POLITICAL CONNECTIONS IN CHINA: DETERMINANTS AND EFFECTS ON FIRMS' EXPORTING BEHAVIOUR AND FINANCIAL HEALTH

by

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ABSTRACT

Using a comprehensive firm-level dataset from the National Bureau Statistics (NBS) of China over the period 2000-2007, this thesis studies political connections, intended as the *lishu* relationship between Chinese manufacturing firms and central, provincial or local governments. Although extensive studies have investigated firms' political connections, the *lishu* relationship has not been explored. Besides, the literature has generally overlooked an important question: what are the determinants of political connections? To fill this gap, we firstly investigate the determinants of the *lishu* relationship. We find that firms' characteristics, ownerships, financial variables, profitability, and sales growth significantly affect the probability of having a *lishu* relationship. We then examine the link between the *lishu* relationship and firms' exporting propensity and intensity. By examining the unobserved firm heterogeneity and the initial conditions problem, we find that the *lishu* relationship has a negative impact on firms' exporting. Furthermore, firm size, productivity, financial health and age are the significant determinants of firms' exporting. Finally, we explore the links between the *lishu* relationship and financial constraints, demonstrating that firms' financial constraints can be alleviated through a *lishu* relationship. This effect is pronounced for firms affiliated with high level of government, foreign firms and firms in financially constrained regions.

To my beloved parents (Hengbin DU & Jianfeng HAO) and my dearest husband (Dr Qiang REN)

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LIST OF ABBREVIATIONS

CES	Centralised Economic System
COEs	Collectively-owned enterprises
CPC	Communist Party of China
CPPCC	Chinese People's Political Consultative Conference
FDI	Foreign Direct Investment
FE	Fixed effects
FEs	Foreign enterprises
GDP	Gross Domestic Product
GMM	Generalised Method of Moments
ME	Marginal effects
MNCs	Multinational corporations
NBS	National Bureau of Statistics of China
OLS	The Ordinary Least Squares
PA	Political affiliation (the *lishu* relationship)
PAC	Political Action Committee
PC	Chinese People's Congress
PEs	Private enterprises
PPCEs	Public-private cooperative enterprises
R&D	Research and development
RE	Random effects
ROA	Return on assets
ROS	Return on sales
SC	State Council
SMES	Socialised Market Economy System
SOEs	State-owned enterprises
TFP	Total factor productivity
TVEs	Township and Village Enterprises
UCEs	Urban Collective Enterprises

CHAPTER 1 INTRODUCTION

This Chapter provides an overview of this research. Section 1.1 introduces the general background and the motivations of this research. The research questions and outlines of this thesis are proposed Section 1.2.

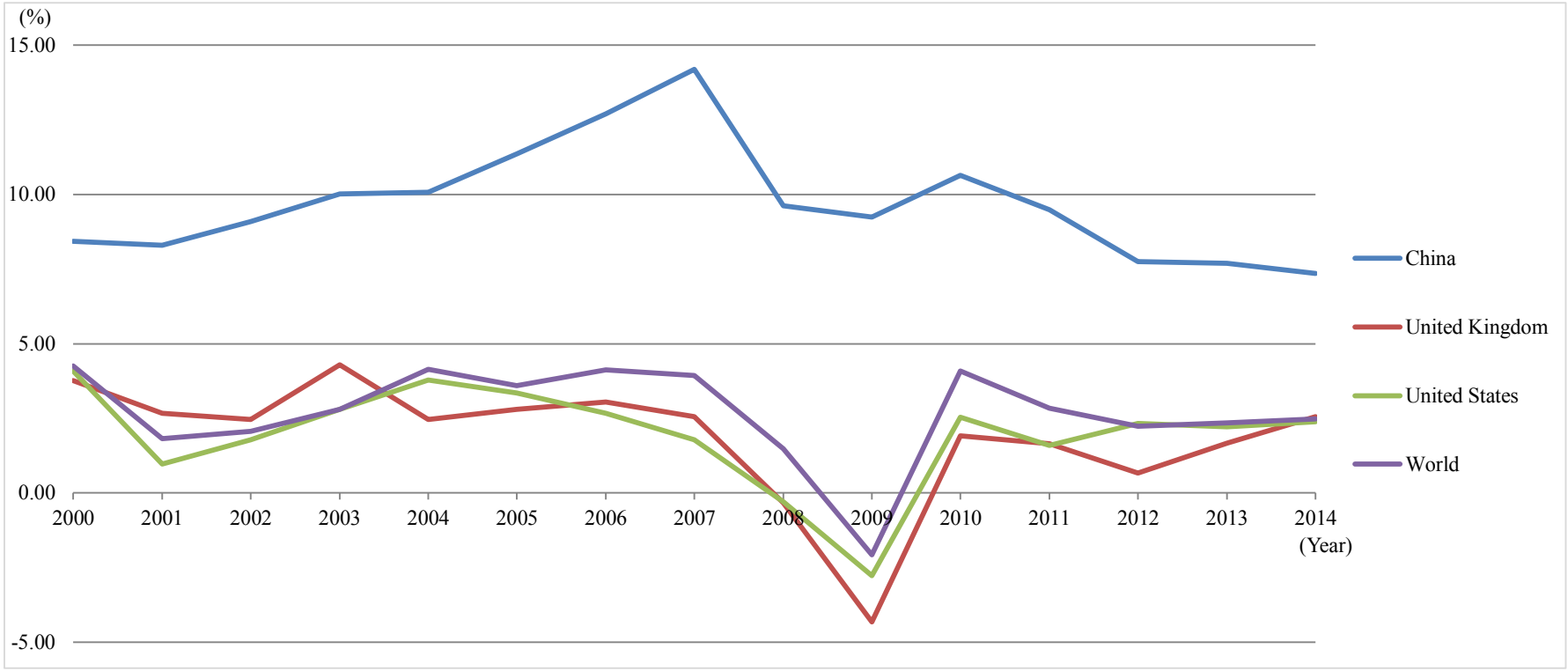
1.1 Research background

Thanks to its reforming and opening-up policy since the 1970s, China has achieved remarkable economic success over the last several decades. The growth rate of its Gross Domestic Product (GDP) has increased dramatically during our sample period, from 8.43% in 2000 to 14.19% in 2007. Such a growth has exceeded the GDP growth rate of the United States (US), the United Kingdom (UK), and the global average rate (see Figure 1.1). During 2008 and 2009, the world GDP growth experienced a significant decline due to the global financial crisis. Both the US and the UK have confronted negative growth, while China conserved a considerable growth above 9.00% in both years. In 2014, China's GDP grew approximately 3 times faster than the US and the UK (The World Bank) (see Figure 1.1).

In addition to its GDP growth, China's international trade witnessed a remarkable increase. Figure 1.2 plots the value of merchandise exports and imports of China and the US from 2000 to 2014. We observe that the US merchandise trade maintained a deficit over the period, while China showed a surplus. Specifically, China became the largest merchandise exporting country in 2009 with a total value of around 1.20

trillion US dollars, compared with 1.05 trillion US dollars in the US (the World Trade Organization; the World Bank) (see Figure 1.2). Figure 1.2 also shows that both China and the US suffered from a shrink in merchandise exports in 2009 because of the economic crisis, but the growth recovered faster and rebounded more sharply in China than that in the US after the crisis. Moreover, total merchandise trade value accounted for 43.63% of the total GDP in China, while the figure was 18.46% in the US in 2009 (the World Trade Organization; the World Bank) (see Figure 1.3). Figure 1.3 demonstrates that the contribution of total value of merchandise exports to the GDP remained above 38% in China over the period 2000-2014. The ratio reached 64.49% in 2006, indicating that exporting in China has contributed to its economic development significantly.

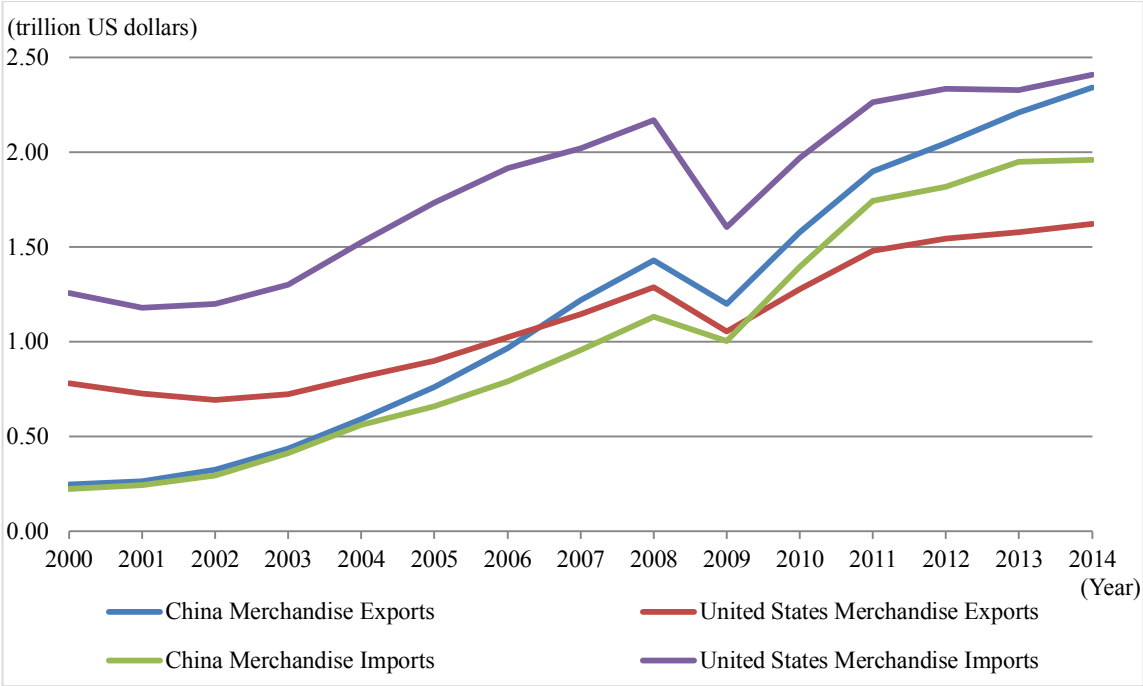
Figure 1.1 The GDP growth rate from 2000 to 2014 (annual %)



Source: World Development Indicators, The World Bank.

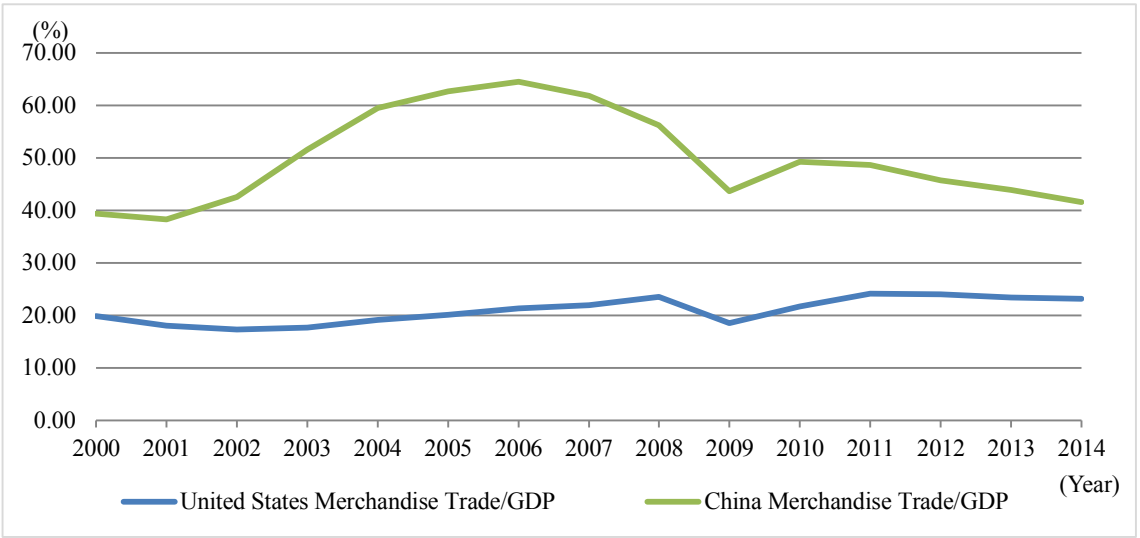
Notes: "Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2005 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources." (The World Bank, available at http://data.worldbank.org/indicator)

Figure 1.2 Merchandise exports and imports of China and the United States from 2000 to 2014 (trillion US dollars)



Source: World Development Indicators, the World Bank. International Trade Statistics 2001-2014, the World Trade Organization.
Notes: "Merchandise exports show the f.o.b. (free on board) value of goods provided to the rest of the world valued in current U.S. dollars." (The World Bank, available at http://data.worldbank.org/indicator)

Figure 1.3 Merchandise trade to GDP ratio in China and the United States from 2000 to 2014 (annual %)



Source: World Development Indicators, the World Bank. International Trade Statistics 2001-2014, the World Trade Organization.
Notes: "Merchandise trade as a share of GDP is the sum of merchandise exports and imports divided by the value of GDP, all in current U.S. dollars." (The World Bank, available at http://data.worldbank.org/indicator)

Yet, such remarkable performance in China has been achieved in recent years, despite the underdeveloped financial and legal systems, which are not favourable to efficient economic activities. The Chinese phenomenal economic and exporting development has therefore been considered as a miracle, and scholars have been trying to comprehend how this miracle was made possible.

Some scholars provide an institutional explanation for China's development, suggesting that the relationship among the governments, market, and firms constitutes the main driving force through the interaction of the "visible hands" and "invisible hands" (Walder, 1995; Qian and Weingast, 1997; Jin and Qian, 1998). They state that during China's economic transition, the government's interventions help to maintain regional stability, which in turn support the firms' development. Additionally, the government controls key products resources and grants favourable assistance to the politically connected firms, which accelerates the development of these firms and in turn enhances the economic growth. The positive relationship between political connections and firm performance has been demonstrated in several empirical studies, which define the political connections from the perspectives of state ownership, politically related entrepreneurs or large shareholders, and campaign contribution (Faccio, 2007, 2010; Chen *et al*., 2010; Goldman *et al*., 2009; Claessens *et al*., 2008; Zhang and Huang, 2009).

However, China has a unique type of political connections called the *lishu* relationship. With the deepening of the economic transition, the "visible hands" meet the "invisible hands", in which process a unique institutional variation, the *lishu* relationship, has

appeared to play a role of the "visible hands". *Lishu* is a Chinese word that means "belonging to", "subordinate to", "affiliated to", or "directly controlled by". Through this relationship, the governments can control the firms both legally and directly, while the affiliated firms can obtain favourable support from the governments. It is therefore the *lishu* relationship that makes this research in China unique and interesting.

Only few studies have looked at the *lishu* relationship in China. Both Li (2004) and Tan *et al*. (2007) estimate the links between the *lishu* relationship and firm performance with an insight into labour productivity, finding a U-shaped effect. That is, firms affiliated to the central and the lowest level of government (i.e. the township) are more productive than the firms connecting to the medium level of government (i.e. provincial, prefecture, and county). Guariglia and Mateut (2013) test the links between political affiliation and trade credit extension, concluding that politically affiliated firms can extend more trade credit than their non-affiliated counterparts. However, these studies assume that firms have been politically affiliated before conducting the empirical analysis, while overlook another important question: what types of firms are more likely to have political affiliation? This question motivates us to investigate the determinants of this unique political connection in China.

In addition, as discussed above, China's exports have contributed greatly to its economic growth. An extensive literature has explored firms' exporting with the following focus: 1) the positive impact of exporting on firms productivity, size, and financial health (Bernard and Jensen, 1995; Baldwin and Gu, 2003; Greenaway *et al*., 2007); 2) assuming the sunk entry costs and firm characteristics as the significant

determinants of firms' exporting behaviour (Roberts and Tybout, 1997; Bernard and Jensen, 1999; Liu and Shu, 2003; Das *et al*., 2007; Greenaway and Kneller, 2008; Manez *et al*., 2008; Manova, 2013). Although few studies have concentrated on the links between ownership and exporting (Lee, 2009; Yi and Wang, 2012; Yi, 2014; Dixon *et al*., 2015), the impact of political connections on firms' exporting decisions and exporting intensity has not been explored yet, which motivates us to estimate the extent to which the *lishu* relationship affects exporting in the context of Chinese manufacturing firms.

According to Modigliani and Miller (1958), a firm's financing decisions should not affect its investment behaviour in a perfect capital market. Nevertheless, capital markets are not perfect due to information asymmetries and agency problems. A pioneering study by Fazzari *et al*. (1988) estimates financial constraints by looking at the sensitivity of investment to cash flow. The study reveals that cash flow tends to influence corporate investment significantly. Subsequently, a branch of literature has supported Fazzari *et al*.'s main conclusion not only from the perspective of fixed capital investment activities (Gilchrist and Himmelberg, 1995; Carpenter and Guariglia, 2008), but also from the perspectives of inventory investment (Kashyap *et al*., 1994; Carpenter *et al*., 1998; Guariglia, 2000), innovation investment (Himmelberg and Petersen, 1994; Bond *et al*., 2005), employment (Sharp, 1994; Nickell and Nicolitsas, 1999), and firms' growth (Carpenter and Petersen, 2002). Although some studies have looked at the cash flow-investment sensitivity and political connections in terms of ownership in China, they either employ a relatively small sample that is likely to suffer from the sample selection problem, or only look

at the listed firms that may not be a good representative of the whole population of Chinese firms. Therefore, we are motivated to investigate how the *lishu* relationship affects the sensitivity of investment to cash flow for the unlisted firms in China.[1]

1.2 Thesis outline and proposed research questions

The rest of this thesis is organised as follows. Chapter 2 introduces the development of private enterprises in China and summaries the relationship between the Chinese governments and enterprises in the development, providing background to understand the *lishu* relationship. For the first time in literature, I explore the different meanings of the *lishu* relationship under the different economic development stages in China. Moreover, I introduce the procedures of establishing, changing, and terminating the *lishu* relationship. I also elaborate the difference between the *lishu* relationship and ownership structure in this chapter for the first time in literature. Chapter 3 describes data and the key variables used for the empirical studies in this thesis.

By examining the significance of firm heterogeneity in having the *lishu* relationship, Chapter 4 tests our first research question: what determines the likelihood of having a *lishu* relationship for Chinese unlisted firms? I test four sets of hypotheses, including hypotheses on firm heterogeneity, ownership status, financial factors, and profitability and growth opportunities, by using a pooled Probit model with clustering the observations by firms' ID, a random-effects Probit model, and an ordered Probit model. We conclude that the probability of a firm being politically affiliated can be

[1] The "financial health" in this thesis is defined as "financial un-constraints". Financially healthy firms refer to unconstrained firms that do not have difficulties in accessing to finance.

explained by the firm's size, age, the region where it operates, ownership structure, financial health, profitability, and growth opportunities. We also find that firms are more prone to have the *lishu* relationship with the medium level of governments as they can access the important resources owned by the governments and enjoy certain autonomy to develop themselves.

In Chapter 5, we discuss the second research question: to what extent does the *lishu* relationship affect firms' exporting activities. Controlling for several firm characteristics within dynamic export models, we focus on the links between the *lishu* relationship and the propensity and intensity of exporting. The unobserved firm heterogeneity and initial conditions problem are also taken into account in our regressions. We find that sunk entry costs exist in the export markets and the *lishu* relationship has a significant negative influence on both the probability and the intensity of firms' exporting. Other firm characteristics, such as firm size, total productivity, financial factors, types of ownership, and location are the significant determinants for firms' exporting activities.

Our third research question, to what extent does the *lishu* relationship affect firms' financial health, is tested in Chapter 6. We first analyse financial constraints in China and conclude that the investment of Chinese firms is sensitive to the availability of internal funds. Then we focus on the links between the *lishu* relationship and the sensitivity of investment to cash flow in Chinese unlisted manufacturing firms by employing the first-difference Generalised Method of Moments (GMM) procedure. We find that the *lishu* relationship can mitigate the effects of financial constraints for

Chinese firms. This effect is more significant for the firms affiliated with a higher level of government. We also find that compared with private firms, foreign firms are more likely to encounter financial constraints; therefore, the *lishu* relationship can reduce their financial constraints significantly. Furthermore, firms locating in the western region have the least sensitivity of investment to the availability of internal financing due to the regional preferential policies. However, the *lishu* relationship can help firms in the central and coastal regions alleviate their financial constraints.

Finally, Chapter 7 concludes this thesis with a summary of the findings from the empirical studies; with a discussion of its implications; and with an elaboration of the limitations and the proposed future research.

CHAPTER 2 THE *LISHU* RELATIONSHIP

This chapter introduces the development of private enterprises in China and summaries the relationship between the Chinese governments and enterprises in the development, providing background to understand the *lishu* relationship in section 2.1. Section 2.2 explores the different meanings of the *lishu* relationship under the different economic development stages in China for the first time in literature. The procedures of establishing, changing, and terminating the *lishu* relationship are presented in section 2.3. Section 2.4 illustrates the positive implications of the *lishu* relationship in enterprises. The difference between the *lishu* relationship and ownership structure is explored in section 2.5.

2.1 The background of the *lishu* relationship: a chronological review of the economic development of China since the establishment of the PRC

China has a unique type of political connections called the *lishu* relationship that means “belonging to”, “subordinate to”, “affiliated to”, or “directly controlled by”. Through this relationship, the government can control the firms both legally and directly, while the affiliated firms can obtain favourable support from the government. It is therefore the *lishu* relationship that makes this research in China unique and stimulating.

The Chinese character “隶属”, or *lishu*, has to be comprehended with the background of the economic development in China. The *lishu* relationship has different content in

the Centralised Economic System[1] (CES) and in the Socialised Market Economy System (SMES), even across the different development stages of the SMES. The understanding of the history of the economic development and the main stages of the development in China after 1949, when the PRC was established, therefore constitutes a prerequisite to comprehend the *lishu* relationship of enterprises in China.

Since the foundation of the People's Republic of China in 1949,[2] the development of enterprises and their political participation in China has experienced a long history, which can be divided into the following four stages.

2.1.1 SOEs dominated system (1949-1978): without a clear separation of functions between governments and enterprises (*zheng qi bu fen*)

The first phase during this period starts from 1949 to 1952, which is the recovery period of the national economy. The traditional malpractice of the old Chinese economic system had a significantly negative influence on the national economy at the early stages of the establishment of the new China. In order to solve problems, such as the imbalance between demand and supply and the strained relationship between state-owned enterprises and individual-owned enterprises, the Central Financial and Economic Committee started to reform industry and commerce. The main content of this reform was to acknowledge the property rights and obligations of individual-owned companies and to stimulate the development of private

[1] It is also known as Planned Economic System, in which the ownership, the operation, and the management of enterprises were mixed and the state's control is the centre of the economy (Hu, 1998; Cheng, 1986).
[2] The Old China refers to the China in the period between 1840 and 1st October 1949. On 1st October 1949, the government of the People's Republic of China was established. Since then, China was called the New China.

businesses.

During this recovery period, the relationship between the governments and private firms has been defined through the slogan: "Utilisation, restriction, and transformation" (*li yong, xian zhi*, *gai zao*)[1] (Ji, 2003, p.253). The central government utilises private enterprises by administrative management, economic lever, industry self-discipline management, and mass movement (*xing zheng guan li shou duan, jing ji gang gan shou duan, hang ye zu zhi zi lv shou duan, qun zhong yun dong shou duan*)[2] (Huang, 2005).

The guiding principal of the Chinese government is to ensure the leading status of the state-operated economy and to protect all capitalist industry and commerce, which were beneficial to the national economy and to people's well-being. Therefore, the private businesses do not need to establish political connections actively but all of

[1] Utilising the private economy refers to the government stimulating the enthusiasm of private enterprises, by allowing them to obtain the normal profits which can support their production and expend reproduction, and by encouraging the material exchange between city and country and among different districts, in order to develop the national economy and mitigate the conflicts between demand and supply caused by material shortages. Restricting the private economy means that along with policies aimed at regulating capital, controlling trade, and strengthening planning, the government restricts those aspects of private economy which are detrimental to the nation's economy and the people's well-being from various perspectives (e.g. the range of the economic activities, tax policy, market prices, and labour conditions). Transforming private enterprises refers to the government adjusting industry and commerce, promoting rural-urban trade, and motivating market circulation based on the socialist principle.

[2] Administrative management includes the adjustment of the relationship between public economy and private economy, the improvement of the business environment for individual and private enterprises, and the enlargement of the amount of processing orders and government procurement from the private industries. Economic lever refers to easier money policy, demand promotion, tax adjustment, and tax items simplification. Industry self-discipline management involves formulating measures for industry so that the private firms in industry have to follow when they perform economic activities. For example, the government adjusts the relationship between labours and the companies by introducing consultative approach to deal with the conflicts in labour relations. Besides, the government requires the private enterprises to publish the production and marketing information in order to guide the entrepreneurs' production and operation. Mass movement refers to two important political campaigns, named as Against Three Evils happened at the end of 1951 and Against Five Evils happened in the beginning of 1952. Against Three Evils refers to conduct the anti-corruption, anti-waste, and anti-bureaucratic in the national authorities and businesses. While Against Five Evils means to conduct anti-bribe, anti-tax evasion, anti-jerry work, anti-theft of the state property, and anti-theft of national economic intelligence. Through these two mass movements, the leading status of working-class and socialism state operated economy has been consolidated, the management system of workers and clerks monitoring production and participation in operation has been established, and the favourable conditions to conduct the socialism transformation of private industry and commerce have been created.

them are controlled and supervised by the government. Between 1949 and 1952, although the state-operated economy was the leading part of the Chinese economy, it did not have an overwhelming dominance over the private economy. On the contrary, the output value of private businesses took up approximately 50% of the total output value (see Table 2.1).

Table 2.1 The value of gross output of different kinds of enterprises from 1949 to 1978

Year	Whole people ownership	Collective ownership	Joint public-private ownership	Private ownership	Individual ownership	Total
			Absolute Value (100 million RMB)			
1949	36.80	0.70	2.20	68.30	32.30	140.30
1952	142.60	11.20	13.70	105.20	70.60	343.30
1957	421.50	149.20	206.30	0.40	6.50	783.90
1965	1255.50	138.40	0.00	0.00	0.00	1393.90
1978	3416.40	814.40	0.00	0.00	0.00	4230.80
			Proportion（%）			
1949	26.20	0.50	1.60	48.70	23.00	100.00
1952	41.50	3.30	4.00	30.60	20.60	100.00
1957	53.80	19.00	26.30	0.10	0.80	100.00
1965	90.10	9.90	0.00	0.00	0.00	100.00
1978	80.80	19.20	0.00	0.00	0.00	100.00

Data Source: National Bureau of Statistics of China. (1985). *Chinese Statistics Summary 1985*. Beijing: China Statistics Press.

The second phase is the traditionally planned economic system stage that goes from the beginning of the socialist construction period (1952) to the reform and opening-up period (1978).

Since 1952, private enterprises in China experienced the Socialist Transformation (*she hui zhu yi gai zao*). When the national economy had recovered from the traditional malpractice of the old Chinese economic system, the Party Central Committee decided to transform from the New Democracy to Socialism. In the first session of the Secretariat of the Central Committee meeting in September 1952, Chairman Mao stated that the country would basically complete the transition to Socialism in the next ten to fifteen years. Then, in September 1953, the Central Committee of the Communist Party of China announced the general line for the transition period. The main part of the general line was to gradually implement socialist industrialisation, while the other important part was to gradually implement the socialist transformation of agriculture, handicrafts, the capitalist industry, and commerce. According to this general line, the whole country began to carry out the Three Socialist Transformations Movement, i.e. the agriculture socialist transformation, the handicrafts socialist transformation, and the capitalist industry and commerce socialist transformation. [1]

[1] The agriculture socialist transformation is also known as the "cooperative movement of agriculture", which is named after the cooperative society in Soviet Union. More specifically, the agriculture socialist transformation refers to the transfer of the small-scale peasant economy to the socialist collective economy through a cooperation approach under the supervision of the people's democratic dictatorship. At the end of 1956, the agriculture socialist transformation was completed and the amount of peasant households who joined in the cooperative society reached up to 96.3%. The handicrafts socialist transformation refers to the transfer of the private ownership of means of production of small handicrafts workers to collective ownership through three stages, including the establishment of the handicrafts production group, the handicrafts supply and marketing cooperative, and the handicrafts production cooperative. At the end of 1956, the number of people who had joined the handicrafts cooperative made up 91.7% of the total number of handicrafts workers in the whole country, indicating that the handicrafts socialist transformation was completed. The capitalist industry and commerce socialist transformation means that based on the "peaceful purchase" policy (whereby means of production are nationalised through peaceful methods and purchased with compensation), the government transferred the national capitalist industry and commerce to socialist public owned enterprises through national capitalism. At the end of 1956, this transformation was completed and the enterprises characterised by a joint venture between the public and private sector accounted up

The Three Socialist Transformations Movement was completed in only four years, from 1952 to 1956. Through this transformation, the nature of production goods was changed from private ownership to socialist public ownership. China became a socialist society and initially established a basic system of Socialism.

In the following 20 years, private enterprises disappeared because of the completed socialist transformation. Especially during the Culture Revolution period, every single private business was considered as a "remnant of capitalism", which had to be got rid of. Private businesses experienced a miserable and difficult period. Until 1978, all private businesses were abandoned. The total number of individual workers in China in 1978 was only 140,000, which only made up 0.015% of the total population (962,590,000). There was no record of private businesses and private enterprises during this period (see Table 2.1).

During this traditional planned economic period, the economic system was characterised as highly centralised planned economy. As the country stood at an economically backward starting point, the State-owned enterprises (SOEs) system was carried out so that China could meet the needs of an increasing development rate. With the absence of private firms, the SOEs system was compatible with the economic system in that particular period, suggesting that the SOEs were the major income source and major expenditure channels of the national finance. At that time, the resource allocation system was highly centralised and enterprises did not have autonomous rights in operation, which was controlled by the government. Therefore,

to 99% of the total original capitalist industry households and workers.

China established a complete industrial system which covered extensive industrial categories only with the development of SOEs (Liu, 2009).

Under a such highly centralised planned economic system, private enterprises were no longer an independent economic entity because of a lack of autonomy and independence. That is, there were no private firms, but only the SOEs and politically affiliated firms. Each enterprise was controlled by a corresponding administrative department. Governments supervised and commanded companies' activities directly by administrative measures. The management rights were controlled by governments at different levels, indicating that managers in enterprises were only executors of the governments to carry out the governments' operating decisions. All appointments and dismissals of enterprises' leaders and recruitments of employees were controlled by governments.

At that time, the affiliated enterprises became the production department of governments. All enterprise activities were based on governments' administrative goals. For example, the operating activities of enterprises only took national planned aims into consideration, and the operating goal of enterprises was to accomplish governments' planned targets. Without considering sales and customers' demands, enterprises only cared about production quantity, instead of quality. The relationship between private firms and the governments was quite affinitive and there was no clear separation between the functions of governments and enterprises.

However, this situation led to several problems, such as unscientific performance

evaluation mechanisms and incentive system, a lack of enthusiasm of employees, and serious bureaucracy problems (Bai and Ren, 2007).

2.1.2 The rise and development of private enterprises (1978-1988)

In the 1980s, the Chinese market started to open to individual-owned businesses. In 1978, the reform and opening-up policy was carried out in order to break the planned economic system and to improve the enterprises system reform by introducing market mechanisms. With the gradual establishment of a modern enterprise system, the seeds of private enterprises were sown.

In 1979, the government allowed for the first time urban and rural individual workers who had a valid residence registration to engage in the repair, service, and manufacturing industry, as a subsidiary and complement to socialist public ownership. However, they were not allowed to recruit labour. Therefore, the private firms during that time period were quite small and their development was stagnant. Before 1980, the policy of the Party and the government was not to encourage or to prohibit the private businesses, indicating that the private businesses did not have a legal status at that time.

In August 1980, the central government held a National Employment Conference and decided to encourage and support the development of private enterprises in towns and cities. The new “3 in 1 combination” employment policy was presented at the conference, pointing out that employment could be improved by combining

employment by assignment through the Government Labour Department, voluntarily-organised employment, and self-employment. More specifically, in the Several Political Provisions of the State Council on Urban Non-agricultural Individual Economy (*guo wu yuan guan yu cheng zhen fei nong ge ti jing ji ruo gan zheng ce xing gui ding*) published by the State Council in July 1981, individual businesses were allowed to employ others, but were limited to up to two assistants, and no more than five apprentices.

These regulations ensured that the state would protect the legal rights and interests of private operators, but also imposed certain limits on their size and fields of operation. Only unemployed youths, the official urban residence, or retirees with certain skills to pass on were allowed to engage in individual businesses. Additionally, individuals could only engage in all kinds of small-scale handicrafts, retail commerce, catering, services, repairs, non-mechanised transport, and building repairs, which were beneficial to the national economy and did not involve the exploitation of others. The limits imposed were for political purposes and kept the private economy under the control of the socialist state and unlikely to develop any capitalist tendency.

A new Constitution was passed on 4th December 1982, at the fifth session of the Fifth National People's Congress (NPC). For the first time, the Constitution admitted the legal status of individual-owned businesses. After his first South Tour in January 1984, Deng Xiaoping decided to open up 14 coastal cities, which stimulated the prosperous development of private businesses, and this phenomenon was called as "*xia hai*"[1] in

[1] The orginal meaning of "*xia hai*" is going to the sea. At the beginning of opening-up period, "*xia hai*" refers to people, especially those worked in government institutions, regisn from their old jobs and start doing business.

Chinese. At the end of 1986, the amount of township and village enterprises rose to 15.15 million and the population of the labour force of these enterprises was almost 80 million. The taxes they paid were 17 billion Yuan and the total value of output amounted to 330 billion, which accounted for 20% of the whole national total value of output (Wu, 2009).

In order to supervise and protect the legal rights of individual businesses, the Provisional Administrative Regulation on Urban and Rural Individual Industrial and Commercial Households (*cheng xiang ge ti gong shang hu guan li zan xing tiao li*) was issued in September 1987. Then in October 1987, the Thirteenth National Party Congress pointed out that the socialist economic mechanism was a planned commodity economy on the basis of public ownership. A socialist planned commodity economy mechanism should be a unitary economic system of planned economy and market economy, indicating the markets were regulated and controlled by the state. In this congress, the legal existence and development of the private economy were admitted publicly for the first time. It was also stated that the State's basic policy on the private economy was to encourage, protect, guide, supervise and manage the development of the private economy. Under this circumstance, private enterprises saw their first development boom.

In April 1988, the first session of the Seventh National People's Congress adopted an "Amendment to the Constitution of People's Republic of China."[1] (*zhong hua ren min*

[1] The first article of the "Amendment to the Constitution of People's Republic of China" states that Article 11 of the Constitution should include a new paragraph which specifies that: "The state permits the private sector of the economy to exist and develop within the restrictions prescribed by law. The private sector of the economy is complement to the socialist public economy. The state protects the legal rights and interests of the private sector

gong he guo xian fa xiu zheng an), suggesting the acknowledgement of the legal status of private enterprises was been written in the Constitution of China. In June 1988, the Provisional Regulations of the People's Republic of China on Private Enterprises (*zhong hua ren min gong he guo si ying qi ye zan xing tiao li*) was issued. It stated that assets of private enterprises belonged to individuals and admitted the legal rights for private businesses to employ more than eight employees. After this point, the Party Central Committee and the State Council have acknowledged private enterprises officially and the private economy finally had legal status.

In these early years of market economy transition, the facilities and support to obtain the resources and access the market were quite deficient, which hindered the commercial environment. As a response, private enterprises in China attempted to establish political connections through "wearing a red hat" (*dai hong mao zi*) whereby they disguised their private ownership and registered as a public owned organisation by affiliating themselves to government agents. Many scholars (for example, Li, 2005; Luo *et al.*, 1998; Putterman, 1995) have noticed the red hat phenomenon and developed various terms to describe it, such as disguised private enterprises, *de facto* privatisation, pseudo-collectives, or pseudo-SOEs.

According to Pan (2006), the phenomenon of wearing a red hat was most popular in the 1980s, taking up 46.30% of the total number of private enterprises. Such prevalent activities could benefit both enterprises and public owned agents. At that time, the private entrepreneurs were worried that the Party and state policy might change

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of the economy, exercises guidance and supervision, and controls over the private sector of the economy."

against them and were afraid that a socialist transformation might happen again. By wearing a red hat, not only their rights could be secured, but also they could utilise the prestige, customer network, and interpersonal relationships of public owned agents to obtain greater profits. On the other hand, in order to put on a red hat, private entrepreneurs needed good connections with government officials and had to pay a management fee to the affiliated government agency or public-owned firm.[1] In this case, such management fee became one of the important income sources for public owned sectors.

2.1.3 Unstable development of individual-owned businesses (1988-1992)

In the middle of the 1980s, economic reforms swept over the country. Some new phenomena, such as the introduction of a contract system,[2] appeared with the rapid development of social productivity. However, the level of people's awareness still stayed at the traditional planned economy stage and did not catch up with the development of social productivity. In this case, these new phenomena were not understood and were considered as capitalism and some people claimed that they should be prevented.

The most well-known event was called the "Guan Guangmei phenomenon". Guan

[1] Chan (1992, p. 251-252) quotes a classic example on such affiliation activity. An official who had worked for 10 years in a regional office of the Foreign Economic Relations and Trade Corporation decided to quit and run his own business, making use of the extensive network built up in his previous job. Instead of setting up a private firm, he made an arrangement with the local authority whereby the firm would be officially owned by the authority and subcontracted to it. According to the contract, the local authority would not invest any money but would be entitled to 30 percent of the firm's profit. In return, the local authority would provide assistance to the firm in acquiring premises, licences, electricity and telephone lines, and in dealing with the Tax Bureau on the firm's behalf.

[2] Contract System is a labour employment system, which did not exist before. Because of the highly centralised planned economy, the labour's recruitment, wage, and distribution are all arranged by the state. The workers recruited are the permanent workers, who will never lose his/her job.

Guangmei was a worker in a vegetable company in Benxi, Liaoning Province. Since 1985, she leased eight grocery stores consecutively. The profit she made during two years was one million RMB, which was 20 times of the average income of the whole population during that period. In this case, some people considered her as a capitalist, who did not follow socialism. Later that year, there was a heated debate on whether the private economy, contract, and lease operation method were characteristics of socialism or capitalism (*xing zi hai shi xing she*). Since the second half of 1988, the government started to manage the economic environment and rectify the economic order to control the chaos in economic life. Under these circumstances, the economic environment became strict for private entrepreneurs. In addition, a trend of bourgeois liberalisation started in 1989. Some people propagandised bourgeois freedom and democracy and took activities against the Party and socialism. After this political disturbance, the whole society started to criticise bourgeois liberalisation, westernisation and privatisation. Some people stated that the private economy posed a threat to the status of public ownership, and thus had a negative impact on national stability. Due to these unfavourable political and policy environments, although the private economy had already received legal status, the development of private enterprises was made very difficult, which weakened the development of the private economy.

Under such an unfavourable environment during the early 1990s, many private enterprises tried to wear a "red hat" in order to secure political protection and obtain important resources such as energy and finance from the government (Naughton, 1994; Che and Qian, 1998). But it was difficult for them to obtain such political connections because they were considered to be against socialism.

2.1.4 Golden period of development (1992-2003)

This represents the golden period of the development of the Chinese private economy. In order to find out whether the individual economy could be characterised as socialism or capitalism, between January and February 1992, Deng Xiaoping inspected the south of China and gave a speech, which scientifically explained the essence of socialism and the relationship between the planned and market economy, solved the ideological problem constantly obsessing the Chinese people, and defined directions of transition from a planned economy to a market economy.

Deng Xiaoping stated that in the past the policy had focused on how to develop productivity, while it overlooked the importance of reform. Reform referred to a change in economic mechanisms, which fundamentally restricted the development of productivity, established the socialist economic system with vigour and vitality, and improved the development of productivity. In this case, reform also meant emancipation of the productive forces. He pointed out that thanks to the reform and opening-up activities, the development of the economy and the people's living standards had improved.

He also clarified that the criteria for judging the characteristics of the individual economy should be whether it promotes the growth of productive forces in a socialist society, whether it promotes the overall powers of the socialist country, and whether it improves people's living standards. He suggested people should be bolder than before in conducting reform and opening to the outside world, by emancipating their

minds and attempting more experiments with courage.

This speech generated reform and an opening-up policy, encouraged people to emancipate their minds, and woke up people's awareness of doing business. Thereafter, the development of private businesses started to face a favourable political environment and private enterprises began to develop speedily.

In October 1992, the 14th National Conference of the Communist Party of China (CPC) took a significant step of the reform and set an objective to establish a socialist market economy system. In 1997, the 15th National Conference of the CPC enhanced the status of private enterprises. It stated clearly that the non-public sector of the economy was an important component of China's socialist market economy. It also confirmed that the basic economic system at the primary stage of socialism was keeping public ownership in a dominant position and developing multiple forms of ownership side by side. It indicates that the nature of the non-public sector of the economy had become an important component of the socialist economy, instead of a necessary supplement to the socialist economy. Afterwards, an increasing number of enterprises began to drop their "red hats" as the economic environment became more favourable for private firms.

The second session of the Ninth NPC in 1999 passed a new "Amendment to the Constitution of People's Republic of China" (*zhong hua ren min gong he guo xian fa xiu zheng an*), which acknowledged, for the first time, that individually-owned businesses, the private economy, and other non-public-owned economies were

important parts of the socialist market economy that could be written into the Constitution, legally protecting the development of the private economy.

In his speech on the 80th anniversary of the Communist Party in July 2001, the Secretary-General of China, Jiang Zemin defined private entrepreneurs for the first time as constructors of the development of socialism with Chinese characteristics, and stated that constructors of the socialist cause, including private entrepreneurs, should be treated equally from a political perspective. In November 2002, the 16th National Conference of the CPC amended the Party Constitution, allowing private entrepreneurs to become Party members, which provided a favourable platform for private entrepreneurs to seek political status.

During this decade from 1992 to 2002, the non-state economy witnessed a rapid development. For example, its output value increased from 20.5 billion up to 392.3 billion RMB. The number of households, the number of employees and the amount of registered capital have seen a substantial increase (see Table 2.2).

Table 2.2 The development of individual enterprises and private enterprises in China from 1992 to 2002

	Individual Enterprises			Private Enterprises		
Year	**Households**	**Employees**	**Capital**	**Households**	**Employees**	**Capital**
1992	1533.90	2476.70	601.00	13.90	231.90	221.00
1993	1766.99	2939.30	854.90	23.80	372.60	680.50
1994	2186.60	3775.90	1318.60	43.20	648.40	1447.80
1995	2528.50	4613.60	1813.10	65.45	955.97	2621.71
1996	2703.70	5017.10	2165.40	81.93	1171.13	3752.37
1997	2850.00	5441.90	2574.00	96.10	1349.30	5140.10
1998	3120.00	6114.00	3120.00	120.00	1710.00	7198.00
1999	3160.00	6241.00	3493.00	151.00	2020.00	10287.00
2000	2671.00	5070.00	3315.00	176.00	2406.00	13308.00
2001	2433.00	4760.00	3436.00	202.85	2714.00	18212.00
2002	2377.00	4743.00	3782.00	243.53	3409.00	24756.00

Notes[1]: "Households" is the number of households, the unit is 10 thousand households; "Employees" refers to the number of employees, the unit is 10 thousand people; "Capital" stands for the amount of registered capital, the unit is a hundred million RMB.
Data Source: Zhang, H and Ming, L. (2004). *The Development Report of Non-Stated-Owned Enterprises: 2003*. Beijing: Social Science Academic Press

Although since the 15th CPC, more and more entrepreneurs began to get rid of their "red hats", this does not mean that entrepreneurs in the private economy were no longer interested in establishing political connections. Actually, they become more and more active in participating in politics. According to Chen *et al*. (2012), since 2001, about 600 private entrepreneurs and individual business owners became Model

[1] Individual enterprises and private enterprises are both included in the non-state economy. The former one refers to the enterprises where the means of production are owned by an individual or family and those can only hire less than 8 employees. While private enterprises are the firms that with private capitalist nature.

Workers (the best worker), while some of them were elected as chairmen of the Federation of Industry and Commerce at the province level, and some of them became members of the Party Congress at the city or province levels. More and more private entrepreneurs started to enter politics by obtaining membership to the People's Congress (PC) or the Chinese People's Political Consultative Conference (CPPCC). At that time, a great amount of people from the private sector started to actively participate in politics in the two months after the 16th Party Congress in November 2002, and some of them obtained very high positions. The number of them was unprecedentedly high since the establishment of the People's Republic of China.

In 2003, the China Business Times (*zhong hua gong shang shi bao*) reported the beginning of political activity of private entrepreneurs as one of the top 10 news of the Chinese private economy. It was also reported that in the 10th National Committee of the CPPCC, more than 65 members, accounting for 2.9% of the whole committee, were from the private economic sectors. According to the Wenzhou Federation of Industry and Commerce in 2006, 596 people, coming from private enterprises, were members of the PC or the CPPCC at the county level or above in this industrial city. Compared with the previous record, there was an increase of 414 people. Although the private economy developed in an unfavourable environment in China for a long time, private enterprises' political participation has always been important during the development of private firms' history in order to deal with incomplete market and allow firms to gain favourable support from governments.

2.2 The *lishu* relationship under the CES and the SMES

The *lishu* relationship under the different economic development stages in China has different content because the roles of the government in the economic activities change (Zhou, 2006). Under the CES, all the enterprises in China had the *lishu* relationship and the relationship in certain enterprises even maintains and continues in the contemporary economy of China (Cheng, 1986). The governmental intervention in these enterprises and the political connections were therefore high. However, the *lishu* relationship under the SMES should be read differently in different forms of enterprises in China, which will be explored in this section.

2.2.1 The *lishu* relationship under the CES in China

Under the CES in the 1950s, all the enterprises should be affiliated to a government or a governmental organ of China, in which the *lishu* relationship connected all the macroeconomic and microeconomic activities closely to the government(s) (Cheng, 1986).

Before 1978, all the enterprises in China are state-owned-enterprises (SOEs) or public-private cooperative enterprises (PPCEs) in which the governments held shares in every enterprise (Cao, 1981; Gao, 1999; Fan, 1990). The governments acted on behalf of the "Chinese people" to hold shares of the enterprises. The *lishu* relationship therefore commonly existed in enterprises between 1950 and 1978.

The *lishu* relationship and the political connections in the SOEs were generated since

the day an enterprise was established because it was the governments or governmental organs that directly set up (a new) or took over (an existing) enterprise. The *lishu* relationship did not maintain when the enterprise did not exist any longer. As well, the *lishu* relationship changed when the enterprise was affiliated to another government or governmental organ. For example, a Chinese private investor Jiaxi Ni purchased Yili (a foreign firm making transnational goods transactions) in 1946 from Nick, who was a Jew operating Yili Commercial Firm before the establishment of the PRC. In order to recover the economy of Beijing after the domestic war between 1945 and 1949, the Beijing government established a PPCEs with Jiaxi Ni, creating an enterprise named as Beijing Yili Food Company in the 1950s. The *lishu* relationship was therefore generated between the Beijing government and Yili (Jiang, 2012). As is mentioned above, all the enterprises established in China were either SOEs or PPCEs[1] before 1978, the *lishu* relationship was thus a characteristic commonly existed in the enterprises.

Managing the economic activities through the *lishu* relationship, the governments played the roles mixed with the administrative and economic tasks including planning production, allocating resources, arranging salaries, purchasing products, deploying labour force, collecting income and budgeting expenses directly (Zeng, 1999). Through the direct management of the enterprises, the governments determined the economic and personnel issues of the enterprises by the means of issuing

[1] It is noteworthy that another important form of enterprise: collective-owned enterprises (COEs) also exist, especially in the rural areas of China. But the COEs in either the cities/towns or the villages are controlled and operated by the "working people" collectively, rather than the "government" or "organ". Therefore, this section does not explore the *lishu* relationship in COEs. See Regulation on the Collective-Owned-Enterprises in Cities and Towns of the PRC, released on 9th September 1991, entered into force on 1st January 1992, amended on 8th January 2011; Regulation on the Collective-Owned-Enterprises in Villages of the PRC, released on 3rd June 1990, entered into force on 1st July 1990.

administrative orders.

2.2.2 The *lishu* relationship under the SMES in China

Since 1978, private enterprises (PEs) and foreign enterprises (FEs) began to emerge in China. In other words, governments and governmental organs are no longer the only participants in the economic system who can establish enterprises. Private natural/legal person, foreign natural/legal person, government/organs, etc. are all able to take part in the SMES but the *lishu* relationship does not exist in all enterprises anymore. During this period, the Chinese character "隶属" (*lishu)* actually has two different meanings.

The first meaning of *lishu* relationship narrowly refers to the connection between an enterprise and the branches/offices affiliated to the enterprise. In this context, the branches or offices are considered as the affiliations of the enterprise under the *lishu* relationship. For instance, the international law firm, Linklaters, has set up three affiliations in China until March 2015. In pursuant to the Enforcement Rules of the PRC on Administration and Registration on Enterprise Legal Person (*zhong hua ren min gong he guo qi ye fa ren deng ji guan li shi xing xi ze*), [1] such affiliations should provide the information regarding the enterprises to which they are affiliated (*lishu*) to the administrative registration office. Furthermore, the Rules of the PRC on Administration and Registration on Individual Proprietorship Enterprise (g*e ren du zi*

[1] Enforcement Rules of the PRC on Administration and Registration on Enterprise Legal Person, released on 20th February 2014, entered into force on 1st March 2014, Articles 21&22.

qi ye deng ji guan li ban fa) [1] require the enterprise's branches to provide the information of the affiliation body (the individual proprietorship enterprise) to the administrative office.

However, such a *lishu* relationship does not refer to the theme of this thesis because it lacks the political connections. But it is noteworthy that such a *lishu* relationship has been stipulated explicitly in Chinese laws above and it is only one aspect of the meaning of the *lishu* relationship.

The *lishu* relationship in this thesis is defined as the enterprises "belonging to", or "subordinate to", or "affiliated to", or "directly controlled by" the governments or governmental organs. The *lishu* relationship establishes political connections through linking an enterprise to a specific level of governments/organs. Unlike the *lishu* relationship which was applied to all the enterprises under the CES above, the *lishu* relationship under the SMES is only established through contributions to the shares of an enterprise.

In the state-owned enterprises (SOEs) where the governments or governmental organs control 51% shares of the enterprises or more, the share contributions (may exist in the forms of capital, land, properties and intellectual property) make the enterprises be affiliated to the governments or organs. For instance, the State-owned Assets Supervision and Administration Commission of the State Council (SASAC)[2] was set

[1] Rules of the PRC on Administration of Registration on Individual Proprietorship Enterprise, released and entered into force on 13th January 2000, Articles 39.

[2] It is a commission of the State Council (SC) of the PRC being responsible for managing the SOEs, appointing top executives and approving mergers and acquisitions. Indeed, SASAC is among the many governmental organs

up in 2003, representing the state and the people to hold shares only in certain enterprises (Shi and Zhao, 2003; Wu, 2003; Zhao, 2004). The State Development & Investment Corporation (SDIC) is a pure SOE wholly owned by the SASAC. SDIC invested 100% shares of China International Investment and Trade Company (CIITC), Guangzhou Textile Resources Company (GTR) and Tianjin Tianyuan Trade Company (TTT). Moreover, in Beijing Textile Resources Limited (BTR) and Shenzhen Sanhuan Industrial Corporation (SSI), SDIC is also holding the majority shares (Yan, 2006; Luo, 2007; Guo, 2013). Because the shares of CIITC, GTR, TTT, BTR and SSI are fully or majorly held by the SASAC, they are affiliated to the SASAC, which is a governmental organ at the central level. As the SASAC is a component of the State Council (SC) system of China, the enterprises listed above are therefore having the *lishu* relationship with a central governmental organ in China and such a relationship is established on the basis of the shares of the SASAC in the enterprises.

The *lishu* relationship and the political connections also exist in the private enterprises (PEs), in which the private holds the 51% shares of the enterprises or more. In this circumstance, the *lishu* relationship exists because of the existence of the shares of the governments or governmental organs. Such PEs differ from the SOEs although they have governmental shares because these PEs do not have compulsory public functions for the society, which should be undertaken as the main duty of the SOEs (Qiao and Liu, 2010; Hao and Shao, 2006). The governmental shares do not constitute the majority shares of certain enterprises because some SOEs are in the process of privatisation (transferring to PEs) in which the state's shares are decreasing but have

that are still imposing political connections on the economy and the *lishu* relationship is hence established in the circumstances where the governmental organs (or governments) are involved.

not been removed completely (Hu, 2004; Xu, 2002). In other PEs where the governmental shares are the minority, the governmental participation aims to improve the capacity and profitability of the governmental capital, instead of controlling the enterprises or the sectors (Lin, 2008; Xu, 2015). For instance, China Mengniu Dairy Company (Mengniu) is a manufacture producing and distributing dairy products, which was established by a Chinese citizen Gensheng Niu in 1999 as a PE. In 2009, China National Oils, Foodstuffs and Cereals Corporation (COFCO) purchased 20% stake of Mengniu (Ye and Qiu, 2008). Because the COFCO is a SOE wholly owned and directly administrated by the SC (Gao *et al*., 2012), the *lishu* relationship was created between Mengniu and the central level of government in China.

From the perspective of shares contributions of the government/organ, foreign enterprises (FEs) can also have the *lishu* relationship. According to Chinese laws, foreign investors/capitals can enter into China only in the forms of Sino-Foreign Joint Venture, China-Foreign Cooperative Enterprise or Foreign-Capital Enterprise.[1] In the first two forms of FEs, the capitals or non-capital properties from the governments or governmental organs may exist, which generate the *lishu* relationship. For instance, Beijing Youshi Contact Lens Co. Ltd. (Beijing Youshi) is a Sino-Foreign Joint Venture established in Beijing, in which Beijing Yishang Group (former: Beijing First Commercial Bureau) holds 40% shares (Meng, 2009). Because Beijing Yishang Group is wholly owned and directly operated by the Beijing government, Beijing Youshi therefore has the *lishu* relationship with this government.

[1] See Law of the People's Republic of China on Foreign-Capital Enterprises, Law of the People's Republic of China on Chinese-foreign Equity Joint Ventures, and the Law of the People's Republic of China on Chinese-foreign Co-operative Enterprise.

Because the governments or governmental organs hold certain shares in PEs or FEs, they are able to elect the governmental representatives as the directors, supervisors, or managers. Because the governments or governmental organs also work to maintain and increase the value of their shares in the PEs, they tend to utilise the *lishu* relationship to achieve the targets.

In spite of the difference of the *lishu* relationship in the CES and the SMES, the enterprises having the *lishu* relationship are commonly affiliated to a government or governmental organ. The possible affiliated governments are broadly expanded to: (1) all the administrative levels of governments in China including the central government (State Council (SC)), province-level governments (the number of provincial governments in China is 34, *sic passim*), city-level governments (333), county-level governments (2,856), and town-level governments (40,906); (2) governmental organs including the ministries, committees, commissions, bureaus and offices of the SC, and bureaus, committees departments and offices of the other levels of governments.

2.3 Procedures establishing and changing the *lishu* relationship

In SOEs, PEs, COEs and FEs, the *lishu* relationship is established once the government(s) or governmental organ(s) contribute to the shares of the enterprises. In a PE, a government or governmental organ can input capitals, land or production equipment to the enterprise. Also, the PE can seek the governmental participation in its shares. Either by accepting the governmental input or seeking the governmental contribution, the PE can obtain the *lishu* relationship accordingly. For instance, since

all the economic activities were controlled by different levels of governments in China before 1978, a natural person had to obtain the *lishu* relationship with a government or governmental organ before she/he can establish an enterprise. The Public-Private Joint Operation Enterprise at the time was created to spread the *lishu* relationship to all the enterprises across the country (He, 2003; Zhang, 2007; Yang and Yan, 2010). Apart from obtaining the *lishu* relationship through the means above, the enterprises shall complete the legal procedure to record the relationship in written, as is discussed below.

Under the CES, the *lishu* relationship was required to be recorded in the memorandum of the enterprises to demonstrate the governments or governmental organs affiliated.[1] The *lishu* relationship shall be illustrated explicitly in the registration of enterprises under the SMES. As a procedural requirement, the Enforcement Rules of the PRC on Administration and Registration on Enterprise Legal Person stipulates that the enterprises having the *lishu* relationship shall provide the information of the *lishu* relationship as part of the business registration.[2] Accordingly, the administrative offices will handle the registration issues within 15 days from accepting the application and will record the *lishu* relationship on the registration certificate of enterprises.

The *lishu* relationship of an enterprise may change either because the shares contribution from the governments/organs is changed or because the

[1] Provisional Regulation on the Public-Private Joint Operation Enterprise, released and entered into force on 2nd September 1954, Articles 19&22.
[2] Enforcement Rules of the PRC on Administration and Registration on Enterprise Legal Person, released on 20th February 2014, entered into force on 1st March 2014, Article 19.

governments/organs themselves have changed. According to the Examining and Endorsing Regulation (the Regulation) on the Change of the *lishu* Relationship,[1] the enterprises should reach agreement with the old and new governments/organs before they change the *lishu* relationship. It is further stipulated explicitly that the *lishu* relationship cannot be changed by any governmental or administrative organ without a pre-consent among the enterprise, the current government/organ and the new government/organ.

The Regulation also requires the current government with which an enterprise is having the *lishu* relationship to submit a formal application in written to the State Economic and Trade Committee (SETC)[2] in order to complete the procedure of changing the *lishu* relationship. As a necessary part of the application, the (1) written consent of the government/organ; (2) the agreement of changing the *lishu* relationship among the enterprise, the current government/organ and the new government/organ; and (3) statement letters regarding the operation, property, credit and debit of the enterprise, shall be submitted so that the SETC can make the decisions accordingly.[3]

In the situation where the *lishu* relationship is changed only through the agreement among the enterprise, the current government/organ and the new government/organ, but without fulfilling the registration procedure, such change will not be recognised

[1] Examining and Endorsing Regulation on the Change of the *lishu* Relationship (1994 amendment), released and entered into force on 19th November 1994, Article 2.3.
[2] Note: the application should be submitted to the National Commission for Restructuring the Economic System. See Examining and Endorsing Regulation on the Change of the *lishu* Relationship (1990 version), released and entered into force on 20th July 1990, Article 3.1.
[3] Examining and Endorsing Regulation on the Change of the *lishu* Relationship (1994 amendment), released and entered into force on 19th November 1994, Article 3.4.

by law and the agreement is considered null in law.[1] It is thus clear that the change of the *lishu* relationship shall be requested by the current government or governmental organ to which an enterprise is affiliated. However, the request has to be made in the form of a formal application, which has to be approved by the administrative registration offices so that the application to change the *lishu* relationship is valid in law.

The termination of the *lishu* relationship of an enterprise can be attributed to the shares withdrawal of the government or governmental organ from the enterprise, or to the fact that the affiliated government or governmental organ no longer exists (Li, 2014; Han, 1989; Zou, 2001). Because the information regarding the *lishu* relationship is recorded in the registration certificate of the enterprise, the termination of the relationship shall be considered as a modification of the certificate. For instance, the Reply of the State Administrative Bureau of Industry and Commerce on the Termination of the *lishu* Relationship requires that the enterprise in question shall submit: (1) the application to terminate the *lishu* relationship; and (2) the statement letter regarding the reasons causing the termination of the *lishu* relationship, to the administrative registration office. For example, Goubuli Food Company was founded in 1858 (Goubuli Bun Shop) and transferred as a SOE in 1956 by the Tianjin government. By making and selling buns, the Goubuli has become one of China's longest established food brands having the *lishu* relationship with the Tianjin government (Liu, 2007). In 2005, the Goubuli Food Company was purchased by a PE in Tianjin (Tianjin Tong Ren Tang Company) from the Tianjin government. The

[1] The Reply of the State Administrative Bureau of Industry and Commerce on the Termination of the *lishu* Relationship, issued on 30th March 1991, Article 2.

governmental share in Goubuli was withdrawn and the *lishu* relationship was terminated thereof.

Although both the change and the termination of the *lishu* relationship should experience the reviewing procedure through the SETC or the Administrative Registration Office for Industry and Commerce, the bodies that initiate the application are different. The change of the *lishu* relationship shall be applied by the current government or governmental organ affiliated by an enterprise, rather than by the enterprise. Such a requirement indicates that the viewpoints of the government or governmental organ shall be respected to emphasise the influence of the political connections (Zhao and Zhang, 2015). But when it comes to the termination of the *lishu* relationship, the enterprise in question initiates the application largely because the *lishu* relationship, the government, and the governmental organ does not exist any longer and it is more convenient and feasible for the enterprise (rather than any other body) to provide the information.

2.4 The positive implications of the *lishu* relationship in enterprises

Under the CES before 1978, enterprises had "no choice" not to establish the *lishu* relationship because the state in the CES had a desire to control every aspect of the economy (Liu *et al*., 1985). Because the state owned all the social resources during 1950 and 1978, the *lishu* relationship helped the enterprises obtain the resources. Although the enterprises lost the initiative and autonomy because of the close connections with the government (Cheng, 1986), the *lishu* relationship did play a crucial role of "concentrating national resources to get big tasks done" (Liu *et al*.,

1985, p.67). For example, the construction of Daqing oil exploration field, the successful research and development of nuclear power, the establishment of the first vehicle manufacturing factory (Hongqi Vehicle Manufacturing Factory), and the production of the seamless iron and steel pipe were all achieved under the CES (Su and Yang, 2000).

After 1978, the influence of the *lishu* relationship on enterprises differs in SOEs, PEs and FEs. The *lishu* relationship of the SOEs mainly achieves the governmental functions to control the life-line of national economy, to maintain the national economic order, and to instruct the direction of the national economy (He, 1998; Bai and Yan, 2004). Through the close connections between the enterprises and the government by the *lishu* relationship, the enterprises can be allocated the national resources to achieve these goals.

In practice, PEs with the *lishu* relationship tend to obtain governmental support directly or indirectly including equipment, machinery, labour resources and capital, which are beneficial to the operation of the enterprises. For instance, the PEs having the *lishu* relationship with the Ministry of Commerce and the SETC in the sector of international trade tend to obtain more trade opportunities globally because these governmental organs put such PEs in a preferential place in the allocation of resources and information (Wu, 2011).

Apart from the benefits the PEs can obtain through the *lishu* relationship, the *lishu* relationship in the FEs contributes to the FEs in a unique way of opening a door to

foreign capitals to Chinese market (Xu, 1996; Xu, 2003; Cui and Zhang, 2013). Such a role of the *lishu* relationship results from the restrictions on the entry of foreign investments/investors in China. According to the Negative List for Foreign Investment in the Free Trade Zone of the PRC, and the Directory Category of Industries for Foreign Investments in the PRC,[1] foreign capitals are restricted to enter into certain sectors in China. And the only way to establish an enterprise in China for these investors is to create a Sino-Foreign Joint Venture or China-Foreign Cooperative Enterprise. Such FEs thus shall not be wholly owned by the foreign investor(s) and some shares must be obtained by either Chinese private investor(s) or Chinese government or governmental organ. For instance, the FEs exploring and developing oil and natural gas shall be in the form of either Sino-Foreign Joint Venture or China-Foreign Cooperative Enterprise.[2] It is the Chinese participation (private or governmental) in the FEs that makes such economic activities possible and feasible in the territory of China. And the *lishu* relationship contained in the governmental participation is therefore an element assisting the establishment of the FEs in China.

[1] Limitations on foreign investments are stipulated in the Industry Category Guide for Foreign Investment (applied across China except for the free trade zones (FTZs)) and the National Negative List for Foreign Investment (applied in the free trade zones). Negative list is formally named in governmental documents as Special Regulatory Measures on the Entry of Foreign Investment in Certain Free Trade Zone. For instance, the Negative Lists for foreign investment in Shanghai FTZ have undergone the 2013 version and 2014 version. The 2015 version has been issued by the State Council of the PRC, applying in all the FTZs in China. A 2018 version has been planned at the 16th Meeting of China Leading Group for Comprehensively Deepen Reforms on 21st September 2015. The latest version of the Industry Category Guide for Foreign Investment is the Industry Category Guide for Foreign Investment 2015, which was released on 10th March 2015 and entered into force on 10th April 2015 (the 2015 Investment Guide replaces the 2011 Revision of Industry Category Guide for Foreign Investment).

[2] Special Management Measures on the Entry of Foreign Investment in the Free Trade Zone of the PRC (Negative List), released on 8th April 2015, entered into force on 7th May 2015, Article 2.4.

2.5 Further exploration of the *lishu* relationship: ownership and *lishu*

A *lishu* relationship, which refers to the political affiliation and the link between government and firm, differs from ownership in the following perspectives:

Firstly, ownership refers to property rights and is established and protected by the basic law, namely the Constitutional Law of the People's Republic of China (PRC). Specifically, the state-owned enterprises (SOEs) are owned by the state, private enterprises (PEs) are owned by the legal entities and individual investors, foreign enterprises (FEs) are owned by investors from abroad, and collectively-owned enterprises (COEs) are owned by all the workers working in the collective. However, the *lishu* relationship refers to a political connection though the governmental jurisdictions. China has 34 provinces and municipalities, 333 prefectures (*di qu*), 2,856 counties and 40,906 towns (*xiang* and *zhen*) (The National Bureau of Statistics). Correspondingly, all firms with a *lishu* relationship are controlled by the hierarchically structured governments, from low to high levels, including the township governments, county governments, prefecture governments, provincial or municipal governments, and the central government (Li, 2004; Tan *et al.*, 2007; Guariglia and Mateut, 2013). According to the state statistical survey regulation, an enterprise can establish an affiliation only with one of these five levels of governments. On the basis of the features of a firm, its operation, location, and size can determine the affiliated government. Generally, SOEs are more likely to affiliate with higher levels of governments, while PEs tend to be affiliated with lower governments.

Secondly, in the four types of ownerships, only SOEs and COEs have political

connections with the Chinese government. However, a firm can establish political affiliation through the *lishu* relationship regardless of its ownership structure. Put another way, political connections intended as ownership can only exist in SOEs and COEs, while political connections intended as the *lishu* relationship can stand in any type of ownership structure.

Thirdly, at the time of establishing the firm, ownership is decided. That is, firms are born with an ownership. For SOEs and COEs, they are born with a close "political blood relation". However, firms can decide whether or not to have the *lishu* relationship after they have been established. That is, the *lishu* relationship is acquired rather than inherent.

Lishu represents an administrative power through which the government controls over every aspect of the affiliated enterprises. According to the CNPC (1993, 1994), the administrative controls through the *lishu* relationship include naming the firms; regulating firms' structure through appointing the directors, chairmen of the board, and general manager; reviewing firms' feasibility reports and business plans; approving licences and major projects; deciding business domain and the amount of taxes and fees; determining the major decisions such as profit distribution and investments; issuing bank loans; and monitoring bank transactions.

The National Bureau of Statistics (NBS) provides detailed codes for the *lishu* relationship. Specifically, enterprises affiliating with the central authorities are coded as 10, enterprises affiliating with the provincial governments are coded as 20,

enterprises affiliating with the city and prefecture (*di qu*) governments are coded as 40, enterprises affiliating with the county (*xian*) governments are coded as 50, enterprises affiliating with the sub-district, town, or village governments are coded as 60, enterprises affiliating with the residents' and villagers' committee governments are coded as 70, and firms with no affiliation are coded as 90.[1]

[1] See Appendix for more details about political affiliation.

Appendix 2A

Table 2A.1 Codes of political affiliation (the *lishu* relationship)

Code	Affiliated level	Detail
10	Central authorities	including Standing Committee of the National People's Congress, Chinese Communist Party Central Committee, ministries and commission under the State Council and affiliated organisations, offices and organisations directly under the State Council and affiliated organisations
20	Provincial	including autonomous regions and municipalities directly under the Central Government
40	City and prefecture (*di qu*)	including autonomous prefecture, league (*meng*), provincially administered municipality, the popedom of municipality directly under the Central Government (county) (*xian*)
50	County (*xian*)	including municipality directly under the prefecture (sub-prefecture, league), the popedom of municipality directly under province, autonomous county (Banner) (*qi*), banner (*qi*), county-level city
60	Sub-district, town, village	
61	Sub-district	
62	Town	
63	Village	
70	Residents' and villagers' committee	
71	Residents' committee	
72	Villagers' committee	
90	No affiliation	

CHAPTER 3 DATA AND KEY VARIABLES

This chapter describes data and the key variables used for the empirical studies in this research. The dataset is described in section 3.1. And section 3.2 introduces the key variables used for the empirical studies in this thesis.

3.1 Data

We use firm-level dataset for this study as it can avoid aggregation problems in estimation, and make it possible to take firm heterogeneity into account (Bond and Van Reenen, 2007). The firm-level data are taken from the National Bureau of Statistics of China (NBS) over the period 2000-2007 and include all types of firms in China, including both state-owned and non-state-owned firms with annual sales of more than five million RMB Yuan.[1]

This dataset comes from the annual accounting reports, maintained and complied by the NBS, and provides comprehensive economic information of each firm covered, including both basic information such as the firm's registration code, the year founded, location, employment, and financial variables such as current and fixed assets, liabilities, annual sales, and total wage bill. These firms come from 31 provinces or province-equivalent municipal cities (except Hong Kong, Macao and Taiwan) all over China and operate in a wide range of industrial sectors, within the mining and

[1] The official RMB yuan exchange rate per US dollar during the sample period was 8.2785 in 2000, 8.2771 in 2001, 8.2770 in 2002 and 2003, 8.2768 in 2004, 8.1943 in 2005, 7.9734 in 2006, and 7.6075 in 2007 (World Development Indicators, World Bank). Therefore, the threshold for including in the dataset is equivalent to between USD 604,098 and USD 657,246 over the sample period.

manufacturing sectors.

The dataset includes a majority of firms which are not traded on the stock market. Compared to listed firms, which are typically large, financially healthy, long-established, and with good credit rating, unlisted firms are more likely to be characterised by a short track record, poor solvency, and a low level of real assets. It is therefore more interesting to look at the political connections, intended as the *lishu* relationship, in those unlisted firms.

3.2 Key variables

Key variables used in this thesis are firm characteristic variables and financial variables. Firm characteristic variables mainly include firm size, political affiliation intended as the *lishu* relationship, ownership types, and location. Financial variables mainly include cash flow-to-capital ratio and leverage ratio. Firm ownership, political affiliation, and location construction are introduced as follows.

Although the NBS includes the registration codes of firms, we use the fraction of paid-in-capital by the various groups in every year to define ownership categories.[1] In total, there are six types of investors: the state; foreign investors (excluding those from

[1] We prefer to use the fraction of capital paid-in to define ownership for three reasons. Firstly, there are considerable delays in updating firms' registration codes, which in turn cause these codes to be unreliable (Dollar and Wei, 2007). Another reason is that in order to take advantage of the benefits (for example, the tax benefits) assigned to certain types of firms, they might falsely register as these types of firms. Finally, we exclude the firms with mixed ownership by using this way to categorise firms into different ownership classes. Mixed ownership firms refer to the firms with no group has a majority share. For example, a firm is characterised by a 35% state ownership, a 35% private ownership, and a 30% foreign ownership. In the sample, there are around 1.5% of firms with this type of ownership and these firms are excluded.

Hong Kong, Macao, and Taiwan); investors from Hong Kong, Macao, and Taiwan; legal entities; individuals; and collective investors. As investments from Hong Kong, Macao, and Taiwan are characterised as the "Round-Tripping" Foreign Direct Investment (FDI),[1] we separate them from other foreign investors. State legal persons and private legal persons are included in the legal entity, which is a form of corporate ownership.[2] As for collective firms, they are managed by local governments and typically owned collectively by communities in urban areas (known as Urban Collective Enterprises or UCEs) or rural areas (known as Township and Village Enterprises or TVEs). Based on the majority average shares of paid-in-capital contributed each year by the four types of investors over the sample period,[3] we group all the firms in four categories: state-owned; privately-owned (which includes all firms owned by legal entities and individual investors);[4] foreign owned (which includes investors from Hong Kong, Macao, Taiwan, and other parts of the world); and collectively-owned.

[1] "Round-Tripping" FDI means that the return of Chinese capital includes part of FDI to China. That is, domestic firms go abroad first and reinvest back later. These domestic capital registers as foreign invested capital from nearby regions in the form of FDI in order to take advantage of benefits (such as tax preferential policy, property rights protection, loose exchange controls, and competitive financial services) that granted to foreign invested firms (Huang, 2003; Xiao, 2004).

[2] Legal persons include a mix of different domestic institutions, such as industrial enterprises, construction and real estate development enterprises, transportation and power enterprises, securities enterprises, trust and investment enterprises, foundations and funds, banks, technology and research institutions and so on.

[3] For example, if the average share of its capital owned by the state is at least 50%, we then classified this firm as state-owned firm. Similar approach is applied for the private firms, foreign firms, and collective firms (Dollar and Wei, 2007; Ayyagari *et al*., 2010; Guariglia *et al.*, 2011).

[4] Firms owned by individuals make up about 60% of the total private firms group. There are two reasons to include the firms owned by state legal persons into this privately-owned category. Firstly, it is caused by the limitation of our dataset, which does not allow us to separate state legal persons from non-state legal persons. Therefore, we cannot exclude the state legal persons from our privately-owned firms category. Secondly, according to Wei *et al*. (2005), although the state's principal interest is mainly political, i.e. maintaining employment levels or control for the strategic industries, all legal entities are profit-oriented, which could justify their inclusion in this category.

Political affiliation is defined as the *lishu* relationship in this thesis. All firms with a *lishu* relationship are controlled by hierarchically structured governments, from low to high levels, including the township governments, county governments, prefecture governments, provincial or municipal governments, and the central government (Tan *et al*., 2007; Guariglia and Mateut, 2013; Li, 2004). According to the state statistical survey regulation, an enterprise can establish an affiliation only with one of these five levels of government. Furthermore, we differentiate firms into four groups according to their degree of political affiliation provided by the NBS, namely firms without a *lishu* relationship, firms affiliated with the high level of government (including the firms affiliated with the central and provincial governments), firms affiliated with the medium level of government (including the firms affiliated with the city and prefecture, and county governments), and firms affiliated with the low level of government (including the firms affiliated with the rest levels of governments).[1]

The 31 provincial units fall into three categories: 22 provinces (*sheng)*; 5 autonomous regions (*zi zhi qu)* (Inner Mongolia, Xinjiang, Tibet, Ningxia, and Guangxi); and 4 municipal cities (*zhi xia shi)* under direct supervision of the central power (Shanghai, Tianjin, Beijing, and, since 1997, Chongqing). Due to the differences in economic development, education level, and infrastructure, we group each firm into one of the three regions: coastal, central, and western, according to its location and following the study by Qin and Song in 2009.[2] Detailed definition of the variables used in each empirical study is presented in the Appendix of each subsequent chapters.

[1] See Appendix for more details about different groups.
[2] Also see Appendix for Chinese provincial units by region.

Appendix 3A

Table 3A.1 Different political affiliation groups

Groups	Code
Firms affiliated with the high level of government	$lishu \leq 20$
Firms affiliated with the medium level of government	$20 < lishu < 60$
Firms affiliated with the low level of government	$60 \leq lishu < 90$
Firms with no political affiliation	$lishu = 90$

Table 3A.2 Chinese provincial units by region (except Hong Kong, Macao, and Taiwan)

Coastal region	Central region	Western region
Beijing	Shanxi	Chongqing
Tianjin	Inner Mongolia	Sichuan
Hebei	Jilin	Guizhou
Liaoning	Heilongjiang	Yunnan
Shanghai	Anhui	Tibet
Jiangsu	Jiangxi	Shaanxi
Zhejiang	Henan	Gansu
Fujian	Hubei	Qinghai
Shandong	Hunan	Ningxia
Guangdong		Xinjiang
Guangxi		
Hainan		

CHAPTER 4 DETERMINANTS OF POLITICAL CONNECTIONS

In this chapter, we investigate the determinants that affect firms' decisions on having political connections, intended as the *lishu* relationship. We use a panel dataset covering 113,549 Chinese firms in the sector of manufacturing, the majority of which are unlisted firms, covering the period 2001-2007 and test 4 sets of hypotheses, including hypotheses on firm heterogeneity, ownership status, financial status, and profitability and growth opportunities. We conclude that the probability of a firm being politically affiliated can be precisely determined by the firm's size, age, the region where it operates, the type of ownership, financial status, profitability, and growth opportunities. These effects are more pronounced for private firms than foreign firms. We also find that firms are more prone to have the *lishu* relationship with the medium level of government. Furthermore, we do not observe a significant effect of cash flow-to-capital ratio on political affiliation for the firms which are located in the central and western regions in China due to the regional policy development.

4.1 Introduction

Politically connected enterprises are a universal and a crucial component of the global economy. The understanding of the influences of political connections on firm performance and financial health is an important issue from both macroeconomic and microeconomic perspectives. There are two schools of thought that deal with this issue.

The first one emphasises that politically connected firms can obtain several kinds of favours, such as the favourable treatment to obtain bank loans (Brandt and Li, 2003; Khwaja and Mian, 2005; Faccio, 2006; Fraser *et al*., 2006; Claessens *et al*., 2008), favourable tax treatment (Adhikari *et al*., 2006; Faccio, 2010), profitable government contracts and crucial licences (Leuz and Oberholzer-Gee, 2006; Goldman *et al*., 2010), as well as higher market share (Faccio, 2007; Faccio, 2010).

The alternative argument is that politically associated firms underperform when compared with the non-associated firms. This idea is supported by many studies, including Fan *et al*. (2007), Faccio (2010), and Peng *et al*. (2011), who argue that politically connected firms have poorer accounting performance than firms without such connections. One of the reasons is that firms with politically connected CEOs are more likely to appoint current or previous government officials to the board. These officials tend to be less professional and lack experience in running a business. Moreover, Leuz and Oberholzer-Gee (2006) point out that the investments in political relationships could lose their value overnight because of regime changes. Therefore, investing in political relationships could be extremely risky, and managers may have to spend lots of time and resources to re-establish the relationships with the new government. In this case, political connections may not always be beneficial to enterprises' long-term development.

Moreover, although political connections have attracted worldwide academic interest, the definition of political connections and their influences on enterprises are different between China and the western world as they have different political regimes. A large

amount of existing literature has studied private enterprises with political connections in countries such as the United States, Malaysia and Thailand (for instance, Roberts, 1990; Agrawal and Knoeber, 2001; Johnson and Mitton, 2003; Adhikari *et al*., 2006; Charumlind *et al*., 2006; Fraser *et al*., 2006; Gul, 2006; Claessens *et al*., 2008; Goldman *et al*., 2009, 2010; Cooper *et al*., 2010). A few studies focus on China (see, for example, Chow *et al*., 2010; Li *et al*., 2008; Chen *et al*., 2011a; Fan *et al*., 2008; Tan *et al*., 2007).

There is a vast quantity of evidence on the correlation between political connections and economic benefits. Most literature assumes that enterprises are politically connected before conducting any empirical analysis. Only few researchers (for example, Li *et al*., 2006; Boubakri *et al*., 2008; Masters and Keim, 1985; Chen *et al*., 2012) have looked at another important question: what are the factors that determine political connections. In other words, what types of enterprises are more likely to have political connections?

In order to fill this literature gap, this chapter aims at investigating the determinants of political connections, intended as the *lishu* relationship for Chinese manufacturing firms. Specifically, this research contributes to the literature in the following ways. Firstly, the *lishu* relationship is a unique type of political connections that only exists in China. Firms can establish connections with the governments by affiliating with different levels of government. There is hardly any research on the relationship of firm performance, financial health and political connections intended as the *lishu* relationship. As an institutional variation during the economic transition in China, it

is worth exploring the *lishu* relationship. For the first time, we estimate the determinants of political connections from the aspect of the *lishu* relationship.

Secondly, a large dataset is adopted, which is provided by the National Bureau of Statistics of China (NBS) between 2000 and 2007. This dataset contains comprehensive economic information of firms coming from 31 provinces or province-equivalent municipal cities (except for Hong Kong, Macao and Taiwan) across China. Moreover, as the existing studies focus on listed firms, which do not represent the population of Chinese firms, research on unlisted firms is very limited. This dataset comprises a large proportion of small and young unlisted firms, representing the population of Chinese firms better than listed firms. To the best of our knowledge, the hypothesis on the determinants of political connections has never been explored using such a comprehensive dataset mainly covering unlisted firms.

Thirdly, having experienced extraordinary economic growth in the past thirty years, never in the past has China become more important world-widely than now. Given a relatively undeveloped legal and financial system caused by significant intervention of the government, the miracle growth speed of the Chinese economy is often considered as a puzzle. It is the first time to explore what factors determine the *lishu* relationship of firms in the context of China. Finally, we take into account various perspectives of firm heterogeneity.

To summarise our main results, we find that older and larger firms, as well as the financially healthy firms, are more likely to have a *lishu* relationship, as they are more

capable of affording the costs of having political relationships. Firms with foreign ownership that are located in the east of China are less likely to affiliate with the governments. However, firms with high profitability and sales growth do not prefer to put their economic advantages into the risk of having political affiliation as such relationship could lose its value overnight due to regime changes.

The remainder of this chapter is organised as follows. Section 4.2 endeavours to review the relevant literature on the determinants of political connections. The conceptual framework and hypotheses are provided in section 4.3. Section 4.4 introduces the specification and estimation methodology. Data sample and summary statistics are introduced in section 4.5. Section 4.6 is devoted to presenting the empirical analysis of the determinants of political connections. Additional tests are presented in section 4.7. Finally, section 4.8 concludes this chapter.

4.2 Literature review

In this section, we summarise the literature on the different measurements of political connections between China and the rest of the world, and on the determinants of political connections.

4.2.1 Measuring political connections

Politically connected firms in the literature which looks at countries other than China are typically defined in five ways. Firstly, at least one of the large shareholders, who

control 10% or more of the company's voting rights directly or indirectly, is a politician (e.g. a national congress member, a government minister, or a head of state) (Faccio, 2002, 2006, 2007, 2010). Secondly, at least one of the company's top officers (e.g. the CEO, president or chairman) is a politician (Faccio *et al*., 2006; Chen *et al*., 2010). A company, which is closely related to a top politician or a political party leader through friendship, family members, and relationships with foreign politicians falls into the third type (Faccio, 2002; Gul, 2006; Faccio *et al*., 2006; Leuz and Oberholzer-Gee, 2006). The fourth group includes firms with state ownership (Boardman and Vining, 1989; Belka *et al*., 1995; Dewenter and Malatesta, 2001). The final type of connection is established by campaign contribution, which refers to a relationship between a firm and an election candidate. That is, a firm, having supported an election candidate in the campaign, will in return gain favours from the politician (Claessens *et al*., 2008; Goldman *et al*., 2009; Cooper *et al*., 2010).

The Chinese socialist political system has attracted growing interests among scholars studying political connections. After almost four decades of economic reform since 1978, various economic institutions in China have obtained increasing authority to operate on market principles. However, according to Guthrie (2000), firms are still involved in relationships with different levels of government and such relationships can influence both firms' strategy and performance. In addition, the Chinese government continues to play an important role in the allocation of critical resources, and state-owned enterprises enjoy preferential treatment in receiving bank funding and other important resources (Chow *et al*., 2010; Li *et al*., 2008; Poncet *et al*., 2010). Along with this line of research, the existing literature analyses political connections

in China from three different perspectives: political connections based on ownership, political connections intended as in the other countries, and the *lishu* relationship.

The first form of political connections in China is established and protected by the basic law, namely China's Constitutional Law. Based on the ownership structure, firms in China can be distinguished into stated-owned enterprises (SOEs), collectively-owned enterprises (COEs), private enterprises (PEs) or foreign enterprises (FEs). According to China's Constitutional Law, SOEs and COEs play a dominant role in the socialist market economy. That is, SOEs and COEs are born with a close "state blood relation" (Liang, 2010). In this circumstance, political connections established through ownership can be considered as a father-son blood relationship, which is strong and long-lasting.

This type of political connection is innate rather than acquired. Unlike political connections in western countries, SOEs and COEs are conferred with a political relationship the moment they are established, indicating that these enterprises need no more effort to seek political ties. In addition, such political connections are established by the government, mainly for the purpose of controlling the life-lines of the national economy. Chen *et al*. (2011a) show that the Chinese government makes use of SOEs and COEs to achieve social and political goals. In fact, core sectors (such as natural resources, civil aviation, real estate, and finance) are only open to SOEs and COEs in China and the government can determine the direction of the macro economy by directly controlling these enterprises.

The second form of political connections in China is similar to those in other countries. Private firms in China seek to establish ties with politicians and governments to survive in an environment characterised by discrimination (Liang, 2010). Most private firms try to establish political ties by hiring current or former government officers as their chairman or CEO (Chen *et al*., 2011a; Xu *et al*., 2011), acting as government advisers in certain government bodies and government-affiliated organisations (Chen *et al*, 2011b; Zhang and Zhang, 2005), campaigning for membership of the Chinese People's Political Consultative Committee (CPPCC), the National People's Congress (NPC) or the Chinese Communist Party (CCP) (Feng *et al*., 2011; Chen *et al.*, 2011b), and even offering bribes and political contributions to the politicians in charge (Bai *et al*., 2005; Fan *et al*., 2008).

Finally, China has a specific type of political connections called the *lishu* relationship, which is exclusive to China, and the most important political connections during the economic transition. Detailed definition of the *lishu* relationship and the differences between the *lishu* relationship and ownership have been explored in Chapter 2. *Lishu* is a Chinese word which means "belonging to", "subordinate to", or "directly controlled by". Firms can be affiliated with various levels of government. Through this relationship, the governments can maintain administrative power to control various aspects of the firm both directly and legally (Tan *et al*., 2007; Li, 2004). Specifically, a *lishu* relationship implies that the government controls firms' structures, directors and senior manager appointments, business plans, major projects, and operational decisions (CNPC, 1993, 1994).

4.2.2 Determinants of political connections

The existing studies investigate the determinants of political connections from three perspectives, namely enterprises' characteristics, entrepreneurs' personal characteristics, and the institutional analysis.

The institutional analysis can be further divided into two categories based on corporate governance mechanisms, namely internal and external institutional mechanisms. Internal mechanisms consist of functions and procedures created to supervise and affect the firm's management activities. They include board characteristics, such as the size of the board of directors, the proportion of non-executive directors on the board, the debt financing, the executive directors' shareholdings, the audit committee, the internal audit function, and the choice of external auditors (Davidson *et al*., 2005). External mechanisms refer to the market and institutions that support the firms' development.

4.2.2.1 Firm-specific characteristics

Boubakri *et al*. (2008) use 245 privatised firms in 14 developed and 27 developing countries during the period 1980-2002, and perform logit regressions, to identify the determinants of political connections. They consider that a company is politically-connected if at least one member of its board of directors or its supervisory board is or was a politician, including a parliament member, a minister or any other top officer. In order to define the determinants of political connections, the authors apply logit

regressions to test a set of firm-specific variables (i.e. size, sector, location and leverage), as well as a set of privatisation variables (i.e. residual government ownership, fraction held by foreigner investors, and privatisation method).

Their results suggest that privatised firms located in a major city and in a regulated sector (utilities, telecommunication and petroleum) are more prone to be politically connected. Firms with a higher leverage ratio are more likely to have political connections in order to keep them from defaulting. Moreover, politically connected firms are generally larger with thousands of employees and more reluctant to dismiss employees. As for privatisation variables, the results show that the residual stake of the government yields a positive and highly significant coefficient, while the coefficient associated with the percentage held by foreign investors is significantly negative. These results indicate that the more significant the residual stake of the government is, the more likely the firm is politically connected. That is, if the government remains a larger stakeholder after privatisation, it will be more able to appoint governmental officials as directors. Furthermore, firms privatised through private sales are less likely to be politically connected as this type of privatisation is characterised as concentrated ownership by private investors who focus on profitability rather than political goals.

Masters and Keim undertake a research on the determinants of participation in the Political Action Committee (PAC) among 1981 Fortune-ranked large corporations in the United States. Using a logit regression, they test how firm characteristics can affect the probability of a corporation having an active PAC in the 1981-1982 election cycle.

Masters and Keim (1985) define that the firms are politically-connected if they have a PAC that contributed money to federal candidates in the election cycle.

Their results suggest that larger firms with more employees have a higher likelihood of having a PAC. The authors point out that the administrative employees are generally considered as the main objective of abundant PAC fund-raising and the proportional relationship between the number of employees and the number of administrators in a corporation is positive. Therefore, larger firms with more assets are able to hire more employees; and a larger employment base of the firm may indicate more administrative employees. In turn, the probability of forming a PAC is increased with firms' assets and the number of employees. They also find that firms in the manufacturing or mining industries, the banking or financing or real estate industries, the wholesale or retail trade or service industries, and the construction industries are less likely to have a PAC. On the contrary, firms in the transportation, energy and communication industries are more likely to have an active PAC. It has been identified that corporations in certain industries have historically been more heavily regulated by the federal government, in the pricing and market entrance (Pittman, 1977; Long and Link, 1983). Therefore, firms in these industries have a greater incentive to engage in political actions.

Masters and Keim (1985) also suggest that the greater the degree of unionisation in the firm's industry, the higher the probability the firm will participate in political activity. This is because unions in an industry can raise incentives for corporations to participate in politics by increasing government involvement in setting the minimum

wage and labour health standards. Additionally, the number of firms in an industry may affect the political participation of some firms because of free rider problems. There are strong incentives to free ride in industries with a large number of firms. In this case, the motivation of one firm to participate in political activity decreases as the number of firms in this industry increases. However, they do not find a precisely determined relationship between firms' economic performance and the decision-making on PAC participations.

Some empirical studies have been conducted in the context of China. Li *et al*. (2006) examine the determinants of political participation in China by using a matched firm-institution data set, which is from a nationwide survey of privately owned enterprises and provincial-level institutional indices. Their sample contains 3,258 privately owned enterprises, including large firms and individual household businesses, drawn from 31 provinces in mainland China. The authors define private entrepreneurs' membership in the Chinese People's Congress (PC) or the Chinese People's Political Consultative Conference (CPPCC) as political participation. Their results show that firms with a longer history or a larger size are more prone to participate in the PC or the CPPCC.

By applying the same definition of political connections in Li *et al*. (2006), Chen *et al*. (2008) study the determinants of political participation of private enterprises, using survey data of enterprises and entrepreneurs from Liuzhou in the Guangxi Province of China. The authors conclude that the entrepreneurs in the firms with greater registered capital, longer history, and larger number of employees are more likely to

participate in the PC or the CPPCC. However, they do not document ownership as an important factor for entrepreneurs entering politics.

Yeh *et al*. (2010) adopt a broad definition of political connections[1] and test the determinants of political connections for Chinese listed firms over the period 1998-2006. The dataset was jointly collected from the Taiwan Economic Journal, Market Observation Post System, and Taiwan Stock Exchange. As the ruling party changed from Kuomingtang (KMT) to Democratic Progressive Party (DPP) in 2000, they divide the sample period into two periods, 1998-2000 and 2001-2006. Their final sample comprises 303 firms per year for the first period and 555 firms per year for the second period. The authors find that politically connected firms are characterised by higher return on assets (ROA), lower R&D intensity, and larger size than non-connected firms in both subsample periods. Specifically, politically-connected firms are associated with a significantly higher average ROA (5.03% in the 1998-2000 period and 5.41% in the 2001-2006 period) than the non-connected firms (3.90% in the 1998-2000 period and 3.93% in the 2001-2006 period), indicating that firms with political connections have more profitable assets in generating revenue.

[1] They define firms as politically connected to a certain political party when at least one of the following four conditions is met: "(1) the firm was founded or run by the political party; (2) the political party is one of the firm's large shareholders; (3) the chairman or CEO publicly supports the presidential candidate representing a certain political party, participates in or has his/her employees participate in the presidential campaign, or was referred or reported by at least one of the major newspapers as being supportive of a certain political party; (4) one of the large shareholders, director, or top officers is/was a member of parliament, a minister, or a top government official"(Yeh *et al*., 2010, p.16-17).

4.2.2.2 Entrepreneurs' personal characteristics

Some researchers focus on the importance of corporate executives' personal attitudes and personal characteristics. Jacobson (1980), for example, argues that "the individual motives and attitudes of corporate officers are crucial in determining both the degree of political involvement and the form it takes" (p.83). Miller *et al*. (1981) point out that higher levels of education, income, and occupational status may encourage entrepreneurs to actively engage in the political area.

Li *et al*. (2006) test the determinants of being a member of the PC or the CPPCC in China by looking at the entrepreneur's age, education background, years of management experience, whether the entrepreneur has a rural origin, whether the entrepreneur is a party member, and whether the entrepreneur is a former public firm manager. They find that older entrepreneurs with more management experience are more likely to participate in politics. Their results also show that the more education an entrepreneur receives, the more likely he/she is to have political connections. Additionally, entrepreneurs in the rural origin have a higher likelihood of being a member of the PC, rather than the CPPCC, indicating that the PC can represent more evenly the majority of the population coming from rural areas. Being a party member or having previous work experience as a public firm manager also increases the probability of political participation.[1] The authors also suggest that both the PC and the CPPCC pay more attention to good human capital when selecting their members. However, party members and former public firm managers are more prone to be the

[1] In China, being a Party member does not necessarily lead to the membership of the PC or the CPPCC.

members of the PC but not of the CPPCC.

Chen *et al*. (2008) evaluate entrepreneurs' characteristics, including age, political status, gender, education, household registration and family background and test their relationship with the participation in the PC or the CPPCC. The authors find that younger entrepreneurs are less likely to become members of the PC or the CPPCC, while gender, education and household registration status do not significantly affect their decisions. In addition, their results show that entrepreneurs with membership in the Chinese Communist Party or other democratic parties have a greater probability of participating in politics. Compared with other democratic parties' membership, those entrepreneurs belonging to the Communist Party have a much higher (five times) probability of political participation. Chen *et al*. (2008) also find that entrepreneurs' family political background is an important determinant affecting the probability of entering politics. Parent leadership identity is a dummy variable that equals to 1 if the entrepreneurs' parents are officials in governments above the county level or in the army at the corresponding level; 0 otherwise. The result indicates that parent leadership identity increases the likelihood of entering politics for entrepreneurs, significantly from 1.25% to 10.13%. They consider entrepreneurs' political status and family background as a formal *de jure* political power, and suggest that such political power is a personal advantage of entrepreneurs which can be used to secure more formal political power and to participate in politics.

4.2.2.3 The external institutional analysis

There is a huge amount of literature examining the underdevelopment of markets and market-supporting institutions in developing and transition countries. According to Bartels and Brady (2003), the institutional environment in transition economies shapes motivations, information, and opportunities in which decisions on political connections are made.

There are four kinds of institutional difficulties faced by private enterprises in these countries. First, according to McMillan (1997), in the early stage of the transition, private businesses can hardly depend on the markets, as financial markets are non-existent and product and labour markets are elementary and undeveloped. In these countries, the allocation of resources, including credit, is in fact tightly controlled by the government or state-owned enterprises (Nee, 1992; McMillan, 1997; Brandt and Li, 2003). Second, the governments may intervene in the corporate world by imposing unnecessary regulations, known as red tape (Brunetti *et al*., 1997; Guriev, 2004). According to Li *et al*. (2008) and Guriev (2004), red tape can be defined as excessive official routines, and unnecessary rules or procedures resulting in delays. Firms have to spend considerable time and resources, including pecuniary and non-pecuniary ones, in getting through the bureaucracy. In addition, heavy formal and informal tax burdens cost private firms substantially in transitional economies. Johnson *et al*. (2000) find that the effective tax rates in Russia and Ukraine are extremely high. Local governments may also impose different kinds of fees on corporations, and in many cases theses fees are illegal. Finally, apart from the failures of the governments and

market, the legal system in these countries is also very rudimentary and weak. The legal system can only play a limited role in protecting the property rights and the enforcement of contracts because a sound legal framework is either non-existent or not enforced (McMillan and Woodruff, 1999; Johnson *et al*., 2002).

Because of the high degree of control applied by governments and the imperfections in the market and legal systems, private firms cannot rely on markets and market-supporting institutions to do businesses and do not have too many choices in response to these state and market failures. They either become passive victims or have to rely on other organisations to do business. For example, firms in Russia and Eastern European countries tend to go underground to reduce the high tax burdens and avoid excessive regulations (Johnson *et al*., 1997, 2000; Friedman *et al*., 2000). Alternatively, firms may also rely on *ad hoc* substitutes for the incompetent formal institutions. Particularly, firms build their own organisations in order to succeed in such an economy, also know as self-help (McMillan and Woodruff, 2002). For example, corporations in Vietnam rely heavily on interfirm relationships to do business because of the lack of the contract enforcement laws (McMillan and Woodruff, 1999). According to Hay and Shleifer (1998), the consequence of the absence of a sound legal system in Russia is that private mechanisms, such as social norms or arbitration, are used to resolve disputes.

Instead of being passive victims or relying on other institutions, entrepreneurs can actively participate in politics to overcome these difficulties. Many entrepreneurs in Russia, for example, are eager to attend the Duma, the popularly elected lower house

of Russia's legislature, so that they can protect themselves from higher taxes and excessive regulations. Similarly, a growing number of entrepreneurs are campaigning for the membership of the National Assembly, which is the highest legislative body in Vietnam.

Boubakri *et al*. (2008) perform a cross-country analysis and define a politically connected firm as at least one politician on its board of directors or its supervisory board. The authors test how the judicial and political variables (i.e. government tenure, influence of political competition, and extent of judicial independence) and environment variables (i.e. economic development, bureaucracy, and corruption) influence the political connections.

The authors find that political and judicial variables can significantly explain the existence of politicians on the boards of newly privatised firms. For example, there is a negative and significant relationship between the extent of judicial independence and the likelihood of political connections, indicating that political appointments are more popular in lower judicial independence countries. The results also suggest that in order to obtain voting support and minimise frictions among veto players, a government that features a higher fractionalisation and that has been in power for only a few years is more likely to keep politicians on the boards of firms. As for the institutional and macroeconomic variables, the authors do not observe a significant explanatory power. For instance, the coefficient on bureaucracy is negative but insignificantly related to the likelihood of political connections. Additionally, there is no relationship between corruption and getting political connections for privatised firms.

Li *et al*. (2006) construct an institutional index, including the development of product markets, the development of credit markets, government regulations, the informal tax burden, and the legal system. The authors point out that the underdevelopment of the market, especially the credit market, can raise the likelihood of political participation, indicating that the credit market is more specific according to different provinces and is more crucial in deciding political connections. They also illustrate that firm owners in provinces with an overregulation burden and without a sound legal enforcement are more prone to have political connections. The effect of the informal tax burden, however, is less significant in these regressions. The findings suggest that one standard deviation increase in the institutional indices can decrease the probability of entrepreneurs entering politics by 8% to 20%, supporting the view that the institutional environment shapes the motivation of private firms' owners to create political connections.

4.2.2.4 The internal institutional analysis

Instead of analysing the rationale for political connections from an external governance perspective, some researchers explore the determinants of political connections from the perspective of firms' internal governance structure. According to Yeh *et al*. (2010), an internal institutional analysis can be done based on the following two reasons.

First, the external governance structure and legal protection for minority shareholders are weak in most developing countries. For example, according to Claessens and Fan

(2002), in some regions in Asia characterised by weak institutions and poor property rights, the limited protection of minority rights allows controlling shareholders to expropriate the minority shareholders. It is therefore unrealistic to rely on an external corporate governance mechanism.

In addition, the relations between some firms' characteristics affected by the internal governance structure and political connections remain ambiguous. According to previous studies, the relations between political connections and firms' performance can be positive or negative. For example, according to Bunkanwanicha and Wiwattanakantang (2009), the market-to-book value of equity of the politically connected firms can increase astonishingly by more than 200%. However, Bertrand *et al*. (2006) find that accounting and stock market performance of firms with politically connected CEOs are lower than those of non-connected firms in France. Therefore, it is necessary to investigate the relationship between internal governance and the likelihood of having political participation.

Yeh *et al*. (2010) point out that the quality of corporate governance is related to firms' decisions to engage in political connections and can be illustrated from both a cost-benefit perspective and a demand-side perspective.

The costs of political connections include governmental interferences and rent expropriated by the connected politicians (Yeh *et al*., 2010). According to Black *et al*. (2006) and Brown and Caylor (2006), corporate governance is a crucial factor in determining firm value and performance. Firms with a superior governance structure

are supposed to be associated with better performance or higher firm value. In contrast, firms with an inferior governance structure are expected to have poorer performance or lower firm value. For the latter firms, governmental interventions, such as bailout when firms face financial distress, are important and therefore, the marginal benefit of such interventions is supposed higher. Therefore, governmental interventions are particularly helpful for firms with poor governance structure and the rent charged by politicians is likely to be small compared with the huge benefits they can offer, indicating that the cost of political connections for these firms is minimal.

As for the demand-side perspective, firms with poor governance would demand more political connections in order to obtain more help and aid from such connections. Because aid and interventions are crucial to the development of firms with poor governance, the marginal benefit of having these connections can almost offset the marginal cost. These firms are therefore more willing to spend money and other resources in having political connections. At the same time, it is easier for firms with poor governance structure to reallocate resources for political connections, because poor governance does not require enterprises to follow accurate accounting standards and thus the firms have more cash to use for other activities, such as political connections.

Before analysing the relationship between quality of internal corporate governance and political connections, Yeh *et al*. (2010) exclude the external governance environment from their hypothesis development. They assume that the external governance structure is fixed for all firms and is related to a lower marginal cost and

a higher marginal benefit when the external governance structure is ineffective.

According to Bøhren and Ødegaard (2003), the true relationship between firm performance and corporate governance may not be appropriately captured if corporate performance relates to one particular aspect of corporate governance. Inspired by this argument, Yeh *et al*. (2010) emphasise the internal governance structure to develop a single governance index, which is a scorecard that measures a firm's corporate governance over three dimensions: ownership structure (including four dummies: controlling shareholders' cash flow rights, voting rights, the voting-cash deviation, and pledge ratio), board structure (including two dummies: board control and supervisory control), and related party transactions (including four dummies: sale, purchase, loan, and guarantee). This corporate governance index (CGI) is constructed by summing these ten dummies. The value falls in the range between 0 and 10. The average score of CGI is 4.97 in the 1998-2000 period and 5.40 in the 2001-2006 period, indicating that the overall corporate governance structure improved marginally over time.

The results suggest that politically connected firms have a lower corporate governance index. Specifically, the average CGI of politically connected firms (4.38 in the 1998-2000 period and 4.56 in the 2001-2006 period) is significantly lower than that of their non-connected counterparts (5.40 in the 1998-2000 period and 5.52 in the 2001-2006 period), suggesting that politically connected firms have worse corporate governance structure than the non-connected firms.

4.3 Conceptual framework and hypotheses

4.3.1 Conceptual framework in the existing literature

Researchers in political science and economics have given theoretical consideration to the political participation of private enterprises. They provide three different perspectives to explain why a firm might want to have political connections: the political science perspective, the organisational science perspective, and the economic cost-benefit perspective.

4.3.1.1 Political science perspective

Political scientists state that both non-pecuniary and economic motives are the determinants for enterprise participating in politics. According to Bentley (1995), political participation results from the demands of social interests or social welfare. Verba (1987) points out that effective political participation has a particularly crucial relationship with all other social and political goals. It represents a procedure by which goals are set and means are chosen in relation to all sorts of social issues. Through participation, the goals of the society are set in a way that is assumed to maximise the allocation of benefits in a society to match the needs and desires of the whole population. In this case, participation is not committed to any social goal, but is a technique for setting goals, choosing priorities, and deciding what resources are required to achieve goals. Entrepreneurs are therefore willing to participate in politics so that they can communicate firms' needs with the governmental demands. Verba

(1987) also points out that participation in politics brings satisfaction to entrepreneurs: satisfaction with governments and satisfaction with their own role.

Olson (2002) points out that the willingness of an enterprise to have political connections is due to the expectation of obtaining additional benefits from the government. The author states that political institutions have clear organisational structures which determine that they are more prone to provide benefits to particular individuals and groups, instead of any collective group with common interest. The political institution is "at best interested in patronage, and at worse on outright graft" (Olson, 2002, p.165). Many businessmen are willing to make contributions to political parties so that they can obtain support from the governmental officials. In other words, this provides economic motives and incentives for entrepreneurs to join these political organisations or to make political patronage to officials so that they can obtain benefits that are available only to a minority group.

4.3.1.2 Organisational science perspective

Organisation theorists apply a resource dependency theory, suggesting that political action is motivated by an institution's dependency on governments. According to Pfeffer and Salancik (2003), resource dependence suggests that some organisations have more power than others because of their control of resources and their location in the social space. For instance, the government is a crucial provider of resources to a number of industries and firms. Under these circumstances, organisations which rely heavily on the government have more incentives to participate in politics in order to

get more resources and power. Therefore, the resource dependency theory may be the basis for the entrepreneurs to make the decision to get involved in politics.

4.3.1.3 Economic cost-benefit perspective

Economists emphasise that an economic cost-benefit analysis is key to political participation. Pittman (1977) considers that an economic system includes two actors, namely individual firms, which are rational actors, and governments, the other important actors. Firms can benefit or be restrained due to various actions taken by governments. Each firm would like to affect government activities for its own benefit, which can be achieved by political involvement. However, such benefits only come at a cost. Therefore, only those firms who expect the benefits of influencing policy to outweigh the costs of political engagement will make the effort to participate in politics.

According to Pittman (1977), the benefits which can be achieved from impacting the government depend on the government's role in a particular industry. For example, the government plays a role in some industries from the perspectives such as making health and safety regulations and laws. In these industries, the government's role is important enough so that the potential benefits of the influence can be considerable. Yet for some industries, the government's role is so small that the potential benefits of influencing may be small, indicating it is not worth to invest in political involvement. Pittman (1997) considers three aspects of government's intervention in industry, including government regulation, government purchase of output, and

government antitrust investigation, and suggests that any of them could substantially augment the benefits available to a firm by affecting government policy. Although the costs of impacting the government may be higher for some firms than others, they are of a comparable scale for all participants and always measured in dollar terms. Pittman (1977) presents a theory of political involvement, which suggests that a firm is willing to be involved in politics only if the policy influence is worth the cost, which would happen if the government plays an important role in the industry in which the firm operates.

Data limitations hinder the full specification and testing of any framework. For example, the non-pecuniary motivations for firms' political participations may be extremely difficult to capture. In addition, executives' ideologies are also difficult to measure. In this analysis, the expected costs-benefits framework is explored. It intends to capture the common argument that profit motivation is behind firms' political investments. It is literally impossible to measure these costs and benefits on a firm-specific basis, as data on the costs and benefits related to political participation are unavailable. However, it is possible to identify several organisational and contextual factors that may have influence on these expected costs and benefits. These factors form the basis of our hypotheses described below.

4.3.2 Hypotheses

In this section, we propose four sets of hypotheses on firm heterogeneity, ownership types, financial status, and profitability and growth opportunities.

4.3.2.1 Hypotheses on firm heterogeneity

This section presents the hypotheses on firm heterogeneity, including firm size and location.[1]

A. The firm size

The ability of corporations to have connections with politicians depends heavily on the size of the resource base they have. A firm's size can be measured from two dimensions: total number of employees and total assets.

According to Masters and Keim (1985), administrative employees are generally considered as the prime targets of creating political connections, as corporations raise most of their political connection money from administrative or managerial employees compared with shareholders or non-managerial employees. In addition, an increase in the total number of employees will lead to an increase in the number of

[1] According to the previous literature, firm age, in terms of how many years ago the firm has come into existence, is a significant determinant for political connections. However, there are two different views on the interaction between firms' age and the likelihood of political participation. One school of thought argues that firms in their early lives are more eager to create connections with governments because they are in greater need of political help when they establish themselves in the concentrated business environment (Leuz and Oberholzer-Gee, 2006). Another school of thought states that entrepreneurs from long-standing enterprises are more likely to be involved in politics. For example, in the Chinese context, Li *et al*. (2006) show that entrepreneurs from firms with a longer history are more prone to participate in politics suggesting that the probability of political participation rises with firms' age. In addition, Chen *et al*. (2008) point out that politically connected corporations are three years older than their non-connected counterparts, and that increasing one year in enterprises history will increase the probability of political participation. It is therefore interesting to look at how the *lishu* relationship is affected by firm age using our large dataset in Chinese unlisted firms. As the missing value of firm age in our dataset are 246,250 firm-year observations. We only perform the test including firm age and report the results in Appendix. And our result supports the latter thought by showing that firm age a positive and precise determinant for firms' political participation. The results for other variables are robust.

administrative staff in a firm. Along with this line of research, firms with a larger employment base should have more administrative employees who are more likely to make sufficient money for the candidates in a political campaign, as political contributions. Therefore, the firms can obtain favourable support from such candidates in the future. Li *et al*. (2006) use 3,258 privately owned enterprises and individual household businesses in China, and indicate a positive interaction between the number of employees and political participation, suggesting that firms with a large scale of employment are more likely to have political connections.

In China, the current election system regarding the representatives of the People's Congress (PC) at various levels provides a channel for private entrepreneurs to participate in political areas, which stimulates entrepreneurs from enterprises with a large employment base to get involved in politics. According to Article 24 of Chapter 6 of the Electoral Law of the People's Republic of China, the electorates for the PC committee are not exclusively divided on the basis of territory. When territory is not applicable, the division of electoral districts depends on the voters' residence or industry, including the basis of production units, institutions units and work units.

In practice, especially in cities, the People's Congress and its Standing Committee at the relative levels accept a method that combines both industry and residence to divide electoral districts. Dividing electoral districts by residence refers to dividing them on the basis of people's household registration or habitual residence, especially the amount of population in the area with concentrated large enterprises. In this case, the more employees the firm has, the more votes an entrepreneur can have as a candidate,

thus the larger probability he/she becomes a member of the PC.

Dividing electoral districts by industry suggests dividing a large firm into one or more electoral districts if the firm has a large number of employees in different industries. For example, election committees divide districts of the large state-owned enterprises affiliated with local governments, according to resources, finance, trade and transportation, in order to make these districts more representative. Under these circumstances, a large firm with a large number of employees in various industries has more opportunities to vote its entrepreneurs as representatives of the PC to represent different industries. Therefore, the political participation can be enhanced by this channel (Chen *et al*., 2008).

In addition to the total number of employees, the total assets a firm has should also be positively related to the probability of having political affiliation. Masters and Keim (1985) point out that the incremental costs of raising more contribution funds are relatively small for larger firms as the initial fixed costs of connecting with the politicians can be spread over a larger asset base. This should increase the chances and the amount of money that larger firms can raise. Therefore, the larger firms have more money to afford the expenditure on having political connections with political candidates. Because larger firms have more assets to take the risk of connecting with politicians and thus are able to obtain a larger share of political benefits caused by corporate political activities, they are more likely to be politically connected than smaller firms.

Yeh *et al*. (2010) also find that the probability for firms to engage in political activity is positively associated with the firm's total assets. Boubakri *et al*. (2008) define firm size as the natural log of total sales when the privatisation occurred and find that firms with political connections are larger than non-connected firms. In addition, Agrawal and Knoeber (2001) and Faccio (2006) find that political connections are more common in larger firms. Chen *et al*. (2008) illustrate that the incremental probability of entrepreneurs' political participation increases from 0.08% to 1.11% if the registered capital is doubled, indicating that entrepreneurs from large firms have a higher probability of participating in politics. In line with these studies, we therefore expect that a firm's size has a positive relationship with the likelihood of political participation.

Hypothesis 1A (H1A): A firm's size is positively related to the probability that the firm has a lishu relationship, ceteris paribus. [1]

B. Firm location

Firm location can also influence political connections. Boubakri *et al*. (2008) use 245 privatised firms, the headquarters of which are located in 14 developed and 27 developing countries during 1980 and 2002, pointing out that firms locating in the major cities are more likely to have politicians on their boards, and these firms are more likely to attract political support. In addition, Chen *et al*. (2005) point out that,

[1] As the correlation between the number of employees and the firms' total assets is 0.554, we use the number of employee as a substitution for the total assets and report the results in Appendix. The results are robust.

in China, family firms in provinces with less developed markets are prone to have political connections. Similarly, business transactions are more likely to depend on personal relationships in regions with less developed markets. In these regions, local governments usually have more flexibility in setting policies and regulations. In China, the western region is generally considered as the less developed area, while the coastal region is considered as more developed. Roberts (1990), Fan *et al*. (2007), and Khwaja and Mian (2005) support the relationship between firm location and the decision of political participation. According to this line of research, it is expected that firms located in the west of China are more likely to have political affiliation.

Hypothesis 1B (H1B): A firm located in the west (coastal) of China has a higher (lower) probability of having a lishu relationship, ceteris paribus.

4.3.2.2 Hypothesis on firm's ownership status

According to Boubakri *et al*. (2008), the likelihood of having political connections in newly privatised firms is positively associated with government residual ownership and negatively related to foreign ownership. The government has more power to appoint the "friends" as directors if a significant governmental shareholding remained in the firm after privatisation. For example, Bertrand *et al*. (2006) use all publicly-traded firms in France over the period 1987 to 2002 and find that CEOs with political connections are more likely to head previously state-owned enterprises. It suggests that the higher the residual stake of the government, the higher the probability that the privatised firm will have political connections.

Using a cross-country dataset, Dyck (2001) states that foreign investors are less likely to accept the political judgment of bureaucrats, as they monitor managers' actions closely and pay more attention to profitability than political goals. Therefore, it is expected that firms are less likely to have political affiliation when foreign investors are involved in the ownership structure.

Hypothesis 2 (H2): Foreign-owned (State-owned) firms are less (more) likely to have a lishu relationship, ceteris paribus.

4.3.2.3 Hypotheses on firm's financial status

A large number of finance and macroeconomics literature studies the presence and importance of financing constraints and its relationship with firms' behaviour. According to the Pecking Order Model and Trade-off Theory, the first choice for a company is internal financing, followed by debt and equity (Myers, 1984). In 1958, Modigliani and Miller (MM) demonstrated that the firm's value is irrelevant to its capital structure, as internal financing and external financing can substitute each other perfectly. However, this hypothesis does not hold in the real world, because of the asymmetric information and the agency problem in the market. Lamont *et al*. (2001) define financial constraints as frictions which can deter firms from funding all their investments. It is therefore expected that less financially constrained firms are more able to invest in political connections. A firm's financial status can be measured by the external financing and the internal financing.

A. External financing

We use the leverage ratio as a proxy for preferential access to the credit market. The leverage ratio is defined as a firm's total debt to total assets ratio (Johnson and Mitton, 2003; Faccio *et al*., 2006; Faccio, 2007).

In the previous literature, a high leverage ratio is associated with soft budget constraints. Therefore, the firms with high leverage ratio are more likely to have political connections. The literature provides two possible interpretations for the high leverage ratio observed in private firms with political affiliation (for instance, Lamont *et al*., 2001; Faccio *et al*., 2006; Boubakri *et al*., 2008). First, lenders can obtain offsetting benefits from governments for making loans to politically connected firms. Second, highly indebted private firms' executives are more prone to appoint politicians to keep them from defaulting. In this case, politically connected borrowers will be bailed out when they encounter economic distress.

Therefore, it is expected that politically affiliated firms would have a higher leverage ratio than their non-connected peers, i.e.:

Hypothesis 3A (H3A): A firm with a higher (low) leverage ratio is more (less) likely to have a lishu relationship, ceteris paribus.

B. Internal financing

Cash flow is commonly used in empirical work as a proxy of the firm's internal funds (for example, Schiantarelli, 1995; Hubbard, 1998; Bond and Van Reenen, 2003; Guariglia, 2008).[1] According to Schiantarelli (1995), cash flow is not only a proxy for internal net worth, but also delivers information about what percentage of investment spending can be financed internally. In this case, a firm with a higher level of cash flow faces less internal financial constraints and may find it easier to fund firms' investment. Along with this research, it is expected that firms with higher level of cash flow are more likely to have a *lishu* relationship.

Hypothesis 3B (H3B): A firm with higher (lower) cash flow is more (less) likely to have a lishu relationship, ceteris paribus.

4.3.2.4 Hypotheses on profitability and growth opportunities

A firm's profitability can also influence the probability to be politically affiliated. However, there is a debate over how profitability can affect the decision making of political participation. On the one hand, political participation can be encouraged in firms with more profits, as they have more resources to allocate to such political activities. Focusing on Taiwanese firms, Yeh *et al*. (2010) find that the average return on assets (ROA) is significantly higher for the connected firms (5.03% in 1998-2000

[1] Liquidity ratio is another common proxy for the level of internal funds available to the firm. However, as the correlation between liquidity ratio and leverage ratio is -0.650, we only report the results by using liquidity ratio in Appendix. And the results are robust.

period and 5.41% in 2001-2006 period) than that for the non-connected firms (3.09% in the 1998-2000 period and 3.93% in the 2001-2006 period), indicating that firms with higher ROA are more likely to connect with politicians. It is also argued that this result suggests that firms with abundant resource can spend money to create political connections.

On the other hand, lucrative firms may not want to put their economic position at risk by involving themselves in political activities. Salamon and Siegfried (1977) analyse the firms in the United States and argue: "Firms earning higher than average profits may shy away from political action if they fear that such action would attract public attention to the monopoly position that yields them such large profits" (p.1033). In addition, according to Leuz and Oberholzer-Gee (2006), investing in political relationship could be extremely risky in Malaysia, because political connections can lose their value overnight. In this case, these lucrative firms might not want to put their profits at risk, especially in developing countries.

In order to examine whether a firm's profitability is positively related to its likelihood of political participation or not, we employ an accounting-based measurement for firm profitability, the return on sales (ROS) (Tallman and Li, 1996; Hitt *et al.*, 1997). We hypothesise that:

Hypothesis 4A (H4A): A firm's ROS is negatively related to its likelihood of having a lishu relationship, ceteris paribus.

Yeh *et al*. (2010) consider sales growth as one of the factors that determine the choice of political participation. In their analysis, politically connected firms have a lower sales growth (4.63% in the 1998-2000 period and 18.50% in the 2001-2006 period) compared with the non-connected firms (10.01% in the first period and 31.76% in the latter period). Firms with poor performance associated with lower sales growth may need to seek more help from governments, suggesting that firms with a higher sales growth are less likely to engage in political connections. In line with Yeh *et al*.'s (2010) research, it is expected that sales growth is negatively related to political connections.

Hypothesis 4B (H4B): A firm with a high (low) sales growth has a lower (higher) probability of having a lishu relationship, ceteris paribus.

The hypotheses can be summarised as shown in Table 4.1.

Table 4.1 Summary of hypotheses

Hypothesis Number	Variables	Expected Sign
H1A	Total Assets	+
H1B	Western Region	+
	Coastal Region	–
H2	State Ownership	+
	Foreign Ownership	–
H3A	Leverage Ratio	+
H3B	Cash Flow Ratio	+
H4A	ROS	–
H4B	Sales Growth	–

4.4 Specification and estimation methodology

In this section, we analyse the determinants of the probability of having a *lishu* relationship. To this end, we estimate a model with a qualitative dependent variable, which assumes the value of 1 in cases where enterprises have a *lishu* relationship in a given year, and the value of 0 for enterprises without such a relationship. For enterprise *i* in year *t*, we denote this as political affiliation PA_{it}, where $PA_{it} \in \{0,1\}$. Therefore,

$$PA_{it} = 1 \; if \; enterprise \; i \; in \; year \; t \; has \; a \; lishu \; relationship$$
$$PA_{it} = 0 \; if \; enterprise \; i \; in \; year \; t \; has \; no \; lishu \; relationship$$

The equation is:

$$\begin{aligned} PA_{it} = \alpha &+ \beta_1 Size_{i(t-1)} + \beta_2 Leverage_{i(t-1)} + \beta_3 CFK_{i(t-1)} + \beta_4 ROS_{i(t-1)} \\ &+ \beta_5 Sales\ Growth_{i(t-1)} + \beta_6 Coastal\ Region_{it} \\ &+ \beta_7 Western\ Region_{it} + \beta_8 Foreign\ Ownership_{it} \\ &+ \beta_9 State\ Ownership_{it} + Industry\ Dummies + Year\ Dummies \\ &+ \varepsilon_{it} \end{aligned} \quad (1)$$

where the subscript *i* indexes firms, while *t* refers to time, where *t* = 2000-2007. PA is the political affiliation status of the firm, which is a dummy variable that equals to 1 if the firm has a *lishu* relationship and 0 otherwise, $Size$ is defined as the firms' total real assets, $Leverage$ is calculated as the ratio of current liabilities plus non-

current liabilities to total assets of the firm, CFK is defined as the ratio of cash flow over the tangible fixed assets, and ROS is the return on sales, a measure of the firm's profitability. Regional dummies include: *Western Region* = 1 if the firm is located in the western region, and 0 otherwise; *Coastal Region* = 1 if the firm is located in the coastal region, and 0 otherwise. Ownership dummies include: *Foreign Ownership* = 1 if the firm is owned by foreign investors (including investors from Hong Kong, Macao, and Taiwan), and 0 otherwise; *State Ownership* = 1 if the firm is owned by the state, and 0 otherwise.

Industry dummies define firms to be located in one of the following ten industrial sectors: metal and metal products; non-metal products and petroleum processing; chemicals and plastic; machinery and equipment; electrical equipment; transport equipment; food and tobacco; textile; leather, timber and furniture; and mining and logging. *Year dummies* are also included to account for business cycle effects and firm-invariant market factors such as changes in government policy.

According to our Hypothesis 1A, we expect the β_1 to show a positive sign. Firms with higher leverage ratio and cash flow-to-capital ratio are expected to be positively related to the probability of having a *lishu* relationship. We also expect that less profitable firms with lower growth opportunities are more prone to have a *lishu* relationship. Firms locate in the west of China are more likely to be politically affiliated, while firms locate in the east are less likely to have a *lishu* relationship. Compared with SOEs, foreign firms are more reluctant to affiliate with the governments.

In order to mitigate problems stemming from reverse causality (for example, the causality is from having a *lishu* relationship to larger size), all the variables, except for dummies, are once-lagged, following the research of Cull *et al*. (2009).

As the dependent variable is dichotomous, linear multiple regression is not appropriate for estimating the model. We therefore use a Probit model instead to estimate the effect of how the independent variables affect the probability of a firm having a *lishu* relationship. We firstly employ a pooled Probit and then a random-effects Probit models to control for the unobserved firm heterogeneity.

4.5 Data and summary statistics

This section describes the dataset used in this chapter, and presents summary statistics.

4.5.1 Data

The firm-level data used in this study are taken from the National Bureau of Statistics of China (NBS). In order to strengthen the reliability of our analysis, we first drop observations which make little sense, such as those with negative real assets, negative age, and negative leverage ratio. Second, we eliminate firms without completed records on our main regression variables. Finally, in order to control the potential effect of extreme values, we drop the outliers, which are the observations beyond the

1st and the 99th percent tails for each continuous main regression variables.[1] After these adjustments, our final panel dataset includes 469,938 firm-level observations, covering 113,549 mainly unlisted firms over the period 2001-2007.[2] The sample has an unbalanced structure,[3] with a number of observations ranging from a minimum of 33,855 in 2001 to a maximum of 86,577 in 2005.

Table 4.2 presents the distribution of the full sample, affiliated group, and non-affiliated group by year and industry. On average, around 46.13% of our firm-year observations have a *lishu* relationship. This can be explained that the political and market environment has become more supportive for the private firms in China because of the economic reforms since the 1990s. Therefore, these firms can develop in a relatively stable environment. However, governments still play a crucial role in China. Focusing on the industry groups, we find that the number of observations for affiliated firms only beats that for non-affiliated firms in food and tobacco (50.16% vs. 49.84%) and mining and logging industry (54.54% vs. 45.46%), while firms in other industries are less likely to have a *lishu* relationship. Since 1981, the State Council of China has established the State Tobacco Monopoly Administration, which fully controls the tobacco industry all over China. Besides, the food industry is crucial to people's livelihood. Therefore, the political affiliation is prevalent in these

[1] It is quite common in the literature (see Greenaway *et al*., 2007; Guariglia, 2008; Carpenter and Guariglia, 2008; Yan, 2012) to eliminate extreme values in this way.

[2] It should be noted that our dataset include a very small proportion of listed firms for two reasons. First of all, according to Liu and Xiao (2004), when firms become listed, their legal identification numbers are changed; it is therefore hard to track these firms. The second reason is that there is no separate identification of Chinese publicly listed firms in the NBS dataset. However, they only comprise a very small portion of the whole sample. Over the whole considered period, only approximately 1,000 listed firms in the manufacturing and mining sectors, accounting for less than 0.3% of the total number of firms in the sample.

[3] See Appendix for details about the structure of the panel.

industries. Mining and logging industries are closely related to the sustainable development of natural and energy resources. Therefore, these firms are prone to have political connections to obtain favourable licence, while the governments also need to control over these industries. In this case, we observe greater political connections in the food and tobacco and mining and logging industries.

Table 4.2 Distribution of the number of observations by year and industry

Year	Full Sample		Affiliated Group		Non-affiliated Group	
	Obs.	Pct.	Obs.	Pct.	Obs.	Pct.
2001	33,855	7.20	24,490	72.34	9,365	27.66
2002	46,372	9.87	30,737	66.28	15,635	33.72
2003	62,905	13.39	36,853	58.59	26,052	41.41
2004	73,082	15.55	25,078	34.31	48,004	65.69
2005	86,577	18.42	28,618	33.05	57,959	66.95
2006	85,700	18.24	25,515	29.77	60,185	70.23
2007	81,447	17.33	23,275	28.58	58,172	71.42
Average				46.13		53.87
Industry						
Metal & Metal products	41,172	8.76	15,996	38.85	25,176	61.15
Nonmetal products & Petroleum processing	44,018	9.37	21,127	48.00	22,891	52.00
Chemicals & Plastic	78,692	16.75	34,493	43.83	44,199	56.17
Machinery & Equipment	53,868	11.46	23,771	44.13	30,097	55.87
Electrical equipment	60,156	12.80	21,835	36.30	38,321	63.70
Transport equipment	21,789	4.64	10,068	46.21	11,721	53.79
Food & Tobacco	17,983	3.83	9,020	50.16	8,963	49.84
Textile	72,657	15.46	21,641	29.79	51,016	70.21
Leather & Timber & Furniture	43,898	9.34	17,143	39.05	26,755	60.95
Mining & Logging	35,705	7.60	19,472	54.54	16,233	45.46
Total	469,938	100.00	194,566	41.40	275,372	58.60

Notes: Obs. stands for the number of observations. Pct. stands for the percentage.

We further classify the affiliated sub-sample into three different levels of the *lishu* relationship: firms affiliated with the low level of government, firms affiliated with the medium level of government, and firms affiliated with the high level of

government. Table 4.3 reports the distribution of the number of observations by year and industry for these three different groups. We observe that for the firms with the *lishu* relationship, most of them are affiliated with the medium level of government (20.29%), followed by firms affiliated with the low level of government (19.96%), while only 5.88% of our firm-year observations have a high level of *lishu* relationship. A similar pattern is observed in the industry distribution. Most of the industries are affiliated with the medium level of government. This might be attributed to the fact that the government at this level can access important resources, as well as enjoy some authorities to support the firms' development.

Table 4.3 Distribution of the number of observations for three affiliated groups by year and industry

Year	Low		Medium		High	
	Obs.	Pct.	Obs.	Pct.	Obs.	Pct.
2001	10,906	32.21	10,510	31.04	3,074	9.08
2002	14,391	31.03	12,678	27.34	3,668	7.91
2003	17,963	28.56	14,930	23.73	3,960	6.30
2004	9,056	12.39	12,131	16.60	3,891	5.32
2005	11,318	13.07	13,484	15.57	3,816	4.41
2006	9,814	11.45	12,108	14.13	3,593	4.19
2007	8,960	11.00	11,110	13.64	3,205	3.94
Average		19.96		20.29		5.88
Industry						
Metal & Metal products	8,427	20.47	5,706	13.86	1,863	4.52
Nonmetal products & Petroleum processing	9,664	21.95	9,467	21.51	1,996	4.53
Chemicals & Plastic	14,137	17.96	16,152	20.53	4,204	5.34
Machinery & Equipment	9,806	18.20	9,746	18.09	4,219	7.83
Electrical equipment	8,567	14.24	9,694	16.11	3,574	5.94
Transport equipment	3,279	15.05	4,075	18.70	2,714	12.46
Food & Tobacco	2,091	11.63	5,736	31.90	1,193	6.63
Textile	11,750	16.17	8,417	11.58	1,474	2.03
Leather & Timber & Furniture	7,939	18.09	6,840	15.58	2,364	5.39
Mining & Logging	6,748	18.90	11,118	31.14	1,606	4.50
Total	82,408	17.54	86,951	18.50	25,207	5.36

Notes: Obs. stands for the number of observations. Pct. stands for the percentage.

Focusing on the distribution of the affiliated firms by four ownership types in Table 4.4, I find that on average, above 94% of SOEs have a *lishu* relationship, followed by COEs (83.25%) and PEs (39.88%), while only 28.06% of FEs are politically affiliated. This can be explained that foreign firms generally operate in an established distribution network and can gain support from their home country or parent company. Therefore, they have less motivation to affiliate with the government.

As for the industry distribution, I find that SOEs in mining and logging industries are most politically affiliated, while PEs and COEs in chemicals and plastic industries are more likely to have a *lishu* relationship. As these industries are generally involved with crucial resources and licence, firms in these industries have higher motivation to have a *lishu* relationship. Foreign firms in the textile industry are more likely to have a *lishu* relationship with the government. This may associate to the fact that textile industry is generally characterised by abundant labourers and lower labour costs. Therefore, foreign firms in this industry need to be connected with the government somehow to get financial and non-financial support.

Table 4.4 Distribution of the number of observations for affiliated group by year, industry, and ownership

Year	SOEs		PEs		FEs		COEs	
	Obs.	Pct.	Obs.	Pct.	Obs.	Pct.	Obs.	Pct.
2001	4,162	97.93	11,554	70.73	3,140	44.60	3,798	91.36
2002	4,752	97.62	14,553	60.65	4,342	45.71	4,817	90.32
2003	5,041	96.52	18,632	50.83	5,071	43.28	5,666	89.67
2004	4,746	93.54	11,551	25.57	1,964	14.81	5,078	78.39
2005	4,346	93.83	14,541	25.42	2,817	18.42	5,116	80.06
2006	3,737	91.35	13,370	23.27	2,229	14.59	4,612	77.63
2007	3,022	89.86	12,561	22.67	2,175	15.00	4,083	75.32
Average		94.38		39.88		28.06		83.25
Industry								
Metal & Metal products	1,497	5.02	8,212	8.49	1,597	7.35	3,606	10.87
Nonmetal products & Petroleum processing	3,455	11.59	10,547	10.90	1,228	5.65	4,449	13.41
Chemicals & Plastic	4,190	14.06	18,656	19.28	3,739	17.20	5,513	16.62
Machinery & Equipment	4,149	13.92	12,762	13.19	1,737	7.99	3,816	11.50
Electrical equipment	2,411	8.09	11,045	11.41	3,852	17.72	3,010	9.07
Transport equipment	2,102	7.05	4,809	4.97	812	3.74	1,580	4.76
Food & Tobacco	1,950	6.54	4,305	4.45	1,238	5.70	833	2.51
Textile	1,417	4.75	11,130	11.50	4,257	19.58	3,213	9.69
Leather & Timber & Furniture	3,079	10.33	7,425	7.67	2,359	10.85	3,198	9.64
Mining & Logging	5,556	18.64	7,871	8.13	919	4.23	3,952	11.91
Total	29,806	100.00	96,762	100.00	21,738	100.00	33,170	100.00

Notes: Obs. stands for the number of observations. Pct. stands for the percentage. The ownership classification is based on the majority average ownership shares (at least 50%). SOEs, PEs, FEs, and COEs refer to state-owned enterprises, private enterprises, foreign enterprises, and collectively-owned enterprises.

Table 4.5 presents the distribution of the affiliated firms by three different regions, i.e. the coastal region, the central region, and the western region. Not surprisingly, we find that the coastal region exhibits the least propensity of having a *lishu* relationship (40.91%), while the firms located in the central and western regions are more likely to have political affiliation (61.43% and 63.42%, respectively). Firms in mining and logging industries still exhibit a high percentage of having a *lishu* relationship in the central region, while firms in chemicals and plastic industries in the coastal and western regions are the most politically affiliated. The results may be attributed to the fact that the mining and logging resources are rich in the central region but the governments control these resources strictly. In order to obtain the mining and logging permit from the governments, firms may tend to have a *lishu* relationship with the governments in the central region. The chemicals and plastic industries usually generate contaminations to the environment. Firms in these sectors may seek the *lishu* relationship with the aim to receive the relaxed environmental measures.

Table 4.5 Distribution of the number of observations for affiliated group by year, industry, and region

Year	Coastal		Central		Western	
	Obs.	Pct.	Obs.	Pct.	Obs.	Pct.
2001	17,004	67.37	4,398	89.79	3,088	83.03
2002	21,307	61.29	5,283	84.69	4,147	77.20
2003	25,962	54.35	6,214	73.7	4,677	69.75
2004	15,929	28.75	5,090	50.56	4,059	53.28
2005	18,023	27.62	5,718	45.95	4,877	54.90
2006	15,602	24.08	5,296	43.11	4,617	53.49
2007	14,127	22.90	4,940	42.22	4,208	52.30
Average		40.91		61.43		63.42
Industry						
Metal & Metal products	11,396	8.91	2,135	5.78	2,465	8.31
Nonmetal products & Petroleum processing	10,821	8.46	5,535	14.98	4,771	16.08
Chemicals & Plastic	22,924	17.92	6,068	16.43	5,501	18.54
Machinery & Equipment	16,789	13.12	4,338	11.74	2,644	8.91
Electrical equipment	17,331	13.54	2,389	6.47	2,115	7.13
Transport equipment	6,262	4.89	2,092	5.66	1,714	5.78
Food & Tobacco	5,053	3.95	1,984	5.37	1,983	6.68
Textile	17,831	13.94	2,591	7.01	1,219	4.11
Leather & Timber & Furniture	11,598	9.06	3,029	8.20	2,516	8.48
Mining & Logging	7,949	6.21	6,778	18.35	4,745	15.99
Total	127,954	100.00	36,939	100.00	29,673	100.00

Notes: Obs. stands for the number of observations. Pct. stands for the percentage.

4.5.2 Summary statistics

Table 4.6 provides descriptive information, including the number of observations in each category, mean, median, and standard deviation (S.D.), relative to variables used for the whole sample and for different sub-samples of firms (firms with a *lishu* relationship and firms without a *lishu* relationship).[1] The *p*-values from an

[1] See Appendix for detailed definitions of the variables used in this chapter. The correlation matrix is also presented in Appendix.

independent mean-equality test between these two groups are also reported in the last column in Table 4.6. All differences are statistically significant at the 1% level.

More specifically, the average total real assets and the number of employees of the affiliated firms in column (2) are 753.45 (thousands of yuan) and around 317 employees, respectively, compared with an average of 542.56 (thousands of yuan) and 249 employees of the non-affiliated firms in column (3), supporting our H1A. Affiliated firms also display a higher leverage ratio (58.60%), which supports our H3A and indicates these affiliated firms suffer from soft budget constraints. However, contrary to our H3B, the cash flow-to-capital ratio is significantly higher in non-affiliated firms (37.49%), compared to that in affiliated firms (30.66%). ROS and sales growth are lower for firms with the *lishu* relationship (0.03% and 9.09%, respectively), which are consistent with our H4A and H4B. Moreover, firms without the *lishu* relationship are generally younger (9 years, compared with 16 years for affiliated firms) and located in the coastal region.

Focusing on the three different levels of the *lishu* relationship in Table 4.7, we observe that while the level of the *lishu* relationship is upgrading, the firms' size, in terms of real assets and the number of employees, as well as firms' age are increasing. In addition, the profitability and sales growth are decreasing when the level of political affiliation is increasing. As for the leverage ratio, we find that firms affiliated with the medium level of government have the highest leverage ratio and the lowest cash flow-to-capital ratio.

Table 4.6 Descriptive statistics (sample mean, median, and S.D.)

Variables	Full sample (1)			Firms with a *lishu* relationship (2)			Firms without a *lishu* relationship (3)			*Diff*
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.	
lishu	3.165	1.000	2.935	6.229	7.000	2.187	1.000	1.000	0.000	0.000***
Real Assets	629.874	221.407	1,262.470	753.450	257.594	1,451.825	542.561	200.047	1,101.035	0.000***
Employee	277.178	154.000	344.056	317.031	177.000	383.059	249.020	143.000	310.519	0.000***
Age	11.985	9.000	10.048	16.021	11.000	12.949	9.308	8.000	6.224	0.000***
Leverage	56.610	58.275	24.693	58.595	60.054	24.756	55.207	56.960	24.551	0.000***
CFK	34.661	20.768	45.044	30.664	17.282	43.514	37.486	23.124	45.887	0.000***
ROS	0.035	0.025	0.079	0.030	0.020	0.089	0.040	0.028	0.070	0.000***
Sales Growth	10.804	10.190	34.451	9.089	8.623	33.700	12.016	11.357	34.922	0.000***
Region	1.349	1.000	0.660	1.495	1.000	0.745	1.246	1.000	0.571	0.000***
Observations	469,938			194,566			275,372			

Notes: Real Assets are expressed in thousands of yuan. Leverage, CFK, ROS, and Sales growth are expressed in percentage terms. S.D. stands for standard deviations. The last column (*Diff*) presents *p*-values from an independent samples mean-equality test between firms with a *lishu* relationship and firms without a *lishu* relationship. *, **, *** indicates significance at the 10%, 5%, and1% level, respectively. See Appendix for complete definitions of all variables.

Table 4.7 Descriptive statistics for three levels of the *lishu* relationship (sample mean, median, and S.D.)

Variables	Low			Medium			High			*Diff1*	*Diff2*	*Diff3*
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.			
lishu	4.051	5.000	1.387	7.410	7.000	0.492	9.276	9.000	0.447	0.000***	0.000***	0.000***
Real Assets	420.170	174.168	862.491	837.390	319.726	1,486.636	1,553.474	659.132	2,277.423	0.000***	0.000***	0.000***
Employee	236.368	141.000	287.259	352.887	202.000	407.644	457.050	264.000	494.288	0.000***	0.000***	0.000***
Age	12.108	10.000	7.654	17.980	11.000	14.698	20.483	13.000	15.468	0.000***	0.001***	0.000***
Leverage	56.155	57.815	24.474	61.501	63.104	24.541	56.552	57.102	25.336	0.000***	0.025**	0.000***
CFK	40.151	24.165	48.478	23.138	12.674	36.959	25.620	13.574	41.296	0.000***	0.000***	0.000***
ROS	0.042	0.029	0.071	0.021	0.013	0.096	0.019	0.015	0.111	0.000***	0.000***	0.002***
Sales Growth	11.175	10.797	34.012	7.655	6.995	34.110	7.216	7.301	30.762	0.000***	0.000***	0.066*
Region	1.274	1.000	0.566	1.675	1.000	0.812	1.594	1.000	0.828	0.000***	0.000***	0.000***
Obs.		82,408			86,951			25,207				

Notes: Real Assets are expressed in thousands of yuan. Leverage, CFK, ROS, and Sales growth are expressed in percentage terms. S.D. stands for standard deviations. The last three columns present *p*-values from an independent samples mean-equality test between the low level of *lishu* group and the medium level of *lishu* group (*Diff1*), between the low level of *lishu* group and the high level of *lishu* group (*Diff2*), and between the medium level of *lishu* group and the high level of *lishu* group (*Diff3*). *, **, *** indicates significance at the 10%, 5%, and1% level, respectively. See Appendix for complete definitions of all variables.

Table 4.8 provides a comparison of the main variables across firms' ownership types. SOEs and FEs are generally large in real assets and the number of employees, compared with PEs and COEs. SOEs have the oldest firms age (27 years) and highest political affiliation level, followed by COEs with 17 years and the second highest political affiliation level. While the FEs are the youngest as most of the foreign firms entered into China after the 1990s. SOEs also suffer from soft budget constraints indicated by their highest leverage ratio, while COEs enjoy the highest cash flow-to-capital ratio. Table 4.8 also illustrates that the ROS and sales growth are higher for private firms and foreign firms than that for SOEs and COEs. Finally, we observe that the FEs prefer to locate their firms in the coastal region, while SOEs are more likely to locate their firms in the inner region of China.

Table 4.9 provides descriptive statistics for three different regions of China. We observe that firms located in the central and western regions exhibit higher political affiliation levels. In addition, firms in the west of China have the largest size, in terms of real assets (709.83 thousands of yuan) and the number of employees (319 people); and they are older (15.48 years) than the firms in the eastern and central China. Interestingly, firms locate in the central region have the highest ROS and sales growth. This may be attributed to their location advantage, which is close to the heart of China, Beijing, with enormous markets. The firms in the western region also show the highest leverage ratio and lowest cash flow-to-capital ratio. The lowest leverage ratio for firms operated in the coastal region may suggest that these firms depend more on their internal funds and foreign financing, instead of debt.

In summary, politically affiliated firms display a larger size measured in the forms of total assets and the number of employees, a higher leverage ratio and are older, while unaffiliated firms have more cash flow, higher profitability and sales growth. These rough statistics provide a primary description of our sample, and support most of our hypotheses preliminarily. Therefore, a more thorough test of the hypotheses is necessary, within a regression analysis framework.

Table 4.8 Descriptive statistics for ownership (sample mean, median, and S.D.)

Variables	SOEs			PEs			FEs			COEs			*Diff1*	*Diff2*	*Diff3*
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.			
lishu	7.676	8.000	1.916	2.693	1.000	2.671	2.255	1.000	2.479	4.242	4.000	2.459	0.000***	0.000***	0.000***
Real Assets	985.579	345.796	1,748.771	523.598	186.599	1,107.429	954.273	383.202	1,591.924	358.945	171.822	645.723	0.000***	0.004***	0.000***
Employee	425.579	235.000	486.372	242.497	140.000	304.793	351.867	205.000	398.223	239.369	145.000	287.214	0.000***	0.000***	0.000***
Age	27.206	29.000	15.616	10.542	8.000	9.027	9.181	9.000	3.577	17.390	14.000	11.186	0.000***	0.000***	0.000***
Leverage	64.026	65.381	25.776	58.603	60.699	23.803	46.346	46.376	24.129	58.304	59.710	25.366	0.000***	0.000***	0.000***
CFK	14.512	7.296	29.290	35.097	21.354	44.000	38.110	23.798	47.486	39.513	22.405	51.341	0.000***	0.000***	0.000***
ROS	0.003	0.005	0.115	0.038	0.027	0.070	0.038	0.026	0.085	0.036	0.024	0.081	0.000***	0.000***	0.823
Sales Growth	5.571	5.268	34.627	12.297	11.531	34.827	9.247	9.008	33.031	8.442	7.915	34.234	0.000***	0.000***	0.000***
Region	1.805	2.000	0.823	1.368	1.000	0.672	1.080	1.000	0.349	1.415	1.000	0.677	0.000***	0.000***	0.000***
Obs.	31,501			292,241			86,590			40,039					

Notes: Real Assets are expressed in thousands of yuan. Leverage, CFK, ROS, and Sales growth are expressed in percentage terms. S.D. stands for standard deviations. The ownership classification is based on the majority average ownership shares (at least 50%). SOEs, PEs, FEs, and COEs refers to state-owned enterprises, private enterprises, foreign enterprises, and collectively-owned enterprises. The last three columns present *p*-values from an independent samples mean-equality test between the SOEs group and the PEs group (*Diff1*), between SOEs group and the FEs group (*Diff2*), and between PEs group and FEs group (*Diff3*). *, **, *** indicates significance at the 10%, 5%, and1% level, respectively. See Appendix for complete definitions of all variables.

Table 4.9 Descriptive statistics for region (sample mean, median, and S.D.)

Variables	Costal			Central			West			*Diff1*	*Diff2*
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.		
lishu	2.784	1.000	2.735	4.004	4.000	3.093	4.789	7.000	3.302	0.000***	0.000***
Real Assets	633.649	224.529	1,268.047	550.322	185.111	1,151.683	709.830	252.300	1,355.499	0.000***	0.000***
Employee	266.051	150.000	333.045	305.371	170.000	373.508	319.779	186.000	374.318	0.000***	0.000***
Age	11.228	9.000	8.889	13.987	9.000	12.615	15.476	10.000	13.453	0.000***	0.000***
Leverage	56.218	58.084	24.428	56.672	57.598	26.374	59.367	60.246	24.074	0.000***	0.000***
CFK	37.049	22.874	45.876	30.258	15.180	44.525	23.277	13.220	36.694	0.000***	0.000***
ROS	0.036	0.026	0.073	0.039	0.024	0.091	0.024	0.015	0.101	0.000**	0.000***
Sales Growth	10.724	10.288	33.890	12.035	10.721	36.603	9.728	8.678	35.434	0.000***	0.000***
Obs.		354,900			66,063			48,975			

Notes: Real Assets are expressed in thousands of yuan. Leverage, CFK, ROS, and Sales growth are expressed in percentage terms. S.D. stands for standard deviations. The last two columns present *p*-values from an independent samples mean-equality test between the coastal region group and the central region group (*Diff1*), and between the coastal region group and the western region group (*Diff2*). *, **, *** indicates significance at the 10%, 5%, and1% level, respectively. See Appendix for complete definitions of all variables.

4.6 Empirical findings

4.6.1 Estimations with pooled Probit and random-effects Probit models

Table 4.10 reports the regression results by employing the pooled Probit model clustering by firms ID (column (1)) and the random-effects Probit model (column (2)) for the entire sample. Because of the non-linear model, the coefficient estimates are not informative about the magnitude of the effects of the outcome variables. Therefore, we also report the estimates of marginal effects (ME) in Table 4.10. The coefficients of all variables are statistically significant at 1% level, except for the coefficient on *western region* variable in the pooled Probit model.

Focusing on column (1) in Table 4.10, the coefficient on the firms' size, in terms of the total assets, is positively related to the probability of the firm having a *lishu* relationship. This result is consistent with our first hypothesis (H1A) and with the literature, which suggests that firms with larger size are more prone to have political affiliation (for example, Li *et al*., 2006; Guariglia and Mateut, 2013; Masters and Keim, 1985). According to the marginal effects (0.048 for the total assets), an increase in a firm's total assets by 0.1, or 10 percentage points, is associated with an increase in the probability of having a *lishu* relationship by 0.0048 (i.e. 0.48 percentage points). The marginal effects are tested larger by using the random-effects Probit, i.e. a 10% increase in a firm's asset is associated with an increase in the probability of having a *lishu* relationship by 0.0107 (which is 1.07 percentage points).

Focusing on regional dummies, we find that the coefficients on the coastal region dummy are negative and statistically significant at 1% level in both estimations, while the coefficients on the western region dummy are positive in both estimations (but insignificant using the pooled Probit). These results suggest that regional factors can also affect the likelihood of having a *lishu* relationship. In China, the coastal area generally provides a better and a more open environment for firms to develop, while enterprises in the West, which are usually associated with fewer investment opportunities, higher transaction costs and more informative asymmetries, could be in greater need of political help. Our results indicate that firms locate in the west of China are more likely to affiliate with politicians, while being a coastal firm decreases the probability of having political affiliation. More specifically, the marginal effects imply that a firm locating in the west of China has a 0.06% and 0.47% higher probability of having a *lishu* relationship in the pooled Probit model and the random-effects Probit model, respectively, while a firm locating in the coastal of China has a 1.21% and 3.24% lower likelihood of political participation, respectively. These results are consistent with our Hypothesis 1B, suggesting that firms located in the western region have higher motivation to connect with the governments.

From both columns in Table 4.10, we can also find that the ownership types precisely determine the firms' decision on political affiliation. The coefficient on the foreign ownership dummy is negative and significant, while that on the state ownership is positive and significant. These results indicate that foreign firms are less likely to have political affiliation, while state-owned firms are more likely to be politically affiliated. This is consistent with our Hypothesis 2 and with findings in Boubakri *et al*. (2008),

Bertrand *et al*. (2006), and Dyck (2001). More specifically, the marginal effects suggest that being a foreign (state-owned) firm has a 1.65% and 4.04% (5.13% and 14.67%) lower (higher) probability of having a *lishu* relationship in the pooled Probit model and the random-effects Probit model, respectively.

The coefficients on the leverage ratio and cash flow-to-capital ratio are positive and significant, indicating that the relationship between leverage ratio (cash flow-to-capital ratio) and the probability of having political affiliation is positive, which is consistent with our Hypothesis 3A and 3B. According to the marginal effects (0.017 for leverage and 0.038 for cash flow-to-capital ratio) in the pooled Probit model, an increase in a firm's leverage (cash flow-to-capital ratio) by 0.1, or 10 percentage points, is associated with an increase in the probability of having a *lishu* relationship by 0.17 percentage points (0.38 percentage point). The marginal effects are tested similarly by using the random-effects Probit. This finding is supported by some existing studies.

According to Johnson and Mitton (2003) and Khwaja and Mian (2005), a higher leverage ratio indicates that firms can benefit from soft budget terms, suggesting that firms with a higher leverage ratio are more likely to obtain external financing. In this case, these firms are more able to have political affiliation. Contrary to the descriptive statistics, the cash flow has a positive and significant influence on the probability of firms having the *lishu* relationship. This can be explained considering that it is widely acknowledged that investment spending of firms should depend on their internal funds as the first choice, which can be measured by liquidity and cash flow. Firms with

greater liquidity or cash flow will have more investment opportunities. In this case, these firms may be prone to have connections with the governments to obtain favourable support, such as crucial licences, profitable investment projects and advantageous help in dealing with investment disputes (Leuz and Oberholzer-Gee, 2006).

From Table 4.10, we observe that ROS exhibits negative and significant coefficients in both estimations, indicating that the relationship between profitability and the likelihood of having political affiliation is negative. These results are consistent with Hypothesis 4A. According to Salamon and Siegfried (1977), in order to avoid unexpected economic losses, firms with higher profitability are less likely to get involved in political activities. Specifically, a 10% decrease in ROS is related to an increase in the probability of having political affiliation by 1.82 percentage points in column (1) and 1.68 percentage points in column (2). In addition, the significant and negative coefficients on the sales growth in both estimations support our Hypothesis 4B, suggesting that firm's growth opportunities may also affect the political connections decisions. In summary, firms with lower sales growth, large size, soft budget constraints, and high cash flow ratio may need more help from governments to obtain favourable projects and expand their investment opportunities.

Table 4.10 Determinants of the *lishu* relationship

Variables	(1)		(2)	
	Coefficient	ME	Coefficient	ME
$Size_{i(t-1)}$	0.153***	0.048***	0.340***	0.107***
	(0.003)	(0.001)	(0.007)	(0.002)
$Leverage_{i(t-1)}$	0.054***	0.017***	0.069***	0.022***
	(0.014)	(0.004)	(0.025)	(0.008)
$CFK_{i(t-1)}$	0.121***	0.038***	0.094***	0.029***
	(0.008)	(0.002)	(0.013)	(0.004)
$ROS_{i(t-1)}$	-0.579***	-0.182***	-0.535***	-0.168***
	(0.047)	(0.015)	(0.071)	(0.022)
$Sales\ Growth_{i(t-1)}$	-0.218***	-0.068***	-0.152***	-0.048***
	(0.006)	(0.002)	(0.011)	(0.003)
$State\ Ownership$	1.632***	0.513***	4.664***	1.467***
	(0.023)	(0.007)	(0.051)	(0.019)
$Foreign\ Ownership$	-0.524***	-0.165***	-1.285***	-0.404***
	(0.011)	(0.003)	(0.025)	(0.008)
$Coastal\ Region$	-0.385***	-0.121***	-1.031***	-0.324***
	(0.011)	(0.003)	(0.028)	(0.009)
$Western\ Region$	0.019	0.006	0.149***	0.047***
	(0.015)	(0.005)	(0.039)	(0.012)
Obs.	469,938	469,938	469,938	469,938
Log likelihood	-260,149		-173,561	

Note: The dependent variable PA_{it} is a binary variable which equals to one if the firm has a *lishu* relationship, and zero otherwise. Column (1) presents results estimated by pooled Probit model clustering observations by firms' ID. Column (2) reports results estimated by random-effects Probit model. Coefficients and marginal effects (ME) are presented for each equation. Robust standard errors are shown in parentheses. Industry dummies and year dummies are included in all estimations. *Obs.* stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

4.6.2 Estimation with ordered Probit model

In this section, we further divide the political affiliation of firms into four groups, i.e. firms without a *lishu* relationship (coded as 1), firms with a low level of *lishu* relationship (including the firms affiliated with the rest levels of governments and coded as 2), firms with a medium level of *lishu* relationship (including the firms affiliated with the city and prefecture, and county governments and coded as 3), and firms with a high level of *lishu* relationship (including the firms affiliated with the

central and provincial governments, and coded as 4). As our dependent variable is an ordinal polychotomous variable, we perform the ordered Probit estimation for the full sample and report the results in Table 4.11.

We start with focusing on the coefficients column.[1] The positive and significant coefficient on firms' real assets indicates that an increase in firms' real assets would yield a decrease in the probability of having no *lishu* relationship, and an increase in the probability of having a *lishu* relationship with the high level of government. Looking at the marginal effects for the first group (firms without a *lishu* relationship), we find that the probability of having no political affiliation decrease by 0.81 percentage points as firms size increases by 10%. We also find that for the other three groups where firms have political affiliation, an increase in firms' real assets by 0.1, or 10 percentage points, is associated with an increase in the probability of having a low/medium/high level of *lishu* relationship by 0.23/0.48/0.11 percentage points, respectively. These findings support our H1A.

Focusing on the regional factors in Table 4.11, we notice a negative coefficient on the coastal region variable, suggesting that being a coastal firm necessarily is associated with a higher probability of having no political affiliation and a lower probability of having high political affiliation. However, the positive and significant coefficient on

[1] According to Cameron and Trivedi (2010), the sign of the coefficients can be immediately interpreted as determining whether the dependent variable increases with the regressor. If coefficient β_j is positive, then an increase in x_{ij} decreases the probability of being in the lowest category ($y_i = 1$) and increases the probability of being in the highest category. The marginal effects are expected to have the opposite signs to coefficients for the first outcome ($y_i = 1$) and have the same signs with coefficients for the rest outcomes. In our case, the first, second, third, and fourth outcomes refer to firms without a *lishu* relationship (the lowest category), firms with a low level of *lishu* relationship, firms with a medium level of *lishu* relationship, and firms with a high level of *lishu* relationship (the highest category), respectively.

western region variable suggests that being a western firm would be related to a lower probability of having no *lishu* relationship and a higher probability of affiliating with the high level of government. These findings are consistent with our H1B. Specifically, being a coastal/western firm is associated with a 1.27%/0.62% higher/lower likelihood of being a non-affiliated firm. Moreover, being a firm located in the east (west) of China is related to a 0.35%/0.75%/0.17% (0.17%/0.36%/0.08%) lower (higher) probability of having a low/medium/high level of *lishu* relationship, respectively.

Similar results can also be found by looking at the ownership variables. That is, being a foreign (state-owned) firm is related to a higher (lower) in the likelihood of having no *lishu* relationship and a lower (higher) in the probability of having a high level of *lishu* relationship. Focusing on the marginal effects for non-affiliated firms, we find that being a foreign (state-owned) firm is associated with a 1.80% (5.54%) higher (lower) likelihood of being a non-affiliated firm. For the other three groups, being a foreign (state-owned) firm is associated with a 0.50%/1.06%/0.24% (1.53%/3.26%/0.75%) lower (higher) probability of having low/medium/high level of political affiliation, respectively. These results support our Hypothesis 2.

As for the financial status variables, the positive and significant coefficients on leverage ratio and cash flow ratio indicate that an increase in leverage ratio/cash flow ratio would yield a decrease in the propensity of being non-affiliated firms and an increase in the propensity of being highly affiliated firms. These findings are consistent with our H3A and H3B.

The negative and significant coefficients on ROS and sales growth in Table 4.11 support the Hypothesis 4A and 4B, suggesting that an increase in ROS/sales growth is associated with a rise in the likelihood of having no *lishu* relationship and a drop in that of having a high level of *lishu* relationship. Specifically, a 10% increase in ROS/sales growth relates to an increase in the likelihood of being a non-affiliated firm by 2.57/0.75 percentage points. Furthermore, an increase in ROS (sales growth) by 0.1, or 10 percentage points, would yield a decrease in the probability of having a low/medium/high level of *lishu* relationship by 0.71/1.51/0.35 (0.21/0.44/0.10) percentage points, respectively.

Furthermore, changes in variables would be associated with changes in the probability of having the *lishu* relationship by a larger percentage point for firms affiliated with medium level of government than those affiliated with low/high level of government. This might relate to the fact that the government at this level can access important resources, as well as enjoy authority to support the firms' development. Therefore, firms are more willing to have the *lishu* relationship with the governments at the medium level.

Table 4.11 Determinants of the *lishu* relationship (four levels of the *lishu* relationship)

Variables	ordered Probit				
	Coefficient	ME (1)	ME (2)	ME (3)	ME (4)
$Size_{i(t-1)}$	0.209***	-0.081***	0.023***	0.048***	0.011***
	(0.003)	(0.001)	(0.000)	(0.001)	(0.000)
$Leverage_{i(t-1)}$	0.030**	-0.012**	0.003**	0.007**	0.002**
	(0.013)	(0.005)	(0.001)	(0.003)	(0.001)
$CFK_{i(t-1)}$	0.075***	-0.029***	0.008***	0.017***	0.004***
	(0.007)	(0.003)	(0.001)	(0.002)	(0.000)
$ROS_{i(t-1)}$	-0.658***	0.257***	-0.071***	-0.151***	-0.035***
	(0.043)	(0.017)	(0.005)	(0.010)	(0.002)
$Sales\ Growth_{i(t-1)}$	-0.192***	0.075***	-0.021***	-0.044***	-0.010***
	(0.005)	(0.002)	(0.001)	(0.001)	(0.000)
$State\ Ownership$	1.421***	-0.554***	0.153***	0.326***	0.075***
	(0.013)	(0.005)	(0.002)	(0.003)	(0.001)
$Foreign\ Ownership$	-0.461***	0.180***	-0.050***	-0.106***	-0.024***
	(0.011)	(0.004)	(0.001)	(0.003)	(0.001)
$Coastal\ Region$	-0.325***	0.127***	-0.035***	-0.075***	-0.017***
	(0.009)	(0.004)	(0.001)	(0.002)	(0.001)
$Western\ Region$	0.158***	-0.062	0.017***	0.036***	0.008***
	(0.013)	(0.005)	(0.001)	(0.003)	(0.001)
/cut1	1.303***				
	(0.021)				
/cut2	1.923***				
	(0.021)				
/cut3	3.101***				
	(0.022)				
Obs.	469,938	469,938	469,938	469,938	469,938
Log likelihood	-441,090				

Note: The dependent variable PAV_{it} is an ordinal variable which equals to 1 if the firm has no *lishu* relationship, 2 if the firm has a low level of *lishu* relationship, 3 if the firm has a medium level of *lishu* relationship, and 4 if the firm has a high level of *lishu* relationship. Coefficients and marginal effects (ME) for each outcome are presented. Robust standard errors are shown in parentheses. Industry dummies and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

4.7 Further tests

4.7.1 Determinants of the *lishu* relationship by ownership

We firstly estimate the determinants of the *lishu* relationship by ownership types.[1] Table 4.12 presents the coefficients and marginal effects estimated by the pooled Probit and random-effects Probit models. As we find that around 94% of state-owned firms and 84% of collectively-owned firms are politically affiliated, we only report the results for private firms (in column (1)), which accounts for more than 60% of our full sample, and foreign firms (in column (2)), which are generally the youngest and vigorous firms in China.

The coefficient on firm' size is positive and significant for both types of firms in both estimations, suggesting that having the *lishu* relationship increases as firms' size increase. The magnitude of marginal effects is larger for private firms (a 10% increase in firms' size is associated with a 0.64 percentage points using the pooled Probit model

[1] I have estimated the regressions for firms getting the *lishu* relationship (from having no *lishu* relationship to having a *lishu* relationship at any level) and for firms ending the *lishu* relationship (from having a *lishu* relationship at any level to having no *lishu* relationship). The results are robust and available on request.
In addition, I have estimated the regression by considering the initial conditions and for firms improving and decreasing their *lishu* level. And the results are robust and available on request.
I also have estimated the regressions for ten different industries available in our dataset, i.e. Metal and metal products industry, Non-metal products and petroleum processing industry, Chemicals and plastic industry, Machinery and Equipment industry, Electrical equipment industry, Transport equipment industry, Food and Tobacco industry, Textile industry, Leather, Timber and Furniture industry, and Mining and Logging industry. And the results are robust overall. However, three industries out of ten have some different situations. Firstly, the coefficients and marginal effects of ROS for the Mining and logging industry are positive and significant. This might due to the fact that minerals and forest resource are owned by the public in China. Therefore, the firms with high profitability in this industry are more prone to have political connections to access resource and licences (Zhang, 2006; Jiang, 2000; Sun, 2004). Secondly, the transport equipment industry and textile industry show negative and significant coefficients and marginal effects on "*Western Region*" variable. This might be because of the fact that during our sample period, there were many local policies that provide many favourable treatments, such as land lease, taxes, and subsidies, which were only available to the transport equipment industry and textile industry in the western region (Wei, 2007; Su, 1999; Hui, 2008; Sun and Jiang, 2015; Luo and Cao, 2005). For example, according to Yang (2004), Xinjiang Province has set up 20 billion RMB subsidies and provided free land to facilitate the development of textile enterprises. Shaanxi Province has provided tax deduction and extra finance and subsidies to the transport industry. In this case, these two industries locating in the western region are less likely to have political connections during our sample period. The results are available on request.

and 0.69 percentage points using the random-effects Probit model), compared with that for foreign firms (a 10% increase in firms' size is associated with a 0.24 percentage points using pooled Probit model and 0.10 percentage points using random-effects Probit model).

As for the regional variables, we find similar results to our previous estimations for both private firms and foreign firms. As for private firms, being a coastal (western) firm is associated with a 1.49% and 1.94% (0.17%) lower (higher) probability of having a *lishu* relationship by using the pooled Probit model and random-effects Probit model, respectively. Looking at the foreign firms in column (2), we find that being a coastal (western) firm is related to a 0.70% (0.88%) and 0.35% (0.47%) lower (higher) probability of having a *lishu* relationship by using the pooled Probit model and the random-effects Probit model, respectively.

Looking at the leverage ratio and cash flow ratio, we observe a positive and significant relationship for both types of firms, expect for the leverage ratio in the foreign firms, which have insignificant effects. Overall, these results suggest that the higher level of leverage ratio and cash flow ratio are associated with higher probability of having a *lishu* relationship. Focusing on the profitability and sales growth, we find that the coefficients of ROS become insignificant for foreign firms. But the results are still robust for the private firms and for sales growth of foreign firms. ROS and sales growth significantly and negatively affect firms' political participation, and this effect is larger for private firms than foreign firms.[1]

[1] The coefficients of ROS for foreign firms are positive and insignificant, which indicates ROS is a poor determinant for foreign firms political participation. These positive sign might be related to the fact that some foreign firms with high profitability need to transfer more return to their home countries. This behaviour is associated with the law and regulation. In this case, profitable foreign firms might use political connections as one method to facilitate the transfer (Zhang, 2011; Zhu and Song, 2002; Fang, 2002; Qi, 2008).

Table 4.12 Determinants of the *lishu* relationship by ownership (PEs vs. FEs)

Variables	(1)				(2)			
	pooled Probit		RE Probit		pooled Probit		RE Probit	
	Coeff.	ME	Coeff.	ME	Coeff.	ME	Coeff.	ME
$Size_{i(t-1)}$	0.207***	0.064***	0.435***	0.069***	0.083***	0.024***	0.185***	0.010***
	(0.004)	(0.001)	(0.008)	(0.002)	(0.007)	(0.002)	(0.015)	(0.001)
$Leverage_{i(t-1)}$	0.084***	0.026***	0.098***	0.016***	0.013	0.004	0.011	0.001
	(0.018)	(0.006)	(0.030)	(0.005)	(0.034)	(0.010)	(0.059)	(0.003)
$CFK_{i(t-1)}$	0.086***	0.027***	0.078***	0.012***	0.091***	0.026***	0.080***	0.004***
	(0.010)	(0.003)	(0.016)	(0.003)	(0.017)	(0.005)	(0.029)	(0.002)
$ROS_{i(t-1)}$	-0.910***	-0.282***	-0.859***	-0.137***	0.130	0.037	0.095	0.005
	(0.064)	(0.020)	(0.094)	(0.015)	(0.090)	(0.026)	(0.142)	(0.008)
$Sales\ Growth_{i(t-1)}$	-0.212***	-0.066***	-0.164***	-0.026***	-0.112***	-0.032***	-0.041	-0.002
	(0.007)	(0.002)	(0.013)	(0.002)	(0.015)	(0.004)	(0.027)	(0.001)
$Coastal\ Region$	-0.481***	-0.149***	-1.215***	-0.194***	-0.244***	-0.070***	-0.668***	-0.035***
	(0.012)	(0.004)	(0.031)	(0.006)	(0.045)	(0.013)	(0.113)	(0.006)
$Western\ Region$	0.001	0.001	0.109**	0.017**	0.307***	0.088***	0.888***	0.047***
	(0.017)	(0.005)	(0.042)	(0.007)	(0.069)	(0.020)	(0.171)	(0.009)
Obs.	292,241	292,241	292,241	292,241	86,590	86,590	86,590	86,590
Log likelihood	-160,109		-109,896		-43,984		-30,011	

Note: The dependent variable PA_{it} is a binary variable which equals to one if the firm has a *lishu* relationship, and zero otherwise. Columns (1) and (2) present results for PEs and FEs, respectively. The regressions are estimated by pooled Probit model clustering observations by firms' ID and random-effects Probit model. Coefficients (Coeff.) and marginal effects (ME) are presented for each regression. Robust standard errors are shown in parentheses. Industry dummies and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

4.7.2 Determinants of the *lishu* relationship by region

Table 4.13 presents the results estimated by the pooled Probit and random-effects Probit models for three regions, i.e. the coastal (column (1)), central (column (2)), and western (column (3)) region.

In terms of firms' size, we find that no matter which region the firm is located in, an increase in firms' size is generally associated with an increase in the probability of having a *lishu* relationship. Similar results are found with firms ownership types. Being a SOEs is generally related to an increase in the likelihood of having political affiliation, while firms with foreign ownership are less likely to be politically affiliated.

The coefficient on leverage ratio is positive and significant at the 1% level for firms locating in the central and western regions, suggesting that these firms with soft budget constraints are more prone to have the *lishu* relationship. However, we find that the cash flow-to-capital ratio is a significant determinant only for firms in the east of China. This may be due to the Chinese regional development policies. Although the open-door policy and the coastal development strategy before the 1990s promoted the development of the east of China considerably, they also brought seriously regional unbalance and inequality. In order to reduce these disparities, China has changed its focus from the east to the inner regions. The central government carried out a series policies to support the development of the inner regions, i.e. "Development of the Western Region in China" (*xi bu da kai fa*) in the late 1990s, "Revitalizing the Northeast Old Industries Strategy"(*zheng xing dong bei lao gong ye*

ji di) in 2003, and the "Rise of Central China Strategy" (*zhong bu jue qi zhan lve*) in 2004. With these favourable policies, a great amount of funding has been injected in these areas. Therefore, firms locating in the central and western regions may have less dependence on the availability of their internal funds to invest, including having political affiliation.

Looking at the ROS and sales growth, our previous results are still robust across the three regions. That is, an increase in ROS or sales growth relates to a decrease in the probability of firms' political participation.

Table 4.13 Determinants of the *lishu* relationship by region

Variables	(1)				(2)				(3)			
	pooled Probit		RE Probit		pooled Probit		RE Probit		pooled Probit		RE Probit	
	Coeff.	ME	Coeff.	ME	Coeff.	ME	Coeff.	ME	Coeff.	ME	Coeff.	ME
$Size_{i(t-1)}$	0.161***	0.050***	0.380***	0.070***	0.133***	0.042***	0.266***	0.093***	0.136***	0.044***	0.294***	0.078***
	(0.004)	(0.001)	(0.008)	(0.002)	(0.008)	(0.002)	(0.015)	(0.005)	(0.009)	(0.003)	(0.020)	(0.005)
$Leverage_{i(t-1)}$	0.021	0.006	0.060	0.011	0.375***	0.118***	0.451***	0.158***	0.113***	0.037***	0.230***	0.006***
	(0.017)	(0.005)	(0.030)	(0.006)	(0.033)	(0.010)	(0.054)	(0.019)	(0.043)	(0.014)	(0.072)	(0.019)
$CFK_{i(t-1)}$	0.156***	0.048***	0.137***	0.025***	0.003	0.001	0.056	0.020	0.008	0.003	0.029	0.008
	(0.009)	(0.003)	(0.015)	(0.003)	(0.020)	(0.006)	(0.032)	(0.011)	(0.028)	(0.009)	(0.045)	(0.012)
$ROS_{i(t-1)}$	-0.795***	-0.247***	-0.708***	-0.131***	-0.042	-0.013	-0.448***	-0.157***	-0.253**	-0.082**	-0.152	-0.040
	(0.062)	(0.019)	(0.091)	(0.017)	(0.101)	(0.032)	(0.157)	(0.055)	(0.108)	(0.035)	(0.165)	(0.044)
$Sales\ Growth_{i(t-1)}$	-0.221***	-0.069***	-0.140***	-0.026***	-0.189***	-0.060***	-0.171***	-0.060***	-0.221***	-0.072***	-0.160***	-0.042***
	(0.007)	(0.002)	(0.013)	(0.002)	(0.015)	(0.005)	(0.025)	(0.009)	(0.018)	(0.006)	(0.030)	(0.008)
$State\ Ownership$	1.708***	0.531***	5.227***	0.968***	1.438***	0.453***	3.547***	1.239***	1.616***	0.526***	4.226***	1.116***
	(0.032)	(0.010)	(0.071)	(0.019)	(0.041)	(0.012)	(0.088)	(0.030)	(0.048)	(0.014)	(0.116)	(0.034)
$Foreign\ Ownership$	-0.537***	-0.167***	-1.374***	-0.254***	-0.646***	-0.204***	-1.416***	-0.495***	-0.351***	-0.114***	-0.731***	-0.193***
	(0.012)	(0.003)	(0.028)	(0.006)	(0.047)	(0.015)	(0.104)	(0.037)	(0.054)	(0.017)	(0.134)	(0.036)
Obs.	354,900	354,900	354,900	354,900	66,063	66,063	66,063	66,063	48,975	48,975	48,975	48,975
Log likelihood	-194,586		-126,255		-36,567		-26,686		-27,908		-19,376	

Note: The dependent variable PA_{it} is a binary variable which equals to one if the firm has a *lishu* relationship, and zero otherwise. Columns (1), (2), and (3) present results for the coastal region, the central region, and the western region, respectively. The regressions are estimated by pooled Probit model clustering observations by firms' ID and random-effects Probit model. Coefficients (Coeff.) and marginal effects (ME) are presented for each regression. Robust standard errors are shown in parentheses. Industry dummies and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

4.8 Conclusion

Although political connections have attracted worldwide academic interests, most of the studies focus on the benefits provided by political connections to the connected firms. An important question, what types of firms are more likely to have political connections, has been neglected.

After almost four decades of economic reform since 1978, various economic institutions in China have gained increasing authority to operate on market principles. However, the government continues to play an important role in the allocation of critical resources and policy making. And the firms remain involved in the relationship with different levels of government. As a unique institutional variation, the *lishu* relationship has received the least attention in previous research. Little is known about this particular relationship through which the Chinese government can maintain its administrative control over the affiliated firms. To the best of our knowledge, this study represents the first effort to empirically estimate the determinants of political connections, intended as the *lishu* relationship in China.

In this chapter, we use a sample of 113,549 mainly unlisted firms in China over the period 2001 to 2007, to test four sets of hypotheses regarding the determinants of the probability of having political connections, measured as the *lishu* relationship. Our empirical work shows that the likelihood of a firm being politically affiliated can be explained by the firms' characteristics, ownership types, financial factors, profitability, and sales growth.

We find that firm size is a positive and precise determinant in explaining firm's political affiliation. Firms locating in the coastal region are less likely to have a *lishu* relationship than those in the west of China. In addition, state-owned firms are more prone to have a *lishu* relationship, compared with foreign firms. Moreover, the relationship between leverage ratio/cash flow-to-capital ratio and the probability of having a *lishu* relationship is positive and significant, indicating that non-financially constrained firms are more likely to invest in political relationships. However, firms with higher profitability and sales growth do not prefer to be politically affiliated.

Then we divide the full sample into four different levels of the *lishu* relationship, i.e. firms without a *lishu* relationship, firms affiliated with the low level of government, firms affiliated with the medium level of government, and firms with the high level of government. Our findings suggest the similar patterns for firms' size, regional factors, ownership types, financial status, profitability, and sales growth. Furthermore, we also find that changes in these variables would be associated with changes in the probability of having a *lishu* relationship by a larger number for firms affiliated with the medium level of governments than those affiliated with the low/high level of government. We attribute this finding to the fact that firms affiliated with medium level of governments can obtain important resources and retain flexibility to operate.

Looking at the ownership types, i.e. private firms and foreign firms, we find the similar results to our previous analysis. And the magnitude of marginal effects is larger for private firms than that for foreign firms. As for the estimations based on three regions, i.e. the coastal, central, and western regions, similar results are found.

However, we do not find that cash flow is a significant determinant for firms in the central and western areas due to the regional development policies. These favourable policies include the "Development of the Western Region in China" (*xi bu da kai fa*), "Revitalising the Northeast Old Industries Strategy" (*zheng xing dong bei lao gong ye ji di*), and the "Rise of Central China Strategy" (*zhong bu jue qi zhan lve*). With these favourable policies, a great amount of funding has been injected in these areas. Therefore, firms locating in the inner regions may have less dependence on the availability of their internal funds to develop and invest in political affiliation.

Following the economic and political reforms in China, the non-state economy continues to play a more important role in every aspect of the country's development. Given a relatively underdeveloped legal and market environment, having the *lishu* relationship may be an effective and active way for entrepreneurs to operate their business in the transitional economy. Therefore, exploring the factors that affect political participation helps understand the economic and political development in China. Our findings have some implications for firms and policy-makers. First, not all of the firms are good candidates to have the *lishu* relationship. As China is geographically large and has different levels of governments, for firms without a *lishu* relationship, they should be prepared to deal with not only one government, but at least five layers of governments in the vertical hierarchy. Especially for the foreign firms that are new to China. Second, China has a system of economic decentralisation and political centralisation, in which local governments have the authority to make economic policies. As many firms are more willing to be affiliated with these medium level of governments, the policy makers should establish relevant policies to support

the firms' development. At the same time, they should be cautious not to induce further regional imbalance and inequity.

Further research can be undertaken from the following direction. As we use the pooled Probit and random-effects Probit models for estimations, it would be interesting to test whether the results are robust by using other estimations, such as the special regressor estimator proposed by Lewbel (2000). Compared with the IV Probit or Tobit model, the special regressor allows us to include the categorical variables as regressors.

Appendix 4A

Table 4A.1 Definition of the variables used

Variable	Definition
PA	a dummy variable that equals to 1 if firm has a *lishu* relationship and 0 otherwise
PAV	an ordinal dummy variable that equals to 1 if firm has no *lishu* relationship, 2 if firm has *lishu* relationship with the low level of government, 3 if firm affiliated with the medium level of government, 4 if firm has *lishu* relationship with the high level of government
Total Assets	sum of the firm's fixed and current assets, where fixed assets include tangible fixed assets, intangible fixed assets, and other fixed assets; and current assets include inventories, accounts receivable, and other current assets
Size	natural logarithm of total real assets (the number of employees in the Appendix Table 3A.8)
Leverage ratio	ratio of total debt to total assets
CFK	ratio of cash flow to tangible fixed assets
ROS	return on sales, ratio of profit before tax and interest to total sales, a measure of profitability
Sales growth	growth of total real sales
State ownership	a dummy variable that equals to 1 if firm is state-owned and 0 otherwise
Foreign ownership	a dummy variable that equals to 1 if firm is owned by foreign investors (including investors from Hong Kong, Macao, and Taiwan) and 0 otherwise
Coastal region	a dummy variable that equals to 1 if firm is located in the coastal region in China and 0 otherwise
Central region	a dummy variable that equals to 1 if firm is located in the central region in China and 0 otherwise
Western region	a dummy variable that equals to 1 if firm is located in the western region in China and 0 otherwise
Age	a firm's age is calculated since the year the firm was established
Liquidity ratio	a ratio of the difference between current assets and current liabilities to total assets
Employee	total number of people employed by the firm
Deflators	all variables (except tangible fixed assets) are deflated using provincial ex-factory producer price indices (*pdsales*) taken from various issues of the china statistical yearbook. tangible fixed assets are deflated using a deflator for fixed capital formation (*pdgoods*)

Table 4A.2 The correlation matrix of the main variables

	Real Assets	Employee	Age	Leverage	Liquidity	CFK	ROS	Sales Growth
Real Assets	1.000							
Employee	0.554	1.000						
Age	0.084	0.175	1.000					
Leverage	-0.004	0.032	0.110	1.000				
Liquidity	-0.022	-0.065	-0.068	-0.650	1.000			
CFK	-0.012	-0.051	-0.103	-0.164	0.346	1.000		
ROS	0.069	0.003	-0.130	-0.250	0.228	0.455	1.000	
Sales Growth	0.033	0.020	-0.095	0.009	-0.022	0.129	0.145	1.000

Table 4A.3 Structure of the unbalanced panel

Year	No. of Observations	Percent	Cumulative
2001	33,855	7.20	7.20
2002	46,372	9.87	17.07
2003	62,905	13.39	30.46
2004	73,082	15.55	46.01
2005	86,577	18.42	64.43
2006	85,700	18.24	82.67
2007	81,447	17.33	100.00
Total	469,938	100.00	

No. of Observations per firm	No. of firms	Percent	Cumulative
5	31,252	27.52	27.52
6	23,341	20.56	48.08
7	24,634	21.69	69.77
8	34,322	30.23	100.00
Total	113,549	100.00	

No. of Observations per firm	No. of Observations	Percent	Cumulative
5	81,190	17.28	17.28
6	78,566	16.72	34.00
7	106,228	22.60	56.60
8	203,954	43.40	100.00
Total	469,938	100.00	

Table 4A.4 Determinants of the *lishu* relationship (including firms' age)

Variables	(1)		(2)	
	Coefficient	ME	Coefficient	ME
$Size_{i(t-1)}$	0.129***	0.038***	0.288***	0.087***
	(0.004)	(0.001)	(0.009)	(0.003)
Age_{it}	0.036***	0.011***	0.117***	0.035***
	(0.001)	(0.000)	(0.002)	(0.001)
$Leverage_{i(t-1)}$	0.079***	0.023***	0.064*	0.019*
	(0.018)	(0.005)	(0.033)	(0.010)
$CFK_{i(t-1)}$	0.133***	0.040***	0.106***	0.032***
	(0.010)	(0.003)	(0.017)	(0.005)
$ROS_{i(t-1)}$	-0.397***	-0.118***	-0.303***	-0.092***
	(0.059)	(0.018)	(0.092)	(0.028)
$Sales\ Growth_{i(t-1)}$	-0.156***	-0.047***	-0.113***	-0.034***
	(0.008)	(0.002)	(0.014)	(0.004)
State Ownership	1.352***	0.402***	3.955***	1.194***
	(0.031)	(0.009)	(0.072)	(0.026)
Foreign Ownership	-0.448***	-0.133***	-1.051***	-0.317***
	(0.013)	(0.004)	(0.030)	(0.010)
Coastal Region	-0.309***	-0.092***	-0.877***	-0.265***
	(0.015)	(0.004)	(0.039)	(0.012)
Western Region	0.054***	0.016***	0.254***	0.077***
	(0.020)	(0.006)	(0.053)	(0.016)
Obs.	297,595	297,595	297,595	297,595
Log likelihood	-156,456		-103,910	

Note: The dependent variable PA_{it} is a binary variable which equals to one if the firm has a *lishu* relationship, and zero otherwise. Column (1) presents results estimated by pooled Probit model clustering observations by firms' ID. Column (2) reports results estimated by random-effects Probit model. Coefficients and marginal effects (ME) are presented for each equation. Robust standard errors are shown in parentheses. Industry dummies and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

Table 4A.5 Determinants of the *lishu* relationship (employee)

Variables	(1)		(2)	
	Coefficient	ME	Coefficient	ME
$Employee_{i(t-1)}$	0.142***	0.045***	0.278***	0.086***
	(0.004)	(0.001)	(0.008)	(0.003)
$Leverage_{i(t-1)}$	0.067***	0.021***	0.113***	0.035***
	(0.014)	(0.004)	(0.025)	(0.008)
$CFK_{i(t-1)}$	0.079***	0.025***	0.046***	0.014***
	(0.008)	(0.002)	(0.013)	(0.004)
$ROS_{i(t-1)}$	-0.349***	-0.110***	-0.299***	-0.093***
	(0.046)	(0.014)	(0.071)	(0.022)
$Sales\ Growth_{i(t-1)}$	-0.210***	-0.066***	-0.143***	-0.045***
	(0.006)	(0.002)	(0.011)	(0.003)
State Ownership	1.658***	0.525***	4.765***	1.484***
	(0.022)	(0.007)	(0.052)	(0.019)
Foreign Ownership	-0.453***	-0.143***	-1.129***	-0.351***
	(0.011)	(0.003)	(0.025)	(0.008)
Coastal Region	-0.333***	-0.105***	-0.941***	-0.293***
	(0.010)	(0.003)	(0.029)	(0.009)
Western Region	0.052***	0.016***	0.226***	0.070***
	(0.015)	(0.005)	(0.040)	(0.012)
Obs.	469,938	469,938	469,938	469,938
Log likelihood	-262,029		-174,185	

Note: The dependent variable PA_{it} is a binary variable which equals to one if the firm has a *lishu* relationship, and zero otherwise. Column (1) presents results estimated by pooled Probit model clustering observations by firms' ID. Column (2) reports results estimated by random-effects Probit model. Coefficients and marginal effects (ME) are presented for each equation. Robust standard errors are shown in parentheses. Industry dummies and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

Table 4A.6 Determinants of the *lishu* relationship (liquidity)

Variables	(1)		(2)	
	Coefficient	ME	Coefficient	ME
$Size_{i(t-1)}$	0.156***	0.049***	0.343***	0.108***
	(0.003)	(0.001)	(0.007)	(0.002)
$Liquidity_{i(t-1)}$	0.150***	0.047***	0.161***	0.051***
	(0.013)	(0.004)	(0.022)	(0.007)
$CFK_{i(t-1)}$	0.093***	0.029***	0.073***	0.023***
	(0.008)	(0.003)	(0.013)	(0.004)
$ROS_{i(t-1)}$	-0.669***	-0.210***	-0.590***	-0.186***
	(0.047)	(0.015)	(0.070)	(0.022)
$Sales\ Growth_{i(t-1)}$	-0.210***	-0.066***	-0.148***	-0.046***
	(0.006)	(0.002)	(0.011)	(0.003)
State Ownership	1.633***	0.513***	4.667***	1.468***
	(0.023)	(0.007)	(0.051)	(0.019)
Foreign Ownership	-0.546***	-0.172***	-1.310***	-0.412***
	(0.011)	(0.003)	(0.025)	(0.008)
Coastal Region	-0.381***	-0.120***	-1.027***	-0.323***
	(0.011)	(0.003)	(0.028)	(0.009)
Western Region	0.021	0.007	0.153***	0.048***
	(0.015)	(0.005)	(0.039)	(0.012)
Obs.	469,938	469,938	469,938	469,938
Log likelihood	-260,009		-173,539	

Note: The dependent variable PA_{it} is a binary variable which equals to one if the firm has a *lishu* relationship, and zero otherwise. Column (1) presents results estimated by pooled Probit model clustering observations by firms' ID. Column (2) reports results estimated by random-effects Probit model. Coefficients and marginal effects (ME) are presented for each equation. Robust standard errors are shown in parentheses. Industry dummies and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

CHAPTER 5 POLITICAL CONNECTIONS AND EXPORTING

Using data from 111,460 mainly unlisted Chinese manufacturing firms between 2001 and 2007, we explore the research question: to what extent does a *lishu* relationship affect firms' exporting behaviour. We adopt a dynamic model to analyse the effect of the *lishu* relationship on the propensity and the intensity of exporting of Chinese firms. We also control for the unobserved firm heterogeneity and initial conditions problem, which have often been overlooked in the existing research on firms' exporting activities. We find that political affiliation has a negative impact on both the propensity and the intensity of exporting. Interestingly, this negative effect is only significant for firms affiliated with the low or medium levels of government, but not for firms affiliated with the high level of government. Previous exporting experience has a strong effect on firms' exporting behaviour in the current period, indicating the presence of sunk entry costs. In addition, the estimate of sunk entry costs decreases, when the initial conditions problem is appropriately controlled for. Being consistent with the findings of current studies, we also find that firm size, total factor productivity, financial factors, types of ownership, and location are the significant determinants for firms' exporting activities.

5.1 Introduction

The internationalisation of the business environment has become one of the most significant developments in the modern era. The increasing liberalisation, integration, globalisation, and competition in the world economies since the post-war period have

triggered a growing engagement of firms in exporting activities.

The study of firms' exporting behaviour goes back to the 1960s. According to Lopez (1967, p.126), long distance trade "became the driving force of economic progress, and in the end affected every aspect of human activity almost as decisively as the Industrial Revolution changed the modern world."

The existing literature provides a comprehensive study on exporting from the perspectives of public policy makers, managers, and researchers. According to Czinkota (1994), in the view of public policy makers, exporting is an important way to accumulate foreign exchange reserves, to increase employment levels, to improve productivity, and to enhance social prosperity. As for business managers, exporting can boost the growth of enterprises, improve financial performance, strengthen competitive ability, and make sure companies survive in a highly internationalised market (Samiee and Waiters, 1990; Kumcu, 1995).

The academic research on firms' exporting can be divided into two groups: international business studies and economics studies. Several researchers have explored firms' exporting behaviour from the perspectives of international business and international management (for example, Albaum and Peterson, 1984; Yeoh and Jeong, 1995; Zou and Stan, 1998; Robertson and Chetty, 2000; Leonidou *et al.*, 2002; Moen, 1999; Peng *et al.*, 2008; Liu, 2010; Wei *et al.*, 2014). They consider exporting as a challenging but promising area for firms' development and an important strategy for firms to internationalise. The internationalised market environment provides many

crucial opportunities for economic development, states independence, profitability growth, and business firms' survival. Firms are therefore likely to enter international markets to take advantage of these opportunities.

Economics researchers focus on the role of external institutions and infrastructure investment on international trade (for example, Kandori, 1992; Greif, 1993, 1994; Anderson and Marcouiller, 2002; Dixit, 2003; Li, 2003; Costinot, 2004; Anderson and Young, 2006; Ranjan and Lee, 2007; Nunn, 2007; Méon and Sekkat, 2008; Albarran *et al*., 2013). These scholars argue that trade expansion requires well-developed support from the institutions, such as property rights institutions, contracting institutions and financing institutions, and undeveloped economic institutions, which sit in an imperfect contract enforcement system and causes insecurity of property rights protection, corruption, and transport costs. These imperfections in turn, can dramatically reduce international trade.

Another group of economics researchers attempts to analyse the relationship between firm heterogeneity and exporting behaviour (for instance, Hirsch and Adar, 1974; Aitken *et al*., 1997; Melitz, 2003; Greenaway *et al*., 2007; Lu, 2011; Chaney, 2013; Lawless, 2009; Van Biesebroeck, 2005; Das *et al.*, 2007; Greenaway and Kneller, 2008; Sinani and Hobdari, 2010; Alessandria and Choi, 2007; Bernard and Jensen, 2004; Roberts and Tybout, 1997; Bernard and Wagner, 2001; Manez *et al*., 2008; Manova, 2013). They point out that the firm size, productivity, capital intensity, and financial considerations can also affect the enterprises' entry into export markets. Particularly, they also point out that the existence of sunk costs is another crucial

determinant of firms' exporting behaviour. As new exporters always have to deal with huge start-up costs, they need to collect information on foreign markets, explore marketing resources, changing and adjusting the products to cater to the needs of international customers, and deal with the new governmental procedures.

However, one feature of the existing studies is that the majority have ignored the effects of firms' political connections on exporting activities. As an important development strategy, having political connections is crucial to firms, especially in developing countries. Several researchers point out that political connections can provide better protection and more prerogatives to the politically connected firms (see, for example, Brandt and Li, 2003; Khwaja and Mian, 2005; Faccio, 2006; Leuz and Oberholzer-Gee, 2006; Goldman *et al*., 2010; Faccio, 2010).

These favourable treatments include better reputation and prestige, more opportunities to access critical and diversified resources which are larger in quantity and higher in quality, preferential policies, assistance in land purchase, favourable access to government contracts and bank loans, reduction in the tax burden, more opportunities in undertaking mergers and acquisitions (M&As) in heavily regulated industries (such as finance, media, aerospace, and natural resources mining) which are not open to the private sector. These favourable assistances all lead to improvements in operating performance. Moreover, politically connected firms may face lower sunk costs because these firms suffer from soft budget constraints. Given the fact that political connections improve firm performance and facilitate sunk costs, ignoring the effects of political connections will bias the estimation of firms exporting behaviour.

Therefore, this study attempts to contribute to the literature in the following four important ways. First, we use a very large dataset, provided by the National Bureau of Statistics of China (NBS) over the period 2000 and 2007. This dataset is made up of comprehensive economic information of firms coming from 31 provinces or province-equivalent municipal cities (except Hong Kong, Macao and Taiwan) all over China. This dataset includes a large proportion of small and young firms, which can represent the population of Chinese firms better than listed firms. It provides us with a unique opportunity to carry out much sharper tests for the exporting activities hypotheses than those typically performed in the literature, which is mostly based on listed firms. Moreover, this dataset not only contains detailed information regarding firms' exporting activities, but also the information about their political connection, so that we are able to examine the relationship between firms' exporting behaviour and political connections. Our final panel covers 111,460 mainly unlisted firms, which corresponds to 502,196 firm-year observations. To the best of our knowledge, the relationship between political connections and exporting activities hypotheses has never been tested for unlisted firms using such a comprehensive dataset. Furthermore, we not only focus on the probability of exporting, but also on the intensity of exporting.

Second, since the opening-up of China in the 1980s, China has swiftly risen as a global trading power and its status as one of the most important countries in the world has been greeted with a curious mixture of both admiration and fear. In particular, in 2009, China has become the largest merchandise exporting country with a total value of around 1.20 trillion US dollars (accounting for 43.63% of its total GDP), compared with the 1.05 trillion US dollars in the US (accounting for 18.46% of its total GDP)

(the World Trade Organization; the World Bank). Some research studies the exporting behaviour of Chinese firms (for example, Du and Girma, 2007; Lu and Tao, 2007; Yang and Malick, 2010; Lu *et al*., 2010; Xu *et al*., 2011; Sun and Hong, 2011; Yi and Wang, 2012; Dai and Yu, 2013). However, these studies mainly focus on exporting behaviour without exploring the effects of political connections. At the same time, political connections are always considered as an important instrument for private enterprises, especially unlisted firms, to develop themselves in the market environment with Chinese characteristics (Child, 1994; Peng *et al*., 2004; Li, 2004; Tan *et al*., 2007; Chen *et al*., 2011a, 2011b; Feng *et al*., 2011). In China, the art of using connections (*guan xi*) to subvert or take the advantages of the formal system exists commonly in the Chinese administration. Therefore, China is a comprehensive laboratory to study as to how political connections affect firms' exporting activities.

Third, political connections have attracted worldwide academic interest. The existing literature on political connections has been conducted in other countries, such as the United States, Malaysia and Thailand (for example, Roberts, 1990; Johnson and Mitton, 2003; Goldman *et al*., 2009). However, the definition of political connections and their influences on enterprises are different between China and the other countries around the world due to the different political regimes. China has a unique type of political connections, named the *lishu* relationship. *Lishu* is a Chinese word which means "belonging to", "subordinate to", or "directly controlled by". Through this relationship, the governments can maintain administrative power to control various aspects of the firm both directly and legally (Tan *et al*., 2007; Li, 2004). Specifically, a *lishu* relationship implies that the government controls firm structures, directors and

senior manager appointments, business plans, major projects, and operational decisions. As an institutional variation during the economic transition in China, the unique *lishu* relationship makes the research of Chinese enterprises distinctive. Our research will therefore focus, for the first time, on the unlisted firms' exporting behaviour through the perspective of the *lishu* relationship.

Finally, it is generally acknowledged that exporting activities are associated with huge sunk costs (Roberts and Tybout, 1997; Clerides *et al*., 1998; Melitz, 2003; Campa, 2004; Bernard and Jensen, 1999, 2004; Greenaway and Kneller, 2007; Manova, 2013). These sunk costs include collecting information about markets, meeting legal requirements and foreign market tastes, and establishing distribution networks. Researchers widely use lagged exporting status as one of the explanatory variables in the regression to capture the sunk costs. However, in the studies of exporting behaviour, the initial conditions problem is common when the start of the sample is not the same as the start of the firms' exporting process. In this case, the initial exporting decision may relate to the unobserved firm heterogeneity, which may take an important part in explaining firms' decisions during the observed sample period. Therefore, ignoring the initial observations or assuming they are exogenous could cause overestimation of the size of the sunk entry costs of exporting. Only few studies have considered this problem (for example, Roberts and Tybout, 1997; Campa, 2004; Manez *et al*., 2008; Lawless, 2009; Albarran *et al*., 2013). However, these papers do not take into account the effects of political connections on firms' exporting behaviour. In this study, we address the initial conditions problem by adopting the Wooldridge (2005) technique.

Our main finding in this chapter is that firms with political affiliation are less likely to export and export less. Being consistent with the existing studies, we also find that sunk entry costs exist in Chinese firms. By controlling for the initial conditions properly, the overestimation of sunk entry costs can be mitigated. We also find that firm size, total factor productivity, financial factors, types of ownership, and location are significant determinants to firms' exporting activities.

The rest of this chapter is organised as follows. Section 5.2 introduces the background of Chinese exporting. Section 5.3 endeavours to provide a comprehensive review of the existing literature on firms' exporting behaviour and political connections. Our hypotheses are demonstrated in section 5.4. Specification and estimation methodology are presented in section 5.5. Data sample and summary statistics are described in section 5.6. In section 5.7, the empirical results are presented. Section 5.8 shows further tests. Section 5.9 concludes this chapter.

5.2 Background

5.2.1 Chinese institutional environment

It is generally acknowledged that better legal protection and better institutions lead to better outcomes of the financial system, and in turn, lead to rapid and constant development in exporting. For example, an entrepreneur, who aims to expand his/her business in an unfamiliar global market, needs to consider how to prevent his/her legal properties from being expropriated by local governments, how to make sure the

contracts can be well implemented by his/her distant clients, and how to obtain sufficient funds from banks in the global financial market to support the expansion. Therefore, well-developed legal and financial systems can encourage the entrepreneur to participate in the international market by providing support for the development of exporting.

Meantime, since its transformation from a centrally planned economic system to a socialist market economic system, the Chinese economy is characterised by a unique market environment where the private sector and public sector coexist. Despite economic reforms provide favourable support for private investment and grant private business preferential access to capital, technology, and markets, SOEs are still powerful and dominate the major industries and resources in China.

Allen *et al*. (2005) examine the financial system in China at the aggregate level, including both the financial markets and the banking system. They compare China's financial system with that in 49 countries. They show that the overhead cost of the banking system in China is much higher, while its profitability is the lowest, indicating that it is not an efficient system. Moreover, according to Morck *et al*. (2000) and Allen *et al*. (2005), stock prices are more synchronous in China, indicating that the stock markets are inefficient. They attribute this phenomenon to the weak protection for the investors. For example, because of poor and uncertain protection of private property rights, political events and rumours may have a significant influence on the market-wide stock prices. In addition, problems such as intercorporate income shifting would reduce firm-specific stock price variation, increasing stock return synchronicity. To

summarise, the financial system in China is influenced significantly by this powerful but insufficient banking system, in which the state-owned banks play the dominating role.[1]

As to the Chinese legal system, it is still evolving and characterised by a fragmentation of regulatory authorities. For example, as the Chinese commercial law system is an instrument to enforce the economic policy of the Chinese Communist Party (CCP), the central government chooses pilot areas (*shi dian*) and implements special rules within those areas to test the effects of a law or regulation before introducing the rules national widely. In this case, the central government may delegate authority and flexibility to local officials so that they can exercise these laws and regulations in accordance with the local circumstances, which in turn may make laws uncertain (Ho, 1994). Moreover, the legal system in China is also characterised by ambiguity in legal drafting. For instance, according to Law and Chen (2004), Chinese economic laws often draw a broad picture, without specifying the concrete and detailed rules. This situation can be attributed to the fact that the Chinese government may not have enough time to consider every aspect of the legislation due to the rapid development of the legal and economic environment; but at the same time, there may be urgent need for some regulations to be carried out in the market. The government therefore has to enact some laws or regulations hastily without containing enough details.

Allen *et al*. (2005) compare the legal system in China to those of other emerging countries, including India, Pakistan, South Africa, Argentina, Brazil, and Mexico.

[1] They are Bank of China (BOC), Industrial and Commercial Bank of China (ICBC), China Construction Bank (CCB), and Agricultural Bank of China (ABC).

They show that the corruption index in China is the worst among the seven developing countries, while its creditor and shareholder protection are only better than that of India and Mexico. This indicates that the development of China's legal system is behind that of the other major emerging countries. Furthermore, one of the most important and necessary factors to have an effective law enforcement system is that a country must have an independent and efficient judicial system with a sufficient supply of qualified legal professionals. However, according to Allen *et al*. (2005), only 20% of all lawyers in China have law degrees, and even a lower percentage of judges have formally received legal education at universities or colleges. Moreover, only four percent of the five million business enterprises in China currently have regular legal advisers. In a word, the law and legal institutions in China, as well as the investor protection systems, are significantly underdeveloped.

Given such underdeveloped external institutional environment, the extraordinary development of exporting in China is always considered as a miracle.

5.2.2 The economic and exporting development in China

The opening-up of China in the 1980s has brought momentous change to the life of its people. The sustained rapid rate of economic growth compares favourably with the experience of other transitional economies. China's sudden rise as a global trading power and its status as one of the most important countries in the world have been greeted with a curious mixture of both admiration and fear. At the end of July 2014, the population of China was approximately 1.36 billion people, ranking it the largest

country in the world (The World Factbook). In current US dollars (billion), the GDP in China has occupied the second place in the world since 2010 (See Table 5.1). If PPP is used to adjust GDPs,[1] China's economy is still the second largest following the United States, and became the largest in 2014 (See Table 5.2). Moreover, the GDP annual growth rate for the United States in 2012 was 2.30%, while the Chinese economic growth rate was 7.80% (The World Bank) (See Figure 5.1). Assuming that both countries continue to grow at the same rate separately, it will take only around 13 years before China overtakes the US to become the largest economy in the world.

[1] Using PPP-adjusted figures to measure GDP is more appropriate. For example, the exchange rate between the RMB yuan and the U.S. dollar changed from 1 U.S. dollar = 4.25 RMB yuan to 1 U.S. dollar = 8.28 RMB yuan in 1992, which introduced a significant downward bias for China's GDP figure in 1992.

Table 5.1 Top 11 Gross Domestic Product ranking from 2010 to 2014

Country	GDP in 2010		GDP in 2011		GDP in 2012		GDP in 2013		GDP in 2014	
	Rank	GDP	Rank	GDP	Rank	GDP	Rank	GDP	Rank	GDP
United States	1	14,958	1	15,534	1	16,425	1	16,427	1	17,348
China	2	5,930	2	7,322	2	8,227	2	8,939	2	10,357
Japan	3	5,495	3	5,896	3	5,960	3	5,007	3	4,602
Germany	4	3,311	4	3,631	4	3,430	4	3,593	4	3,874
France	5	2,570	5	2,785	5	2,614	5	2,739	6	2,834
United Kingdom	6	2,297	7	2,465	6	2,477	6	2,490	5	2,950
Brazil	7	2,143	6	2,475	7	2,253	7	2,190	7	2,347
Italy	8	2,059	8	2,196	9	2,014	9	2,068	8	2,148
India	9	1,711	10	1,873	10	1,842	11	1,758	9	2,051
Canada	10	1,614	11	1,779	11	1,821	10	1,825	11	1,785
Russia	11	1,525	9	1,899	8	2,030	8	2,118	10	1,861

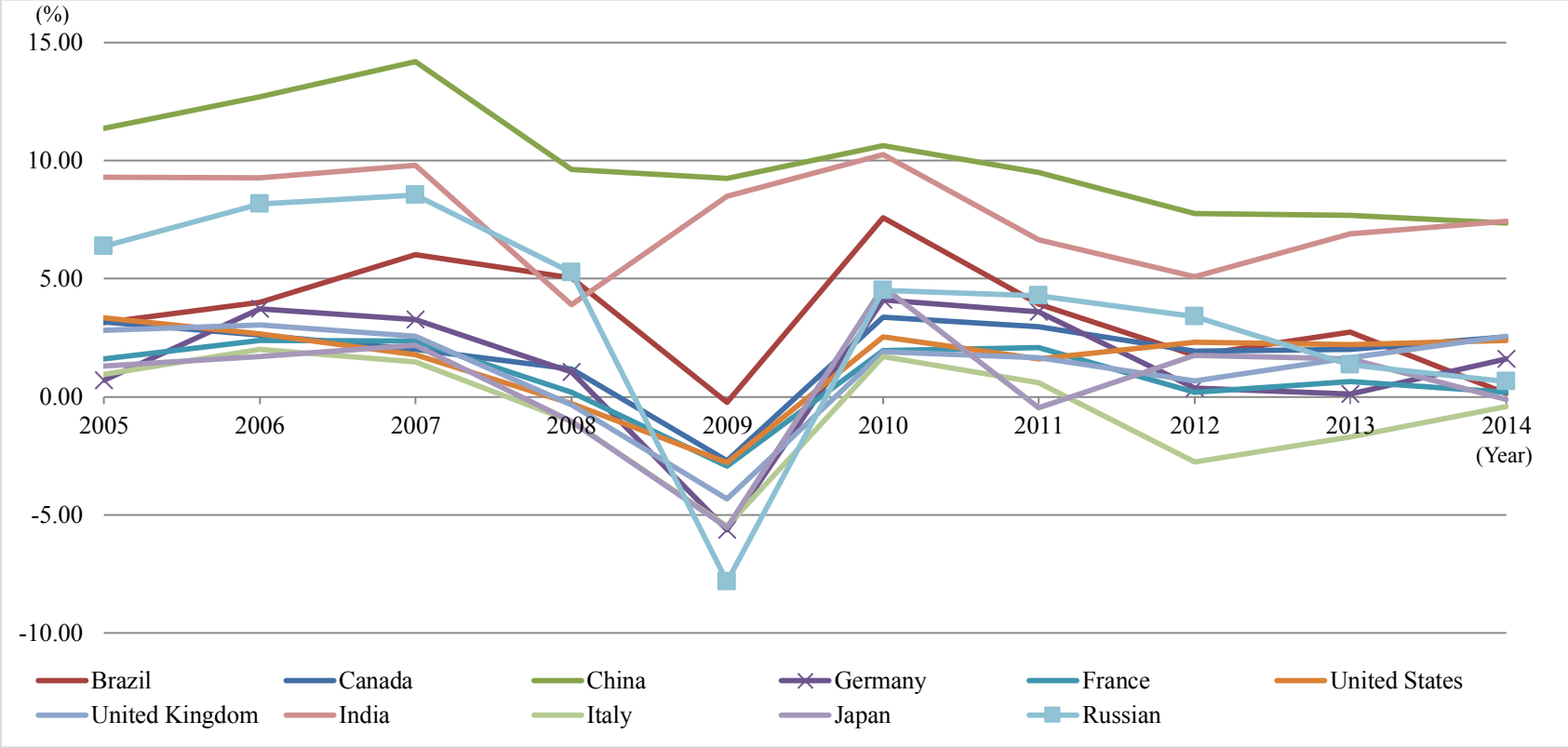
Note: The GDP is expressed in billion US dollars.
Data Source: IMF World Economic Outlook, October 2015

Table 5.2 Top 11 Gross Domestic Product based on PPP valuation ranking from 2010 to 2014

Country	GDP in 2010 using PPP		GDP in 2011 using PPP		GDP in 2012 using PPP		GDP in 2013 using PPP		GDP in 2014 using PPP	
	Rank	GDP	Rank	GDP	Rank	GDP	Rank	GDP	Rank	GDP
United States	1	14,958	1	15,534	1	16,425	1	16,427	2	17,348
China	2	10,040	2	11,189	2	12,621	2	13,374	1	18,088
Japan	3	4,351	4	4,411	4	4,576	4	4,729	4	4,767
India	4	4,141	3	4,489	3	4,716	3	4,962	3	7,411
Germany	5	2,926	5	3,085	5	3,167	5	3,227	5	3,748
Russia	6	2,222	6	2,363	6	2,486	6	2,558	6	3,577
United Kingdom	7	2,201	8	2,269	8	2,313	8	2,378	10	2,569
Brazil	8	2,167	7	2,270	7	2,330	7	2,422	7	3,276
France	9	2,114	9	2,199	9	2,238	9	2,273	9	2,591
Italy	10	1,783	10	1,825	10	1,813	11	1,805	12	2,135
Mexico	11	1,609	11	1,706	11	1,798	10	1,845	11	2,149

Data Source: IMF World Economic Outlook, October 2015
Notes: The GDP is expressed in billion US dollars. The purchasing power parity (PPP) between two countries, A and B, is the ratio of the number of units of country A's currency needed to purchase in country A the same quantity of a specific good or service as one unit of country B's currency will purchase in country B. PPPs can be expressed in the currency of either of the countries. In practice, they are usually computed among large numbers of countries and expressed in terms of a single currency, with the U.S. dollar (US$) most commonly used as the base or "numeraire" currency" (Global Purchasing Power Parities and Real Expenditures. 2005 International Comparison Program. The World Bank.).

Figure 5.1 GDP growth from 2005 to 2014 (annual %）



Data Source: The World Bank indicators

Notes: This is the annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2005 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources (The World Bank).

It may be more useful to compare China's GDP and economic growth with that of the other major emerging economies rather than the most developed countries, since China's rapid economic growth only started in 1979.[1] Table 5.3 compares China with the ten largest emerging economies in the world. In 2014, China's GDP was more than four times the size of Brazil's, which is the second largest developing economy in the world (see Table 5.3). In terms of PPP-adjusted GDP figures in 2014 (See Table 5.4), China is more than twice the size of India, the second largest emerging economy in the world. As to the annual growth rate of GDP in 2012, China has been growing faster (7.8%) than Thailand (6.5%), which has the second highest growth rate in this group (The World Bank) (See Figure 5.2). Moreover, China has the largest annual GDP per capita growth rate among the group of the emerging economies over the period of 2005 and 2014 (See Figure 5.3). With its rapid development, China is positioned to play an increasingly significant role in the world economy.

[1] Measured in current US dollars, China's GDP in 1978 was 148.18 billion US dollars, while in 1979 it reached 176.63 billion US dollars.

Table 5.3 Comparison of China and other major emerging economies from 2010 to 2014

Country	GDP in 2010		GDP in 2011		GDP in 2012		GDP in 2013		GDP in 2014	
	Rank	GDP	Rank	GDP	Rank	GDP	Rank	GDP	Rank	GDP
China	2	5,930	2	7,322	2	8,227	2	8,939	2	10,357
Brazil	7	2,143	6	2,475	7	2,253	7	2,190	7	2,347
India	9	1,711	10	1,873	10	1,842	11	1,758	9	2,051
Russia	11	1,525	9	1,899	8	2,030	8	2,118	10	1,861
Mexico	14	1,047	14	1,161	14	1,177	14	1,327	15	1,291
Indonesia	18	710	16	846	16	879	16	867	16	889
Argentina	28	368	27	445	26	475	26	485	24	543
South	29	363	29	402	29	384	33	354	33	350
Thailand	30	319	31	346	33	366	28	401	30	405
Malaysia	35	238	36	289	35	305	35	312	35	338
Pakistan	47	177	48	214	45	226	45	237	44	247

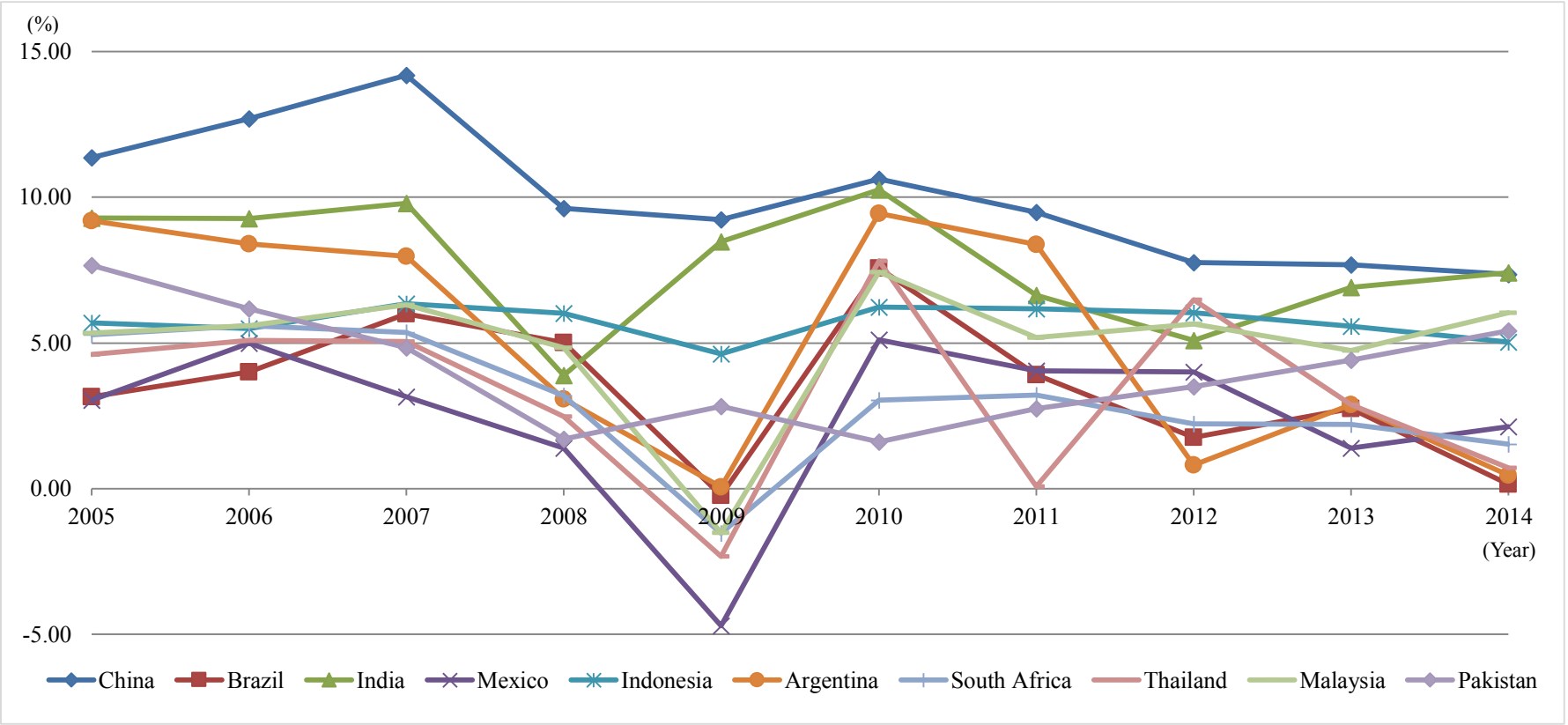
Note: The GDP is expressed in billion US dollars.
Data Source: IMF World Economic Outlook, October 2015

Table 5.4 Comparison of China and other major emerging economies based on PPP valuation from 2010 to 2014

Country	GDP in 2010 using PPP		GDP in 2011 using PPP		GDP in 2012 using PPP		GDP in 2013 using PPP		GDP in 2014 using PPP	
	Rank	GDP	Rank	GDP	Rank	GDP	Rank	GDP	Rank	GDP
China	2	10,040	2	11,189	2	12,261	2	13,374	1	18,088
India	4	4,141	3	4,489	3	4,716	3	4,962	3	7,411
Russia	6	2,222	6	2,363	6	2,486	6	2,558	6	3,577
Brazil	8	2,167	7	2,270	7	2,330	7	2,422	7	3,276
Mexico	11	1,609	11	1,706	11	1,798	10	1,845	11	2,149
Indonesia	15	1,026	15	1,114	15	1,204	15	1,285	8	2,686
Argentina	23	639	22	709	22	735	22	771	24	951
Thailand	24	584	24	595	24	645	24	674	21	1,070
South Africa	25	523	25	552	25	576	25	596	29	707
Pakistan	27	487	26	515	26	547	26	574	26	884
Malaysia	29	429	29	460	29	495	28	525	28	769

Note: The GDP is expressed in billion US dollars.
Data Source: IMF World Economic Outlook, October 2015
Notes: The purchasing power parity (PPP) between two countries, A and B, is the ratio of the number of units of country A's currency needed to purchase in country A the same quantity of a specific good or service as one unit of country B's currency will purchase in country B. PPPs can be expressed in the currency of either of the countries. In practice, they are usually computed among large numbers of countries and expressed in terms of a single currency, with the U.S. dollar (US$) most commonly used as the base or "numeraire" currency". (Global Purchasing Power Parities and Real Expenditures. 2005 International Comparison Program. The World Bank.)

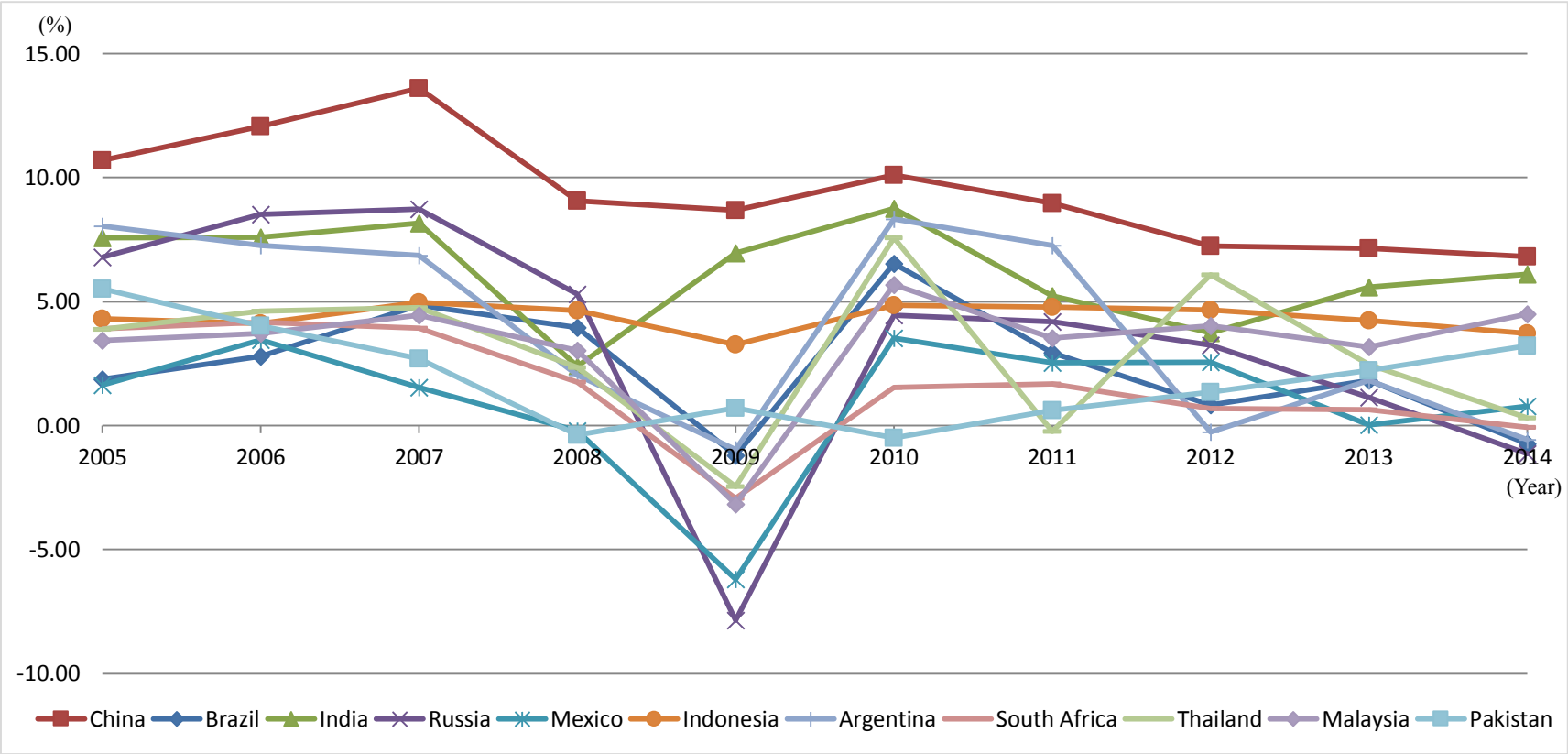
Figure 5.2 GDP growth in China and other major emerging economies from 2005 to 2014 (annual %)



Data Source: The World Bank indicators

Notes: This is the annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2005 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources (The World Bank).

Figure 5.3 GDP per capital growth in China and other major emerging economies from 2005 to 2014 (annual %)



Data Source: The World Bank indicators

Notes: This figure is the annual growth rate of GDP per capita based on constant local currency. Aggregates are based on constant 2005 U.S. dollars. GDP per capita is gross domestic product divided by midyear population. GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. Please refer to footnote 2 for details on the calculation of GDP.

In light of the miraculous development of the Chinese economy in the past decades, understanding the exporting behaviour of Chinese firms is important. Since the economic reform initiated in the 1970s, China has not only experienced a dramatic economic growth, but also actively engaged in international markets and encouraged exports by establishing the Special Economic Zones[1] and the duty drawback system.[2]

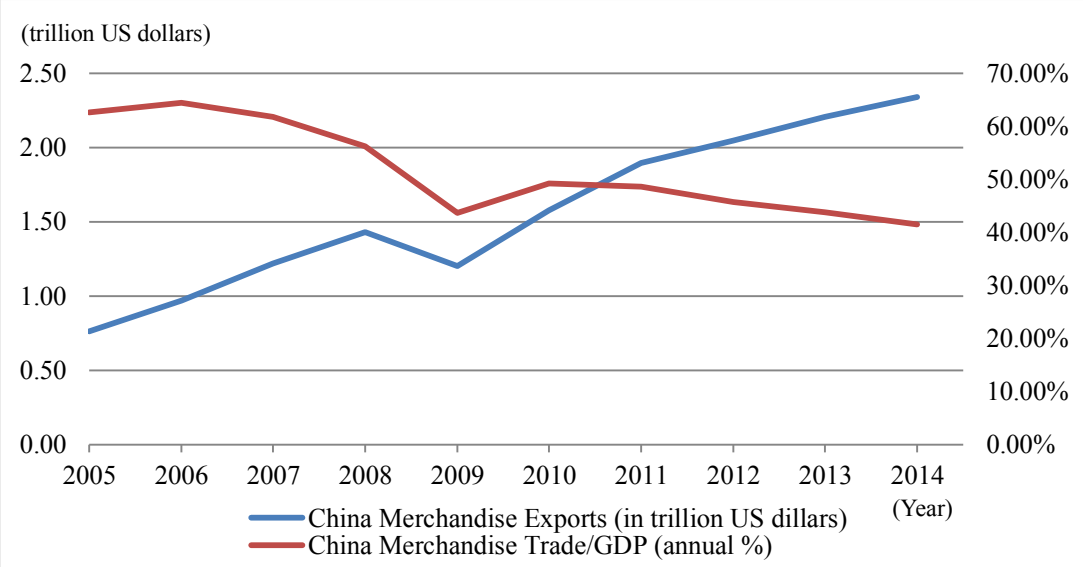
During the earlier years of the establishment of the new China since 1949, the export value was only around 0.55 billion US dollars (WTO databases). Through the development in the next two decades, the export value amounted to 2.31 billion US dollars in 1970, but only taking up 2.61% of the total GDP (See Table 5.5). Along with the deepening of China's economic reform and the opening-up policy in the next thirty years, the total value of exports experienced a steady and rapid growth reaching 266.10 billion US dollars in 2001, and the ratio of export to GDP increased to 22.60%.

[1] As a part of the economic reform, the Special Economic Zones were considered as bridges linking home and abroad. On the one hand, these regions enjoy considerable autonomy, preferential tax treatment, and high levels of resources. They are the front line of the opening-up policy and closely connected with the international markets, having easier access to market information, foreign capital, modern technology, and management experience. These zones can absorb and utilise foreign capital and introduce developed technology and management experience for the construction of the socialist modernisation. On the other hand, through these zones, firms in the inland areas have more opportunities to develop economical and technological cooperation with the outside world. Currently, China has six Special Economic Zones, including Shenzhen in Guangdong Province (authorised in May 1980), Zhuhai in Guangdong Province (authorised in August 1980), Xiamen in Fujian Province (authorised in October 1980), Shantou in Guangdong Province (authorised in November 1984), Hainan (authorised in April 1988), and Kashi in Xinjiang Province (authorised in May 2010).

[2] Duty drawback schemes, which typically involve a combination of import duty drawbacks and value-added tax (VAT) rebates and exemptions on imports that are used for the production of exports in China. For imported inputs, the VAT levy is in addition to the import duty. Finished final goods are also subject to VAT. However, previously paid VAT on its inputs is deducted from the VAT payment on its final goods. When the final goods are exported, the previously paid VAT on imported inputs is rebated to the export processor (see China's Ministry of Finance: www.mof.gov.cn and Ministry of Commerce: www.mofcom.gov.cn). Therefore, duty drawbacks and VAT rebates respectively reduce the tariffs and domestic taxes on imported inputs for export processing. For example, a 17% tariff was imposed on the imports of electronic equipment and an additional 17% domestic tax was levied on its value-added in production in 1998. Both taxes are rebated when the electronic equipment is used for export processing. Moreover, the rebate rates were increased and many products enjoyed zero value-added tax rates in 1999 (see China's Ministry of Finance: www.mof.gov.cn). These policies provide great incentives for firms to sell products abroad as they discriminate against imported inputs used in goods sold in domestic markets.

The WTO membership provided more opportunities for China to participate in the global market. Since China has become a member of the WTO, more enterprises engaged in exporting activities. Especially in recent years, a growing number of firms all around the world have looked beyond their traditional domestic markets, and focused on high-growth export markets. The merchandise exports (measured in current US dollars) have enlarged 207.47% from 0.76 trillion to 2.34 trillion between 2005 and 2014, except for a decline in 2009 due to the global financial crisis (See Figure 5.4). Figure 5.4 also shows that the contribution of the total value of merchandise exports to the GDP remained above 40% over the period 2005-2014. Specifically, the ratio reached 64.49% in 2006, indicating that exporting has become one of the most important and fastest growing economic activities in economic development.

Figure 5.4 Merchandise exports (trillion US dollars) and merchandise trade to GDP ratio (annual %) from 2005 to 2014



Source: World Development Indicators, the World Bank. International Trade Statistics 2001-2014, the World Trade Organization.
Notes: "Merchandise exports show the F.O.B. (free on board) value of goods provided to the rest of the world valued in current U.S. dollars." "Merchandise trade as a share of GDP is the sum of merchandise exports and imports divided by the value of GDP, all in current U.S. dollars." (The World Bank, available at http://data.worldbank.org/indicator)

Table 5.5 Export and export to GDP ratio in China from 1970 to 2014

Year	Value (Billion US dollars)	Export to GDP (Percentage)
1970	2.31	2.61
1975	7.69	4.59
1980	18.10	10.65
1985	27.35	9.21
1990	62.09	16.07
1991	71.91	17.37
1992	84.94	18.65
1993	91.74	19.65
1994	121.01	21.27
1995	148.78	20.23
1996	151.05	20.05
1997	182.79	21.75
1998	183.71	20.35
1999	194.93	20.17
2000	249.20	23.33
2001	266.10	22.60
2002	325.60	25.13
2003	438.23	29.56
2004	593.33	33.95
2005	761.95	37.08
2006	968.98	39.13
2007	1,220.46	38.41
2008	1,430.69	34.98
2009	1,201.61	26.71
2010	1,577.75	29.40
2011	1,898.38	28.54
2012	2,048.71	27.33
2013	2,213.30	23.32
2014	2,342.54	22.61

Data Source: The WTO databases and the World Factbook

5.3 Literature review

We hereby survey the literature on the determinants of firms' exporting decisions, the relationship between firm performance and political connections, and the relationship between political connections and firms' exports.

5.3.1 Determinants of firms' exporting behaviour

There are a growing number of empirical studies on the determinants of firms' exporting decisions. The existing literature focuses on the four aspects including the sunk entry costs, the relationship between firms' characteristics and exporting behaviour, the connection between financial factors and exporting behaviour, and the impact of innovation on firms' exporting activities.

5.3.1.1 The sunk entry costs

Before starting exporting, new potential exporters must gather information from foreign markets, decide whether or not exporting is feasible and potentially profitable, and identify the target market(s). Once exporting decisions are made, a firm has to learn the foreign regulations and new bureaucratic procedures, adapt their products and packages to foreign market standards and tastes, develop new distribution channels and export department, comply with all the shipping regulations specified by the foreign customs agency, and face transportation and insurance costs and tariffs.

Das *et al*. (2007) calculate the sunk costs participating in foreign markets in currency

units for Colombian manufacturing firms and find that in 1999 US dollars, the sunk costs of entering exporting market range from $730,000 to $1.6 million based on firm size. Kasahara and Lapham (2013) estimate the magnitude of the sunk costs of exporting for Chilean manufacturing firms and find that the sunk costs of exporting are $363,000 1990 on average for wood products to $998,000 1990 for food products.

A growing literature studies the hysteresis in the exporting market due to the sunk entry costs. Roberts and Tybout (1997) test a sample of 650 Columbian firms and find that among firms that did not export in year *t*, more than 85 percent of them did not export in year *t*+1. Similarly, for firms that initially export, the proportion of manufacturing firms that remain in the export market from one year to the next is between 83% and 91% from 1983 to 1989. This indicates that there is substantial persistence in firm-level patterns of entry into the export market. More specifically, participation in the previous year can increase the probability of exporting in the current years by as much as 0.63 percent, suggesting that export history affects firms' exporting decision-making due to the existence of sunk costs. Furthermore, the authors demonstrate that the re-entry costs for firms that have departed from the foreign market for two years are not significantly different from the costs for new exporters, suggesting that the start-up costs cannot be avoided.

Similar findings have been found in other countries. Bernard and Wagner (2001) find substantial sunk costs of 6,400 Germany firms. Bugamelli and Infante (2003) show that being a current exporter increases the probability of exporting in the next year by 70% larger than that of non-exporters in Italy. Significant sunk entry costs have also been observed in the United States by Bernard and Jensen (2004), in the United

Kingdom by Greenaway and Kneller (2004), in Ireland by Lawless (2009), and in Spain by Campa (2004).

5.3.1.2 Firm characteristics and exporting behaviour

It appears that good firms become exporters. However, some researchers may argue that firms become good because they are exporters and the substantial differences between exporters and non-exporters do not indicate any direction of causality. In this case, the direction of causality between firm characteristics and export behaviour is vague, i.e. it is not clear whether good firms become exporters or exporters become good firms. In this case, apart from the sunk entry costs, a number of empirical works have estimated the relationship between firms' characteristics and exporting activities from the perspective of firm size, productivity, foreign ownership, age, location, and labour costs and industries.

A. Firm size

A large numbers of international business studies examine the relationship between firm size and export performance from a theoretical perspective. It is pointed out that the size of the firm can be used as a substitute indicator of resource availability (Calof, 1994; Katsikeas *et al*., 1996; Prasad *et al*., 2001). These resources can influence the firm's decision on marketing strategy and performance (Dhanaraj and Beamish, 2003). Katsikeas *et al*. (1996, p.56) maintain that "there is a consensus in the international business literature that larger companies possess more financial and human resources as well as production capacity, attain higher levels of economies of scale, and tend to

perceive lower levels of risk about overseas markets and operations". Bonaccorsi (1992) states that these size-related properties can facilitate the exporting activity.

Some studies look at the relationship between firms' size and exporting by employing the empirical analysis. By using firm-level data from the Census Bureau's Annual Survey of Manufactures (ASM) over the period 1976-1987, Bernard and Jensen (1995) show that compared with non-exporters, exporters in the US manufacturing industry perform better. The authors find that the difference in size between exporters and non-exporters is remarkable. Exporters are substantially larger than non-exporters. On average, exporters are more than four times larger than non-exporters regarding the total employment and more than six times larger in term of the value of shipments.

Similar results have been found by other scholars. Roberts and Tybout (1997) use annual firm-level data of Colombian manufacturing plants from 1981 to 1989 and show that the increase in firm size, measured by the firm's capital stock, improves the propensity of exporting. Aitken *et al*. (1997) use annual data on 2,104 Mexican manufacturing firms over the period 1986-1990 and find that firms' size is positively associated with the probability of exporting. In a given industry, larger firms generally produce more compared with smaller firms. Therefore, the fixed entry costs for entering international markets can be spread over more production for larger firms. In this case, the costs of foreign distribution per unit decline with the increase of the firm's size.

Bernard and Jensen (1999) use the US firms' data from the Longitudinal Research Database (LRD) of the Bureau of the Census, including all the manufacturing firms

in both the Census of Manufactures (CM) from 1987 to 1992 and the ASM for inter-census years from 1984 to 1992. They test the relationship between the export status of the firm today and the subsequent performance, finding that from 1984 to 1987, firm size grew substantially faster for firms that became exporters in 1988 when compared with the non-exporters. It is thus suggested that being a good firm increases the probability of exporting.

Some studies of the determinants of exporting behaviour have been made in China. For instance, using data from The Data of the Third National Industrial Census of the People's Republic of China (DTNICPRC) conducted by the China State Statistic Bureau (SSB) (now called National Bureau of Statistics of China (NBS)) in 1995, Liu and Shu (2003) explore the relationship between firm size and exporting behaviour from the perspective of sunk costs and find that larger firms are more capable of bearing sunk costs, and are therefore more likely to export. Similar results have been found by Lu *et al*. (2008), who use a sample of 779 manufacturing firms listed on Chinese stock markets between 2002 and 2005, and Xu *et al*. (2011), who use a larger dataset drawn from the China Industrial Firms Database from 2001 to 2007.

These studies find that compared with domestic sales, exporting involves extra costs, such as collecting market information, establishing overseas sales promotion campaigns, adapting products to foreign markets, transporting, and communicating. Moreover, due to the uncertainties in international markets and the different economic environments in trading partner countries, exporting firms face more risks than in the domestic market. Such costs and problems can be extremely severe for small firms. By contrast, larger firms are more capable of expanding abroad because they have

more resources to enter the foreign market.

To summarise the existing literature, the fact that small and medium-sized firms export less than large firms can be attributed to three factors. Firstly, large firms have the cost advantage in export activities, in terms of the start-up costs and trading costs (Wagner, 1995, 2001). Only large firms can afford the sunk entry costs. In addition, because of the scale economy, large firms can reduce trading costs through bulk shipping and extensive overseas network. Secondly, large firms export more than small and medium-sized firms through the effect of productivity. Large firms are considered as firms with higher productivity, which is one of the driving forces of exporting (Roberts and Tybout, 1997; Bernard and Jensen, 1995; Bernard *et al*., 2007; Baldwin and Gu, 2003; Bernard *et al*., 2003; Melitz, 2003; Greenaway and Kneller, 2007). Finally, large firms face less financial constraints in financing exporting activities because the information asymmetry between lenders and borrowers of these firms is less severe (Amiti and Weinstein, 2011; Manova, 2013).

However, some scholars find there is no significant relationship between firm size and export performance (Contractor *et al*., 2005; Moen, 1999; Wolff and Pett, 2000). Therefore, the relationship between firm size and export performance is still controversial (Brouthers and Nakos, 2005; Kaynak and Kuan, 1993). These mixed results may be explained by the fact that various studies have used different samples, including firms from many different industrial sectors, or by the fact that they used different measures to evaluate firm size. Additionally, small, medium and large firms are defined differently from one country to another, indicating that the connections between firm size and export performance may be different depending on the criterion

and measurement scales used (Contractor *et al*., 2005; Baldauf *et al*., 2000; Hoang, 1998).

B. Productivity

Good firms can be interpreted as firms with a high level of productivity. Exporters have been found to be more capital intensive, more innovative, and more productive than non-exporters (Tybout, 2001; Baldwin and Hanel, 2003). Bernard and Jensen (1995) document that labour productivity, whether measured by shipments or value-added per employee, is around a third greater for exporters than non-exporters in both large and small firms.

On the other hand, participation in export markets may improve production efficiency. The current literature provides two mechanisms to explain the positive correlation between exporting and productivity.

The first mechanism argues that exporting improves productivity. That is, the improvement in productivity can be attributed to the fact that exporters have to increase their efficiency because they are forced by more competitive markets. Some scholars argue that exporters gain access to new knowledge, technical expertise from their international contracts or global buyers in the exporting market, and hence learn both new product designs and production methods, to which their domestic counterparts do not have access. This "learning and developing by exporting" effect may be particularly relevant to the developing countries in East Asia (for example, Evenson and Westphal, 1995; Grossman and Helpman, 1991; Rhee *et al*., 1984; World

Bank, 1993).

The second mechanism states a reverse causality. That is, the productivity difference between exporters and non-exporters may reflect the self-selection hypothesis. That is, only the more productive firms can self-select and survive in the highly competitive international markets. Considering that the sunk costs are higher in the foreign markets than in the domestic markets, only firms with high efficiency will find it profitable to enter the export market. Furthermore, exporters who experience a reduced productivity will be forced to exit from the international market. According to Melitz (2003), the "New-New Trade Theory" states that the firms' characteristics such as the productivity, determine the exporting participation in the international market. Beyond a certain amount of productivity, firms can profitably export as the value of their sales on the foreign markets exceeds the level of fixed costs.

These two mechanisms have been tested in different countries. For instance, Clerides *et al*. (1998) make use of microdata of manufacturing firms in Columbia, Mexico, and Morocco; Bernard and Jensen (1995, 2004) and Bernard *et al*. (2007) look at the US data; Baldwin and Gu (2003) examine data for Canadian manufacturing firms; Delgado *et al*. (2002) explore the data of Spanish firms; Bernard and Wagner (2001) look at the German firms; Mayer and Ottaviano (2007) estimate several European countries, including Belgium, France, Germany, Hungary, Italy, Norway, and the UK; Hallward-Driemeier *et al*.(2002) focus on the East Asia countries, including Indonesia, Korea, Malaysia, Philippine, and Thailand; Aw *et al*. (2000) use manufacturing data from the Republic of Korea and Taiwan (China); and Xu *et al*. (2011) focus on the Chinese firms. All of these authors find that self-selection in export markets is

important. They document that an increase in labour productivity will improve the percentage of firms' exporting dramatically, confirming that more productive firms are more likely to enter foreign markets. Moreover, this effect is much stronger for foreign-owned firms (including foreign firms with funds from Hong Kong, Macao and Taiwan) than for domestically-controlled firms, and more sizeable for younger enterprises than for older ones. However, the productivity growth is slower for exporters than non-exporters, indicating that, although exporting provides expanded market opportunities and more potential jobs, it does not show evidence of boosting firm productivity (Bernard and Jensen, 2004).

C. Foreign ownership

A few studies have estimated the relationship between foreign ownership and the probability of exporting. For example, Aitken *et al*. (1997) find that firms with foreign ownership are more likely to export than domestic firms do in Mexico. They suggest that foreign firms have the natural advantages in gathering information regarding the foreign markets and technology. These firms can also improve the export prospects for domestic local firms through directly or indirectly sharing information and providing distribution services for domestic firms to distribute their products. Bernard and Jensen (2004) use all firms in the ASM from 1984 to 1992 and find that the ownership of a US multinational firm increases the probability of exporting.

Xu *et al*. (2011) also find similar results in Chinese firms. They divide firms by ownership into three categories, including domestic firms, foreign-owned firms, and firms with funds from Hong Kong, Macao and Taiwan. Foreign-funded firms and

firms with funds from Hong Kong, Macao and Taiwan are more likely to export than domestic firms. More specifically, in both the foreign-funded firms and firms with funds from Hong Kong, Macao and Taiwan, the percentage of exporting firms is about 70%, while in domestic firms, the number stays around 25%.

Raff and Wagner (2014) examined around 7,000 manufacturing firms in German in 2009 and find that foreign firms export more goods to more countries. Based on 14,585 firms from 30 countries and 14 industries collected by the World Bank between 2002 and 2006, Boddin *et al*. (2015) show a statistically significant and positive relationship between foreign ownership and the propensity of exporting. Specifically, they find that foreign-owned firms are 17.60% more likely to engage in exporting. This effect is more obvious for low-income countries: foreign ownership increases the propensity of exporting by 25%. The authors point out that firms in less developed countries face more severe constraints, such as the technology, marketing know-how, and financing opportunities, which can be alleviated through foreign ownership.

Raff and Wagner (2014) also document several reasons for such effect. Firstly, foreign-owned firms can benefit from the established international networks to connect customers in more countries and with more goods. These firms enjoy an integrated international supply chain and support from a multinational group, which in turn can lower transaction costs. Secondly, foreign-owned firms can obtain financial support from their parent companies to reduce credit constraints. Thirdly, firms with foreign ownership are prone to invest more in R&D and therefore are more innovative. The decision on the participation in the export market positively relates to both innovative products and improved production processes.

D. Firm age

Several researchers have looked at the linkage between firm age and exporting decisions from an empirical perspective. Roberts and Tybout (1997) find that older firms are more likely to export because of the cost differences among producers. The older the firms are, the more efficient and competitive they are in world markets because of cost advantages that cannot be copied by their competitors. By contrast, young firms would observe smaller returns to enter the export market because they are less likely to survive. Becchetti and Rossi (2000) use data on Italian firms and conclude that firm age, which is defined as the firm's foundation year, has a positive relationship with export intensity and export participation. This finding is consistent with the studies by Roberts and Tybout (1997). Moreover, using data from the Encuesta Sobre Estrategias Empresariales (ESEE) of the Spanish Ministry of Industry and Energy (MINER) and the Fundacion Empresa Publica (FUNEP, Madrid) over the period 1990-1998, Barrios *et al*. (2003) also find that older firms are more likely to be efficient and to have higher exporting activity than other firms.

E. Location

The location is also a determinant of exporting behaviour. According to Roberts and Tybout (1997), firms located in less mountainous areas and closer to the coast are more likely to export. A similar result has been found by Xu *et al*. (2011) in China. That is, firms in the eastern region of China are more likely to export and to export more than firms in central or western regions. More specifically, in the eastern provinces, more than 50% of firms in Guangdong Province choose to export, while

the largest proportion of firms that export in the central region is around 24% (in Henan Province) and that proportion in the western region is about 19% (in Guangxi Province).

F. Labour costs and industries

Aitken *et al*. (1997) point out that export production is relatively skill-intensive and high wages can reflect high levels of individual-specific human capital. They find that increases in the average wage in a given region are related to a higher probability of exporting. Similarly, Bernard and Jensen (2004) consider high average wages and the white collar employment share as indicators of labour quality and find that average wages and white collar employment shares are positively related to the probability of exporting.

However, Liu and Shu (2003) point out that a negative relationship exists between labour costs and exports in China. Labour costs can be defined as the ratio of total wages to the total number of employees. According to the traditional factor endowment theory, an industry should import goods which are produced using relatively scarce resources of the home country, while export goods are using the relatively abundant resources of the country. China is well known to have wage rates which are relatively low compared with other countries. Therefore, its manufacturing industries have an international competitiveness in labour costs. In this case, the lower the labour costs are, the more a country exports. According to the The Data of the Third National Industrial Census of the People's Republic of China (DTNICPRC), conducted by the SSB in 1995, the leading exporting industries are cotton textiles,

clothing manufacturing, leather products, daily electronic apparatus and electronic components, which all produce labour intensive products. The authors further demonstrate that a 1% decrease in labour costs would increase exports by 1.88% in a sector. Xu *et al*. (2011) also indicate that Chinese firms operating in labour-intensive sectors and high-tech sectors are more likely to export.

5.3.1.3 Financial factors and exporting behaviour

According to Modigliani and Miller (1958), with perfect capital and credit markets, the financing decisions of a firm are irrelevant to its investment behaviour. Therefore, if the Modigliani-Miller assumption is satisfied, firms' investment decisions are motivated by the maximisation of shareholders' benefits, but are independent of the financial factors, such as internal liquidity, leverage, or dividend payments. However, in the real world, which is characterised by imperfect markets, financing constraints will affect firms' investment decisions. Substantial research has estimated the relationship between financial constraints and firm investment, employment, and R&D decisions. A high sensitivity of investment (or other firm activities) to cash flow is considered as an indicator of financial constraints. In this case, financially constrained firms only invest when they have sufficient internal funds, and will invest more when they have higher cash flow (for example, Degryse and Jong, 2006; Carpenter and Petersen, 2002; Hubbard *et al*., 1993; Fazzari *et al*., 1988; Whited, 1992).

A number of researchers have examined the models of fixed investment, inventory, and R&D investment as the functions of financial factors in countries across the world,

such as the United Kingdom (Blundell *et al*., 1992; Bond and Meghir, 1994; Guariglia, 1999, 2000; Bond *et al*., 2003; Benito, 2005) and some developing countries (for instance, Jaramillo *et al*., 1996; Harrison and McMillan, 2003).

By looking at manufacturing firms in the US over the period 1969-1984, Fazzari *et al*. (1988) point out that because of asymmetric information and capital market imperfections, a firm's opportunity cost of external finance is substantially higher than its costs of internal funds. Therefore, when compared with the non-financially constrained firms, the investment of constrained firms is more sensitive to fluctuations in their cash flow. In addition, liquidity has a greater effect on investment among the constrained firms than the non-constrained firms.

Additionally, Whited (1992) focuses on US manufacturing firms from 1972 to 1986 and concludes that asymmetric information in debt markets can affect financially constrained firms' ability to obtain outside finance, and therefore, the opportunity cost of investment is higher. According to Kashyap *et al*. (1994) and Carpenter *et al*. (1994, 1998), financial factors have influence on inventory movements. More specifically, the inventory investment of firms without access to public debt markets is significantly liquidity-constrained.

Recently, several scholars have considered exporting as a type of investment. According to Melitz (2003), there is a large pool of prospective entrants into the export markets. Before entering into the foreign market, all firms are identical. Compared with the economic activities in the domestic market, entering into the exporting markets involves huge sunk costs, which can be considered as a form of investment.

That is, in order to enter into the global markets, firms must firstly make an initial investment. Furthermore, most entry costs must be paid up in advance, thus only firms with abundant liquidity are able to afford the costs. These features make the financial markets crucial to the firms' exporting activities.

A. Does financial health improve exporting?

This is a common argument that exporting relates to the additional upfront expenditures that make production for foreign markets more costly than manufacturing in the home country. Sunk and fixed costs of international trade include understanding the potential profitability in the global exporting market, making market-specific investments in capacity, product customisation and regulatory compliance, and establishing and maintaining foreign distribution networks. Variable trade costs involve shipping, duties, and freight insurance. Compared with domestic operations, most of these expenses have to be paid off before export revenues are realised. Moreover, international shipping and delivery usually take one to three months to complete, when compared with domestic orders (Djankov *et al*., 2010). In these circumstances, the liquidity needs relating to set-up costs are especially large for exporting.

Kletzer and Bardhan (1987) extend the Heckscher-Ohlin trade model by introducing a financial sector and forecast that the export of goods, that depend more on external financing, will have a comparative advantage in a country with a well-developed financial sector. Chaney (2013) builds a model of international trade with liquidity constraints and shows that only those firms that have sufficient liquidity are able to

export, because firms must pay entry costs in order to access foreign markets. Firms with liquidity constraints tend to be non-exporters. In addition, a set of firms which can profitably export may be prevented from doing so if they lack sufficient liquidity to finance these entry costs. Moreover, whether a firm is financially constrained or not can impact on the firm's decision to sell abroad and the volume of its foreign sales. In line with these studies, firms' export decisions are likely to be affected by financial variables.

Berman and Héricourt (2010) analyse a sample of 5,000 firms in 9 developing and emerging economies and state that the correlation between the productivity and the selection of firms in the export market is imperfect because of the existence of financial constraints. As standard international trade models assume that the financial markets are perfect, if the firm does not have enough liquidity *ex-ante*, the firm can always borrow enough funds to pay the fixed costs and enter the export market if it is profitable for them to do so. However, under the imperfect financial markets, only firms that have sufficient liquidity or access to external finance will be able to enter the exporting market. Their results suggest that better financial health promotes the entry into the export market, but has no impact on the volume of foreign sales. More specifically, a 10% increase in the ratio of total debt over total assets and the ratio of cash flow over total assets can increase the probability of exporting respectively between 0.5% and 1%. Similar results are found by Muûls (2008), who argue that Belgian firms with more credit constraints are less likely to export, and if they do export, they sell fewer types of products to fewer destinations overseas.

Manova (2013) focuses on 107 countries across 27 industrial sectors over the period

1985-1995, and estimates the relationship between financial market imperfections and firms' international trade. Her results suggest that companies that face binding constraints in the financing of their fixed export costs may not be able to serve a foreign market. Similarly, binding constraints in the financing of their variable export costs may affect the size of foreign shipments. In this case, strong financial institutions lead to firms' exporting in more destinations, to an increase in the variety of the export products, and to a rise in aggregate trade volumes. Between 1985 and 1995, financial development alone explains 22% of the observed growth in trade. Moreover, as exporters rely more on external financing than domestic producers to mitigate the additional costs to trade, greater transaction risks, and the higher working capital requirements because of the longer shipping times, the financial frictions reduce foreign exports disproportionately.

By analysing a dataset which matches exporting firms with the main banks that provide them trade finance in Japan over the period 1990-2010, Amiti and Weinstein (2011) show that exports declined much faster than domestic sales during financial crises. They attribute this phenomenon to the fact that the health of financial institutions is a crucial determinant to firm-level exports during financial crises. Specifically, a decline in bank health destroys firms' exports 7 times more than their domestic sales. In particular, the greater the credit default risks are and the longer time lags the international trade has, the more dependence on financing are required by the exporters. The authors also demonstrate that the drops in exports due to financial factors made up at least 20% of the total drop in exports in financial crises. As the evidence suggests that exporters in many countries highly depend on trade finance, these results indicate that financial shocks are more likely to play important roles on

the decrease of export in other countries.

Focusing on 170,000 firm-year observations from an unbalanced panel of over 25,000 French manufacturing enterprises over the period 1993-2005, Bellone *et al*. (2010) use the liquidity ratio and the leverage ratio to measure financial constraints and analyse the link between financial factors and firm exporting behaviour. They point out that while liquidity is generally regarded as a sign of financial health, firms may be forced to withhold cash because they are unable to access external funds. The authors find strong evidence that firms with less credit-constraints are more likely to self-select in the exporting markets. Similar results are reported by Minetti and Zhu (2011), who use survey data on firms' credit rationing in Italy at the beginning of 2001 and conclude that firms with a higher liquidity ratio are more likely to export, as a high liquidity ratio can be interpreted as a sign of good financial health.

Some studies have been conducted in the context of China. Using detailed customs data on China international trade transactions in 2005 from the Chinese Customs Office, Manova *et al*. (2011) demonstrate that credit frictions hinder firms' trade flows and also affect the number of export destinations. Furthermore, they point out that foreign firms can overcome such frictions by obtaining additional funding from their parent companies. Using data from the Annual Report of Industrial Enterprise Statistics compiled by the SSB from 1999 to 2002, Du and Girma (2007) indicate that access to formal financial channels (i.e. bank loans) increases the export intensity of private firms in China. Li and Yu (2009) use firm-level data made up of more than 160,000 manufacturing firms per year for the period 2000-2007. They measure credit constraints using a firm's interest expenditure (cost of servicing debt), which is a

proxy for the firm's capability to obtain external financing. Therefore, firms with larger interest expenditures are assumed to have less severe credit constraints. Their result indicates that a positive linkage exists between interest expenditure and firm's export. In other words, firms with easier access to external finance or the alternative sources of funds face less severe credit constraints, and consequently, such firms are more likely to export and are able to export more.

B. Does exporting enhance financial health?

Some studies indicate that the direction of causality goes from exporting to better financial health, i.e. exporting exerts a positive effect on firms' financial health. Campa and Shaver (2002) study the Spanish manufacturing sector from 1990 to 1998. They find that firms are more financially constrained when they do not participate in the global market. Therefore, they conclude that exporting can help firms reduce their financial constraints.

Greenaway *et al*. (2007) use a panel dataset of 9,292 UK manufacturing firms collected by the Bureau Van Dijk in the Financial Analysis Made Easy (FAME) database from 1993 to 2003 and explore the relationship between firms' financial health and their export market engagement decisions. Their results suggest that exporters enjoy better financial health than non-exporters. However, this result seems to be mainly attributed to the fact that financial health is improved by participating in exporting activities, indicating that financial health is not a determinant to the entry into the exporting markets, but rather an outcome of entry. In other words, the authors find no evidence that less constrained firms are more likely to initiate export activities,

but they find strong evidence that the participation in export markets improves firms' financial health. In particular, they find little difference in leverage ratios and liquidity ratios between the new exporters and non-exporters, suggesting that firms that just started to export are not considerably different from non-exporters in terms of financial health. On the other hand, when comparing the continuous exporters and the new exporters, they find that the former enjoy a better average financial health over the sample period.

Bridges and Guariglia (2008) focus on 61,496 UK firms over the period 1997 to 2002, and study the impact of financial factors on firm survival, differentiating firms into globally engaged firms and purely domestic firms. More specifically, they estimate a model of the likelihood of firm failure with financial variables, which are interacted with dummies indicating whether firms are globally engaged or purely domestic. They consider two dimensions of global engagement: exporting and being foreign-owned. Their results show that higher leverage and lower collateral cause higher failure probabilities only among the purely domestic firms. Therefore, they conclude that international activities affect firms' survival probabilities by shielding firms from financial constraints.

5.3.1.4 Innovation, technology spillovers and exporting behaviour

The current literature recognises the importance of innovation on the probability of exporting, especially in developing countries. According to Lall (1992) and Westphal (2002), innovation at the firm-level in developing countries is considered as the acquisition, application, modification, improvement, and creation of technology.

More specifically, innovation refers to the acquisition of technological capabilities. That is, the skills and information needed to use the imported technologies efficiently. However, firms in developing countries lack domestic capabilities and depend on a series of mechanisms to import technology from foreign investors. For example, multinational corporations (MNCs) can transfer technology to firms in developing countries by setting up industries which can provide advanced technology and educated and trained labour. Foreign buyers can also transfer the product technology in the form of market feedback regarding the product blueprints, models, patterns, design, styling, and packaging.

A few studies have tested the relationship between innovation, learning, and exporting in developing countries, suggesting that the technology factor is a crucial determinant for manufacturing exports in less developed countries. For example, Bhaduri and Ray (2004) use 1994-1995 cross-sectional data for two R&D intensive industries in India, i.e. pharmaceutical industry and electronics/electrical industry. They categorise technological capability into know-how- and know-why-oriented. The former group focuses on production engineering and the reduction of the marginal costs by improving production efficiency, while the latter group aims at improving new processes and designs. The authors find that the know-how-oriented capabilities enhance exports of both sectors, while the know-why-oriented capabilities are particularly important for pharmaceutical exports only.

Similar results have been found in electronic exports in Malaysia and Thailand by Rasiah (2003), in garment exports in Mauritius by Wignaraja (2002), and in clothing firms in Sri Lanka by Wignaraja (2008a, 2008b). These studies reveal that technology

capabilities and skills drive exports because the improvement of technological capabilities demands experience, skills development and information collecting.

The relationship between innovation and exporting has also been analysed in the developed countries, such as the UK. Roper and Love (2002) use firm-level data of around 1,700 UK manufacturing firms and 1,300 German firms over the period 1991-1994, finding that product innovation has a strong effect on the probability (i.e. the likelihood of becoming an exporter) and intensity (i.e. the proportion of a firm's sales, which are exported) of exporting in both countries. Wakelin (1998) examines a microeconomic dataset of 320 UK firms' propensity to export over the period 1988-1992, which covers half of the total UK manufacturing output over the five years. She examines the role of innovation in determining exporting activities in both innovating and non-innovating firms. Her results show sizeable differences in the innovating and non-innovating firms both in terms of the probability of exporting and the level of exports, indicating that the capacity to innovate fundamentally changes the exporting behaviours of firms.

Some scholars focus on the Chinese exporting market, and find a similar positive link between technology and exporting performance. Guan and Ma (2003) analyse survey data from 213 industrial firms in China and explore the relationship between innovation capability and export performance by adopting a resource-based perspective at the firm-level. They propose seven innovation capability dimensions, namely learning, research and development (R&D), manufacturing, marketing, organisational, resource allocating, and strategy planning. Furthermore, they divide these seven dimensions into two groups, namely the core innovation assets and the

supplementary innovation assets. The core innovation assets are defined as the ability of a firm to translate innovation concepts through R&D, manufacturing and marketing processes, while the supplementary innovation assets are defined as the ability of a firm to support and harmonise core innovation capability to play the role effectively. This includes the other four dimensions (i.e. learning, organisational, resource, and strategic). Their results show that, except for manufacturing capability, export growth is significantly and positively related to the other six innovation capability dimensions. More specifically, their findings suggest that the core innovation assets alone cannot lead to significant export growth. On the other hand, the supplementary innovation assets not only provide a possibility for core innovation assets to form and operate effectively, but also become dominant in determining the export performance of Chinese firms by enabling these firms to obtain sustainable international competitiveness.

Using a dataset of Chinese firms drawn from the World Bank's Investment Climate Survey (now called Enterprise Surveys) undertaken in 2003, Wignaraja (2012) analyses China's extraordinary success in the export of automobiles and electronics since starting an open-door to foreign direct investment (FDI) policy in 1978. The author attributes such success to the technology transfer from multinationals to local firms in the automobile and electronics industries. The technology spillovers have been well documented. Previous studies (for example, Javorcik, 2004; Blalock and Gertler, 2004) suggest that multinationals can benefit local firms by increasing the demand for components made by local firms. In particular, in order to improve the quality of the required components, multinationals provide employee training and technical support. For example, Tianjin FAW Toyota Motor Co., Ltd received more

than 150 engineers from its international partners in order to introduce the Toyota production system. In addition, the capability of technology is a crucial source of competitive advantage in the exporting market. Benefitting from enormous technology transfer and significant access to market networks of MNCs, China's share of world automobile exports increased from 0.6% to 2.8% between 2001 and 2009, while its share of world electronics increased from 5.8% to 9.7% (Wignaraja, 2012).

5.3.2 Political connections and firm performance

Although exporting behaviour is one of the most important parts of firm performance, the existing literature focuses on the relationship between political connections and firm performance, for example, the ability to obtain profitable government contracts, equity value, stock returns, and market share, instead of exporting. The current studies can be categorised into four groups: research in the United States, cross-country analysis, developing countries other than China, and in the context of China.

5.3.2.1 Research in the United States

According to Roberts (1990), the accidental death of a senator decreases the stock prices of enterprises connected with this senator, while the prices of enterprises related to the senator's successor experience an increase, suggesting that the existing political connections impose a positive influence on stock prices and enterprise value. Goldman *et al*. (2009) analyse S&P 500 companies from 1996 to 2000 and conclude that companies with politically connected board members enjoy a positive abnormal stock return after the nomination announcement of an individual. Specifically,

companies connected to the Republican Party saw a growth in stock price and enterprise value in 2000 when the Republicans won the presidential election, whilst companies connected to the Democratic Party experienced a decline in stock price and enterprise value. By using data from the S&P 500 companies between 1990 and 2004, especially during the years of the 1994 midterm election and the 2000 presidential election, Goldman *et al*. (2010) find that the firms connecting to the winning (losing) party are more likely to experience an increase (decrease) in procurement contracts.

5.3.2.2 Cross-country analysis

Focusing on 541 companies with political connections in 47 countries in 1997, Faccio (2007, 2010) finds that firms with political connections enjoy a considerably higher market share than firms without such connections (18.04% versus 9.48% separately), especially when the connection is established through a stronger political connection. The author points out that political connection is stronger when companies are connected through owners rather than directors, or when such a connection is linked with a minister rather than with a member of the parliament, or when the connection occurs in countries with high levels of corruption. In addition, connected firms have a lower tax rate (29.67%) than their non-connected peers (32.70%).

5.3.2.3 Research in developing countries other than China

Politically connected firms tend, in fact to receive preferential treatment from governments. Johnson and Mitton (2003) point out that one of the forms of political favouritism in Malaysia is the official status awarded to firms run by ethnic Malays

(known as Bumiputeras). Bumiputeras have the priority for government contracts, opportunities to buy privatised assets, increased access to other subsidies from the government. In Indonesia, the family of B.J. Habibie, the third President, controlled several crucial industries, such as chemicals, construction, real estate, transport, and communications. Thanks to such connections, many of these businesses had made considerable profits from government contracts and state-granted monopolies (Leuz and Oberholzer-Gee, 2006). Moreover, political ties can lead to easier approval of crucial licences for the politically connected enterprises. According to Leuz and Oberholzer-Gee (2006), with a very close association with President Suharto, the Salim Group in Indonesia obtained franchises in industries where huge profits could be produced, such as banking, flour milling, and telecommunications.

Some scholars point out that the enterprises with political connections pay lower taxes. Using the listed firms' annual reports in the Kuala Lumpur Stock Exchange (KLSE) over the period 1990 and 1999, Adhikari *et al*. (2006) show that politically connected firms pay tax at significantly lower effective rates than other firms in Malaysia. This result suggests that the relationship with governments can influence the effective tax rates in a relationship-based economy.

The equity value of firms can also be significantly affected by political activities. Fisman (2001) examines the role of the announcement about the health condition of the former President Suharto on stock prices in Indonesia, and finds that share prices of companies with close ties to the Suharto family experienced an abnormal decrease after the news regarding the president's deteriorating health was announced.

However, investments in political relationships could lose their value overnight because of regime changes (Leuz and Oberholzer-Gee, 2006). Therefore, investing in political relationships could be extremely risky, and political connections may therefore not always be valuable for enterprises' long-term development. According to Bernheim and Whinston (1986), there is a way to lower the negative effects of government change. The authors believe that politicians are prone to provide support for firms which have the strongest willingness to pay for political patronage. In this case, well-connected managers can easily re-establish the relationships with the new government once a political regime has changed; therefore, government changes only have little influence on long-term firm performance.

5.3.2.4 Research in China

Several studies have examined the performance of firms with political connections in the context of China. From the angle of ownership, SOEs are congenital with a variety of state's valuable resources and are able to receive more favourable support than other groups in China (Child, 1994; Steinfeld, 1998). Peng *et al*. (2004) point out that unlike PEs, SOEs receive more opportunities to access critical resources which are larger in quantity and higher in quality. Zhang and Huang (2009) conduct a research on listed SOEs and PEs in China and find that SOEs have easier access to more diversified and crucial resources.

Chen *et al*. (2011a) indicate that private firms are more likely to hire executives with political connections to change their weaker positions or enhance their competitive positions. By using a survey data from 150 small- and medium-sized Chinese

enterprises, Chen *et al*. (2011b) find that firms with political connections receive favourable treatment from government authorities, in terms of the preferential policies, the assistance in land purchase, and the easier access to governmental contracts, especially when the entrepreneurs are governmental advisers or members in high level legislative organisations.

Looking at privately controlled listed firms on the Shanghai and Shenzhen Stock Exchange between 1993 and 2009, Feng *et al*. (2011) shed light on the benefits of political connections for private enterprises in China from a relatively comprehensive perspective. They find that the firms controlled by private entrepreneurs who begin to participate in politics enjoy an increase in cumulative abnormal market-adjusted stock returns (7.5% over 12 months and 18.9% over 24 months), indicating that political relationships can benefit the connected firm over a long period of time. In addition, they document a significantly positive improvement in operating performance (assets, sales, earnings, return on sales, return on assets, and return on earnings) for firms controlled by private entrepreneurs who begin to participate in politics. They also find that political participation benefits the firms through reducing their tax burden. The authors also point out that compared with the firms without political participation, firms with such connections are more likely to obtain beneficial corporate deals through mergers and acquisitions (M&As) in heavily regulated industries which are not open to the private sector, including finance, media, aerospace, and natural resources mining (14% and 24% separately).

By analysing manufacturing firms from the China Database of Industrial Firms developed by the National Bureau of Statistics of China (NBS) from 1994 to 1996,

Tan *et al*. (2007) evaluate the relationship between the *lishu* at different governmental levels and firms' performance. The authors state that firms with a *lishu* relationship have many advantages, including the enhanced legitimacy, better reputation and prestige, greater access to superior resources, and governmental supports and subsidies. The higher level governments possess more monopolised resources and have greater capacity and authority to provide privileges to firms they control. In turn, firms affiliated with higher levels of government have more resource, which can improve their performance. Similarly, using the dataset including approximately 900,000 observations between 1994 and 1996 drawn from China's Database of Industrial Firms (DIF), Li (2004) illustrates that the relationship between the *lishu* and firm performance, in terms of labour productivity, is U-shaped and that firms linked to the central government and the lowest level of government outperform firms affiliated with intermediate governments.

Lu (2011) employs survey data of Chinese private firms in 2004 and studies the impact of political connections on trade expansion among different regions in China. Political connections are defined as an entrepreneur being a member of the Chinese People's Congress (PC), which is divided into four administrative levels, namely the town-level, the county-level, the prefecture-level and the region-level or above. Their results show that political connections have a positive influence on the firms' degrees of trade expansion. Being a member of the PC significantly reduces the firm's sales within the local county, but has a statistically significant and positive effect on trade expansion in other counties and other regions. The author finds that the trade expansion into other administrative areas requires the firm to have a high hierarchical level of political connections, i.e. the entrepreneur should be a member of the PC at

the corresponding administrative level or above. For example, sales within the county can only be affected by the political connection at the county-level or above; the expansion into other areas in the same region can only be affected by political connection at the prefectural-level or above; and the expansion into other regions can only be affected by the political connection at the region-level or above.

However, politically connected firms do not always benefit from their connections with the governments. Fan *et al*. (2007) provide a different view of political connections' effects on firm performance by analysing CEO and board data from the IPO prospectuses of newly listed A-share enterprises on the Shanghai and Shenzhen Stock Exchange during the period 1993-2001. Their evidence shows that, based on three-year post-IPO stock returns, firms run by politically connected CEOs have an 18% poorer performance compared with the non-connected counterparts. They also have lower three-year post-IPO earning growth, sales growth, and change in returns on sales. Such negative effects appear shortly after the initial trading day. One of the reasons for these findings is that firms with politically connected CEOs are more likely to appoint other current or previous government officials to the board. These officials tend to be less professional and lack of experience in running a business. Xia *et al*. (2009) collect a sample of COEs in Chinese manufacturing industries from the National Industrial Census (NIC) and track changes of ownership between 2000 and 2005. They find that transformed (privatised and corporatised) COEs achieved better performance in productivity, sales growth, and profitability than the untransformed COEs.

By analysing non-financial A-share firms in China from 2001 to 2006, Chen *et al*. (2011a) show that the sensitivity of investment expenditure to growth opportunities for SOEs is 62.5% lower than that for non-SOEs, suggesting that SOEs are less efficient than non-SOEs. Furthermore, they point out that political connections have a significant negative influence on investment efficiency in SOEs, while no such evidence is found in the non-SOEs. They attribute such poor performance of SOEs to distortions in firms' investment behaviour caused by governmental intervention. Moreover, Liu *et al*. (2010) point out that SOEs and COEs tend to employ too many people and are therefore characterised by lower employee efficiency.

In summary, political connections are linked to firm performance. As firms with better performance are usually considered as the potential exporting candidates, it is now interesting to investigate the relationship between political connections and exporting behaviour of firms.

5.3.3 Political connections and exports

Although there is a growing literature investigating the determinants of firms' export decisions and the value of political connections, studies on the relationship between political connections and the probability of exporting are much scarcer. A few studies focus on the political connections only in terms of state-ownership.

Because of the connections with government, SOEs also enjoy several political and financial advantages, such as soft budget constraints, more secure property rights,

better public provision, greater access to monopoly industries and industries subsidise by the government, and less competition than non-SOEs (Sun and Tong, 2003; Yi and Wang, 2012; Connelly *et al*., 2010). However, the negative relation between state ownership and firm performance has been documented worldwide.

For example, Dewenter and Malatesta (2001) use a 1,369 firm-year sample reported in *Fortune* magazine around the world, and find that the profits of government-owned firms are significantly less than that of private firms. Meggionson *et al*. (1994) point out that privatised state-owned firms have improvement in real sales, profits, capital investment spending, operating efficiency, and work forces by exploring 61 enterprises from 18 countries and 32 industries.

According to Dixon *et al*. (2015), Yi (2014), Yi and Wang (2012), Connelly *et al*. (2010), Sun and Tong (2003), Wei *et al*. (2005), and Bai and Xu (2005), there are several reasons explaining such an inverse relationship: lack of motivation for top management team, redundant employees and excessive wages, appointing politically connected people as top managers without considering their experience and expertise, burdening with political and social goals, suffering from higher transaction costs and serve agency problem, poor innovation and financial performance, low productivity, and increased corruption. These problems are particularly predominant in China.

In line with these studies, a few scholars find a negative relationship between exporting and state ownership in China. Yi and Wang (2012) and Yi (2014) analyse 30,333 firms in Zhejiang Province across mining, manufacturing, electricity, gas, and

water industries from 2001 to 2003, demonstrating that state ownership is negatively associated with the exporting participation. They further point out that firms with state ownership are lack of capabilities to internationalise, and that these disadvantages of SOEs make them less competitive in the global market.

Using a dataset covering 1,240 listed companies drawn from the China Stock Market Accounting Database (CSMAR) and Sino-fin over the period 2004-2010, Dixon *et al*. (2015) find state ownership negatively relates to the export intensity, while they do not document such relationship between export probability and state ownership. Todo *et al*. (2014) focus on the privatisation of Chinese SOEs and estimate whether the privatisation improves the probability of exporting in China by using 13,991 firm-year observations from 2000 to 2007. The results suggest that Chinese firms are more likely to export after privatisation.

Lee (2009) provides an alternative explanation for this negative link between state ownership and exporting participation from the perspective of the industry. The author points out that the state controls for strategic and energy industries, such as petroleum, nuclear fuel, raw chemical material, mining, supply of electric and heat power, gas, and water, which are less export-oriented industries in China.

There is another study estimating the linkage between firms' exporting behaviour and political connections, in terms of political affiliation to some level of government. Du and Girma (2007) analyse whether politically affiliated firms make less efficient use of external finance when compared with their unconnected counterparts regarding the

growth of export. They use 28,400 Chinese firms over the period 1999 to 2002 and divide the firms into two sub-samples, i.e. purely private and politically connected firms.

The authors conclude that politically affiliated Chinese firms enjoy softer financing constraints as the relevant state organisations are prone to provide financial assistance (bailout) to the connected firms when they default on their loans. In general, more finance support more exports. As for private firms, they were only allowed to export through state-owned trading companies and did not have the right to reserve foreign exchange earnings obtained from their exports before the 1990s. Although such discrimination no longer exists, private firms still suffer from financial suppression, especially those without political connections. However, the authors find that private firms with no political affiliation utilise bank loans more efficiently in promoting the export growth. Moreover, firms with political affiliation in capital-intensive industries do not exhibit a significant export-promoting effect of bank loans. The authors attribute this phenomenon to the resource misallocation by the banking sector caused by political bias. Compared with their study, which mainly focus on the export intensity using private firms over four years sample periods, our study explores a more comprehensive dataset with state ownership, private ownership, foreign ownership, and collective ownership and estimate both export probability and intensity.

5.4 Hypotheses

Although the effects of political connections on firms' behaviour on the one hand, and the determinants of firms' export decisions on the other hand have been studied separately in the existing literature, to the best of our knowledge, there are only a few papers examining the link between political connections in terms of state ownership and export. Furthermore, only one paper estimates how the political connections in the form of political affiliation with certain levels of government affect the export intensity.

According to Chen *et al*. (2012), Jiang (2007) and Wei *et al*. (2004), firms without the political connections in China may choose to export in order to obtain benefits from the global market. Yet, in this case, they have to take risks associated with venturing overseas. In contrast, firms with a *lishu* relationship are able to obtain the benefits such as financing, markets and resources without exporting, thanks to their political connections. Firms with a *lishu* relationship may therefore not need to venture overseas, as they can benefit from financing, resources and so on domestically.

Following this line of research, we estimate the relation between political connections, defined as the *lishu* relationship, and the propensity of entering into foreign markets. It is expected that a firm's *lishu* relationship has a negative impact on the likelihood of becoming an exporter, and that the *lishu* relationship can reduce the export intensity. We therefore posit the following two hypotheses:

Hypothesis 1 (H1): Having a lishu relationship is negatively related to the probability of becoming an exporter, ceteris paribus.

Hypothesis 2 (H2): Having a lishu relationship reduces the export intensity, ceteris paribus.

5.5 Specification and estimation methodology

5.5.1 Baseline specification

In order to estimate the probability of exports, we employ a model when the dependent variable (Exp_{it}) is qualitative, and assumes the value of 1 if enterprise i is an exporter at time t, and 0 otherwise. The equation is:

$$Exp_{it} = \alpha + \beta_1 Exp_{i(t-1)} + \beta_2 PA_{i(t-1)} + \beta_3 Size_{i(t-1)} + \beta_4 TFP_{i(t-1)} + \beta_5 CFK_{i(t-1)} + \beta_6 Leverage_{i(t-1)} + Region\ Dummies + Industry\ Dummies + Ownership\ Dummies + Year\ Dummies + \varepsilon_{it} \quad (1)$$

where the subscript *i* indexes firms, while *t* refers to time, where *t* = 2000-2007. PA is the political affiliation status of the firm, which is a dummy variable that equals 1 if the firm has a *lishu* relationship and 0 otherwise, $Size$ is defined as the firms' total real assets, TFP refers to total factor productivity calculating using the Levinsohn and Petrin (2003) technique,[1] CFK is defined as the ratio of cash flow over the

[1] This method has been widely used in Greenaway *et al.* (2007, 2014), Ding *et al*. (2012), and Chen

tangible fixed assets, and $Leverage$ is calculated as the ratio of current liabilities plus non-current liabilities to total assets of the firm. We also control for the Chinese characteristics by adding $Region\ Dummies,$ $Industry\ Dummies,$ and $Ownership\ Dummies$ into the model. According to our first hypothesis, we expect the β_2 to show a negative sign.

In order to estimate the intensity of exporting, we use the following equation:

$$\begin{aligned} Expratio_{it} = {} & \alpha + \beta_1 Expratio_{i(t-1)} + \beta_2 PA_{i(t-1)} + \beta_3 Size_{i(t-1)} + \beta_4 TFP_{i(t-1)} \\ & + \beta_5 CFK_{i(t-1)} + \beta_6 Leverage_{i(t-1)} + Region\ Dummies \\ & + Industry\ Dummies + Ownership\ Dummies\ + Year\ Dummies \\ & + \varepsilon_{it} \end{aligned} \quad (2)$$

where $Expratio$ is defined as the ratio of exports to total real sales. According to the second hypothesis, we expect a negative relationship between PA and $Expratio$.

Lagged dependent variable $Exp_{i(t-1)}$ and $Expratio_{i(t-1)}$ are included in both equations, respectively, to account for sunk entry costs. Starting with Roberts and Tybout (1997), a line of empirical research has investigated the firms' dynamic export status and sunk fixed costs (Bernard and Jensen, 2004; Buono and Fadinger, 2012). The main conclusion of these papers is that firms' export status is very persistent and that previous export status is an important indicator of current export status, which

and Guariglia (2013). The TFP estimates based on the Levinsohn and Petrin (2003) method can be obtained in Stata by using the –*levpet*- command. We also applied it separately to different industrial groups.

provides evidence of the sunk-cost model. That is, the coefficient on the lagged export status can be regarded as a measure of the extent of these costs if sunk costs are significant. Alternatively, if current exporting does not rely on previous exporting experience, then there are no sunk costs.

We also control for the firms' characteristics in both equations. Moreover, in order to mitigate problems stemming from reverse causality (for example, the causality is from exporting to changes in firms' characteristics, such as size and productivity), I follow the previous studies (Roberts and Tybout, 1997; Bernard and Jensen, 2004; Greenaway *et al*., 2007; Yi and Wang, 2012) and make all time-varying variables pre-determined and lagged by one period.

In order to control for time-invariant factors common to firms across regions and industries, we also include region and industry dummies in both equations. *Region dummies* are dummy variables for firm location: *Coastal* = 1 if the firm is located in the coastal region, and 0 otherwise; *Central* = 1 if the firm is located in the central region, and 0 otherwise; *Western* = 1 if the firm is located in the western region, and 0 otherwise.[1] *Industry dummies* define firms to be located in one of the following ten industrial sectors: metal and metal products; non-metal products and petroleum processing; chemicals and plastic; machinery and equipment; electrical equipment; transport equipment; food and tobacco; textile; leather, timber and furniture; and mining and logging. *Year dummies* are also included to account for business cycle

[1] In order to avoid the dummy variable trap and multicollinearity problem, we only include the *Coastal* dummy and *Western* dummy in doing the regression analysis. And we expect that firms located in the coastal region are more likely to export, while firms located in the western region are less likely to export.

effects and firm-invariant market factors, such as changes in exchange rates or government policy.

We expect that firm's previous export experience, size, TFP, and financial health can improve the export participation and intensity for Chinese unlisted firms. Due to the sunk entry costs happened in exporting, previous exporters are more likely to export in the current period as they do not have to pay for the sunk entry costs again. Larger and more productive firms are more prone to be involved in exporting activities as they are able to afford the huge sunk costs. In terms of ownership, we expect that foreign ownership helps firms' exporting as they can obtain well-established distribution network, foreign market information, and financing assistance from their parent companies. As for the state-ownership, we expect a negative relationship.

As the dependent variable in Eq. (1) is dichotomous, linear multiple regression is not appropriate for estimating the model. We therefore use a pooled Probit estimator instead. As for the estimation of Eq. (2), there are many observations that have zero values in their export intensity (i.e. a firm either exports with $Expratio_{it} > 0$ or it does not with $Expratio_{it} = 0$). Therefore, OLS estimation may not be an appropriate method as it can deliver inconsistent parameter estimates due to the fact that the sample is not representative of the whole population. We therefore start with the pooled Tobit model (Tobin, 1958), which is estimated by a maximum likelihood method and yields consistent estimates of the model parameters.[1]

[1] It is important to note that we cluster observations by firms' ID in our pooled Tobit and pooled Probit regressions. This means that we relax the usual requirement that the observations be independent, and allow observations to be independent across groups (clusters) but not necessarily with in groups (clusters).Clustering correct heteroskedastic standard errors but not affecting the coefficients estimates.

5.5.2 Unobserved firm heterogeneity

In Eq. (1) and Eq. (2), we control for a set of observed firm characteristics that may affect firms' export participation and intensity. However, it is likely to have some unobserved firms' characteristics that are not included in the regression, but are able to influence the firms' exporting (Roberts and Tybout, 1997; Bernard and Jensen, 2004; Greenaway *et al*., 2007; Yi and Wang, 2012). Such unobserved firm heterogeneity includes managerial ability, product characteristics, technology, and foreign experience and networks. As these unobserved characteristics are potentially serial correlated and permanent over time, they will cause persistence in exporting behaviour. In this case, ignoring them will give rise to an overestimation of the effects of sunk entry costs and the previous export experience because the lagged export variable could act as the only determinant of the current exporting. For instance, for a firm with a management strategy of internationalisation, the exporting decision of this firm in an initial period and in the future may be made out of this unobserved heterogeneity. Therefore, it is inappropriate to assume that exporting experience in the past gives rise to the current exporting decision by applying the standard econometric techniques. Heckman (1981) terms the conditional relationship between previous and future experience caused by improper treatment of unobserved firm characteristics as spurious state dependence. Himmelberg *et al*. (1999) find a spurious relation between ownership and performance, which caused by unobserved heterogeneity.

Following Bernard and Jensen (2004) and Yi and Wang (2012), we assume the error term ε_{it} in both equations consists of two components: the permanent unobserved

firm-specific time-invariant component, k_i, and an exogenous random disturbance component, μ_{it}. That is:

$$\varepsilon_{it} = k_i + \mu_{it} \quad (3)$$

where k_i is independently and identically distributed normal, and μ_{it} is independently and identically distributed normal for each firm and year.

There are several proposed estimation techniques that can be used to account for unobserved heterogeneity, including a Probit model with random effects (RE) or fixed effects (FE), conditional Logit, and linear probability models with random or fixed effects. The disadvantages of the conditional Logit model are that this estimation drops all the time-invariant variables and all the firms with a dependent variable which equals either always 0 or 1, and reduces the accuracy of those variables with negligible variance across time (Greenaway *et al*., 2007). However, as for the linear probability models, Yi and Wang (2012) and Greenaway *et al*. (2007) point out that the probabilities indicated by estimated coefficients could lie outside the unit interval [0, 1] and that the assumption of constant variance in the OLS estimation could be violated by the heterogeneous error term. Therefore, the Probit model with FE or RE can model the unobserved heterogeneity of the firm better. The FE framework treats the unobserved effect k_i as a parameter to be estimated, while the RE framework treats it as a random variable. Most fixed-effects model leads to biased and inconsistent parameter estimates, especially of the coefficient of the lagged dependent variables (Wooldridge, 2010).

The random-effects Probit model requires the firm-specific unobserved effects to be uncorrelated with the regressors, which could cause bias (Bernard and Jensen, 2004; Greenaway *et al*., 2007). Especially if the heterogeneity of the unobserved firm-specific effects is large, the RE Probit estimate of the coefficient on the lagged dependent variable could be overestimated (Heckman, 1981). However, as our objective with dynamic specifications is not to obtain a precise estimate of the lagged dependent variable coefficient, this problem is unlikely to affect out main conclusions. Additionally, according to Wooldridge (2010, p.286), "With a large number of random draws…, it almost always makes sense to treat the unobserved effects…as random draws... This approach is certainly appropriate from an omitted variables or neglected heterogeneity perspective". Therefore, I follow Heckman (1981) and Roberts and Tybout (1997) and employ a random-effects Probit model for the estimation of Eq. (1). And a random-effects Tobit model is applied to estimate the Eq. (2).[1]

As discussed above, the RE Probit model has a strong assumption that the unobserved heterogeneity is uncorrelated with all the other explanatory variables, which is hard to hold in reality. Therefore, I follow Mundlak (1978) and Chamberlain (1984) and allow for possible correlation between the unobserved firm heterogeneity and the regressors by:

[1] Our results are robust to using pooled Probit and Tobit estimators. Therefore, we prefer the pooled Probit and Tobit models with cluster-robust standard errors to the random-effects estimators due to their computational advantages. For a large sample, computational time is in fact an issue for random-effects Probit and Tobit models, because they use "full 'random effects' with lots of covariates" Wooldridge (2009, p.18). Therefore, we only report the results by using pooled Probit and Tobit models in the empirical analysis. The results for the two main hypotheses obtained from random-effects Probit and Tobit models are presented in Appendix.

$$k_i = \delta_1 \overline{PA_i} + \delta_2 \overline{Size_i} + \delta_3 \overline{TFP_i} + \delta_4 \overline{CFK_i} + \delta_5 \overline{Leverage_i} + \epsilon_i \quad (4)$$

where $\overline{PA_i}$, $\overline{Size_i}$, $\overline{TFP_i}$, $\overline{CFK_i}$, and $\overline{Leverage_i}$ refer to the means, and $\epsilon_i \sim iid\ N(0, \sigma_\epsilon^2)$, independent of all the regressors and μ_{it} for all firm and year. Incorporating Eq. (4) into Eq. (1) and Eq. (2) respectively, we obtain:

$$\begin{aligned} Exp_{it} = {} & \alpha + \beta_1 Exp_{i(t-1)} + \beta_2 PA_{i(t-1)} + \beta_3 Size_{i(t-1)} + \beta_4 TFP_{i(t-1)} \\ & + \beta_5 CFK_{i(t-1)} + \beta_6 Leverage_{i(t-1)} + \delta_1 \overline{PA_i} + \delta_2 \overline{Size_i} + \delta_3 \overline{TFP_i} \\ & + \delta_4 \overline{CFK_i} + \delta_5 \overline{Leverage_i} + Region\ Dummies \\ & + Industry\ Dummies + Ownership\ Dummies\ + Year\ Dummies \\ & + \epsilon_i + \mu_{it} \end{aligned} \quad (5)$$

$$\begin{aligned} Expratio_{it} = {} & \alpha + \beta_1 Expratio_{i(t-1)} + \beta_2 PA_{i(t-1)} + \beta_3 Size_{i(t-1)} + \beta_4 TFP_{i(t-1)} \\ & + \beta_5 CFK_{i(t-1)} + \beta_6 Leverage_{i(t-1)} + \delta_1 \overline{PA_i} + \delta_2 \overline{Size_i} + \delta_3 \overline{TFP_i} \\ & + \delta_4 \overline{CFK_i} + \delta_5 \overline{Leverage_i} + Region\ Dummies \\ & + Industry\ Dummies + Ownership\ Dummies\ + Year\ Dummies \\ & + \epsilon_i + \mu_{it} \end{aligned} \quad (6)$$

5.5.3 The initial conditions problem

It is generally acknowledged that the treatment of the initial observations in a dynamic panel data model with unobserved effects is important both theoretically and practically. The estimation of Eq. (5) and Eq. (6) is based on an assumption on the

relationship between the initial export participation, Exp_{i1} / $Expratio_{i1}$ and the error term ϵ_i. In the existing studies of a dynamic binary discrete-choice model, the initial conditions are assumed to be pre-determined or exogenous using a standard random-effects Probit model (Hackman, 1981b; Bernard and Jensen, 2004). That is, the initial observation values are independent of the unobserved firm-specific effects. If the observation period for each firm initiates from the very beginning of the exporting, the initial conditions should be exogenous. However, most micro-econometric studies with panel datasets, including ours, the start of the sample is not the same as the start of the exporting behaviour. In this case, the unobserved time-invariant firm heterogeneity that can influence current exporting activities can also affect the exporting activities in the initial period. Therefore, it is improper to assume that the initial conditions are exogenous. Overlooking the endogeneity of the initial conditions will therefore cause an upward biased estimation of the lagged dependent variable. That is, the impact of previous exporting experience of the current export activities would indicate that the sunk entry costs are overestimated.

Wooldridge (2005) suggests a conditional maximum likelihood estimator, which is simpler and more practical in empirical research than the solution proposed by Heckman (1981b). This estimator suggests a model that the distribution of the unobserved heterogeneity effect is conditional on the initial value and other exogenous explanatory variables. The model is shown as:

$$\epsilon_i = \rho_0 + \rho_1 Y_{i1} + \delta \bar{X}_i' + \omega_i \qquad (7)$$

where ω is uncorrelated with the initial observation Y_1. Incorporating Eq. (7) into Eq.

(5) and Eq. (6) respectively, we obtain:

$$Exp_{it} = \alpha + \rho_1 Exp_{i1} + \beta_1 Exp_{i(t-1)} + \beta_2 PA_{i(t-1)} + \beta_3 Size_{i(t-1)} + \beta_4 TFP_{i(t-1)} + \beta_5 CFK_{i(t-1)} + \beta_6 Leverage_{i(t-1)} + \delta_1 \overline{PA_i} + \delta_2 \overline{Size_i} + \delta_3 \overline{TFP_i} + \delta_4 \overline{CFK_i} + \delta_5 \overline{Leverage_i} + Region\ Dummies + Industry\ Dummies + Ownership\ Dummies + Year\ Dummies + \omega_i + \mu_{it} \quad (8)$$

$$Expratio_{it} = \alpha + \rho_1 Expratio_{i1} + \beta_1 Expratio_{i(t-1)} + \beta_2 PA_{i(t-1)} + \beta_3 Size_{i(t-1)} + \beta_4 TFP_{i(t-1)} + \beta_5 CFK_{i(t-1)} + \beta_6 Leverage_{i(t-1)} + \delta_1 \overline{PA_i} + \delta_2 \overline{Size_i} + \delta_3 \overline{TFP_i} + \delta_4 \overline{CFK_i} + \delta_5 \overline{Leverage_i} + Region\ Dummies + Industry\ Dummies + Ownership\ Dummies + Year\ Dummies + \omega_i + \mu_{it} \quad (9)$$

As the simple likelihood function proposed by Wooldridge (2005) has the same structure with a standard random-effects Probit model, we use the RE Probit model for our estimation for the first hypothesis. Similarly, we employ the RE Tobit model for estimating the second hypothesis.[1]

[1] Similar to the unobserved firm heterogeneity analysis, we only report the results by using pooled Probit and Tobit models in the empirical analysis. The results for the two main hypotheses obtained from random-effects Probit and Tobit models are presented in Appendix.
I have also analysed the probability and intensity of exporting for baseline equation, equation considering unobserved firm heterogeneity, and equation considering initial conditions using two-period lagged variables and obtained the robust results, which are available on request.

5.6 Data and summary statistics

5.6.1 Data

In this chapter, we use a firm-level dataset which includes both state-owned and non-state-owned firms from 31 provinces or province-equivalent municipal cities (except Hong Kong, Macao and Taiwan) all over China. This dataset is from the annual accounting reports, maintained and complied by the NBS. In order to strengthen the reliability of our analysis, we first drop observations which make little sense, such as those with negative real assets, negative export, negative age, and negative leverage ratio. Second, we eliminate firms without complete records on our main regression variables. Finally, in order to control for the potential effect of extreme values, we drop outliers, which are the observations beyond the 1st and the 99th percent tails for each continuous main regression variables.[1] After the above adjustments, our final panel dataset includes 502,196 firm-level observations, covering 111,460 mainly unlisted firms over the period 2001-2007.[2] The sample has an unbalanced structure,[3] with the number of observations ranging from a minimum of 43,187 in 2001 to a maximum of 85,698 in 2004.

We classify firms into exporters and non-exporters and present the distribution of the

[1] It is quite common in the literature (see Greenaway *et al*., 2007; Guariglia, 2008; Carpenter and Guariglia, 2008; Yan, 2012) to eliminate extreme values in this way.

[2] It should be noted that our dataset include a very small proportion of listed firms for two reasons. Frist of all, according to Liu and Xiao (2004), when firms become listed, their legal identification numbers are changed; it is therefore hard to track these firms. The second reason is that there is no separate identification of Chinese publicly listed firms in the NBS dataset. However, they only comprise a very small portion of the whole sample. Over the whole considered period, only approximately 1000 listed firms in the manufacturing and mining sectors, accounting for less than 0.3% of the total number of firms in the sample.

[3] See Appendix for details about the structure of the panel.

full sample, exporters, and non-exporters by year and industry in Table 5.6. We observe that on average, only around 31.04% of our firm-year observations are involved in exporting activities. This can be explained by the fact that exporting activities always involve huge sunk entry costs, such as collecting information, establishing distribution network, and adjusting the products and packages for foreign markets. Focusing on the industry groups, we find that the number of observations for exporters only exceeds that for non-exporters in the textile industry (51.32% vs. 48.68%), while firms in other industries are less likely to export. This can be attributed to the fact that Chinese textile industry is characterised by huge comparative advantages, such as abundant raw material and low human labour costs. Therefore, the textile industry has been playing an important part in the foreign trade ever since the opening-up policy was adopted in China. This is also consistent with the existing literature that firms in labour intensive industries are more likely to export in China (Liu and Shu, 2003).

Table 5.6 Distribution of the number of observations by year and industry

Year	Full Sample		Exporters		Non-exporters	
	Obs.	Pct.	Obs.	Pct.	Obs.	Pct.
2001	43,187	8.60	13,153	30.46	30,034	69.54
2002	58,005	11.55	17,198	29.65	40,807	70.35
2003	71,108	14.16	20,932	29.44	50,176	70.56
2004	85,698	17.06	28,273	32.99	57,425	67.01
2005	84,953	16.92	27,335	32.18	57,618	67.82
2006	82,355	16.40	26,265	31.89	56,090	68.11
2007	76,890	15.31	23,601	30.69	53,289	69.31
Average				31.04		68.96
Industry						
Metal & Metal products	45,031	8.97	12,380	27.49	32,651	72.51
Nonmetal products & Petroleum processing	47,635	9.49	7,088	14.88	40,547	85.12
Chemicals & Plastic	85,930	17.11	24,568	28.59	61,362	71.41
Machinery & Equipment	59,959	11.94	17,140	28.59	42,819	71.41
Electrical equipment	62,228	12.39	28,807	46.29	33,421	53.71
Transport equipment	23,972	4.77	5,979	24.94	17,993	75.06
Food & Tobacco	18,789	3.74	4,082	21.73	14,707	78.27
Textile	73,707	14.68	37,827	51.32	35,880	48.68
Leather & Timber & Furniture	46,761	9.31	12,866	27.51	33,895	72.49
Mining & Logging	38,184	7.60	6,020	15.77	32,164	84.23
Total	502,196	100.00	156,757	31.21	345,439	68.79

Notes: Obs. stands for the number of observations. Pct. is the percentage.

Table 5.7 reports the distribution of the number of observations by year and industry only for firms with a *lishu* relationship. We find that the percentage of exporters in our firm-year observations that have a *lishu* relationship (24.25%) is lower than that of non-exporters, indicating that firms with a *lishu* relationship are less likely to export. We further observe that the number of observations for non-exporters is larger than exporters across all industrial sectors. Even in the textile industry, firms with a *lishu* relationship are less likely to enter into the export market.

Table 5.7 Distribution of the number of observations for firms with the *lishu* relationship

Year	*Lishu* Sub-sample		Exporters		Non-exporters	
	Obs.	Pct.	Obs.	Pct.	Obs.	Pct.
2001	30,020	14.45	7,640	25.45	22,380	74.55
2002	35,872	17.26	9,307	25.95	26,565	74.05
2003	39,958	19.23	10,277	25.72	29,681	74.28
2004	26,968	12.98	6,178	22.91	20,790	77.09
2005	27,987	13.47	6,958	24.86	21,029	75.14
2006	24,876	11.97	5,785	23.26	19,091	76.74
2007	22,121	10.65	4,780	21.61	17,341	78.39
Average				24.25		75.75
Industry						
Metal & Metal products	17,458	8.40	4,035	23.11	13,423	76.89
Nonmetal products & Petroleum processing	22,948	11.04	2,492	10.86	20,456	89.14
Chemicals & Plastic	37,662	18.12	9,306	24.71	28,356	75.29
Machinery & Equipment	26,216	12.62	6,541	24.95	19,675	75.05
Electrical equipment	22,643	10.90	8,290	36.61	14,353	63.39
Transport equipment	10,849	5.22	2,132	19.65	8,717	80.35
Food & Tobacco	9,450	4.55	1,698	17.97	7,752	82.03
Textile	21,727	10.46	10,483	48.25	11,244	51.75
Leather & Timber & Furniture	18,390	8.85	3,617	19.67	14,773	80.33
Mining & Logging	20,459	9.85	2,331	11.39	18,128	88.61
Total	207,802	100.00	50,925	24.51	156,877	75.49

Notes: Obs. stands for the number of observations. Pct. is the percentage.

Looking at the distribution of exporters by four ownership types in Table 5.8, I find that on average, firms with foreign ownership are more prone to export (68.95%), followed by the private enterprises (25.21%), while the SOEs and collectively-owned firms are more likely to focus on the domestic market. This may result from the advantages that foreign firms have in entering export market, such as the established network and support from their parent companies, while the domestic market is mainly occupied by state-owned firms and large private firms. I also find that SOEs in important industries, such as Chemicals and Plastic, Machinery and Equipment, and Electrical equipment, export the most (17.48%, 20.52%, and 13.40%,

respectively). These exports can be explained by the political considerations or national strategic plans. For PEs, FEs, and COEs, firms in textile industry export the most.

Table 5.8 Distribution of the number of observations for exporters by year, industry, and ownership

Year	SOEs		PEs		FEs		COEs	
	Obs.	Pct.	Obs.	Pct.	Obs.	Pct.	Obs.	Pct.
2001	603	13.27	5,505	24.08	5,506	68.45	776	14.78
2002	648	13.22	8,414	24.42	6,390	66.45	890	14.27
2003	675	13.01	10,850	24.31	7,547	66.39	899	13.09
2004	655	13.41	15,170	26.83	10,463	74.31	898	12.69
2005	663	15.40	14,969	26.22	9,719	68.92	960	14.81
2006	558	14.35	14,615	26.03	9,324	69.06	802	13.36
2007	437	13.64	13,041	24.59	8,764	69.09	529	9.85
Average		13.75		25.21		68.95		13.26
Industry								
Metal & Metal products	266	6.28	6,908	8.37	4,187	7.25	551	9.58
Nonmetal products & Petroleum processing	244	5.76	4,189	5.07	1,938	3.36	351	6.1
Chemicals & Plastic	741	17.48	12,579	15.24	9,068	15.71	1,071	18.61
Machinery & Equipment	870	20.52	10,332	12.51	4,758	8.24	579	10.06
Electrical equipment	568	13.40	13,223	16.02	13,338	23.11	658	11.44
Transport equipment	369	8.70	3,263	3.95	1,955	3.39	124	2.16
Food & Tobacco	253	5.97	1,932	2.34	1,479	2.56	154	2.68
Textile	454	10.71	20,854	25.26	13,605	23.57	1,326	23.04
Leather & Timber & Furniture	192	4.53	5,851	7.09	5,839	10.12	522	9.07
Mining & Logging	282	6.65	3,433	4.16	1,546	2.68	418	7.26
Total	4,239	100.00	82,564	100.00	57,713	100.00	5,754	100.00

Notes: Obs. stands for the number of observations. Pct. is the percentage. The ownership classification is based on the majority average ownership shares (at least 50%). SOEs, PEs, FEs, and COEs refer to state-owned enterprises, private enterprises, foreign enterprises, and collectively-owned enterprises.

Table 5.9 shows the distribution of exporters by three different regions, i.e. the coastal region, the central region, and the western region. Not surprisingly, we observe that coastal region exhibits the largest number of firm-year observations that involved in exporting activates (37.09%), followed by the central region (14.12%), and the western region (11.31%). Exporting in the textile industry in the coastal region remains the highest compared with other industries. As for the central and western regions, we find that firms in Chemicals and Plastic industry export more than other industries.

Table 5.9 Distribution of the number of observations for exporters by year, industry, and region

Year	Coastal		Central		West	
	Obs.	Pct.	Obs.	Pct.	Obs.	Pct.
2001	12,114	37.67	535	9.09	504	9.80
2002	15,699	35.98	807	10.25	692	10.65
2003	18,976	35.63	1,061	10.55	895	11.48
2004	25,493	39.66	1,601	12.99	1,179	12.97
2005	23,437	36.74	2,890	23.51	1,008	11.36
2006	22,764	36.96	2,521	20.78	980	11.36
2007	21,381	37.01	1,305	11.66	915	11.55
Average		37.09		14.12		11.31
Industry						
Metal & Metal products	11,013	7.87	765	7.14	602	9.75
Nonmetal products & Petroleum processing	5,447	3.89	1,307	12.19	334	5.41
Chemicals & Plastic	21,207	15.16	1,995	18.61	1,366	22.13
Machinery & Equipment	15,000	10.72	1,344	12.54	796	12.89
Electrical equipment	26,992	19.30	1,080	10.07	735	11.91
Transport equipment	4,944	3.53	405	3.78	630	10.21
Food & Tobacco	3,193	2.28	469	4.38	420	6.80
Textile	35,755	25.56	1,382	12.89	690	11.18
Leather & Timber & Furniture	11,719	8.38	921	8.59	226	3.66
Mining & Logging	4,594	3.28	1,052	9.81	374	6.06
Total	139,864	100.00	10,720	100.00	6,173	100.00

Notes: Obs. stands for the number of observations. Pct. is the percentage.

5.6.2 Descriptive statistics

We start with looking at some summary statistics (sample mean, medians, and standard deviations).[1] Table 5.10 presents these descriptive statistics for the full sample, exporters, and non-exporters. We find in the full sample, that most of our firms are less likely to export, and the average export/total sales ratio is only 17.20%. Exporters are larger than non-exporters, in terms of the real assets (661.48 thousands of yuan vs. 415.67 thousand of yuan), and the number of employees (325 people vs. 205 people). Besides, exporters are less likely to have political affiliations than non-exporters. Table 5.10 also shows that exporters generally locate in the east of China and more productive than their counterpart, and cash flow/capital ratio is slight but significantly larger in exporters than that in non-exporters, suggesting that financial health improves the participation of exporting.

However, we find that the leverage ratio is slight but significantly lower in exporters: 54.76% compared to 57.78% for non-exporters, and exporters are younger than non-exporters (10.45 years vs. 11.89 years). As we expect that the older firms with high leverage ratio are more likely to export, this finding goes against our expectation, but in line with the stylised facts documented in the existing literature: Chinese exporters appear to be younger and less leveraged than non-exporters. According to the last column in Table 5.10, all these variables are significantly different across the exporters group and non-exporters group.

[1] See Appendix for detailed definitions of the variables used in this chapter. The correlation matrix is also presented in Appendix.

Table 5.10 Descriptive statistics (sample mean, median, and S.D.)

Variables	Full sample			Exporters			Non-exporters			*Diff*
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.	
Exp	0.312	0.000	0.463	1.000	1.000	0.000	0.000	0.000	0.000	
Expratio	17.195	0.000	32.773	55.088	58.659	36.789	0.000	0.000	0.000	0.000***
lishu	3.129	1.000	2.900	2.690	1.000	2.742	3.328	1.000	2.947	0.000***
Real Assets	492.401	206.252	778.802	661.483	285.112	955.362	415.673	181.645	669.873	0.000***
Employee	242.791	147.000	270.518	325.983	208.000	324.251	205.039	125.000	232.619	0.000***
Age	11.392	8.000	9.940	10.450	9.000	8.299	11.885	8.000	10.665	0.000***
TFP	44.299	35.809	31.676	46.872	39.293	30.818	43.126	34.172	31.991	0.000***
Leverage	56.835	58.409	24.930	54.759	56.272	24.212	57.777	59.416	25.193	0.000***
CFK	33.732	20.570	42.446	34.946	22.500	41.535	33.181	19.636	42.842	0.000***
Region	1.358	1.000	0.667	1.147	1.000	0.452	1.453	1.000	0.724	0.000***
Observations		502,196			156,757			345,439		

Notes: *Exp* is a dummy variable which takes the value of one for exporters, and zero otherwise. *Expratio* is the intensity of exports. Real Assets are expressed in thousands of yuan. TFP, Leverage, and CFK are expressed in percentage terms. S.D. stands for standard deviations. The last column (*Diff*) presents *p*-values from an independent samples mean-equality test between exporters group and non-exporters group. *, **, *** indicates significance at the 10%, 5%, and1% level, respectively. See Appendix for complete definitions of all variables.

Table 5.11 provides a comparison of the main variables across firm-ownership types. Foreign firms normally exhibit the highest probability of exporting (0.692 vs. 0.254 in PEs, 0.137 in SOEs, and 0.133 in COEs) and intensity of exporting (45.56% vs. 12.74% in PEs, 3.88% in SOEs, and 5.84% in COEs). As for the political affiliation, foreign firms have the lowest level of *lishu* relationship (2.28), followed by the PEs (2.67) and COEs (4.22), while the SOEs have the highest level of *lishu* relationship (7.66). SOEs and foreign firms enjoy the largest asset base (723.41 thousands of yuan and 741.90 thousand of yuan, respectively). SOEs and FEs hire more employees (369 people in SOEs and 301 people in FEs) than PEs and COEs (216 people and 222 people, respectively).

Table 5.11 also shows that SOEs and COEs are much older than PEs, while the FEs are the youngest one as most of the foreign firms entered China after the 1990s. This finding is consistent with the fact that younger firms may be established as global firms; therefore, they are more likely to participate in exporting from China. Foreign firms also enjoy the highest productivity (50.78%), followed by PEs (43.85%), COEs (42.57%), and SOEs (32.47%), suggesting that FEs are the most efficient firms in China but SOEs perform non-efficiently. This may be associated with the reason that FEs have advanced management experience and technology, while SOEs take too much the political and social responsibilities. As for financial variables, SOEs show the highest leverage ratio (64.33%), while that for the foreign firms is the lowest (46.15%), suggesting that SOEs suffer from the soft budget constraints due to the favourable support from the state banks. Interestingly, we observe that the cash flow/capital ratio is larger for FEs and COEs than PEs and SOEs. Finally, we find that

FEs prefer to set up their firms in the coastal region, while SOEs are more likely to locate their businesses in the central region, where is closer to China's capital, Beijing, the heart of political and economic development.

Table 5.11 Descriptive statistics for ownership (sample mean, median, and S.D.)

Variables	SOEs			PEs			FEs			COEs			*Diff1*	*Diff2*	*Diff3*
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.			
Exp	0.137	0.000	0.344	0.254	0.000	0.435	0.692	1.000	0.462	0.133	0.000	0.339	0.000***	0.000***	0.000***
Expratio	3.877	0.000	14.699	12.742	0.000	28.513	45.558	39.916	42.071	5.836	0.000	19.675	0.000***	0.000***	0.000***
lishu	7.658	8.000	1.960	2.671	1.000	2.639	2.280	1.000	2.488	4.221	4.000	2.444	0.000***	0.000***	0.000***
Real Assets	723.410	332.687	979.872	421.170	176.599	696.037	741.901	358.335	991.308	327.558	167.538	500.722	0.000***	0.005***	0.000***
Employee	369.093	230.000	370.529	216.735	131.000	242.984	301.263	187.000	313.468	222.875	140.000	241.354	0.000***	0.000***	0.000***
Age	26.495	28.000	15.802	9.948	7.000	8.884	8.810	9.000	3.706	16.887	14.000	11.064	0.000***	0.000***	0.000***
TFP	32.471	24.365	27.441	43.853	35.608	30.815	50.779	42.086	34.146	42.569	33.640	32.017	0.000***	0.000***	0.000***
Leverage	64.329	65.463	26.296	58.661	60.651	24.122	46.145	45.949	24.253	58.413	59.770	25.451	0.000***	0.000***	0.000***
CFK	15.247	7.794	29.520	33.608	20.833	40.968	38.255	24.272	46.010	38.642	22.438	48.506	0.000***	0.000***	0.000***
Region	1.811	2.000	0.825	1.375	1.000	0.678	1.085	1.000	0.359	1.417	1.000	0.678	0.000***	0.000***	0.000***
Obs.		30,912			324,757			83,394			43,291				

Notes: *Exp* is a dummy variable which takes the value of one for exporters, and zero otherwise. *Expratio* is the intensity of exports. Real Assets are expressed in thousands of yuan. TFP, Leverage, and CFK are expressed in percentage terms. S.D. stands for standard deviations. The ownership classification is based on the majority average ownership shares (at least 50%). SOEs, PEs, FEs, and COEs refer to state-owned enterprises, private enterprises, foreign enterprises, and collectively-owned enterprises. The last three columns present *p*-values from an independent samples mean-equality test between the SOEs group and the PEs group (*Diff1*), between SOEs group and the FEs group (*Diff2*), and between PEs group and FEs group (*Diff3*). *, **, *** indicates significance at the 10%, 5%, and1% level, respectively. See Appendix for complete definitions of all variables.

Focusing on the different regions of China shown in Table 5.12, we observe that firms in the east of China have higher probability and intensity of exporting (0.37 and 21.46%), followed by firms in the central (0.15 and 4.99%) and west of China (0.11 and 3.66%). Firms located in the western and central regions exhibit the higher political affiliation levels (4.64 and 3.94, respectively) than that of coastal firms (2.76). In addition, firms in the west of China have the largest size, in terms of real assets (549.92 thousands of yuan) and the number of employees (286 employees), and are older (14.55 years) than firms in the centre (436.14 thousands of yuan, 268 employees, and 13.07 years old) and east of China (494.88 thousands of yuan, 231 employees, and 10.71 years old).

As for the productivity and financial variables, firms in the East enjoy the highest TFP (45.82%) and cash flow-to-capital ratio (36.09%), indicating they are more effective compared with firms in the central region (with 41.57% TFP and 28.91% cash flow ratio) and those in the West (37.24% TFP and 23.70% cash flow ratio). Furthermore, we observe that firms in the western region enjoy the highest leverage ratio (59.43%), followed by firms in the central area (56.59%) and those in the coastal area (56.51%). The lowest leverage ratio for coastal firms may suggest that coastal firms depend more on their internal funds and foreign financing, instead of debt.

Table 5.12 Descriptive statistics for region (sample mean, median, and S.D.)

Variables	Costal			Central			West			*Diff1*	*Diff2*
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.		
Exp	0.372	0.000	0.483	0.149	0.000	0.356	0.114	0.000	0.318	0.000***	0.000***
Expratio	21.462	0.000	35.613	4.994	0.000	17.719	3.655	0.000	14.868	0.000***	0.000***
lishu	2.758	1.000	2.699	3.943	2.000	3.062	4.636	5.000	3.290	0.000***	0.000***
Real Assets	494.883	207.843	784.056	436.141	178.687	707.965	549.922	236.669	825.700	0.000***	0.000***
Employee	231.615	138.000	261.796	268.927	164.000	289.368	286.016	180.000	296.471	0.000***	0.000***
Age	10.706	8.000	8.852	13.069	8.000	12.268	14.549	9.000	13.205	0.000***	0.000***
TFP	45.816	37.555	31.460	41.571	31.027	33.895	37.244	29.226	28.801	0.000***	0.000***
Leverage	56.509	58.298	24.636	56.592	57.443	26.535	59.432	60.211	24.610	0.000***	0.000***
CFK	36.085	22.653	43.345	28.913	15.189	40.979	23.704	13.626	35.440	0.000***	0.000***
Obs.		376,482			71,763			53,951			

Notes: *Exp* is a dummy variable which takes the value of one for exporters, and zero otherwise. *Expratio* is the intensity of exports. Real Assets are expressed in thousands of yuan. TFP, Leverage, and CFK are expressed in percentage terms. S.D. stands for standard deviations. The last two columns present *p*-values from an independent samples mean-equality test between the coastal region group and the central region group (*Diff1*), and between the coastal region group and the western region group (*Diff2*). *, **, *** indicates significance at the 10%, 5%, and1% level, respectively. See Appendix for complete definitions of all variables.

5.7 Empirical results

5.7.1 The *lishu* relationship and the propensity of exporting

Table 5.13 provides the regression results of applying pooled Probit[1] clustering observations by firms ID in Eqs. (1), (5), and (8). Both coefficients and marginal effects are presented in Table 5.13.[2] Column (1) presents results for the baseline equation (Eq. (1)). Column (2) reports results by considering unobserved firm heterogeneity (Eq. (5)). Results that take account of initial conditions problem (Eq. (8)) are reported in column (3).

Focusing on column (1) in Table 5.13, we find that the lagged export experience is positive and significant at 1% level. Besides, the marginal effects suggest that being an exporter in the previous period is 3.50% more likely to export in the current period than those that did not. Being consistent with the existing literature, we find that sunk entry costs of exporting exist in Chinese manufacturing firms.

Looking at the *lishu* variable in column (1), we find a significant negative relationship between political affiliation and the probability of exporting. Specifically, being a politically affiliated firm is associated with a 0.13% lower probability of exporting. This finding supports our first hypothesis, which suggests that firms with a *lishu* relationship are less likely to export.

[1] Out results are robust by using the random-effects Probit model. The results obtained from random-effects Probit model are presented in Appendix.
[2] Because of the non-linear model, the coefficient estimates are not informative about the magnitude of the effects of the outcome variables.

Other firm characteristics, such as firm size, productivity, leverage ratio, cash flow/capital ratio, types of ownership, and regional factors are found to be significant determinants of export participation decisions. Larger firms with high productivity are more likely to export. A 0.1 or 10 percentage points increase in firm size, in terms of real assets, is linked with an increase in the likelihood of exporting by 0.11 percentage points. Similarly, a 10 percentage points rise in total factor productivity is associated with a 0.13 percentage points increase in the probability of exporting.

However, firm cash flow/capital ratio and leverage ratio are negative and statistically significant at the 1% level, indicating that firms with financial health are less likely to export. Although this result contradicts some previous studies (Du and Girma, 2007; Li and Yu, 2009; Bellone *et al*., 2010; Chaney, 2013), some scholars have provided explanations for these special relationships. According to Carey *et al*. (1998), firms with a higher lagged leverage ratio are considered as high-risk borrowers in the current period from the view of the bank. Therefore, the higher its leverage ratio was, the harder it is for the firm to obtain sufficient external financing now to support their exports. Minetti and Zhu (2011) also document a negative relationship between cash flow and the probability of exporting. The authors attribute this relationship to the size effect because cash flow is normalised by the firm's capital and larger firms are more likely to export.

Focusing on the types of ownership in column (1) Table 5.13, we find that state ownership has a negative effect on firms participate in the export market, while foreign firms are more likely to export. Particularly, being a state-owned firm (foreign

firm) is related to a 0.24% (0.58%) lower (higher) likelihood of exporting. Furthermore, firms locate in the coastal region are prone to export compared with firms in the western region. Specifically, being a coastal firm (western firm) is associated with a 0.13% (0.26%) higher (lower) propensity of exporting.

As discussed in section 5.5.2, we include that the vector of means of time-varying observable factors to take firm unobserved heterogeneity into account, and report the results in column (2) in Table 5.13. The lagged export status is still significant at a 1% level and remains the same marginal effects. This finding also supports the sunk entry costs statement. The leverage ratio is still a negative and significant determinant of export participation. However, political affiliation, TFP, and cash flow are no longer significant determinants, while the coefficient of firm size becomes negative and significant. We then look at the estimates for the means of time-varying factors. All means of the variables have significant signs, suggesting that the connection exists between firm unobserved heterogeneity and the observed characteristics.

We find that although the lagged cash flow/capital ratio is insignificantly negative, the coefficient of its mean value becomes significant and negative at 1% level due to the size effects. Furthermore, we observe the opposite signs of lagged *lishu* status (positive) and its mean value (negative), of lagged size (negative) and its mean value (positive), of lagged TFP (negative) and its mean value (positive), and of lagged leverage ratio (negative) and its mean value (positive).

A few studies have also documented such findings. For example, using Austrian firms'

exporting activities over the period 1996-2002, Egger and Url (2006) find opposite signs of the coefficients on the current value and the average value of partner country's log population size in estimating the Austrian log export. Steward (2007) discovers opposite signs for lags of education and marriage status with their means in estimating the dynamics of unemployment in the UK from 1991 to 1996. Drakos and Konstantinou (2013) investigate the effects of real oil prices and their uncertainty on investment decisions among Greek manufacturing firms over the period 1994-2005, and find opposite signs for coefficients on lags of employment and lead to value-added with their means. In estimating the market access and survival of exports of Peruvian firms from 2002 to 2008, Fugazza and McLaren (2014) also include means of time-varying dependent variables in a random-effects Probit model. The authors find a positive relationship between the current log value of sectoral imports and the likelihood of exporting, but a negative relationship between its average value and the probability of exporting. They point out that the coefficients on the current values reflect the immediate effect of the variables, while those on the average value reflect the gradual or over time effect.

In line with these studies, we interpret the opposite signs for firm size as that a 10 percentage point increase in the real assets in the previous period decreases the probability of exporting in the current period by 0.07%. However, an average increase in the real assets by 10 percentage points over the sample period is associated with an increase in the probability of exporting by 0.19%. One explanation could be that the firm costs a lot to expand its size in previous years; therefore, it does not hold sufficient funds to invest in export markets in the current period. However, always

being a larger firm during the sample period has a positive and significant influence on participating in export markets as larger firms can afford the costs involved in exporting.

Compared with the positive but insignificant coefficient on lagged *lishu* status in column (2) Table 5.13, the coefficient on its mean value has a significant and negative impact on the export decisions, indicating that over time firms with political affiliation are less likely to enter export markets. Being a politically affiliated firm is 0.21% less likely to export. This result supports our first hypothesis.

As for the leverage, the lagged value has a negative effect on firms' export decisions while its mean value has a positive effect. This finding is consistent with the existing literature, suggesting that firms with a high leverage ratio in the previous period are considered as high-risk borrowers; hence, these firms may lack sufficient funds in the current period and may postpone their exporting activities for the future. However, over time, firms with high leverage ratio can accumulate more funds to invest in exporting. Although the coefficient on lagged TFP is negative and insignificant, its mean value has a positive effect on the firms' propensity of exporting at 1% significant level, suggesting that over time the firms with higher productivity are more likely to export. Specifically, a 10% increase in productivity is related to an increase in the probability of exporting by 0.23%.

By taking into account of the unobserved firm heterogeneity, our results on types of ownership and regional factors do not change. State ownership has a negative impact

on the propensity of exporting, while foreign ownership has a positive effect. Compared with firms located in the coastal region, these located in the west of China are less likely to export.

In column (3), I address the initial conditions problem by Wooldridge's (2005) method and include the initial values of export status in the regressions. Similar results with slight changes in the magnitudes of marginal effects are obtained. Over time, smaller firms with a *lishu* relationship are less likely to export. Firms with high productivity and leverage ratio are more likely to export. The negative coefficient on cash flow is still affected by size effects. State ownership (foreign ownership) is negatively (positively) related to the probability of exporting. Furthermore, firms in the coastal area are more likely to export. As for the exporting status in the initial period, Exp_{i1}, it is positive and significant at a 1% level. Firms that exported in the first period of the sample are 0.95% more likely to export in the current period. As for the previous exporting experience, we find a decrease from 3.50% to 2.81%, confirming that without proper control of the initial conditions, the size of sunk entry costs of exporting is overestimated.

Table 5.13 The propensity of exporting

Variables	(1)		(2)		(3)	
	Coeff.	ME	Coeff.	ME	Coeff.	ME
$Exp_{i(t-1)}$	2.571***	0.350***	2.573***	0.350***	2.148***	0.281***
	(0.007)	(0.001)	(0.007)	(0.001)	(0.008)	(0.001)
Exp_{i1}					0.728***	0.095***
					(0.008)	(0.001)
$PA_{i(t-1)}$	-0.097***	-0.013***	0.003	0.001	0.007	0.001
	(0.006)	(0.001)	(0.009)	(0.001)	(0.009)	(0.001)
$Size_{i(t-1)}$	0.079***	0.011***	-0.050***	-0.007***	-0.038***	-0.005***
	(0.002)	(0.000)	(0.008)	(0.001)	(0.008)	(0.001)
$TFP_{i(t-1)}$	0.095***	0.013***	-0.005	-0.001	0.002	0.001
	(0.005)	(0.001)	(0.008)	(0.001)	(0.008)	(0.001)
$Leverage_{i(t-1)}$	-0.036***	-0.005***	-0.094***	-0.013***	-0.091***	-0.012***
	(0.011)	(0.001)	(0.022)	(0.003)	(0.022)	(0.003)
$CFK_{i(t-1)}$	-0.083***	-0.011***	-0.013	-0.002	-0.019	-0.002
	(0.008)	(0.001)	(0.012)	(0.002)	(0.012)	(0.002)
State Ownership	-0.179***	-0.024***	-0.138***	-0.019***	-0.158***	-0.021***
	(0.013)	(0.002)	(0.013)	(0.002)	(0.015)	(0.002)
Foreign Ownership	0.426***	0.058***	0.417***	0.057***	0.321***	0.042***
	(0.007)	(0.001)	(0.007)	(0.001)	(0.009)	(0.001)
Coastal Region	0.099***	0.013***	0.084***	0.011***	0.001*	0.001*
	(0.008)	(0.001)	(0.008)	(0.001)	(0.009)	(0.001)
Western Region	-0.188***	-0.026***	-0.186***	-0.025***	-0.225***	-0.029***
	(0.012)	(0.002)	(0.012)	(0.002)	(0.013)	(0.002)
$\overline{PA_i}$			-0.154***	-0.021***	-0.180***	-0.024***
			(0.012)	(0.002)	(0.013)	(0.002)
$\overline{Size_i}$			0.140***	0.019***	0.129***	0.017***
			(0.008)	(0.001)	(0.009)	(0.001)
$\overline{TFP_i}$			0.167***	0.023***	0.160***	0.021***
			(0.011)	(0.001)	(0.011)	(0.001)
$\overline{Leverage_i}$			0.113***	0.015***	0.076***	0.010***
			(0.025)	(0.003)	(0.027)	(0.003)
$\overline{CFK_i}$			-0.114***	-0.016***	-0.092***	-0.012***
			(0.016)	(0.002)	(0.017)	(0.002)
Obs.	502,196	502,196	502,196	502,196	502,196	502,196
Log likelihood	-127,769		-127,622		-122,784	

Note: The dependent variable Exp_{it} is a binary variable which equals to one if the firm exports, and zero otherwise. Column (1) presents results for the baseline equation. Column (2) reports results by considering unobserved firm heterogeneity. Results that take account of initial conditions problem are reported in column (3). All equations are estimated by pooled Probit models clustering observations by firms' ID. Coefficients (Coeff.) and marginal effects (ME) are presented for each equation. Robust standard errors are shown in parentheses. Ownership dummies, regional dummies, industry dummies, and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

5.7.2 The *lishu* relationship and the intensity of exporting

The regression results obtained by the pooled Tobit model [1] with clustering observations by firms ID in Eqs. (2), (6), and (9) are presented in Table 5.14. Both coefficients and marginal effects are presented in Table 5.14. Column (1) presents results for the baseline equation (Eq. (2)). Column (2) reports results by considering unobserved firm heterogeneity (Eq. (6)). Results that take account of initial conditions problem (Eq. (9)) are reported in column (3). Only 156,757 observations are uncensored, indicating a relatively low level of exporting of Chinese manufacturing firms. A total of 345,439 observations are left-censored, which suggests that these firms do not export during our sample period.

Focusing on column (1), we find that lagged export ratio is positive and significant related to the current export ratio. The marginal effects suggest that a 10% increase in the previous export ratio is associated with an increase in the export intensity by 4.05 percentage points in the current period. Firms with political affiliations export less than their counterparts, indicating that having a *lishu* relationship reduces the export intensity. Being a politically affiliated firm is associated with a 7.94% less exporting. This finding is consistent with existing studies and our Hypothesis 2.

From column (1) Table 5.14, we also find that larger firms with higher productivity export more than smaller firms with lower productivity. Specifically, a 10% increase in the firms' size (TFP) would yield an increase of 11.69 (10.46) percentage points in

[1] Out results are robust by using the random-effects Tobit model. The results obtained from random-effects Tobit model are presented in Appendix.
Using the GMM technique, we find that the main result that political connections have a negative impact on exporting intensity is still holding.

export ratio. These results suggest that once firms become exporters, the magnitudes of firm size and productivity are significant in improving the export intensity. As for the financial variables, we observe negative relationships between leverage ratio and export intensity, and between cash flow/capital ratio and export ratio. A 10% decrease in the leverage ratio (cash flow/capital ratio) increases the export intensity by 0.10 (7.07) percentage points. Similar to our results in section 5.7.1, the negative coefficient on cash flow-to-capital ratio could be related to the size effects. And the negative leverage ratio can be explained by the fact that exporters can obtain global financing from their exporting activities, which provides a motivation for firms with low leverage ratio in the previous period to export more in the global market in the current period.

As for the ownership and regional factors, we find that firms with state (foreign) ownership export less (more). Specifically, being a state-owned (foreign) firm is associated with a 17.67% (32.60%) lower (higher) export ratio. Firms located in the coastal region export more, while the firms in the west of China export less. Being a coastal (western) firm is associated with a 17.59% (19.97%) more (less) exporting. This can be attributed to the fact that firms locate in the east of China have geographic advantages in terms of accessing to foreign markets and reducing transportation costs.

Unobserved firm heterogeneity is considered by adding a vector of means of time-varying observable factors in the regressions. Results are reported in column (2) Table 5.14. The lagged export ratio maintain a positive and significant impact on the current export ratio, indicating that a 0.1 increase in the previous export ratio is related to an increase in the export intensity by 4.05 percentage points in the current period.

Similar to our results in section 5.7.1, we also observe opposite signs between lagged *lishu* status and its mean value, and between lagged leverage ratio and its mean value. These results suggest that over time, political affiliated firms export less (i.e. being a political affiliated firm is associated with a 12.37% less exporting.) and firms with high leverage ratio export more (i.e. a 10% increase in leverage ratio is related to an increases in the export intensity by 13.04 percentage points). This result indicates that over time, a firm with good financial status can improve its export intensity.

By considering the unobserved firm characteristics, the results on types of ownership and regional factors only change slightly in terms of the magnetite of marginal effects. Being a state-owned (foreign) firm is related to a 14.26% (32.00%) less (more) exporting. Moreover, being a coastal (western) firm is associated with a 16.35% (19.75%) more (less) exporting.

Column (3) in Table 5.14 presents the regression results that address the initial conditions problem. We obtain similar results with slight changes in the magnitude of marginal effects. The reduced marginal effects on the lagged export ratio indicate that a 10% increase in export ratio in the previous period improves the export intensity in the current period by 3.39 percentage points. As for the export intensity in the initial period, $Expratio_{i1}$, the positive and significant effect suggests that having positive a export ratio in the first period of the sample increases the export ratio in current period by 0.84 percentage points. Over time, larger firms with high productivity and leverage ratio export more. Firms with the *lishu* relationship and locating in the west of China export less. The negative coefficient on cash flow is still affected by size effects. State ownership (foreign ownership) is negatively (positively) related to the intensity of exporting.

Table 5.14 The intensity of exporting

Variables	(1)		(2)		(3)	
	Coeff.	ME	Coeff.	ME	Coeff.	ME
$Expratio_{i(t-1)}$	1.229***	0.405***	1.229***	0.405***	1.025***	0.339***
	(0.002)	(0.001)	(0.002)	(0.001)	(0.004)	(0.001)
$Expratio_{i1}$					0.254***	0.084***
					(0.004)	(0.001)
$PA_{i(t-1)}$	-2.406***	-0.794***	0.042	0.014	0.041	0.014
	(0.164)	(0.054)	(0.217)	(0.071)	(0.208)	(0.069)
$Size_{i(t-1)}$	3.544***	1.169***	0.085	0.028	0.357*	0.118*
	(0.068)	(0.022)	(0.200)	(0.066)	(0.195)	(0.065)
$TFP_{i(t-1)}$	3.170***	1.046***	0.533***	0.176***	0.686***	0.227***
	(0.149)	(0.049)	(0.197)	(0.065)	(0.189)	(0.062)
$Leverage_{i(t-1)}$	-0.029***	-0.010***	-2.328***	-0.768***	-2.040***	-0.674***
	(0.316)	(0.104)	(0.530)	(0.175)	(0.509)	(0.168)
$CFK_{i(t-1)}$	-2.144***	-0.707***	-0.152	-0.050	-0.249	-0.082
	(0.214)	(0.071)	(0.280)	(0.093)	(0.269)	(0.089)
State Ownership	-5.356***	-1.767***	-4.324***	-1.426***	-4.203***	-1.389***
	(0.480)	(0.158)	(0.487)	(0.160)	(0.486)	(0.161)
Foreign Ownership	9.883***	3.260***	9.703***	3.200***	7.730***	2.555***
	(0.197)	(0.064)	(0.201)	(0.065)	(0.218)	(0.072)
Coastal Region	5.333***	1.759***	4.957***	1.635***	4.103***	1.356***
	(0.287)	(0.095)	(0.288)	(0.095)	(0.294)	(0.097)
Western Region	-6.053***	-1.997***	-5.989***	-1.975***	-6.033***	-1.994***
	(0.449)	(0.148)	(0.449)	(0.148)	(0.451)	(0.149)
$\overline{PA_i}$			-3.752***	-1.237***	-3.839***	-1.269***
			(0.309)	(0.102)	(0.312)	(0.103)
$\overline{Size_i}$			3.707***	1.223***	3.518***	1.163***
			(0.214)	(0.071)	(0.212)	(0.070)
$\overline{TFP_i}$			4.370***	1.441***	4.036***	1.334***
			(0.283)	(0.093)	(0.286)	(0.094)
$\overline{Leverage_i}$			3.953***	1.304***	3.174***	1.049***
			(0.663)	(0.219)	(0.664)	(0.219)
$\overline{CFK_i}$			-3.267***	-1.078***	-2.765***	-0.914***
			(0.409)	(0.135)	(0.417)	(0.138)
Obs.	502,196	502,196	502,196	502,196	502,196	502,196
Log likelihood	-872,485		-872,024		-867,564	
Uncensored	156,757		156,757		156,757	
Left-censored	345,439		345,439		345,439	
Right-censored	0		0		0	

Note: The dependent variable $Expratio_{it}$ (exports/total sales) is a censored variable which takes its real value if the firm has positive exports with no larger than total sales (uncensored observations), zero if the firm does not export (left-censored), and 100 for the upper limits (right-censored). Column (1) presents results for the baseline equation. Column (2) reports results by considering unobserved firm heterogeneity. Results that take account of initial conditions problem are reported in column (3). All equations are estimated by pooled Tobit models clustering observations by firms' ID. Coefficients (Coeff.) and marginal effects (ME) are presented for each equation. Robust standard errors are shown in parentheses. Ownership dummies, regional dummies, industry dummies, and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

5.8 Further tests

5.8.1 Different levels of the *lishu* relationship and exporting behaviour

In this section, we aim to test whether the different levels of *lishu* relationship have the same effect on firms' exporting behaviour. To this end, we further divide the political affiliation of firms into four groups, i.e. firms with a low level of *lishu* relationship (including the firms affiliated with the rest levels of governments), firms with a medium level of *lishu* relationship (including the firms affiliated with the city and prefecture, and county governments), and firms with a high level of *lishu* relationship (including the firms affiliated with the central and provincial governments).

We start with the first column in Table 5.15. We find that the lagged export status remains positive and significant with the same magnitude of marginal effects as that in Table 5.13, suggesting that firms export in the previous period are more likely to remain their export status in the current period. The coefficients on three levels of *lishu* relationship are all negative and significant at a 1% level. Being a firm affiliated with the low/medium/high level of government is associated with a 0.12/0.14/0.13 lower probability of exporting. As for the other factors that can affect the firms' exporting decisions, we find the similar results as in section 5.7.1 with slight change in the magnitude of marginal effects.

Column (2) in Table 5.15 takes into account the unobserved firm heterogeneity. Looking at the three levels of *lishu* relationship, we find, over time, firms with a *lishu*

relationship, no matter which level it is, are less likely to export. Interestingly, this negative effect is significant for firms affiliated with a low or medium level of government, but insignificant for the firms with a high level of *lishu* relationship. In China, the major participants in the governmental external communications (with foreign countries and cities) are dominated by the central and the provincial governments. Economic communication and transnational trade are the two predominant types of governmental external communications (Yang, 2015). These governments prefer to grant their affiliated firms with exporting opportunities through sharing information and bridging the cooperation. In this case, the negative effects of the *lishu* relationship on firms' exporting can be mitigate somehow. Additionally, all the other results are similar to our previous findings.

Column (3) in Table 5.15 addresses the initial conditions problem. Focusing on our three main coefficients on different levels of *lishu* relationship, we find similar results. The low or medium level of political affiliation have a significant and negative influence on firms' exporting propensity, while this negative effect becomes only significant at a 10% level for firms with a high level of *lishu* relationship due to the scarce exporting opportunities the high level government can obtain through their external communication with other foreign countries. The results for other variables remain robust.

Table 5.16 estimates the effects of different levels of the *lishu* relationship on export intensity. Similar results have been found. That is, without controlling for the unobserved firm heterogeneity and initial conditions problem, affiliation with all the

three levels of government have a negative and significant relationship with firms' export intensity. Focusing on columns (2) and (3), we find that over time, this negative effect becomes insignificant for firms affiliated with high levels of government, but remains significant for firms affiliated with low/medium level of government. As for other variables, the results are robust. By controlling the initial conditions problem appropriately, the overestimation of sunk costs can be reduced.

Table 5.15 The propensity of exporting (different levels of the *lishu* relationship)

Variables	(1)		(2)		(3)	
	Coeff.	ME	Coeff.	ME	Coeff.	ME
$Exp_{i(t-1)}$	2.571***	0.350***	2.573***	0.350***	2.148***	0.281***
	(0.007)	(0.001)	(0.007)	(0.001)	(0.008)	(0.001)
Exp_{i1}					0.727***	0.095***
					(0.008)	(0.001)
$PAlow_{i(t-1)}$	-0.091***	-0.012***	-0.013	-0.002	-0.015	-0.002
	(0.007)	(0.001)	(0.011)	(0.002)	(0.011)	(0.002)
$PAmedium_{i(t-1)}$	-0.106***	-0.014***	-0.005	-0.001	0.001	0.001
	(0.008)	(0.001)	(0.014)	(0.002)	(0.014)	(0.002)
$PAhigh_{i(t-1)}$	-0.097***	-0.013***	-0.075**	-0.010**	-0.072**	-0.009**
	(0.014)	(0.002)	(0.034)	(0.005)	(0.035)	(0.005)
$Size_{i(t-1)}$	0.080***	0.011***	-0.049***	-0.007***	-0.037***	-0.005***
	(0.002)	(0.000)	(0.008)	(0.001)	(0.008)	(0.001)
$TFP_{i(t-1)}$	0.094***	0.013***	-0.005	-0.001	0.002	0.001
	(0.005)	(0.001)	(0.008)	(0.001)	(0.008)	(0.001)
$Leverage_{i(t-1)}$	-0.035***	-0.005***	-0.093***	-0.013***	-0.091***	-0.012***
	(0.011)	(0.001)	(0.022)	(0.003)	(0.022)	(0.003)
$CFK_{i(t-1)}$	-0.083***	-0.011***	-0.013	-0.002	-0.019	-0.002
	(0.008)	(0.001)	(0.012)	(0.002)	(0.012)	(0.002)
State Ownership	-0.175***	-0.024***	-0.146***	-0.020***	-0.158***	-0.021***
	(0.014)	(0.002)	(0.014)	(0.002)	(0.016)	(0.002)
Foreign Ownership	0.426***	0.058***	0.417***	0.057***	0.322***	0.042***
	(0.007)	(0.001)	(0.007)	(0.001)	(0.009)	(0.001)
Coastal Region	0.097***	0.013***	0.084***	0.011***	0.003*	0.001*
	(0.008)	(0.001)	(0.008)	(0.001)	(0.009)	(0.001)
Western Region	-0.187***	-0.025***	-0.187***	-0.025***	-0.224***	-0.029***
	(0.012)	(0.002)	(0.012)	(0.002)	(0.013)	(0.002)
$\overline{PAlow_i}$			-0.168***	-0.023***	-0.181***	-0.024***
			(0.014)	(0.002)	(0.015)	(0.002)
$\overline{PAmedium_i}$			-0.148***	-0.020***	-0.188***	-0.025***
			(0.017)	(0.002)	(0.018)	(0.002)
$\overline{PAhigh_i}$			-0.049	-0.007	-0.083*	-0.011*
			(0.037)	(0.005)	(0.038)	(0.005)
$\overline{Size_i}$			0.139***	0.019***	0.129***	0.017***
			(0.008)	(0.001)	(0.009)	(0.001)
$\overline{TFP_i}$			0.167***	0.023***	0.158***	0.021***
			(0.011)	(0.001)	(0.011)	(0.001)
$\overline{Leverage_i}$			0.114***	0.016***	0.077***	0.010***
			(0.025)	(0.003)	(0.027)	(0.003)
$\overline{CFK_i}$			-0.114***	-0.015***	-0.093***	-0.012***
			(0.016)	(0.002)	(0.017)	(0.002)
Obs.	502,196	502,196	502,196	502,196	502,196	502,196
Log likelihood	-127,997		-127,617		-122,924	

Note: The dependent variable Exp_{it} is a binary variable which equals to one if the firm exports, and zero otherwise. Column (1) presents results for the baseline equation. Column (2) reports results by considering unobserved firm heterogeneity. Results that take account of initial conditions problem are reported in column (3). All equations are estimated by pooled Probit models clustering observations by firms' ID. Coefficients (Coeff.) and marginal effects (ME) are presented for each equation. Robust standard errors are shown in parentheses. Ownership dummies, regional dummies, industry dummies, and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

Table 5.16 The intensity of exporting (different levels of the *lishu* relationship)

Variables	(1)		(2)		(3)	
	Coeff.	ME	Coeff.	ME	Coeff.	ME
$Expratio_{i(t-1)}$	1.229***	0.406***	1.229***	0.405***	1.026***	0.339***
	(0.002)	(0.001)	(0.002)	(0.001)	(0.004)	(0.001)
$Expratio_{i1}$					0.254***	0.084***
					(0.004)	(0.001)
$PAlow_{i(t-1)}$	-2.891***	-0.954***	-0.342	-0.113	-0.314	-0.104
	(0.198)	(0.065)	(0.271)	(0.089)	(0.260)	(0.086)
$PAmedium_{i(t-1)}$	-2.044***	-0.674***	-0.306	-0.101	-0.260	-0.086
	(0.226)	(0.074)	(0.303)	(0.100)	(0.291)	(0.096)
$PAhigh_{i(t-1)}$	-0.916**	-0.302**	-0.839	-0.277	-0.806	-0.266
	(0.411)	(0.135)	(0.675)	(0.223)	(0.656)	(0.217)
$Size_{i(t-1)}$	3.477***	1.147***	0.095	0.031	0.366*	0.121*
	(0.069)	(0.023)	(0.200)	(0.066)	(0.196)	(0.065)
$TFP_{i(t-1)}$	3.173***	1.047***	0.537***	0.177***	0.690***	0.228***
	(0.149)	(0.049)	(0.197)	(0.065)	(0.189)	(0.062)
$Leverage_{i(t-1)}$	0.009	0.003	-2.322***	-0.766***	-2.034***	-0.672***
	(0.316)	(0.104)	(0.530)	(0.175)	(0.509)	(0.168)
$CFK_{i(t-1)}$	-2.129***	-0.702***	-0.157	-0.052	-0.255	-0.084
	(0.214)	(0.071)	(0.281)	(0.093)	(0.269)	(0.089)
State Ownership	-6.001***	-1.980***	-5.424***	-1.789***	-5.345***	-1.767***
	(0.500)	(0.165)	(0.512)	(0.169)	(0.512)	(0.169)
Foreign Ownership	9.887***	3.261***	9.694***	3.197***	7.720***	2.551***
	(0.197)	(0.064)	(0.201)	(0.065)	(0.218)	(0.072)
Coastal Region	5.375***	1.773***	5.045***	1.664***	4.189***	1.384***
	(0.287)	(0.095)	(0.289)	(0.095)	(0.295)	(0.097)
Western Region	-6.174***	-2.036***	-6.216***	-2.050***	-6.268***	-2.071***
	(0.449)	(0.148)	(0.450)	(0.148)	(0.452)	(0.149)
$\overline{PAlow_i}$			-5.237***	-1.727***	-5.322***	-1.759***
			(0.391)	(0.129)	(0.394)	(0.130)
$\overline{PAmedium_i}$			-2.629***	-0.867***	-2.777***	-0.918***
			(0.431)	(0.142)	(0.428)	(0.142)
$\overline{PAhigh_i}$			-0.617	-0.203	-0.596	-0.197
			(0.822)	(0.271)	(0.812)	(0.268)
$\overline{Size_i}$			3.577***	1.180***	3.386***	1.119***
			(0.215)	(0.071)	(0.213)	(0.070)
$\overline{TFP_i}$			4.403***	1.452***	4.066***	1.344***
			(0.283)	(0.093)	(0.286)	(0.094)
$\overline{Leverage_i}$			4.023***	1.327***	3.252***	1.075***
			(0.663)	(0.219)	(0.664)	(0.219)
$\overline{CFK_i}$			-3.190***	-1.052***	-2.686***	-0.888***
			(0.409)	(0.135)	(0.417)	(0.138)
Obs.	502,196	502,196	502,196	502,196	502,196	502,196
Log likelihood	-872,467		-871,976		-867,510	
Uncensored	156,757		156,757		156,757	
Left-censored	345,439		345,439		345,439	
Right-censored	0		0		0	

Note: The dependent variable $Expratio_{it}$ (exports/total sales) is a censored variable which takes its real value if the firm has positive exports with no larger than total sales (uncensored observations), zero if the firm does not export (left-censored), and 100 for the upper limits (right-censored). Column (1) presents results for the baseline equation. Column (2) reports results by considering unobserved firm heterogeneity. Results that take account of initial conditions problem are reported in column (3). All equations are estimated by pooled Tobit models clustering observations by firms' ID. Coefficients (Coeff.) and marginal effects (ME) are presented for each equation. Robust standard errors are shown in parentheses. Ownership dummies, regional dummies, industry dummies, and year dummies are included in all estimations. *Obs.* stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

5.8.2 The propensity and intensity of exporting by ownership

We then estimate the decision to export and export intensity by ownership types.[1] We report the marginal effects of the regression results for the probability of exporting in Table 5.17 and for export intensity in Table 5.18. The coefficient estimates are provided in Table 5A.4 and Table 5A.5 in the Appendix. As we find that around 94% of state-owned firms and 84% of collectively-owned firms are politically affiliated, we only report the results for private firms (in column (1)), which accounts for more than 60% of our full sample, and foreign firms (in column (2)), which are most effective and active sector in China.

Focusing on the main regressor, *lishu* status variable, we find that the *lishu* relationship negatively affects the propensity of exporting. Once these firms export, their export intensity is less for politically affiliated firms. Such negative relationship is more significant in foreign firms than that in private firms. All the other estimation results are robust as found in the previous sections.

[1] I also have estimated the regressions for ten different industries available in our dataset, i.e. Metal and metal products industry, Non-metal products and petroleum processing industry, Chemicals and plastic industry, Machinery and Equipment industry, Electrical equipment industry, Transport equipment industry, Food and Tobacco industry, Textile industry, Leather, Timber and Furniture industry, and Mining and Logging industry. And the main results are robust, indicating that during our sample period, political connections have a negative impact on export probability and intensity in these sub-samples. Results are available on request.

Table 5.17 The propensity of exporting by ownership (Private firms vs. Foreign firms): marginal effects

Variables	(1)			(2)		
	I	II	III	I	II	III
$Exp_{i(t-1)}$	0.355***	0.354***	0.288***	0.409***	0.409***	0.328***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Exp_{i1}			0.094***			0.112***
			(0.001)			(0.003)
$PA_{i(t-1)}$	-0.010***	0.002	0.002	-0.016***	0.001	0.001
	(0.001)	(0.002)	(0.002)	(0.002)	(0.004)	(0.003)
$Size_{i(t-1)}$	0.011***	-0.007***	-0.005***	0.005***	-0.004	-0.005
	(0.000)	(0.001)	(0.001)	(0.001)	(0.003)	(0.004)
$TFP_{i(t-1)}$	0.014***	0.004**	0.002	0.011***	0.006**	0.006**
	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)	(0.003)
$Leverage_{i(t-1)}$	-0.003*	-0.020***	-0.019***	-0.012***	-0.011	-0.012
	(0.002)	(0.004)	(0.003)	(0.004)	(0.009)	(0.008)
$CFK_{i(t-1)}$	-0.011***	-0.002	-0.002	-0.014***	-0.005	-0.005
	(0.001)	(0.002)	(0.002)	(0.003)	(0.004)	(0.004)
Coastal Region	0.012***	0.010***	0.010***	0.060***	0.059***	0.043***
	(0.001)	(0.001)	(0.001)	(0.005)	(0.005)	(0.006)
Western Region	-0.029***	-0.029***	-0.032***	-0.001	-0.002	-0.001
	(0.002)	(0.002)	(0.002)	(0.008)	(0.008)	(0.009)
$\overline{PA_i}$		-0.013***	-0.016***		-0.027***	-0.028***
		(0.002)	(0.002)		(0.005)	(0.005)
$\overline{Size_i}$		0.020***	0.018***		0.010***	0.011***
		(0.001)	(0.001)		(0.004)	(0.004)
$\overline{TFP_i}$		0.031***	0.028***		0.009**	0.011**
		(0.002)	(0.002)		(0.004)	(0.004)
$\overline{Leverage_i}$		0.030***	0.021***		0.029***	0.026**
		(0.004)	(0.004)		(0.010)	(0.010)
$\overline{CFK_i}$		-0.016***	-0.013***		-0.016***	-0.013**
		(0.003)	(0.003)		(0.005)	(0.006)
Obs.	324,757	324,757	324,757	83,394	83,394	83,394

Note: The dependent variable Exp_{it} is a binary variable which equals to one if the firm exports, and zero otherwise. Column (1) and Column (2) present results for PEs sub-group and FEs sub-group, respectively. PEs and FEs refer to private enterprises and foreign enterprises. For each column, cell I presents results for the baseline equation, cell II reports results by considering unobserved firm heterogeneity, and results that take account of initial conditions problem are reported in cell III. All equations are estimated by pooled Probit models clustering observations by firms' ID. Robust standard errors are shown in parentheses. Regional dummies, industry dummies, and year dummies are included in all estimations. *Obs*. stands for the number of observations. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

Table 5.18 The intensity of exporting by ownership (Private firms vs. Foreign firms): marginal effects

Variables	(1)			(2)		
	I	II	III	I	II	III
$Expratio_{i(t-1)}$	0.379***	0.379***	0.318***	0.639***	0.638***	0.532***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.004)
$Expratio_{i1}$			0.076***			0.139***
			(0.002)			(0.004)
$PA_{i(t-1)}$	-0.455***	0.096	0.091	-1.431***	0.147	0.126
	(0.064)	(0.082)	(0.080)	(0.177)	(0.249)	(0.240)
$Size_{i(t-1)}$	1.248***	0.050	0.163**	0.260***	0.269	0.264
	(0.026)	(0.074)	(0.073)	(0.072)	(0.256)	(0.248)
$TFP_{i(t-1)}$	1.090***	0.077	0.141*	0.620***	0.449**	0.482**
	(0.062)	(0.080)	(0.077)	(0.155)	(0.215)	(0.207)
$Leverage_{i(t-1)}$	-0.135	-1.293***	-1.138***	-0.940***	-1.468**	-1.524**
	(0.128)	(0.203)	(0.195)	(0.325)	(0.661)	(0.638)
$CFK_{i(t-1)}$	-0.742***	-0.061	-0.087	-0.725***	-0.013	-0.076
	(0.090)	(0.114)	(0.110)	(0.207)	(0.295)	(0.284)
Coastal Region	1.112***	0.988***	0.777***	6.470***	6.452***	5.434***
	(0.100)	(0.101)	(0.104)	(0.618)	(0.619)	(0.643)
Western Region	-2.312***	-2.303***	-2.316***	-0.706	-0.530	-0.575
	(0.160)	(0.160)	(0.162)	(0.962)	(0.963)	(0.995)
$\overline{PA_i}$		-0.529***	-0.588***		-2.212***	-2.117***
		(0.121)	(0.122)		(0.347)	(0.353)
$\overline{Size_i}$		1.285***	1.205***		0.549**	0.635**
		(0.080)	(0.080)		(0.282)	(0.280)
$\overline{TFP_i}$		1.738***	1.571***		0.316***	0.382***
		(0.116)	(0.117)		(0.301)	(0.309)
$\overline{Leverage_i}$		1.953***	1.426***		3.150***	2.703***
		(0.261)	(0.262)		(0.771)	(0.776)
$\overline{CFK_i}$		-1.178***	-1.070***		-1.211***	-0.888**
		(0.172)	(0.176)		(0.397)	(0.408)
Obs.	324,757	324,757	324,757	83,394	83,394	83,394

Note: The dependent variable $Expratio_{it}$ (exports/total sales) is a censored variable which takes its real value if the firm has positive exports with no larger than total sales (uncensored observations), zero if the firm does not export (left-censored), and 100 for the upper limits (right-censored). Column (1) and Column (2) present results for PEs sub-group and FEs sub-group, respectively. PEs and FEs refer to private enterprises and foreign enterprises. For each column, cell I presents results for the baseline equation, cell II reports results by considering unobserved firm heterogeneity, and results that take account of initial conditions problem are reported in cell III. All equations are estimated by pooled Tobit models clustering observations by firms' ID. Robust standard errors are shown in parentheses. Regional dummies, industry dummies, and year dummies are included in all estimations. *Obs*. stands for the number of observations. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

5.8.3 The propensity and intensity of exporting by region

In this section, we estimate the decision to export and export intensity by regions. We report the marginal effects of the regression results for the probability of exporting by regions in Table 5.19 and for export intensity in Table 5.20. The coefficients estimates are provided in Table 5A.6 and Table 5A.7 in the Appendix. In each table, column (1) reports the results for firms located in coastal region, column (2) presents the results for firms in the central region, and column (3) shows the results for firms in the western region.

In all three regressions, for the firms in the east of China, the *lishu* relationship has a significant negative effect on the propensity and intensity of exporting. As for other factors, we find the similar results with the analysis in the previous sections.

Table 5.19 The propensity of exporting by region: marginal effects

Variables	(1)			(2)			(3)		
	I	II	III	I	II	III	I	II	III
$Exp_{i(t-1)}$	0.376***	0.375***	0.303***	0.302***	0.301***	0.242***	0.209***	0.208***	0.169***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.003)
Exp_{i1}			0.096***			0.105***			0.058***
			(0.001)			(0.003)			(0.003)
$PA_{i(t-1)}$	-0.017***	0.002	0.002	-0.007***	-0.009***	-0.009***	-0.001	0.002	0.001
	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)
$Size_{i(t-1)}$	0.011***	-0.006***	-0.004***	0.008***	-0.012***	-0.010***	0.010***	-0.001	-0.001
	(0.000)	(0.001)	(0.001)	(0.001)	(0.003)	(0.003)	(0.001)	(0.003)	(0.003)
$TFP_{i(t-1)}$	0.015***	0.001	0.001	0.007***	0.005*	0.003	0.004***	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)
$Leverage_{i(t-1)}$	-0.004**	-0.014***	-0.012***	-0.009**	-0.020***	-0.021***	-0.001	-0.003	-0.005
	(0.002)	(0.004)	(0.003)	(0.004)	(0.007)	(0.007)	(0.000)	(0.006)	(0.006)
$CFK_{i(t-1)}$	-0.014***	-0.001	-0.001	-0.002	-0.009*	-0.009**	-0.006*	-0.013***	-0.012***
	(0.001)	(0.002)	(0.002)	(0.003)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
State Ownership	-0.031***	-0.023***	-0.024***	-0.018***	-0.015***	-0.016***	-0.022***	-0.013***	-0.017***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.003)	(0.003)
Foreign Ownership	0.062***	0.060***	0.045***	0.041***	0.041***	0.028***	0.022***	0.028***	0.022***
	(0.001)	(0.001)	(0.001)	(0.004)	(0.004)	(0.005)	(0.005)	(0.003)	(0.004)
$\overline{PA_i}$		-0.028***	-0.031***		-0.003	-0.005		-0.005*	-0.006*
		(0.002)	(0.002)		(0.004)	(0.004)		(0.003)	(0.004)
$\overline{Size_i}$		0.019***	0.016***		0.022***	0.020***		0.013***	0.010***
		(0.001)	(0.001)		(0.003)	(0.003)		(0.003)	(0.003)
$\overline{TFP_i}$		0.025***	0.024***		0.017***	0.013***		0.003	0.005
		(0.002)	(0.002)		(0.003)	(0.004)		(0.003)	(0.003)
$\overline{Leverage_i}$		0.018***	0.011***		0.021**	0.022***		0.004	0.009
		(0.004)	(0.004)		(0.008)	(0.008)		(0.007)	(0.007)
$\overline{CFK_i}$		-0.024***	-0.021***		-0.022***	-0.029***		-0.005	-0.001
		(0.002)	(0.003)		(0.006)	(0.006)		(0.005)	(0.006)
Obs.	376,482	376,482	376,482	71,763	71,763	71,763	53,951	53,951	53,951

Note: The dependent variable Exp_{it} is a binary variable which equals to one if the firm exports, and zero otherwise. Column (1), column (2) and Column (3) present results for the coastal region sub-group, the central region sub-group and the western region sub-group, respectively. For each column, cell I presents results for the baseline equation, cell II reports results by considering unobserved firm heterogeneity, and results that take account of initial conditions problem are reported in cell III. All equations are estimated by pooled Probit models clustering observations by firms' ID. Robust standard errors are shown in parentheses. Ownership dummies, industry dummies, and year dummies are included in all estimations. *Obs*. stands for the number of observations. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

Table 5.20 The intensity of exporting by region: marginal effects

Variables	(1)			(2)			(3)		
	I	II	III	I	II	III	I	II	III
$Expratio_{i(t-1)}$	0.456***	0.456***	0.381***	0.279***	0.279***	0.234***	0.252***	0.252***	0.209***
	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)	(0.004)
$Expratio_{i1}$			0.095***			0.060***			0.054***
			(0.002)			(0.004)			(0.004)
$PA_{i(t-1)}$	-1.055***	0.061	0.064	-0.247**	-0.314**	-0.335**	-0.034	0.052	0.083
	(0.067)	(0.090)	(0.087)	(0.103)	(0.135)	(0.131)	(0.109)	(0.138)	(0.133)
$Size_{i(t-1)}$	1.243***	0.143*	0.246***	0.722***	0.257*	0.197	1.096***	0.248*	0.295**
	(0.028)	(0.082)	(0.081)	(0.044)	(0.132)	(0.130)	(0.046)	(0.136)	(0.133)
$TFP_{i(t-1)}$	1.263***	0.200**	0.256***	0.471***	0.032	0.081	0.259***	0.155	0.168
	(0.062)	(0.083)	(0.079)	(0.088)	(0.117)	(0.113)	(0.096)	(0.123)	(0.118)
$Leverage_{i(t-1)}$	-0.139	-0.792***	-0.677***	-0.595***	-1.404***	-1.343***	-0.248	-0.517*	-0.506*
	(0.130)	(0.223)	(0.214)	(0.193)	(0.316)	(0.307)	(0.218)	(0.306)	(0.294)
$CFK_{i(t-1)}$	-0.975***	-0.025	-0.016	-0.335**	-0.131	-0.153	-0.320*	-0.438**	-0.418**
	(0.086)	(0.113)	(0.109)	(0.147)	(0.194)	(0.186)	(0.184)	(0.207)	(0.201)
State Ownership	-2.447***	-1.970***	-1.882***	-0.802***	-0.728***	-0.739***	-0.551***	-0.509***	-0.503***
	(0.241)	(0.243)	(0.244)	(0.192)	(0.197)	(0.199)	(0.175)	(0.181)	(0.184)
Foreign Ownership	3.887***	3.826***	3.076***	1.759***	1.741***	1.478***	1.563***	1.528***	1.340***
	(0.076)	(0.077)	(0.085)	(0.214)	(0.217)	(0.237)	(0.206)	(0.208)	(0.232)
$\overline{PA_i}$		-1.692***	-1.738***		-0.102	-0.150		-0.036	-0.120
		(0.128)	(0.129)		(0.195)	(0.196)		(0.207)	(0.209)
$\overline{Size_i}$		1.169***	1.108***		1.076***	1.017***		0.910***	0.863***
		(0.088)	(0.088)		(0.141)	(0.140)		(0.145)	(0.143)
$\overline{TFP_i}$		1.810***	1.698***		0.642***	0.519***		0.073	0.048
		(0.118)	(0.120)		(0.168)	(0.169)		(0.181)	(0.183)
$\overline{Leverage_i}$		1.553***	1.260***		1.399***	1.222***		0.317	0.437
		(0.276)	(0.278)		(0.406)	(0.404)		(0.403)	(0.407)
$\overline{CFK_i}$		-1.699***	-1.497***		-0.928***	-1.009***		-0.316	-0.284
		(0.165)	(0.169)		(0.277)	(0.281)		(0.321)	(0.324)
Obs.	376,482	376,482	376,482	71,763	71,763	71,763	53,951	53,951	53,951

Note: The dependent variable $Expratio_{it}$ (exports/total sales) is a censored variable which takes its real value if the firm has positive exports with no larger than total sales (uncensored observations), zero if the firm does not export (left-censored), and 100 for the upper limits (right-censored). Column (1), column (2) and Column (3) present results for the coastal region sub-group, the central region sub-group and the western region sub-group, respectively. For each column, cell I presents results for the baseline equation, cell II reports results by considering unobserved firm heterogeneity, and results that take account of initial conditions problem are reported in cell III. All equations are estimated by pooled Tobit models clustering observations by firms' ID. Robust standard errors are shown in parentheses. Ownership dummies, industry dummies, and year dummies are included in all estimations. *Obs*. stands for the number of observations. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

5.9 Conclusion

On the one hand, extensive studies have been done to estimate firms' exporting activities; on the other hand, political connections and the benefits they can provide have attracted worldwide academic attentions. However, only few studies have looked at firms' exporting activities and political connections from the perspective of state ownership. Having experienced almost four decades of economic reform since 1978, China has risen as a leading power in the global exporting market. Meanwhile, government interventions still play an important part in firms' development. Therefore, it is interesting to look at the links between political connections and firms' exporting activities in the context of China.

I investigate the probability of exporting and the intensity of exporting by examining how sunk costs, the *lishu* relationship, firm observed and unobserved heterogeneity, and the initial conditions affect the exporting behaviour of Chinese firms. An important feature of this chapter is that I take into account firms' political affiliation, in terms of the *lishu* relationship. Using a large dataset of Chinese manufacturing firms between 2001 and 2007, I find that the sunk entry costs exist in exporting, and that previous export status and export ratio play an important role in the current export participation and intensity. We also find that firms with a *lishu* relationship in the previous year and over the period have a negative impact on both the propensity and intensity of exporting in the current period. Such negative effects are more significant for foreign firms compared with private firms, and for firms located in the coastal region. Interestingly, when we further divide the firms' *lishu* relationship into four

different levels, we find that this negative effect is only significant for firms affiliated with low or medium levels of government, but insignificant for firms affiliated with high level government. We attribute this finding to the fact that high level government can obtain scarce exporting opportunities through their external relations with foreign governments and prefer to transfer these opportunities to the affiliated firms to mitigate the negative influence of the *lishu* relationship.

We also find that firms with larger size and higher productivity are more likely to participate in export markets and export more. As for the financial variables, we find that although the lagged leverage ratio is negatively related to the propensity and intensity of exporting, over time such negative relationship diminishes and a higher leverage ratio is associated with high probability and intensity of exporting. The negative coefficients on cash flow/capital ratio may attribute to the size-effects (Minetti and Zhu, 2011). Moreover, the size of sunk entry costs of exporting is overestimated without proper controlling for the initial conditions problem. We correct the unobserved firm heterogeneity and the initial conditions problem by adding a vector of means of observed firm characteristics and the initial values.

Our results have some implications for the development of Chinese manufacturing firms and policy makers. Firstly, not all firms have the appropriate characteristics to become exporters. Participating in foreign markets is always involved in huge sunk costs. Therefore, policies aiming to help firms overcome the obstacles of exporting should be more effective and helpful in promoting more exporting entrant. The governments are advised to provide information about the potential foreign markets

to reduce parts of the sunk costs for the potential exporters. Secondly, we find that state ownership has a negative and significant impact on firms' exporting activities. It may be considered as a result of the SOEs lacking the capabilities to internationalise. Therefore, firms with an exporting plan should avoid collaborating with SOEs or holding large state stakes in the firms. Last but not least, we find that affiliation with low or medium level of government is negatively associated with firms' exporting activities, while this negative effect diminishes for firms affiliated with high level of government. Therefore, firms with an international agenda should try to affiliate with high level government, while avoiding the affiliation with low or medium level of government. Further research can be done by adopting other estimations such as the special regressor estimator proposed by Lewbel (2000).

Appendix 5A

Table 5A.1 Definition of the variables used

Variable	Definition
Exp	a dummy variable which equals to one if the firm exports, and zero otherwise
Expratio	ratio of exports to total sales
PA	a dummy variable that equals to 1 if firm has a *lishu* relationship and 0 otherwise
PAV	an ordinal dummy variable that equals to 1 if firm has no *lishu* relationship, 2 if firm has a *lishu* relationship with the low level of government, 3 if firm affiliated with the medium level of government, 4 if firm has a *lishu* relationship with the high level of government
Total Assets	sum of the firm's fixed and current assets, where fixed assets include tangible fixed assets, intangible fixed assets, and other fixed assets; and current assets include inventories, accounts receivable, and other current assets
Size	natural logarithm of total real assets
Leverage ratio	ratio of total debt to total assets
CFK	ratio of cash flow to tangible fixed assets
TFP	total factor productivity, calculated using the Levinsohn and Petrin (2003) method, applied separately to different industrial groups
State ownership	a dummy variable that equals to 1 if firm is state-owned and 0 otherwise
Foreign ownership	a dummy variable that equals to 1 if firm is owned by foreign investors (including investors from Hong Kong, Macao, and Taiwan) and 0 otherwise
Coastal region	a dummy variable that equals to 1 if firm is located in the coastal region in china and 0 otherwise
Central region	a dummy variable that equals to 1 if firm is located in the central region in china and 0 otherwise
Western region	a dummy variable that equals to 1 if firm is located in the western region in china and 0 otherwise
Age	a firm's age is calculated since the year the firm was established
Deflators	all variables (except tangible fixed assets) are deflated using provincial ex-factory producer price indices (*pdsales*) taken from various issues of the china statistical yearbook. tangible fixed assets are deflated using a deflator for fixed capital formation (*pdgoods*)

Table 5A.2 The correlation matrix of the main variables

	Real Assets	PA	PAV	Age	TFP	Leverage	CFK
Real Assets	1. 000						
PA	0.079	1. 000					
PAV	0.156	0.881	1. 000				
Age	0.103	0.290	0.359	1. 000			
TFP	0.154	-0.073	-0.073	-0.076	1. 000		
Leverage	0.003	0.056	0.055	0.108	-0.212	1. 000	
CFK	-0.026	-0.061	-0.084	-0.095	0.479	-0.158	1. 000

Table 5A.3 Structure of the unbalanced panel

Year	No. of Observations	Percent	Cumulative
2001	43,187	8.60	8.60
2002	58,005	11.55	20.15
2003	71,108	14.16	34.31
2004	85,698	17.06	51.37
2005	84,953	16.92	68.29
2006	82,355	16.40	84.69
2007	76,890	15.31	100.00
Total	502,196	100.00	

No. of Observations per firm	No. of firms	Percent	Cumulative
5	31,061	27.87	27.87
6	22,939	20.58	48.45
7	24,109	21.63	70.08
8	33,351	29.92	100.00
Total	111,460	100.00	

No. of Observations per firm	No. of Observations	Percent	Cumulative
5	99,212	19.76	19.76
6	90,330	17.99	37.74
7	115,819	23.06	60.81
8	196,835	39.19	100.00
Total	502,196	100.00	

Table 5A.4 The propensity of exporting by ownership (Private firms vs. Foreign firms): coefficients

Variables	(1)			(2)		
	I	II	III	I	II	III
$Exp_{i(t-1)}$	2.596***	2.597***	2.189***	2.361***	2.361***	1.964***
	(0.009)	(0.009)	(0.010)	(0.016)	(0.016)	(0.018)
Exp_{i1}			0.717***			0.669***
			(0.010)			(0.017)
$PA_{i(t-1)}$	-0.072***	0.012	0.011	-0.094***	0.008	0.007
	(0.007)	(0.007)	(0.005)	(0.014)	(0.004)	(0.003)
$Size_{i(t-1)}$	0.083***	-0.053***	-0.037***	0.030***	-0.023	-0.033
	(0.003)	(0.009)	(0.010)	(0.006)	(0.020)	(0.021)
$TFP_{i(t-1)}$	0.104***	0.026**	0.015	0.065***	0.036**	0.037**
	(0.007)	(0.010)	(0.011)	(0.012)	(0.017)	(0.017)
$Leverage_{i(t-1)}$	-0.025*	-0.146***	-0.141***	-0.069***	-0.066	-0.073
	(0.014)	(0.026)	(0.026)	(0.025)	(0.050)	(0.051)
$CFK_{i(t-1)}$	-0.081***	-0.013	-0.018	-0.084***	-0.029	-0.033
	(0.011)	(0.015)	(0.015)	(0.016)	(0.023)	(0.024)
Coastal Region	0.091***	0.073***	0.004***	0.344***	0.341***	0.258***
	(0.009)	(0.009)	(0.010)	(0.030)	(0.030)	(0.034)
Western Region	-0.214***	-0.212***	-0.242***	-0.003	-0.012	-0.003
	(0.014)	(0.014)	(0.016)	(0.047)	(0.047)	(0.053)
$\overline{PA_i}$		-0.093***	-0.119***		-0.156***	-0.167***
		(0.014)	(0.016)		(0.027)	(0.029)
$\overline{Size_i}$		0.148***	0.135***		0.055***	0.066***
		(0.010)	(0.011)		(0.021)	(0.022)
$\overline{TFP_i}$		0.226***	0.212***		0.055**	0.064**
		(0.013)	(0.014)		(0.023)	(0.025)
$\overline{Leverage_i}$		0.220***	0.158***		0.169***	0.156**
		(0.031)	(0.033)		(0.058)	(0.062)
$\overline{CFK_i}$		-0.117***	-0.098***		-0.095***	-0.080**
		(0.020)	(0.022)		(0.031)	(0.034)
Obs.	324,757	324,757	324,757	83,394	83,394	83,394
Log likelihood	-83,154	-82,860	-80,009	-26,544	-26,515	-25,555

Note: The dependent variable Exp_{it} is a binary variable which equals to one if the firm exports, and zero otherwise. Column (1) and Column (2) present results for PEs sub-group and FEs sub-group, respectively. PEs and FEs refer to private enterprises and foreign enterprises. For each column, cell I presents results for the baseline equation, cell II reports results by considering unobserved firm heterogeneity, and results that take account of initial conditions problem are reported in cell III. All equations are estimated by pooled Probit models clustering observations by firms' ID. Robust standard errors are shown in parentheses. Regional dummies, industry dummies, and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

Table 5A.5 The intensity of exporting by ownership (Private firms vs. Foreign firms): coefficients

Variables	(1)			(2)		
	I	II	III	I	II	III
$Expratio_{i(t-1)}$	1.349***	1.348***	1.131***	0.993***	0.991***	0.924***
	(0.003)	(0.003)	(0.006)	(0.004)	(0.004)	(0.007)
$Expratio_{i1}$			0.272***			0.252***
			(0.006)			(0.007)
$PA_{i(t-1)}$	-1.617***	0.341	0.322	-2.223***	0.229	0.195
	(0.229)	(0.293)	(0.283)	(0.276)	(0.386)	(0.371)
$Size_{i(t-1)}$	4.439***	0.264	0.579**	0.403***	0.417	0.408
	(0.093)	(0.178)	(0.259)	(0.112)	(0.398)	(0.384)
$TFP_{i(t-1)}$	3.879***	0.274	0.502*	0.963***	0.697**	0.747**
	(0.220)	(0.283)	(0.272)	(0.241)	(0.334)	(0.321)
$Leverage_{i(t-1)}$	-0.481	-4.601***	-4.046***	-1.460***	-2.280**	-2.359**
	(0.454)	(0.721)	(0.693)	(0.505)	(1.027)	(0.988)
$CFK_{i(t-1)}$	-2.641***	-0.218	-0.310	-1.126***	-0.021	-0.117
	(0.320)	(0.404)	(0.390)	(0.321)	(0.459)	(0.440)
Coastal Region	3.955***	3.516***	2.761***	10.050***	10.022***	8.412***
	(0.358)	(0.360)	(0.371)	(0.962)	(0.962)	(0.996)
Western Region	-8.225***	-8.194***	-8.232***	-1.096	-0.824	-0.890
	(0.570)	(0.571)	(0.577)	(1.494)	(1.495)	(1.540)
$\overline{PA_i}$		-1.883***	-2.088***		-3.437***	-3.278***
		(0.430)	(0.435)		(0.539)	(0.547)
$\overline{Size_i}$		4.573***	4.282***		0.852**	0.983**
		(0.284)	(0.283)		(0.438)	(0.433)
$\overline{TFP_i}$		6.183***	5.583***		0.491***	0.592***
		(0.413)	(0.416)		(0.468)	(0.478)
$\overline{Leverage_i}$		6.951***	5.069***		4.892***	4.185***
		(0.931)	(0.931)		(1.197)	(1.201)
$\overline{CFK_i}$		-4.192***	-3.802***		-1.881***	-1.374**
		(0.614)	(0.626)		(0.616)	(0.631)
Obs.	324,757	324,757	324,757	83,394	83,394	83,394
Log likelihood	-476,712	-476373	-473941	-295103	-295065	-293634
Uncensored	82,564	82564	82564	57713	57713	57713
Left-censored	242,193	242193	242193	25681	25681	25681
Right-censored	0	0	0	0	0	0

Note: The dependent variable $Expratio_{it}$ (exports/total sales) is a censored variable which takes its real value if the firm has positive exports with no larger than total sales (uncensored observations), zero if the firm does not export (left-censored), and 100 for the upper limits (right-censored). . Column (1) and Column (2) present results for PEs sub-group and FEs sub-group, respectively. PEs and FEs refer to private enterprises and foreign enterprises. For each column, cell I presents results for the baseline equation, cell II reports results by considering unobserved firm heterogeneity, and results that take account of initial conditions problem are reported in cell III. All equations are estimated by pooled Tobit models clustering observations by firms' ID. Robust standard errors are shown in parentheses. Regional dummies, industry dummies, and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

Table 5A.6 The propensity of exporting by region: coefficients

Variables	(1)			(2)			(3)		
	I	II	III	I	II	III	I	II	III
$Exp_{i(t-1)}$	2.616***	2.615***	2.191***	2.374***	2.371***	1.988***	2.789***	2.783***	2.343***
	(0.008)	(0.008)	(0.009)	(0.023)	(0.023)	(0.024)	(0.031)	(0.031)	(0.037)
Exp_{i1}			0.698***			0.863***			0.798***
			(0.009)			(0.028)			(0.038)
$PA_{i(t-1)}$	-0.115***	0.012	0.018	-0.056***	-0.068***	-0.075***	-0.003	0.021	0.020
	(0.007)	(0.011)	(0.011)	(0.016)	(0.024)	(0.025)	(0.023)	(0.037)	(0.037)
$Size_{i(t-1)}$	0.078***	-0.042***	-0.028***	0.064***	-0.095***	-0.086***	0.138***	-0.019	-0.009
	(0.003)	(0.009)	(0.009)	(0.006)	(0.022)	(0.023)	(0.009)	(0.033)	(0.035)
$TFP_{i(t-1)}$	0.106***	0.003	0.008	0.053***	0.036*	0.024	0.059***	0.024	0.032
	(0.006)	(0.009)	(0.010)	(0.014)	(0.021)	(0.021)	(0.021)	(0.032)	(0.032)
$Leverage_{i(t-1)}$	-0.029**	-0.096***	-0.090***	-0.073**	-0.154***	-0.176***	-0.001	-0.034	-0.066
	(0.013)	(0.025)	(0.025)	(0.029)	(0.055)	(0.056)	(0.000)	(0.081)	(0.083)
$CFK_{i(t-1)}$	-0.096***	-0.004	-0.002	-0.018	-0.070*	-0.073**	-0.003*	-0.172***	-0.167***
	(0.009)	(0.013)	(0.013)	(0.025)	(0.036)	(0.036)	(0.001)	(0.059)	(0.060)
State Ownership	-0.214***	-0.162***	-0.176***	-0.138***	-0.121***	-0.130***	-0.291***	-0.171***	-0.238***
	(0.018)	(0.018)	(0.021)	(0.026)	(0.027)	(0.030)	(0.054)	(0.034)	(0.041)
Foreign Ownership	0.428***	0.420***	0.327***	0.324***	0.320***	0.227***	0.296***	0.376***	0.311***
	(0.008)	(0.008)	(0.009)	(0.033)	(0.034)	(0.040)	(0.060)	(0.042)	(0.051)
$\overline{PA_i}$		-0.193***	-0.227***		-0.022	-0.038		-0.062*	-0.082*
		(0.013)	(0.014)		(0.031)	(0.033)		(0.046)	(0.050)
$\overline{Size_i}$		0.130***	0.119***		0.177***	0.161***		0.175***	0.138***
		(0.009)	(0.010)		(0.023)	(0.024)		(0.035)	(0.037)
$\overline{TFP_i}$		0.177***	0.172***		0.132***	0.106***		0.044	0.063
		(0.012)	(0.013)		(0.027)	(0.029)		(0.041)	(0.044)
$\overline{Leverage_i}$		0.122***	0.079***		0.164**	0.178***		0.052	0.126
		(0.029)	(0.030)		(0.065)	(0.068)		(0.096)	(0.102)
$\overline{CFK_i}$		-0.170***	-0.152***		-0.173***	-0.235***		-0.063	-0.012
		(0.017)	(0.018)		(0.046)	(0.048)		(0.073)	(0.081)
Obs.	376,482	376,482	376,482	71,763	71,763	71,763	53,951	53,951	53,951
Log likelihood	-101,028	-100,696	-97,112	-17,010	-16,942	-16,319	-7,815	-7,816	-7,525

Note: The dependent variable Exp_{it} is a binary variable which equals to one if the firm exports, and zero otherwise. Column (1), column (2) and Column (3) present results for the coastal region sub-group, the central region sub-group and the western region sub-group, respectively. For each column, cell I presents results for the baseline equation, cell II reports results by considering unobserved firm heterogeneity, and results that take account of initial conditions problem are reported in cell III. All equations are estimated by pooled Probit models clustering observations by firms' ID. Robust standard errors are shown in parentheses. Ownership dummies, industry dummies, and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

Table 5A.7 The intensity of exporting by region: coefficients

Variables	(1)			(2)			(3)		
	I	II	III	I	II	III	I	II	III
$Expratio_{i(t-1)}$	1.212***	1.212***	1.010***	1.395***	1.399***	1.172***	1.444***	1.445***	1.199***
	(0.002)	(0.002)	(0.004)	(0.009)	(0.009)	(0.018)	(0.014)	(0.014)	(0.023)
$Expratio_{i1}$			0.251***			0.302***			0.309***
			(0.004)			(0.019)			(0.025)
$PA_{i(t-1)}$	-2.806***	0.163	0.170	-1.239**	-1.573**	-1.679**	-0.194	0.297	0.477
	(0.180)	(0.240)	(0.231)	(0.518)	(0.678)	(0.657)	(0.624)	(0.793)	(0.762)
$Size_{i(t-1)}$	3.304***	0.379*	0.652***	3.617***	1.287*	0.987	6.281***	1.423*	1.693**
	(0.074)	(0.219)	(0.214)	(0.220)	(0.664)	(0.653)	(0.275)	(0.781)	(0.765)
$TFP_{i(t-1)}$	3.359***	0.531**	0.680***	2.357***	0.161	0.406	1.483***	0.889	0.966
	(0.166)	(0.220)	(0.211)	(0.441)	(0.587)	(0.568)	(0.552)	(0.705)	(0.677)
$Leverage_{i(t-1)}$	-0.370	-2.107***	-1.797***	-2.982***	-7.043***	-6.733***	-1.424	-2.965*	-2.905*
	(0.346)	(0.594)	(0.569)	(0.966)	(1.586)	(1.540)	(1.252)	(1.754)	(1.687)
$CFK_{i(t-1)}$	-2.592***	-0.067	-0.041	-1.678**	-0.657	-0.769	-1.836*	-2.511**	-2.400**
	(0.229)	(0.301)	(0.289)	(0.737)	(0.971)	(0.933)	(1.053)	(1.190)	(1.155)
State Ownership	-6.507***	-5.239***	-4.993***	-4.016***	-3.652***	-3.706***	-3.156***	-2.917***	-2.888***
	(0.641)	(0.647)	(0.648)	(0.965)	(0.991)	(0.996)	(1.007)	(1.039)	(1.057)
Foreign Ownership	10.336***	10.174***	8.160***	8.813***	8.733***	7.409***	8.963***	8.766***	7.691***
	(0.205)	(0.209)	(0.226)	(1.076)	(1.090)	(1.189)	(1.188)	(1.197)	(1.334)
$\overline{PA_i}$		-4.498***	-4.611***		-0.510	-0.750		-0.209	-0.690
		(0.340)	(0.343)		(0.980)	(0.984)		(1.185)	(1.202)
$\overline{Size_i}$		3.108***	2.938***		5.396***	5.100***		5.221***	4.954***
		(0.234)	(0.232)		(0.709)	(0.702)		(0.836)	(0.825)
$\overline{TFP_i}$		4.813***	4.504***		3.220***	2.600***		0.418	0.277
		(0.315)	(0.318)		(0.842)	(0.847)		(1.036)	(1.051)
$\overline{Leverage_i}$		4.130***	3.341***		7.014***	6.128***		1.821	2.507
		(0.735)	(0.737)		(2.040)	(2.025)		(2.314)	(2.338)
$\overline{CFK_i}$		-4.517***	-3.972***		-4.654***	-5.060***		-1.814	-1.629
		(0.439)	(0.448)		(1.392)	(1.410)		(1.844)	(1.858)
Obs.	376,482	376,482	376,482	71,763	71,763	71,763	53,951	53,951	53,951
Log likelihood	-768,016	-767,615	-763,624	-65,806	-65,736	-65,429	-36,477	-36,452	-36,211
Uncensored	139,864	139,864	139,864	10,720	10,720	10,720	6,173	6,173	6,173
Left-censored	236,618	236,618	236,618	61,043	61,043	61,043	47,778	47,778	47,778
Right-censored	0	0	0	0	0	0	0	0	0

Note: The dependent variable $Expratio_{it}$ (exports/total sales) is a censored variable which takes its real value if the firm has positive exports with no larger than total sales (uncensored observations), zero if the firm does not export (left-censored), and 100 for the upper limits (right-censored). Column (1), column (2) and Column (3) present results for the coastal region sub-group, the central region sub-group and the western region sub-group, respectively. For each column, cell I presents results for the baseline equation, cell II reports results by considering unobserved firm heterogeneity, and results that take account of initial conditions problem are reported in cell III. All equations are estimated by pooled Tobit models clustering observations by firms' ID. Robust standard errors are shown in parentheses. Ownership dummies, industry dummies, and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

Table 5A.8 The propensity of exporting (random-effects Probit model)

Variables	(1)		(2)		(3)	
	Coeff.	ME	Coeff.	ME	Coeff.	ME
$Exp_{i(t-1)}$	2.571***	0.350***	2.573***	0.350***	1.507***	0.138***
	(0.006)	(0.000)	(0.006)	(0.000)	(0.012)	(0.000)
Exp_{i1}					1.965***	0.179***
					(0.023)	(0.000)
$PA_{i(t-1)}$	-0.097***	-0.013***	0.003	0.001	0.006	0.001
	(0.006)	(0.000)	(0.010)	(0.000)	(0.012)	(0.000)
$Size_{i(t-1)}$	0.079***	0.011***	-0.050***	-0.007***	-0.060***	-0.006***
	(0.002)	(0.000)	(0.008)	(0.000)	(0.010)	(0.003)
$TFP_{i(t-1)}$	0.095***	0.013***	-0.005	-0.001	0.042***	0.004***
	(0.006)	(0.000)	(0.008)	(0.000)	(0.010)	(0.000)
$Leverage_{i(t-1)}$	-0.036***	-0.005***	-0.094***	-0.013***	-0.091***	-0.008***
	(0.012)	(0.000)	(0.022)	(0.000)	(0.027)	(0.000)
$CFK_{i(t-1)}$	-0.083***	-0.011***	-0.013	-0.002***	-0.047***	-0.004***
	(0.008)	(0.000)	(0.012)	(0.000)	(0.014)	(0.000)
State Ownership	-0.179***	-0.024***	-0.138***	-0.019***	-0.274***	-0.025***
	(0.014)	(0.000)	(0.014)	(0.000)	(0.025)	(0.000)
Foreign Ownership	0.426***	0.058***	0.417***	0.057***	0.572***	0.052***
	(0.007)	(0.000)	(0.007)	(0.000)	(0.014)	(0.000)
Coastal Region	0.099***	0.013***	0.084***	0.011***	0.036**	0.003***
	(0.008)	(0.000)	(0.009)	(0.000)	(0.015)	(0.000)
Western Region	-0.188***	-0.026***	-0.186***	-0.025***	-0.429***	-0.039***
	(0.013)	(0.000)	(0.013)	(0.000)	(0.022)	(0.000)
$\overline{PA_i}$			-0.154***	-0.021***	-0.281***	-0.026***
			(0.012)	(0.000)	(0.018)	(0.000)
$\overline{Size_i}$			0.140***	0.019***	0.090***	0.008***
			(0.009)	(0.000)	(0.011)	(0.000)
$\overline{TFP_i}$			0.167***	0.023***	0.194***	0.018***
			(0.011)	(0.000)	(0.016)	(0.000)
$\overline{Leverage_i}$			0.113***	0.015***	0.077**	0.007***
			(0.026)	(0.000)	(0.037)	(0.000)
$\overline{CFK_i}$			-0.114***	-0.016***	-0.094***	-0.009***
			(0.016)	(0.000)	(0.024)	(0.000)
Obs.	502,196	502,196	502,196	502,196	502,196	502,196
Log likelihood	-127,999		-127,622		-120,143	

Note: The dependent variable Exp_{it} is a binary variable which equals to one if the firm exports, and zero otherwise. Column (1) presents results for the baseline equation. Column (2) reports results by considering unobserved firm heterogeneity. Results that take account of initial conditions problem are reported in column (3). All equations are estimated by random-effects Probit models. Coefficients (Coeff.) and marginal effects (ME) are presented for each equation. Robust standard errors are shown in parentheses. Ownership dummies, regional dummies, industry dummies, and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

Table 5A.9 The intensity of exporting (random-effects Tobit model)

Variables	(1)		(2)		(3)	
	Coeff.	ME	Coeff.	ME	Coeff.	ME
$Expratio_{i(t-1)}$	0.786***	0.238***	0.785***	0.238***	0.394***	0.121***
	(0.004)	(0.001)	(0.004)	(0.002)	(0.003)	(0.001)
$Expratio_{i1}$					0.855***	0.263***
					(0.005)	(0.001)
$PA_{i(t-1)}$	-2.259***	-0.684***	0.112	0.034	0.102	0.031
	(0.187)	(0.057)	(0.218)	(0.066)	(0.201)	(0.062)
$Size_{i(t-1)}$	2.794***	0.846***	1.233***	0.374***	2.189***	0.673***
	(0.101)	(0.031)	(0.196)	(0.060)	(0.181)	(0.056)
$TFP_{i(t-1)}$	2.291***	0.694***	1.051***	0.319***	1.409***	0.433***
	(0.164)	(0.050)	(0.188)	(0.057)	(0.173)	(0.053)
$Leverage_{i(t-1)}$	-0.186	-0.056	-1.112**	-0.337**	-0.334	-0.103
	(0.388)	(0.117)	(0.506)	(0.153)	(0.467)	(0.144)
$CFK_{i(t-1)}$	-1.855***	-0.562***	-0.522**	-0.158**	-0.757***	-0.233***
	(0.232)	(0.070)	(0.263)	(0.080)	(0.242)	(0.075)
State Ownership	-10.868***	-3.291***	-7.755***	-2.351***	-12.846***	-3.951***
	(0.623)	(0.189)	(0.642)	(0.195)	(0.892)	(0.274)
Foreign Ownership	30.464***	9.225***	29.654***	8.991***	10.785***	3.317***
	(0.361)	(0.106)	(0.369)	(0.109)	(0.711)	(0.219)
Coastal Region	11.468***	3.473***	10.394***	3.152***	4.350***	1.338***
	(0.411)	(0.124)	(0.411)	(0.124)	(0.409)	(0.126)
Western Region	-10.800***	-3.270***	-10.774***	-3.267***	-11.810***	-3.633***
	(0.612)	(0.185)	(0.609)	(0.184)	(0.608)	(0.187)
$\overline{PA_i}$			-8.528***	-2.586***	-4.962***	-1.526***
			(0.411)	(0.124)	(0.426)	(0.131)
$\overline{Size_i}$			2.275***	0.690***	2.377***	0.731***
			(0.231)	(0.070)	(0.218)	(0.067)
$\overline{TFP_i}$			4.323***	1.311***	3.167***	0.974***
			(0.361)	(0.110)	(0.354)	(0.109)
$\overline{Leverage_i}$			4.650***	1.410***	1.775**	0.546**
			(0.802)	(0.243)	(0.789)	(0.243)
$\overline{CFK_i}$			-4.336***	-1.315***	-1.249**	-0.384**
			(0.522)	(0.158)	(0.527)	(0.162)
Obs.	502,196	502,196	502,196	502,196	502,196	502,196
Log likelihood	-860926		-860543		-840536	
Uncensored	156,757		156,757		156,757	
Left-censored	345,439		345,439		345,439	
Right-censored	0		0		0	

Note: The dependent variable $Expratio_{it}$ (exports/total sales) is a censored variable which takes its real value if the firm has positive exports with no larger than total sales (uncensored observations), zero if the firm does not export (left-censored), and 100 for the upper limits (right-censored). Column (1) presents results for the baseline equation. Column (2) reports results by considering unobserved firm heterogeneity. Results that take account of initial conditions problem are reported in column (3). All equations are estimated by random-effects Tobit models. Coefficients (Coeff.) and marginal effects (ME) are presented for each equation. Robust standard errors are shown in parentheses. Ownership dummies, regional dummies, industry dummies, and year dummies are included in all estimations. *Obs*. stands for the number of observations. *Log likelihood* is the log likelihood of the fitted model. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively.

CHAPTER 6 POLITICAL CONNECTIONS AND FINANCIAL CONSTRAINTS

In this chapter, we examine the extent to which political connections, intended as the *lishu* relationship, affect the financial constraints using 105,487 unlisted Chinese manufacturing firms over the period 2002-2007. We document that Chinese firms face financial constraints, which is indicated by the high sensitivity of investment to the availability of internal financing. We also find that compared with private firms, foreign firms are more likely to encounter financial constraints; therefore, the *lishu* relationship can reduce their financial constraints significantly. Furthermore, firms locating in the western region have the least significant sensitivity of investment to the availability of internal financing due to the implement of the regional development policies. However, the *lishu* relationship can help firms in the central and coastal regions alleviate their financial constraints.

6.1 Introduction

For private firms, the possession of resource and sufficient financing represents a crucial competitive edge. According to Modigliani and Miller (1958), a firm's investment decisions are not affected by their financing decisions on perfect capital markets. Capital markets, however, are not perfect and the imperfections create a wedge between the costs of internal funds and external funds. Due to asymmetric information and agency problems, firms face higher costs of external financing. Therefore, firms are considered financially constrained when their investments are

sensitive to internal funds. Put another way, firms facing higher imperfections experience a wider difference between internal and external financing, and therefore are more financially constrained.

There is considerable evidence that financial constraints are an impediment to the efficient allocation of credit for corporate investments and therefore to the growth of firms, and hence the economy (Stein, 2003; Hubbard, 1998; King and Levin, 1993). Some studies focus on a) the relationship between financial constraints and firms' characteristics, such as size, age, and business group affiliation, b) the links between financial constraints and firms' activities, such as acquisitions, and c) the connection between financial constraints and institutional environment, such as the legal and financial systems that affect their financial constraints (for example, Hadlock and Pierce, 2010; Lensinka *et al*., 2003; Erel *et al*., 2015; Demirgüç-Kunt and Maksimovic, 1998). Few studies examine the relationship between firms' political connections and financial constraints.

The impact of political connections on firm financial constraints can be categorised into two groups. The first group focuses on the "direct effect", which indicates that governments provide more preferential treatment and assistance, such as the extended welfare terms to the connected firms directly. Faccio (2010) states that politically connected firms find it easier to access governmental support when the International Monetary Fund or the World Bank provides financial assistance to domestic firms. Bartels and Brady (2003) find that private enterprises that have political connections with local government are able to receive more financial subsidies.

The second group focuses on the "indirect effect", which considers political connections as a middle power between firms and financing institutions, like banks. Through the indirect effect, political connections can bring favourable loan terms to the connected firms. According to Faccio (2006), enterprises with political connections can access more bank loans and more preferential interest and tax rates than those without political connections.[1] Boubakri *et al*. (2008) also show that the costs of equity financing for firms with political connections are lower than that for the firms without such ties. Similar results have been found in developing countries, such as Malaysia and Pakistan. Johnson and Mittion (2003) and Khwaja and Mian (2005) assert that politically connected firms can receive more loans than unconnected firms.

Whilst most of the literature that looked at the links between political connections and financial constraints focused on developed countries, some literature focused on developing countries. However, the definitions of political connections and the impacts on enterprises are different between China and other countries due to the different political regime. In addition, among the developing countries, financial market imperfections are considered to be very pronounced in China for the following three reasons.

[1] Faccio (2006) looked at 47 countries covered by the Worldscope database, which provides full coverage of developed markets. These 47 countries are Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, Colombia, Czech Rep., Denmark, Finland, France, Germany, Greece, Hong Kong, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Luxembourg, Malaysia, Mexico, Netherlands, New Zealand, Norway, Peru, Philippines, Poland, Portugal, Russia, Singapore, South Africa, South Korea, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Thailand, Turkey, the US, the UK, Venezuela, and Zimbabwe.

First, the development of market-supporting institutions does not match the rapid growth of the economy. Private entrepreneurs face many barriers in running their businesses because the weak state, financial markets, and legal system cannot appropriately secure property rights and enforce contracts (Hay and Shleifer, 1998; McMillan and Woodruff, 1999; Frye and Zhuravskaia, 2000). Second, although private firms are growing fast and the private sector has stimulated most of China's economic growth since the 1980s (Allen *et al*., 2005), the state sector is favoured by the government in China. Crucial industries, including national security, civil aviation, finance, natural resources, and real estate, are still dominated by state-owned firms (SOEs).[1] Third, by law, the state banks, which were the largest Chinese banks, were instructed not to lend to private enterprises until 1997, suggesting that private enterprises did not have high rank in terms of political status at that time. Due to the lingering legacy of the centrally-planned economy, capital allocation in China has been characterised by government intervention. The state controls the primary resources and the financial system, and a bias exists in favour of the state-owned firms (Brandt and Li, 2003; Bai *et al*., 2006; Li *et al*., 2008; Cull *et al*., 2009, 2014; Gordon and Li, 2011). Huang (2003) considers this lending bias as a "political pecking order" in the Chinese capital market.

Moreover, insufficient financing support may set up obstacles to the development of firms that lack political connections. According to Johnson *et al*. (2000), McMillan

[1] In the fourth Plenary Session of the 15th Central Committee in September 1999, it was proposed by The Decisions of Chinese Communist Party Central Committee Regarding the Reform and Development of State-owned Enterprises and other Important Issues (*zhong gong zhong yang guan yu guo you qi ye gai ge he fa zhan ruo gan zhong da wen ti de jue ding*). This phenomenon is called as *Guo Jin Min Tui* in Chinese since 2002, which means that the state advances and the private sector recedes.

and Woodruff (2002), and Guriev (2004), private firms are often rejected access to bank loans, which are largely reserved for the state-owned firms, or suffer from heavy governmental regulations (red tape) and extra legal fees. Farrell and Lund (2006) report that the private sector had produced more than half of China's GDP by 2006 but the loans they received only account for 27% of total loans. Dollar and Wei (2007) also point out that the distorted credit allocation has led to the continued uneven distribution in the return to capital on the grounds of firm ownership, regions, and industrial sectors.

Although the "political pecking order" in the allocation of resource where private firms were discriminated has been alleviated since 1997, credit constraints on private firms still exist and may hinder the growth of the Chinese economy. Therefore, this research contributes to the literature in the following ways.

Firstly, the Chinese economy is a particularly interesting setting due to its heterogeneity. Firms in developing countries are more likely to face severer financial constraints than those in developed countries, and firm owners typically consider financial constraints as one of their key obstacles to invest and develop (Dethier *et al*., 2011). Given the noticeable imperfections in the Chinese capital market, China is an ideal pilot region to test the financial constraints hypothesis and the extent to which political connections can alleviate these constraints.

Secondly, the existing studies examining the financial constraints hypothesis for Chinese firms are based on the datasets containing relatively small numbers of firms,

which do not represent the whole population of Chinese firms, and are likely to suffer from sample selection bias. For example, Chow and Fung (1998, 2000) use a dataset from the Shanghai Economic Commission that includes 5,325 manufacturing firms in 32 manufacturing industries of Shanghai from 1989 to 1992. Héricourt and Poncet (2009) use a dataset of 1,300 companies over the period 2000-2002, taken from the World Bank's 2003 Investment Climate Survey. Poncet *et al*. (2010) use firm-level data originating from the Oriana dataset, which contains 14,967 firms over the period 1998-2005. Cull *et al*. (2014) use a dataset from the World Bank 120 city survey covering 12,400 firms in 2005. By contrast, our paper uses a very large dataset, compiled by the Chinese National Bureau of Statistics from 2002 to 2007, which includes 105,487 unlisted manufacturing firms, summing up to 356,053 observations. This dataset contains a large proportion of small and young firms that are more prone to suffer from liquidity constraints. It therefore provides a unique opportunity to carry out sharper tests of the financial constraints than those typically performed in the literature.

Although a series of studies conducted by Guariglia apply the same dataset, they do not test the relationship between political connections and financial constraints. For example, Chen and Guariglia (2013) look at the link between internal financial constraints and firm-level productivity, Ding *et al*. (2013) analyse the relation between investment in fixed and working capital and financial constraints, Guariglia *et al*. (2008, 2011) investigate the extent to which the internal financial constraints affect firms' asset growth, Guariglia and Liu (2014) examine the relationship between financial constraints and firms' innovation activities, and Guariglia and Mateut (2013)

explore the linkage between political affiliation and trade credit extension by Chinese firms. To the best of our knowledge, the hypothesis of the linkage between political connections and financial constraints, measured by investment-cash flow sensitivity, has never been tested using such a comprehensive dataset.

Thirdly, the existing studies are almost based on the data from firms quoted on the stock market. However, financial constraints on these listed firms tend to be weaker as they are typically large, financially healthy, and long-established enterprises with good credit ratings, compared with the unlisted firms. A sharper test of financial constraints should be done from unquoted firms, which are generally considered as a short track record, poor solvency, and low real assets compared with their counterparts. Although few studies have examined the financial constraints hypotheses in unlisted firms (for instance, Chen and Guariglia, 2013; Ding *et al*., 2013; Guariglia *et al*., 2008, 2011; Guariglia and Liu, 2014; Guariglia and Mateut, 2013), again, these studies do not focus on the extent to which political connections can affect financial constraints. Therefore, this paper attempts to shed light on the tests of the hypothesis of political connections and financial constraints by using unlisted firms in China.

Finally, although political connections have attracted worldwide academic interest, China is characterised by a type of political connection which does not exist in other parts of the world.[1] This unique political connection is called the *lishu* relationship,

[1] In other parts of the world, politically connected firms are typically defined in five ways. Firstly, at least one of the large shareholders who controlling 10% or more of the company's voting rights directly or indirectly is a politician (e.g. a national congress member, a government minister, or a head of state) (Faccio, 2002, 2006, 2007 and 2010). Secondly, at least one of the company's top officers (e.g. the CEO, president or chairman) is a politician (Faccio *et al*., 2006; Chen *et al*., 2010). A company, which is closely related to a top politician or a political party leader through friendship, family members, and

which is an institutional variation during the economic transition in China. *Lishu* is a Chinese word which means "belonging to", "subordinate to", or "directly controlled by". Through this relationship, the governments can maintain administrative power to control various aspects of the firm both directly and legally (Tan *et al*., 2007; Li, 2004). In addition to the control perspectives, the firms with the *lishu* relationship can get governmental support and subsidies (Tan *et al*., 2007). As the non-state ownership is growing in China, having the *lishu* relationship is an important route through which the firm can be connected with the government. There is hardly any research on the relationship between financial health and political connections intended as the *lishu* relationship. Our research will therefore focus, for the first time, on financial constraints for unlisted firms through the perspective of the *lishu* relationship.

In this chapter, we document that the investments for unlisted firms are constrained by the accessibility of the firms' internal funds. Firms that locate in the coastal region are more financially constrained. However, through the *lishu* relationship with the government, these financial constraints can be reduced for affiliated firms. Such a mitigating effect is more significant for firms affiliated with a high level of government.

The rest of this chapter is organised as follows. Section 6.2 endeavours to provide a

relationships with foreign politicians falls into the third type (Faccio, 2002; Gul, 2006; Faccio *et al*., 2006; Leuz and Oberholzer-Gee, 2006). The fourth group includes firms with state ownership (Boardman and Vining, 1989; Belka *et al*., 1995; Dewenter and Malatesta, 2001). The final kind of connection is established by campaign contribution, which refers to a relationship between a firm and an election candidate. That is, a firm, having supported an election candidate in the campaign, will in return gain favours from the politician (Claessens *et al*., 2008; Goldman *et al*., 2009; Cooper *et al*., 2010).

comprehensive review of the related existing literature on financial constraints and political connections and propose our hypotheses. Baseline specification and methodology are described in section 6.3. Section 6.4 describes the data sample and summary statistics. In section 6.5, our empirical results are presented. Section 6.6 presents further tests. Section 6.7 concludes this chapter.

6.2 Literature review and hypotheses

This chapter analyses the following four streams of literature: the background of financial constraints, the debate on indicators of financial constraints, financial constraints in China, and the impact of political connections on firms' financial constraints.

6.2.1 The background of financial constraints

Financial constraints have received intensive academic interest. In the perfect world with frictionless capital markets proposed by Modigliani and Miller (1958), a firm's value is irrelevant to its capital structure, which is the way that a firm is financed, because the internal financing and external financing can substitute each other perfectly. That is, a firm's investment only relies on the profitability of this investment project and a firm can make the investment decisions independently. Although this theory has been the foundation of corporate investment analysis, it does not exist in the real world. Researchers and scholars have theoretically and empirically identified a variety of frictions and distortions that prevent firms from making investment

decisions optimally and independently.

Information asymmetries and agency problems are two major types of frictions. They will arise when managers are better informed than outside investors or when managers have inside information about the firm but not about the market or the economy (Myers and Majluf, 1984). Information asymmetries are a fact of life and difficult to diminish due to the following three perspectives.

First of all, it is hard for a firm to only disclose proprietary information to investors and financiers without revealing it to competitors (Myers and Majluf, 1984). In order to illustrate the true value of a project, the firm has to provide sufficient verifiable details to the lenders, rather than only saying, for example, "we have a fantastic investment plan, but we cannot tell you the details for confidential reasons". However, making a public investment project will in most cases let the firm's competitors gain the confidential information which they have not known. The leakage of confidential information to the public or to the competitors can be catastrophic and disastrous as the competitors may act as a free rider to take unfair advantage of others' hard work. The proposed investment can also be jeopardised by competitors as they may steal the idea.

Secondly, it is costly to convey all the information to the market (Myers and Majluf, 1984; Campbell, 1979). The investors' and lenders' information disadvantages are reflected not only through the fact that investors obtain fewer facts than the managers, but also through how to process and understand this information. As outsiders of a

firm, investors and lenders always do not have a better understanding on what the information means for the firm and what should (not) be done, when compared with the managers, who are the insiders of a firm. Therefore, the costs of providing and verifying the information are very high because educating investors and lenders always involved substantial time and labour capital inputs.

Finally, under most situations, there is no need to convey proprietary information to investors as it is difficult to require an outside investor to have the equal understanding and intelligence as managers do. Therefore, Myers and Majluf (1984) argue that the asymmetric information is created naturally because of the separation of professionals (managers) from others (investors, lenders, or public).

Ross (1973, p.134) points out that the agency relationship is "one of the oldest and common codified modes of social interaction". He defines the agency relationship as an interaction between two or more parties, with one assigned as agent or as representative, acting on behalf of another or the other part(ies), which is (are) the principal. Furthermore, Gjesdal (1982, p.373) shows that "the principal-agent relationship is arisen when corporate decisions are made by managers or individuals (agents) on behalf of the firm's capital suppliers (principals) in firms, without considering how principals can be affected by these decisions". For example, when the top managers aim at obtaining greater wages and bonuses, they may tend to make decisions which can improve the company's performance in the short term, but can cause some problems in the long term. Obviously, these decisions will not be approved by shareholders. In this situation, agency costs appear as the corporate decisions are

made by agents on behalf of the shareholders.

Moral hazard and adverse selection are the two forms of information asymmetries and agency problems. Adverse selection arises at the earliest stage of financing. As it is difficult to observe the risk of a project for the lenders in front of a group of firms that need external finance, they cannot distinguish a good borrower from a bad one and price correctly according to good and bad borrowers respectively (Hyytinen and Väänänen, 2006; Stiglitz and Weiss, 1981). The lenders therefore can only grant financing at a higher rate that compensates them for losses if the firm turns out to be bad. When the interest rate increases, some good borrowers may withdraw from the market, increasing the probability of default of loans-making. As a consequence, the expected benefits of lenders will decrease. Moral hazard occurs after the lender provides a firm with external financing. The firm may take activities that jeopardise the repayment or use this financing for other purposes instead of the indicated purpose. From the viewpoint of the lenders, the owner of the firm may be prone to accept more risky investments or work less hard (Jensen and Meckling, 1976).

Due to the friction, financial constraints and preference for financing exist in the reality. According to the Pecking Order Model and the Trade-off Theory, the first choice of a company is internal financing, followed by issuing debt and equity (Myers, 1984). Financial constraints refer to the friction that makes firms unable to finance all investment they want to, including assets illiquidity, heavy dependence on bank loans, and difficulty in borrowing (Lamont *et al*., 2001). These capital market imperfections may have a significant influence on firms' behaviour and their growth.

6.2.2 Controversy on measures of financial constraints

A long debate on whether the sensitivity of firm's investment to their cash flow should be considered as an indicator of financial constraints has initiated since Fazzari, Hubbard, and Petersen (FHP hereafter) published their ground-breaking work in 1988.

6.2.2.1 Evidence of financial constraints

FHP (1988) use annual data on 421 manufacturing firms over the period 1970-1984 constructed from the Value Line database and examine the importance of a financing hierarchy caused by capital market imperfections, i.e. asymmetric information. The authors test whether the determinants of investments are the same for firms with similar costs between internal financing and external financing and firms with a remarkable financing hierarchy by modifying a model of firm financial and investment decisions taken from the public finance literature.

FHP point out that the different tax treatments to capital gains and dividends generate the differences in the costs of internal and external financing. That is, external funds are more expensive than internal funds because dividends are taxed higher than capital gains. Hence, the authors use firms' average retention ratios to identify firms that faced financial constraints. This logic can be explained as follows. Suppose that the cost disadvantage of external finance is small (e.g. only issue costs), the retention behaviour should contain little or no information about firm's investment behaviour or its *q* value. Therefore, firms would just choose the external finance to support their

investment when internal finance fluctuates. On the other hand, if a prominent financing hierarchy exists, then the costs of external funding are higher than that of internal funding because of the information costs, tax treatment, or transaction. In this case, choosing external finance by paying considerable dividends would not be a valuable decision to fund investment opportunities. Therefore, if financial constraints exist, the constrained firms will have a different investment to cash flow sensitivity compared with non-constrained firms. That is, the investment of firms that reserve all or almost all of their earnings will prone to be more sensitive to cash flow than that of the high dividend payout ratio firms.

Specifically, they classify firms into four categories according to the payout ratios from Class 1 to Class 4 in decreasing the likelihood of facing financial constraints. They regard Class 1 firms as those facing binding financial constraints, which retained 95% of their income and paid an average dividend of 35%. In this group, they find that most firms do not pay any dividend for the first 7-10 years and a small dividend in the rest of the sample period. In particular, around 41% of total firms in Class 1 never pay a dividend over the entire sample period even though these firms are profitable. The average retention ratio (percentage of years with positive dividend) for Class 2, Class 3, and Class 4 are 85%, 68%, and 34% (83%, 98%, and 99%), respectively.

In their empirical tests, FHP estimate a model with both Q and cash flow included under the framework of the q-theory of investment as below:

$$(\frac{I}{K})_{it} = \alpha + \beta_1 Q_{it} + \beta_2(\frac{CF}{K})_{it} + \beta_3(\frac{CF}{K})_{it-1} + \mu_{it}$$

where *I* is the investment, *K* represents the replacement value of the capital stock at the beginning of the sample period, *CF* is firms' available cash flow, α is the normal value of $(\frac{I}{K})_i$, and μ_{it} is a white noise error term . *Q* is Tobin's *Q* at the beginning of the period after being adjusted for personal and corporate tax. The authors find that investment is approximately three times more sensitive to cash flow in Class 1 (firms with low-dividend payout ratio) compared with Class 3 and 4, suggesting that cash flow tends to affect the investment significantly in financially constrained firms.

A number of papers followed FHP's research, supporting their main conclusion not only from the perspectives of investment behaviour,[1] but also from inventory investment,[2] R&D investment,[3] employment decisions, and growth.[4]

6.2.2.2 Conflicting views

An important challenge to FHP's (1988) work came from Kaplan and Zingales (1997) (hereafter KZ (1997)). They focus on the 49 low-dividend paying firms (i.e. Class 1)

[1] For example, Gilchrist and Himmelberg (1995) and Carpenter and Guariglia (2008) point out that firms' investment-cash flow sensitivity is significant for financially constrained firms.
[2] For firms without access to external finance markets, their inventory investment is significantly constrained by their internal funding because of the low adjustment costs of inventory investment. That is, those firms have to reduce their inventory investment if they do not have enough cash reserves (Kashyap *et al*., 1994; Carpenter *et al*., 1994, 1998; Guariglia, 2000; Benito, 2005).
[3] Bond *et al*. (2005), Himmelberg and Petersen (1994), and Bloch (2005) find that internal finance is the principal determinants of R&D investment.
[4] For example, Cantor (1990), Sharp (1994), and Nickell and Nicolitsas (1999) show that the sensitivity of employment demand to fluctuations in internal financing is more significant in highly leveraged firms. While Carpenter and Petersen (2002) state that financially constrained firms with small size present roughly a dollar-for-dollar linkage between the growth of the assets and internal funding.

used in FHP (1988) for the same fifteen years, 1970 to 1984, and reclassify firms in this sample into five groups according to their degree of financial constraints based on information contained in the firms' annual reports and management's statements on liquidity.

The first group in their classification contains firms without financial constraints, named as not financially constrained (NFC). This group includes the definitely financial healthy firms with low debt and high cash in the predictable future. The second group contains the firms that are likely not to be financially constrained (LNFC). Firms in this group are financially healthy and do not indicate any sign of being liquidity constrained. The third group includes firms that are possibly financially constrained (PFC). These firms cannot be classified either as financially constrained or as unconstrained because they do not show any clear indication of financial constraints, but they do not seem to hold sufficient liquidity and cash reserves either. The fourth group embraces the firms that have difficulties to gain funding. These firms are classified as likely to be financially constrained (LFC). The last group includes financially constrained firms (FC). These firms are either in shortage of debt or expressly state that they have to reduce investments due to liquidity problems.

The authors find that sensitivities of investments to cash flow are higher, rather than lower in FHP (1988), for those firms classified as less financially constrained firms. Therefore, they conclude that higher sensitivities of investment to cash flow cannot be interpreted as a proper indicator showing that firms are more financially constrained.

Following the approach of KZ (1997), Cleary (1999) examines 1,317 US firms between 1987 and 1994 from the SEC Worldscope Disclosure database, and finds that although investment decisions of all firms are very sensitive to liquidity, the sensitivity is greater for more creditworthy firms than for less creditworthy firms. This result supports the conclusion of KZ (1997).

Another series of studies focus on the conventional Q model of investment and challenge the findings in FHP (1988). The definition of average q is the ratio of the value of the firm to the replacement cost of its installed capital. However, share prices may indicate a noisy measure of the firm's true value, which may lead to a serious measurement error problem. Therefore, some scholars argue that the traditional Q model of investment has weakness as it uses share prices to measure average q.

Cummins *et al*. (2006) believe that market-based average q has measurement error because of the substantial and persistent error during the process when the stock market is measuring the firm's intrinsic value. The authors study 11,431 observations over the period 1982-1999 from the Compustat and I/B/E/S data set, and find a strong relationship between investment spending and an alternative measure of average q obtained by earnings forecasts from securities analysts. They also find that when controlling for the expected future profitability by analysts' earnings forecasts, internal funds are insignificant in explaining investment decisions, even for firms who do not pay dividends and firms without bond ratings (which were considered as financially constrained firms in previous studies). They conclude that there is no correlation between internal finance and investment. Furthermore, Erickson and

Whited (2000) obtain similar results to the series of studies that used earnings forecasts, suggesting that cash flow is uncorrelated with investment outlays in both liquidity-constrained firms and unconstrained firms by using 737 manufacturing firms from the Compustat dataset over 1992-1995.

Similar results have been found by Bond and Cummins (2001), who use 1,066 firms from 1982 to 1999 taken from the Compustat and I/B/E/S database, and Bond *et al*. (2004), who use 703 UK quoted firms from 1987 to 2000. Their results show that there is a positive relationship between investment spending and cash flow when applying the conventional measure of average q (based on stock market valuations). However, such a relationship vanishes when using the alternative measure of average q (based on analysts' earnings forecasts), even for the financially constrained firms. This suggests that in the former studies, it is simply because cash flow picks up investment opportunities, which is not appropriately accounted for by average q, cash flow becomes a significant determinant of investment.

Another branch of the literature relative to this debate demonstrates theoretically that empirical findings on the investment-cash flow sensitivity cannot be interpreted as evidence for the existence of financial constraints. For example, according to Alti (2003), the sensitivity of investment to cash flow exists even in the benchmark case with no financial constraints, and such sensitivity is higher for younger, smaller, and low dividend payout firms that are growing fast. The author argues that the investment-cash flow sensitivity should be attributed to the fact that cash flow contains information about investment opportunities that is not captured by Tobin's q,

rather than to capital market imperfections. Under this circumstance, the sensitivity for younger firms is higher because these firms face uncertainties of their projects' quality and therefore respond more aggressively to the information reflected in cash flow. Gomes (2001), Abel and Eberly (2003), and Cooper and Ejarque (2001, 2003) also provide theoretical challenges to the hypothesis that a significant relationship between cash flow and investment can be regarded as a predictor of the presence of financial constraints, suggesting that the sensitivity is probably due to a combination of measurement error in *q* and identification problems.

However, Carpenter and Guariglia (2007) point out that the I/B/E/S analysts are more likely to follow larger and profitable firms that face less financial constraints, which may explain why authors that considered securities analysts' earnings forecasts from I/B/E/S database did not find significant effects of cash flow on investment.

6.2.2.3 The rationale of the debate

According to Cleary (1999) and Guariglia (2008), the different conclusions of the validity of investment–cash flow sensitivities as measures of financial constraints obtained by these different groups of researchers can be attributed to the fact that they use different ways to measure financial constraints.

Studies that support the results of FHP (1988) generally classify firms, according to their characteristics such as dividend payout ratio, firms' age and size, the access to commercial paper, and information on whether they have a bond rating. These

variables can be seen as proxies of the capital market imperfections and information asymmetries faced by these firms, which in turn make financial constraints appear. Information asymmetries considerably affect smaller and younger firms, as they can only access little public information and it is more difficult for financial institutions to gather this information. Hence, external finance is particularly expensive for these firms (Bernanke *et al*., 1996). In an imperfect market with asymmetric information, dividends can be used for firms to transmit information to shareholders and the outside world. Firms with a high dividend payout ratio indicate that they have good long-term prospects (John and Williams, 1985; Miller and Rock, 1985). By contrast, getting external funds will be more complicated for firms with low-dividend payout ratios as they are more likely to suffer from moral hazard and adverse selection problems. Finally, in order to make bond rating feasible (issue bond) and access the commercial paper market, Calomiris *et al*. (1995) point out that firms must achieve a minimum requirement on size, age, and collateral level to ensure that the additional risk related to information asymmetries is low enough for them.

As for the study that has found results in line with KZ (1997), they categorise firms based on the level of available internal financing, which can be considered as a proxy for the degree of internal financial constraints that firms face. For example, KZ (1997) separate their sample according to firms' liquidity related variables, which are significantly correlated with the level of available internal funds to firms. Cleary (1999) constructs an index of firms' financial strength based on variables such as the current ratio, debt ratio, and the coverage ratio etc., which are strongly associated with firms' internal financing.

In addition, Allayannis and Mozumdar (2004) point out that the findings in KZ and Cleary are mainly due to the inclusion of negative cash flow observations, which can be considered as a proxy for identifying firms that are in financially distressed situations. They argue that when firms are in a considerably worse situation and cash shortage is severe, firms' investments may have been reduced to their lowest possible levels and only extremely essential and necessary investments can be undertaken. In this case, even if cash flow declines, investments cannot be reduced any further. This situation is quite predominant among the most constrained firms. Hence, the sensitivity of investment-cash flows is low in these firms.

6.2.2.4 The reconciliation of the debate

Some studies provide evidence to reconcile the existing conflicting debate. Moyen (2004) uses a simulated sample of 2,000 firms between 1987 and 2001 from annual Compustat data and provide evidence that reconciles the conflicting empirical studies by identifying firms with financial constraints via various criteria.[1] She finds that using the constrained model or Cleary's index to identify firms with financial constraints leads to KZ's result, which is that constrained firms have a lower sensitivity of investment to cash flow than unconstrained firm' investment. She points out that in the presence of favourable opportunities, both constrained and

[1] The author builds an unconstrained model, in which firms have no financial constraints and can access to external financing markets. These firms maximize their equity value by choosing its policies of investment, dividend, and debt. Another model is called the constrained model, in which firms cannot obtain external funds. These firms can only choose its dividend and investment policies to maximise their equity value. Combining with these two models, the author defines financially constrained firms as those with low dividends, low cash flow, described in constrained model, especially those that invest less due to insufficient internal funds and no access of external funds, and low Cleary index values.

unconstrained firms invest more. For unconstrained firms, they can issue debt to finance their additional investment opportunities. As this debt financing effect is not considered in her regression specification, it amplifies the cash flow sensitivity for unconstrained firms. While for constrained firms, they must choose either to allocate their cash flow to more investment or more dividends. This weakens the sensitivity between constrained firms' cash flow and their investment. Additionally, the result shows that firms with low index value (financially constrained firms) have a lower investment-cash flow sensitivity than those with high index value (0.292 vs. 1.007).

She also confirms FHP's result under the conditions that financially constrained firms are identified by low cash flow, by low dividends, or by both the constrained model and an investment policy that their internal financing has been used up. The author states that if the constrained firms run out of their internal funds, their investment depends on cash flow and asset sales. In this case, the sensitivity between investment and cash flow for these firms is very significant.

Another study supporting the findings of both FHP and KZ/Cleary is Cleary *et al*. (2007). The authors use 88,599 observations from the annual S&P Compustat financial statement data between 1980 and 1999 and argue that existing models that present a monotonic relationship between internal financing and investment depends either on excessively restrictive assumptions on a firm's investment or funding opportunities, or on particular assumptions on the external funding costs. Therefore, they provide three more plausible assumptions[1] and find that the linkage between

[1] Firstly, internal financing is cheaper than external financing. Secondly, the cost of external financing is determined endogenously, and hence depends on the firm's financial situation and the investment it

internal finance and investment is U-shaped. That is, investment increases monotonically with internal financing if the firm has a high level of internal funds, but decreases for firms with low level of internal financing. Their results indicate that firms with high level of internal financing only need to borrow a small amount of money in order to meet the almost-best investment scale. In this case, they only need to take the responsibility of a small repayment and face a small expected liquidation loss. If these firms' internal funds decrease, they can reduce a small scale of investment without losing too much revenue to avoid borrowing more money. Therefore, an increase in internal funds will cause an increase in investment, and vice versa. The story is quite different among the firms with low level of internal financing. These firms generally invest less, but require more loans and suffer higher default and liquidation risks. At the same time, through enlarging investment scale, these firms can obtain more revenue, which would in turn increase the firm's ability to make repayments and reduce the risk of default. Due to this revenue effect, firms with low level of internal funds will eventually invest more when a decrease happened in its internal funds.

Furthermore, Guariglia (2008) also provides reconciliation for the conflicting findings in FHP and KZ by using 24,184 mainly unquoted UK companies[1] over the period 1993-2003. By dividing the sample based on the level of accessible internal funds to the firms, she finds a U-shaped relationship between investment and cash flow. That is, given the cash flow-to-capital ratio with an around 0 value, the investment-to-

plans to make. Finally, investment is scalable, which means that firms can choose between larger and smaller investments.

[1] Guariglia (2008) estimates 7,534 firms in the manufacturing sector and 24,184 firms in a broader range of industries.

capital ratio is at its minimum level, and then the investment to capital ratio increases in both situations when the cash flow becomes negative and positive. The results also suggest that the sensitivity of investment to cash flow is likely to increase monotonically with the degree of external financial constraints that firms face, and the sensitivity is the highest for firms with external financial constraints and without internal financial constraints.

6.2.3 Financial constraints in China

6.2.3.1 Institutional environment in China

According to Beck *et al*. (2006), firms in countries with higher levels of institutional development face significantly lower financial constraints than firms in countries with less developed institutions. When compared with the governments in developed countries, those in developing countries play a more crucial role in allocating financial resources. In addition, they tend to support state-owned firms and firms that have stronger ties with the government in allocating the capital (Ayyagari *et al*., 2012). As the largest developing countries in the world, capital market imperfections and the underdeveloped legal/institutional support are considered to be very noticeable in China.

Since its transformation from a centrally planned economic system to a market economic system with socialist characteristics, the Chinese economy is characterised as a unique market environment where the private sector and public sector exist

simultaneously. Although a series of economic reforms since 1978 have been carried out and provided favourable support to private investments, such as granting private businesses preferential access to capital, technology, and markets, stated-owned enterprises are still powerful and dominate the major industries and resources. In practice, the state banks, which were the largest Chinese banks, were not allowed to lend loans to private firms until 1997. Not having loans from state banks indicated that private firms were excluded from the external financing as the credit market was dominated by state banks at that time. Although the situation has become better since 1997, the financial market in China is still controlled by the state and private firms are still treated unfavourably. As a result, in order to start and expand firms, most private entrepreneurs had to depend on self-financing (Li *et al*., 2008).

The Chinese financial system is generally regarded as inefficiency and fragmented. Allen *et al*. (2005) explore the financial system, including both the financial markets and the banking system, in China at the aggregate level. They compare China's financial system with that in 49 countries. Their results show that the banking system is not an efficient system due to its higher overhead cost and the lowest profitability.

In addition, according to Morck *et al*. (2000) and Allen *et al*. (2005), poor minority investor protection and imperfect regulation of market give rise to a phenomenon that stock prices are more synchronous in China than in other countries, suggesting that the stock markets are inefficient. For example, due to poor and uncertain protection of private property rights, political events and rumours may significantly affect the market-wide stock prices, which should be associated with economic fundamentals,

and may cause stock prices to diverge considerably from fundamental values. In addition, the relative amounts of capitalised firm-level and market-level information into stock prices determine the extent to which stocks move together. Among developing countries, less protection for public investors' property rights against corporate insiders is associated with less firms-specific information being capitalised into stock prices. This effect would reduce firm-specific stock price variation, increasing stock return synchronicity.

The four stated-owned banks constitute the largest financial institutions in China and have been dominating the financial market with low efficiency.[1] However, it is noteworthy that the Chinese financial system has experienced important structural reforms over the past decade.

In order to mitigate the Asian financial crisis at the end of the 1990s, the State Council released the Notice Concerning Deepening Financial Reform, Rectifying Financial Order and Preventing Financial Risk *(zhong gong zhong yang guan yu shen hua jin rong gai ge, zheng dun jin rong zhi xu, fang fan jin rong feng xian de tong zhi)*, which outlined the risks that were faced by the financial system and proposed a reform plan (Chinese Communist Party News and Documents, 1997). In a speech at 2002 National Financial Work Conference, Premier Zhu Rongji pointed out that overheating in the real estate market, unnecessary government investment projects, redundant government interference in bank lending decisions, misappropriation of bank funds, and heavily indebted SOEs led to the problems in the financial system (Zhu, 2013).

[1] They are Bank of China (BOC), Industrial and Commercial Bank of China (ICBC), China Construction Bank (CCB), and Agricultural Bank of China (ABC).

The Premier outlined an aspiring restructuring reform of the financial system, which spanned around ten years and included three phases (Borst and Lardy, 2015).

The first stage of the reform aimed to improve the banks' balance sheet and efficiency by dismissing redundant employees and closing excessive branches, increasing the banks' capital base, and establishing four asset management companies[1] to deal with the nonperforming loans and bad assets. The second stage of the reform focused on adjustments of the structure of financial regulatory institutions, including establishing the China Banking Regulatory Commission (CBRC) to regulate the banking sector independently, and creating Central Huijin Investment Company Ltd. to implement the shareholders' rights and obligations in the large state-owned commercial banks on behalf of the government. The final phase of the reform aimed to corporatise and list the major national banks on the stock market by introducing foreign strategic investments in Chinese banks, and increasing disclosure and transparency of the banks.

Later, during the Third Plenary Session of the 18th Central Committee of the Chinese Communist Party in November 2013, A Decision on Major Issues Concerning Comprehensive and Far-Reaching Reform *(zhong gong zhong yang guan yu quan mian shen hua gai ge ruo gan zhong da wen ti de jue ding)* has been issued (Xinhua News, 2013). This document states a clear outline of the far-reaching financial reform, including establishing private financial institutions, developing the capital markets, accelerating liberalisation of interest rate, moving to a market-based exchange rate,

[1] They are China Orient Asset Management Corporation, China Great Wall Asset Management Corporation, China Cinda Asset Management Corporation, and China Huarong Asset Management Corporation.

promoting capital account convertibility, establishing a deposit insurance scheme, creating a market-based exit mechanism, and experimenting with mixed ownership reform.

These new developments have improved the financial system in China, but at the same time they have also brought new risks. For example, the amount of nonperforming loans has increased significantly. At the same time, a shadow banking system has played a crucial role in credit allocation with insufficient regulations, which might cause moral hazard and some other risks. In this case, the financial system in China is underdeveloped and financial constraints still exist.

According to Beck *et al.* (2008), better protection of property rights can increase external financing, especially for small firms. However, the Chinese legal system is still evolving and is too weak to protect property rights and enforce contracts (Hay and Shleifer, 1998; McMillan and Woodruff, 1999; Frye and Zhuravskaia, 2000). The Chinese legal system is characterised by a fragmentation of regulatory authorities. For example, as the Chinese commercial law system is an instrument aimed at enforcing the economic policy of the Chinese Communist Party (CCP), the central government chooses model areas (*shi dian*) and implements special regulations within those areas to test the effects of these rules in one area before introducing them to the whole nation. In this case, the central government may delegate authority and flexibility to local officials so that they can exercise the authority in accordance with the local circumstances. In this case, laws may become uncertain (Ho, 1994). Moreover, the legal system in China is also characterised by ambiguity in legal drafting. For example,

according to Law and Chen (2004), Chinese economic laws often draw a broad picture, without specifying the concrete and detailed rules. This situation can be explained by the fact that the Chinese government may not have enough time to consider every aspect of the legislation because of the rapid development of the legal and economic environment; but at the same time, some regulations may be in urgent need to be carried out in the market economy. The government therefore often enacts some laws or regulations hurriedly without containing sufficient details.

Allen *et al*. (2005) compare the legal system in China to those of other emerging countries, including India, Pakistan, South Africa, Argentina, Brazil, and Mexico. They show that the corruption index in China is the worst among the seven developing countries, while its protection for creditors and shareholders are only better than that of India and Mexico. This indicates that the development of China's legal system is behind that of the other major emerging countries. Furthermore, one of the most important factors necessary to have an effective law enforcement system is that a country must have an independent and efficient judicial system with a sufficient supply of qualified legal professionals. However, according to Allen *et al*. (2005), only 20% of all lawyers in China have law degrees, and even a lower percentage of judges have formally studied law at universities or colleges. Moreover, only 4% of the five million business firms in China have regular legal advisers. Allen *et al*. (2005) also argue that the most important problem with China's accounting system is the lack of independence, and the situation of professional auditors is similar to that for legal professionals.

In a word, the financial, legal, and accounting institutions in China, including investor protection systems, accounting standards, and quality of government are significantly underdeveloped. Additionally, governments also place heavy regulations (red tape) or extra-legal fees on private firms (Brunetti *et al*., 1997; Johnson *et al*., 2000, 2002; Hellman *et al*., 2003; Guriev, 2004). Under this circumstance, the banking lending decisions could be biased by the weak institutional supports and financial constraints would be pronounced in China.

6.2.3.2 Empirical evidence on financial constraints in China

Using 5,325 companies in Shanghai from 1989 to 1992 supplied by the Shanghai Economic Commission, Chow and Fung (1998) show that the investment of manufacturing firms in Shanghai is sensitive to cash flow. Cash flow plays an important role in determining investment behaviour, indicating the existence of financial constraints in China. The authors also find that non-state firms are more liquidity-constrained than state-owned firms in terms of the availability of cash flow. This can be attributed to the lending bias of favourable treatments obtained by state-owned firms. Because of this bias, non-state firms find it hard to obtain bank loans, which are the major source of external funding in a transition economy, and in turn, the progress of economic reforms will be impeded. The difference between the cash flow estimates of non-state firms and SOEs supports their overinvestment hypothesis: private firms with more efficient and good investment opportunities have to depend more on internal financing, while state-owned firms with less efficient and poor investment opportunities do not. Chen (2008) analyses 815 Chinese listed firms over

the period 1998-2004 obtained from the 2005 China Stock Market Financial Database (Annual Report). Similar to the results obtained by Chow and Fung (1998), Chen (2008) shows that non-state firms exhibit a larger dependency of investment on cash flow, indicating that they are more significant constrained than SOEs.

According to Héricourt and Poncet (2009), state-owned firms are insensitive to the debt-to-asset ratio and the interest coverage ratio, which are proxies for financial distress. By contrast, domestic private firms show credit constraints. Similar results have been reached by Poncet *et al*. (2010), who uses 14,967 Chinese firms from 1998 to 2005, originating from the Oriana data set. The authors find that Chinese private firms are significantly financial-constrained, while state-owned firms and foreign-owned firms are not. Guariglia *et al*. (2011) estimate the relationship between liquidity constraints and asset growth using 79,841 mainly unlisted Chinese firms from the Chinese National Bureau of Statistics between 2000 and 2007, and confirm that private and foreign firms are affected significantly by the available amount of cash flow, while SOEs are not. This result suggests that SOEs do not suffer from financial constraints, while private firms suffer a lot, especially those private firms that are located in coastal regions and with negligible foreign ownership.

Furthermore, both Héricourt and Poncet (2009) and Poncet *et al*. (2010) point out that although domestic private firms in China face financial distortion and discriminations, which can be alleviated by FDI. One reason is that foreign investment inflows can bring abundant capital and inject equity for domestically owned firms to reduce their credit constraints (Harrison *et al*., 2004). Moreover, Chinese governments grant

foreign-financed firms elite status legally and politically compared with other private firms. Under this circumstance, having foreign investments can help private domestic firms get around legal obstacles as well.

Ding *et al*. (2013) provide another insight for financially constrained Chinese firms to reduce their constraints and keep a high investment rate. Using a panel of 758,849 firm-year observations covering 116,724 mainly unlisted firms, Ding *et al*. (2013) analyse the reasons why Chinese firms facing significant financial constraints are characterised as very high investment rates. Specifically, they focus on the role of working capital management. The author considers the working capital as a measure of liquidity and defines it as the difference between current assets and current liabilities. Their results firstly confirm that SOEs in China are not financially constrained, while private, foreign, and collective firms show a high sensitivity of fixed investment to cash flow. Moreover, the authors point out that the latter three types of firms also have a high sensitivity of working capital investment to cash flow, indicating that firms can adjust both the fixed and working capital investment to ease the cash flow shocks. Especially, those firms with a high working capital to fixed capital ratio are prone to adjust their working capital investment in the presence of fluctuations in cash flow. Furthermore, except for foreign firms, all other firms with high working capital exhibit a low sensitivity of fixed capital investment to cash flow, which suggests that these firms can mitigate the impact of cash flow fluctuations on their fixed capital investment by using their working capital. To summarise, firms can alleviate their financial constraints by adjusting their working capital management: adjusting both fixed and working capital investment for firms with internal finance

constraints, while adjusting working capital investment more than fixed capital for firms with external credit constraints.

Lin and Bo (2012) find an interesting result using 1,325 non-financial listed firms on either the Shanghai Stock Exchange or the Shenzhen Stock Exchange over the period of 1999 and 2008. The authors confirm that the listed firms experience financial constraints in China by estimating two proxies for financial constraints: the investment-cash flow sensitivity and the KZ index.

From the above analysis of Chinese institutional environment and empirical evidence in the existing literature, we can conclude that given such an under-developed financial and legal system, the government has severely got involved in resource allocation, in which the SOEs are provided with preferential treatment. Firms that lack government connections confront difficulties in development and investment, as they have insufficient financial support (Cull *et al*., 2014; Dollar and Wei, 2007; Farrell and Lund, 2006). In other words, these obstacles are more significant in China because of the hostility of the political environment to private firms, which do not rank high in terms of political status. Having political connections is therefore important for Chinese firms. The art of using connections (*guan xi*) to subvert or take advantages of the formal system, also known as "using the back door" (*zou hou men*), exists everywhere in the Chinese administration. Political connections are always considered as an important instrument for private enterprises, especially unlisted firms, to overcome these market and state failures and to develop themselves in the market environment with Chinese characteristics.

6.2.4 Political connections and financial constraints

The ownership of capital can determine the enterprises' ability to receive external funding. In practice, private firms are always considered to be more risky than their state-owned counterparts in the eyes of banks in China. Financial resources, therefore, are more likely to be allocated to SOEs (Havrylchyk and Poncet, 2007). In other words, PEs are discriminated against on credit market. Under the circumstance where they lack market supporting institutions, private firms either become passive victims or have to depend on other institutions to do business (Li *et al*., 2006; Johnson *et al*., 1997; Friedman *et al*., 2000; McMillan and Woodruff, 1999). Such phenomenon is particularly pronounced in developing countries, especially in China. Political connections are found to be prevalent among firms and are considered as crucial resources for the connected firms.

Specifically, political connections can in fact provide favourable financing for well-connected firms both directly (providing favourable finance support to the connected firms) and indirectly (acting as a bridge between connected firms and the financing providers). The financial benefits provided by political connections have been documented in previous studies on different countries. Specifically, political connections can bring easier access to funding and more loans, lower-cost financing, and a preferential bailout for the connected enterprises. In turn, these benefits can mitigate financial constraints on the connected firms.

6.2.4.1 Access to funding

Faccio (2002) focuses on firms in 42 countries and defines higher leverage as a proxy for easier access to financing. Her results illustrate that firms with political connections, and especially firms with stronger and closer connections, have a statistically significant higher leverage ratio than non-connected firms. She also provides some anecdotal examples to support the idea that connected firms can obtain easy funding from government-controlled banks, even though they are not qualified to get this bank credit. For example, Tommy, former President Soeharto's son, was declined twice by the central bank and Sultan of Brunei in searching credit to finance his corporations. Finally, he asked his father to intervene and the central bank lent him $600 million under the president's pressure.

A few studies have demonstrated that political connections can grant easier access to financing and more funding in developing countries, such as Thailand, Malaysia, Pakistan, and Brazil. The scholars find that banks in Asia tend to allocate credit to friends and relatives on soft terms, instead of focusing on hard market criteria. Using a sample of non-financial listed companies in Stock Exchange of Thailand in 1996, Charumilind *et al*. (2006) conclude that compared to firms without connections to politicians, firms with such ties have easier access to long-term debt with much less collateral needed.

According to Johnson and Mittion (2003), political connections can increase the debt-to-asset ratio for the connected firms by 50% to 60%. The debt-to-asset ratio of the

unconnected firms is much smaller than the figure of the connected firms in Malaysia. Similarly, analysing loan-level data of 90,000 firms in Pakistan from 1996 to 2002, Khwaja and Mian (2005) show that compared to non-affiliated firms, politically associated enterprises receive 45% more loans from banks controlled by the government.

Using a novel dataset of firm-level and candidate-level contributions during the 1998 and 2002 elections in Brazil, Claessens *et al*. (2008) look at the relationship between political connections and preferential access to finance from the perspective of campaign contributions. They find that political connections affect contributing firms positively in terms of growth in bank financing following an election. The empirical evidence shows that a one-standard-deviation increase in contributions to deputies leads to a 9.4% increase in bank financing. Furthermore, the authors point out that firms making contributions to winning deputies benefit more in terms of greater access to funding. Their regression results suggest that a one standard deviation increase in contributions to the elected government leads to a 12.1% growth in bank credit, indicating that these firms obtain more loans from banks.

In China, the ownership of capital can determine the enterprises' ability to receive external funding. In practice, private firms are always considered to be more risky than their state-owned counterparts in the eyes of banks. Financial resources, therefore, are more likely to be allocated to SOEs (Havrylchyk and Poncet, 2007). In other words, Private Enterprises (PEs) are discriminated in the credit market, while SOEs have the privilege to obtain as many bank loans as they need (Ge and Qiu, 2007; Lin, 2011;

Dong *et al*., 2012). Collectively-owned enterprises (COEs) are the firms owned by all of the citizens of a township or village, but controlled by the local government (Park and Shen, 2003). These firms can benefit from preferential access to the newly emerged product and input markets and massive loans from state banks on rather soft terms (Che and Qian, 1998; Kung and Lin, 2007; Park and Shen, 2003; Chang and Wang, 1994; Brandt *et al*., 2005).

Gordon and Li (2003) theoretically point out that SOEs can access a better financing platform because the Chinese government restricts the access to bank loans for non-state owned firms to increase its market control power. Guariglia *et al*. (2011) point out that SOEs can absorb surplus labour and help governments to maintain social stability; therefore, they can access unlimited loans from the state banks.

Dong *et al*. (2012) study 779,157 firm-year observations and 182,973 unique manufacturing firms in the non-listed sector over the period 1998-2007. Their data are taken from the National Basic Unit Census (which is developed and maintained by the National Bureau of Statistics of China (NBS)), and find that there is a significant difference between firms with and without state ownership in terms of financing debts. That is, the long-term debt ratio for state-owned firms is 3.55% higher than that for firms without such ownership. This effect is much stronger in the regions with less developed institutions, such as the less developed financial and legal systems. According to the descriptive statistics over the sample period, the ratio of long-term liabilities to total assets for both firms with and without state ownership show a decrease from 1999 to 2007. The decreasing pattern, however, is more significant in

firms without state ownership (from 7.60% to 4.03%) compared with firms with state ownership (from 13.59% to 11.08%). This finding indicates that firms with state ownership can benefit from bank loans on rather soft terms.

However, Lin and Bo (2010) do not illustrate that state ownership can alleviate firms' financial constraints through bringing in more bank loans for the firms in the state-controlled banking sector. They argue that SOEs do suffer from the soft budget constraints; however, when these firms go through the corporatisation movement, these benefits have been eliminated. In this case, although these firms still have connections with the state, they can be considered as modern enterprises operating in a market environment.

Private entrepreneurs can establish political connections through actively participating in the political organisations. According to Li *et al*. (2006), Chinese private entrepreneurs with the membership of the People's Congress (PC) or the Chinese People's Political Consultative Conference (CPCC) can gain scarce resources that are not accessible from the markets, favourable tax treatment, and better access to credit and other resources.

Using a national wide survey of 3,258 Chinese private firms in 2002, Li *et al*. (2008) find that Chinese Communist Party members assist connected private firms to obtain more loans from state banks and other state institutions, and Party membership is particularly crucial for enterprises in areas with weaker legislation. Fan *et al*. (2008) collect 23 high-level government bureaucrats (including provincial level government

and central level government) corruption cases that happened during the period 1995 to 2003, and point out that private firms with connections to politicians have advantages in receiving more loans for a longer term and better growth opportunities. Moreover, Feng *et al*. (2011) find that the leverage ratio and long-term debt are significantly related to political participation in a positive way, suggesting that firms controlled by entrepreneurs who participate in politics have better access to debt financing, especially long-term debt.

Chan *et al*. (2012a) analyse Chinese listed firms on the Shanghai and Shenzhen Stock Exchange markets from 2005 to 2007 and conclude that political connections can reduce financial constraints for the connected firms. The investment sensitivity to cash holdings is positive and statistically significant for firms without political ties (0.065), while the sensitivity is much smaller and not statistically significant for politically connected firms (0.010). This evidence suggests that non-connected firms experience huge financial constraints, whereas connected firms seem to be free from such constraints. In addition, firms without connections controlled by families face greater constraints than non-connected firms with state ownership. The authors attribute such benefits of connected firms to easier access to external credit, preferential policy treatment, and implicit government guarantee. Our work is different from this study by using a comprehensive dataset covering unlisted firms. In addition, the authors define political connections as the firm's chairman or CEO is a current or previous governmental official, while ours depends on the *lishu* relationship, which has received the least academic attention.

There is only one study looking at the relationship between political affiliation and trade credit in China conducted by Guariglia and Mateut (2013). Using a sample of over 72,000 firms in the manufacturing and mining industrial sectors from the National Bureau of Statistics of China (NBS) between 2000 and 2007, Guariglia and Mateut (2013) document evidence that political affiliation (*lishu*) has a significant impact on the trade credit extension. They point out that politically affiliated firms can access short-run external financing more easily in China. As a result, these firms, and especially firms with more financial constraints, can extend more trade credit than their non-affiliated counterparts. Their findings suggest that bank financing can be redistributed by trade credit and therefore, political connections can increase the efficiency in the allocation of resources.

6.2.4.2 Cost of financing

Politically connected firms can receive loans at a relatively cheap price. Using data for firms in 47 countries, Faccio (2007) shows that companies connected with a minister enjoy an average decrease of 1.14% in the interest rate on debt. Similarly, Leuz and Oberholzer-Gee (2006) point out that establishing political connections is a way to obtain low-cost financing.

By analysing 2,537 firms from 25 countries between 1997 and 2001, Boubakri *et al*. (2008) show that the cost of equity financing for firms with political connections is lower than that for firms without such ties. More specifically, connected firms in 16 out of 25 countries face a lower cost of equity capital than that for the non-connected

firms from the same countries. In other words, connected firms have an approximately 50 basis-point lower equity financing cost, especially when political ties are strong. Chaney *et al*. (2011) support the idea above by conducting an analysis of accounting data for more than 4,500 corporations in 19 countries, suggesting that firms without connections are more likely to pay more when issuing debt.

Similar results are observed in China. Li *et al*. (2011) consider all listed private enterprises on the Shanghai and Shenzhen Stock Exchange market from 2005 to 2009 and conclude that political connections can reduce the cost of financing among private firms in China, as political officials contribute to allocate financial resources to target enterprises through rent-seeking.

Xu *et al*. (2013) use the 489 listed family firms in Shanghai and Shenzhen A-share stock markets in China between 2000 and 2007, corresponding to 2,094 observations, and estimate whether the political connections of family firms can help these firms to ease the financial constraints. The authors demonstrate that family firms with political connections can overcome the underinvestment problem by reducing information asymmetry, and by reducing the investment sensitivity to their internal funds. The authors point out that through the good relationship with the government that controls privileged resources, the costs of external financing can be reduced for the connected firms. They also prove that this effect is more remarkable for firms with significant financial constraints.

6.2.4.3 Bailout benefits

Some research illustrates that politically connected firms tend to get government aid in economic distress. By analysing 450 politically connected firms in 35 countries over the period 1997-2002, Faccio *et al*. (2006) document that 11.3% of firms with political connections receive financial assistance from the governments, while only 4.4% of their non-connected peers receive such a package, indicating that connected firms are particularly more likely to be bailed out than other firms. They also find that 51 firms (out of 71 firms), which received a bailout more than once during the sample period were politically connected. Additionally, they find that in countries that receive financial assistance from the International Monetary Fund or the World Bank, politically associated firms are disproportionately more likely to receive a financial aid package than non-connected firms (21.1% and 7.4% respectively).

Blau *et al*. (2013) use data on lobbying expenditures for 237 US financial firms that received the 2008 Troubled Asset Relief Program (TARP)[1] support from the Centre for Responsive Politics (CRP), and confirm that political engagement significantly affects the distribution, timing, and magnitude of the TARP bailout, and firms that obtained bailout dollars spent four times or more on lobbying than firms that did not obtain bailout dollars. The authors measure political engagement from two proxies,

[1] The TARP program is proposed by Hank Paulson, the U.S. Treasury Secretary, on 19th September 2008 to address the mortgage crisis. "The TARP bill was passed by Congress on October 3rd. It authorized the Treasury department to purchase up to $700 billion worth of troubled assets (especially mortgage-backed securities) from financial institutions to stabilize financial markets and prevent the crisis from escalating further. On October 14th, 2008, secretary Paulson and President Bush announced revisions to the program, which authorized the Treasury department to use up to $250 billion of the available $700 billion to purchase preferred stock from US financial institutions under the Capital Purchase Program (CPP)."(Blau *et al*., 2013, p.3009).

i.e. lobbying expenditures and political connections.[1]

The authors also find that firms with political engagement during the 5 years prior to TARP had a better chance (37%-51% for the firms that lobbied and 23.5%-39.3% for the firms with political connections) to receive such bailout supports. The timing of bailout decisions is also related to political engagement of firms. 62% of firms that lobbied and 70% of politically connected firms during the 5 years prior to TARP obtained the TARP funds in the first two payouts, while 95% of firms that lobbied and 100% of firms with political connections received funding during the first nine payouts. Specifically, all eight firms that received bailouts on the first payout date (28th October 2008) had both lobbied and connected with politicians during the 5 years before the TARP. 15 firms received support on the second payout date (17th November 2008), of which five had lobbied and four firms had political connections.

The authors also find that firms that lobbied/firms that had political connections obtained bailouts 21.34%/35.37% sooner than firms that did not lobby/firms that were not politically connected. Furthermore, their results show that politically engaged firms obtained more support than other firms. Specifically, firms that did not lobby accepted between $2.02 billion and $5.14 billion less than firms that had lobbied, while unconnected firms received between $3.08 billion and $6.47 billion less than connected firms.

[1] Blau *et al*. (2013) consider a firm to be politically connected if at least one of the following three conditions holds: 1) the firm previously employed a current federal government officer; 2) the firm currently employs a previous federal government officer; 3) the firm currently employs a current federal government officer.

6.2.5 Hypotheses

Based on the analysis above, we hypothesise that:

Hypothesis 1 (H1): Because of the underdeveloped and imperfect Chinese financial market, Chinese firms' investment intensities are likely to be constrained by the availability of internal financing.

Hypothesis 2 (H2): The effect of financial constraints on investment intensities is likely to be mitigated by the lishu relationship.

Hypothesis 3 (H3): The effect of the lishu relationship on financial constraints is more significant for firms with high and medium levels of the lishu relationship compared with firms with lower and without such relationships.

6.3 Specifications and estimation methodology

6.3.1 Baseline specification

We initially estimate the following simple dynamic investment model similar to that used by Chan *et al*. (2012a):

$$\frac{I_{it}}{K_{it}} = \alpha_0 + \alpha_1 \frac{I_{i(t-1)}}{K_{i(t-1)}} + \alpha_2 \frac{CF_{it}}{K_{it}} + \alpha_3 \frac{Sale_{it}}{K_{it}} + v_i + v_t + v_{jt} + e_{it} \qquad (1)$$

where I is the firm's investment, K is the tangible fixed assets, which indicates the replacement value of its capital stock, CF is the firm's cash flow, and *Sale* is defined as the firm's real sales. These variables are scaled by capital stock K. The subscript i indexes firms, while t refers to time, where t = 2000-2007. We include the lagged dependent variable in the model specification in order to control for the past level of investment by the firm.

The error term in Eq. (1) consists of four elements. v_i is a firm-specific component, which we control for by estimating the equations in first-difference. v_t represents a time-specific component and is accounted for by including time dummies in the regressions. v_{jt} denotes a time-specific component which varies across industries, which accounts for industry-specific time effects. We take v_{jt} into account by including interactions between industry dummies and time dummies in the regressions. And e_{it} is an idiosyncratic component.

To the extent that the FHP conclusion is valid in the Chinese context, an increase in cash flow should increase the investment spending. Therefore, we expected that the coefficient of cash flow is positive and statistically significant in this regression if firms' internal funds can affect their investments.

In order to control for possible bias due to omitting relevant variables, we augment Eq. (1) with following additional variables. Firstly, in order to control for the effects of external financing, we include the leverage ratio in Eq. (1). As a high leverage ratio indicates that the firm faces soft budget constraints, we expect the coefficient on the

leverage ratio to be positive. Moreover, if expected future profit is high, then firms may hold more cash because they anticipate greater capital investment. In this case, the coefficient of cash flow may not reflect financial constraints. We therefore incorporate an accelerator term, defined as sales growth ($Sales\ Growth$) into Eq. (1) to account for the effects of future opportunities of investment (Chan *et al*., 2012b; Cull *et al*., 2014).

$$\frac{I_{it}}{K_{it}} = \alpha_0 + \alpha_1 \frac{I_{i(t-1)}}{K_{i(t-1)}} + \alpha_2 \frac{CF_{it}}{K_{it}} + \alpha_3 \frac{Sale_{it}}{K_{it}} + \alpha_4 Leverage_{it} + \alpha_5 Sales\ Growth_{it} + v_i + v_t + v_{jt} + e_{it} \quad (2)$$

In order to test the influences of the *lishu* relationship on the sensitivity of cash flow to investments for Chinese firms, rather than estimating all the equations on separate sub-samples of firms as in Cull *et al*. (2014), Chen *et al*. (2011), and Chan *et al*. (2012a), we estimate a single equation and interact the cash flow variables with political affiliation variable, which is a dummy variable that equals to 1 if the firm has a *lishu* relationship and 0 otherwise following Chen *et al*. (2011) and Mclean *et al*. (2012). Specifically, we estimate the following reduced and augmented equations:

$$\frac{I_{it}}{K_{it}} = \alpha_0 + \alpha_1 \frac{I_{i(t-1)}}{K_{i(t-1)}} + \alpha_{21} \frac{CF_{it}}{K_{it}} + \alpha_{22} \frac{CF_{it}}{K_{it}} \times PA_{it} + \alpha_3 \frac{Sale_{it}}{K_{it}} + v_i + v_t + v_{jt} + e_{it} \quad (3)$$

$$\frac{I_{it}}{K_{it}} = \alpha_0 + \alpha_1 \frac{I_{i(t-1)}}{K_{i(t-1)}} + \alpha_{21} \frac{CF_{it}}{K_{it}} + \alpha_{22} \frac{CF_{it}}{K_{it}} \times PA_{it} + \alpha_3 \frac{Sale_{it}}{K_{it}} + \alpha_4 Leverage_{it}$$
$$+ \alpha_5 Sales\ Growth_{it} + v_i + v_t + v_{jt} + e_{it} \quad (4)$$

Using interactions rather than separate regressions for each group allows us to avoid the endogenous sample selection problems, obtain degrees of freedom, and take account of the fact that firms can transit between groups (Guariglia, 2008). For all the sample firms, we expect that the coefficient on the interaction term to be significantly less than zero.

We further divide the *lishu* relationship into four degrees by generating an ordinal dummy variable, named *PAV*, which takes the value of 1 if firms have no *lishu* relationship, takes the value of 2 for firms affiliated with the low level of government, takes the value of 3 for firms affiliated with the medium level of government, and takes the value of 4 for firms affiliated with the high level of government.[1] We interact cash flow with this dummy indicating various degrees of political connections held by firms and expect that the firms affiliated with higher level of governments in China face less financial constraints. Specifically, we estimate the following reduced and augmented equations:

$$\frac{I_{it}}{K_{it}} = \alpha_0 + \alpha_1 \frac{I_{i(t-1)}}{K_{i(t-1)}} + \alpha_{21} \frac{CF_{it}}{K_{it}} + \alpha_{22} \frac{CF_{it}}{K_{it}} \times PAV_{it} + \alpha_3 \frac{Sale_{it}}{K_{it}} + v_i + v_t + v_{jt}$$
$$+ e_{it} \quad (5)$$

[1] See Appendix for detailed definitions.

$$\frac{I_{it}}{K_{it}} = \alpha_0 + \alpha_1 \frac{I_{i(t-1)}}{K_{i(t-1)}} + \alpha_{21} \frac{CF_{it}}{K_{it}} + \alpha_{22} \frac{CF_{it}}{K_{it}} \times PAV_{it} + \alpha_3 \frac{Sale_{it}}{K_{it}} + \alpha_4 Leverage_{it}$$

$$+ \alpha_5 Sales\ Growth_{it} + v_i + v_t + v_{jt} + e_{it} \qquad (6)$$

6.3.2 Estimation methodology

The Ordinary Least Squares (OLS) estimates are likely to suffer from biases caused by unobserved firm-specific heterogeneity and possible endogeneity of the regressors, while the Fixed Effects estimator only controls for the former bias. For the purpose of controlling both biases, we estimate all equations by adopting the first-difference generalised method of moments (GMM),[1] proposed by Arellano and Bond (1991). This methodology has been widely employed in recent research (for example, Guariglia *et al*., 2011; Firth *et al*., 2012; Greenaway *et al*., 2014; Guariglia and Mateut, 2013; Männasoo and Maripuu, 2015). This method controls for the unobserved firm-specific heterogeneity by estimating regressions in first-difference, and controls for the problem of possible endogeneity of regressors by using the regressors lagged two or more periods as instruments.

If the model is appropriately specified, the variables in the instrument set should not be correlated with the error term. In order to evaluate whether the instruments are valid and whether the model is specified appropriately, we consider two tests suggested by Arellano and Bond (1991). The first test is the serial correlation in the differenced residuals. Generally, we assess the correlation of order *l*+1 in differences to check for serial correlation of order *l* in levels (Brown and Petersen, 2009;

[1] The GMM estimation in this chapter is performed in Stata using the command –*xtabond2*- developed by Roodman (2009).

Roodman, 2009). The instrument set needs to be restricted to lag 3 and deeper if the serial correlation of order 2 in the differenced residuals exists. Therefore, we use the $m(l)$ test to evaluate the presence of lth-order serial correlation in the differenced residuals. This test is under the null of no lth-order serial correlation of the differenced residuals and asymptotically distributed as a standard normal.

The second test is the Sargan test (also known as *J*-test). This test is used for assessing over-identifying restrictions. The null hypothesis being evaluated by the Sargan test is the instrument validity. That is, the instrumental variables are uncorrelated with the set of residuals, and therefore, they are acceptable, healthy, and valid instruments. It is asymptotically distributed as a chi-square variable with $(n\text{-}k)$ degrees of freedom, where n is the number of instruments and k is the number of parameters. However, according to Blundell and Bond (1998) and Benito (2005), when the estimation is used for samples with a very large cross-sectional dimension, it is likely to over-reject the null hypothesis of valid instrument. Therefore, given the size of our panel, we tend to pay little attention to the *J*-test.

We select our instruments starting with lagged twice regressors. If $m2$ test is rejected, we delete the regressors lagged twice from the instrument set and use regressors lagged three times as instruments.[1] We only include the deeper lags if they can improve the specification estimations.

[1] The $m1$ test for first-order serial correlation of the differenced residuals is reported in all the tables. As our regressions are tested in first-differences, we observe negative first-order autocorrelation in the differenced residuals. If the regressions use instruments both lagged twice (t-2) and three times (t-3), both the $m2$ and the $m3$ tests for second- and third- autocorrelation in the differenced residuals are reported in the tables. If the most recent instruments are lagged twice (t-2) or three times (t-3), only the $m2$ or $m3$ test will be reported in the tables. Note that the differences between bad instruments and model specification cannot be diagnosed neither by the Sargan test nor by the lth-order serial correlation in the differenced residuals.

6.4 Data and summary statistics

6.4.1 Data

We use firm-level dataset for this study as it can avoid aggregation problems in estimation, and make it possible to take firm heterogeneity into account (Bond and Van Reenen, 2007). This dataset is from the annual accounting reports, maintained and complied by the National Bureau of Statistics of China (NBS), and provides comprehensive economic information of all types of firms in China with annual sales of more than five million Yuan.[1]

In order to improve the reliability of our analysis, we first drop observations which make little sense, such as those with negative sales, negative age, and negative leverage ratio. Second, we eliminate firms without complete records on our main regression variables. Finally, in order to control for the potential effect of extreme values, we drop outliers, which are the observations beyond the 1st and 99th percent tails for each continuous main regression variables.[2] After the above adjustments, our final panel dataset includes 356,053 firm-level observations, covering 105,487 mainly unlisted firms over the period 2002-2007.[3] The sample has an unbalanced structure,[4] with the number of observations ranging from a minimum of 32,358 in 2002 to a

[1] The official RMB exchange rate per US dollar during the sample period was 8.2785 in 2000, 8.2771 in 2001, 8.2770 in 2002 and 2003, 8.2768 in 2004, 8.1943 in 2005, 7.9734 in 2006, and 7.6075 in 2007 (World Development Indicators, World Bank). Therefore, the threshold for including in the dataset is equivalent to between USD 604,098 and USD 657,246 over the sample period.

[2] It is quite common in the literature (see Greenaway *et al*., 2007; Guariglia, 2008; Carpenter and Guariglia, 2008; Yan, 2012) to eliminate extreme values in this way.

[3] It should be noted that our dataset include a very small proportion of listed firms for two reasons. Frist of all, according to Liu and Xiao (2004), when firms become listed, their legal identification numbers are changed; it is therefore hard to track these firms. The second reason is that there is no separate identification of Chinese publicly listed firms in the NBS dataset. However, they only comprise a very small portion of the whole sample. Over the whole considered period, only approximately 1000 listed firms in the manufacturing and mining sectors, accounting for less than 0.3% of the total number of firms in the sample.

[4] See Appendix for details about the structure of the panel.

maximum of 79,185 in 2006.

6.4.2 Summary statistics

Table 6.1 reports the summary statistics for the full sample, firms with the *lishu* relationship and those without such relationship.[1] The statistics presented include the number of observations in each category, mean, median, and standard deviation (S.D.). And we also report the *p*-values from an independent mean-equality test between the firms with a *lishu* and those without a *lishu* in the last column in Table 6.1.

Relative to those without a *lishu* relationship, firms with a *lishu* relationship have lower average investment intensities (7.61% vs. 10.90%), are much older (17 vs. 10 years old), and much larger in terms of assets (908.05 vs. 636.53 thousands of yuan). Compare with the leverage ratio of non-affiliated firms (55.20%), the higher leverage ratio of the affiliated firms (58.92%) suggests that the latter firms suffer from the soft budget constraints. The politically affiliated firms prefer to locate in the centre and west of China, while firms without a *lishu* relationship are more likely to locate themselves in the coastal area. Table 6.1 also shows that firms with a *lishu* relationship have lower cash flow/capital ratio (29.66% vs. 36.68%), lower sales/capital ratio (5.88% vs. 7.69%), and lower sales growth (8.32% vs. 10.89%), compared with firms without a *lishu* relationship. The politically affiliated firms are therefore growing more slowly. This may indicate that they respond to social and political needs, as well as to economic objectives (Bai *et al*., 2006). All the variables in the two groups are significantly different from each other.

[1] See Appendix for the complete definitions and the correlation matrix of variables used.

Table 6.1 Descriptive statistics (sample mean, median, and S.D.)

Variables	Full sample			Firms with a *lishu* relationship			Firms without a *lishu* relationship			*Diff*
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.	
Investment/Capital	9.580	6.082	31.151	7.612	4.210	29.859	10.904	7.546	31.923	0.000***
PA	0.402	0.000	0.490	1.000	1.000	0.000	0.000	0.000	0.000	0.000***
PAV	1.704	1.000	0.964	2.751	3.000	0.690	1.000	1.000	0.000	0.000***
Cash flow/Capital	33.857	20.836	43.605	29.663	17.058	42.328	36.679	23.209	44.220	0.000***
Sales/Capital	6.964	4.274	7.891	5.877	3.339	7.287	7.694	4.950	8.192	0.000***
Leverage	56.694	58.170	24.990	58.918	60.092	25.285	55.197	56.822	24.677	0.000***
Sales Growth	9.859	9.572	33.549	8.324	8.162	32.958	10.892	10.608	33.901	0.000***
Real Assets	745.733	249.868	1494.509	908.045	293.936	1742.523	636.526	225.902	1289.867	0.000***
Age	12.814	10.000	10.184	17.144	12.000	13.127	10.044	9.000	6.337	0.000***
Region	1.350	1.000	0.663	1.512	1.000	0.757	1.240	1.000	0.566	0.000***
Observations		356,053			143,207			212,846		

Notes: PA is a dummy variable that equals to 1 if the firm has a *lishu* relationship and 0 otherwise. PAV is an ordinal dummy which takes the value of 1 if firms have no *lishu* relationship, takes the value of 2 for firms affiliated with the low level of government, takes the value of 3 for firms affiliated with the medium level of government, and takes the value of 4 for firms affiliated with the high level of government. Real Assets are expressed in thousands of yuan. All the other variables except for age and region are expressed in percentage terms. S.D. stands for standard deviations. The last column (*Diff*) presents *p*-values from an independent samples mean-equality test between affiliated group and non-affiliated group. *, **, *** indicates significance at the 10%, 5%, and 1% level, respectively. See Appendix for complete definitions of all variables.

Focusing on the three different levels of *lishu* relationship in Table 6.2, we observe that while the level of *lishu* relationship is upgrading, the investment/capital ratio is decreasing (from 9.62% to 6.46% and 5.81% for firms affiliated with the low/medium/high level of government, respectively), while the firm size (measured by the real assets), as well as firm age are increasing. In addition, the sales-to-capital ratio and sales growth are decreasing when the level of political affiliation is increasing. As for the financial factors, we find that firms affiliated with the medium level of government have the highest leverage ratio (62.02%) and the lowest cash flow to capital ratio (22.79%). Furthermore, we observe that the firms affiliated with medium level of government are more likely to locate themselves in the inner regions.

Table 6.2 Descriptive statistics for three levels of the *lishu* relationship (sample mean, median, and S.D.)

Variables	LOW			MEDIUM			HIGH			*Diff1*	*Diff2*	*Diff3*
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.			
Investment/Capital	9.624	6.249	31.311	6.462	3.074	29.417	5.811	3.161	26.746	0.000***	0.000***	0.005***
PA	1.000	1.000	0.000	1.000	1.000	0.000	1.000	1.000	0.000	0.000***	0.000***	0.000***
PAV	2.000	2.000	0.000	3.000	3.000	0.000	4.000	4.000	0.000	0.000***	0.000***	0.000***
Cash flow/Capital	39.656	24.408	47.341	22.786	12.815	36.345	24.432	13.319	40.267	0.000***	0.000***	0.000***
Sales/Capital	7.870	5.007	8.408	4.697	2.621	6.236	4.226	2.273	5.719	0.000***	0.000***	0.000***
Leverage	55.893	57.338	24.662	62.024	63.277	25.201	57.244	57.578	26.057	0.000***	0.000***	0.000***
Sales Growth	10.619	10.517	33.420	6.890	6.641	33.275	6.661	7.180	30.213	0.000***	0.000***	0.378
Real Assets	489.051	194.224	1034.712	976.108	351.838	1752.263	1828.692	741.653	2631.622	0.000***	0.000***	0.000***
Age	12.907	11.000	7.597	18.996	12.000	14.693	21.476	14.000	15.469	0.000***	0.000***	0.000***
Region	1.273	1.000	0.569	1.681	1.000	0.815	1.623	1.000	0.837	0.000***	0.000***	0.000***
Observations		56,354			66,092			20,761				

Notes: PA is a dummy variable that equals to 1 if the firm has a *lishu* relationship and 0 otherwise. PAV is an ordinal dummy which takes the value of 1 if firms have no *lishu* relationship, takes the value of 2 for firms affiliated with the low level of government, takes the value of 3 for firms affiliated with the medium level of government, and takes the value of 4 for firms affiliated with the high level of government. Real Assets are expressed in thousands of yuan. All the other variables except for age and region are expressed in percentage terms. S.D. stands for standard deviations. The last three columns present *p*-values from an independent samples mean-equality test between the low level of *lishu* group and the medium level of *lishu* group (*Diff1*), between the low level of *lishu* group and the high level of *lishu* group (*Diff2*), and between the medium level of *lishu* group and the high level of *lishu* group (*Diff3*). *, **, *** indicates significance at the 10%, 5%, and1% level, respectively. See Appendix for complete definitions of all variables.

Table 6.3 presents a comparison of the main variables by the types of firms' ownership. In terms of investment-to-capital ratio, PEs and FEs invest more (10.88% and 9.28%, respectively), followed by COEs (7.72%), while SOEs have the lowest ratio (3.15%). SOEs and FEs are generally large in real assets (1220.30 thousands of yuan and 1118.85 thousands of yuan, respectively), compared with PEs and COEs (608.10 thousands of yuan and 407.01 thousands of yuan, respectively). SOEs have the highest political affiliation level (level 3) and are the longest-established firms in terms of firms age (28 years), followed by COEs with 18 years old and the second highest political affiliation level (level 2), while the FEs are the youngest one (10 years old). This is due to the fact that most foreign firms entered China after the 1990s. SOEs also suffer from soft budget constraints indicated by their highest leverage ratio (65.35%), while FEs enjoy the highest cash flow-to-capital ratio (37.88%). Table 6.3 also shows that sales/capital ratio is the highest for COEs (7.48%) and the sales growth is the highest for private firms (11.29%). Finally, we observe that the FEs prefer to locate their firms in the coastal region, while SOEs are more likely to locate their firms in the inner area of China.

Table 6.3 Descriptive statistics for ownership (sample mean, median, and S.D.)

Variables	SOEs			PEs			FEs			COEs					
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.	*Diff1*	*Diff2*	*Diff3*
Investment/Capital	3.154	1.057	27.636	10.883	7.472	32.126	9.283	5.896	28.561	7.719	4.438	31.458	0.000***	0.000***	0.000***
PA	0.944	1.000	0.229	0.317	0.000	0.465	0.234	0.000	0.423	0.814	1.000	0.389	0.000***	0.000***	0.000***
PAV	3.212	3.000	0.719	1.533	1.000	0.864	1.398	1.000	0.799	2.101	2.000	0.718	0.000***	0.000***	0.000***
Cash flow/Capital	14.314	7.586	29.830	34.248	21.358	42.357	37.883	24.399	46.346	37.813	21.904	49.349	0.000***	0.000***	0.000***
Sales/Capital	2.998	1.607	4.511	7.450	4.744	8.076	6.756	4.123	7.649	7.475	4.535	8.364	0.000***	0.000***	0.000***
Leverage	65.352	66.059	26.584	58.875	60.849	23.853	46.000	45.756	24.282	58.378	59.665	25.850	0.000***	0.000***	0.000***
Sales Growth	4.768	4.789	33.609	11.288	10.878	33.971	8.543	8.703	31.817	7.880	7.548	33.999	0.000***	0.000***	0.000***
Real Assets	1220.297	386.136	2177.360	608.104	207.952	1299.233	1118.852	444.634	1820.282	407.006	183.795	785.862	0.000***	0.000***	0.000***
Age	27.920	30.000	15.476	11.401	8.000	9.272	9.799	10.000	3.413	18.029	15.000	11.150	0.000***	0.000***	0.000***
Region	1.810	2.000	0.827	1.370	1.000	0.677	1.079	1.000	0.348	1.418	1.000	0.680	0.000***	0.000***	0.000***
Observations	25,582			215,269			69,781			30,087					

Notes: PA is a dummy variable that equals to 1 if the firm has a *lishu* relationship and 0 otherwise. PAV is an ordinal dummy which takes the value of 1 if firms have no *lishu* relationship, takes the value of 2 for firms affiliated with the low level of government, takes the value of 3 for firms affiliated with the medium level of government, and takes the value of 4 for firms affiliated with the high level of government. Real Assets are expressed in thousands of yuan. All the other variables except for age and region are expressed in percentage terms. S.D. stands for standard deviations. The ownership classification is based on the majority average ownership shares (at least 50%). SOEs, PEs, FEs, and COEs refers to state-owned enterprises, private enterprises, foreign enterprises, and collectively-owned enterprises. The last three columns present *p*-values from an independent samples mean-equality test between the SOEs group and the PEs group (*Diff1*), between SOEs group and the FEs group (*Diff2*), and between PEs group and FEs group (*Diff3*). *, **, *** indicates significance at the 10%, 5%, and1% level, respectively. See Appendix for complete definitions of all variables.

The descriptive statistics for three different regions of China are provided in Table 6.4. We observe that firms located in the central region have the highest investment to capital ratio (10.01%), followed by firms in the central area (9.21%), and firms in the west of China have the lowest investment/capital ratio (7.03%) and the highest political affiliation level. In addition, firms in the west of China are generally larger, in terms of real assets (835.87 thousands of yuan) and older (around 17 years) than firms in the east and central of China. Interestingly, firms located in the coastal region have the highest sales/capital ratio and cash flow/capital ratio (7.55% and 36.12%, respectively), while those located in the west of China enjoy the highest leverage ratio (60.01%). However, firms in the central area have the largest sales growth (11.06%). This may be attributed to their location advantage, which is close to the heart of China, Beijing, which is one of the biggest cities with rapid growth rate, providing extensive markets to the firms.

Table 6.4 Descriptive statistics for region (sample mean, median, and S.D.)

Variables	Costal			Central			Western			*Diff1*	*Diff2*
	Mean	Median	S.D.	Mean	Median	S.D.	Mean	Median	S.D.		
Investment/Capital	10.006	6.617	30.936	9.205	5.326	33.253	7.030	3.301	29.710	0.000***	0.000***
PA	0.345	0.000	0.475	0.554	1.000	0.497	0.612	1.000	0.487	0.000***	0.000***
PAV	1.572	1.000	0.890	2.004	2.000	1.015	2.259	3.000	1.106	0.000***	0.000***
Cash flow/Capital	36.122	22.938	44.173	29.887	15.078	44.272	22.852	13.286	35.950	0.000***	0.000***
Sales/Capital	7.550	4.778	8.187	5.494	3.144	6.749	4.680	2.532	6.288	0.000***	0.000***
Leverage	56.098	57.814	24.672	57.412	58.095	26.632	60.014	60.505	24.765	0.000***	0.000***
Sales Growth	9.781	9.666	32.999	11.059	10.156	35.522	8.869	8.289	34.749	0.000***	0.000***
Real Assets	742.927	253.649	1475.306	691.417	210.000	1487.587	835.868	277.434	1629.327	0.000***	0.000***
Age	11.971	10.000	8.953	15.079	10.000	12.859	16.680	11.000	13.695	0.000***	0.000***
Region	1.000	1.000	0.000	2.000	2.000	0.000	3.000	3.000	0.000	0.000***	0.000***
Observations		269,414			48,828			37,811			

Notes: PA is a dummy variable that equals to 1 if the firm has a *lishu* relationship and 0 otherwise. PAV is an ordinal dummy which takes the value of 1 if firms have no *lishu* relationship, takes the value of 2 for firms affiliated with the low level of government, takes the value of 3 for firms affiliated with the medium level of government, and takes the value of 4 for firms affiliated with the high level of government. Real Assets are expressed in thousands of yuan. All the other variables except for age and region are expressed in percentage terms. S.D. stands for standard deviations. The last two columns present *p*-values from an independent samples mean-equality test between the coastal region group and the central region group (*Diff1*), and between the coastal region group and the western region group (*Diff2*). *, **, *** indicates significance at the 10%, 5%, and1% level, respectively. See Appendix for complete definitions of all variables.

6.5 Empirical results

6.5.1 Financial constraints in China

Table 6.5 presents the estimation of Eq. (1) and Eq. (2) for the full sample of firms. Column (1) reports the estimation for Eq. (1), while column (2) reports the estimation for Eq. (2). Both equations are estimated by the first-difference GMM technique.

Focusing on the coefficient of cash flow variable in column (1). Under the assumption of perfect capital markets without financial constraints, we should find a negative and insignificant relationship between investment and the availability of cash flow. However, if the cash flow is positively and significantly associated with the investment, this suggests that the firm's investment activities are subject to credit constraints. Our result shows a positive and precisely determined coefficient on cash flow in Eq. (1), which is consistent with our first hypothesis that Chinese firms' investments have a significant sensitivity to its internal funds. The coefficient of cash flow in first column estimator is 0.202 and the standard deviation for cash flow in Table 6.1 is 43.605. Therefore, a one-standard-deviation increase in cash flows yields an 8.808 increase in investment. The mean value of the investment is 9.580, hence a one-standard-deviation increase in cash flows creates a 91.94% increase of investment. This result indicates that the effect of cash flow on investment is economically significant.

Column (2) in Table 6.5 presents the results by controlling for the sales growth and leverage ratio. We find that the coefficient on cash flows decreases to 0.141, but remain

significant at a 5% level, indicating that the investment is sensitive to the availability of internal funds in China. Specifically, one-standard-deviation increase in cash flows yields a 6.148 increase in investment. Evaluated at the sample mean for investment, a one-standard-deviation increase in cash flow creates a 64.18% increase in investment. This result also consistent with most of the existing studies (FHP, 1988; Chow and Fung, 1998; Cull *et al*., 2014; Chen *et al*., 2011; Hubbard, 1998; Stein, 2003; Dethier *et al*., 2011).

When focusing on the coefficients of the other regressors, we find a positive and significant relationship between sales-to-capital ratio and investment in both columns. More specifically, in the reduced equation, a 10% increase in sales-to-capital ratio causes a 3.427 increase in investment. Considering the mean value for investment, a 10% increase in sales-to-capital ratio enhances the investment by 35.75%. As for the augment equation, a 10% increase in sales-to-capital ratio causes a 3.299 increase in investment. Evaluated at the mean value of investment, a 10% increase in sales to capital ratio enhances the investment by 34.44%.

The insignificant but positive coefficient on the leverage ratio indicates that debt may not be the first preference for Chinese firms to finance their investment activities. This can be explained by the fact that private firms, which takes up almost 60% of our sample, are not favoured in the capital market, which is dominated by the government. Therefore, it might be difficult for them to obtain sufficient external financing when there is an investment opportunity. We also find a negative and significant (at 1% level) relationship between sales growth and investment intensity. One possible explanation

for the negative relationship between sales growth and investment/capital ratio is that firms with less expected future profits generally invest less, but require more loans and face higher default risks. Meanwhile, via expanding investments, these firms can gain more revenue, which in turn can reduce the risk of default and increase these firms' liquidity. According to Cleary *et al*. (2007), these firms will ultimately invest more.

Although the Sargan test indicates some problems with the specification of the model and/or the validity of the instruments, the *m*3 test in both columns shows that the null of no 3rd-order autocorrelation of the differenced residuals cannot be rejected. As we have discussed in section 6.3.2, the *J*-test tends to over-reject given the large size of our panel, we incline not to consider too much about this statistic. We therefore conclude that the instruments and specifications are generally acceptable.

To summarise, the results suggest that Chinese firms suffer from financial constraints as their investment intensity is sensitive to the access to cash flow.

Table 6.5 Financial constraints in China

Variables	(1)	(2)
$I_{i(t-1)}/K_{i(t-1)}$	-0.026	-0.119***
	(0.038)	(0.042)
CF_{it}/K_{it}	0.202***	0.141**
	(0.057)	(0.057)
$Sale_{it}/K_{it}$	4.340***	4.181***
	(0.690)	(0.672)
$Leverage_{it}$		0.023
		(0.078)
$Sale\ Growth_{it}$		-0.616***
		(0.115)
$m1$	-18.64	-19.090
$m3$	0.299	0.167
J (p-value)	0.000	0.000
Observations	356,053	356,053

Notes: Columns (1) and (2) report the results for the reduced equation and augmented equation, respectively. We estimate all equations using the first-difference GMM estimator. The robust standard errors are presented in the parentheses. Time dummies and interactions between industries dummies and time dummies are included in all regressions. Instruments in all columns are three lags of all right-hand-side variables, time dummies and interactions between industries dummies and time dummies. $m1$/$m2$/$m3$ are tests for first-order/second-order/third-order serial correlation in the first-differenced residuals, asymptotically distributed as N(0,1) under the null hypothesis of no autocorrelation. The J statistics is a test for the over-identifying restrictions, distributed as chi-square under the null hypothesis of instrument validity. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

6.5.2 The *lishu* relationship and financial constraints in China

Test results of estimating the second hypothesis, which predicts that firms with a *lishu* relationship face less financial constraints than their counterpart, are reported in Table 6.6. Column (1) reports the results for Eq. (3), while column (2) presents the results for Eq. (4). The interaction terms are based on the cash flow-to-capital ratio and the *lishu* dummy variable.

The negative coefficient of the interaction term between cash flow and *lishu* relationship in column (1) indicates investment/capital ratio is less sensitive to the level of cash flow for the firms with a *lishu* relationship. This insignificant level is due to omitting the relevant control variables. Focusing on the results in column (2), we find that the coefficient of the interaction term is significantly negative, suggesting that the *lishu* relationship reduces the sensitivity of investment to cash flow.

In the regressions including interactions, the overall cash flow coefficient equals the cash flow coefficient plus the interaction coefficient multiplied by the mean value of the interactive variable (Mclean *et al*., 2012). In this case, in column (1) the total cash flow coefficient is the sum of the cash flow coefficient plus the *cash flow-PA* interaction coefficient multiplied by the mean value of *PA*. The cash flow coefficient in this regression is 0.215, whereas the interaction term is -0.055, the mean value of *PA* for firms with a *lishu* relationship is 1.00 and for those without a *lishu* relationship is 0.00. Therefore, the overall cash flow ratio for firms with a *lishu* relationship is 0.16 and for non-affiliated firms is 0.215, which is more than one time larger than that for

affiliated firms. Looking at column (2), the cash flow coefficient in this regression is 0.174, while the interaction term is -0.075. Hence, the overall cash flow ratio in Eq. (4) for firms with a *lishu* relationship is 0.099 and for firms without a *lishu* relationship is 0.174. These results support our Hypothesis 2, which indicates that the *lishu* relationship can mitigate the financial constraints faced by affiliated firms.

As for the other variables, sales-to-capital ratio still has a positive and significant influence on investment activities. The coefficient of sales growth remains negative and significant. We do not find a significant relationship between leverage ratio and firms' investment activities. As the $m3$ test in both columns is not rejected, we therefore conclude that our instruments and specification are generally acceptable.

Table 6.6 The *lishu* relationship and financial constraints in China

Variables	(1)	(2)
$I_{i(t-1)}/K_{i(t-1)}$	-0.012	-0.077*
	(0.038)	(0.040)
CF_{it}/K_{it}	0.215***	0.174***
	(0.067)	(0.065)
$CF_{it}/K_{it} \times PA$	-0.055	-0.075*
	(0.045)	(0.043)
$Sale_{it}/K_{it}$	4.344***	4.263***
	(0.692)	(0.667)
$Leverage_{it}$		0.002
		(0.076)
$Sale\ Growth_{it}$		-0.447***
		(0.105)
$m1$	-18.990	-18.73
$m3$	0.194	-0.103
J (p-value)	0.000	0.000
Observations	356,053	356,053

Notes: Columns (1) and (2) report the results for the reduced equation and augmented euqtion, respectively. We estimate all equations using the first-difference GMM estimator. The robust standard errors are presented in the parentheses. Time dummies and interactions between industries dummies and time dummies are included in all regressions. Instruments in all columns are three lags of all right-hand-side variables, time dummies and interactions between industries dummies and time dummies. $m1/m2/m3$ are tests for first-order/second-order/third-order serial correlation in the first-differenced residuals, asymptotically distributed as N(0,1) under the null hypothesis of no autocorrelation. The J statistics is a test for the over-identifying restrictions, distributed as chi-square under the null hypothesis of instrument validity. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

6.5.3 Different levels of the *lishu* relationship and financial constraints in China

Table 6.7 presents the test results for our third hypothesis, which expects that the higher level of government the firms affiliated with, the lower cash flow-investment sensitivity they face. To this end, we estimate the Eqs. (5) and (6) and report the results in columns (1) and (2), respectively.

Looking at the results in column (1), the negative coefficient of the interaction term indicates that firms with a high level of *lishu* relationship face less investment-cash flow sensitivity. By controlling for relevant variables, this effect becomes significant. Specifically, the cash flow coefficient in column (1) is 0.248, while the interaction term is -0.033. The mean value of *PAV* for firms without a *lishu* relationship, and firms affiliated with a low/medium/high level of government are 1.00/2.00/3.00/4.00, respectively. Therefore, the overall cash flow coefficient of the firms without a *lishu* relationship is 0.215, the figure is 0.182 for the firms with a low level of *lishu* relationship, it is 0.149 for the firms with a medium level of *lishu* relationship, and for the firms with a high level of *lishu* relationship the number is 0.116. Focusing on the results of the augmented equation, we calculate the overall cash flow coefficient for non-affiliated firms is 0.187, while that for firms affiliated with a low/medium/high level of government is 0.125/0.063/0.001, respectively. In line with our Hypothesis 3, these results suggest that the sensitivity of investment to cash flow decreases when the level of the affiliated government increases. This may be attributed to the higher level of governmental control of the abundant resources, which is likely to support their affiliated firms. In this regard, the dependence of investment on cash flow can be

alleviated consequently.

The results for the other variables are similar to the previous findings. Leverage ratio does not have a significant influence on investments. Increases in sales-to-capital ratio will increase the investment, while the relationship between sales growth and investment is negative and significant due to the revenue effect. Moreover, due to the large panel, we focus on the *m*3 tests, which do not indicate significant problems of the model specification.

Table 6.7 Different levels of the *lishu* relationship and financial constraints

Variables	(1)	(2)
$I_{i(t-1)}/K_{i(t-1)}$	-0.012	-0.093**
	(0.038)	(0.041)
CF_{it}/K_{it}	0.248***	0.249***
	(0.086)	(0.083)
$CF_{it}/K_{it} \times PAV$	-0.033	-0.062**
	(0.027)	(0.027)
$Sale_{it}/K_{it}$	4.265***	4.244***
	(0.677)	(0.665)
$Leverage_{it}$		0.007
		(0.078)
$Sale\ Growth_{it}$		-0.547***
		(0.112)
***m*1**	-19.10	-19.27
***m*3**	0.204	-0.029
***J* (*p*-value)**	0.000	0.000
Observations	356,053	356,053

Notes: Columns (1) and (2) report the results for the reduced equation and augmented equation, respectively. We estimate all equations using the first-difference GMM estimator. The robust standard errors are presented in the parentheses. Time dummies and interactions between industries dummies and time dummies are included in all regressions. Instruments in all columns are three lags of all right-hand-side variables, time dummies and interactions between industries dummies and time dummies. *m*1/*m*2/*m*3 are tests for first-order/second-order/third-order serial correlation in the first-differenced residuals, asymptotically distributed as N(0,1) under the null hypothesis of no autocorrelation. The *J* statistics is a test for the over-identifying restrictions, distributed as chi-square under the null hypothesis of instrument validity. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

6.6 Further tests

6.6.1 The *lishu* relationship and financial constraints by firm ownership

We firstly estimate the financial constraints and the extent to which a *lishu* relationship affects financial constraints by different types of firms' ownership. As we find that around 94% of state-owned firms and 84% of collectively-owned firms are politically affiliated, in Table 6.8, we only report the results for private firms (in column (1)), which account for more than 60% of our full sample, and foreign firms (in column (2)), which are generally the youngest and active firms in China.

Focusing on sub-columns (a) and (b) of private firms, and (I) and (II) of foreign firms, we find that the coefficients on cash flow in all regressions are significant and positive, indicating that financial constraints exist in private and foreign firms in China. Interestingly, we observe that financial constraints are more severe in foreign firms than in private firms. Looking at the augmented equation results for both firms (sub-columns (b) and (II), respectively), we find that the coefficient on cash flow is significant at the 10% level for private firms, while it is at the 1% level for foreign firms. In particular, a one-standard-deviation increase in cash flow leads to a 7.918 increase in investment of foreign firms and a 6.404 increase in private firms. Evaluated at the mean value of investment in each group, a one-standard-deviation increase in cash flow creates an 85.29% increase for foreign firms and a 58.85% increase in private firms.

Sub-columns (c) and (d) in column (1), and (III) and (IV) in column (2) report the linkage between the *lishu* relationship and financial constraints of private and foreign firms, respectively. Focusing on the coefficient on the interaction term between cash flow and the *lishu* relationship, we find that it is negatively related to the investment/capital ratio in all four regressions, suggesting that the *lishu* relationship can alleviate financial constraints for both private and foreign firms. Especially, such effect is more pronounced for foreign firms (significant at the 1% level) when compared with private firms (significant at the 10% level). Particularly in the augmented regressions for foreign firms, the overall cash flow coefficient for affiliated firms is 0.159, while it is 0.281 for non-affiliated firms. Similar results are found for other independent variables.

Table 6.8 The *lishu* relationship and financial constraints in China by ownership

Variables	Private Firms (1)				Foreign Firms (2)			
	(a)	(b)	(c)	(d)	(I)	(II)	(III)	(IV)
$I_{i(t-1)}/K_{i(t-1)}$	-0.085***	-0.191***	-0.085***	-0.114**	-0.032	-0.069	-0.022	-0.042
	(0.005)	(0.060)	(0.005)	(0.054)	(0.062)	(0.063)	(0.064)	(0.064)
CF_{it}/K_{it}	0.286***	0.187*	0.290***	0.123*	0.238***	0.209***	0.298***	0.281***
	(0.045)	(0.096)	(0.050)	(0.095)	(0.078)	(0.078)	(0.086)	(0.085)
$CF_{it}/K_{it} \times PA$			-0.031	-0.024*			-0.125**	-0.122***
			(0.041)	(0.061)			(0.049)	(0.046)
$Sale_{it}/K_{it}$	4.727***	4.590***	4.759***	4.133***	2.016	1.686	2.158	1.769
	(0.407)	(0.754)	(0.410)	(0.694)	(1.805)	(1.320)	(1.849)	(1.357)
$Leverage_{it}$		0.063		0.042		0.120		0.120
		(0.118)		(0.106)		(0.119)		(0.122)
$Sale\ Growth_{it}$		-0.882***		-0.632***		-0.205		-0.130
		(0.171)		(0.146)		(0.135)		(0.125)
$m1$	-68.16	-15.10	-67.36	-15.64	-10.56	-9.706	-10.57	-9.602
$m2$	1.539		1.550					
$m3$		-0.022		-0.032	-0.011	0.285	-0.087	0.0460
J (p-value)	0.0000	0.417	0.000	0.000	0.000	0.000	0.000	0.000
Observations	215,269	215,269	215,269	215,269	69,781	69,781	69,781	69,781

Notes: Columns (1) and (2) report the results for private firms and foreign firms, respectively. Sub-columns (a) and (I) present the results for estimating Eq. (1) in each group. Sub-columns (b) and (II) report the results for estimating Eq. (2) in each group. Sub-columns (c) and (III) present the results for estimating Eq. (3) in each group. Sub-columns (d) and (IV) report the results for estimating Eq. (4) in each group. We estimate all equations using the first-difference GMM estimator. The robust standard errors are presented in the parentheses. Time dummies and interactions between industries dummies and time dummies are included in all regressions. Instruments in all columns are two and deeper lags of all right-hand-side variables, time dummies and interactions between industries dummies and time dummies. $m1$/$m2$/$m3$ are tests for first-order/second-order/third-order serial correlation in the first-differenced residuals, asymptotically distributed as N(0,1) under the null hypothesis of no autocorrelation. The J statistics is a test for the over-identifying restrictions, distributed as chi-square under the null hypothesis of instrument validity. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

6.6.2 The *lishu* relationship and financial constraints by region

Given China's huge size and various geographic distributions, the regions have played a vital role in the development and growth of the Chinese economy. In fact, most regional development policies in China are based on three zones, i.e. the east, the central, and the west.

Because of the reform and opening-up policy, firms locating in the east of China have experienced fast development since the 1970s, which causes development divergences between the coastal and inner regions. In order to reduce the regional inequalities and balance the development across different regions, the Chinese government has changed its development policies with a focus on the central and western regions. The government implemented the "Development of the Western Region in China" (*xi bu da kai fa*) in the late 1990s, and the "Rise of Central China Strategy" (*zhong bu jue qi zhan lve*) in 2004. Supported by these national strategies, substantial financing has been invested in environment, infrastructure, and energy and resource extraction in those regions.

As the coastal region in China is the most developed and competitive market for firms, they have to get involved in the severe competition for financial resources and other benefits. In this case, firms in the eastern provinces are more prone to rely on their own internal financing than firms in the central and western provinces. Therefore, firms in the eastern region are more likely to be financially constrained (Chen, 2008; Guariglia *et al*., 2011).

We test the Hypotheses 1 and 2 in the three regional groups and report our results in Table 6.9.[1] Column (1) presents the results of the coastal region, column (2) reports the results of the central region, and the results of the western region are presented in column (3). We find that the sensitivity of investment to the internal funds is significant for firms in the eastern and central regions than those in the western region. This can be attributed to the fact that the central development policy has been carried out by the Chinese government only since 2004. Given our sample period, which is from 2002 to 2007, it may not have enough time for us to observe the significant effect of this policy. Furthermore, focusing on the interaction term, we find that, for those firms with financial constraints in the coastal and central regions, the *lishu* relationship can reduce the cash flow-investment sensitivity.

[1] We only report the results by estimating the augmented equations, and present the results by estimating the reduced equations in the Appendix.

Table 6.9 The *lishu* relationship and financial constraints in China by region (augmented equation)

Variables	Coastal Region (1)		Central Region (2)		Western Region (3)	
	(a)	(b)	(A)	(B)	(I)	(II)
$I_{i(t-1)}/K_{i(t-1)}$	-0.156***	-0.118**	-0.093***	-0.095***	0.026	0.077
	(0.050)	(0.048)	(0.008)	(0.008)	(0.106)	(0.096)
CF_{it}/K_{it}	0.122**	0.162***	0.256***	0.320**	0.341	0.287*
	(0.058)	(0.064)	(0.075)	(0.102)	(0.258)	(0.128)
$CF_{it}/K_{it} \times PA$		-0.084*		-0.074*		-0.036
		(0.046)		(0.070)		(0.113)
$Sale_{it}/K_{it}$	4.372***	4.631***	0.493	0.818	0.130	-0.287
	(0.747)	(0.735)	(0.486)	(0.513)	(1.926)	(1.751)
$Leverage_{it}$	0.078	0.048	0.495***	0.448***	-0.277	-0.213
	(0.092)	(0.089)	(0.094)	(0.096)	(0.211)	(0.195)
$Sale\ Growth_{it}$	-0.705***	-0.502***	-0.285***	-0.225***	-0.367**	-0.221
	(0.140)	(0.126)	(0.084)	(0.082)	(0.185)	(0.153)
$m1$	-16.67	-15.95	-28.39	-15.64	-7.027	-7.219
$m2$			-0.190			
$m3$	0.147	-0.214		-0.032	-1.590	-1.998
J (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Observations	269,414	269,414	48,828	215,269	37,811	37,811

Notes: Columns (1) , (2), and (3) report the results for coastal region, central region, and western region, respectively. Sub-columns (a), (A) and (I) present the results for estimating Eq. (2) in each region. Sub-columns (b), (B) and (II) report the results for estimating Eq. (4) in each region. We estimate all equations using the first-difference GMM estimator. The robust standard errors are presented in the parentheses. Time dummies and interactions between industries dummies and time dummies are included in all regressions. Instruments in all columns are two and deeper lags of all right-hand-side variables, time dummies and interactions between industries dummies and time dummies. $m1$/$m2$/$m3$ are tests for first-order/second-order/third-order serial correlation in the first-differenced residuals, asymptotically distributed as N(0,1) under the null hypothesis of no autocorrelation. The J statistics is a test for the over-identifying restrictions, distributed as chi-square under the null hypothesis of instrument validity. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

6.7 Conclusion

The impacts of financial constraints on firms' investment activities have been substantially explored since FHP (1988), which for the first time that it was pointed out that the sensitivity of investment to cash flow can be regarded as an indicator of financial constraints. The existing studies on financial constraints have been extended to inventory investment, R&D investment, employment demand, and the growth of firms. Most literature estimating the links between political connections and financial constraints focuses on the developed countries. Some literature explores the developing countries, but with a focus on Thailand, Pakistan, and Malaysia. However, these studies define political connections either as state ownership or the linkage established by entrepreneurs' political participation. Our study fills the gap in the literature testing the effects of political connections, in the context of the *lishu* relationship, on the cash flow-investment sensitivity for Chinese unlisted firms.

We use a comprehensive firm-level dataset from 2002 to 2007 provided by the NBS, which includes 105,487 mainly unlisted firms from 31 provinces or province-equivalent municipal cities all across China. We demonstrate that Chinese firms confront financial constraints and can mitigate their cash flow-investment sensitivity through the *lishu* relationship. Moreover, this effect is more significant to the firms affiliated with a high level of government. We also find that compared with private firms, foreign firms are more likely to encounter financial constraints; therefore, the *lishu* relationship can reduce their financial constraints significantly. Furthermore, firms locating in the western region have the least sensitivity of investment to the

availability of internal financing due to the implement of the regional development policies. However, the *lishu* relationship can help firms in the central and coastal regions alleviate financial constraints.

Our findings confirm the "lending bias" and "political pecking order" existing in the Chinese capital market. One of the implications for Chinese firms is that they can diminish financial constraints by the *lishu* relationship with the governments. In addition, the higher level of government they can affiliate with, the more investment-cash flow sensitivity they can reduce. In addition, the Chinese governments should also develop policies to mitigate financing obstacles for the financially constrained firms and the firms with a lower level of political affiliation. Non-banking financial institutions, such as trust, security, insurance, financial leasing, rural credit cooperatives, and financial companies, should be established to improve the financial system and reduce financial constraints for Chinese unlisted firms.

Further research can be undertaken from the following directions. Firstly, it would be interesting to test other models, such as the error-correction model and Euler equation model. Secondly, it would be interesting to investigate the links between the *lishu* relationship and other types of investment activities. Thirdly, it also would be worthy of incorporating investments in net working capital (NWC), particularly in the context of China.

Appendix 6A

Table 6A.1 Definition of the variables used

Variable	Definition
Investment/capital ratio	ratio of firms investment to tangible fixed assets
PA	a dummy variable that equals to 1 if firm has a *lishu* relationship and 0 otherwise
PAV	an ordinal dummy variable that equals to 1 if firm has no *lishu* relationship, 2 if firm has a *lishu* relationship with the low level of government, 3 if firm affiliated with the medium level of government, 4 if firm has a *lishu* relationship with the high level of government
Leverage ratio	ratio of total debt to total assets
CFK	ratio of cash flow to tangible fixed assets
Sales/capital ratio	ratio of firms real sales to tangible fixed assets
Sales growth	growth of total real sales
Region	coastal region=1; central region=2; western region=3
Deflators	all variables (except tangible fixed assets) are deflated using provincial ex-factory producer price indices (*pdsales*) taken from various issues of the china statistical yearbook. tangible fixed assets are deflated using a deflator for fixed capital formation (*pdgoods*)

Table 6A.2 The correlation matrix of the main variables

	Investment /Capital	PA	PAV	Cash flow/Capital	Sales/Capital	Leverage	Sales Growth
Investment/Capital	1.000						
PA	0.030	1.000					
PAV	-0.049	-0.075	1.000				
Cash flow/Capital	-0.058	-0.100	0.884	1.000			
Sales/Capital	-0.029	0.481	-0.116	-0.149	1.000		
Leverage	0.005	-0.194	0.066	0.068	0.060	1.000	
Sales Growth	0.139	0.134	-0.043	-0.049	0.132	0.003	1.000

Table 6A.3 Structure of the unbalanced panel

Year	No. of Observations	Percent	Cumulative
2002	32,358	9.09	9.09
2003	44,586	12.52	21.61
2004	56,942	15.99	37.60
2005	66,033	18.55	56.15
2006	79,185	22.24	78.39
2007	76,949	21.61	100.00
Total	356,053	100.00	

No. of Observations per firm	No. of Firms	Percent	Cumulative
5	26,834	25.44	25.44
6	20,739	19.66	45.10
7	23,598	22.37	67.47
8	34,316	32.53	100.00
Total	105,487	100.00	

No. of Observations per firm	No. of observations	Percent	Cumulative
5	49,797	13.99	13.99
6	53,540	15.04	29.02
7	78,906	22.16	51.18
8	173,810	48.82	100.00
Total	356,053	100.00	

Table 6A.4 The *lishu* relationship and financial constraints by region (reduced equation)

Variables	Coastal Region (1)		Central Region (2)		Western Region (3)	
	(a)	(b)	(A)	(B)	(I)	(II)
$I_{i(t-1)}/K_{i(t-1)}$	-0.041	-0.039	-0.100***	-0.100***	-0.072***	-0.073***
	(0.044)	(0.044)	(0.008)	(0.008)	(0.010)	(0.010)
CF_{it}/K_{it}	0.180***	0.208***	0.299***	0.370***	0.156	0.137
	(0.057)	(0.066)	(0.083)	(0.118)	(0.122)	(0.147)
$CF_{it}/K_{it} \times PA$		-0.065		-0.077		-0.035
		(0.047)		(0.081)		(0.125)
$Sale_{it}/K_{it}$	4.494***	4.641***	1.468***	1.644***	4.681**	4.452**
	(0.769)	(0.769)	(0.500)	(0.540)	(1.937)	(1.835)
$m1$	-16.45	-16.44	-35.88	-33.83	-30.05	-30.54
$m2$			-0.006	-0.079	1.078	1.104
$m3$	0.207	0.160				
J (p-value)	0.000	0.417	0.000	0.000	0.000	0.000
Observations	269,414	269,414	48,828	48,828	37,811	37,811

Notes: Columns (1) , (2), and (3) report the results for coastal region, central region, and western region, respectively. Sub-columns (a), (A) and (I) present the results for estimating Eq. (1) in each region. Sub-columns (b), (B) and (II) report the results for estimating Eq. (3) in each region. We estimate all equations using the first-difference GMM estimator. The robust standard errors are presented in the parentheses. Time dummies and interactions between industries dummies and time dummies are included in all regressions. Instruments in all columns are two and deeper lags of all right-hand-side variables, time dummies and interactions between industries dummies and time dummies. $m1$/$m2$/$m3$ are tests for first-order/second-order/third-order serial correlation in the first-differenced residuals, asymptotically distributed as N(0,1) under the null hypothesis of no autocorrelation. The J statistics is a test for the over-identifying restrictions, distributed as chi-square under the null hypothesis of instrument validity. * indicates significance at the 10% level. ** indicates significance at the 5% level. *** indicates significance at the 1% level.

CHAPTER 7 CONCLUSION

This chapter concludes the thesis. A summary of the findings is presented in section 7.1. Section 7.2 raises the implications of this research. Limitations of this study and recommendations for future research are discussed in section 7.3.

7.1 Summary of findings

The *lishu* relationship is a unique kind of political connections, which only exists in China. Through this relationship, the government can control the firms legally and directly, while the affiliated firms can obtain favourable support from the government and develop smoothly under the market economy with Chinese characteristics. However, as a unique institutional variation of importance, the *lishu* relationship has received the least attention in previous research. For the first time in literature, Chapter 2 provides the political and economic background of this relationship, explores its different meanings under the different economic development stages in China, introduces the procedures of establishing, changing, and terminating this relationship, and explores the difference between the *lishu* relationship and ownership structure.

The dataset we use in this thesis is presented in Chapter 3. The dataset is drawn from the NBS (National Bureau of Statistics of China) from 2000 to 2007, which covers more than 100,000 mainly unlisted manufacturing firms from 31 provinces or province-equivalent municipal cities. This thesis investigates the determinants and effects of the *lishu* relationship between Chinese manufacturing enterprises and

central, provincial, or local governments. This thesis comprises three main empirical studies. In particular, we examine the determinants of the *lishu* relationship, the links between the *lishu* relationship and firms' exporting, and the effects of the *lishu* relationship on firms' financial constraints.

Chapter 4, being the first empirical part, explores what types of firms are more likely to have political affiliation. This is an important question, but has been overlooked in the existing literature. We find that the older and larger firms are prone to have a *lishu* relationship, while the firms with foreign ownership and locating in the east of China are less likely to affiliate with the governments. Financially healthy firms are more likely to have the *lishu* relationship. However, firms with high profitability and sales growth do not show such preference. Furthermore, we find that firms are more inclined to have connections with the medium level of governments. We attribute this finding to the fact that the governments can provide the affiliated firms with the important resources and high flexibilities at the same time. Similar results are found by looking at the types of ownership and the locations of firms. Particularly, the magnitude of marginal effects is larger for private firms than that for foreign firms. Moreover, we do not find that cash flow is a precise determinant to the firms in the central and western regions. This can be explained by the fact that firms in these regions have received preferential financial supports due to the Chinese regional development policies. Therefore, these firms have less dependence on their internal funding.

In Chapter 5, we estimate dynamic models for both the propensity and intensity of

exports of Chinese manufacturing firms. We employ the pooled Probit and Tobit models, clustering observations by firms ID, as well as random-effects Probit and Tobit models, respectively. Furthermore, we take into account of the sunk entry costs, unobserved firm heterogeneity, and the initial conditions problem. It is supposed to be the first study that estimates both firms' exporting probability and intensity for the unlisted Chinese firms from the perspective of the *lishu* relationship. We reveal that sunk entry costs exist in firms' exporting behaviour. Moreover, the overestimation of the size of the sunk entry costs can be alleviated by controlling the initial conditions problem appropriately. In addition, we find that the politically affiliated firms are less likely to participate in the export markets and export less once they enter these markets. This can be attributed to the political and social goals the affiliated firms have responsibilities to achieve, which in turn restricts the firms' capability to internationalise. Interestingly, this negative effect is only significant to the firms affiliated with low or medium level of governments. We also find that firm size, total factor productivity, financial factors, ownership structure, and location are the significant determinants of firms' exporting activities.

Chapter 6 focuses on the relations between the *lishu* relationship and firms' financial constraints, proxied by the sensitivity of investment to internal funds. We document that the investments of Chinese firms significantly depend on the availability of cash flow, suggesting that financial constraints exist in the context of China. We further find that by the *lishu* relationship, firms can alleviate such constraints. This effect is more significant for the firms affiliated with a higher level of government. We also find that, when compared with the private firms, the *lishu* relationship can reduce the

financial constraints of foreign firms more significantly because they are more likely to encounter the constraints. Furthermore, firms locating in the western region have the least sensitivity of investment to the availability of internal financing due to the regional policies. However, the *lishu* relationship can help firms in the central and coastal regions alleviate financial constraints.

7.2 Implications of this research

Given a relatively underdeveloped legal and market environment, having the *lishu* relationship may be an effective and active way for entrepreneurs to operate their business in the transitional economy. Our findings in Chapter 4 demonstrate that not all the firms are the good candidates to have the *lishu* relationship. In addition, China is geographically large and has different levels of governments. For the firms without the *lishu* relationship, they should be prepared to face the regulations from not only one government, but at least five layers of governments in the vertical hierarchy. Second, China has a system of economic decentralisation and political centralisation, in which the local governments have the authority to make economic policies. Since firms are more willing to be affiliated with the medium level of governments, the policy makers should establish the policies to support the firms' development. At the same time, they should be cautious not to arouse further regional imbalance and inequity.

The findings in Chapter 5 illustrate that entering into the foreign markets is always related to huge sunk costs. Therefore, the policies aiming to help firms overcome the

obstacles of exporting should be more effective and helpful in promoting more exporting entrant. The governments are advised to provide information about the potential foreign markets to reduce the sunk costs for the potential exporters. Secondly, we find that state ownership has a negative and significant impact on firms' exporting activities. Therefore, firms with an exporting plan should avoid collaborating with SOEs or holding large state stakes in the firms. Last but not least, we find that affiliation with low or medium level of government is negatively associated with firms' exporting activities, while this negative effect diminish for firms affiliated with high level of government. Therefore, firms with an international agenda should try to affiliate with higher level of governments, while avoiding the affiliation with the low or medium level of government.

In Chapter 6, we confirm that the "lending bias" and "political pecking order" exist in the Chinese financial market. One of the implications for Chinese firms is that they can diminish financial constraints by the *lishu* relationship with the governments. In addition, the higher governments they can affiliate with, the more investment-cash flow sensitivity they can reduce. In addition, the Chinese governments should also develop policies to mitigate financing obstacles for the financially constrained firms and the firms with a lower level of political affiliation. Non-banking financial institutions, such as trust, security, insurance, financial leasing, rural credit cooperatives, and financial companies, should be established to improve the financial system and reduce financial constraints for Chinese unlisted firms.

Following the deepening of the economic and political reforms in China, state-

ownership has witnessed a decrease in recent years. Private enterprises are expected to play a more important and active role in every aspect of the country's development. Under the current socialism political regime with the Chinese characteristics, the economic system in China is neither centrally planned nor market-based. According to the main findings in our three empirical chapters, as a part of an administrative strategy, the *lishu* relationship should be assessed carefully before deciding how to establish an efficient *lishu* relationship. To achieve the harmonious development national widely, the Chinese governments should establish new policies and regulations to alleviate the financial constraints, reduce large sunk entry costs for exporters, and balance the development across different political affiliation groups, ownership types, and regions.

7.3 Limitations of the study and the proposed future research

One of the limitations of this study results from the period covered in this dataset. Although the original panel data covers a relatively long period from 2000 to 2007, it does not include the data since 2008. As the global financial crisis swept all over the world during 2008 and 2009, Chinese firms have also experienced a decline in firm performance and exporting. Therefore, it would be of interest to examine whether the politically affiliated firms performed differently compared with the unaffiliated counterparts during the crisis.

Secondly, we do not employ the IV Probit or Tobit estimator in Chapters 4 and 5, because it requires that the endogenous regressors are continuous and cannot be

applied when the categorical variables are included as regressors. Therefore, it would be prudent to test whether these results are robust by using other methods, for example, the special regressor estimator proposed by Lewbel (2000). Compared with the IV Porbit or Tobit model, the special regressor allows discrete or limited endogenous regressor. Baum (2012) develops the *–sspecialreg-* command in Stata. In this case, future research can be done by employing new estimation methods.

Thirdly, in Chapter 6, it would be interesting to test whether the results remain robust if other models are applied, such as the error-correction model and Euler equation model (Bond *et al*., 2003; Guariglia, 2008). It also would be worthy of incorporating investments in net working capital (NWC), particularly in the context of China.

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