 |
| 7500 | Automotive Repair, Services, and Parking | 19 | 0 | 0 | 19 | 1 | 18 |
| 7510 | Automotive Rental and Leasing, Without Drivers | 0 | 20 | 10 | 10 | 0 | 20 |
| 7812 | Motion Picture and Video Tape Production | 89 | 98 | 121 | 66 | 26 | 161 |
| 7819 | Services Allied To Motion Picture Production | 17 | 13 | 18 | 12 | 6 | 24 |
| 7822 | Motion Picture and Video Tape Distribution | 47 | 27 | 36 | 38 | 0 | 74 |

| 4-digit | SIC Title | Small firms | Large firms | Young firms | Old firms | R&D firms | Non R&D firms |
|---|---|---|---|---|---|---|---|
| 7830 | Motion Picture Theatres | 11 | 17 | 17 | 11 | 0 | 28 |
| 7900 | Amusement and Recreation Services | 19 | 0 | 9 | 10 | 0 | 19 |
| 7948 | Racing, Including Track Operation | 14 | 30 | 0 | 44 | 0 | 44 |
| 7990 | Miscellaneous Amusement and Recreation | 122 | 207 | 73 | 256 | 33 | 296 |
| 7996 | Amusement Parks | 4 | 18 | 10 | 12 | 3 | 19 |
| 7997 | Membership Sports and Recreation Clubs | 6 | 15 | 5 | 16 | 0 | 21 |
| 8000 | Health Services | 38 | 20 | 9 | 49 | 3 | 55 |
| 8011 | Offices and Clinics Of Doctors Of Medicine | 9 | 0 | 9 | 0 | 0 | 9 |
| 8050 | Nursing and Personal Care Facilities | 8 | 0 | 8 | 0 | 0 | 8 |
| 8060 | Hospitals | 71 | 59 | 49 | 81 | 22 | 108 |
| 8062 | General Medical and Surgical Hospitals | 153 | 99 | 84 | 168 | 0 | 252 |
| 8071 | Medical Laboratories | 5 | 12 | 15 | 2 | 11 | 6 |
| 8090 | Miscellaneous Health and Allied Services, Not Elsewhere Classified | 43 | 0 | 25 | 18 | 2 | 41 |
| 8200 | Educational Services | 144 | 62 | 76 | 130 | 52 | 154 |
| 8400 | Museums, Art Galleries, and Botanical and Zoological Gardens | 15 | 0 | 10 | 5 | 0 | 15 |
| 8700 | Engineering, Accounting, Research, Management, and Related Services | 33 | 64 | 86 | 11 | 38 | 59 |
| 8711 | Engineering Services | 519 | 197 | 351 | 365 | 82 | 634 |
| 8721 | Accounting, Auditing, and Bookkeeping Services | 16 | 0 | 9 | 7 | 0 | 16 |
| 8731 | Commercial Physical and Biological Research | 27 | 8 | 27 | 8 | 10 | 25 |
| 8734 | Testing Laboratories | 21 | 14 | 29 | 6 | 16 | 19 |
| 8741 | Management Services | 12 | 0 | 10 | 2 | 0 | 12 |
| 8742 | Management Consulting Services | 32 | 20 | 33 | 19 | 21 | 31 |
| 8744 | Facilities Support Management Services | 36 | 13 | 7 | 42 | 5 | 44 |
| 8748 | Business Consulting Services, Not Elsewhere Classified | 16 | 17 | 13 | 20 | 6 | 27 |
| 8800 | Private Households | 77 | 19 | 51 | 45 | 14 | 82 |
| 8810 | Private Households | 470 | 589 | 234 | 825 | 139 | 920 |
| 8811 | Private Households | 81 | 95 | 32 | 144 | 31 | 145 |
| | Total | 38,611 | 38,630 | 38,501 | 38,740 | 17,186 | 60,055 |

# 5 Chapter 5: Conclusion

This thesis studies different topics on corporate decisions in Asian emerging economies. It mainly highlights three areas of corporate finance: social trust and bond issuance decisions (chapter 2); political uncertainty and corporate cash holdings (chapter 3); and trade credit, market power, and asymmetric information (chapter 4). The conclusion explains the contribution of each chapter, constraints of the thesis, and future research direction.

## 5.1 Contributions of the thesis

The first empirical chapter (chapter 2) sheds light on an inability to borrow money abroad in local currency or borrow long term from domestic sources or "the original sin". This chapter also empirically examines how trust interacts with country governance environments in bond issuance and domestic currency-denominated bond issuance between 1997 and 2018 in eight emerging economies: China (mainland), Hong Kong SAR (China), Indonesia, Korea, Malaysia, Philippines, Singapore, and Thailand.

This chapter applies probit models to tackle all research questions and provides three findings. First, this chapter contributes to the discussion on the role of social trust in corporate bond issuance. The results provide that firms prefer to issue bonds in any currency when they are in high social trust economies. This suggest that firms in a high-social trust economy tend to issue bonds because of lower agency cost, monitoring cost and transaction cost. It is evident that social trust plays an essential role in eliminating the impact of original sin. This confirms that social trust is an essential factor to consider when firms decide to issue bonds in any currency.

Second, this chapter examines how the interplay between trust and country governance environment affects corporate bond issuance decisions. The results indicate that formal (country governance environment) and informal institutions (high social trust) are complements. In other words, high social trust and good country governance supports the confidence of bond participants in Asian emerging bond markets. Because of better formal and informal institutions, bond markets attract more bond issuers and bond investors.

Third, this chapter examine the effects of currency choice on the probability of domestic currency bond issuance. This chapter identifies that country governance environment substitutes for the contributions of social trust to increase a probability to

domestic currency-denominated bond issuance. The results show the substitute relationship between formal and informal institutions. Firms in high social trust economies have a high probability of issuing bonds denominated in domestic currency. This positive effect of high social trust is less salient in better country governance environments. The results are robust after using an alternative measurement of social trust and adding more controlling factors. The original sin in corporate can be washed away when firms decide to issue bond especially in domestic currency. In other words, an increase in the level of social trust can eliminate original sin.

The second empirical chapter of this thesis (chapter 3) studies how political uncertainty can cause corporates to adjust their cash holdings and affect asset growth by using national election data. This chapter combines two empirical pieces of literature on political uncertainty and corporate cash holdings. Adding to the discussion on different election systems causes various corporate behaviour changes. This chapter contributes to the existing literature in three parts. First, this chapter explores the impact of national elections on corporate cash holdings in Asian emerging economies, namely China (mainland), Indonesia, South Korea, Malaysia, the Philippines, Singapore, Thailand, and Taiwan (China). The results present the difference between the effect of presidential and legislative elections and the effect of assembly-elected presidents on corporate cash holdings.

Second, this chapter highlights corporate cash holdings and their sensitivity to cash flow by focusing on how elections influence a firm's propensity to save cash (Almeida et al., 2004). This chapter, unlike previous research, connects the concepts of political volatility, cash flow sensitivity, and the internal finance theory of development (Carpenter and Peterson, 2002). The results identify that cash holdings of firms in countries with presidential and legislative elections are more sensitive to national elections than those in countries with assembly-elected presidents. This chapter sheds new light on corporate cash holdings with political uncertainty. In election periods, firms in countries with presidential and legislative elections are more likely to hold more cash as a precaution against uncertainty. However, only large firms in countries with assembly-elected presidents prefer to hold less cash due to a negative grabbing-hand effect, which is rent-seeking by government officials (Chen et al., 2017).

Third, this chapter adds value by studying how internal financing increases asset growth in election periods. This chapter underscores the importance of using an internal source of financing to increase asset value during political uncertainty. The results show

that internal financing is a key for only small firms in countries with presidential and legislative elections, but others have better access to external financing during election periods. With the effect of political instability on asset growth, this chapter discovers that only small businesses in Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand use internal financing to extend their operations during election seasons. These advocate financial awareness of small and financially constrained firms that have barriers to external financing.

Forth, this chapter takes into account the debate on the precautionary motive for cash holdings and financially constrained firms. This chapter contributes to previous literature by addressing that the sensitivity of cash to cash flow during election periods supports the precautionary motive hypothesis. The results show that small firms (financially constrained firms) are more likely to save cash from cash inflow in election periods than large firms (financially unconstrained firms). This is a significant result that explains that the sensitivity of cash to cash flow is intuitive under the financial constraints channel. Further, this shows that financially constrained firms have financial awareness to spend or save cash during uncertain times.

The third and final empirical chapter (chapter 4) examines the offer of trade credit in Asian emerging markets with varying levels of social trust to see how social trust influences the effect of customer power and asymmetric information on trade credit. To explain why firms with a large market share are more likely to get trade credit from their vendors but asymmetric information firms are more likely to receive lower trade credit. This chapter contributes by providing the link among trade credit taken, market power, and asymmetric information from 5,183 enterprises from 1988 to 2018 in nine economies: China, Hong Kong SAR (China), Indonesia, South Korea, Malaysia, the Philippines, Singapore, Taiwan (China), and Thailand. This chapter contributes to the literature on the impact of market power and asymmetry information on trade credit in Asian emerging economies. The results propose that a higher value of social trust can change a decision to offer trade credit to customers who have superior information (Guiso et al., 2008). In addition, this chapter examines the link between relationship-specific investment (RSI) and trade credit for firms in high and low social trust economies (Dass et al., 2015 and Jory et al., 2020).

## 5.2 Constraints of the thesis

A number of constraints in the thesis exist. One considerable caveat is data limitation. Regarding the sample of Asian emerging economies in the three empirical chapters, each chapter studies eight or nine economies depending on data available. The quality of data collection in emerging markets in East and Southeast Asian economies is not as good as developed economies. In the second empirical chapter (chapter 3), close outcomes and margins of victory are an interesting literature gap, and these should be considered in this chapter. With the limitation of data from the Economic Policy Uncertainty index, there is only EPU index from China and Singapore. Therefore, this chapter cannot use a newspaper-based approach.

## 5.3 Direction of future research

The limitations explained earlier show several possible angles for future research. The second chapter studies the impact of political uncertainty on corporate cash holdings and asset growth. For future research, it would be interesting to understand how corporate behavior changes with uncertainty. Further, it would be fruitful to study text-based uncertainty measures, such as the uncertainty of a pandemic.

The third chapter demonstrates the impact of social trust on the prob- ability of bond issuance. This chapter focuses inability to issue domestic currency bonds. Future research could also consider how trust matters in bond issuance in onshore and offshore bond markets. This chapter also looks at the interaction of trust and country governance on bond issuance decisions. Due to available data for onshore and offshore markets, the sample should focus only on China.

Finally, the fourth chapter emphasises the impact of market power and asymmetry information on trade credit. Its purpose is to help small firms and young firms obtain more trade credit without an increase in default risks to suppliers. It is common that firms with high market share receive more trade credit, and small and young firms receive less trade credit. Future research could also study how digital platforms help small and young firms to access trade credit.

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