Political Connections, Macroeconomic Stimulus, and Firm Performance:

Evidence from China

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THESIS

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This thesis is dedicated to my mother, Lianpu Li.

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LIST OF ABBREVIATIONS

CPPCC	Chinese People's Political Consultative Conference
CSMAR	China Stock Market Financial Statements Database
DID	Difference in Difference
FEVD	Forecast Error Variance Decomposition
GDP	Gross Domestic Product
GMM	Generalized Method of Moments
IRF	Impulse Response Function
LGFV	Local Government Financing Vehicle
NPC	National People's Congress
PC	Politically Connected
PVAR	Panel Vector Autoregression
SOE	State-Owned Enterprise

SUMMARY

Gaining knowledge of the link between political connections and firm behavior is important for a general understanding of how resource allocation is affected by political connections. This dissertation will examine this link by using the difference-in-difference model and panel vector autoregression model with data about all the listed companies on China's two stock markets (Shanghai and Shenzhen) from 2003 to 2012.

The first chapter will introduce China's political system, political connections between the government and listed companies, and the potential impact on firm performance. The second chapter explores the impact of China's stimulus package on firm behavior through political connections. In response to the global financial crisis of 2008, China launched its "four trillion-yuan stimulus package". Companies with close relationships to the central and local governments were likely to benefit more from this stimulus package. Chapter 2 uses a difference-in-difference analysis to compare politically connected and nonpolitically connected firms before and after 2008. The empirical results suggest that after the adoption of the stimulus package, politically connected firms had about 7.1% higher leverage, 9.3% higher receivables, and 6.6% lower sales compared to firms lacking those political connections, while the levels of investment, cash stock, and profit among all these firms were not significantly different. The last chapter uses within-firm variations to detect the impact of political connections on firm behavior. Using a panel vector autoregression model yields findings that show a positive shock in political connections has positive impacts on profit, receivables, and cash, while resulting in negative impacts on leverage, investment, and sales.

These results suggest that a firm might need to strengthen its connections, and thus bring advantages to the organization, by hiring board members who used to be government officials. However, when a firm has already established its political connections with the government, it might need to seriously consider whether to forge more connections since there are both advantages and disadvantages to increasing political connections within a firm. For an economy, building up political connections likely harms resource allocation and long-term economic growth because the resources the firms spend on hiring previous government officials and the resources allocated to the politically connected firms are all considered to be misallocated.

1. INTRODUCTION TO CHINA'S POLITICAL INSTITUTION

Abstract

Gaining knowledge of the link between political connections and firm behavior is important for a general understanding of how resource allocation is affected by political connections. This chapter serves as an introduction to the whole dissertation, discussing China's political system, political connections between the government and listed companies, the potential impact of political connections on firm performance, and related literature. This discussion will provide context for the dissertation and background information for Chapters 2 and 3.

JEL Codes: E62, G30, H50

1.1   **<u>The Institutional Background of China's Political System</u>**

The People's Republic of China (PRC) is a socialist republic run by the Communist Party of China (CPC). PRC exercises its state power through CPC, the central government, and their local system.[1]

Besides CPC and government systems, there are two other parallel political systems: the People's Congress and the People's Political Consultative Conference (Table I). The members of The People's Congress at the county level, who have the responsibility to oversight local governments, are elected by voters. These members would elect members to the provincial People's Congress, which then elect members to the National People's Congress (NPC). The ruling CPC committee of each level select candidates who would elect local congresses and higher-level positions (Table I). The Chinese People's Political Consultative Conference (CPPCC) coordinates the eight registered minor parties[2] and the Communist Party of China.

In China, each of the above four political systems is part of the governing power of the country. Therefore, if a person is a government official, a member of the Communist Party of China or the eight other registered minor parties, or a member of the NPC, this person will have political power in China. Meanwhile, China does not strictly regulate the "revolving door" in politics. Government officials and political party members are usually appointed to be company executives by the higher-level departments of governments or parties and vice versa. These officials or party members can also create their own companies independently or together with other people.

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[1] *South China Morning Post*, "How the Chinese Government Works."
[2] The minor parties include the Revolutionary Committee of the Chinese Guomindang; the China Democratic League; the China Democratic National Construction Association; the China Association for Promoting Democracy; the Chinese Peasants' and Workers' Democratic Party; the China Party for Public Interest (China Zhi Gong Dang); the Jiusan Society; and the Taiwan Democratic Self-Government League.

The company executives who used to be government officials, political party members, or NPC members can easily maintain relationships with the governing powers, thus allowing their companies to benefit more from government policies than companies that lack executives with comparable connections. This explains the rationale in this paper for using this information as a measure of the political connectedness of publicly listed firms.

In the meantime, government officials have different levels of power depending on the specific systems they work in and the specific levels they work at. This political power monotonically decreases as it becomes more decentralized. For example, government officials will have more political power if they are provincial-level officials than if they are city-level officials. And in a given level (e.g., the provincial level), people who are government officials or members of the Communist Party of China will have more political power than members of the eight other registered minor parties or the NPC. Therefore, company executives will have different political connections in terms of political power according to the positions they used to hold before joining the companies.

1.2   **The Revolving Door and Political Connections**

In most countries, the concept of the revolving door describes an important phenomenon in both the political system and business operations. For example, in the U.S., the term "revolving door" describes "the movement of federal public employees into the lobbying industry" (Blanes Vidal, Draca, and Fons-Rosen, 2012). Vidal, Draca, and Fons-Rosen (2012) mention in their research that "56 percent of the revenue generated by private lobbying firms between 1998 and 2008 can be attributed to individuals with some type of federal government experience." Therefore, in many countries (especially developed ones), there are strict laws and regulations on

the revolving door phenomenon to keep government officials from moving from government to private companies.

In China, there exists a similar policy. For example, the Civil Servant Law of the People's Republic of China was launched in 2005 and came into force in 2006. Within this law, there are several articles that regulate specific actions. Article 53 states that "a civil servant shall observe disciplines and shall not have any of the following acts: (14) Undertaking or participating in any profit-making activity or holding a concurrent post in an enterprise or any other profit-making organization." At the same time, Article 63 states that "civil servants may be exchanged within the troop of civil servants or may be exchanged with those personnel undertaking public office in state-owned enterprises, public institutions, people's associations or private organizations. The forms of exchange include transferring to another post, changing to another post and working out by assuming a temporary leading position in an inferior entity." Moreover, Article 64 states that "those personnel who are engaged in public office of state-owned enterprises, public institutions, people's associations or private organizations may be transferred to the state organs to hold leading posts or non-leading posts above the deputy researcher level or hold any other non-leading post at the corresponding level."[3]

A stricter and clearer regulation comes from Article 102. It states that "where a civil servant resigns his post or retires and if he is a leading member before resignation, he shall not take any post in an enterprise or any other profit-making organization that is directly related to his original post, or shall not engage in any profit-making activity directly related to his prior work within 3 years after he leaves his post. For any other civil servant, the time limit is 2 years. Where a civil servant has any violation of the provisions in the preceding paragraph after resignation or

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[3] The Civil Servant Law of the People's Republic of China, 2005.

retirement, the administrative department of civil servants at the same level as the original organ he works for shall order him to correct within a prescribed time limit; where he fails to correct, the administration for industry and commerce above the county level shall confiscate the illegal proceedings generated from his business, order the entity concerned to dismiss him, and according to the seriousness of circumstances, impose the receiving entity a fine of 1~5 times of that as imposed on the person punished."[4]

These laws and related articles are similar to those found in many other countries, but they were not strictly enforced before 2013. According to some official reports, when the Central Organization Department of the Communist Party of China assessed officials involved with enterprise in 2013, it triggered the departure of the official independent director (Xing Zhu, 2014). From late 2013 to early 2014, the Central Organization Department of the Communist Party of China cleaned up more than 40,700 party and leading government officials in total, including 229 provincial-level officials. This clean-up campaign occurred due to the introduction of the "Opinions on Further Regulating the Issue of Party and Government Leading Officials in Part-Time Employment" of the Central Organization Department in October 2013. New requirements concerning employment in enterprises were created, and current leading officials were explicitly forbidden to work part time in them. At the same time, stricter regulations were imposed regarding the behavior of postretirement leading officials in enterprises.

WIND Economic Database statistics show that from October 19, 2013, to July 2014, nearly 300 people in the Shanghai and Shenzhen stock exchanges have taken the initiative to resign as independent directors, affecting about 300 listed companies. There were at least 120 official independent directors among the 300 people. The designation of "official independent director"

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[4] The Civil Servant Law of the People's Republic of China, 2005.

refers to in-position or resigned government officials who are serving as independent executive directors at a company. According to the statistics, the highest number of official independent directors who have served in central-level units totals up to 412 individuals. Meanwhile, at a high point, there were 427 people serving in provincial-level units. These two levels of official independent directors add up to nearly 80% of the total.

Up to 2014, A-share firms had nearly 8,000 independent directors. In 2013, A-share listed companies paid RMB 425 million in compensation for independent directors.

This new policy might have been part of the anti-corruption campaign after 2012. Therefore, we have reason to believe that before 2012, there were a lot of government officials who were also working in both state-owned and privately listed companies as executives and were able to establish political connections between the government and their companies.

1.3   **Political Connections and Firm Performance**

What is the impact of political connections on firm behavior? Studying these links is important for a general understanding of how resource allocation is affected by political connections. Such connections can be of substantial importance in a centrally planned economy such as the one found in China. Whether a firm is close to the central and local government may decide how easily it can enter an industry, compete with other firms, maintain its market power, and improve its market performance.

A firm with closer political connections might be able to easily obtain a producing permit, get a better piece of land at a cheaper price than its counterparts, avoid some taxes or administration fees, and secure more profitable projects from the government than its competitors with fewer

political connections. Therefore, political connections could potentially affect a lot of different variables or indicators of firm performance (e.g. total factor productivity).

Having a closer political connection could help a company get more resource-rich land or property at a better location more easily. With better land or location, the company might be able to produce its product more efficiently based on the better land quality, better natural and cultural environment, and better transportation system.

However, closer political connections could also place a heavier burden on the firms. For example, these firms might need to hire more local workers who are not as efficient as employees from a broader market. They might also need to provide some products or services to the local communities that they wouldn't have if there were no political connections.

Therefore, the relationship between political connections and productivity is ambiguous, and as a consequence it also implies the ambiguous relationships between political connections and other measures of firm performance such as sales, profits, and investments.

1.4   **Literature Review**

International studies focused on political connections among firms have found that a firm with government ties has an easier time getting support from the government than firms that lack those connections. Shleifer and Vishny (1994) have shown that politicians would take rents generated by connections, and firm value would increase when marginal benefits of connections surpass marginal costs. Fisman (2001) studied rent valuation for a group of Indonesian firms, which are highly involved in the economic activities. He found that well-connected firms were hurt more than less-connected firms, when there were adverse rumors about Suharto's health. He concluded that the value of well-connected firms may largely derived from political connections.

He believes that this finding could be applied to many other countries, such as Bangladesh, China, India, Nigeria, Pakistan, and Russia. Faccio (2006) discovered a significant increase in corporate value and stock price impact whenever a businessperson was elected as prime minister and whenever a large shareholder entered politics.

A few studies have also looked specifically at the political connections of Chinese companies, with most of them finding that politically connected firms take advantage of their closer relationships with the government. Chan, Dang, and Yan (2012) found that there is no financing constraints for politically connected firms, whereas nonpolitically connected firms have significant constraints. Cull, Li, Sun, and Xu (2015) examined the role of firms' government ties—identifiable by government intervention in CEO appointments and state ownership status—and demonstrate that government connections are associated with substantially less severe financial constraints. Chen, Li, Luo, and Zhang (2017) found that there is an inverted U-shaped relation between political connection and firm value: firm value increased at the low level of connection but started to decrease at the high level.

Some studies, however, found that political connections had an insignificant impact on firm behavior. For example, Lin and Bo (2012) examined how state ownership affects financial constraints on investment among Chinese firms and discovered that state ownership does not help in reducing firms' financial constraints on investment.

1.5   **Construction of the Political Connection Variable**

The data used to determine the presence of political connections comes from the WIND Economic Database established by Wind Information Co., Ltd. (Wind Info), from Shanghai, China (personal résumés related to political connections for board members were all manually sorted).[5]

After collecting these résumés, I read through them to check whether each board member had a background as a government official or a member of the NPC or the CPPCC.

Although using the same data, the construction methodologies for the political connection variable are slightly different in Chapters 2 and 3. In Chapter 3, which uses the panel vector autoregression (PVAR) model, political connection construction is more complicated than in Chapter 2, which uses the difference-in-difference (DID) model. I explain the methodology in detail below.

1.5.1 <u>Political Connection Construction in Chapter 3 (the Panel Vector Autoregression Model)</u>

The political backgrounds of senior executives can be categorized into the following groups. First, there are people who used to be nongovernment department officials, such as NPC or CPPCC members. Second, there are people who were once government officials. The first group has less political power than the second group in general. There are strict administrative levels in China's administrative system, ranging from ordinary clerks to national-level officials. Therefore, I scored the political connections of senior executives according to the administrative levels they used to hold. The details are as follows.[6, 7]

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[5] According to the "People's Republic of China Company Law," Article 109, a company limited by shares shall have 5–19 board members.

[6] See Table I for the structure of the political system.

[7] According to the official website of China's central government, China has 34 provincial-level administrative regions. Under the provincial-level administrative regions, China has 334 city-level administrative regions and 2,851 county-level administrative regions.

1.5.1.1 <u>Nongovernment Department Officials</u>

- National-level NPC member or CPPCC member: 6 pts

- Provincial-level NPC member or CPPCC member: 4 pts

- City-level or lower-level NPC member or CPPCC member: 2 pts

1.5.1.2 <u>Government Officials</u>

- Vice-ministerial (vice-provincial) level and higher: 7 pts

- Bureau level: 6 pts

- Vice-bureau level: 5 pts

- County level: 4 pts

- Vice-county level: 3 pts

- Ke level: 2 pts

- Vice-ke level and lower: 1 pt

After scoring the senior executives' political connections, I constructed a political background index for every company. First, I aggregated the scores of all the senior executives and obtained the total political connection score for all the executives from one company. After that, to account for the important roles of CEOs and board presidents, I added up the scores of the CEO and the board president of each company to obtain the political connection score of the top decision makers of each company. Moreover, I standardized the political connection score for all the companies, with one being the highest score, and adjust the scores of all the other companies in proportion: [pc index = (x - minimum) / maximum].

In terms of different levels of government, I consider three levels for my research because the stimulus plan involved all of them. These different levels of government had the power to control the flow of government funds during the financial crisis. However, many funds were allocated through banking loans from different levels of banks instead of direct government subsidies. This may be the reason why subsidies were not significantly impacted by the stimulus plan, while leverage was significantly affected.

1.5.2 **Political Connection Construction in Chapter 2 (the Difference-in-Difference Model)**

In Chapter 3, construction of the political connection variable is rather simple. If a company had a board member with a government, party, NPC, or CPPCC background for at least half the number of years since its founding, that company was considered to be politically connected for the purposes of this research.

To sum up, this chapter provides an introduction to this thesis on China's political institution, the relationship between political connections and firm behavior, and the construction of the political connection variable. There is no agreement on whether political connections will bring benefits to firms and whether firms with political connections will perform better than those firms that do not nurture such ties. To answer these questions for China's listed companies during 2003–2012, I will use corresponding data and both applied micro- and applied macroeconometric models to study both within-firm and cross-firm variations. Specifically, Chapter 2 will use the DID model to study the impact of the stimulus package on firm behavior through political connections using cross-firm (between) variations. Meanwhile, Chapter 3 of this dissertation will

use the PVAR model to study the impact of political connections on firm performance using within-firm variations.

Table I.   Government and Party Agencies (U.S. vs. China)

U.S.	China	
Government	**Government Communist Party**	**NPC CPPCC**
Federal	National	National
State	Province	Province
County	City	City
City	County	County
Town	Village	Village

* NPC: National People´s Congress

* CPPCC: Chinese People´s Political Consultative Conference

Table II.   Construction of the Political Connection Variable

U.S.	China				
Government	**Government**		**NPC and CPPCC**		
Federal	National	7	National	6	
	Vice-National	7			
State	Province	7	Province	4	
	Vice-Province	7			
County	City	6	City	2	
	Vice-City	5			
City	County	4	County	2	
	Vice-County	3			
Town	Village	2	Village	2	
	Vice-Village	1			

* NPC: National People´s Congress

* CPPCC: Chinese People´s Political Consultative Conference

2. MACROECONOMIC STIMULUS AND THE DISTORTING EFFECTS OF POLITICAL CONNECTIONS: EVIDENCE FROM CHINA

Abstract

The global financial crisis of 2008 hit the Chinese economy hard. In response, China launched its four trillion yuan stimulus package. Because China's economic policies follow both central planning and market-based schemes, political relations influence resource allocation. Companies with close relationships to the central and local governments were the ones most likely to benefit from the stimulus package. This research uses a difference-in-difference analysis of publicly listed companies in China from 2003 to 2012, comparing politically connected and nonpolitically connected firms before and after 2008. The empirical results suggest that after the adoption of the stimulus package, politically connected firms had about 7.1% higher leverage, 9.3% higher receivables, and 6.6% lower sales compared to firms lacking those political connections, even though the levels of investment, cash stock, and profit among all these firms were not significantly different. My findings show that politically connected firms received a disproportionate amount of support from the stimulus package through increased leverage while maintaining a higher level of receivables and a lower level of sales. One potential reason for the imbalance between leverage and sales is the fact that a firm working on a project related to the stimulus package might not be paid on time, so the payment would be reflected as part of the company's receivables, instead of its sales. In conclusion, it appears that economic stimulus resulted from providing politically connected firms with a disproportionate amount of bank loans.

JEL Codes: E62, G30, H50

2.1   **<u>Introduction</u>**

The financial crisis hit the world economy severely in 2008. China's gross domestic product (GDP) growth rate fell from 13.9% in the last quarter of 2007 to 7.1% in 2008 during the fourth quarter of 2008, and the unemployment rate increased by 2% in 2008.[8] In an attempt to minimize the global financial crisis's impact on China's GDP growth rate, the Chinese government announced a four trillion yuan stimulus (US$586 billion) policy in November 2008. The package was intended to be invested in key areas such as housing, health care, education, and infrastructure, as well as go toward projects to rebuild disaster areas. All funds were to be dispersed by 2010 (Table III).

Although the stimulus package was initiated by the central government, three-quarters of the total spending was to go through local governments.[9] The package allowed local governments to circumvent some legal restrictions (e.g., the prohibition against local governments running budget deficits) and manipulate the disbursement of funds to support specific companies (Figure 1; Cong, Gao, Ponticelli, and Yang, 2018). Upon analyzing the allocation of the stimulus package, researchers found that the firms favored by local governments were almost always the largest ones in the given locality and were publicly listed companies (Bai, Hsieh, and Song, 2016). Given this finding, it seems likely that this stimulus policy was not used to extend equal support to publicly listed companies within different company groups. Instead, under the policy arrangement, it appears very likely that the firms with closer relationships to the central and local governments benefited the most from the stimulus package.

This research uses political connections as a measure of the relationships between publicly listed companies and the government. Political connections are important to almost every kind of

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[8] Feng, Hu, and Moffitt (2015), tabulations from the Urban Household Survey.
[9] Local governments include all the administrative levels under the central government.

firm across different countries, but they are significantly more important to the firms in a centrally planned and market-based economy such as China's. Closer political connections could help a company acquire more resource-rich land or property at a better location more easily. At the same time, though, having a closer political connection could also put more burden on the firms (e.g., through the responsibility to hire local workers to maintain a low level of unemployment or to provide some products or services for local communities). Therefore, the relationship between political connections and productivity is ambiguous, which also implies the ambiguous relationships between political connections and other measures of firm performance such as sales, profits, and investments.

This paper presents an analysis of whether and how politically connected firms have benefited more from the 2008 stimulus package compared to nonpolitically connected firms. Implementing a DID method on panel data for Chinese listed companies from 2003 to 2012,[10] I compare politically connected and nonpolitically connected firms before and after 2008. The variables I examine were very likely impacted by the stimulus package: leverage, investment, cash stock, net receivables, sales, and net profit.

The political connection data in this dataset quantifies the links between company executives and government agencies. First, I used the Wind Economic Database to collect the personal résumés of all the board members for each listed company. Second, I grouped all the companies as either politically connected or nonpolitically connected based on whether any of the companies' board members were government officials before joining the company. In other words, for the purposes of this research, if for at least half of its years in existence a given listed company

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[10] To maintain comparable groups, I omit all firms listed only before or after 2008.

in the sample had a board member who was a government official before joining the company, that listed company was recognized as a politically connected firm.

Traditionally, researchers have used SOEs as a proxy for political connections and on that basis have contrasted SOEs with private companies. There are two drawbacks to this approach. First, merely looking at different types of ownership might disguise important aspects of the economy as a whole. For instance, some private firms with close connections to the central or local government might benefit from those ties as much as SOEs do or even more. Second, comparing SOEs and private companies might not give us clear and reliable results since they are different not only in terms of ownership but also in terms of other characteristics, such as size, cash stock, and other variables (e.g., SOEs are on average 10.8% bigger than private companies in cash stock, while politically connected firms are only 0.6% smaller than nonpolitically connected firms). For this reason, the comparison conducted here relies on known political connections, following the example of only a handful of studies, such as those by Shleifer and Vishny (1994), Fisman (2001), and Faccio (2006). This paper, to my knowledge, is the first study to use this variable to analyze the disproportionate impacts of China's stimulus package on different types of listed companies.

The empirical results suggest that after the adoption of the stimulus package, politically connected firms had about 7.1% higher leverage, 9.3% higher receivables, and 6.6% lower sales than firms that were not politically connected, but the differences in investment, cash stock, and profit between politically connected and nonpolitically connected firms were negligible. The estimates for SOEs compared to private companies were similar in the areas of investment, receivables, and profit, but in the important areas of leverage and sales, these two groups exhibited no appreciable differences: in other words, comparing SOEs and private companies disguised important findings from the political connections regressions.

The main findings of this research are as follows. First, the majority of bank loans (i.e., short-term borrowings and long-term debts[11]) went to firms with political connections. These firms were able to maintain their leverage levels after the financial crisis but also had higher receivables at the same time. Second, the stimulus package failed to improve investment for any of the listed companies, but it helped all the companies (both politically connected and nonpolitically connected firms) to increase their cash stocks in general, with no discernibly different impacts on politically connected versus nonpolitically connected firms. Finally, a comparison based on the presence or absence of political connections gives us more reliable results than traditional comparisons between SOEs and private companies. To sum up, because they received more support from the package in terms of leverage, politically connected firms have benefited more from the Chinese government's stimulus package. At the same time, though, they have higher receivables and lower sales than nonpolitically connected firms.

2.2   **Policy and Institutional Background**

2.2.1   **Background of the Stimulus Package**

China's State Council announced the RMB 4 trillion (US$586 billion) stimulus plan on November 9, 2008, to minimize the impact of the global financial crisis on China and recover the country's GDP growth. The stimulus package targeted its investments at some crucial areas: housing, infrastructure, transportation, health and education, rebuilding in disaster areas, and finance, etc.

On March 6, 2009, China's National Development and Reform Commission provided a breakdown of stimulus fund distribution. Public infrastructure development would take up the

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[11] See Table III for detailed definitions.

biggest portion (1.5 trillion yuan). The second largest part (1 trillion yuan) went to reconstructions in regions hit by the Great Wenchuan Earthquake. Funding for the construction of low-cost housing, rehabilitation of slums, and other social security projects received the next-highest share of the stimulus money. Two other areas, rural development and technology improvement programs, received 370 billion yuan each. To ensure sustainable development, some 210 billion yuan was also allocated to promote energy saving and emissions reductions. Finally, 150 billion yuan would be allocated for education, culture, and family planning promotion (Zhang, 2008; Jiang, 2009). The details of the stimulus package plan are shown in Table III.

Although the stimulus package was initiated by the central government, only a quarter of the stimulus spending showed up on the balance sheet of the central government. The other three-quarters went through newly created off-balance sheet companies called "local government financing vehicles" (LGFVs).[12] On the one hand, these off-balance sheet companies borrowed money from banks and shadow banks (trust products) and issued bonds. On the other hand, these LGFVs interacted with firms directly, together with the central government and the bank system.

The stimulus package directly impacted firm behavior through two main channels. First, the central government, LGFVs, and banks lent money to firms directly to relieve their credit constraints.[13] Second, the central government and LGFVs signed contracts with firms and made these contractors work directly on detailed projects. In the former channel, the firms' leverage (short-term and long-term debt) was impacted directly, while in the latter channel, the direct impact on firms was in the area of sales (operating revenue).

The LGFVs removed a big portion (75%) of the total stimulus package from central government control. This policy arrangement allowed local governments to circumvent legal

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[12] Both the central and local governments have the funds.
[13] These funds were represented by bank loans in the banking system.

prohibitions (e.g., the prohibition against local governments running budget deficits) and manipulate the disbursement of funds to favor certain companies. Although the stimulus package distribution at the beginning of the program followed a general plan, no detailed information is available on how the plan was implemented. Therefore, very few research studies have focused on the details and economic impacts of the stimulus policy. Some studies, including the present one, have used publicly available information to explore in detail the implementation and economic impact of the stimulus package.

2.2.2   **The Institutional Background of China's Political System**

The politics of the PRC take place within the framework of a socialist republic run by a single party, the CPC. State power is exercised through the CPC, the central government, and their local representation.[14]

Besides CPC and government systems, there are two other parallel political systems: the People's Congress and the People's Political Consultative Conference (Table I). The members of The People's Congress at the county level, who have the responsibility to oversight local governments, are elected by voters. These members would elect members to the provincial People's Congress, which elect members to the National People's Congress (NPC). The ruling CPC committee of each level select candidates who would elect local congresses and higher-level positions (Table I). The Chinese People's Political Consultative Conference (CPPCC) coordinates the eight registered minor parties[15] and the Communist Party of China.

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[14] *South China Morning Post*, "How the Chinese Government Works."
[15] The minor parties include the Revolutionary Committee of the Chinese Guomindang; the China Democratic League; the China Democratic National Construction Association; the China Association for Promoting Democracy; the Chinese Peasants' and Workers' Democratic Party; the China Party for Public Interest (China Zhi Gong Dang); the Jiusan Society; and the Taiwan Democratic Self-Government League.

In China's political system, each of the above four political systems is part of the governing power of the country. Therefore, if a person is a government official, a member of the Communist Party of China or the eight other registered minor parties, or a member of the NPC, this person will have political power in China. Meanwhile, China does not strictly regulate the revolving door in politics. Government officials and political party members are usually appointed to be company executives by the higher-level departments of governments or parties and vice versa. These officials or party members can also create their own companies independently or together with other people.

Company executives who used to be government officials, political party members, or NPC members can easily maintain relationships with the governing powers, thus allowing their companies to benefit more from government policies than companies that lack executives with comparable connections. This explains the rationale in this paper for using this information as a measure of the political connectedness of publicly listed firms.

In other words, if for at least half of its years in operation a company has a board member who was once a government official, a political party member, or an NPC member, then that company will be recognized as a politically connected company. Since politically connected firms have board members who maintain close relationships with governments or governing departments, I hypothesize that these firms benefitted more from the stimulus package than their nonpolitically connected counterparts.

2.3   **Conceptual Framework, Literature Review, and Predictions**

2.3.1   **Financial Crisis and Firm Behaviors**

A financial crisis causes capital distress and puts financial constraints on companies, leading them to decrease their leverage levels. Campello, Graham, and Harvey (2010) show that the impact of the financial crisis was severe on credit-constrained firms and led to deep cuts in planned research and development, employment, and capital spending. Firms that could not commit to the maturity structure would reduce their debt and leverage as well, as shown in Brunnermeier and Oehmke (2013). Demirguc-Kunt, Martinez-Peria, and Tressel (2015) found that firm leverage and debt maturity declined in advanced economies and developing countries, even where the crisis was not felt. The deleveraging and maturity reduction were specifically significant for private firms, including small and medium-sized companies.

As uncertainty or risk increases and business prospects become more uncertain under a financial crisis, companies tend to invest less while holding more cash to respond to capital constraint, avoiding risks and preparing to work through the financial crisis. According to Keynes (1936), if a firm has unrestricted access to external capital, corporate liquidity becomes irrelevant. Duchin, Ozbas, and Sensoy (2010) controlled for firm fixed effects and time-varying measures of investment opportunities in their study and demonstrated that corporate investment declined significantly following the onset of the financial crisis, which is consistent with a causal effect of a supply shock. Contrarily, if a firm encounter financing friction, liquidity management may become an important issue. Opler, Pinkowitz, Stulz, and Williamson (1999) concluded that firms with stronger growth opportunities and riskier cash flows would hold higher cash-to-total-noncash assets ratio. Meanwhile, John (1993) states that firms tend to hold more cash when they have higher financial distress costs, and the study's empirical result is consistent with this theoretical prediction.

The few studies on this topic focusing specifically on China and other East Asian economies have arrived at similar findings. Jeong (2015) found that corporate investment declined significantly after the crisis, even after controlling for factors associated with the demand side, such as contemporaneous capital productivity and cash flow. Shiau, Chang, and Yang (2018) observed that in China and Taiwan, firms increased equity financing and reduced capital expenditures to raise cash holdings after the crisis. Bo, Driver, and Lin (2014) concluded that compared to nonstate firms, state-controlled firms were less affected by the financial crisis and more active in investment.

2.3.2 **Political Connections and Firm Performance**

International studies focused on political connections among firms have found that a firm with government ties has an easier time getting support from the government than firms that lack those connections. Shleifer and Vishny (1994) have shown that politicians would take rents generated by connections, and firm value would increase when marginal benefits of connections surpass marginal costs. Fisman (2001) studied rent valuation for a group of Indonesian firms, which are highly involved in the economic activities. He found that well-connected firms were hurt more than less-connected firms, when there were adverse rumors about Suharto's health. He concluded that the value of well-connected firms may largely derived from political connections. He believes that this finding could be applied to many other countries, such as Bangladesh, China, India, Nigeria, Pakistan, and Russia. Faccio (2006) discovered a significant increase in corporate value and stock price impact whenever a businessperson was elected as prime minister and whenever a large shareholder entered politics.

A few studies have also looked specifically at the political connections of Chinese companies, with most of them finding that politically connected firms take advantage of their closer relationships with the government. Chan, Dang, and Yan (2012) found that there is no financing constraints for politically connected firms, whereas nonpolitically connected firms have significant constraints. Cull, Li, Sun, and Xu (2015) examined the role of firms' government ties—identifiable by government intervention in CEO appointments and state ownership status—and demonstrate that government connections are associated with substantially less severe financial constraints. Chen, Li, Luo, and Zhang (2017) found that there is an inverted U-shaped relation between political connection and firm value: firm value increased at the low level of connection but started to decrease at the high level.

2.3.3 <u>**China's Stimulus Package and Its Impact on Different Types of Firms**</u>

Besides the impacts of the financial crisis and political connections on firm behavior, in the case of China, a few studies have shed light on the disproportionate impacts of China's stimulus package on the performance of different types of firms. They found that state-owned companies have benefited more from the stimulus package in comparison to non-state-owned firms.

Deng, Morck, Jing, and Yeung (2011) argue that the effectiveness of the stimulus package comes from the state's control over the banking system and corporate sector. Cong, Gao, Ponticelli, and Yang (2018) found that the stimulus favored state-owned enterprises and companies with lower productivities, which reversed the capital reallocation toward private companies that characterized China's high growth before 2008. Meanwhile, Shen, Firth, and Poon (2016) discovered that during the stimulus project in 2009, large and state-owned firms increased their

leverage ratios by 2.89% and 1.68% more, respectively, than their comparable companies because of government intervention and better access to the credit market.

2.3.4 **Theoretical Predictions**

Although some studies have investigated the different impacts of China's stimulus package on the performance of different types of firms, they all used state ownership as a proxy for political relationships between firms and the government. This paper instead, and for the first time to my knowledge, uses political connections as a proxy for political relationships and a DID model to study the disproportionate impacts of China's stimulus package on firm behavior, thus comparing politically connected and nonpolitically connected firms.

Based on the theories and literature discussed above, I arrived at the following predictions about firm behavior for listed companies in China. First, after the financial crisis, leverage will decrease for all the listed companies in general, and investment will decrease while cash stock increases. Sales are expected to go down as well because of decreased economic activity during the recession. Second, compared to nonpolitically connected firms, politically connected firms will benefit more from the stimulus package and thus will have higher leverage, higher investment, higher cash stock, and higher sales as they face fewer financial risks and credit constraints than nonconnected firms.

2.4 **Data**

2.4.1 **Financial Statement**

The dataset used in this study includes all listed companies in China's two stock markets: the Shanghai and Shenzhen Stock Exchanges. The data is from the China Stock Market Financial

Statements Database (CSMAR), which is produced by the GTA Research Service Centre (GTA Information Technology Co., Ltd.). This dataset covers all the information from 2003 to 2012 for 2,326 firms and includes 15,942 firm-year observations. To match it with the data used to establish political connections, I used "end of year" values for all the financial statement variables.[16]

Since firms in the financial industry are generally different from other firms in terms of financial statement rules, I dropped all the firms categorized in this industry. Also, my identification strategy was DID, which requires treatment and control groups before and after the treatment year. Therefore, I deleted all the firms listed only before or after 2008 because the comparable groups in the study must all have observations from before and after 2008.

After the indicated firms were dropped, the dataset included 1,446 firms with 13,127 firm-year observations. In a few cases, new firms about which limited observations had been made were dropped. Many new companies have been listed on China's two stock markets since 2010. Whereas no more than 100 new companies were listed before 2009, since 2010 the numbers have grown significantly: in the period 2010–2012 the number of new listed companies each year has been 348, 281, and 155, respectively. The two most important reasons for this are the accelerated pace of initial public offering approval and the launch of the Growth Enterprise Market in October 2009. This observation points to another reason why these newly listed companies should be dropped from the dataset used in this research: many of them are not only new but also significantly different from other firms.

2.4.2 **Political Connections**

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[16] Specifically, the "end of the year" is December 31 of each year.

The data used to determine the presence of political connections comes from the WIND Economic Database established by Wind Information Co., Ltd. (Wind Info), from Shanghai, China (personal résumés related to political connections for board members were all manually sorted).[17]

After collecting these résumés, I read through them all to check whether each board member was once a government official or a member of the NPC or the CPPCC.

Finally, if for at least half of the years since any company's founding it had a board member with a government, party, NPC, or CPPCC background, that company was considered politically connected for the purposes of this research.

2.4.3 **<u>Descriptive Statistics</u>**

Figures 2 and 3 plot the numbers of different types of firms through time. Firm numbers remained at roughly the same level starting in 2007 because I dropped new firms that were listed after 2008 since there were no earlier observations to use as a control group.

Table V shows the definitions of and basic statistics for the main variables. As indicated in the previous section, political connectedness was determined using the Wind Economic Database. Information on subsidies was manually sorted from the annual reports of listed companies. Leverage, investment, cash stock, net receivables, sales, profitability, size, and cash flow were the main factors of interest and therefore the control variables in the research. The raw data values were taken from the CSMAR, which is produced by the GTA Research Service Centre (GTA Information Technology Co., Ltd.). To make the data consistent throughout the research, I capitalized the financial indicators and divided each of them by the number of total assets.

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[17] According to the "People's Republic of China Company Law," Article 109, a company limited by shares shall have 5–19 board members.

Tables VI and VII present statistical summaries for two dimensions: politically connected versus nonpolitically connected companies and SOEs versus private firms. From these two tables, we can see that there are differences between politically connected and nonpolitically connected firms, and some of these differences are significant (e.g., investments, receivables, sales, etc.). Furthermore, the differences between SOEs and private firms are much bigger than those between politically connected and nonpolitically connected firms, thus making them more incomparable. Tables VIII–XI display all the variables on two dimensions and the differences for both before and after the treatment year (2008). Tables VIII and IX display the evidence for politically connected versus nonpolitically connected firms. After dividing the entire period between before and after the event (i.e., the beginning of the stimulus package), we can see that some of the variables (e.g., investment, cash, and profitability) maintain similar differences across the two periods, while other variables (e.g., leverage, receivables, and sales) do not show the same differences between the two periods. Although Tables X and XI display similar evidence, the differences between SOEs and private firms across the two periods are not as obvious as those between politically connected and nonpolitically connected firms. Figures 4–15 plot the main variables for comparisons of these two dimensions for the whole period and show the same evidence as in Tables VIII–XI. These are the most crucial pieces of evidence for this research, and I will explore them in detail in the following sections.

2.5   **Identification Strategy**

In this section, I empirically answer the question of whether politically connected listed companies benefit more from the stimulus package than their nonpolitically connected counterparts. To explain this approach, I first present in Figures 4–9 the general trends of leverage,

investment, cash stock, receivables, sales, and profit for both politically connected and nonpolitically connected firms.

The stimulus package was launched at the end of 2008, which serves as the treatment year for this study's DID estimation approach to detect the impact of the stimulus package on the performance of politically connected firms compared to nonpolitically connected ones. Four patterns are noticeable: (a) the leverage of both groups was decreasing until 2007, but after that, the leverage of the nonpolitically connected group continued to decrease, while the politically connected group maintained the same leverage level; (b) both groups share the same trends in investment and cash stock before and after 2008 without significant difference between them; (c) while the gap between net receivables for both groups closes after 2008, the gap between sales for the two groups widens after 2008; and (d) there is not much difference in profit between these two groups over the time period.

My empirical design relies on the assumption that politically connected firms would have shared the same trends as nonpolitically connected firms without the stimulus package. Although this assumption is untestable, I implemented a fixed effects model (Equation 1) to trace out the time-varying effects of politically connected firms. This allowed me to examine the politically connected firms' pattern relative to the nonpolitically connected group. The model is specified as follows:

$$Y_{it} = \alpha + \text{PoliticalConnection}_i + \delta_t + \partial_t \text{PoliticalConnection}_i * \delta_t + \varepsilon_{it} \ (1),$$

where leverage, investment, cash stock, sales, receivables, and profits are dependent variables. α is the constant term. $\text{PoliticalConnection}_i$ is a dummy variable equal to one if a firm is politically

connected to the government, while the omitted group comprises nonpolitically connected firms. δ_t is a set of year dummies. $\text{PoliticalConnection}_i * \delta_t$ are the interaction terms capturing the time-varying effects of the politically connected group in ∂_t. I plotted the regression results of ∂_t in Figures 16–21. Although the coefficients of cash stock regression displayed in the graph do not follow the pre-common trend assumptions, all the other dependent variables demonstrate reliable pre-common trends between the treatment and comparison groups prior to the launch of the stimulus package. This evidence supports the use of a DID approach in this context.

Next, I implemented the DID model to estimate the impact of the stimulus package on the firms with political connections as compared to the nonpolitically connected group after 2008, in contrast to the previous period, as shown below:

$$\text{Y}_{it} = \alpha + \text{PoliticalConnection}_i + \delta_t + \beta\text{PoliticalConnection}_i * \text{Post}_t + X_{it} + \text{Industry}_m +$$
$$\text{Location}_n + \varepsilon_{it} \text{ (2),}$$

where leverage, investment, cash stock, sales, receivables, and profits are still the dependent variables. α is the constant term. $\text{PoliticalConnection}_i$ is a dummy variable equal to one if a firm is politically connected to the government, while the omitted group comprises nonpolitically connected firms. δ_t is a set of year dummies. Post_t is a dummy variable equal to one if an observation is in the period 2009–2012, while the omitted group is in the period 2003–2008. Industry_m represents the industry fixed effects. Location_s stands for the provincial fixed effects. β is the estimate of primary interest.

A potential endogeneity problem exists if there is a correlation between political connections and important financial statement variables, such as total assets (base year),[18] cash flow, and profitability.[19] To address this issue, I controlled these variables in X_{it} to explore whether the estimate β changes significantly.

2.6   **Main Results**

2.6.1   **Results Description**

Tables XIII–XVIII show the results of the DID estimation of Equation (2). The variable PoliticalConnection*Post in the first row is the DID estimator of primary interest.

Table XIII presents the results of the leverage regressions. Compared to nonpolitically connected firms, the leverage of firms with political connections is around 1.4 percentage points higher in the post-2008 period relative to the pre-2008 period—after controlling for important variables and adding industry and province fixed effects. Given that the leverage level of nonpolitically connected firms after 2008 remains at 19.6% on average, politically connected firms in fact have around 7.1% higher leverage. Figure 4 also documents this difference between the two groups before and after 2008. Before 2008, the two groups share the same decreasing trend. But after the stimulus package initiated at the end of 2008, politically connected firms maintain their leverage level, while leverage among nonpolitically connected firms continues to decrease until the end of the period. This result indicates that firms with political connections were receiving more support through the stimulus package in terms of short-term and long-term debt and therefore experiencing more relief from capital and credit constraints during the financial crisis.

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[18] Many of the variables in this research have been divided by total assets so that I'm using ratios in the regressions. Therefore, I control the total assets of the first year (2003) for each firm to avoid a collinearity problem.

[19] I also tried using other important variables (e.g., net intangible assets and net cash flow from operating activities) as controls, but they don't affect the regression results.

Next, I move to the results pertaining to investment and cash stock. Table XIV presents the results of the investment regressions. The DID estimates are around 0.001, both with and without added controls or industry and province fixed effects. Combining Table XIV with Figure 5, we can see that both politically connected and nonpolitically connected firms follow the same trend and experience decreasing investment after 2007.

Cash stock regression results are presented in Table XV. Estimation results stay at around 0.005–0.008 and remain insignificant across different specifications. Combining Table XV with Figure 6, we see that the two groups of firms share the same increasing trend after 2008 and reflect little difference between them.

Table XVI shows the net receivables regression results. Politically connected firms increase their net receivables by around 1.3 percentage points, after adding controls and fixed effects, compared to nonpolitically connected firms in the poststimulus package period relative to the prepolicy period. Since the net receivables of nonpolitically connected firms after 2008 maintains 14% on average, politically connected firms have 9.3% higher net receivables. More importantly, this is the only variable on the asset side of the balance sheet that displays any significant difference between politically connected and nonpolitically connected firms. In Figure 7, we can see that there used to be a big gap between the two groups, where nonpolitically connected firms had much higher net receivables. But after 2008, this gap closed, while politically connected firms even had a slightly higher level of net receivables. This result demonstrates that nonpolitically connected firms decreased their net receivables through time. Although firms with political connections made similar efforts, nonpolitically connected firms did this more effectively.

I now turn to another important variable: sales. Sales is not only a variable that, together with leverage, is directly impacted by the stimulus package but also an important measure (together

with net receivables and cash stock) of liquidity. Table XVII displays the regression results for sales. Politically connected firms have sales that are lower than those of nonpolitically connected firms by about 4.9 percentage points (i.e., the equivalent of 6.6%) in the poststimulus package period relative to the prestimulus package period. Figure 8 tells the same story. Before 2008, the two groups of firms not only share the same trend but also remain at approximately the same level of sales. But after 2008, nonpolitically connected firms display a much higher level in sales than the politically connected firms. This result indicates that after the start of the stimulus package, nonpolitically connected firms were able to increase their sales more than the politically connected firms.

The regression results of net profits are shown in Table XVIII. The DID estimate is only -0.005 without any controls. After adding all controls and fixed effects, the estimate decreases further, to -0.003. Figure 9 also shows that the two groups share the same trend in net profits before and after 2008. I also checked difference variables such as total profits and operational profits, but they returned similar results. Therefore, there does not appear to be much difference in terms of profitability between the two groups of firms.

2.6.2 **Further Interpretation**

In summary, these results indicate that firms with political connections maintain higher levels of leverage and receivables while having lower levels of sales compared to the firms that do not have political connections. Combining these pieces of evidence, I will try to explore the story behind these findings. As we can see, politically connected firms had higher receivables but lower sales than the nonpolitically connected firms, meaning these politically connected firms would generally be recognized as performing worse according to financial criteria. However, these firms

with political connections were able to maintain higher leverage, meaning that banks and other financial institutes would still like to lend money to them. Thus, there are two possible stories that could explain this phenomenon.

One potential story is that these firms are truly performing poorly, but they are able to take advantage of their political connections with governments to borrow money through banks and other financial institutions. Since these firms have lower sales but higher receivables, they might not be able to sell their products and services very well on the market and might not be able to manage their liquidity well at the same time. To survive, these firms are taking advantage of their political connections to different levels of government to be able to borrow money. This logic is especially plausible after the start of the stimulus package, which gave both the central and local governments more power to support firms through banks or LGFVs.

The other potential story is that these firms are not necessarily performing worse but simply providing more of their products and services to public projects. In China, various public projects constitute a huge market and provide a powerful avenue for GDP growth. Working for the government on these public projects guarantees payment and thus the survival of the firms. However, the execution of payments for these types of projects always takes longer than it does in regular markets. Therefore, if a firm is working on a public project, it is very likely that the firm will not get paid on time and will instead receive the payment at a later date. Thus, the payment will not be reflected as a "sales" item in the financial statement but will be reflected on the "receivables" instead. With this logic, these politically connected firms are very likely to receive more public projects through their political connections with the different levels of government. As a result, they are not getting paid immediately but in the future. Therefore, their sales are generally lower, but they maintain higher levels of receivables as assets. To survive through this

hardship, they receive more short-term borrowings and long-term debts from banks and other financial institutions (e.g., LGFVs) due to their government connections. It is possible that these politically connected firms are taking advantage of their relationships with the government to receive more public projects and bank loans. On the other hand, it is also possible that the government is taking advantage of its relationship with these firms and pushing them to take more responsibility and provide more products and services for public projects. At the same time, although the different levels of government cannot pay these firms on time, they are able to use their political powers to provide financial support (i.e., by lending money) to these companies through banks and other financial institutions (e.g., LGFVs).

To conclude, the findings suggest that the stimulus package did support politically connected firms by providing disproportional financial support and loans from banks or other financial institutions (e.g., LGFVs). To further explore this phenomenon, there are two potential logics. Although I am not able to distinguish between these two possibilities in this research, future studies could further explore the story behind them.

2.7 **Difference-in-Difference Estimation of the Other Dimension: State-Owned Enterprises versus Private Companies**

2.7.1 **Estimation Strategy**

To evaluate the approach of comparing firms with and without political connections, I present another dimension of comparison between SOEs and private firms to weigh my approach against the traditional one that is most often used in the literature. The equations for the common trend test regression and DID estimations, given in Section 5, are now used for SOEs versus private firms:

$$Y_{it} = \alpha + SOE_i + \delta_t + \partial SOE_i * \delta_t \text{ (3) and}$$

$$Y_{it} = \alpha + SOE_i + \delta_t + \beta SOE_i * Post_t + X_{it} + Industry_m + Location_n + \varepsilon_{it} \text{ (4)},$$

where leverage, investment, cash stock, sales, receivables, and profits are still the main dependent variables. α is the constant term. SOE_i is the dummy variable equal to one if a firm is an SOE (i.e., a state-owned holding enterprise or enterprise with state-owned equity), while the omitted group comprises private firms. Other variables and fixed effects hold as in Equations (1) and (2).

Figures 22–27 plot the regression results of ∂ in Equation (3) over time for all the dependent variables. The plot of the profit regression violates the assumption of the DID approach as it moves away from zero early on in the time period. The same issue applies to leverage in Figure 10, although Figure 22 does not show the gap between the two groups in terms of ∂ plotting. These assumption violations bias the estimates of leverage and profit. The plot of the other variables does not violate the pre-common trend assumption, but it fails to show any different tendencies before and after the stimulus package for investment and sales. Basically, the pre-common trend tests still allow me to enforce the DID approach for most variables, but these issues indicate the need to pay attention to the regressions and discuss the results carefully.

2.7.2 **Regression Results**

Tables XIX–XXIV show the results of the DID estimation of Equation (4). Variable SOE*Post in the first row is the DID estimator of primary interest.

Table XIX presents the results of the leverage regressions. The DID estimator is 0.015, with significance without any control or fixed effects. But after adding controls and fixed effects, the estimator decreases to an insignificant 0.003. There are two main reasons behind this change in the estimator. The first reason is that the pre-common trend assumption is violated, so the regression results fail to provide credible results. The other reason is that SOEs and private firms are not comparable because they are different in important respects. Therefore, the regression results do not hold after adding some key controls.

The regression results of investment in Table XX are similar to those in Equation (2). The DID estimates are around 0.001, both with and without added controls or industry and province fixed effects. Politically connected and nonpolitically connected firms alike follow the same trend and experience a decrease in investment after 2007.

Cash stock regression results are presented in Table XXI. Estimation results without controls or fixed effects are insignificant at 0.008. But after the addition of controls and fixed effects, the magnitude of the estimator doubled in significance. As shown in Figures 12 and 24, the two groups of firms share the same trend in cash stock across the full period, so a DID approach could be expected to yield a reliable result. However, the obvious change before and after adding controls warns us again about the different characteristics of SOEs and private firms that might not be comparable to each other.

Table XXII gives estimation results similar to those in Table XVI for the net receivables regressions. SOEs have net receivables that are higher by around 1.2 percentage points, after adding controls and fixed effects, compared to nonpolitically connected firms in the poststimulus package period relative to the prepolicy period. Since the net receivables of private firms after 2008 remains at 15.7% on average, SOEs have 7.6% higher net receivables.

Next, I turn to the sales results presented in Table XXIII. SOEs have sales that are higher than those of private firms by around 1.4 percentage points (i.e., the equivalent of 2%) in the poststimulus package period relative to the prestimulus package period. The regression results change from negative to positive but with much smaller magnitudes that are no longer significant.

The regression results of net profits are shown in Table XIV. The DID estimate is significant even though it is only -0.004. As we have seen in Section 7.1, since the pre-common trend is violated for profit regression, this result may not be reliable.

To sum up, the results from the DID estimations between SOEs and private firms are very different from the estimation results comparing politically connected and nonpolitically connected firms. A comparison of these results is displayed in Table XII. There are two reasons behind the differences between the two sets of results. One is that the pre-common trend assumption is violated for some variables. The other, more important reason is that SOEs and private firms differ in fundamental ways and are not comparable in some important respects. In other words, the traditional method that uses state ownership as a proxy for the political relationship between firms and governments might not give us reliable regression results and could possibly disguise some important aspects of the whole picture. On the other hand, using political connections, as I have in this paper, results in a more reliable, comprehensive, and accurate picture.

2.8   **Robustness Check**

2.8.1   **Investigation of Sample Selection Bias**

One concern comes from the survival rate of the firms on the stock markets. If many firms are exiting from stock markets after a financial crisis, then it is worrisome that the estimation is only for a subsample of all the observations because it will cause bias in the estimation results.

Therefore, it is important to check the data from different angles to make sure the estimations and their results are robust.

First, I have to check how many firms that exist before the financial crisis exit the stock markets afterward. Tables XXV and XXVI show that there are only 17 firms with 62 firm-year observations that exit the stock markets after the financial crisis compared to the 1,462 firms with 13,178 observations in the full data sample. That is to say, exited firms make up no more than 1% of the total firms on the stock markets, which will not cause a serious problem for the sample and estimation. Among these exited firm-year observations, half of them are politically connected firms, 79% are SOEs, and about one-third of them are both politically connected and SOEs.

Table XXVI presents a detailed comparison between firms that survived the financial crisis and those that exited the stock markets before or during the financial crisis. Significant differences between these two groups are noticeable for most of the variables, especially for leverage, investment, receivables, net profit, and cash flow. Compared to the surviving firms, exited firms have higher leverage, receivables, and cash flows but lower investment and net profit. These results are reasonable as the exited firms are likely to be the ones that perform worse in terms of higher debts and receivables and lower net profits.

Since there are significant differences between these two groups in terms of firm performance, it is necessary to test the robustness of the estimation results and see if the results hold with and without the exited firms. Table XXVII shows the estimation results without the 62 observations for firms that exit the stock markets after the financial crisis. Compared to Table XII, most of the results are almost the same, except for a couple of coefficients. However, the differences are very small, not bigger than 0.001 in magnitude. Therefore, the estimation results

from regressions with and without the exited firms are generally the same and assure us of the robustness of the main regression results in the previous sections.

2.8.2 **Reverse Causality of Political Connections**

Another concern comes from the reverse causality of firm performance on political connections. For example, if some bank loans provided through LGFVs after the stimulus package ultimately bring government officials to firms that did not have any officials as board members before, then a company becomes a politically connected firm due to the change in its market performance. This will cause a reverse causality problem that leads to potential bias in the identification strategy.

To investigate this problem, I regressed the test regressions of political connections on the firm performance variables, which are dependent variables in the previous regression, as shown in Equation (6). Along with these tests, I also regressed political connections on the lagged period values of the firm performance variables in Equation (7):

$$\text{PoliticalConnection}_i = \alpha + \delta_t + \beta X_{it} + \text{Firm}_p + \varepsilon_{it} \quad \text{(6) and}$$

$$\text{PoliticalConnection}_i = \alpha + \delta_t + \beta X_{it-1} + \text{Firm}_p + \varepsilon_{it} \quad \text{(7).}$$

The results are shown in Table XXVIII, with the results of Equation (6) in Columns 1 and 2, while the results of Equation (7) are in Columns 3 and 4. In Columns 1 and 2, only the coefficients of cash and receivables are slightly significant, though the magnitudes are not big. In Columns 3 and 4, all the coefficients are small and insignificant. Therefore, we should not worry too much about the reverse causality issue of firm performance on political connections.

2.9   **<u>Conclusion</u>**

This research evaluates the impact of China's stimulus package on politically connected and nonpolitically connected firms, before and after the package's introduction in 2008, using a DID identification strategy.

Considering the terms of the stimulus package, I predicted that politically connected firms would benefit more from the stimulus policy compared to nonpolitically connected firms. The results of this comparison justify this hypothesis. Politically connected firms generally increased their leverage by 1.4 percentage points, making their leverage levels 7.1% higher than those of nonpolitically connected firms. At the same time, politically connected firms also increased their receivables by 1.3 percentage points and saw their sales drop by 4.9 percentage points: levels that are correspondingly 9.3% higher and 6.6% lower than those for nonpolitically connected firms. The impacts of the stimulus package did not differ for these two groups of firms in the variables of investment, cash stock, or profit. In the post-2008 period relative to the pre-2008 period, politically connected firms benefited more from the stimulus package because they received more support in terms of leverage. Simultaneously, these firms also maintained higher receivables and lower sales compared to the group of nonpolitically connected firms.

Further exploring this phenomenon, there are two possible stories that could explain this evidence. One is that these firms are performing poorly but are able to take advantage of their political connections with governments to borrow money through banks and other financial institutions. The other possibility is that these firms are not necessarily performing worse than their counterparts but simply providing more of their products and services to public projects while receiving more short-term borrowings and long-term debts at the same time from banks and other

financial institutions (e.g., LGFVs) due to their government connections. Whatever the reason, the stimulus package allocated financial resources through administrative power instead of a market mechanism, thus deteriorating the activation and power of the market system and leading to a serious weakening of resource allocation and long-term economic growth.

For comparison, I have used the same DID estimation strategy within the more traditional framework of looking at SOEs versus private firms. The regression results of these comparisons are different from the results of the comparison between politically connected and nonpolitically connected firms. The estimators of most of the variables attenuate a lot because of two main issues. First, the two groups do not share the same trend across a number of variables before the start of the stimulus package, in violation of the pre-common trend assumption. Second, the regression coefficients attenuate with controls and fixed effects, underscoring the fact that SOEs and private companies differ in important respects. In other words, SOEs and private companies are not comparable and thus cannot give us reliable estimation results. This evidence calls attention to the need to select credible means of measuring political relationships between firms and governments. Compared to the traditional method that uses state ownership as a proxy for political ties, using the résumés of firms' board members to construct the measure of political connections, as I did in this paper, can produce different and, I believe, more reliable estimates, thus presenting a picture that is more comprehensive and accurate.

To conclude, the findings suggest that the stimulus package did support politically connected firms by providing disproportionate financial supports and loans from banks or other financial institutions (e.g., LGFVs) to different firms. This mechanism hurt the market system and has therefore deteriorated China's resource allocation and long-term economic growth and development. To further explore this phenomenon, two potential lines of thought exist. Although

I am not able to distinguish between these two possibilities in this research, future studies could further explore these topics.

Figure 1.   Structure of the stimulus package[20]
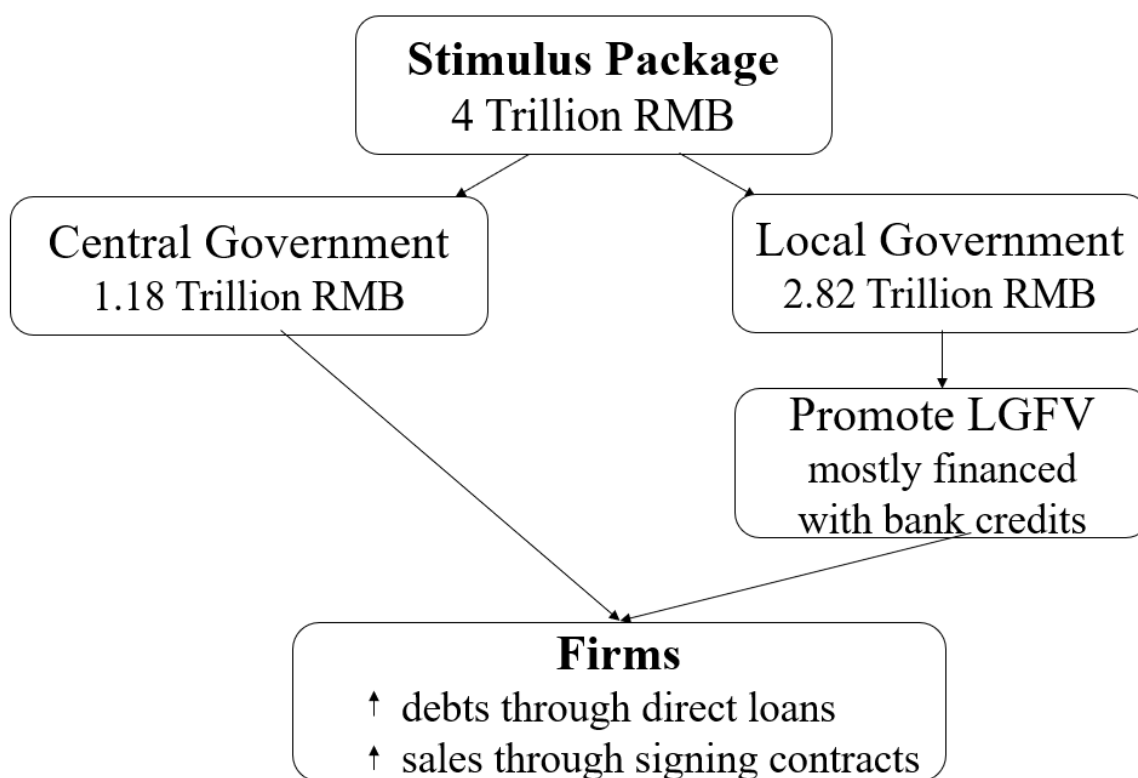
Figure 2.   Number of firms: PC vs. non-PC

Number of Companies
PC vs. Non-PC
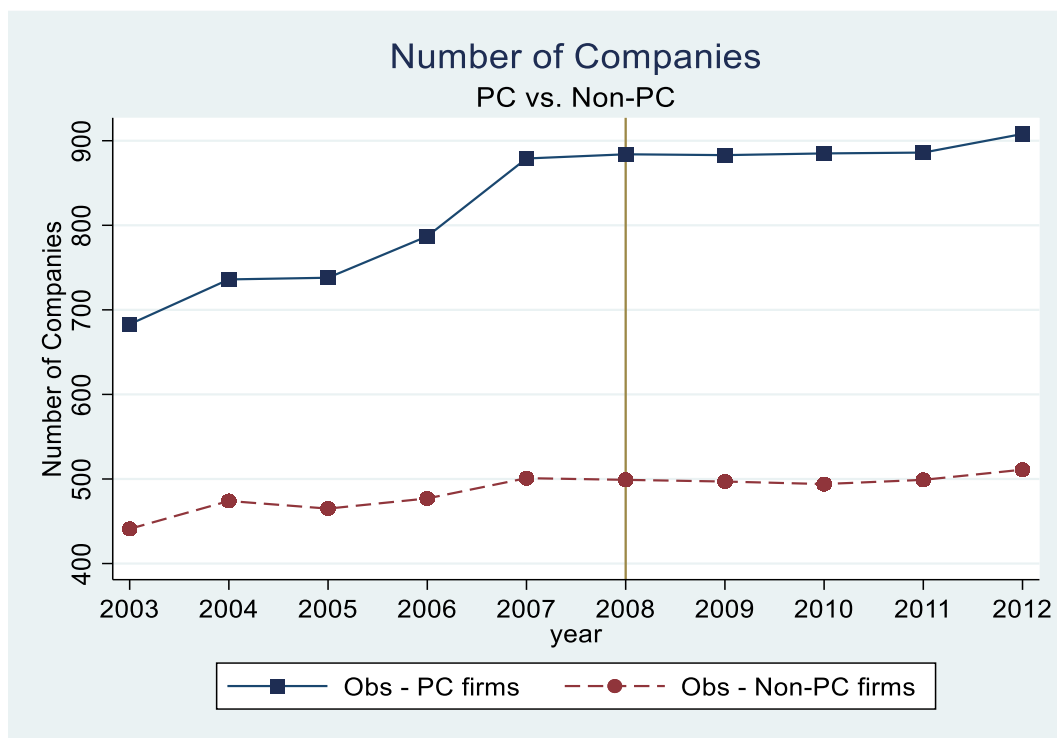
Figure 3.   Number of firms: SOE vs. private
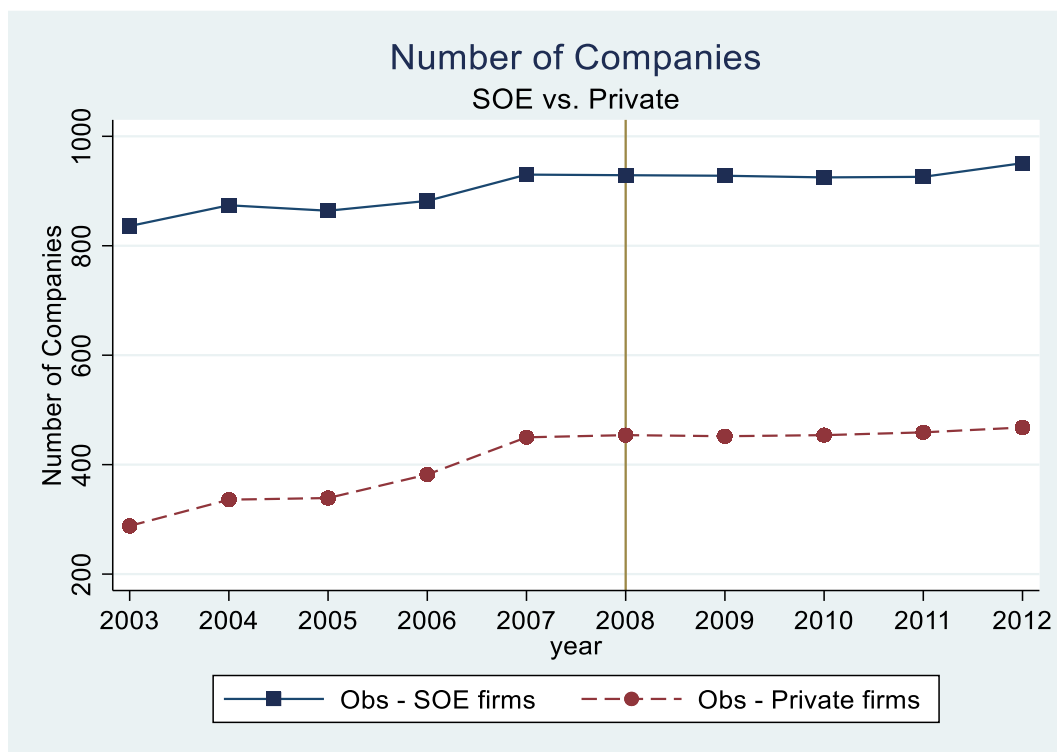
Figure 4.   Descriptive comparison: PC vs. non-PC (leverage)
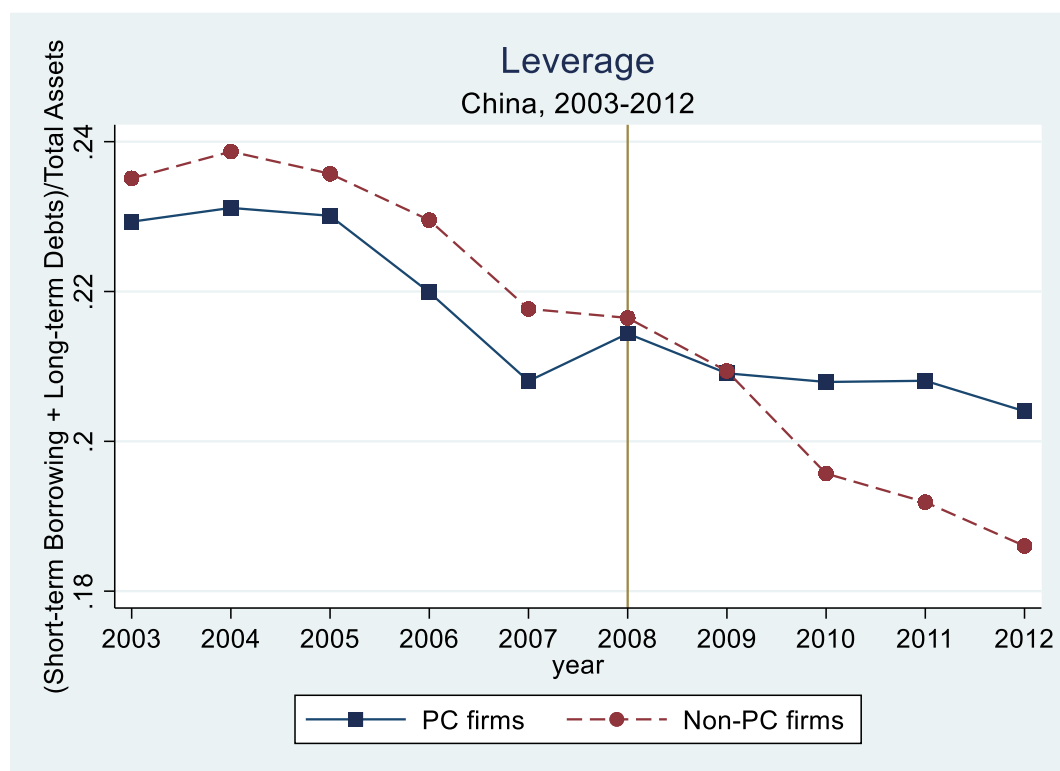
Figure 5.   Descriptive comparison: PC vs. non-PC (investment)
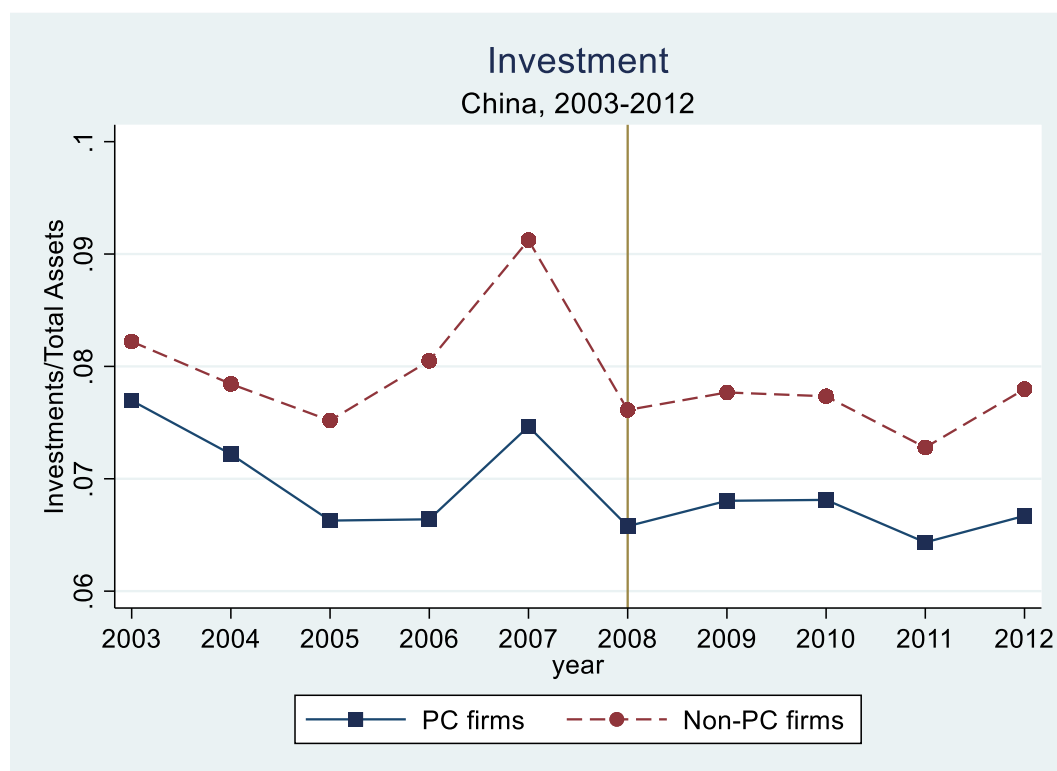
Figure 6.   Descriptive comparison: PC vs. non-PC (cash)
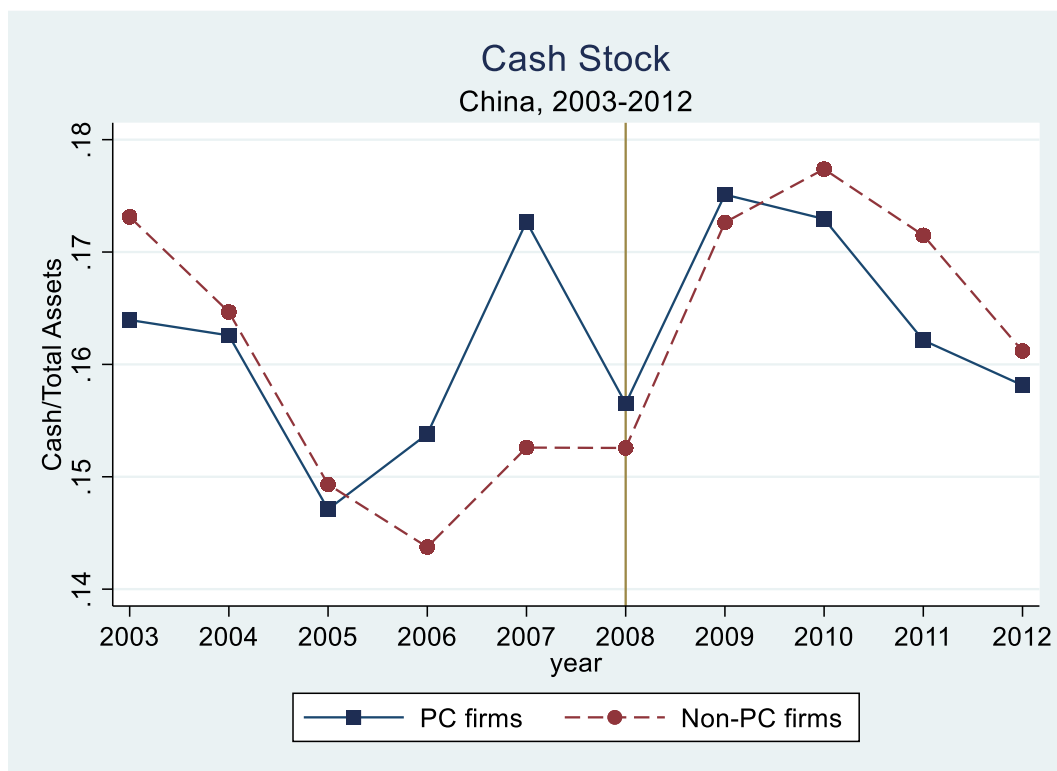
Figure 7.   Descriptive comparison: PC vs. non-PC (receivables)
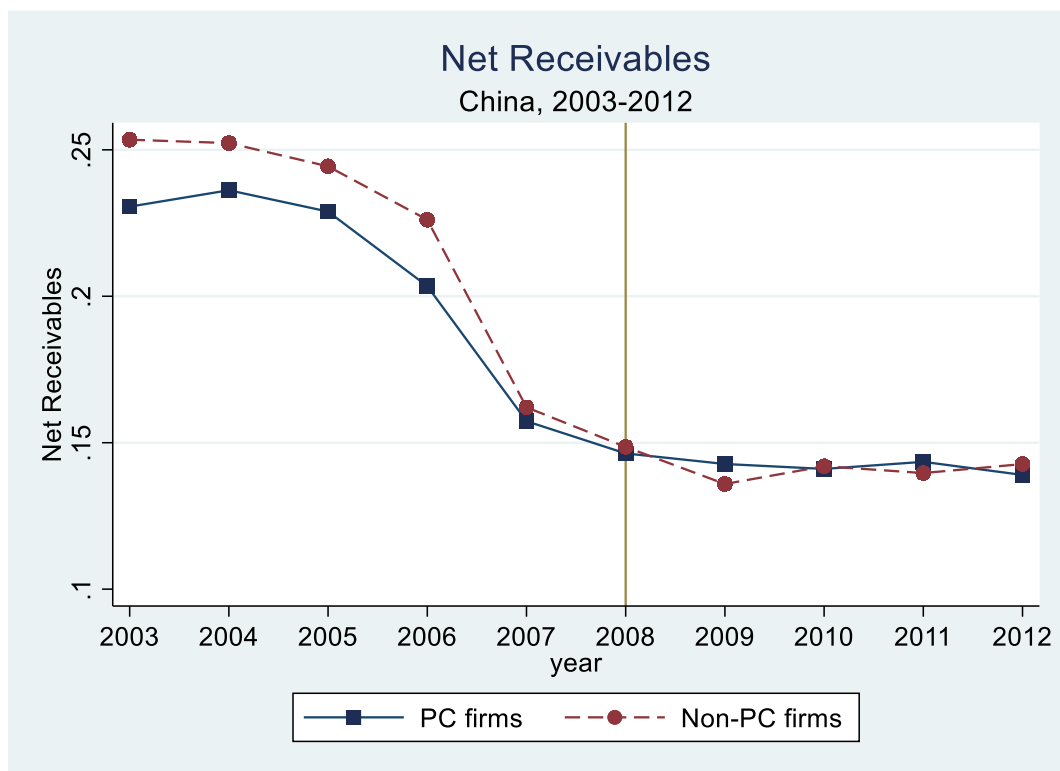
Figure 8. Descriptive comparison: PC vs. non-PC (sales)
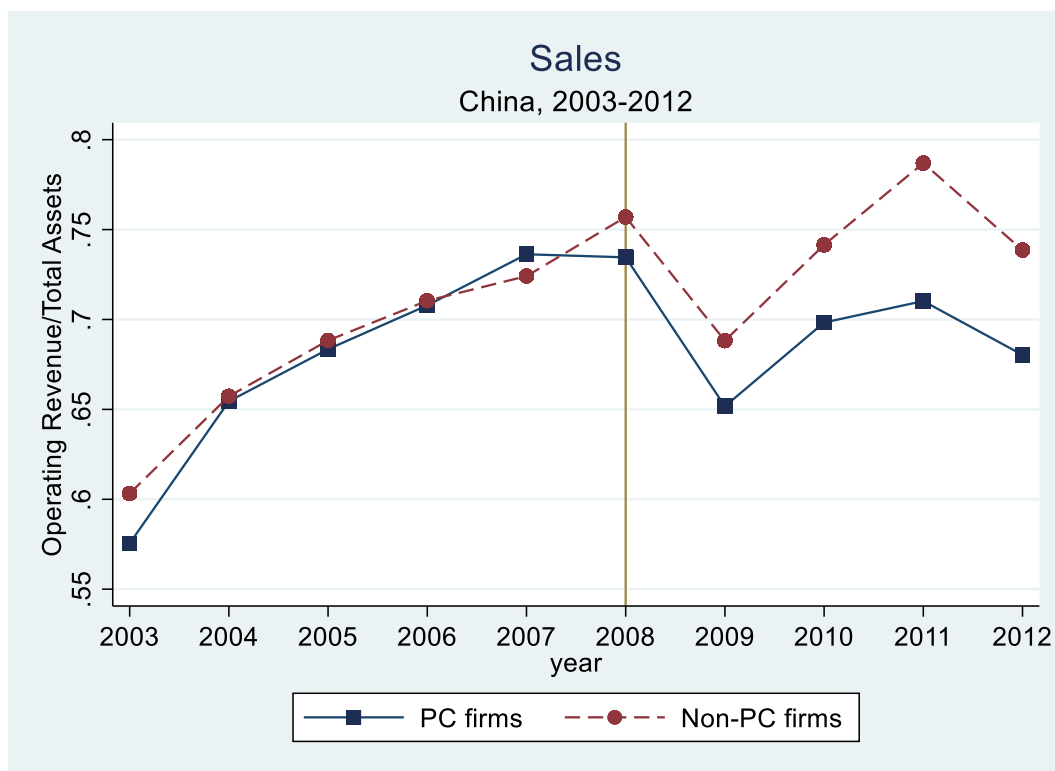
Figure 9.   Descriptive comparison: PC vs. non-PC (net profit)
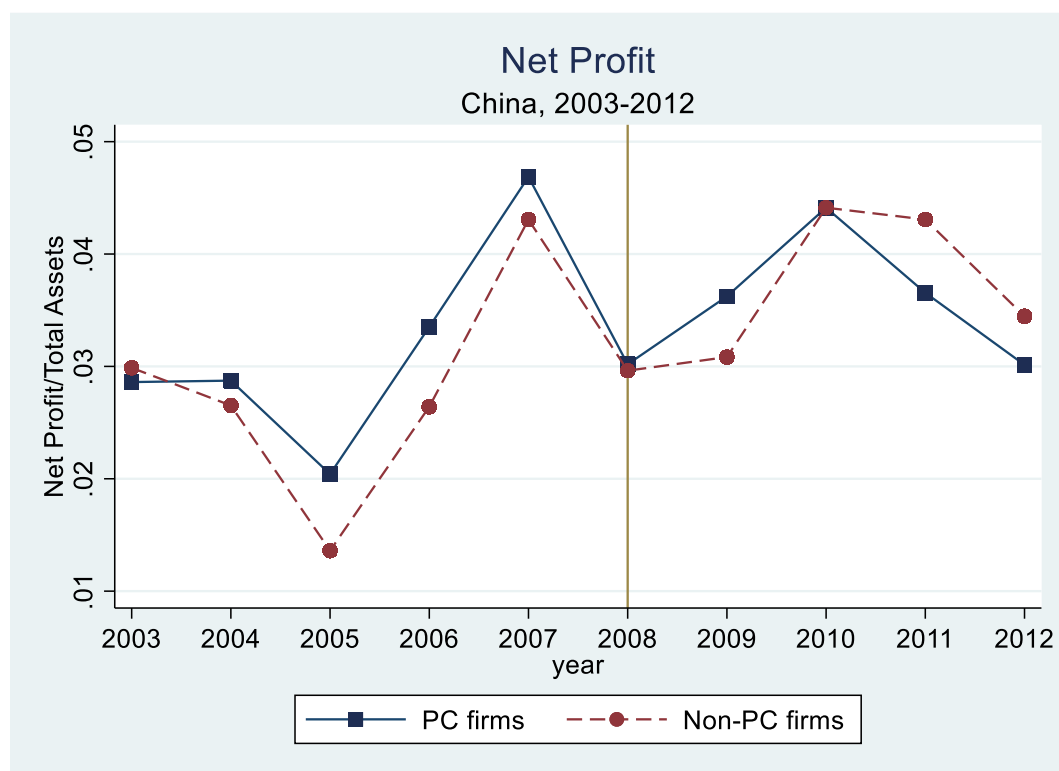
Figure 10.   Descriptive comparison: SOE vs. private (leverage)
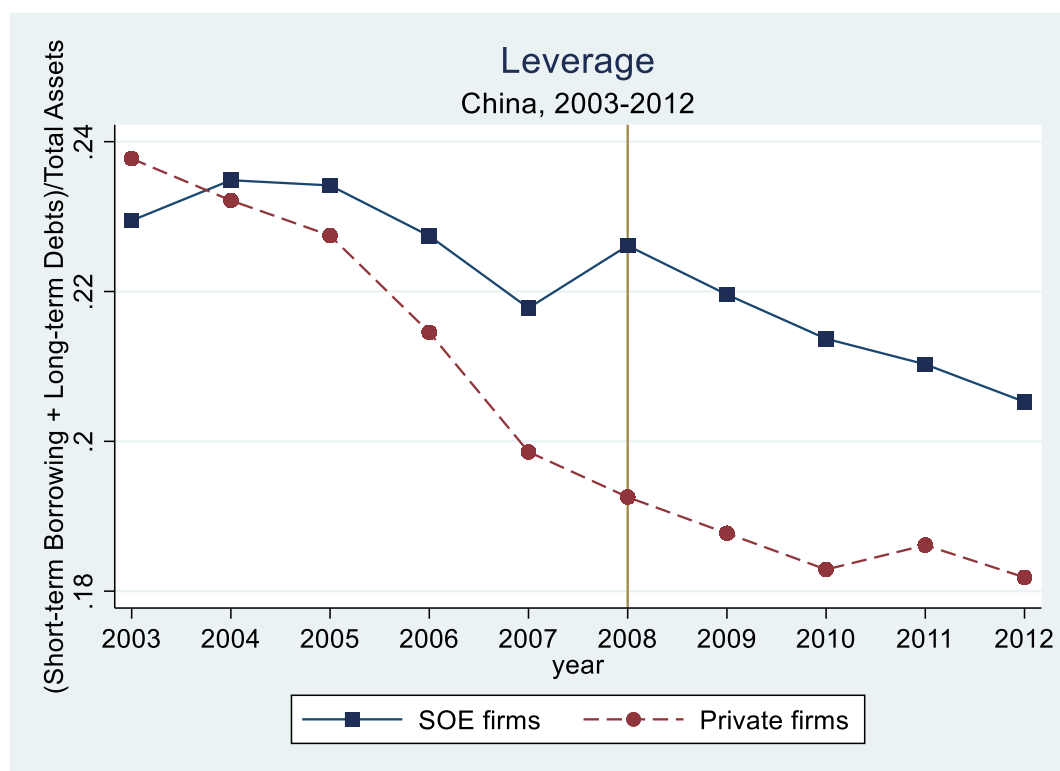
Figure 11.   Descriptive comparison: SOE vs. private (investment)
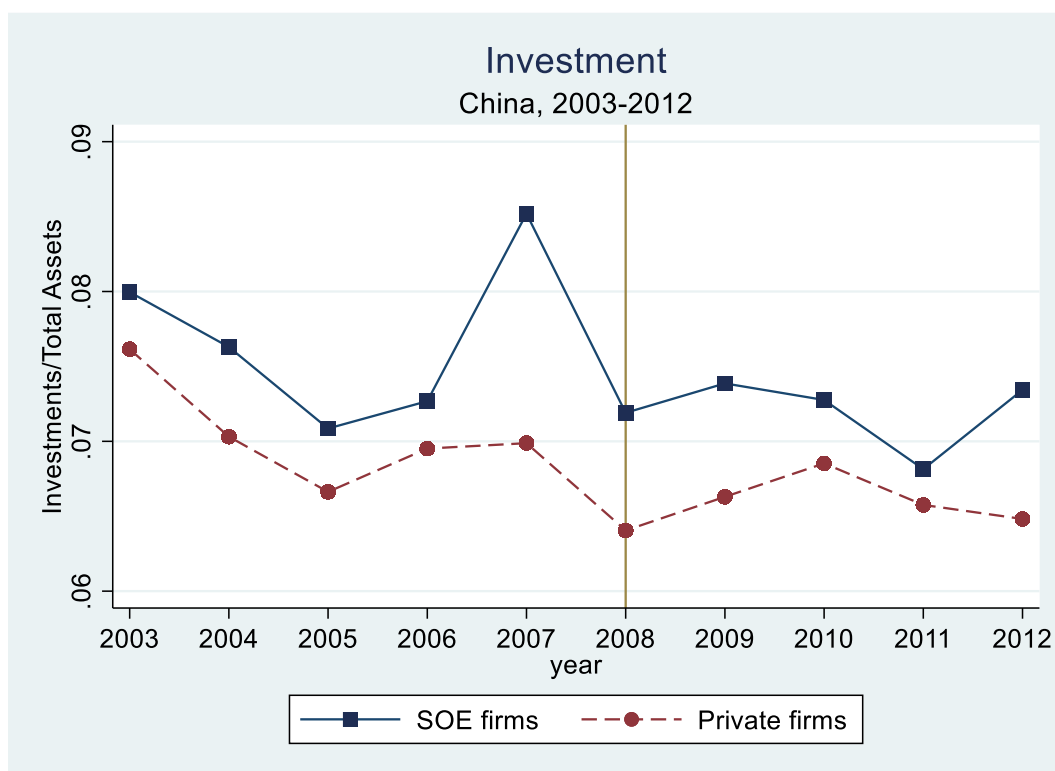
Figure 12.   Descriptive comparison: SOE vs. private (cash)
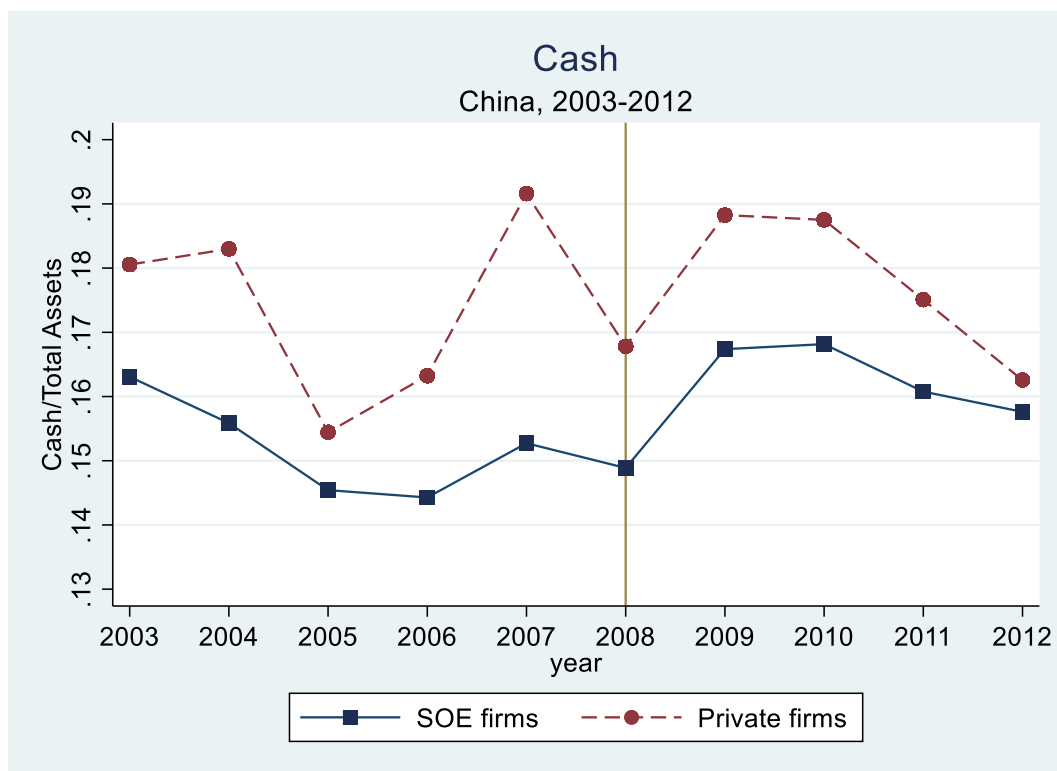
Figure 13.   Descriptive comparison: SOE vs. private (receivables)
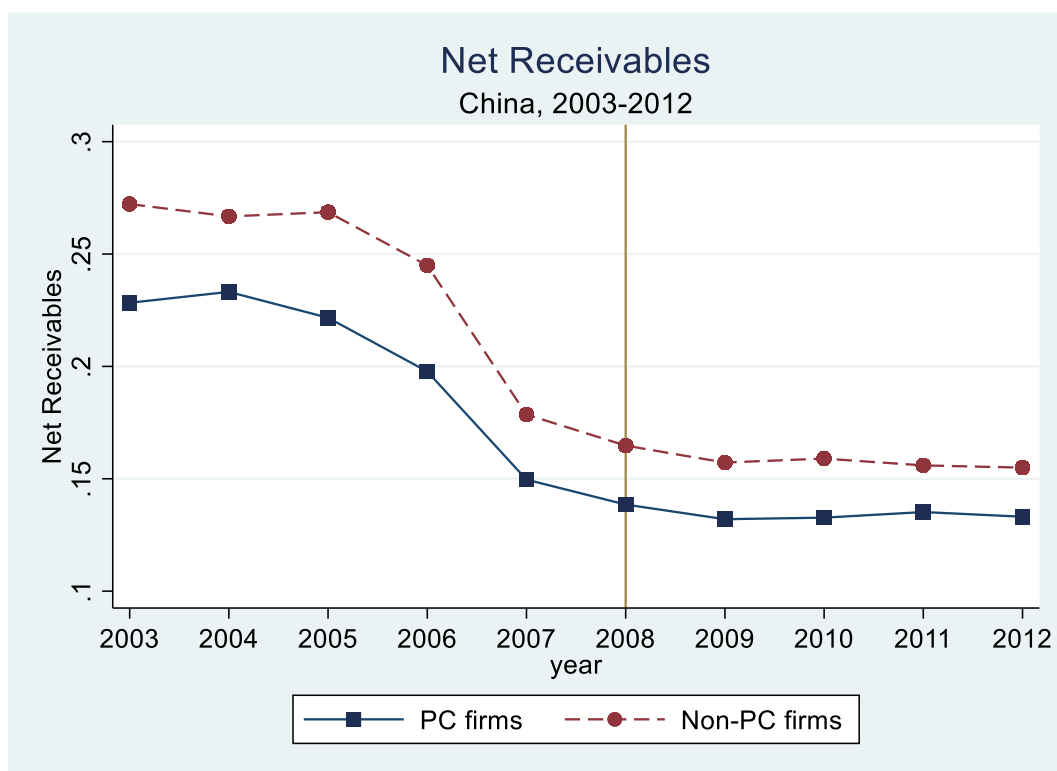
Figure 14.   Descriptive comparison: SOE vs. private (sales)
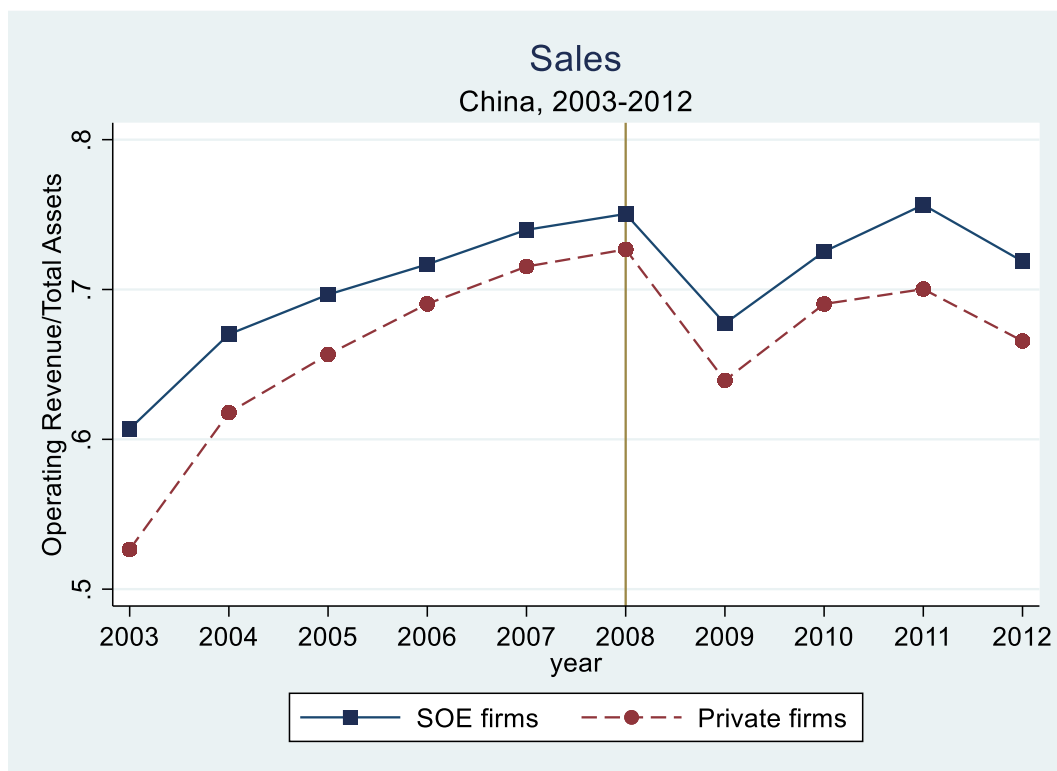
Figure 15.   Descriptive comparison: SOE vs. private (net profit)
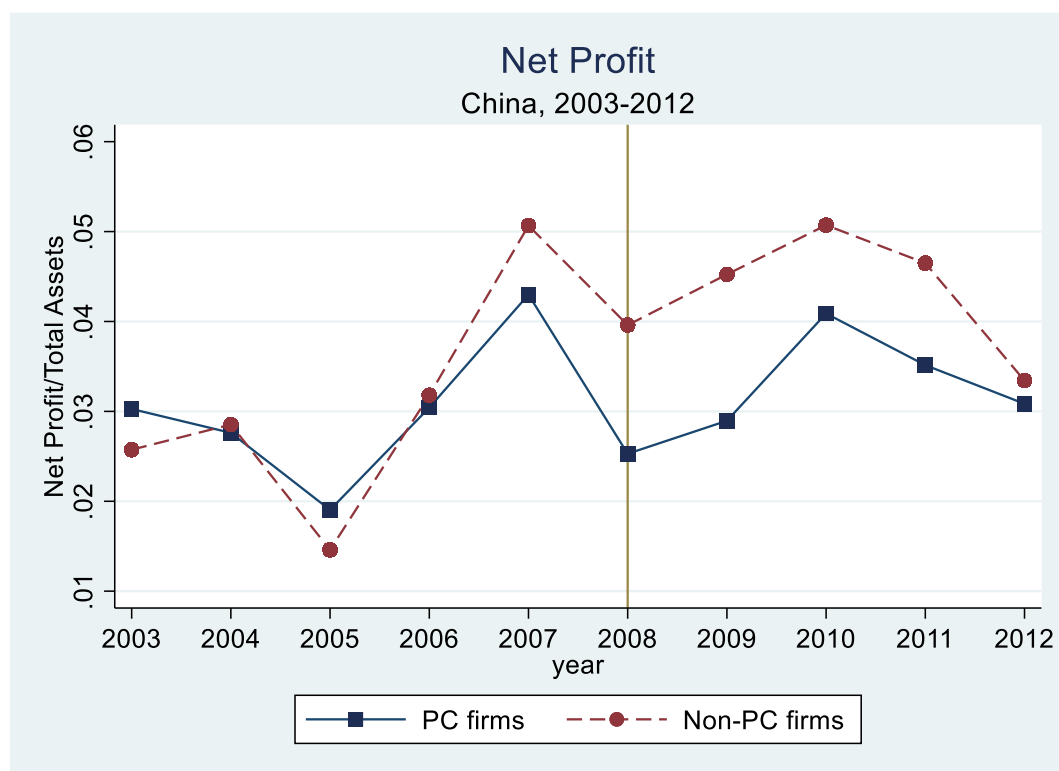
Figure 16.   Common trend test: PC vs. non-PC (leverage)
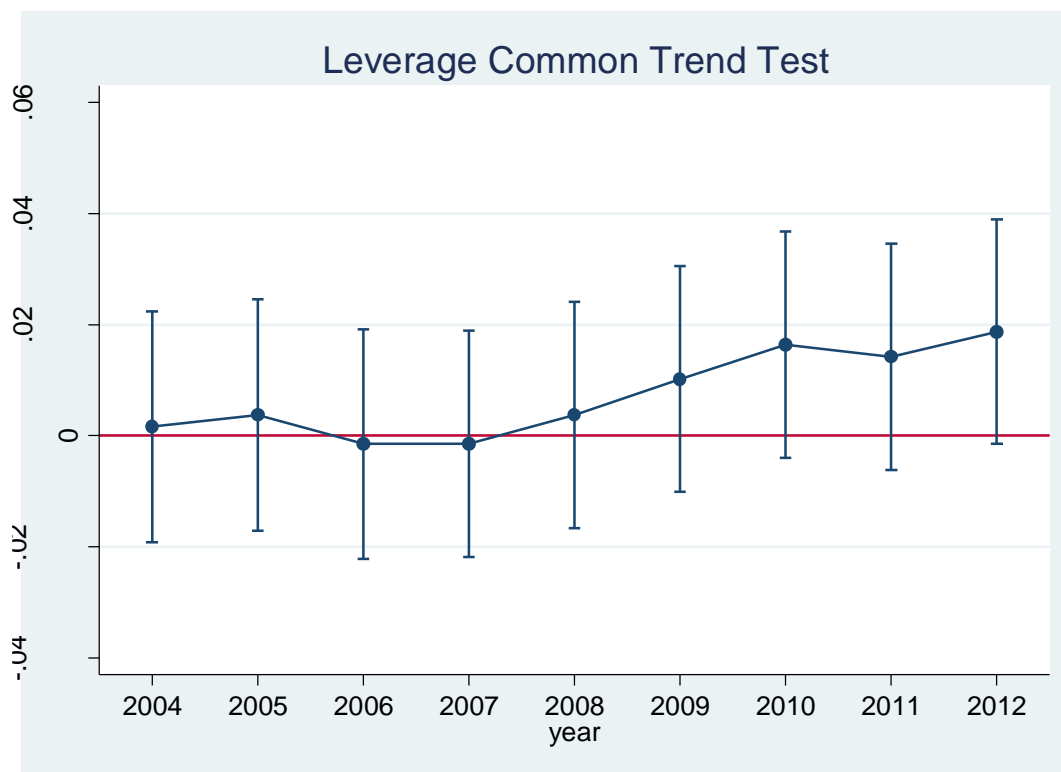
Figure 17.   Common trend test: PC vs. non-PC (investment)
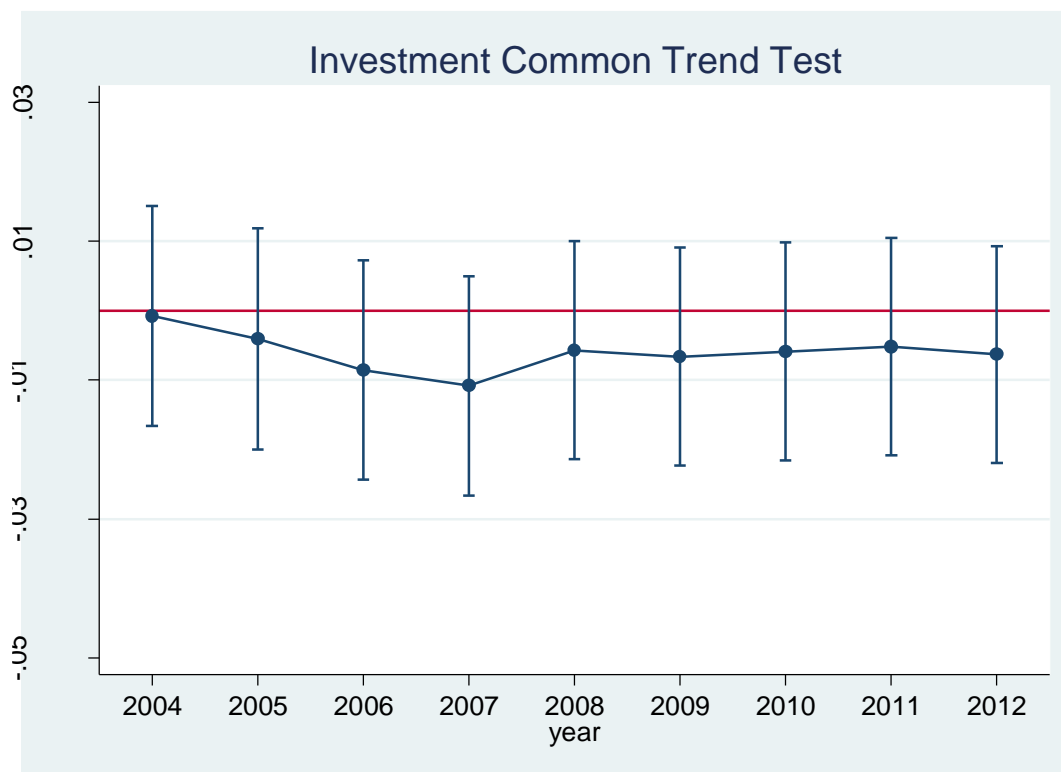
Figure 18.   Common trend test: PC vs. non-PC (cash)
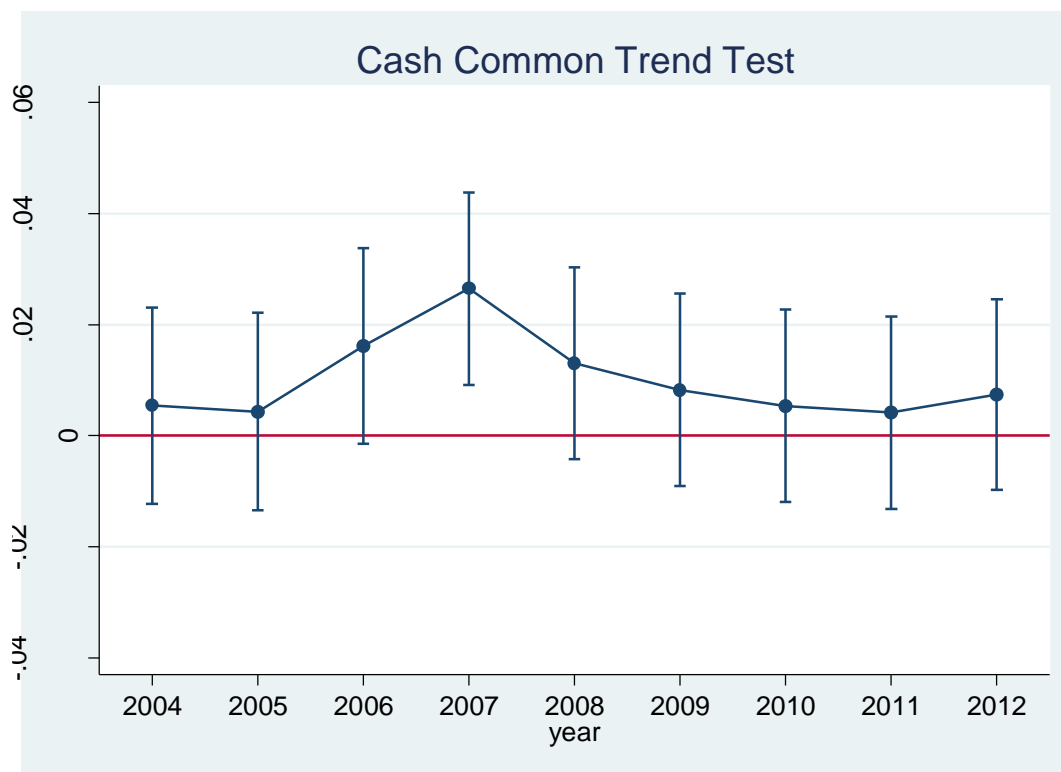
Figure 19.   Common trend test: PC vs. non-PC (receivables)
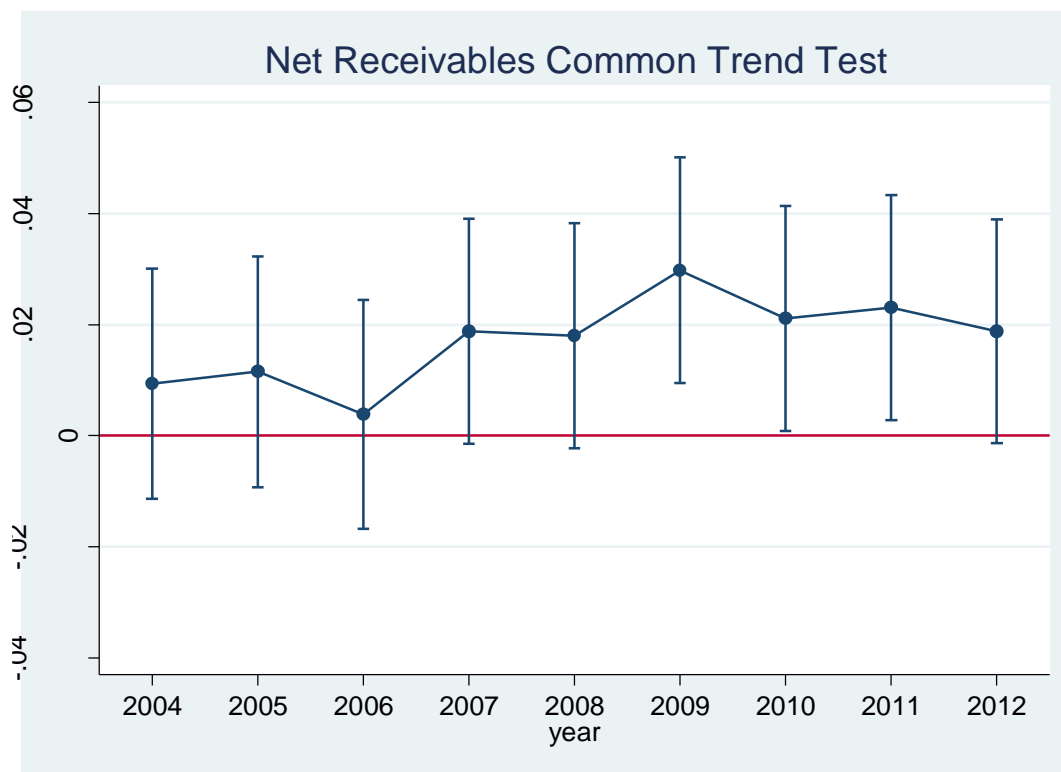
Figure 20.   Common trend test: PC vs. non-PC (sales)
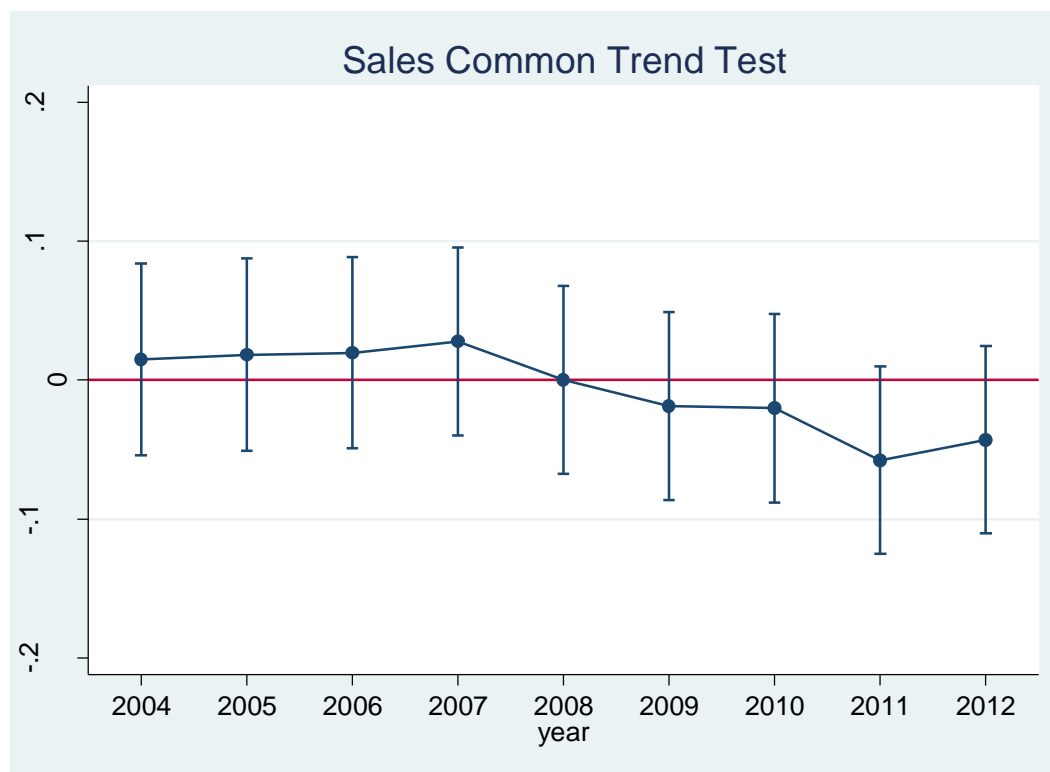
Figure 21.   Common trend test: PC vs. non-PC (net profit)
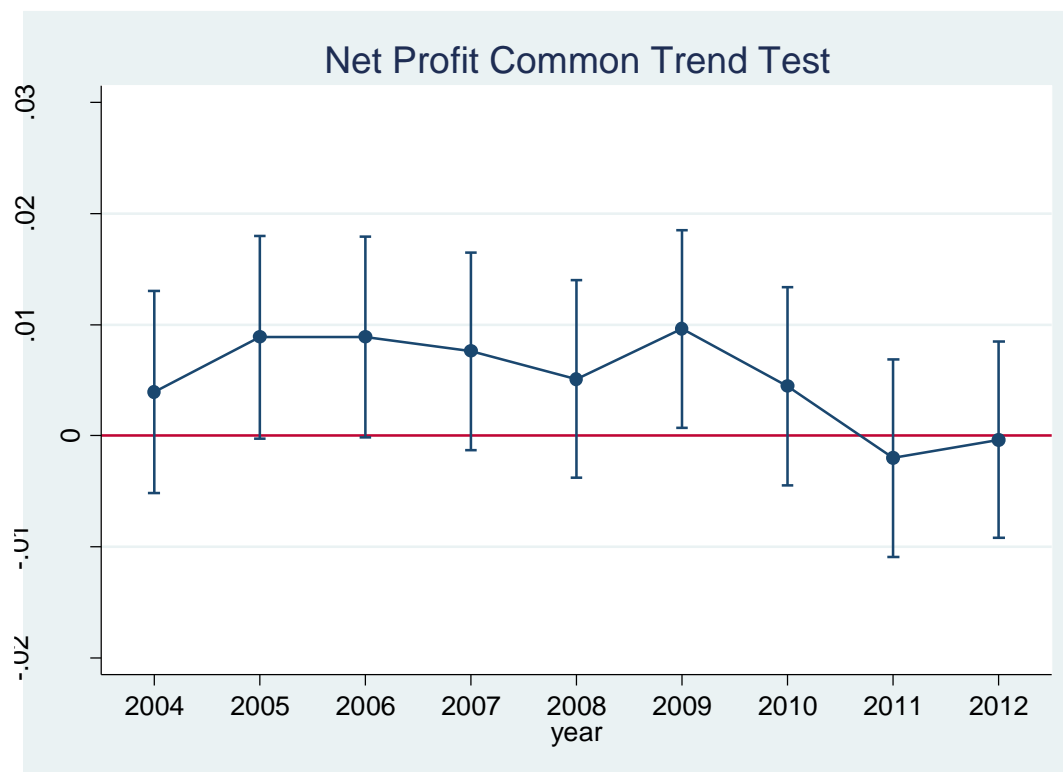
Figure 22.   Common trend test: SOE vs. private (leverage)
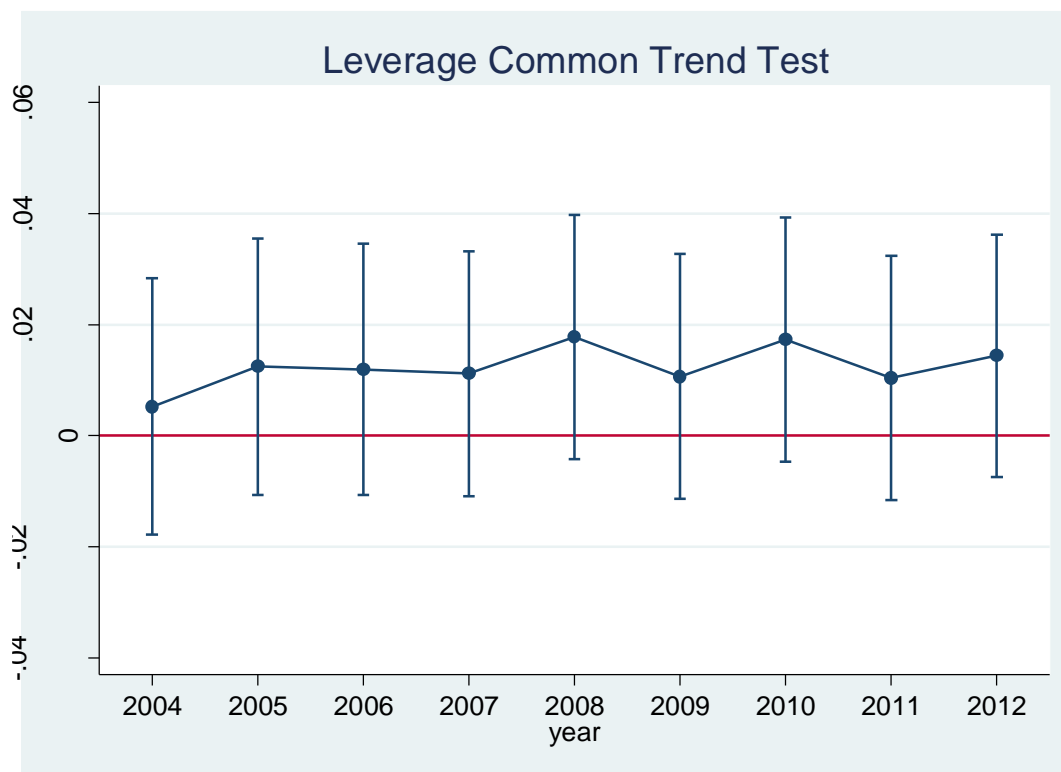
Figure 23.   Common trend test: SOE vs. private (investment)
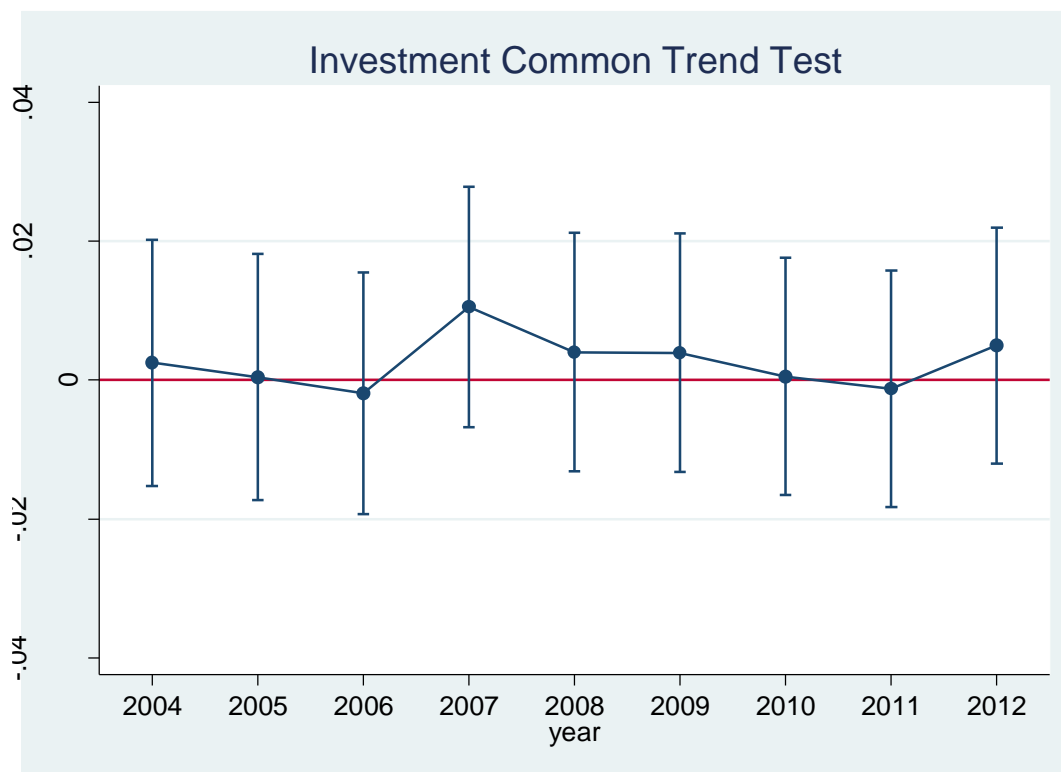
Figure 24.   Common trend test: SOE vs. private (cash)
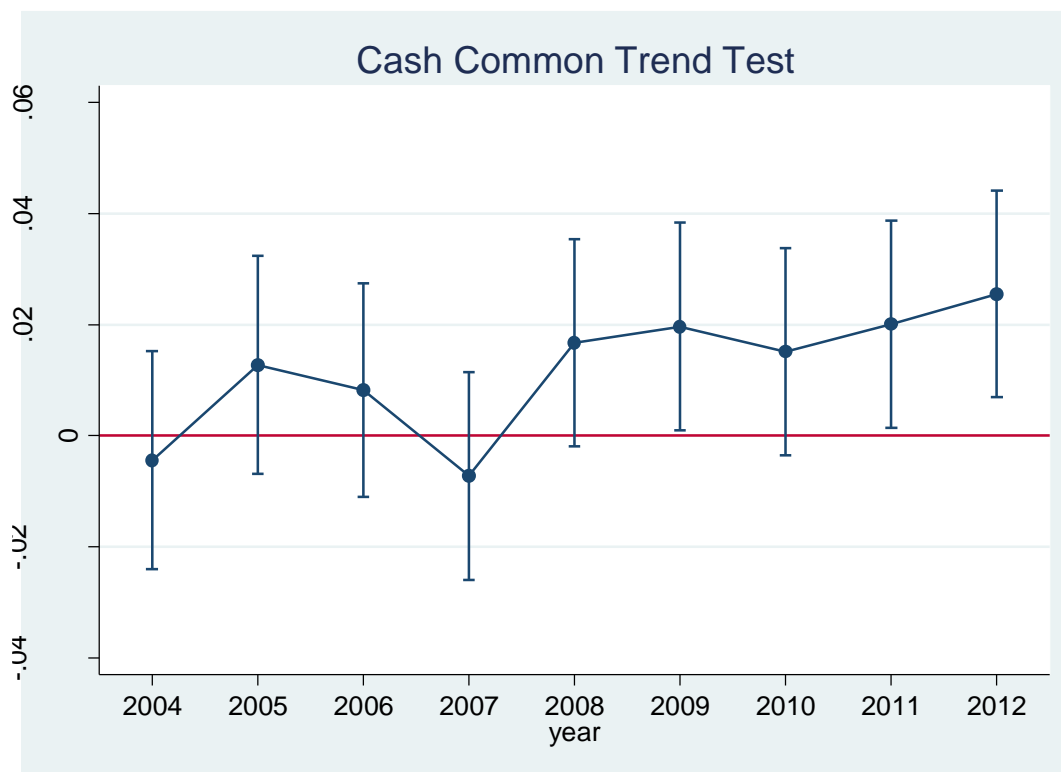
Figure 25.   Common trend test: SOE vs. private (receivables)
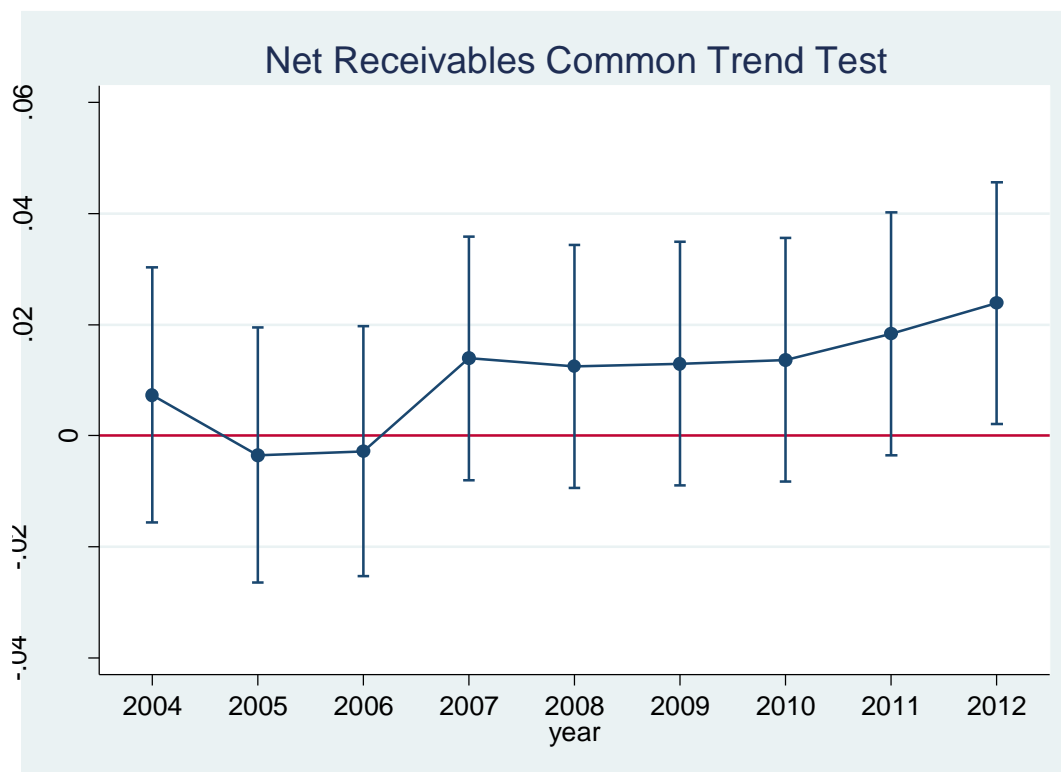
Figure 26.   Common trend test: SOE vs. private (sales)
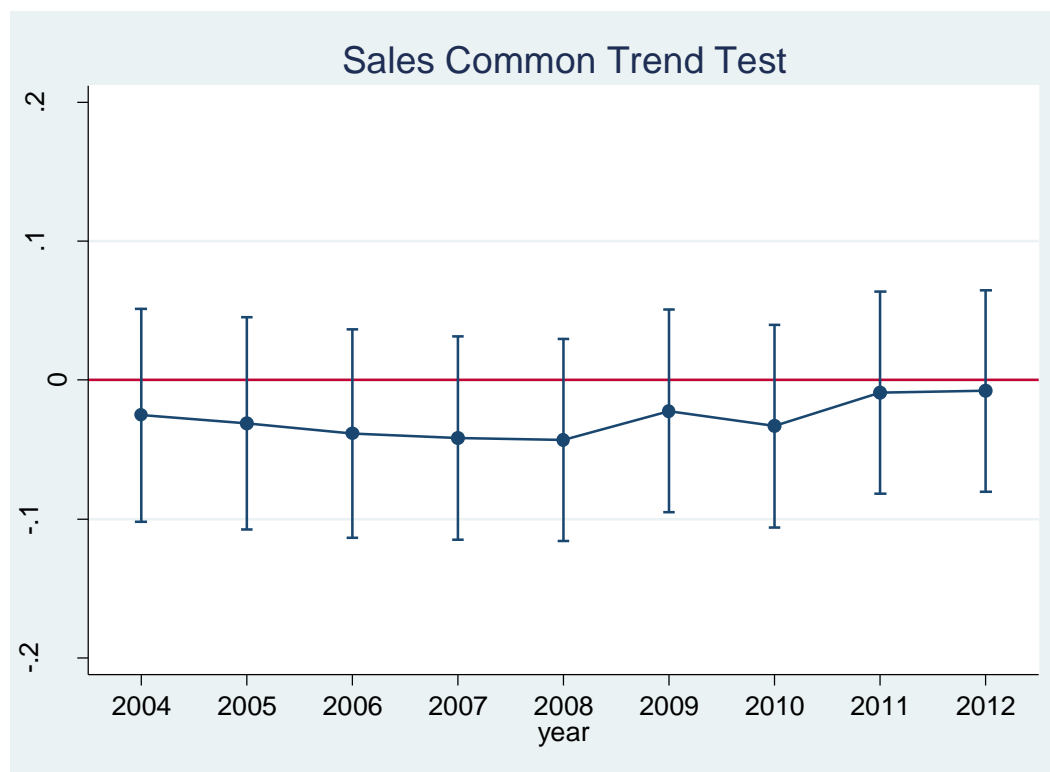
Figure 27. Common trend test: SOE vs. private (net profit)
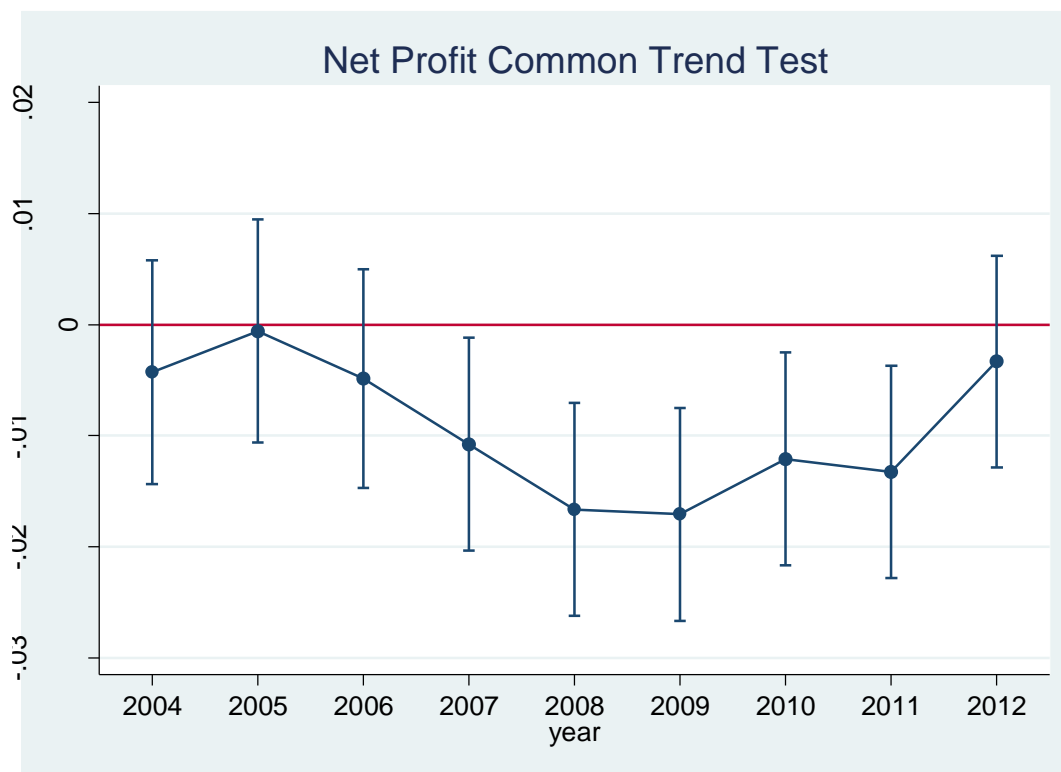
Table III.   Stimulus Package Investment Plan: Composition[21]

	Initial plan (3 trillion) Nov. 2008	Revised plan (3 trillion) March 2009	First tranche (100 billion) Dec. 2008	Second tranche (130 billion) Feb. 2009
Transport & power infrastructure (railroad, road, airport, electricity grid)	60%	50%	25%	21%
Rural village infrastructure	12%	12%	34%	24%
Environmental investment; natural areas	12%	7%	12%	8%
Affordable housing	9%	13%	10%	22%
Technological innovation & structural adjustment	5%	12%	6%	12%
Health & education	1%	5%	13%	13%

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[21] Barry Naughton, "Understanding the Chinese Stimulus Package," China Leadership Monitor, Spring 2009: Issue 28, Hoover Institution.

Table IV.   Government and Party Agencies (U.S. vs. China)

U.S.	China	
Government	**Government NPC**	**Communist Party CPPCC**
Federal	National	National
State	Province	Province
County	City	City
City	County	County
Town	Village	Village

* NPC: National People´s Congress

* CPPCC: Chinese People´s Political Consultative Conference

Table V.   Summary Table

	Name	Obs.	Mean	S.D.	1st	5th	50TH	95th	99th
1	PC	13,127	0.079	0.103	0.000	0.000	0.053	0.280	0.440
2	Total Assets	13,127	7.94E+9	4.63E+10	2.27E+08	4.55E+08	2.15E+09	2.32E+10	9.41E+10
3	Leverage	13,072	0.215	0.151	0.000	0.000	0.207	0.480	0.595
4	Investment	11,874	0.072	0.099	0.000	0.001	0.035	0.276	0.482
5	Cash	13,127	0.162	0.120	0.008	0.027	0.133	0.404	0.566
6	Receivables	13,124	0.177	0.147	0.007	0.022	0.142	0.444	0.697
7	Sales	13,127	0.695	0.498	0.076	0.159	0.577	1.702	2.534
8	Profitability	13,127	0.033	0.059	-0.173	-0.058	0.031	0.120	0.191
9	Size	13,127	20.753	1.206	18.357	19.082	20.625	22.956	24.331
10	Cash Flow	13,127	-0.008	0.106	-0.293	-0.183	-0.003	0.148	0.270
11	Subsidy	11,708	0.003	0.007	0.000	0.000	0.001	0.014	0.032

1. PC (Political Connection) = (x - Minimum) / Maximum

2. Total Assets

3. Leverage = (Long-Term Debts[22] + Short-Term Borrowings[23]) / Total Assets

4. Investment = (Short-Term Investment + Long-Term Investment) / Total Assets[24]

5. Cash = Cash and Cash Equivalents / Total Assets

6. Receivables = (Net Account Receivable + Net Prepayments + Net Other Receivable) / Total

    Assets

7. Sales = Operating Revenue / Total Assets

8. Profitability = Net Profit / Total Assets

9. Size = Natural Log of Total Assets (Real Term)[25]

10. Cash Flow = Net Cash Flow from Operating and Investing Activities / Total Assets

11. Subsidy = Subsidy / Total Assets

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[22] Debts that the company borrows from banks or other financial institutions, with a maturity of over one year (excluding one year). Used from 1990 onward.

[23] Short-Term Borrowings: borrowings with a maturity of less than one year (including one year) and not yet repaid. Used from 2000 onward.

[24] Short-term and long-term investments include trading financial assets, net short-term investments, available-for-sale financial assets, held-to-maturity investments, net long-term equity investments, and net long-term investments.

[25] Real term total assets = total assets / price deflator.

Table VI.   Summary Statistics: PC vs. Non-PC[26]

	(1) All	(2) PC	(3) NonPC	(4) Difference
Leverage	0.215	0.215	0.215	0.000
	(0.151)	(0.152)	(0.150)	(0.003)
Investment	0.073	0.069	0.079	0.010***
	(0.099)	(0.097)	(0.101)	(0.002)
Cash	0.162	0.163	0.162	-0.001
	(0.120)	(0.122)	(0.116)	(0.002)
Receivables	0.177	0.173	0.183	0.010***
	(0.147)	(0.140)	(0.158)	(0.003)
Sales	0.695	0.686	0.711	0.025***
	(0.498)	(0.490)	(0.511)	(0.009)
Profitability	0.033	0.034	0.032	-0.002
	(0.059)	(0.059)	(0.059)	(0.001)
Size	20.753	20.790	20.691	-0.098***
	(1.206)	(1.204)	(1.208)	(0.022)
Cash Flow	-0.008	-0.010	-0.004	0.006***
	(0.106)	(0.104)	(0.109)	(0.002)
Subsidy	0.003	0.003	0.003	0.000
	(0.007)	(0.007)	(0.007)	0.000
N	13,127	8,269	4,858	13,127

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[26] There are 5,591 firm-year observations that are for both politically connected firms and SOEs.

Table VII.   Summary Statistics: SOE vs. Private

	(1) All	(2) SOE	(3) Private	(4) Difference
Leverage	0.215	0.222	0.201	-0.020***
	(0.151)	(0.153)	(0.145)	(0.003)
Investment	0.073	0.074	0.068	-0.007***
	(0.099)	(0.101)	(0.092)	(0.002)
Cash	0.162	0.156	0.176	0.019***
	(0.120)	(0.116)	(0.127)	(0.002)
Receivables	0.177	0.169	0.195	0.026***
	(0.147)	(0.143)	(0.154)	(0.003)
Sales	0.695	0.707	0.669	-0.038***
	(0.498)	(0.514)	(0.460)	(0.009)
Profitability	0.033	0.031	0.038	0.007***
	(0.059)	(0.057)	(0.062)	(0.001)
Size	21.753	20.911	20.405	-0.506***
	(1.206)	(1.239)	(1.050)	(0.021)
Cash Flow	-0.008	-0.005	-0.012	-0.007***
	(0.106)	(0.104)	(0.109)	(0.002)
Subsidy	0.003	0.003	0.003	0.001*
	(0.007)	(0.007)	(0.007)	0.000
N	13,127	9,045	4,082	13,127

Table VIII.   Descriptive Comparison: PC vs. Non-PC (Years before 2009)

	(1) All	(2) PC	(3) NonPC	(4) Difference
Leverage	0.224	0.221	0.229	0.007*
	(0.147)	(0.147)	(0.147)	(0.003)
Investment	0.074	0.070	0.081	0.010***
	(0.095)	(0.092)	(0.098)	(0.002)
Cash	0.158	0.160	0.156	-0.004
	(0.118)	(0.122)	(0.112)	(0.003)
Receivables	0.203	0.197	0.213	0.016***
	(0.166)	(0.156)	(0.181)	(0.004)
Sales	0.689	0.687	0.692	0.005
	(0.494)	(0.500)	(0.484)	(0.012)
Profitability	0.031	0.032	0.028	-0.004*
	(0.060)	(0.059)	(0.061)	(0.001)
Size	20.562	20.602	20.497	-0.104***
	(1.067)	(1.065)	(1.067)	(0.025)
Cash Flow	-0.010	-0.012	-0.007	0.004
	(0.106)	(0.104)	(0.109)	(0.003)
Subsidy	0.002	0.002	0.002	0.000*
	(0.005)	(0.005)	(0.006)	0.000
N	7,564	4,707	2,857	7,564

Table IX.　　Descriptive Comparison: PC vs. Non-PC (Years after 2009)

	(1) All	(2) PC	(3) NonPC	(4) Difference
Leverage	0.203	0.207	0.196	-0.012**
	(0.155)	(0.157)	(0.152)	(0.004)
Investment	0.070	0.067	0.076	0.010**
	(0.104)	(0.103)	(0.106)	(0.003)
Cash	0.168	0.167	0.171	0.004
	(0.122)	(0.122)	(0.121)	(0.003)
Receivables	0.141	0.142	0.140	-0.001
	(0.106)	(0.107)	(0.105)	(0.003)
Sales	0.704	0.685	0.739	0.054***
	(0.503)	(0.476)	(0.547)	(0.015)
Profitability	0.037	0.037	0.038	0.001
	(0.058)	(0.058)	(0.056)	(0.002)
Size	21.013	21.038	20.969	-0.069
	(1.330)	(1.325)	(1.337)	(0.037)
Cash Flow	-0.004	-0.007	0.001	0.009**
	(0.106)	(0.104)	(0.107)	(0.003)
Subsidy	0.005	0.005	0.005	0.000
	(0.008)	(0.009)	(0.008)	0.000
N	5,563	3,562	2,001	5,563

Table X.   Descriptive Comparison: SOE vs. Private (Years before 2009)

	(1) All	(2) SOE	(3) Private	(4) Difference
Leverage	0.224	0.228	0.215	-0.014***
	(0.147)	(0.148)	(0.145)	(0.004)
Investment	0.074	0.076	0.069	-0.007**
	(0.095)	(0.097)	(0.089)	(0.002)
Cash	0.158	0.152	0.174	0.022***
	(0.118)	(0.113)	(0.129)	(0.003)
Receivables	0.203	0.194	0.226	0.032***
	(0.166)	(0.159)	(0.179)	(0.004)
Sales	0.689	0.698	0.666	-0.033**
	(0.494)	(0.507)	(0.460)	(0.012)
Profitability	0.031	0.029	0.033	0.004*
	(0.060)	(0.058)	(0.063)	(0.002)
Size	20.562	20.700	20.237	-0.462***
	(1.067)	(1.094)	(0.922)	(0.025)
Cash Flow	-0.010	-0.007	-0.018	-0.012***
	(0.106)	(0.105)	(0.108)	(0.003)
Subsidy	0.002	0.002	0.002	0.000**
	(0.005)	(0.005)	(0.006)	0.000
N	7,564	5,315	2,249	7,564

Table XI.   Descriptive Comparison: SOE vs. Private (Years after 2009)

	(1) All	(2) SOE	(3) Private	(4) Difference
Leverage	0.203	0.212	0.185	-0.028***
	(0.155)	(0.160)	(0.143)	(0.004)
Investment	0.070	0.072	0.066	-0.006
	(0.104)	(0.107)	(0.097)	(0.003)
Cash	0.168	0.163	0.178	0.015***
	(0.122)	(0.120)	(0.124)	(0.003)
Receivables	0.141	0.133	0.157	0.024***
	(0.106)	(0.107)	(0.103)	(0.003)
Sales	0.704	0.719	0.674	-0.045***
	(0.503)	(0.522)	(0.461)	(0.014)
Profitability	0.037	0.034	0.044	0.010***
	(0.058)	(0.055)	(0.061)	(0.002)
Size	21.013	21.211	20.611	-0.601***
	(1.330)	(1.365)	(1.155)	(0.035)
Cash Flow	-0.004	-0.004	-0.005	-0.001
	(0.106)	(0.103)	(0.110)	(0.003)
Subsidy	0.005	0.004	0.005	0.001*
	(0.008)	(0.008)	(0.008)	0.000
N	5,563	3,730	1,833	5,563

Table XII.   Regression Results Comparison (DID)

	PC vs. Non-PC	SOE vs. Private
Leverage	0.013**	0.006
	(0.005)	(0.005)
Investment	-0.001	-0.002
	(0.004)	(0.004)
Cash	-0.005	0.015***
	(0.004)	(0.004)
Receivables	0.013**	0.011*
	(0.004)	(0.004)
Sales	-0.049**	0.017
	(0.016)	(0.016)
Profitability	-0.003	-0.005*
	(0.002)	(0.002)

Standard errors in parentheses

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table XIII.   Regression Results: PC vs. Non-PC (DID-Leverage)

	(1) Leverage	(2) Leverage	(3) Leverage	(4) Leverage	(5) Leverage	(6) Leverage
PoliticalConnection*Post	0.018***	0.018***	0.013**	0.013**	0.013**	0.013**
	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
Total Asset (Base Year)		0.000	0.000	0.000	0.000***	0.000***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow			-0.366***	-0.303***	-0.272***	-0.269***
			(0.013)	(0.013)	(0.012)	(0.012)
Profitability				-0.744***	-0.679***	-0.675***
				(0.025)	(0.024)	(0.025)
_cons		0.236***	0.227***	0.248***	0.249***	0.270***
		(0.005)	(0.005)	(0.005)	(0.015)	(0.017)
Industry FE	No	No	No	No	Yes	Yes
Province FE	No	No	No	No	No	Yes
N	13,072	13,072	13,072	13,072	13,072	12,898
adj. R-sq	0.007	0.007	0.072	0.152	0.272	0.284

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Table XIV.   Regression Results: PC vs. Non-PC (DID-Investment)

	(1) Investment	(2) Investment	(3) Investment	(4) Investment	(5) Investment	(6) Investment
PoliticalConnection*Post	0.001	0.001	0.001	0.001	-0.001	-0.001
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Total Asset (Base Year)		0.000***	0.000***	0.000***	0.000*	0.000**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow			0.047***	0.050***	0.036***	0.024**
			(0.009)	(0.009)	(0.009)	(0.009)
Profitability				-0.035*	-0.020	-0.018
				(0.016)	(0.016)	(0.016)
_cons	0.085***	0.085***	0.086***	0.088***	0.061***	0.053***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.006)	(0.007)
Industry FE	No	No	No	No	Yes	Yes
Province FE	No	No	No	No	No	Yes
N	11,874	11,874	11,874	11,874	11,874	11,710
adj. R-sq	0.003	0.003	0.005	0.006	0.068	0.102

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Table XV.   Regression Results: PC vs. Non-PC (DID-Cash)

	(1) Cash	(2) Cash	(3) Cash	(4) Cash	(5) Cash	(6) Cash
PoliticalConnection*Post	-0.008	-0.007	-0.006	-0.004	-0.005	-0.005
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Total Asset (Base Year)		-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow			0.249***	0.209***	0.190***	0.191***
			(0.013)	(0.012)	(0.012)	(0.012)
Profitability				0.466***	0.437***	0.423***
				(0.020)	(0.019)	(0.019)
_cons	0.165***	0.166***	0.171***	0.158***	0.172***	0.171***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.012)	(0.012)
Industry FE	No	No	No	No	Yes	Yes
Province FE	No	No	No	No	No	Yes
N	13,127	13,127	13,127	13,127	13,127	12,953
adj. R-sq	0.005	0.007	0.052	0.105	0.194	0.218

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Table XVI.   Regression Results: PC vs. Non-PC (DID-Net Receivables)

	(1) Receivables	(2) Receivables	(3) Receivables	(4) Receivables	(5) Receivables	(6) Receivables
PoliticalConnection*Post	0.015**	0.015**	0.015**	0.013**	0.012**	0.013**
	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)
Total Asset (Base Year)		-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow			-0.025	0.014	-0.001	-0.004
			(0.014)	(0.014)	(0.013)	(0.014)
Profitability				-0.462***	-0.453***	-0.448***
				(0.029)	(0.027)	(0.027)
_cons	0.248***	0.248***	0.247***	0.261***	0.255***	0.216***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.010)	(0.010)
Industry FE	No	No	No	No	Yes	Yes
Province FE	No	No	No	No	No	Yes
N	13,124	13,124	13,124	13,124	13,124	12,950
adj. R-sq	0.085	0.088	0.088	0.118	0.268	0.282

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Table XVII.   Regression Results: PC vs. Non-PC (DID-Sales)

	(1) Sales	(2) Sales	(3) Sales	(4) Sales	(5) Sales	(6) Sales
PoliticalConnection*Post	-0.046*	-0.046*	-0.042*	-0.046*	-0.045*	-0.049**
	(0.019)	(0.019)	(0.018)	(0.018)	(0.016)	(0.016)
Total Asset (Base Year)		0.000***	0.000***	0.000***	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow			0.585***	0.591***	0.494***	0.481***
			(0.047)	(0.047)	(0.045)	(0.046)
Receivables				0.250***	0.092***	0.146***
				(0.034)	(0.033)	(0.034)
_cons	0.591***	0.590***	0.605***	0.543***	0.371***	0.270***
	(0.014)	(0.014)	(0.014)	(0.017)	(0.026)	(0.033)
Industry FE	No	No	No	No	Yes	Yes
Province FE	No	No	No	No	No	Yes
N	13,127	13,127	13,127	13,124	13,124	12,950
adj. R-sq	0.008	0.009	0.023	0.028	0.271	0.306

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Table XVIII.   Regression Results: PC vs. Non-PC (DID-Profit)

	(1) Profit	(2) Profit	(3) Profit	(4) Profit	(5) Profit
PoliticalConnection*Post	-0.005*	-0.005*	-0.003	-0.003	-0.003
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Total Asset (Base Year)		0.000***	0.000***	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)
Receivables			-0.079***	-0.089***	-0.087***
			(0.005)	(0.005)	(0.005)
_cons	0.027***	0.027***	0.047***	0.045***	0.041***
	(0.002)	(0.002)	(0.002)	(0.006)	(0.007)
Industry FE	No	No	No	No	Yes
Province FE	No	No	No	No	No
N	13,127	13,124	13,124	13,124	12,950
adj. R-sq	0.017	0.018	0.052	0.107	0.120

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Table XIX.   Regression Results: SOE vs. Private (DID-Leverage)

	(1) Leverage	(2) Leverage	(3) Leverage	(4) Leverage	(5) Leverage	(6) Leverage
SOE*Post	0.015*	0.015*	0.011*	0.007	0.007	0.006
	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.005)
Total Asset (Base Year)		-0.000	-0.000	0.000	0.000***	0.000***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow			-0.369***	-0.306***	-0.272***	-0.269***
			(0.013)	(0.013)	(0.012)	(0.012)
Profitability				-0.737***	-0.679***	-0.675***
				(0.025)	(0.024)	(0.025)
_cons	0.222***	0.222***	0.209***	0.235***	0.241***	0.260***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.015)	(0.017)
Industry FE	No	No	No	No	Yes	Yes
Province FE	No	No	No	No	No	Yes
N	13,072	13,072	13,072	13,072	13,072	12,898
adj. R-sq	0.010	0.010	0.076	0.155	0.272	0.284

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Table XX. Regression Results: SOE vs. Private (DID-Investment)

	(1) Investment	(2) Investment	(3) Investment	(4) Investment	(5) Investment	(6) Investment
SOE*Post	-0.001	-0.001	-0.001	-0.001	-0.001	-0.002
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Total Asset (Base Year)		-0.000***	-0.000***	-0.000***	-0.000*	-0.000**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow			0.047***	0.050***	0.037***	0.024***
			(0.009)	(0.009)	(0.009)	(0.009)
Profitability				-0.034*	-0.021	-0.017
				(0.016)	(0.016)	(0.016)
_cons	0.074***	0.074***	0.075***	0.077***	0.052***	0.047***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.006)	(0.007)
Industry FE	No	No	No	No	Yes	Yes
Province FE	No	No	No	No	No	Yes
N	11,874	11,874	11,874	11,874	11,874	11,710
adj. R-sq	0.002	0.002	0.004	0.005	0.066	0.102

Standard errors in parentheses

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table XXI.   Regression Results: SOE vs. Private (DID-Cash)

	(1) Cash	(2) Cash	(3) Cash	(4) Cash	(5) Cash	(6) Cash
SOE*Post	0.008	0.008	0.010*	0.013***	0.014***	0.015***
	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)
Total Asset (Base Year)		-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow			0.252***	0.213***	0.191***	0.193***
			(0.013)	(0.012)	(0.012)	(0.012)
Profitability				0.456***	0.436***	0.424***
				(0.020)	(0.019)	(0.019)
_cons	0.184***	0.184***	0.193***	0.177***	0.187***	0.189***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.012)	(0.012)
Industry FE	No	No	No	No	Yes	Yes
Province FE	No	No	No	No	No	Yes
N	13,127	13,127	13,127	13,127	13,127	12,953
adj. R-sq	0.010	0.012	0.059	0.107	0.193	0.217

Standard errors in parentheses

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table XXII.   Regression Results: SOE vs. Private (DID-Net Receivables)

	(1) Receivables	(2) Receivables	(3) Receivables	(4) Receivables	(5) Receivables	(6) Receivables
SOE*Post	0.014**	0.014**	0.013*	0.011*	0.011*	0.010*
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Total Asset (Base Year)		-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow			-0.020	0.022	0.003	-0.001
			(0.014)	(0.014)	(0.013)	(0.014)
Profitability				-0.478***	-0.459***	-0.455***
				(0.029)	(0.027)	(0.027)
_cons	0.267***	0.267***	0.266***	0.283***	0.265***	0.229***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.010)	(0.011)
Industry FE	No	No	No	No	Yes	Yes
Province FE	No	No	No	No	No	Yes
N	13,124	13,124	13,124	13,124	13,124	12,950
adj. R-sq	0.094	0.096	0.096	0.129	0.269	0.284

Standard errors in parentheses

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table XXIII.   Regression Results: SOE vs. Private (DID-Sales)

	(1) Sales	(2) Sales	(3) Sales	(4) Sales	(5) Sales	(6) Sales
SOE*Post	0.007	0.006	0.013	0.010	0.013	0.017
	(0.018)	(0.018)	(0.018)	(0.018)	(0.016)	(0.016)
Total Asset (Base Year)		0.000***	0.000***	0.000***	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash Flow			0.584***	0.589***	0.490***	0.472***
			(0.047)	(0.047)	(0.045)	(0.046)
Receivables				0.264***	0.096***	0.155***
				(0.034)	(0.033)	(0.034)
_cons	0.557***	0.557***	0.578***	0.508***	0.316***	0.203***
	(0.015)	(0.015)	(0.015)	(0.018)	(0.028)	(0.034)
Industry FE	No	No	No	No	Yes	Yes
Province FE	No	No	No	No	No	Yes
N	13,127	13,127	13,127	13,124	13,124	12,950
adj. R-sq	0.008	0.009	0.023	0.029	0.273	0.310

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Table XXIV. Regression Results: SOE vs. Private (DID-Profit)

	(1) Profit	(2) Profit	(3) Profit	(4) Profit	(5) Profit
SOE*Post	-0.007**	-0.007**	-0.006**	-0.005*	-0.005*
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Total Asset (Base Year)		0.000***	0.000***	0.000	0.000
		(0.000)	(0.000)	(0.000)	(0.000)
Receivables			-0.082***	-0.089***	-0.089***
			(0.005)	(0.005)	(0.005)
_cons	0.032***	0.032***	0.053***	0.052***	0.049***
	(0.002)	(0.002)	(0.002)	(0.006)	(0.007)
Industry FE	No	No	No	Yes	Yes
Province FE	No	No	No	No	Yes
N	13,127	13,127	13,124	13,124	12,950
adj. R-sq	0.019	0.021	0.057	0.111	0.123

Standard errors in parentheses

* $p<0.05$, ** $p<0.01$, *** $p<0.001$

Table XXV.   Descriptive Statistics: Firms Exiting Stock Market after 2009

	Number	Percentage
Total Firms	1,462	100%
Exit Firms	17	1%
Total Observations	13,178	100%
Exit Observations	62	0.50%
Political Connected	30	0.23%
SOE	49	0.37%
Both PC & SOE	22	0.17%

Table XXVI.   Descriptive Comparison: Survived vs. Exited after 2009

	(1) Remain	(2) Exit	(3) Difference
Leverage	0.215	0.335	0.120***
	(0.151)	(0.139)	(0.018)
Investment	0.073	0.039	-0.034***
	(0.097)	(0.056)	(0.008)
Cash	0.162	0.123	-0.040**
	(0.120)	(0.113)	(0.014)
Receivables	0.177	0.312	0.136***
	(0.147)	(0.270)	(0.034)
Sales	0.695	0.780	0.086
	(0.497)	(0.694)	(0.088)
Profitability	0.033	-0.014	-0.047***
	(0.059)	(0.084)	(0.011)
Cash Flow	-0.008	0.002	0.010
	(0.106)	(0.093)	(0.012)
N	13,116	62	13,178

Table XXVII. Regression Results (DID): Without Firms That Exited the Market after 2009

	PC vs. Non-PC	SOE vs. Private
Leverage	0.014**	0.006
	(0.005)	(0.005)
Investment	-0.001	-0.001
	(0.004)	(0.004)
Cash	-0.005	0.014***
	(0.004)	(0.004)
Receivables	0.012**	0.010*
	(0.004)	(0.005)
Sales	-0.049**	0.015
	(0.016)	(0.016)
Profitability	-0.003	-0.005*
	(0.002)	(0.002)

Table XXVIII.Regression Results (DID): Controlling for Political Connections of Lag-1 Year

	(1) Political Connection		(2) Political Connection
Leverage	-0.003	Leverage (lag-1)	-0.007
	(0.006)		(0.006)
Investment	0.002	Investment (lag-1)	0.001
	(0.008)		(0.009)
Cash	0.015*	Cash (lag-1)	0.014
	(0.007)		(0.007)
Receivables	0.016*	Receivables (lag-1)	0.010
	(0.005)		(0.005)
Sales	-0.002	Sales (lag-1)	-0.003
	(0.002)		(0.002)
Profitability	-0.006	Profitability (lag-1)	0.004
	(0.011)		(0.011)
_cons	0.080***	_cons	0.079***
	(0.003)		(0.003)
Firm FE	Yes	Firm FE	Yes
N	11,818		10,530
adj. R-sq	0.130		0.148

Standard errors in parentheses
* $p<0.05$, ** $p<0.01$, *** $p<0.001$

3.   HOW DO POLITICAL CONNECTIONS IMPACT THE BEHAVIOR OF CHINESE FIRMS?

Abstract

Gaining knowledge of the link between political connections and firm behavior is important for a general understanding of how resource allocation is affected by political connections. Such connections can be of substantial importance in an economy such as China's that combines market-based schemes and central planning. After using across-firm variations in the last chapter, this chapter will take advantage of within-firm variations to detect the impact of political connections on firm behavior. I use a panel vector-autoregression model to study 1,583 Chinese listed companies with 9,059 observations between 2004 and 2011. I find that a positive shock in political connections has positive impacts on profit, receivables, and cash, while the effect of current shock on political connections has negative impacts on leverage, investment, and sales.

JEL Codes: E62, G30, H50

3.1   **<u>Introduction</u>**

How do political connections impact firm behavior? Gaining knowledge about this link is important for a general understanding of how resource allocation is affected by political connections. Such connections can be of substantial importance in an economy such as China's that combines market-based schemes with central planning. Moreover, the slowdown in economic growth in recent years has caused much concern. To what extent is this slowdown attributable to misallocation of resources due to political considerations and government subsidies?

Political connections between firms and governments are important to almost every kind of firm across different countries. However, such connections are significantly more important to the firms operating in centrally planned economies like China's. Whether a firm is close to the central and local governments may decide how easy or hard it is for the firm to enter an industry, compete with other firms, maintain its market power, and improve its market performance. A firm with closer political connections might be able to easily obtain a producing permit, get a better piece of land at a cheaper price than its counterparts, avoid some taxes or administration fees, and secure more profitable projects from governments than their competitors with fewer political connections.

To detect the impact of political connections on firm behavior in China, I studied the causal effects of political connections on the real financial activities of firms, including sales, receivables, investment, leverage, cash, and profitability. Specifically, the last chapter focused on across-firm variations to compare companies with political connections to those without them, while also comparing their performance before and after the start of the stimulus package (and financial crisis). To depict a more thorough picture, this chapter will take advantage of the within-firm variations to explore the impact of political connections on firm behavior across time.

To avoid potential endogeneity and bias and be able to use as many observations as possible, I use a PVAR model to take advantage of within-firm variations and estimate the impacts of exogenous shock in political connections on firm performance variables.

Traditionally, researchers have used SOEs as a proxy for political connections and on that basis have contrasted SOEs with private companies. There are two drawbacks to this approach. First, merely looking at different types of ownership might disguise important aspects of the economy. Second, comparing SOEs and private companies might not give us clear and reliable results since they are different not only in terms of ownership but also in terms of other characteristics, such as size, cash stock, and other variables. Also, most researchers have only used political connections as a binary variable (0-1) in their studies.

To better define political connections, I used data from the Wind Economic Database and take high-level managers' personal government positions as being representative of their political connections. Furthermore, I manually sorted all the government position information and made this variable more informative and more accurate. To my knowledge, my research is the first of its kind to use a political connection variable as a discrete variable to detect its impact on firm behavior.

The empirical results suggest that 1 percentage point of positive current shock in political connections will have a 0.22 percentage point of negative impact on sales, a 0.13 percentage point of positive impact on net receivables, a 0.14 percentage point of negative impact on investment, a 0.14 percentage point of negative impact on leverage, a 0.08 percentage point of positive impact on cash, and a 0.09 percentage point of positive impact on net profit. Among these, the impacts on net receivables, investment, and leverage are significant, while the other impacts are insignificant.

3.2   **The Institutional Background of China's Political System**

The politics of the PRC take place within the framework of a socialist republic run by a single party, the CPC. State power is exercised through the CPC, the central government, and their local representation.[27]

Besides CPC and government systems, there are two other parallel political systems: the People's Congress and the People's Political Consultative Conference (Table I). The members of The People's Congress at the county level, who have the responsibility to oversight local governments, are elected by voters. These members would elect members to the provincial People's Congress, which elects members to the National People's Congress (NPC). The ruling CPC committee of each level select candidates who would elect local congresses and higher-level positions (Table I). The Chinese People's Political Consultative Conference (CPPCC) coordinates the eight registered minor parties[28] and the Communist Party of China.

In China's political system, each of the above four political systems is part of the governing power of the country. Therefore, if a person is a government official, a member of the Communist Party of China or the eight other registered minor parties, or a member of the NPC, this person will have political power in China. Meanwhile, China does not strictly regulate the revolving door in politics. Government officials and political party members are usually appointed to be company executives by the higher-level departments of governments or parties and vice versa. These officials or party members can also create their own companies independently or together with other people.

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[27] *South China Morning Post*, "How the Chinese Government Works."

[28] The minor parties include the Revolutionary Committee of the Chinese Guomindang; the China Democratic League; the China Democratic National Construction Association; the China Association for Promoting Democracy; the Chinese Peasants' and Workers' Democratic Party; the China Party for Public Interest (China Zhi Gong Dang); the Jiusan Society; and the Taiwan Democratic Self-Government League.

These company executives who used to be government officials, political party members, or NPC members can easily maintain their relationships with the governing powers, thus allowing their companies to benefit from government policies more than companies that lack executives with comparable connections. This explains my rationale for using this information as a measure of the political connectedness of publicly listed firms.

In the meantime, government officials have different levels of power depending on the specific system they work in and the specific level they work at. Political power in the country monotonically decreases as it becomes more decentralized. For example, government officials will have more political power if they are provincial-level officials than if they are city-level officials. And on the same level (e.g., the provincial level), if a person is a government official or a member of the Communist Party of China, then that person will have more political power than a member of the eight other registered minor parties or the NPC. Therefore, company executives will have different political connections and thus different amounts of political power according to the positions they used to hold before joining their companies. I will discuss this concept in more detail in Section 4.2, which focuses on the construction of the political connection variable.

3.3   **Literature Review and Predictions**

3.3.1   **Political Connections and Firm Performance**

International studies focused on political connections among firms have found that a firm with government ties has an easier time getting support from the government than firms that lack those connections. Shleifer and Vishny (1994) have shown that politicians would take rents generated by connections, and firm value would increase when marginal benefits of connections surpass marginal costs. Fisman (2001) studied rent valuation for a group of Indonesian firms,

which are highly involved in the economic activities. He found that well-connected firms were hurt more than less-connected firms, when there were adverse rumors about Suharto's health. He concluded that the value of well-connected firms may largely derived from political connections. He believes that this finding could be applied to many other countries, such as Bangladesh, China, India, Nigeria, Pakistan, and Russia. Faccio (2006) discovered a significant increase in corporate value and stock price impact whenever a businessperson was elected as prime minister and whenever a large shareholder entered politics.

A few studies have also looked specifically at the political connections of Chinese companies, with most of them finding that politically connected firms take advantage of their closer relationships with the government. Chan, Dang, and Yan (2012) found that there is no financing constraints for politically connected firms, whereas nonpolitically connected firms have significant constraints. Cull, Li, Sun, and Xu (2015) examined the role of firms' government ties—identifiable by government intervention in CEO appointments and state ownership status—and demonstrate that government connections are associated with substantially less severe financial constraints. Chen, Li, Luo, and Zhang (2017) found that there is an inverted U-shaped relation between political connection and firm value: firm value increased at the low level of connection but started to decrease at the high level.

3.3.2 **Panel Vector-Autoregression Model**

For many datasets, ordinary least squares with fixed effects has been widely used to estimate the impact of one variable on another. However, when the lagged dependent variable must be included on the right-hand side, a Nickell bias issue will occur (Nickell, 1981). To solve the

Nickell bias, researchers have been increasingly using PVAR models in applied research to deal with panel data.

Head, Lloyd-Ellis, and Sun (2014) used a PVAR model to estimate the impact of income shocks on the short-run dynamics of house prices, home sales, and construction in the U.S. They mention in their paper that they used a PVAR model for three reasons. First, it outperforms other standard generalized method of moments (GMM) estimators when endogenous variables are persistent. Second, its asymptotic properties have been extended to the PVARs. Finally, the fixed effects estimator has exhibited a finite-sample bias for samples with similar dimensions to theirs.

Ceh Casni, Dumicic, and Tica (2016) studied the impact of housing prices and income on consumption behavior in multiple European countries during 2001-2012 using the PVAR approach. They found that the impact of housing wealth shock on the personal consumption is initially positive but short-lived.

Recent research that has also been frequently referenced comes from Abrigo and Love (2015). In this study, they discuss the context of using a PVAR model in detail, the model selection, model estimation, and inferences about PVAR models in a GMM framework. In addition, they execute a set of Stata programs and use standard Stata datasets to illustrate the PVAR package of programs.

3.3.3 **Contribution and Theoretical Predictions**

Although some studies have investigated the different impacts of political connections on the firm performance of different types of firms, they all use state ownership as a proxy for the political relationships between firms and the government. This paper instead, and for the first time to my knowledge, uses political connections as a proxy for political relationships. Furthermore, no

previous research has focused on detecting the impact of a continuous political connection variable on firm behavior. This research is the first of its kind to combine a continuous political connection variable, a fixed effect model, and a PVAR model to study this relationship for China's listed companies.

Based on the theories and literature discussed above, I arrived at the following predictions about the firm behavior of listed companies in China. Compared to a lower political connection score, firm-year observations that have higher political connection scores mean the relevant firms will benefit more from their closer relationships with different levels of government, thus resulting in higher leverages, higher investments, and higher profits because they face fewer credit constraints. Receivables and sales are ambiguous because a higher political connection score means the firms might sell more to governments but also maintain higher receivables since they will likely not get paid back right after a sale. In the meantime, the cash stock will also be ambiguous because firms with higher political connection scores might have higher cash stock to maintain better liquidity or might reflect lower cash stock since they don't have much financial constraint.

3.4 **Data**

3.4.1 **Financial Statement**

The dataset used in this study includes all listed companies in China's two stock markets: the Shanghai and Shenzhen Stock Exchanges. The data comes from the CSMAR, which is produced by the GTA Research Service Centre (GTA Information Technology Co., Ltd.). This dataset covers all the information from 2003 to 2012 for 2,326 firms and includes 15,942 firm-

year observations. To match it with the data used to establish political connections, I use "end of year" values for all the financial statement variables.[29]

3.4.2 **Measurement of Political Connections**

The data used to determine the presence of political connections comes from the Wind Economic Database established by Wind Information Co., Ltd. (Wind Info), from Shanghai, China (personal résumés related to political connections for board members were all manually sorted).[30]

After collecting these résumés, I read through them to check whether each board member had a background as a government official or a member of the NPC or the CPPCC.

The political backgrounds of senior executives can be categorized into the following groups. First, there are people who used to be nongovernment department officials, for example, as an NPC member or CPPCC member. Second, there are people who were government officials. The first group has less political power than the second group in general. There are strict administrative levels, ranging from ordinary clerks to national-level officials, in China's administrative system. Therefore, I scored the political connections of senior executives according to the administrative levels they used to hold. The details are as follows.[31]

3.4.2.1 **Nongovernment Department Officials**

- National-level NPC member or CPPCC member: 6 pts

- Provincial-level NPC member or CPPCC member: 4 pts

- City-level or lower-level NPC member or CPPCC member: 2 pts

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[29] Specifically, the "end of the year" is December 31 of each year.
[30] According to the "People's Republic of China Company Law," Article 109, a company limited by shares shall have 5–19 board members.
[31] See Table II for the structure of the political system.

3.4.2.2 **Government Officials**

- Vice-ministerial (vice-provincial) level and upper: 7 pts

- Bureau level: 6 pts

- Vice-bureau level: 5 pts

- County level: 4 pts

- Vice-county level: 3 pts

- Ke level: 2 pts

- Vice-ke level and lower: 1 pt

After scoring the senior executives' political connections, I constructed the political background index for every company. First, I aggregated the scores of every senior executive and obtained the total political connection score for all the executives from one company. After that, considering the important roles of CEOs and board presidents, I added up the scores of the CEO and board president of each company to obtain the political connection score of the company's top decision makers. Meanwhile, I also standardized the political connection score for all the companies, making one the highest score, and adjusted the scores of all the other companies in proportion: [pc index = (x - minimum) / maximum].

In terms of different levels of government, there are three levels of them for my research, and the stimulus plan actually involved all three of them. These three different levels of government had control over the flow of government funds during the financial crisis. Many of the funds were allocated through banking loans from different levels of banks instead of through

direct government subsidies. This may be the reason why subsidies were not very significantly impacted by the stimulus plan, while leverage was very significant.

3.4.3 **Descriptive Statistics**

Figure 29 averages the political connection scores of all the firms in the data across time (in years). The political connection scores increase from 2005 but decrease after 2008, which was the peak for the entire period. One reason for this phenomenon is that after the financial crisis, many new companies were listed on China's two stock markets. Whereas no more than 100 new companies were listed before 2009, since 2010 the numbers have grown significantly: in the period 2010–2012, the number of new listed companies each year has been 348, 281, and 155, respectively. The two most important reasons for this are the accelerated pace of initial public offering approval and the launch of the Growth Enterprise Market in October 2009. Among these new firms, many of them did not have any political connections at the beginning of their listing on the stock markets.

Table XXXI shows the definitions of and basic statistics for the main variables. As indicated in the previous section, political connectedness was determined using the WIND Economic Database. Sales, net receivables, investment, leverage, cash stock, profitability, and total assets were the main factors of interest and therefore the dependent variables of the PVAR model in the research. The raw data values were taken from the CSMAR, which is produced by the GTA Research Service Centre (GTA Information Technology Co., Ltd.). To make the data consistent throughout the research, I capitalized the financial indicators and divided each of them by the number of total assets.

3.5   **Identification Strategy**

In this section, I empirically answer the question of how political connections impact the performance of China's listed companies. To explain this approach, I first present in Figures 28 general trends of leverage, investment, cash stock, receivables, sales, and profit, as well as political connections over time.

3.5.1   **Fixed Effects Model**

The model presented here is heavily inspired by Abrigo and Love (2015). First, I considered a *k*-variate panel data of order *p* with firm fixed effects in Equation (1).

$$Y_{it} = Y_{it-1}A_1 + Y_{it-2}A_2 + \cdots + Y_{it-P+1}A_{P-1} + X_{it}B + u_i + e_{it} \quad (1),$$

$$i \in \{1,2, \dots, N\}, t \in \{1,2, \dots, T\}$$

where Y_{it} is the dependent variable; X_{it} is the exogenous variable; and u_i and e_{it} are the firm fixed effects and idiosyncratic errors. In the equation, $A_1,\dots, A_p$ and *B* are parameters to be estimated. Here I assume $E[e_{it}] = 0$ and $E[e'_{it}e_{it}] = 0$.

However, with the lagged dependent variables in the right-hand side of the fixed effects model above, estimates would be biased even with a large *N* (Nickell, 1981). And in this context, I have 10 years of observations so that $T = 10$.

3.5.2   **Generalize Method of Moments Estimation**

To solve the Nickell bias, I used a PVAR model to estimate the impact of political connections on firm performance.

As proposed by Arellano and Bover (1995), forward orthogonal deviation was used to avoid the biases caused by the first-difference transformation. To minimize data loss, it subtracts the average of future observations, rather than using deviations from past observations,.

To improve efficiency, I can include a longer set of lags as instruments. But this process might significantly reduce observations. To solve the problem, Holtz-Eakin, Newey, and Rosen (1988) created instruments using future observations, with missing observations substituted with zero.

Assuming that coefficients on the lag of variable m are jointly zero for variable n, I use Granger causality tests for the GMM estimate of A and its covariance matrix.

In my estimation, I have six dependent variables: leverage, investment, cash stock, receivables, sales, and profit, such that $k = 6$ for the equations. To run the regressions above, first, I generated the residuals of these six variables by regressing them on year dummies because time fixed effects need to be manually removed before estimation, while firm fixed effects will be dealt with automatically (Love and Abrigo, 2016). Second, I ran the PVAR model using profitability and leverage residuals, while taking political connections as the exogenous variable.[32]

3.6   **Results**

Based on the model selection criteria[33], the first order PVAR is the preferable model. According to Table XXXII, it has the smallest MBIC, MAIC, and MQIC. It also has the biggest value for a J-test. Therefore, I fit the first order PVAR model using GMM estimation from the PVAR model.

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[32] See Abrigo and Love (2015) for model selection criteria and impulse response function (IRF).
[33] See Abrigo and Love (2015) and Andrews and Lu (2001).

The regression results of the first order PVAR model are shown in Table XXXIII. It is clear from the result table that there are only 4,693 observations, which amount to significantly less than the full sample available in the data. This is because the PVAR model by default drops from estimation any observation with missing data. To increases the estimation sample and improve estimation efficiency, I use "GMM-style" instruments, whose lags with missing values are replaced with zeroes.

Table XXXIV displays the regression results from the GMM-style PVAR model. The top row has the group of six main dependent variables. Then within the result table, the first six rows are the coefficients of the lagged dependent variables on the right-hand side of Equation (1). On the diagonal line from the top left to the bottom right, the coefficients are the impacts of the lagged dependent variables on their current values, which are all significant. For example, the coefficient of lagged sales on current sales is 0.708, meaning that a 1 percent increase in lagged sales will increase current sales by 0.708 percent. In the same way, a 1 percent increase in lagged sales will decrease current net receivables by 0.009 percent, while a 1 percent increase in lagged net receivables will insignificantly decrease current sales by 0.002 percent.

The most important information comes from the seventh row of coefficients in the table, which are the impacts of the exogenous variable, political connections, on the list of dependent variables. A 1 percentage point increase in political connections will decrease sales, investment, and leverage by 0.215 percent, 0.414 percent, and 0.137 percent, respectively, while increasing net receivables, cash, and profit by 0.133 percent, 0.075 percent, and 0.085 percent, respectively. Among these estimates, the impacts on net receivables, investment, and leverage are significant.

The test results of the Granger causality in Table XXXVII show that the causal relationship link of the Granger-causes is at the confidence levels.

Prior to estimating IRFs and FEVDs, I checked the stability of the estimated PVAR. Table XXXVIII and Figure 30 confirm that the estimate is stable. In Figure 30, all the eigenvalues lie within the unit circle, so the PVAR satisfies the stability condition.

The most important results are shown in Figure 31. I calculated the implied IRF and FEVD, while IRF confidence intervals were calculated using 200 Monte Carlo.

Figure 32 demonstrates the impacts of current shocks on political connections and how they affect future firm performance in terms of the important variables I identified. Based on the figure, 1 percentage point of positive current shock in political connections will have a 0.22 percentage point of negative impact on sales, a 0.13 percentage point of positive impact on net receivables, a 0.14 percentage point of negative impact on investment, a 0.14 percentage point of negative impact on leverage, a 0.08 percentage point of positive impact on cash, and a 0.09 percentage point of positive impact on net profit. Among these, the impacts on net receivables, investment, and leverage are significant, while the other impacts are insignificant. (The impact on net profit is barely significant.)

Thus, an increase in political connections will bring advantages to a firm in terms of profit, but it might hurt the firm's performance in leverage, investment, and sales. This evidence demonstrates that for a company that already has political connections with the government, increasing its political connections (within the firm) might not necessarily benefit its performance. Combined with the results in the last chapter (Chapter 2, using across-firm variations), I show that compared to firms that do not have any political connections, the politically connected firms will benefit more from their connections with different levels of government. However, increasing these political connections within a firm might not bring more advantages.

In practice, a firm might need to consider building its connections by hiring a board member who used to be a government official. This could bring advantages to the firm in contrast to its competitors. However, when a firm has already established political connections with the government, it must seriously consider whether to deepen these ties since the benefits of increasing political connections within a firm remain unclear.

For an economy as a whole, building up political connections could harm resource allocation and long-term economic growth. First, a firm has to spend money to hire former government officials to build its political connections. Although these firms might benefit from their ties to different levels of government, this does not justify the resource allocation since politically connected companies are not necessarily better-performing ones. Second, when a firm has already established its connections with the government, it might not be able to foster more benefits by increasing its level of political connectedness. Therefore, the resources the firms spend on hiring officials with government backgrounds and the resources allocated to politically connected firms are both misallocated resources in an economy.

3.7   **Robustness Check**

It is worrisome that political connections might be endogenous instead of exogenous. Therefore, I performed a robustness check that includes political connections as an endogenous variable in the dependent variable list.

The regression results are shown in Table XXXV, which demonstrates that including political connections as an endogenous variable does not make the results very different from those of the original model. For example, the impact of political connections on sales changes from -

0.215 to -0.301, while the impact on cash changes from 0.075 to 0.071. Both two estimates are consistently insignificant.

The detailed comparison between the results from the exogenous and endogenous political connection regressions are shown in Table XXXVI. In summary, none of the impacts of political connections on firm performance change signs: the estimates between both regressions remain positive or negative. Among these impacts, only the ones on net receivables and leverage change from being significant to insignificant. However, these changes in magnitude are not very big, with the largest change being from -0.141 to -0.088 (for investment).

Therefore, including political connections as an endogenous variable instead of an exogenous variable will change the regression results. But according to the robustness check, doing so will not change them (i.e., the impacts of the political connections on firm performance) very much.

3.8   **Conclusion**

This research evaluated the impact of political connections on firm performance using the PVAR identification strategy.

The empirical results show that 1 percentage point of positive current shock in political connections will have a 0.22 percentage point of negative impact on sales, a 0.13 percentage point of positive impact on net receivables, a 0.14 percentage point of negative impact on investment, a 0.14 percentage point of negative impact on leverage, a 0.08 percentage point of positive impact on cash, and a 0.09 percentage point of positive impact on net profit. Among these, the impacts on net receivables, investment, and leverage are significant, while the other impacts are insignificant.

According to the prediction made in Section 3.3, firm-year observations with higher political connection scores should have meant that these firms benefitted more from their closer relationships with governments, thus obtaining higher leverages, higher investments, and higher profits, while receivables, sales, and cash stock would be ambiguous. However, my findings illustrate that an increase in the political connections of a firm to the government will lead to both lower leverage and investment, while yielding higher profit as predicted. At the same time, receivables and cash will be higher, and sales will be lower. Some of these results are significant, and others are not.

To sum up, my findings are not consistent with many other existing research results in terms of the predictions concerning the impact of political connections on firm performance. One important reason for this difference is that this research only uses within-firm variations across years. Therefore, the research results in this chapter are also different from Chapter 2 of this dissertation, which used across-firm variations.

Ultimately, the findings show that an increase in political connections will bring advantages to a firm in terms of profit but might hurt its performance in leverage, investment, and sales.[34] This evidence demonstrates that for a company that already has political connections with the government, increasing its political connections (within the firm) might not necessarily improve its performance. Combined with the results in the last chapter (Chapter 2, using across-firm variations), I have shown that compared to firms that do not have any political connections, the politically connected firms will benefit from their ties to different levels of government. But increasing these political connections within a firm might not bring more advantages.

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[34] The theoretical reasons behind these pieces of evidence would benefit from further exploration in follow-up studies.

In practice, a firm might need to build its connections by hiring a board member who used to be a government official. This could bring advantages to the firm in contrast to its competitors. However, when a firm has already established political connections with the government, it must seriously consider whether to seek deeper ties since the benefits of increasing political connections within a firm remain unclear.

For an economy, building up political connections will harm resource allocation and long-term economic growth. First, a firm must spend money to hire previous government officials to build its political connections. Although these firms might benefit from their government ties, this will not justify the resource allocation since the politically connected companies are not necessarily better-performing ones. Second, when a firm has already established connections with the government, it might not be able to reap more benefits by increasing its level of political connections. Therefore, the resources the firms spend on hiring previous government officials and the resources allocated to the politically connected firms are both misallocated resources in an economy.

Figure 28.   Structure of stimulus package[35]

```
                    ┌─────────────────────────┐
                    │   Stimulus Package      │
                    │    4 Trillion RMB       │
                    └─────────────────────────┘
                      ╱                    ╲
                     ╱                      ╲
    ┌──────────────────────────┐    ┌──────────────────────────┐
    │   Central Government     │    │    Local Government      │
    │    1.18 Trillion RMB     │    │    2.82 Trillion RMB     │
    └──────────────────────────┘    └──────────────────────────┘
                   ╲                          │
                    ╲                         ▼
                     ╲              ┌──────────────────────────┐
                      ╲             │     Promote LGFV         │
                       ╲            │    mostly financed       │
                        ╲           │   with bank credits      │
                         ╲          └──────────────────────────┘
                          ╲                  ╱
                    ┌─────────────────────────────────┐
                    │            Firms                │
                    │  ↑ debts through direct loans   │
                    │  ↑ sales through signing contracts │
                    └─────────────────────────────────┘
```

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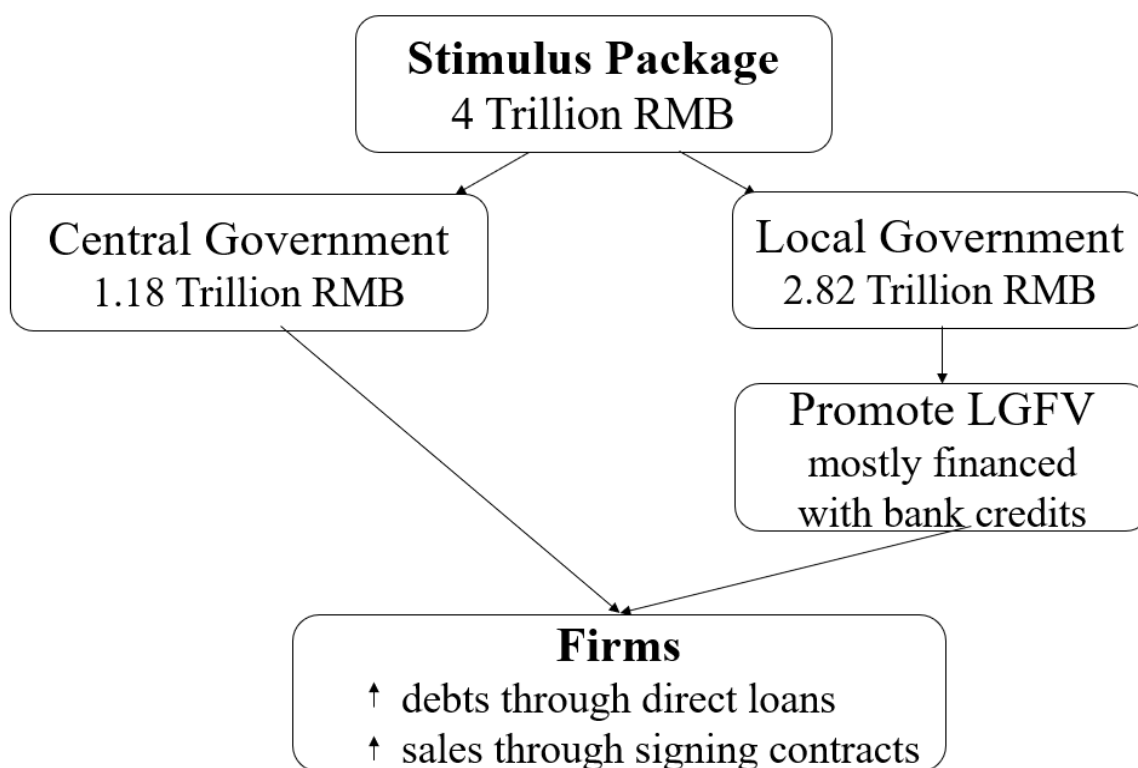
[35] Adapted from Cong, Gao, Ponticelli, and Yang (2018).

Figure 29.   Average political connection scores across years
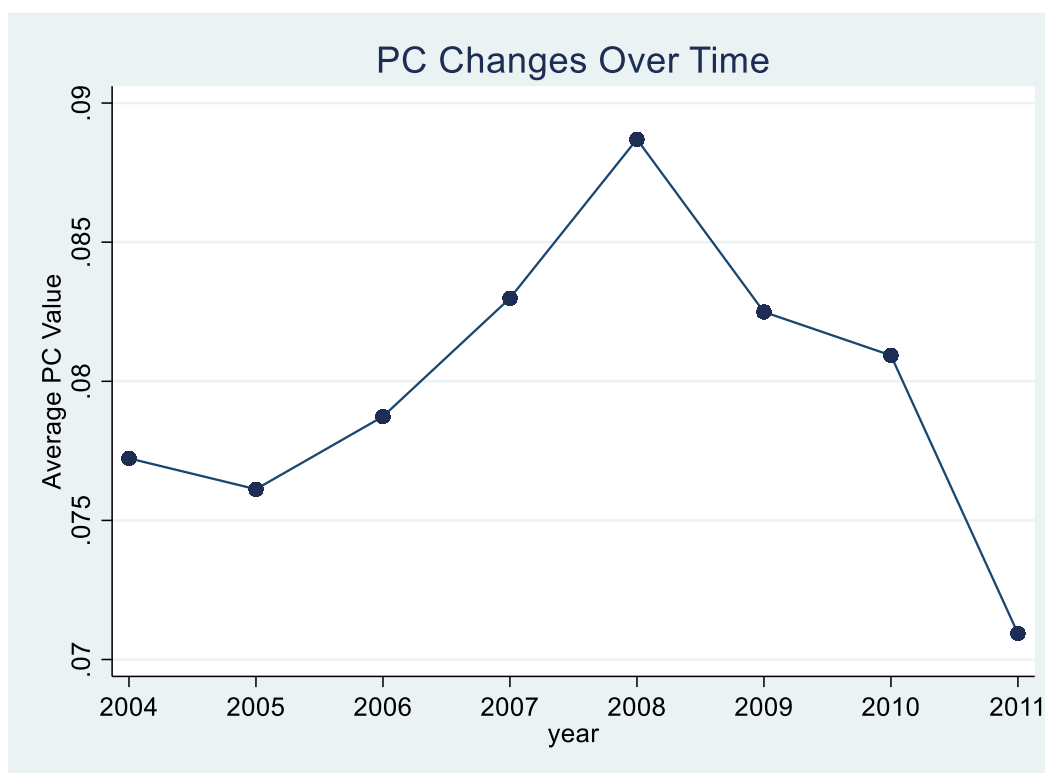
Figure 30.　　Graph of eigenvalues
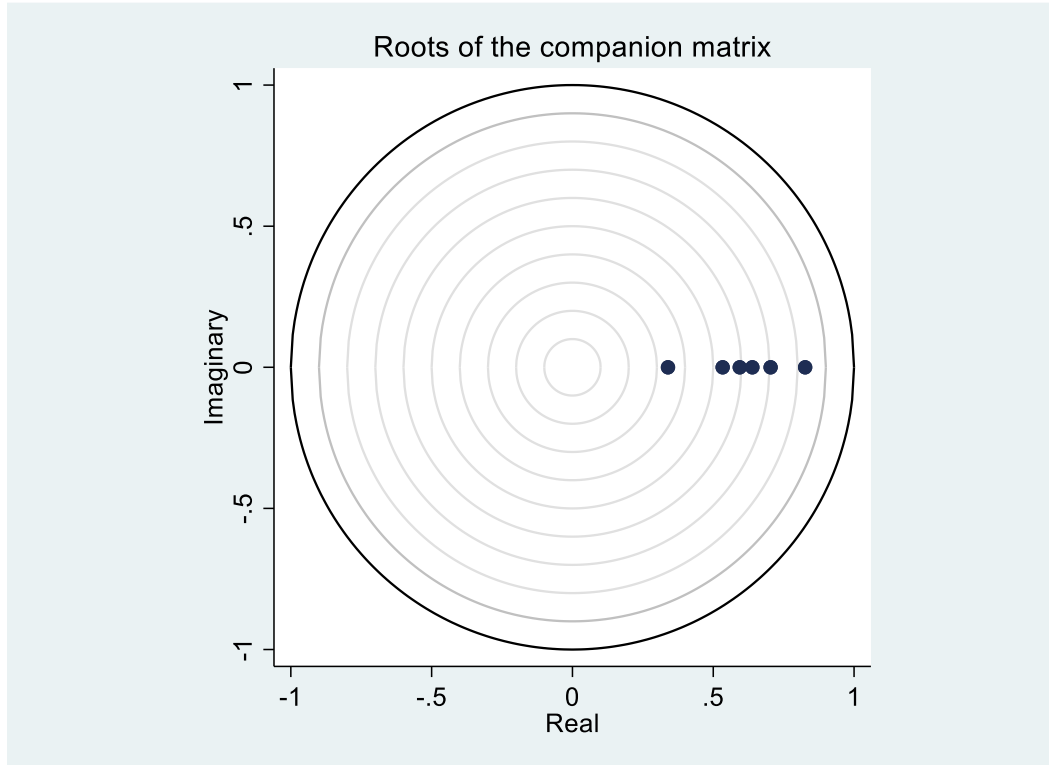
Figure 31.   Impulse response functions: Dynamic multipliers of political connections
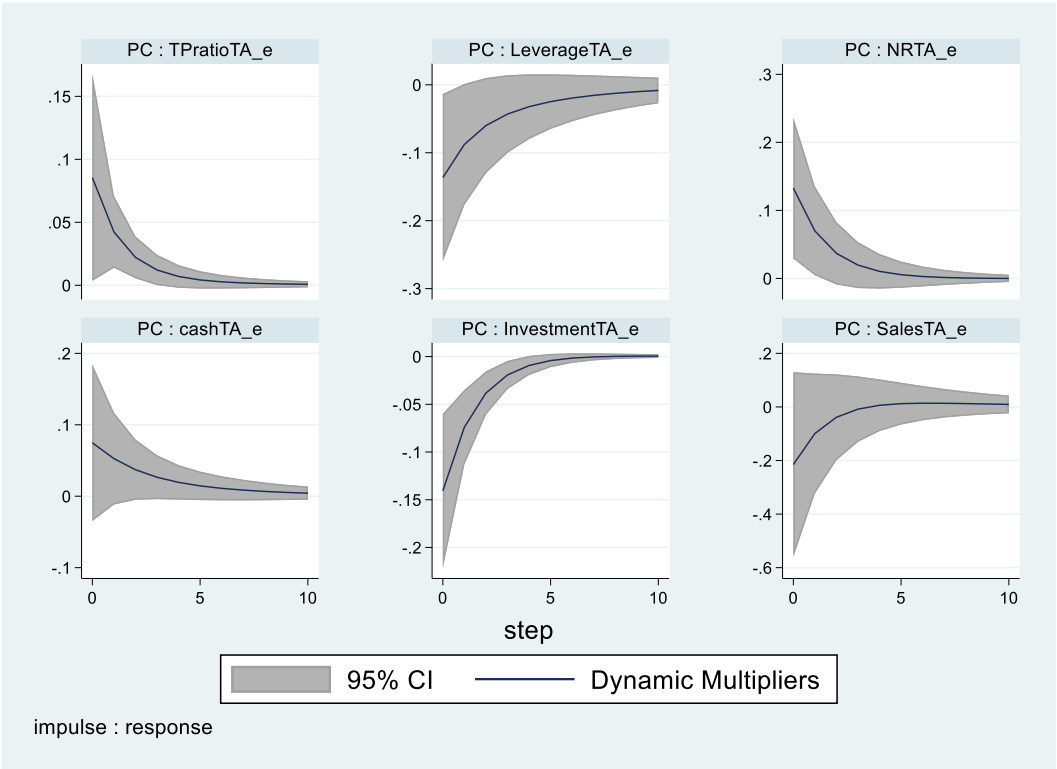
Table XXIX.   Government and Party Agencies (U.S. vs. China)

U.S.	China	
Government	**Government Communist Party**	**NPC CPPCC**
Federal	National	National
State	Province	Province
County	City	City
City	County	County
Town	Village	Village

* NPC: National People´s Congress

* CPPCC: Chinese People´s Political Consultative Conference

Table XXX.   Construction of the Political Connection Variable

U.S.	China			
Government	**Government**		**NPC and CPPCC**	
Federal	National	7	National	6
Federal	Vice-National	7	National	6
State	Province	7	Province	4
State	Vice-Province	7	Province	4
County	City	6	City	2
County	Vice-City	5	City	2
City	County	4	County	2
City	Vice-County	3	County	2
Town	Village	2	Village	2
Town	Vice-Village	1	Village	2

* NPC: National People´s Congress

* CPPCC: Chinese People´s Political Consultative Conference

Table XXXI.   Summary Table

	Name	Obs.	Mean	S.D.	1st	5th	50TH	95th	99th
1	Political Connection	9,059	0.080	0.105	0.000	0.000	0.040	0.293	0.453
2	Sales	9,059	0.705	0.488	0.091	0.173	0.590	1.718	2.483
3	Receivables	9,059	0.175	0.139	0.010	0.025	0.142	0.437	0.675
4	Investment	9,059	0.072	0.096	0.000	0.001	0.036	0.270	0.470
5	Leverage	9,059	0.220	0.151	0.000	0.000	0.214	0.482	0.597
6	Cash	9,059	0.162	0.118	0.010	0.029	0.133	0.398	0.576
7	Profitability	9,059	0.044	0.067	-0.182	-0.055	0.039	0.148	0.231
8	Total Assets	9,059	8.50E+09	4.64E+10	2.95E+08	5.53E+08	2.35E+09	2.48E+10	1.03E+11

1. Political Connection = (x - Minimum) / Maximum

2. Sales = Operating Revenue / Total Assets

3. Receivables = (Net Account Receivable + Net Prepayments + Net Other Receivable) / Total

    Assets

4. Investment = (Short-Term Investment + Long-Term Investment) / Total Assets[36]

5. Leverage = (Long-Term Debts + Short-Term Borrowings) / Total Assets

6. Cash = Cash and Cash Equivalents / Total Assets

7. Profitability = Net Profit / Total Assets

8. Total Assets

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[36] Short-term and long-term investments include trading financial assets, net short-term investments, available-for-sale financial assets, held-to-maturity investments, net long-term equity investments, and net long-term investments.

Table XXXII. Model Selection

No. of obs = 4666
No. of panels = 1127
Ave. no. of T = 4.140

lag	CD	J	J pvalue	MBIC	MAIC	MQIC
1	0.999967	187.6213	0.0000032	-724.7689	-28.37867	-273.309
2	0.9999521	101.0343	0.0136131	-507.2258	-42.96569	-206.2525
3	0.9998874	38.31158	0.3650246	-265.8185	-33.68842	-115.3319

Table XXXIII. First-Order PVARs with Political Connection: 4 Lags of Instruments

	(1) Sales	(2) Receivables	(3) Investment	(4) Leverage	(5) Cash	(6) Profit
Sales_lag1	0.461***	-0.010	0.028*	-0.049*	0.030	0.003
	(0.085)	(0.012)	(0.012)	(0.019)	(0.018)	(0.010)
Receivables_lag1	-0.031	0.291***	(0.012)	0.011	0.070	-0.007
	(0.114)	(0.034)	(0.025)	(0.040)	(0.036)	(0.025)
Investment_lag1	-0.317	0.011	0.421***	0.116*	-0.006	-0.090*
	(0.166)	(0.037)	(0.065)	(0.057)	(0.060)	(0.041)
Leverage_lag1	-0.408**	0.015	0.015	0.693***	-0.102*	-0.060*
	(0.132)	(0.031)	(0.029)	(0.051)	(0.045)	(0.030)
Cash_lag1	-0.224	-0.044	-0.008	-0.057	0.676***	0.052
	(0.144)	(0.034)	(0.031)	(0.054)	(0.057)	(0.032)
Profit_lag1	-0.212	0.068*	-0.022	0.149**	0.052	0.288***
	(0.139)	(0.027)	(0.029)	(0.046)	(0.045)	(0.038)
Political Connection	-0.262	0.256*	-0.047	-0.169	-0.230	-0.031
	(0.344)	(0.008)	(0.079)	(0.128)	(0.124)	(0.078)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
N =	4,693					
No. of panels =	1,131					
Ave. no. of T =	4.149					

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table XXXIV. First-Order PVARs with Political Connection (GMM): 4 Lags of Instruments

	(1) Sales	(2) Receivables	(3) Investment	(4) Leverage	(5) Cash	(6) Profit
Sales_lag1	0.708***	-0.009	0.007	-0.046***	0.021	0.007
	(0.062)	(0.011)	(0.009)	(0.012)	(0.012)	(0.007)
Receivables_lag1	-0.002	0.668***	0.029**	0.029	0.001	-0.047***
	(0.044)	(0.027)	(0.010)	(0.017)	(0.014)	(0.013)
Investment_lag1	-0.356***	0.129***	0.540***	0.051	0.025	-0.108***
	(0.102)	(0.035)	(0.045)	(0.037)	(0.035)	(0.026)
Leverage_lag1	-0.249***	0.043	-0.007	0.754***	-0.066**	-0.044**
	(0.065)	(0.025)	(0.015)	(0.026)	(0.022)	(0.017)
Cash_lag1	-0.072	0.070***	0.028*	-0.054*	0.620***	-0.007
	(0.055)	(0.020)	(0.014)	(0.021)	(0.025)	(0.014)
Profit_lag1	-0.297***	-0.024	-0.042*	0.148***	0.061*	0.345***
	(0.086)	(0.030)	(0.019)	(0.030)	(0.029)	(0.028)
Political Connection	-0.215	0.133*	-0.141**	-0.137*	0.075	0.085
	(0.174)	(0.055)	(0.044)	(0.068)	(0.056)	(0.044)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
N =	9,059					
No. of panels =	1,583					
Ave. no. of T =	5.723					

Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Table XXXV. First-Order PVARs with Endogenous Political Connection (GMM): 4 Lags of

Instruments

	(1) PC	(2) Sales	(3) Receivables	(4) Investment	(5) Leverage	(6) Cash	(7) Profit
PC_lag1	0.630***	-0.301	0.092	-0.088*	-0.098	0.071	0.052
	(0.060)	(0.157)	(0.052)	(0.037)	(0.057)	(0.049)	(0.040)
Sales_lag1	-0.012	0.695***	-0.012	0.009	-0.043***	0.019	0.005
	(0.006)	(0.058)	(0.011)	(0.009)	(0.012)	(0.011)	(0.007)
Receivables_lag1	0.015	-0.002	0.677***	0.025**	0.028	-0.001	-0.045***
	(0.009)	(0.043)	(0.026)	(0.010)	(0.016)	(0.013)	(0.013)
Investment_lag1	-0.017	-0.358***	0.125***	0.559***	0.047	0.018	-0.111***
	(0.022)	(0.102)	(0.034)	(0.043)	(0.037)	(0.035)	(0.026)
Leverage_lag1	-0.003	-0.259***	0.031	0.000	0.752***	-0.073***	-0.048**
	(0.014)	(0.062)	(0.024)	(0.014)	(0.025)	(0.021)	(0.016)
Cash_lag1	0.028**	-0.079	0.085***	0.020	-0.053**	0.606***	-0.006
	(0.011)	(0.052)	(0.019)	(0.013)	(0.020)	(0.024)	(0.013)
Profit_lag1	-0.006	-0.292***	-0.020	-0.047*	0.145***	0.061*	0.348***
	(0.016)	(0.084)	(0.029)	(0.019)	(0.030)	(0.028)	(0.027)
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N =		9,059					
No. of panels =		1,583					
Ave. no. of T =		5.723					

Standard errors in parentheses
* p<0.05, ** p<0.01, *** p<0.001

Table XXXVI. Results Comparison (Political Connection: Exogenous vs. Endogenous)

	PC Exogenous	PC Endogenous
Sales	-0.215	-0.301
	(0.174)	(0.157)
Receivables	0.133*	0.092
	(0.055)	(0.052)
Investment	-0.141**	-0.088*
	(0.044)	(0.037)
Leverage	-0.137*	-0.098
	(0.068)	(0.057)
Cash	0.075	0.071
	(0.056)	(0.049)
Profitability	0.085	0.052
	(0.044)	(0.040)

Table XXXVII.   Granger Causality Wald Test

Equation \ Excluded	chi2	df	Prob > chi2
SalesTA_e			
NRTA_e	0.001	1	0.971
InvestmentTA_e	12.284	1	0.000
LeverageTA_e	14.546	1	0.000
cashTA_e	1.716	1	0.190
TPratioTA_e	12.043	1	0.001
ALL	34.87	5	0.000
NRTA_e			
SalesTA_e	0.736	1	0.391
InvestmentTA_e	13.912	1	0.000
LeverageTA_e	2.947	1	0.086
cashTA_e	11.702	1	0.001
TPratioTA_e	0.661	1	0.416
ALL	28.588	5	0.000
InvestmentTA_e			
SalesTA_e	0.586	1	0.444
NRTA_e	8.83	1	0.003
LeverageTA_e	0.253	1	0.615
cashTA_e	4.144	1	0.042
TPratioTA_e	4.78	1	0.029
ALL	16.703	5	0.005
LeverageTA_e			
SalesTA_e	14.19	1	0.000
NRTA_e	2.955	1	0.086
InvestmentTA_e	1.83	1	0.176
cashTA_e	6.263	1	0.012
TPratioTA_e	24.306	1	0.000
ALL	41.86	5	0.000
cashTA_e			
SalesTA_e	3.384	1	0.066
NRTA_e	0.006	1	0.937
InvestmentTA_e	0.513	1	0.474
LeverageTA_e	8.952	1	0.003
TPratioTA_e	4.592	1	0.032
ALL	35.648	5	0.000
TPratioTA_e			
SalesTA_e	1.045	1	0.307
NRTA_e	12.861	1	0.000
InvestmentTA_e	16.765	1	0.000
LeverageTA_e	6.964	1	0.008
cashTA_e	0.277	1	0.599
ALL	49.439	5	0.000

Table XXXVIII.   Eigenvalue Stability Condition

Eigenvalue		
Real	Imaginary	Modulus
0.826399	0	0.826399
0.7036878	0	0.7036878
0.6387674	0	0.6387674
0.5942019	0	0.5942019
0.533462	0	0.533462
0.339252	0	0.339252

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