Essays on the Political Economy of Development

Erqi GE

TESI DOCTORAL UPF / year 2020

THESIS SUPERVISOR
Maria Petrova
Department of Economics and Business

upf. Universitat Pompeu Fabra Barcelona

To my parents,

Acknowledgement

My deepest gratitude goes first to my supervisor, Professor Maria Petrova, who guided my research in the past six years. It is hardly possible to finish the thesis without her. Once I was struggling to find out the research topics and she always encouraged me to look for as many ideas as I can and keep talking with her. Although many of these ideas did not work out in the end, she was never tired of discussing them with me. I owe too much to her patience, trust and continuous support.

I am grateful to Professor Rosa Ferrer, for all her suggestions about research and living in Spain. She shared her own academic experience with me and gave me a lot of career advice. To me she is a respectful researcher and at the same time an approachable peer. I also would like to thank Professor Albrecht Glitz for his comments on my thesis and help in my PhD study. My thanks also go to Professor Larbi Alaoui, Jose Apesteguia, Fernando Broner, Christian Brownless, Julian di Giovanni, Ruben Durante, Ruben Enikolopov, Manuel Garcia-Santana, Libertad González, Joan Monràs, Dávid Nagy, Giacomo Ponzetto, Alessandro Tarozzi, Victoria Vanasco and all participants in the LPD Breakfast seminar and International Lunch seminar, for all their helpful comments and criticisms provided in the different stages of my study. My appreciation also goes to Laura Agustí, Marta Araque, Marta Lesdesma and Carlota Manchon for their excellent administrative help.

I also want to thank my friends in UPF. Time spending with them makes my life in Barcelona colorful and memorable. I really enjoyed the moments in the office and bars with my office mates in 20.154: Thomas,

Martí, Giacomo and Mehregan. I have also benefited a lot from the interactions with other friends in UPF and BGSE: Anas, Daniel, Dante, Fernando, Flavio, Konstantin, Milena, Nikolas, Sebastian, and Sebastien. I also want to thank my Chinese friends in Barcelona: Donghai, Guohao, Haozhou, Jianxing, Jingjing, Lang, Renbin, Rui, Shangdi, Shangyu, Shengliang, Shi, Tingting, Tongbin, Wanli, Xinghua, Yan, Yifei, Yimei, Yining, Yiru, Yucheng and Zidong. Although we always talk about the inferior quality of the Chinese food in Barcelona, having lunch and dinner with you in the Chinese restaurants after work is still one of the happiest moment during these years.

Finally I want to thank to my parents. No words can express my gratitude to you. It is my fortune to grow up in such a family. You tell me not to forget to be happy and always stay by my side. Your accompany and love from the other side of the world is the biggest consolation in this hard journey.

Abstract

This thesis consists of three chapters about political economy in China. The first chapter focuses on the interregional trade. Taking advantages of direct allocations of regional leaders by central government in China, this chapter shows the social interactions between local leaders would lower the trade barrier and increase the interregional trade volumes, while the promotion tournaments would lower the bilateral trade. The second chapter looks at financial market. With the standard method of event study, this chapter shows investors in mainland China stock market are super sensitive to the public speeches of China's Premier Wen Jiabao, about the real estate industry, but investors in the Hong Kong stock market are not influenced at all. Further evidence suggests this reaction to public speeches is due to the political implications, contained in the speeches, but not new information about fundamental change. The third chapter discusses the political participation of Chinese citizens. Using the linguistic difference between the dialects in the birthplace and standard Mandarin (Putonghua) as the instruments for the language ability of individuals, this chapter shows people speaking better Putonghua participate less in the local elections. Regarding mechanisms, we show this is not because citizens are satisfied with the local officials. At the meantime, people with better Putonghua spend more time on media and are more likely to realize the severity of social problems.

Resum

Esta tesis consta de tres capítulos sobre economía política en China. El primer capítulo se centra en el comercio interregional. Aprovechando las asignaciones directas de los líderes regionales por parte del gobierno central en China, este capítulo muestra que las interacciones sociales entre los líderes locales reducirían la barrera comercial y aumentarían los volúmenes de comercio interregional, mientras que los torneos de promoción reducirían el comercio bilateral. El segundo capítulo analiza el mercado financiero. Con el método estándar de estudio de eventos, este capítulo muestra que los inversores en el mercado de valores de China continental son muy sensibles a los discursos públicos del primer ministro de China, Wen Jiabao, sobre la industria de bienes raíces, pero los inversores en el mercado de valores de Hong Kong no están influenciados en absoluto. La evidencia adicional sugiere que esta reacción a los discursos públicos se debe a las implicaciones políticas, contenidas en los discursos, pero no a nueva información sobre el cambio fundamental. El tercer capítulo discute la participación política de los ciudadanos chinos. Utilizando la diferencia lingüística entre los dialectos en el lugar de nacimiento y el mandarín estándar (Putonghua) como instrumentos para la capacidad lingüística de las personas, este capítulo muestra que las personas que hablan mejor el putonghua participan menos en las elecciones locales. En cuanto a los mecanismos, mostramos que esto no se debe a que los ciudadanos no estén satisfechos con los funcionarios locales. Mientras tanto, las personas con mejor Putonghua pasan más tiempo en los medios y tienen más probabilidades de darse cuenta de la gravedad de los problemas sociales.

Preface

The main goal of this thesis is to understand the social and economic influence of political institutions in China. This thesis is consisting of three chapters. The first chapter focuses on how the local politicians would influence interregional trade. Taking advantages of direct allocations of regional leaders by central government in China, this chapter studies how the career incentives and social networks of local leaders influence interregional trade in China. Using the data on inter-regional railway cargo from 2001 to 2015, I find that, social networks of local leaders help to reduce trade costs and increase the trade volumes between connected regions. At the same time, promotion tournaments between local leaders create trade frictions and can lead to lower bilateral trade between competitors. In terms of the mechanisms, I study the content of articles published in government-owned newspapers. This analysis reveals that connections or competition between local leaders also affect the number of articles on leaders' official visits to other regions, providing direct evidence of the efforts of local leaders to push interregional economic cooperation. Also, I find that local leaders with greater career concerns are more likely to put into place import restrictions to help local firms grow.

The second chapter looks at how the political sensitivity would affect the financial market. Investors' expectations shape stock market variability, being sensitive to new information released. However, the effect of newly released information depends on how investors interpret it, which in turn, can depend on the political culture. Different cultural backgrounds can lead to different interpretations of the same message, even if the message recipients are profit motivated. Using the data from the public speeches of

Premier in China, Wen Jiabao, about real estate industry, this chapter finds investors in mainland China stock market are sensitive to these political speeches. They change their investment decisions immediately, which are reflected both in the stock prices and transaction volumes. At the same time, similar firms traded in Hong Kong stock market are not influenced by Wen's speeches at all, although these firms, listed in Hong Kong stock market, derive large share of profits from the housing market in China. Further, I find both mainland and Hong Kong investors are equally sensitive to the policy announcements, relevant to their businesses. This implies that the stock market reaction to public speeches in China is due to the political implications, contained in the speeches, but not new information about fundamental change.

The third chapter studies how the standardization of languages would influence political participation of Chinese citizens. Using the linguistic difference between the dialects in the birthplace and standard Mandarin (Putonghua) as an instrument for individual language proficiency, this chapter shows that people who can speak better Putonghua are less likely to participate in political activities, as shown by the lower turnout in the county-level elections. Regarding the mechanisms, we show people with better skills in Putonghua do not trust local officials more and are less likely to seek for support from other government departments or courts when facing unfair treatment, suggesting the low participation does not come from the satisfaction with the government institutions. At the meantime, people with better Putonghua skills generally spend more time on TV and radios, and believe there are more social problems in the society.

Contents

Chapter 1

SOCIAL NETWORKS, CAREER INCENTIVES AND INTERREGIOAL TRADE IN CHINA

1.1 Introduction

Trade is crucial to a country's economic development and economists acknowledge that free movement of resources in the domestic market helps in achieving the economy of scale (Ramondo, Rodríguez-Clare and Saborío-Rodríguez, 2016). However, given the benefits of frictionless intra-national trade, domestic trade barriers are still observed even in countries with low levels of decentralization and strong central government. [1]

---

[1] In Canada, consumers were prohibited from buying wines directly from other provinces until 2014, *Wall Street Journal*.

There is much literature on international trade costs and their influence on welfare; however, less attention is paid to what influences interregional trade. Moreover, there is very little evidence on whether interregional trade is affected by political interactions. This paper aims to fill in this gap.

In this paper, we consider the impact of two understudied factors: how career incentives and social networks of regional leaders influence interregional trade. Previous work suggests that the motivation to stay in office plays an important role in politicians' policy decisions.[2] However, the effect of career incentives on interregional trade is not obvious. On the one hand, in order to achieve a promotion, local leaders could cooperate and trade more with other regions by complying with the will of the central government to make the national market integrated.[3] On the other hand. local leaders have less incentive to implement policies beneficial to regions governed by their competitors (e.g., lowering the interregional trade barrier), especially when their moving up in politics is closely related with local development and the seats for promotion are limited.

Social networks among regional leaders are expected to affect interregional trade in a positive way. If regional cooperations could increase chances of being promoted, local leaders within the same network, who

---

[2]Literature addresses how electoral accountability changes the policy choices of politicians in different countries, for instance, United States (Besley and Case, 1995), India (Besley and Burgess, 2002), Brazil (Klašnja and Titiunik, 2017) and Italy (Coviello and Gagliarducci, 2017). Politicians' responsiveness in countries without general public elections is also documented, for instance, China (Chen, Pan and Xu, 2015; Jia, 2017).

[3]Riker (1964) suggests in the societies with a federalist system, nationwide political institutions can mobilize state leaders to conduct policies with positive externalities by providing the chance to be promoted. However, he cannot explain why in some countries, like China, strong central government and local protectionism co-exist.

are more likely to be political allies, would prefer to trade more amongst each other, since the career promotion of friends can translate into greater political benefits in the future. An alternative channel is that since market participants with similar backgrounds would like to share more information (Banerjee, Chandrasekhar, Duflo and Jackson, 2019) and have higher social trust amongst one another (Fisman, Paravisini and Vig, 2014; Cai and Szeidl, 2017), local leaders, as participants in regional cooperations, would like to share local information with their friends and the negotiation of trade terms could be done more efficiently. Thus social connections between local leaders lead to an increase of interregional trade via decreased information asymmetry between both leaders and regions.

Specifically, this paper studies the impact of career concerns and social networks of local leaders on interregional trade, by exploiting variation in interregional trade via railway cargo in China. China has experienced rapid development and striking economic growth over the past thirty years, and much of this achievement has been credited to the Regionally Decentralized Authoritarian System (Xu, 2011), and its promotion system is believed to be well-designed to motivate local leaders to push local economic development: One of the most important criteria when considering promotion of regional leaders is the local gross domestic product (GDP) growth rate where they are governing (Li ang Zhou, 2005; Jia, Kudamatsu and Seim, 2015; Yao and Zhang, 2015). At the same time, domestic trade in China is considered an important factor to GDP growth rate at both national and regional level, given the resource distribution is quite unbalanced. Yet while the benefits of being promoted are large and the central government continues to push for the elimination of interregional trade barriers, local protectionism and market fragmenta-

tion are still widely observed (Young, 2000; Poncet, 2003). One example is that before 2003, Shanghai only allowed cars produced by its local joint venture with Volkswagen to operate in the taxi fleet, and forbids taxi company to have any cars produced outside Shanghai.[4]

To illustrate how career incentives and social networks might influence interregional trade volumes in China, we examine the idea via a simple model based on the classic Ricardian model with trade costs (Deardorff, 2014), and combine it with the promotion tournaments model following Lazear and Rosen (1981). The model predicts that interregional trade should respond to both career incentives and the structure of social networks among the leaders. To test these predictions empirically, we then collect data on interregional railway cargo in China from 2001 to 2015 as proxies for interregional trade activities, which is the only public and reliable data on domestic trade in China. To construct the social network and career incentive of each local leader, we collected curriculum vitae (CVs) for 109 politicians from the official website of Communist Party. Among those individuals, 102 of them once worked as province secretaries in the data period, while the rests were Politburo Standing Committee (PSC) members and in charge of the promotion and demotion of local leaders. Social network is defined by whether local leaders once worked together, went to the same school or came from the same hometown. Career incentive is constructed by whether a local leader satisfies the age qualification (Kou and Tsai, 2014) and whether he is connected to the current PSC members (Jia, 2017).

---

[4]Another example is that a sub-district office in Urumqi issued a document assigning Xinjiang Beer Group as the sole distributor of the night market beer under its jurisdiction, and all the street vendors can only sell the Xinjiang beer. *Can Subdistrict Offices Sell Beer Franchise? People's Daily.*

The empirical strategy exploits the variation in connections and incentives of leaders across regions during different years. [5] The validity of the empirical strategy relies on the fact that local leaders are rotated among different regions unexpectedly and they cannot choose which jurisdictions to serve (Shi, Xi, Zhang and Zhang, 2019). We provide both anecdotal and statistical evidence in order to show our empirical strategy is valid and produces unbiased results. The econometric specification follows the standard gravity model (Head and Mayer, 2014) from trade literature. Specifically, we include year fixed effects to control for variation across time, and province-pair fixed effects to control for all time invariant factors between regions, like geographic distance and culture. Furthermore, we include exporter-year fixed effects and importer-year fixed effects to control the multilateral trade resistance (MTR), as suggested in trade literature. We both look at cross-politician and within-politician effects.

The results are in line with the theoretical predictions. Firstly, the results confirm that connections (social network links) increases bilateral trade flows. Specifically, trading volume between two provinces increases by 10% when the province party secretaries become connected. Secondly, different from the common expectation that career incentives necessarily motivate local leaders to push for activities beneficial to local economic growth, the data implies that career incentives can reduce internal trade. More specifically, we find that local leaders are less likely to engage in economic cooperation and the bilateral trade flows decrease by

---

[5]Technically, we implement difference-in-difference estimation, and the identifying assumption is a parallel trend assumption, i.e. that in the absence of leader rotation, the differences between places with the leaders with strong incentives, or between places with different levels of connections, would remain constant over time.

8% if these leaders are competitors in promotion tournaments. Thirdly, in the case when at least one of local leaders in bilateral trade does not have a strong career incentive, connections still bring positive changes in bilateral trade volumes by 8%. However, we only find a marginal change in trade volumes when local leaders are connected, but are competing with each other for the promotion tournament. Our results imply that connections increase trade volumes because of lower information costs among leaders with similar backgrounds, but only marginally because political allies prefer to support each other in promotion tournaments. Overall, these results are robust to using different empirical specification or functional form.

We also examine how the career incentives of local leaders might influence inflows and outflows. There are two possible strategies local leaders could exploit to help local firms to grow. The first one is to open the market, and the second is to restrict the imports to protect local producers from competition. The results are consistent with the latter. We find that trade outflows go up by 19% when local leaders have a strong career incentive, while inflows go down by 15%. These results imply that comparing to the long-run benefits in those regions by allowing perfect competition among local and outside products, regional leaders with career interests would push short-run growth of firms by conducting local protectionism.

However, given transportations are charged by weights in the railway system and only the weights of bilateral trade flows are documented, the magnitude of all these effects should be interpreted with caution, since the importance of heavy goods including coal and other mineral ores are

over-emphasized. To alleviate such concerns, we take coal from the bilateral trade flows, given coal is the only category reported separately from total freight, and do the same analysis again.[6] All these results are similar compared to our baseline results. Moreover, we find regions where local leaders both having career concerns would not lower coal transportation, which denies the possibility that competitors are providing less inputs to each other, and the decrease in general trade flows between competing politicians is more likely because they care about relative gains in short-term GDP growth from trade.

Next, we investigate the mechanisms behind these empirical facts. First, we examine the possibility of reverse causality. If the production structures of two regions are complementary and central government wants to enhance the cooperation between those two regions, then it will assign connected leaders to those two region because it knows information asymmetry between them would be lower. In other words, the higher trade volumes between connected regions are not because local leaders are connected, but because of the preference of central government. To test this hypothesis, we compare for how many years connected and unconnected pairs of leaders stay in their positions. If the statement of reverse causality is true, connected pairs should be kept in their positions longer since central government wants to promote interregional trade, knowing that connected leaders are key to keep such cooperations. However, data shows there is no systematic difference in the tenure in office for connected and unconnected pairs, and, if anything, connected pairs stay in place for shorter periods of time. This is not consistent with the reverse

_____

[6]Coal takes 50% of weights in railway transportation. Among the rest, other kinds of mineral ores take 30%.

causality story.

Second, we investigate the channel of repeated investment. Local government spending contributes a lot to local GDPs in China. To achieve promotion, motivated leaders might focus on industries which could provide more tax revenue to support such large government expenditures. If leaders with career concerns are more likely to invest in the same industries, then the production structures among those regions would be similar, so that the decreased trade volume between motivated leaders could be blamed for the decrease in demand for trade. To check this possibility, we firstly compute the weights of 21 industries in national tax revenue and list the top-10 industries providing highest tax in national level. Then we calculate the dependency rates of top-10 industries by the ratio of output of each industry in each region and local GDP. We find in general, compared to regions where leaders do not have career interest, those regions with motivated leaders are not having higher dependency rates in any of those industries. This result contradicts the repeated investment story.

Last but not least, since the interregional trade policy is also implicit and unobserved, and to provide more direct evidence on how local leaders influence interregional trade, we collect all news articles from the government-owned newspaper in each region for our data period. In each region, there is one government-owned newspaper and it documents the activities of local leaders, with the main goal of propaganda. From each newspaper, we select all the articles that mention interregional visits of local leaders. Local leaders frequently travel to other regions to talk about regional cooperations, and local entrepreneurs are generally invited in such visits. These events provide great chances for the businessman from

different regions to meet each other. Trade barriers are difficult to detect, yet given that these articles are monitored by the local governments, they could be a proxy for the effort on the part of the latter to lower the trade barrier with other regions. We find there are more articles on interregional visits of local leaders between regions where the local leaders are connected, and fewer articles on visits when they are competitors.

This paper contributes to several strands of literature. First, we complement the discussion over the political economy of trade policies. Within this set of papers, this paper is the first empirical study to systematically examine how social networks and career concerns affect domestic trade, especially in the absence of general elections. Conconi, Facchini and Zanardi (2014) analyze the votes of the House and Senate members for major trade liberalization bills in United States since 1970 and find that senators are more likely to reject trade liberalization when re-election is closer. However, votes by each senator have limited impact on the final decision relative to international trade policy, so that strategic voting cannot be entirely avoided in this situation. Here, senators represent the will of the median voter; we know less about how career concerns might influence trade policy in a place where local leaders are appointed by the central government. Besides the career concerns of politicians, much of the literature emphasizes the important role of the median voter (Baldwin,1989; Grossman and Helpman, 2005), as well as that of lobbying (Grossman and Helpman, 1994 and 1995 ; Guriev, Yakovlev and Zhuravskaya, 2010). Other political factors have also caught the attention of economists, such as political institutions (Milner, 1999), policy inconsistencies (Staiger and Tabellini, 1987), political instability (Fisman, Hamao and Wang, 2014) and financial decentralization (Young, 2000; Poncent,

2003). Because of the scarcity of data in domestic trade, most studies in this literature only provide qualitative evidence, and among those few quantitative research, most of them use data from Input-Output tables, which are complied every five years. This paper provides more accurate estimations by bilateral trade flows in each year of a given time period.

It also contributes to the literature on political leaders and economic outcomes. This paper is the first one to document the spillover effect of career concerns, as trade not only influences the regions where motivated leaders are governing, but also the economies of their trading partners. There is a vast number of studies on factors influencing the behavior of local leaders and how local economic activities are further influenced (Petrova, 2008; Snyder and Strömberg, 2010; Ferraz and Finan, 2011; Martinez-Bravo, Mukherjee and Stegmann, 2017). Specifically, how the career concerns of non-elected politicians and bureaucrats influence their behavior has recently begun to be addressed (Alesina and Tabellini, 2007; Enikolopov, 2014; Bertrand, Burgess, Chawla and Xu, 2017; Ornaghi, 2018). In the context of China, Alder and Kondo (2018) shows that political leadership will make distortions on the highway network construction. Persson and Zhuravskaya (2016) shows that local leaders who work in the same place after having been promoted from lower levels in the hierarchy care more about social welfare and spend more money on education and health than outsiders, who focus more on investment with an eye towards promotion. There are also some papers addressing the influence of promotion incentive on politicians' behavior in China (Shin, Adolph and Liu, 2012; Fisman and Wang, 2017; Chen and Kung, 2018). Jia (2017) argues that local leaders with stronger career incentives are more likely to allow the use of dirty resources in production to make the local economy grow faster in the

short-term to increase their chance of being promoted. Shi, Xi, Zhang and Zhang (2019) finds that in China, interregional investment flows would be increased after the transfer of regional leaders from one city to another. This paper claims this is for the extraction of economic rents, and such behaviour would be neutralized by the career motives of regional leaders. Rather than examining the allocation of investment, public spending and transfers, this paper complements this literature by looking at interregional trade. Moreover, it also provides evidence that motivated leaders are not just interested in projects influencing the local economy in the short-run, like larger government investment, but also manipulate policies which might affect local economy in both the short- and long-run (i.e., interregional trade policies).

Lastly, this paper adds to the discussion over factors influencing bilateral trade. This study complements the literature by introducing promotion competitions between local leaders as a new type of trade frictions, which to date has not been addressed in this literature. It is also the first one to document the effect of social networks among politicians in reducing trade costs. Starting with Tinbergen (1962), who emphasizes the negative role of distance between trading partners in bilateral trade, gravity model has been applied to discern different types of trade costs which further influence the trade flows (Anderson and van Wincoop, 2003; Eaton and Kortum, 2002; Hummels, Ishii and Yi, 2001; Rose and van Wincoop, 2001; Portes and Rey, 2005). Some of this literature focuses on economic policy, like the Regional Trade Agreement (Frankel and Wei, 1993; Baier and Bergstrand, 2005) and the adoption of a single currency (Rose, 2000). Some research find that informal norms among market participants also influence trade outcomes (Nunn, 2007; Guiso, Sapienza

11

and Zingales, 2009; Jha, 2013). How politicians on trade costs are understudied in the literature, and this paper complements this literature by documenting causal impact of the political interactions and competitions on interregional trade volumes.

The paper is organized as follows: Section (1.2) provides background information. Section (1.3) introduces a simple model for how social networks and career incentives of local leaders can influence their efforts to enhance interregional economy cooperation. Section (1.4) presents the data and explains how we construct the relevant variables. Section (1.5) discusses the empirical strategy, particularly how the gravity model is applied in this paper. Section (1.6) shares the empirical results, while Section (1.7) discusses the mechanisms behind the findings. We then provide several robustness checks and the last section concludes with a summary of the results and a brief reflection.

1.2   Background Information

Section (1.2.1) discusses the role of province secretaries in local economic growth, particularly interprovincial trade. Section (1.2.2) provides basic information regarding the social networks of China's political elite. Section (1.2.3) presents the Chinese political promotion.

1.2.1 The Role of Province Leaders and Interregional Trade in China

In China's regionally decentralized authoritarian system (Xu, 2011), local leaders have absolute say in designing local policies, and while the central government regulates their behavior through the promotion system. An advantage of such power decentralization is that local leaders are assumed to have more information about the local economy, thus potentially avoiding the implementation of ineffective policies. Yet decentralization always raises the moral hazard problem between central and local government. The regionally decentralized authoritarian system is believed to be well suited to solving this discrepancy problem by regulating the promotion of local leaders, particularly that of provincial leaders.

Each province has two principle leaders: a province secretary and a governor, each of whom formally have different duties. The province secretary is the leader of Province Party Committee, and is in charge of the promotion of local cadres and propaganda. The governor is the head of the Province Government and is responsible for implementing policies concerning local development. Although the same in rank, in reality, province secretaries are *de facto* higher in the province hierarchy, having more influence on local policy decisions. The greater relative importance of the position of province secretary is reflected by the fact that a transfer from the position of governor to province secretary is treated as a promotion.

The distribution of resources is unbalanced in China and domestic trade contributes a lot to China's development. Tombe and Zhu (2019) finds the reduced internal trade and migration costs in China account for 28% of

its aggregate labor productivity growth between 2000 and 2005. Besides its contribution in national level, domestic trade is also highly correlated with regional development. Figure (1.1) shows the relationship between the regional GDP and interregional trade in China in 2012. This figure shows there is a strong positive relationship between regional GDP and the amount in Interregional Trade. This relationship still holds when we consider outflow and inflow separately. Figure (1.2) shows the correlation between the growth rate of regional GDP and interregional trade between 2007 and 2012, and we find generally in the regions with higher growth rate in Interregional trade, GDP grows faster, and the positive relationship would be more stronger if we exclude Beijing, where the headquarters of many central government-owned firms are located. The data about interregional trade in both figures are collected from Input and Output tables.

Although the benefits of free movements of resources in domestic market is well acknowledged, local protectionism and trade favoritism are still often observed. Local leaders can affect interregional trade in both economic and non-economic ways. First, local leaders can choose the suppliers who receive government spending. For example, Lequan Wang, who filled the position of Province Secretary of Xinjiang from 1995 to 2010, was suspected of benefiting firms in his hometown, Shandong Province. During his term, firms from Shandong acquired almost all government procurement of Xinjiang, including road building and even the purchase of ceramic tile. Given the long distance between Xinjiang and Shandong (3644 kilometers) and those projects can easily be done in Xinjiang, the considerable inflow from Shandong has generally be credited to Lequan Wang's favoritism to his hometown (Cliff, 2012). Second, local leaders can use economic-related polices to adjust the composition of goods in

Figure 1.1: Correlation between Regional GDP and Interregional Trade, 2012

Notes: Figure (1.1) shows the correlation between regional GDP and Interregional Trade in China in 2012. Interregional Trade is calculated by the sum of amount in outflow and inflow. Data about region GDP is from National Statistic Bureau. Data about Interregional Trade is from Regional input and output table, complied in *Input-Output Tables of China, 2012*

the local market. For example, giving more tax refunds to dealers if they are willing to sell goods produced by local firms, or offering more convenient financing. They can also increase the costs of outside goods sold in their jurisdictions, whether formal or informal, and thus encourage or discourage product inflow. Thirdly, outside firms also often face discrimination. According to a survey carried out by Peking University in 2004, outside firms would have much more complicated procedures if they want to open stores in some cities, and the local government sometimes allow the hyperbolic advertisement of local firms to compete with goods produced by outside firms. Fourthly, local leaders can sign the executive

Figure 1.2: Correlation between the Growth Rate of Regional GDP and Interregional Trade from 2007 to 2012

orders to regulate the market. For instance, in the early 1990s, because of high profits from silk-related products, Zhejiang Province, the region with the largest production of silk, signed an executive order that all silk could be only sold to local firms (Young, 2000). Finally, local leaders can act as brokers to help local firms expand their markets in other places. For example, during visits to other regions, local leaders always bring several business executives along, introducing them to leaders and business people in other areas.[7]

---

[7]Market fragmentation has attract the attention of central government. The National Development and Reform Commission in China also published articles about how local government conduct protectionism. Some local governments would set a higher standard, or charge higher fees for productions from 'outside' firms to enter

All these examples suggest local leaders, especially province secretaries, have much influence over local economic policy and the local market, including between whom trading occurs and the amount of trade volumes.

1.2.2 Social Network of Chinese Province Leaders

Networks are very important in China and it can affect social life in a variety of ways (Fisman, Shi, Wang and Xu, 2018). Within politics, social networks play fundamental role in the formation of political factions. For example, one of the most famous political factions in China, *Shanghai Gang*, led by Zemin, Zhang, the General Secretary of the Communist Party from 1989-2002 and Province Secretary in Shanghai from 1987 to 1989, is composed of both his subordinates during these years in Shanghai and other bureaucrats who worked in this municipality later on (Finkelstein and Kivlehan, 2015)[8]. Another famous informal political faction is called *Tuan Pai*, whose members originate from the Communist Youth League, including the previous the General Secretary of the Communist Party, Jintao Hu[9]. Both of these examples highlight the importance of work experience in the formation of one's social network.

In addition to career connections, the literature also underlines the significance of the hometown relationships and alumni experiences. Hometown relationships (*laoxiang guanxi*), also known as "social tie", provides an

---

local market. They will even assign check points in the province boarders to restrict the inflow of productions from other provinces. In those articles, local protectionism is framed as an obstacle to the establishment of socialist market economic system.

[8] Finkelstein and Kivlehan (2015) points out in *Shanghai Gang*, none of the member's hometown is Shanghai. Shanghai is the place where members start to reach success in politics.

[9] Analysis: China's next inner circle, *Reuters*

important source of exchange. Fisman, Shi, Wang and Xu (2018) documents how the selection of CAE/CSE members, the highest honor of Chinese Science, is biased by hometown relationships between committee members and candidates. In politics, faction disputes and corruption are also sometimes connected to social ties. For example, the Xishan Society ($Xishan\ Hui$) consisted of high-ranking officials who were working in Beijing but were all from Shanxi Province. It is believed that, its members helped one another to gain promotions. The group included business people from Shanxi as well, such that benefits were also exchanged between these executives and officials[10]. In respond to concerns about such groups, hometown associations were banned in 2015 by the Communist Party of China in an effort to prevent corruption. Alumni relationships have similarly been a source of questionable behavior and have aided the exchange of profits, through favoritism in resource distribution. To this regard, a popular TV series produced by the People's Procuratorate in 2017 depicts a local government in a fabricated province that is controlled by officials with the same education background from a specific law school; these alumni are protecting each other in an anti-corruption investigation[11].

Social networks between local leaders help cooperations between local governments. For example, when Qiang Wei, who once worked with Liu Qi, the party secretary in Beijing at that time, was rotated to Qinghai province as province secretary in 2007, Beijing and Qinghai announced a package of plans for cooperations, covering different sectors including education, health and economy. One of the policy is targeted in labor market: If someone is willing to work in Qinghai for several years, when he

_____

[10]Xi's 'China Dream' comes to coal country. *The Diplomat*
[11]China laps up glossy TV corruption drama. *BBC*

returns, he can get special treatment in financial reimbursement and career development. As a result of those policies, until 2009, Beijing firms invested more than 2.8 billion RMB in Qinghai[12].

1.2.3 Promotion Tournaments and the Career Incentives of Local Leaders

Although quite high in rank, province secretaries are still highly motivated to get promoted, as they can potentially receive more benefits both while they are in the position and after retirement. If a province secretary manages to get promoted from the rank of *Zheng Bu*, he rises to that of *Fu Guo* (Party and State Leader), which is the second highest rank within Chinese politics. Promotion also means greater power. One must reach the rank of *Fu Guo* in order to be promoted to the highest rank, *Zheng Guo*, occupied by just seven (or nine) people, acknowledged as the most powerful individuals in the country. Although there is no formal documentation reporting the treatment of officials after retirement, *Fu Guo* is believed to be better treated than *Zheng Bu*. Nominally, Party and State Leaders are managed by the central government and after retirement, have special treatment relative to housing, transportation, diet, and especially, health care. They are, for example, treated in the hospitals where the most prestigious doctors work and enjoy special wards.

While the benefits of promotion are extensive, the system is also very competitive. There were around 400 officials ranked *Zheng Bu* but only 62 as rank *Fu Guo* in 2018. The most well-documented standard for promotion is firstly local economic development. Local economic develop-

---

[12]Cooperations to Develop: Beijing Supports the Development of Qinghai. *Sina News*

ment is believed to be positively related with the career prospects of local leaders, and is one of the most well-known empirical results in studies of the Chinese economy (Li and Zhou, 2005) [13]. The evaluation is based on the economic development of regions where the politician is working as local leader in his political career. To increase local GDP, on one hand, local leaders would conduct some policies to make short-run GDP boost. For instance, they can conduct preferential policies to attract large firms to do investment in their jurisdictions[14], or to invest in large projects on behalf of government. On the other hand, since the exchange of goods and regional cooperations help industry upgrading and competition push local firms to innovate and reach production efficiency, local governments are also motivated to conduct open market policies since it helps local economy in both short and long run. Although the miracle of China's growth is partially credited to the promotion system, however, this rule also incur some concerns. Since the seats in upper ranks are quite limited, relative performance is also important, local governments are willing to invest in projects or conducting policies, even if they are inefficient, just to show their importance relative to their competitors[15], and they have less incentives to conduct policies beneficial to other regions (Zhou, 2004).

The second rule for promotion is age ceiling. While the age ineligibility

---

[13]We replicate their findings using our data and it it show in Table (A.1.1)

[14]One popular policy local government use to attract firms is to provide tax refund, and provide the land for free to firms to build factories and dormitories

[15]One example is in 80's, central government wanted to build a economic zone among Beijing, Tianjin, Shandong, Liaoning and other regions to enhance the economic cooperations among each other. According to the primary plan, Beijing, as the political and culture center, is suggested to develop high-tech industries and modern service industries, and manufacturing industry should be allocated in Tianjin. However, in reality, to show their importance in newly built economy zone, Beijing still push the development of manufacturing industries and keep large firms concentrated. This policy make resources wasted in Beijing, but restrained the development of Tianjin successfully. See more details in The Life of Bohai Economic Circle. *Southern Weekly*

rule is also well-documented in the political science literature, fewer political economists have given it systematic attention. Following the statement by Xiaoping Deng in 1980 that cadres should be young, officials in each rank in China are constrained by an age ceiling. If an officials reaches the age limit and is unable to get promoted on time, they are either retired or transferred to an honorary position and their political careers are formally ended. The age ineligibility rule is strictly enforced, with few exceptions made before 1990 but none in the 21st century (Kou and Tsai, 2014).

Table (1.1) presents information on promotion ages for bureaucrats in different ranks. For local party secretaries who belong to the rank of *Zheng Bu*, if they want to get promotion, their age must be lower than the age ceiling, 67. They must seek a promotion to next rank, *Fu Guo*, and avoid being retired or transferred to honorary positions. Promotions are determined during the 1st Plenary Session of the newly elected Central Committee of CPC, which held every five years. As a result, if a local leader fails in a given selection year, but will be older than 67 at the time of the next session, he knows he will never be promoted. In a few cases, the province secretary, normally those in Directly Controlled Municipalities, already has the rank of *Fu Guo*, and if they want to be promoted to *Zheng Guo*, their age ceiling is 67 as well. During the study period, three of these sessions were held, in 2002, 2007 and 2012 respectively.

In addition to these formal regulations, there are also some informal standards that shape the promotion of local leaders. Among these, connection to the Politburo Standing Committee (PSC) members is the most salient. PSC members decide upon the promotions of province secretaries and

Table 1.1: Official Promotion Age of Chinese Bureaucrats

Rank(Chinese)	Position Rank	Position in CPC	Promotion Age
Zheng Guo	State Leaders	General Secretary	67
Fu Guo	Deputy State Leader	Member of Politubro	67
Zheng Bu	Minister	Provincial Party Secretary	63
Fu Bu	Deputy Minister		58
Zheng Ting	Bureau Director	City Party Secretary	55
Fu Ting	Deputy Bureau Director		52
Zheng Chu	Division Head	County Party Secretary	50
Fu Chu	Deputy Division Head		45
Zheng Ke	Section Head	Town Party Secretary	40
Fu Ke	Deputy Section Head		40

This table contains the information on promotion ages for different ranks of bureaucrats. The first column indicates the rank in Chinese and the second the rank in English. The third column presents representative positions in each rank in the CPC. Officially, party secretaries are equivalent to governors in each rank, but in reality, the former are a half-rank higher than the latter. The fourth column indicates the official promotion age. Information on promotion ages is from Kou and Tsai (2014).

connection to them is believed to largely increase the likelihood of being promoted. Jia, Kudamatsu and Seim (2014) shows how both connections to PSC members and local economic growth are determinant in the promotion of local leaders. For example, the newly elected Politburo member and city secretary of Beijing, Qi Cai, was rapidly promoted. He rocketed to the rank of *Fu Guo*, without being Central Committee Member before, a very rare event in Chinese politics. His promotion is widely credited to his experience working together with Jinping Xi in Zhejiang and Fujian Provinces.

1.3 Theoretical Framework

In this section, we present a simple model, based on Ricardian model with trade costs (Deardorff, 2014) and promotion tournament model in Lazear and Rosen (1981), to formally illustrate how social network and career

concern would influence interregional trade.

Let's start with the standard Ricardian model. Assume there are two regions, i and j, and both produces two goods, cheese (c) and wine (w). Labor required to produce one unit of product c or w in region i are a_{ic} and a_{iw}, while in region j are a_{jc} and a_{jw}. Traditional Ricardian model suggests trade happens when regions have different relative productivity in producing c and w. Assume the world price of cheese (P_c) and wine (P_w) are given. Specifically, region i has comparative advantage to produce cheese if:

$$\frac{a_{ic}}{a_{iw}} < \frac{P_c}{P_w} < \frac{a_{jc}}{a_{jw}}$$

When the price ratio of cheese and wine falls between the relative productivity of two goods in region i and j, compare with producing both products at production frontier, region i would devote all the labor to produce cheese and trade with region j to exchange wine. Trade increases regional GDP. Since

$$\frac{a_{ic}}{a_{iw}} \times \frac{P_c}{P_w} > 1$$

In a world with trade costs, the comparative advantage is rewrite in the following format:

$$\frac{a_{ic} + \lambda_{icj}}{a_{iwj} + \lambda_{iwj}} < \frac{P_c}{P_w} < \frac{a_{jc} + \lambda_{jci}}{a_{jw} + \lambda_{jwi}}$$

In this function, λ_{icj} is the trade costs for cheese produced in region i to be exported to region j. Further, λ_{icj} can be written as the sum of interregional tariff set by local government τ_{icj} and non-tariff costs between two

23

regions c_{ij}. c_{ij} could be treated as an aggregate of costs from distance, culture, information asymmetry, etc. As we can see from the function, compared to the world without trade costs, trade is less likely to happen since some goods are lost during the transaction, and how much each region gain from trade depends on the tariffs set by his trading partners. In other words, trade happens when

$$\frac{a_{ic} + \tau_{icj} + c_{ij}}{a_{iwj} + \tau_{iwj} + c_{ij}} < \frac{P_c}{P_w} < \frac{a_{jc} + \tau_{jci} + c_{ij}}{a_{jw} + \tau_{jwi} + c_{ij}}$$

Literature of network documents the fact that people belonging to the same network have lower information asymmetry among each other, and make market transactions more efficiently by reducing negotiation costs. Thus in this model, connected regional leaders would have lower negotiation costs c_{ij}, as a results, compared to unconnected regions, connected regions would have more interregional trade.

Now we show how regional government would set the tariffs. Since the promotion of regional leaders are determined by the regional GDP growth rate, based on promotion tournament model, the utility function of local leader in region i is written as the following:

$$U_i = \begin{cases} Pr(\gamma_i > \gamma_j)V + [1 - Pr(\gamma_i < \gamma_j)]v + H(\gamma_i), & \text{if i and j are competitors} \\ V + H(\gamma_i), & \text{if i and j are not competitors} \end{cases}$$

In the equation above, γ_i and γ_j are GDP growth rate in region i and region j respectively, and they are determined by the tariffs set by the local leaders. $H(\gamma_i)$ is the utility gained from the regional growth. If local lead-

ers in those regions are not competitors, then their utility only depends on the regional growth rate. But if they are competitors, then the utility depends on whether they get promotion successfully. Assume V is the utility if region i achieve a higher growth rate and local leader in region i gets promotion successfully, and v is the utility if region i has a lower growth rate compared to region j and its local leader lose the promotion tournament. As a result, if local leaders i and j both seek promotion, then local leader in region which gain less in trade would set a higher import tariff to decrease trade, otherwise he will lose the tournament. To respond, other regions are willing to set a higher import tariff as well otherwise his competitors would have a higher gain in trade. This model suggest when both leaders have promotion incentives, trade between those regions would be decreased since local leaders care about their relative ranking. However, if local leaders are connected, then utility from losing the tournaments would be higher since the promotion of friends could lead to benefits in the future, in other words, $v_{connected} > v_{unconnected}$. In this case, even under the promotion tournaments, compared to unconnected leaders, connected pairs are willing to set a lower tariff and increase trade.

Although the basic two by two model is very simple, but the intuition is similar in the general model with many goods and regions. Connected leaders are more likely to trade since the negotiation costs are lower among all those regions, and thus loss during trade is lower, which in turn increase trade. Regions where local leaders both want to get promotion would have incentive to set a higher import tariffs, thus trade less, but the decreased trade would be compensated if local leaders are connected.

1.4 Data

This section presents the data. Section (1.4.1) presents our data on interregional railway cargo and explains why it is a good proxy for interprovincial trade. Section (1.4.2) and (1.4.3) explain respectively how we construct the social networks and career incentives of province secretaries.

1.4.1 Interprovincial Trade

Since there are no customs between provinces, data on inter-provincial trade is quite rare. In this paper, we use information on inter-provincial railway cargo to represent inter-provincial trade, as previously done in the literature (Jia, Mei and Ming, 2017). From the *China Railway Yearbook*, we collected data on inter-provincial railway cargo in all 29 provinces (Tibet and Qinghai are excluded) and their trading partners from 2001 to 2015, which includes 435 province-year spells and 12,180 pairs of provinces-year observations. Each observation contains the origin province and destination, and the trading volume between them. In railway system, transportation fees are charged by weight; this data thus includes the weight of the goods but not their value. The categories of goods and corresponding weights are unobserved, except for coal.

Until 2010, railway was the second most commonly-used cargo transportation method in China, following road transportation. It then fell to the 3rd, surpassed by water transportation. Railway accounts for 10% to 15% of the total freight in a given year, compared to 75% from road. There is, however, a lack of reliable data on road transportation, while the Railway Ministry collects and publishes information on railway cargo ev-

ery year. This is, in fact, the only accurate data that is publicly available showing patterns of inter-provincial trade in China. Railway in China is mostly invested by central government. According to the annual report by Ministry of Railways, in 2013, length of nation-invested railway is 103,000 kilometers, compared to 4,000 kilometers invested by local governments[16]. Using data aggregated on regional level, the correlation between total cargo and railway cargo is 0.3, which is also significant. Figure (1.3) shows the weight carried by different means of transportation from 2001 to 2015. The solid line represents the weight carried by road, and the dotted and dash lines show the weight carried by railway and water respectively. We see that (a) the weight carried by road is much larger than that carried by railway or water, and (b) water becomes the second most important transportation method around 2010. Figure (1.4) shows the correlation between total and railway cargo, using the regional-level data in both 2005 and 2015, and it shows there is a strong positive correlation between these two variables. Table (A.1.2) in the appendix shows the freight volume by road, railway and water respectively as well as their proportions in total volume from 2001 to 2015.

However, compared to short-distance, railway is more popular in long-distance transportation. In other words, in interregional trade, railway is more important than the number shown in pervious table. There is no official statistics about the freight volume in both intra- and inter-provincial trade by different transportation modes. But National Bureau of Statistics published the cargo turnover every year since 1999. Cargo turnover is the product by total weight and average distance in a given year, which

---

[16]Annual Statistics Communique in 2013, Ministry of Railways.

is shown in Table (A.1.3). Water takes the largest proportion in cargo turnover, since it is commonly used in international trade which usually takes a long distance. Railway accounts for 31.07% in 2001 and 13.32% in 2015 in cargo turnover, compared to the 13.32% and 8.04% respectively in freight volume. This result confirms that railway is more popular in long distance than short distance transportation. Railway takes almost almost 60% in cargo turnover in 2000 and 30% in 2015 if water transportation is excluded. Nation-invested railway is the main methods in railway cargo: It takes 37395.33 (Trillion Ton $\times$ KM) in cargo turnover, compared to 162.22 (Trillion Ton $\times$ KM) by local government-invested railway. Overall, interprovincial railway cargo is a good proxy for the interregional trade.

In terms of composition, railway is the first choice for the trade of coal, crude oil, fertilizer, wood, and cereals, the most common raw materials in the production. In 2013, compared to total production, railway transportation included 63% of coal , 66% of crude oil, and 72% of cotton. Although 90% of the weight in railway cargo freight consists of raw-material, we cannot conclude that there are no final goods carried by railway. In fact, as raw-materials (like coal, ore, and mental) always have greater weight, their importance in the railway transportation is easily exaggerated. In reality, railway always carries some consumption goods as well, such as refrigerators and air-conditioners.

1.4.2   Social Networks of Local Leaders

We define social network working from anecdotes and based on broad consensus in the literature (Jia, Kudamatsu and Seim, 2014; Jia, 2017)

Figure 1.3: Weight Carried by Different Transportations Modes from 2001 to 2015
(Units: Billion Ton)
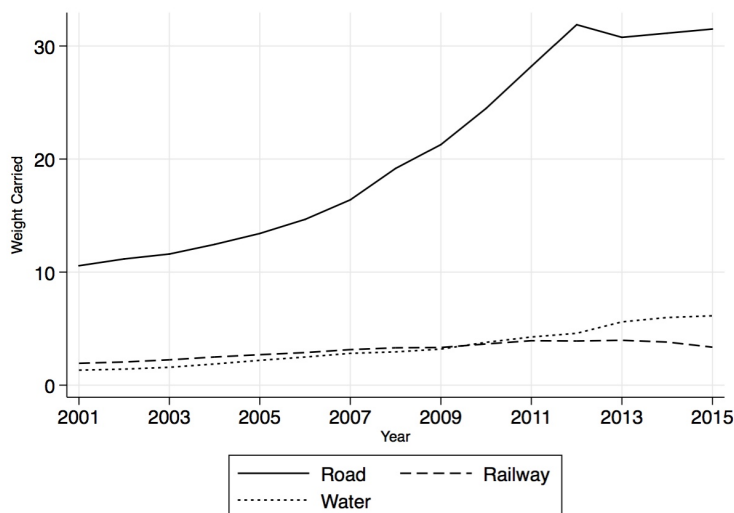
Notes: Figure (1.3) shows the freight volumes carried by different transportation methods during the data period. Most freight volumes were carried by road, railway is the second most important method before 2010, then drops to third. Original data is from National Bureau of Statistics.

whereby local leaders *A* and *B* are connected if at least one of the following three criteria is satisfied: (1) *A* and *B* previously worked at the same place, at the same time. (2) *A* and *B* are alumni of the same institution and (3) *A* and *B* share the same hometown at the city level. Of these three, Jia, Kudamatsu and Seim (2014) shows that working experience provides the strongest connections in the Chinese politics. In the dataset, the correlation between work tie and education tie is 0.02, which is quite marginal.

In order to construct these connections, we gathered all the CVs of national leaders and local party secretaries from 2001 to 2015. For a total of

Figure 1.4: Correlation Between Total Cargo and Railway Cargo (Units: Million Ton)
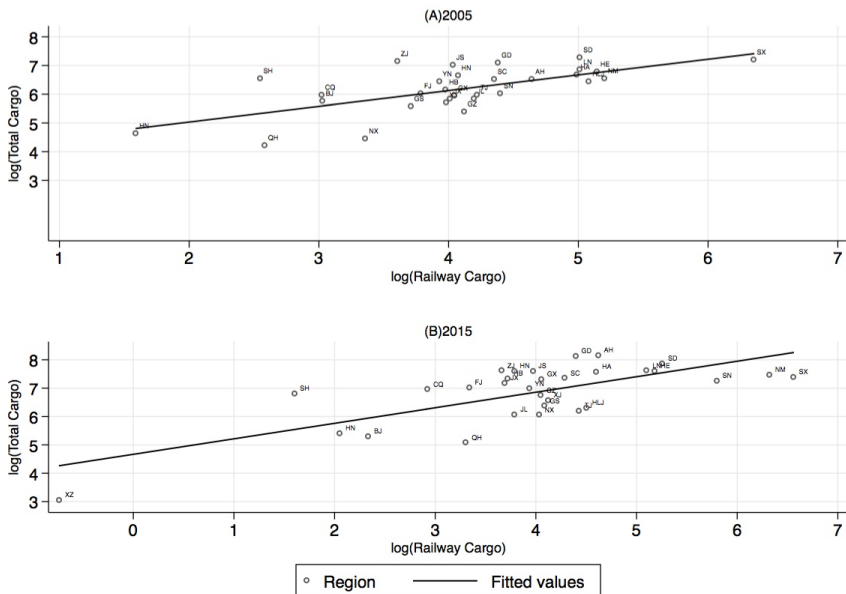
109 individuals, 102 among them once worked as the party secretary in at least one province during the study period. These CVs were collected through the official websites of the Communist Party and the government, and where needed, cross-checked and complemented by the information on Wikipedia and Baidu Baike (A Chinese version of Wikipedia). The CVs contain the demographic information on the local leader, including their gender, date of birth, education background, hometown, and mostly important, work experience, allowing to build the social networks of Chinese bureaucrats based on the three criteria described above.

Figure (1.5) provides examples of the social networks of local leaders in 2015, based on work experience. The green points indicate the Politburo Standing Committee (PSC) members, who are in charge of the promotions of local leaders (Jia, 2017), while the orange points represent the provinces. The magnitudes of the nodes represent the number of connections each person has. As shown in both figures, most local leaders have at least one connection, with some linked directly to Politburo Standing Committee members. These figures also reflect the dynamic nature of these social networks. For example, the Province Secretary of Yunan Province (pointed by the rectangular) had very few connections in 2010, but by 2015, this province is one of the most connected. There are more connections in 2015 since local leaders are better educated, and more education ties are formed.

1.4.3   Career Incentives of Local Leaders

In order to measure the career incentives of local leaders, we use both connections to Politburo Standing Committee members and age ineligibility rule. Connection to PSC members measures the likelihood of being promoted, while the age ceiling determines whether local leader has the minimum qualification for promotion.

More specifically, we construct the connection to PSC members using the same standard as for the social networks of local leaders: whether the local leader shares the same work experience, education background, or hometown at the city level with one or more PSC members. Figure (1.6) shows the likelihood of being promoted respectively for those with and

Figure 1.5: Social Network of Local leaders
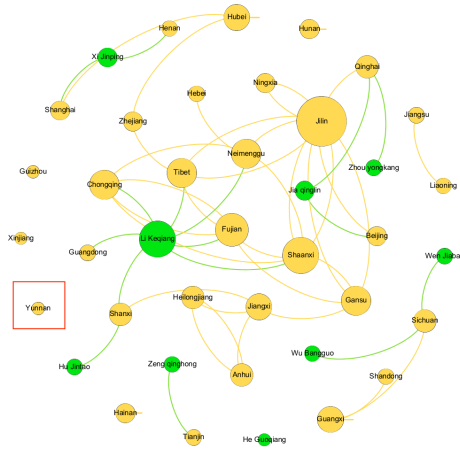
(a) Network in 2010
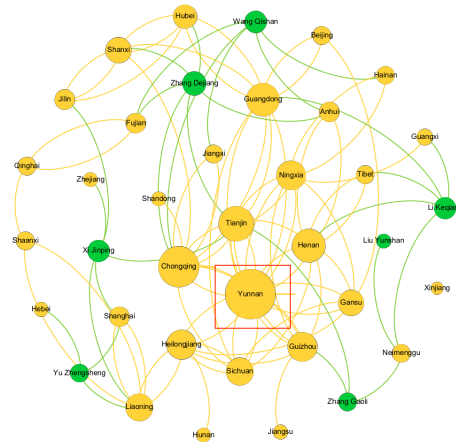
(b) Network in 2015

Notes: Figure (1.5) shows the social networks of local leaders in China in both 2010 and 2015. The green nodes in both figures represent PSC members, while the orange nodes are province secretaries in each region. A line between two nodes shows that officials are connected by at least one of the following sources: work experience, alumni of the same institution and/or common *laoxiang* relationship. Comparing the network in 2010, in 2015 there are more connections, and this is because province secretaries working in 2015 are more likely to get higher education than those in 2010.

without a connection to the PSC members.

Figure 1.6: Promotion Prospect of Leaders with and without Connections
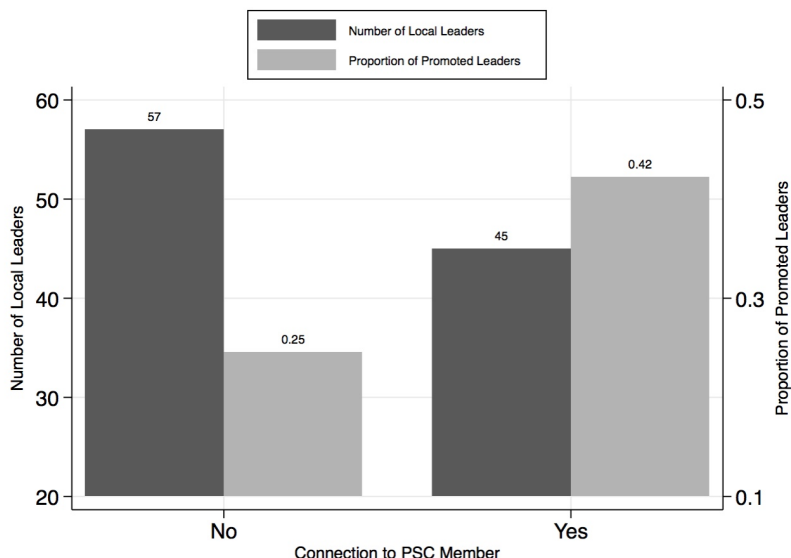
Notes: Figure (1.6) shows that the promotion prospects of local leaders is partially related to their connections to PSC members. The dark column represents the number of politicians with and without a connection to PSC members, while the light column shows the proportion of officials promoted during the data period. Although the number of local leaders is similar, the likelihood of being promoted is nearly 50% higher for those connected to PSC members compared to those without this connection.

In Figure (1.6), the X-axis shows whether or not the local leader is connected to PSC members, while on the Y-axis, dark bar shows the number of officials and light bar shows the successful rate of promotion in each category. We observe that out of the 102 officers were province secretaries at some point during the period of 2001 to 2015, 45 had a connection to PSC members and of these 42% were promoted to the rank of *Fu Guo* or above. The remaining 57 officers did not have a the connection and just

25% of this group was promoted. Although the number in each category is similar, the prospect of being promoted nearly doubles when the local leaders is connected to the PSC members. Figure (1.6) thus provides an clear correlation between ties to PSC members and the likelihood of being promoted. We also did a simple regression to check the correlation between promotion results and the connections to PSC members. Compared to those who do not have connections to PSC members, those well connected are more likely to be promoted, and both within-politician and cross-politicians effects show the similar patterns. The results are shown in Table (A.1.4).

The second dimension is the age ceiling. Table (1.2) shows how we measure the age ineligibility rule, following the standard regulation of the Communist Party of China. For example, A, B, and C are all provincial party secretaries who failed to be promoted in 2002. In the next selection year, 2007, C will be older than 67, meaning he will be retired or transferred to a honorary positions before the next session. As a result, in 2002, after failing in the tournament, C realizes he will never be promoted anymore and henceforth loses the promotion incentive. Like C, after failing-five years later-in 2007, B knows he will be retired or transferred and similarly loses his promotion incentive. However, provincial party secretary A still qualifies in terms of age and can thus compete in the next promotion tournament, therefore retaining hope of being promoted.

A local leader is consequently assumed to have a larger career incentive if he is connected to the PSC members (thus having a greater likelihood of being promoted,) and qualifies in terms of age (making him eligible to compete in the next tournament). If either of these two criteria is unsatis-

Table 1.2: Example for the Identification of Age Ceiling

	Age (2002)	Age (2007)	AgeQualify (03-07)	Age (2012)	AgeQualify (08-12)
A	50	55	Yes	60	Yes
B	58	63	Yes	68	No
C	64	69	No	74	N.A

This table is to illustrate the construction of promotion incentive. The 1st Plenary Session for each Central Committee of the CPC is in the autumn of re-election Year. Suppose all these representative officers did not enter Politburo. Party Secretary A has promotion incentive in this period since his age is qualified. Party Secretary B fails in 2002 and 2007, but he knows he still has chance in 2012, so he has career incentive between 2003-2012. However, when he fails in 2012, B knows he will be retired in the half way since he would be over 65 before 2012, so he would have no chance to compete in 2012, so he is lack of Career Incentive in 2008 to 2012. On the other hand, when Party Secretary C fails in 2002, he knows he would be retired before 2007, and thus lose the incentive in the next five years.

fied, then the officer is assumed to lack of career incentive. Specifically, the specification for the career incentive of politician i in time t is the interaction of the connection to PSC members and age qualification:

$$Incentive_{i,t} = PSCConnect_{i,t} \times AgeQualify_{i,t}$$

$PSCConnect_{i,t}$ is equal to 1 if local leader i is connected to at least one of the PSC members in year t, otherwise it is equal to 0. $AgeQualify$ is equal to 1 if the age of the local leader i at year t is under the limit for the next selection year. In this setting, the local leader would thus have career incentive if he is both qualified in terms of age and connections. There are few local Province Secretaries who already has the rank of *Fu Guo*, then he is assumed to be out of the promotion tournament since most bureaucrats in *Fu Guo* work in central government and the promotion to *Zheng Guo* is less correlated with local economy.

Other relevant data, including GDP growth and local population, are ex-

tracted from the official website of the Chinese Statistics Office. Table (1.3) provides some descriptive statistics. Panel (A) shows the pair-province characteristics: On average, the log of trade volume between two regions is 3.97, while coal movements only happens in one third of observations, with the average of 3.45. 9% of observations are connected and in 10% of observations, local leaders in both regions have promotion incentives, thus they are competitors. Panel (C) shows the politicians' characteristics in region-year level: Basically all the local leaders are male, and most have a college degree or above. Nearly half are connected to the PSC members. The average age of the province secretaries is 59 years old, and the maximum is 70[17]. Out of the sample of bilateral trade, 10% are connected in terms of either same work experience, alumni relationship, or social ties.

1.5   Empirical Strategy

To test how the career incentives and social networks of local leaders influence trading volumes between provinces, our empirical specification follows the standard gravity model, as is common in the trade literature (Jiang, Mei and Min 2017). Section (1.5.1) presents the general setting of the gravity model and explains how it is adapted to this specific context. Section (1.5.2) justifies the empirical strategy and explains why it provides the unbiased results. Section (1.5.3) introduces the specific econometric setting used to test the hypotheses.

---

[17]The official retirement age for politicians in $FuGuo$ is 70 (Kou and Tsai, 2014). Two politicians, Qi Liu and Jinlong Guo, who both were in rank of $FuGuo$ and worked as municipality secretary in Beijing, retired at 70. All the other local leaders leave their positions before 67.

Table 1.3: Descriptive Statistics

Panel (A): Pair-Province Characteristics					
Variables	Observations	Mean	Standard Deviation	Min	Max
Average of Log Trade Volume	12180	3.97	1.37	0	8.59
Log Trade Volume	12165	3.97	1.54	0	10.6
Log Trade Coal	3907	3.45	2.17	0	10.58
Work Tie	12180	0.044	0.20	0	1
Education Tie	12180	0.049	0.22	0	1
Social Tie	12180	0.00099	0.031	0	1
Connection	12180	0.090	0.29	0	1
Competition	12180	0.10	0.31	0	1
Panel (B): Regional Characteristics in Region-Year Level					
Variables	Observations	Mean	Standard Deviation	Min	Max
Log of Local GDP	435	8.98	1.04	5.70	11.2
Log of Local Population	435	8.20	0.72	6.26	9.29
Number of State-Owned Firm in Local Level	435	6.60	0.64	4.37	7.96
Number of Private-Owned Firm in Local Level	435	7.82	1.39	3.56	10.8
Local Unemployment Rate	434	3.65	0.69	1.20	6.50
Number of Connections to PSC Members	435	0.66	0.92	0	5
Panel (C): Politicians' Characteristics in Region-Year Level					
Variables	Observations	Mean	Standard Deviation	Min	Max
Incentive(1 = Yes)	435	0.32	0.47	0	1
Age	435	59.6	4.13	47	70
Age Ceiling(1 = Qualified)	435	0.80	0.40	0	1
Gender(1 = Male)	435	0.011	0.11	0	1
Ethnics(1 = Han)	435	0.92	0.27	0	1
College(1 = Yes)	435	0.92	0.27	0	1

This table includes the descriptive statistics for region level variables. Trade volume data is collected from the Annual Report by Ministry of Railways. Demographic information of local leaders are captured from their public CVs. Data regarding social network and incentives of local leaders are made based on their CVs . All the rests in this table are collected from National Bureau of Statistics of China.

1.5.1 Gravity Model

The gravity model is a standard trade model used to explain bilateral trade (Anderson, 2011; Head and Mayer, 2014; Fally, 2015) and is widely employed to test how selected economic or non-economic factors might influence trade flows. In the spirit of a structured model, in its reduced form, gravity models are firstly used to highlight the importance of distance in trade between two economies. The impact of additional factors on bilateral trade are then also investigated through the gravity model, such as the languages spoken in the two economies, the cultural differences, and geographic factors (e.g., common borders). Formally, the general setting of a gravity model starts with the gravity equation:

$$V_{ij} = G\frac{S_i M_j}{\phi_{ij}}$$

In this equation, V_{ij} is the trade flow from province i to province j. G is a factor irrelevant to either region i or region j, for example, the development of modern transportation technology. S_i represents all the region i specific factors that are relevant to the total demand of inflow (e.g., the local economic development), and M_j represents all the province j specific factors that are relevant to the total demand of outflow. The last component, ϕ_{ij}, is the trade costs between province i and province j which could influence the ease of trade. In the literature, ϕ_{ij} represents the iceberg costs and includes some geographic or economic factors, such as distance, common borders and shared currency. To estimate the gravity equation, the standard procedure is to take the natural logarithm of all the variables and generate a log-linear equation, which is suitable for OLS estimation (Baldwin and Taglioni, 2006):

$$logV_{ij} = logG + logM_i + logM_j - log\phi_{ij}$$

The estimation equation of the gravity model follows the specification of the OLS regression, and relates the trade volume between two regions with the economic development of both regions respectively, and the trade costs between them. To estimate this model, the economic development is generally represented by local GDP.

For the general gravity model to be applicable to our context, we make a small modification to the baseline model. We emphasize the role of social networks and career incentives in deciding bilateral trade flows, and these

components enter the gravity model through the trade cost, ϕ_{ij}. More specifically, the trade cost is composed of a non-political part $\phi_{np,ij}$ (λ_{ij} in the theoretical model in Section (1.3)) and a part related to tariffs set by local leaders. Given the theoretical expectations described in the previous section, connected local leaders would set a lower import tariffs, thus social networks are positively related to trade, but competition between local leaders forms another source of trade cost. We thus denote the political-related part of trade cost as a combination of C_{ij}, the influence of the connection between leaders, and T_{ij}, the costs induced by the statuses of leaders in promotion tournaments.

$$V_{ij} = GM_iM_j \times \frac{e^{\alpha C_{ij} - \beta T_{ij}}}{\phi_{np,ij}}$$

Which turns into:

$$logV_{ij} = logG + \alpha C_{ij} - \beta T_{ij} + logM_i + logM_j - log\phi_{np,ij} \qquad (1.1)$$

The above equation is the general estimation equation. The item on the left hand side is the log of trade volumes from provinces i to j. On the right hand side, C_{ij} is a dummy variable indicates the whether local leaders are connected or not, and T_{ij} represents whether local leaders are competitors in promotion tournaments. Coefficient α and β explain to what extend social network and career incentives of local leaders could affect interprovincial trade. $logM_i$ and $logM_j$ represent the economic development in both provinces and $log\phi_{np,ij}$ is the non-political trade costs.

To estimate the equation above, following the trade literature, we in-

clude the local GDP in provinces i and j as proxies for the local economy. To control for all the time-invariant factors which present as iceberg trade costs, we include the pair-province fixed effect, which handles most trade costs, such as distance between the two provinces, language barriers and cultural difference, as well as some economic factors (e.g., whether these provinces belong to the same economic zone and whether they use a shared currency. We also add a number of control variables to alleviate the concern that any results are induced by other characteristics of province or local leaders, other than social network or career incentive. These control variables include the gender, age, education level and ethnicity of the local leaders, as well as the local population, local unemployment rate and the number of private and state-owned firms in the region. In the literature, trade volumes are always represented by the value of the trading good. Here however, only the weight of goods carried by railway at this stage is available, as the railway system counts the price of transportation solely in this manner. Using the weight of trading goods, instead of their value, could lead to an overestimation of the importance of heavy goods like coal or metals. However, since we include the pair-province fixed effect in the estimation function, which handles the relative production structure in the pairwise provinces, this should still adequately capture change in bilateral trade.

1.5.2   Validity of Estimation Strategy

The specification relies on the rotation of local leaders. The validity of the estimation strategy requires that the social networks and career incentives of local leaders are orthogonal with other factors that might influence provincial trade, particularly, the estimation would be biased if some un-

observable factors both determine the allocation of local leaders and the interprovincial trade policy. However, the allocation is highly likely independent on interregional trade policy due to the nature of CPC's cadre rotation system, which is inherited from Imperial China (Shi, Xi, Zhang and Zhang, 2019). Cadres with a ranking of *Zheng Bu* are usually rotated from province to province, providing an ideal environment in which to test our hypothesis. As the literature shows, the rotation of province secretaries are quasi-random for several reasons. First, the aim of the cadre rotation system is not economic but political, meant to balance power of locals and outsider and ensure orders from the central government are carried out efficiently. Second, the system largely relies on factors that are not controlled by province leaders themselves, such as the retirement or arrest of previous leaders. To illustrate this point, the current General Secretary of the Communist Party of China, Xi Jinping, when transferred to Fujian Province, commented, "this transition is very unexpected".

To further alleviate the concern that the assignment of province secretaries is correlated with economic fundamentals, which would bias the estimation, we also conduct several statistical analyses to show that our identification strategy is valid.

To this end, we project the sum of connections and career incentives in different regions during the data period (2001-2015) respectively onto a map of China, checking to see whether the distribution of connection levels or career incentives are systematically different between developed and less developed provinces. Figure (1.7a) shows the spatial distribution of the rank in total number of connections that local leaders across the different regions had over the entire period. As we examine a total

41

of 29 provinces, the theoretical maximal amount of connections in one region in 15 years is 435, although in reality, the largest number is below 100. In this figure, the darker regions have more connections in total and thus have a higher rank. Figure (1.7b) shows the the distribution of GDP in different regions. Comparing Figure (1.7a) and (1.7b), there is no any systematic difference between developed and developing areas. For example, leaders in Gansu and Guangdong provinces both have a large number of connections, but are very different in terms of economic contexts. Gansu is less developed, while Guangdong is one of the richest provinces in China.

Figure (1.8a) focuses on the spatial distribution of local leaders with career incentives in the data period. The value here is how many local leaders with career incentives worked in the respective provinces. The maximal value is 15. Figure (1.8b) is the same graph with Figure (1.7b). Comparing Figure (1.8a) and (1.8b), again we do not find any systematic differences between developed and less developed areas. For example, most local leaders in Ningxia Province, a less developed inner-land area, have strong career incentives, while two much more developed coastal provinces, Fujian and Zhejiang, have a similar number of motivated leaders. Like Figures (1.7), Figure (1.8) shows that the allocation of leaders with career incentives is not just dependent solely on economic fundamentals in the province.

In addition to the distribution of connected and motivated leaders, in Table (1.4), we also show the correlation between local leaders with career incentives and some provincial and personal characteristics. Columns (1) to (3) in Table (1.4) include several important economic indexes, while

42

Figure 1.7: Social Network of Local leaders
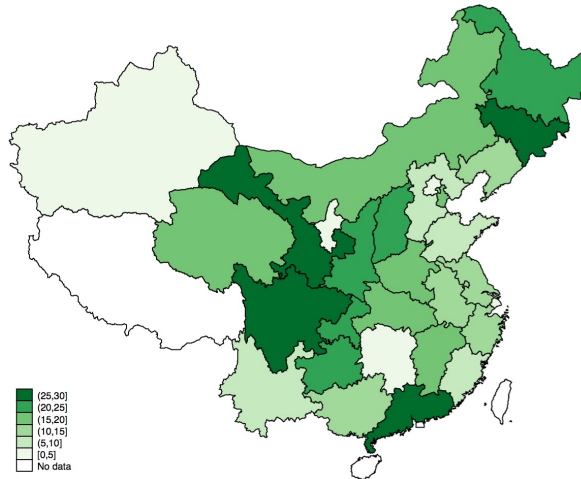
(a) Rank in Number of Connections from 2001 to 2015
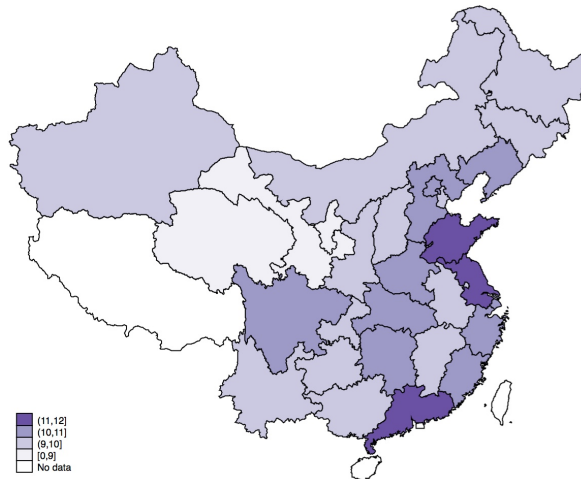
(b) Regional GDP in 2015

Notes: Figure (1.7) shows that the number of connections each province had during the data period is generally similar for developed and developing provinces, suggesting that the latter does not depend solely on economic development.

Figure 1.8: Social Network of Local leaders
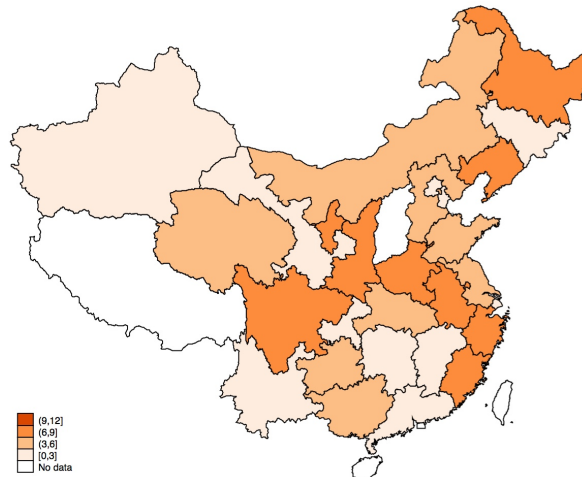
(a) Number of Motivated Leaders in Different Regions
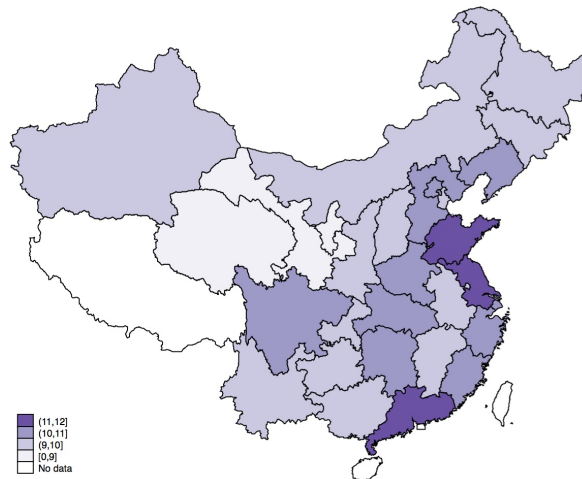
(b) Regional GDP in 2015

Notes: Figure (1.8) shows that the number of local leaders with career incentives each province had during the data period is generally similar for developed and developing provinces, suggesting that the latter does not depend solely on economic development.

44

columns (4) to (6) include the year fixed effect to control for any systematic differences between various years. Region fixed effect is also controlled to alleviate the concern of different economic fundamentals. Importantly, we test the correlation between whether the local leaders have career incentives with the real GDP growth rate in the preceding year, and the average real GDP growth rate in three and five years respectively. If the central government is more likely to assign promising local leaders to areas with better fundamentals, this should appear in Table (1.4). However, the results show that the career prospects of local leaders are unrelated to economic performance in previous periods, and are similarly uncorrelated with various province characteristics, such as geographic location, whether they are home to minorities, as well as a number of personal characteristics, such as education level and ethnicity. The only factor correlated with career incentive is age, which is unsurprising given the incentive of local leaders is the product of connection to PSC members and age ceiling.

To summarize, in light of both the anecdotes and statistical analysis, the empirical strategy based on a reduced-form gravity model should be valid. Furthermore, we do the similar regression and check the correlation between the number of connections local leaders have and the regional GDP growth rate in previous periods. The results are similar. Highly-connected local leaders are not systematically to be assigned in regions with promising growth rate. Results are shown in Table (A.1.5).

1.5.3   Hypotheses and Estimation Strategy

In what follows we present the hypotheses and discuss how they are tested following the specification of reduced-form gravity model.

Table 1.4: The Correlation between Leaders with Career Incentive and other Characteristics

	(1) Incentive	(2) Incentive	(3) Incentive	(4) Incentive	(5) Incentive	(6) Incentive
$GDP\ Growth_{t-1}$	-0.568			-0.585		
	(-0.53)			(-0.28)		
$Average\ GDP\ Growth_{t-3\ to\ t-1}$		-1.122			-0.814	
		(-0.55)			(-0.24)	
$Average\ GDP\ Growth_{t-5\ to\ t-1}$			-0.736			0.355
			(-0.32)			(0.08)
$LogGDP_t$	0.120	0.118	0.125	0.524	0.544	0.470
	(1.44)	(1.40)	(1.43)	(1.07)	(0.96)	(0.76)
$LogPopulation_t$	-0.094	-0.104	-0.097	-1.002	-0.990	-0.976
	(-0.79)	(-0.80)	(-0.74)	(-1.61)	(-1.58)	(-1.56)
$Minority$	-0.036	-0.032	-0.035	0.662	0.606	0.731
	(-0.35)	(-0.29)	(-0.32)	(0.56)	(0.46)	(0.50)
Age	-0.025**	-0.025**	-0.025**	-0.032***	-0.032***	-0.032***
	(-2.51)	(-2.50)	(-2.44)	(-3.24)	(-3.26)	(-3.25)
$College$	-0.036	-0.036	-0.036	-0.124	-0.124	-0.126
	(-0.24)	(-0.24)	(-0.24)	(-0.80)	(-0.80)	(-0.80)
$Gender$	0.251	0.262	0.254	0.328	0.335	0.322
	(0.77)	(0.80)	(0.79)	(1.02)	(1.04)	(1.00)
$Number\ of\ State-Owned\ Firms$	-0.040	-0.029	-0.040	-0.159	-0.156	-0.155
	(-0.34)	(-0.22)	(-0.31)	(-0.72)	(-0.70)	(-0.68)
$Number\ of\ Private\ Firms$	0.006	0.011	0.006	-0.077	-0.073	-0.096
	(0.09)	(0.17)	(0.08)	(-0.35)	(-0.34)	(-0.46)
$Unemployment\ Rate$	0.054	0.054	0.054	0.017	0.016	0.019
	(0.74)	(0.73)	(0.74)	(0.11)	(0.10)	(0.12)
Year FE	No	No	No	Yes	Yes	Yes
Region FE	No	No	No	Yes	Yes	Yes
N	434	434	434	434	434	434
Adjust R^2	0.080	0.081	0.080	0.289	0.289	0.288

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. This table shows there is no correlation between the career concern of regional leaders and economic fundamentals in previous periods. Assignment of regional leaders are only correlated with their ages, which is reasonable because the official document in CPC regulates the age ceiling for regional leaders to get promotion.

First, we focus on the influence of connections on trading volumes between provinces. As discussed in Section (1.2), the province secretary is the *de facto* leader of the province and plays an important role in deciding local economic policy. If the secretaries are connected, they know one another better and may even belong to the same faction. Based on the literature emphasizing the importance of reduced information costs in market transactions, which are even more salient among participants with similar backgrounds, social networks should reduce trade costs be-

tween connected provinces, in turn increasing trade volumes. Moreover, because political alliances are more likely to be formed among connected leaders, and political allies are expected to help one another in promotion tournaments, then provinces should conduct more transactions with each other when the local leaders are connected. Economic collaboration and better trade terms are thus easier to achieve if local leaders once worked together, were educated in the same places or come from the same hometown. In this sense, connections are expected to decrease trade costs, reflecting provincial favoritism. We expect that when local leaders from two provinces are connected, the trade volume between these two provinces should be increase.

Hypothesis (1.1): When local leaders in two provinces are connected, the trading volume between these provinces should increase.

Regression (1.2) is designed to test Hypothesis (1.1):

$$\log Trade_{ijt} = \alpha + \beta_1 Connection_{ijt} + + \log GDP_{it}$$
$$+ \log GDP_{jt} + \tau_t + \lambda_{ij} + \epsilon_{ijt} \tag{1.2}$$

Specifically, based on the gravity equation (1.1), the dependent variable is constructed by the log of trade volumes between province i and province j in regression function (1.2). The interested variable in regression (1.2) is $Connection_{ijt}$, a dummy variable equal to 1 if the local leaders in both provinces are connected at year t. The parameter we are interested is β_1. Hypothesis (1.1) predicts that β_1 is positive, meaning that compared to

those who are not connected, the total trade flow between the connected provinces is larger. Since the rotation of province secretaries is highly unexpectedly and not controlled by the province secretaries themselves, and the assignment of local leaders is not dependent on economic fundamentals, regression (1.2) should give a precise estimation of the effect of connections on bilateral trade. To control for unobserved time-invariant factors between provinces, particularly other kinds of trade costs, we include the pair-province fixed effect λ_{ij}. τ_t is the year-fixed effect, included to alleviate the concern of time-related factors. The standard error is robust and clustered at the pair-province level, as the errors could be related to any specific province pair. As robustness tests, we control for additional characteristics of local leaders and provinces in different specifications.

Beyond the baseline results, recent work in the trade literature suggests that multilateral trade resistance (MTR) should be taken into account when estimating a gravity equation. MTR represents the specific trade costs a country/province faces relative to all trade partners, such as the production structure and legal system. A commonly used control when dealing with panel data is adding the region-year fixed effect in the regression function (Anderson and van Wincoop, 2003; Baldwin and Taglioni, 2006; Ruiz and Vilarrubia, 2007; Head and Mayer, 2013). Regressions (1.2) and (1.3) are same, except regression (1.3) includes the region-year fixed effects of both regions to take care of all the control variables in regression (1.2) (e.g., GDP of both regions) and other unobserved region-level factors. Following suit, we also show the results with the modified regression equation, where local economic development and MTR are captured by the province-year fixed effect γ_{it} and η_{jt}:

$$\log Trade_{ijt} = \alpha + \beta_1 Connection_{ijt} + \gamma_{it} + \eta_{jt} + \tau_t + \lambda_{ij} + \epsilon_{ijt} \quad (1.3)$$

Next, we focus on the influence of the career incentives of province secretaries on the total trading volume between provinces. There are two different mechanisms through which career incentives might influence interprovincial trade. In the first channel, as suggested by the literature, provincial economic performance is an important criteria when considering the promotion of local leaders. We should thus expect that when a local leaders have a strong career incentive, he will be eager to boost economic growth in his province. Interprovincial trade should thus also increase, even more so when both local leaders have strong career incentives, as in this way they have a larger chance of being promoted. The second channel emphasizes the role of promotion tournaments as a trade cost. Promotion tournaments are very competitive, such that local leaders not only care about their economic performance, but also their rank compared to their peers, and thus they are motivated to act in ways that are mutually beneficial. Put this way, local leaders with career incentives are less likely to trade with their competitors, as this risks strengthening their opponents.

Hypothesis (1.2a): Career incentive plays a positive role in interprovincial trade: when local leaders have a strong career incentive, trading volume should increase, with the effect being even larger when both province secretaries have career incentive.

49

Hypothesis (1.2b): Career incentive plays a negative role in interregional trade: when local leaders have a strong career incentive, they will be less likely to trade with their opponents.

Regression (1.4) is designed to test Hypothesis (1.2a) and Hypothesis (1.2b):

$$\log Trade_{ijt} = \alpha + \beta_1 Incentive_{it} \times Incentive_{jt} + \log GDP_{it}$$
$$+ \log GDP_{jt} + \tau_t + \lambda_{ij} + \epsilon_{ijt} \qquad (1.4)$$

In regression (1.4), the dependent variable is the log of trade volumes between two provinces. $Incentive_{it}$ and $Incentive_{jt}$ are dummy variables equal to 1 if the local leader in province i and province j at time t have strong career incentives. As shown in subsection (1.4.3), career incentives are constructed by the combination of connections to PSC members, and whether local leaders are younger than the age ceiling. The interested variable in regression (1.4) is the interaction term between $Incentive_{it}$ and $Incentive_{jt}$, which is equal to 1 only if the local leaders in both provinces have strong career incentives, that is, when the local leaders are competitors in the promotion tournaments. If Hypothesis (1.2a) is correct, we expect β_1 to be positive but if Hypothesis (1.2b) is correct, we expect β_1 to be negative, meaning that the promotion tournament works as a type of trade cost, decreasing trade flows between competitors. As in the econometric specification (1.2), pair-province fixed effect λ_{ij} and year-fixed effect τ_t are both controlled. The standard error is robust and clustered at the pair-province level. Different sets of control variables are

included as robustness tests. Although we are focusing at the effect of interaction term, $Incentive_{it}$ and $Incentive_{jt}$ are both included as controls.

Again, to control for MTR, region-year fixed effects are included in regression (1.5):

$$\log Trade_{ijt} = \alpha + \beta_1 Incentive_{it} \times Incentive_{jt}$$
$$+ \gamma_{it} + \eta_{jt} + \tau_t + \lambda_{ij} + \epsilon_{ijt} \quad (1.5)$$

Beyond separately testing the influence of social network and career incentive, we also explore how social networks and career incentives together change interregional trade. In doing so, we test how the effect of connections fluctuates relative to career incentive status in the trade regions, and whether the effect of connections is mainly induced by social trust among local leaders or political in-group favoritism. Specifically, if connection influences interregional trade through social trust, then we should find it no matter whether the local leaders in these regions have career incentives or not. However, if connection influences the trade through political in-group favoritism, we should find that the effect is larger when the local leaders are connected, because in such cases, to increase their chances of being promoted later, political allies help one another by boosting trade.

Hypothesis (1.3a): Connections influence interregional trade through social trust, increasing trade flows independently of whether local leaders have career incentives or not.

Hypothesis (1.3b): Connections influence interregional trade through political in-group favoritism, increasing trade flows when both leaders have career incentives.

Regression (1.6) is designed to test Hypothesis (1.3a) and Hypotheses (1.3b).

$$\log Trade_{ijt} = \alpha + \beta_1 Connection_{ijt} + \beta_2 Incentive_{it} \times Incentive_{jt}$$
$$+ \beta_3 Connection_{ijt} \times Incentive_{it} \times Incentive_{jt}$$
$$+ \log GDP_{it} + \log GDP_{jt} + \tau_t + \lambda_{ij} + \epsilon_{ijt} \qquad (1.6)$$

Here the dependent variable is still trade flows in the bilateral interprovincial trade, but we add interaction terms between connections and career incentives to test the influence of the former in different circumstances. Specifically, β_1 shows the effect of connections when neither of the local leaders have career incentive. β_2 represents the effect of career incentives on the bilateral trade when the local leaders have no connections. More importantly, β_3 measures the influence of connections in a situation of political competition. The pair-province fixed effect λ_{ij} and year-fixed effect τ_t are controlled. The standard error is robust and clustered at the pair-province level. Different sets of control variables are included as robustness tests. If connections influence bilateral trade through social trust, we expect β_1 to be positive, and if it works through political in-group favoritism, then we expect β_3 to be positive. $Incentive_{it}$ and $Incentive_{jt}$ are both included as controls.

Similarly, we use regression (1.7) to control for MTR:

$$\log Trade_{ijt} = \alpha + \beta_1 Connection_{ijt} + \beta_2 Incentive_{it} \times Incentive_{jt}$$
$$+ \beta_3 Connection_{ijt} \times Incentive_{it} \times Incentive_{jt}$$
$$+ \gamma_{it} + \eta_{jt} + \tau_t + \lambda_{ij} + \epsilon_{ijt} \tag{1.7}$$

1.6 Results

In this section, we present the main results. Specifically, in subsection (1.6.1), we show some graphic results. In subsection (1.6.2), we provide the baseline results, showing how connections and career concerns respectively influence inter-provincial trade. In subsection (1.6.3), we further investigate how the career concerns of local leaders influence their decisions on outflows and inflows respectively.

1.6.1 Graphic Results

Before going through the regression results, this subsection presents some graphic evidence on how connections and career concern would influence the trade volume between regions by some specific examples. Figure (1.9) offers an example of how social networks might influence interregional trade volumes. The solid line shows the volume of interregional trade in railway cargo between Nei Mongol, the province with large production of coal, and Hebei. Before 2008, there were no connections between the local leaders in these provinces. They barely knew each other, as they had never worked together, were not alumni of the same school,

nor shared a hometown ($LaoXiang$). However, in 2008, a rotation of cadres brought Zhang Yunchuan to Hebei as province secretary. Zhang Yunchuan was working with Chu Bo, the party secretary in Nei Mongol, ten years ago in Hunan province. Chu Bo left Nei Mongol in 2010, but his successor Hu Chunhua worked in Hubei province as governor while Zhang Yunchuan was the province secretary, which makes those two regions still connected. The connection between regional leaders in Nei Mongol and Hebei ends in 2013, when province secretaries in both regions are rotated. On the contrary, there were no connections between Nei Mongol province and Tianjin province during the same time period. To this regard, when observing the dashed line representing trade volumes between these two provinces, Figure (1.10) shows that although we see comparable patterns before 2008, the railway cargo between Nei Mongol and Hebei increased considerably during the "connected" years in comparison to that between Nei Mongol and Tianjin.

Figure (1.10) shows an example of how promotion tournaments might influence interregional trade volumes. The dashed line represents trade between Guizhou province and Yunnan province. Before 2012, the local leaders in these two provinces were not competitors: the local leaders in Jilin were not connected to the PSC members and had a smaller chance of being promoted. However, in 2012, the new province secretary, Wang Rulin, was connected to one of the PSC members and he was also quite young. Then the local leaders in the these provinces became competitors in the promotion tournaments, and we find there is a tremendous drop in the trade volumes after 2012. On the contrary, trade between Guizhou and Yunan was quite stable, where the local leaders in these two provinces were never competitors, shown in solid line. Note that the

54

Figure 1.9: The Interregional Trade Volume of Nei Mongol from 2001 to 2015. (Units:Billion Ton)

solid line shows similar pattern to the dashed line until 2013, which then dramatically varies after the local leaders in Guizhou and Jilin became competitors.

1.6.2 Baseline Results

The Effect of Social Networks

Table (1.5) presents the results of regression (1.2) and regression (1.3), and shows how social networks influence trade volumes. Estimation of

Figure 1.10: The Interregional Trade Volume of Guizhou from 2001 to 2015. (Units:Billion Ton)
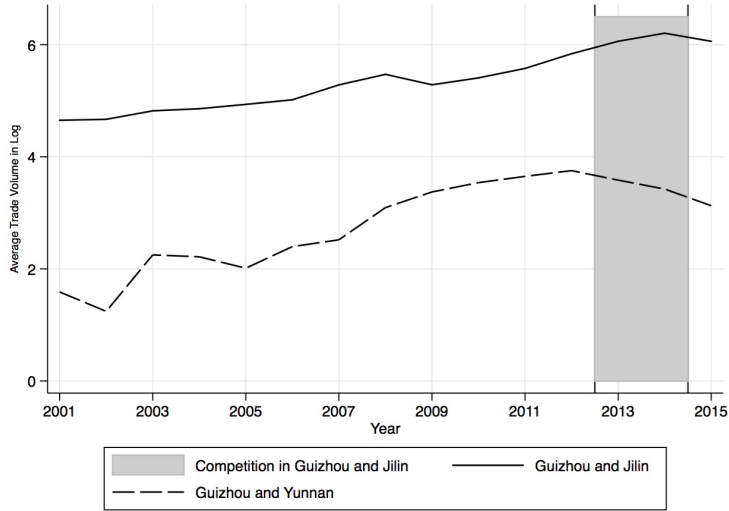
Notes: Figure (1.10) shows the trade volumes of Guizhou Province with Jilin and Yunnan Provinces respectively during the data period. The trade volumes of Guizhou-Jilin and Guizhou-Yunnan show the similar patterns until the local leaders of Guizhou and Jilin both have career incentives, and thus becoming competitors, in 2013.

parameter β_1 is significant at the 5% level in the baseline regression and confirms that when local leaders in both provinces are connected, the volume of trade from province i to province j increases. The first four columns define connection only by work experience, while the last three columns also include social ties. Columns (1) and (4) show the baseline results, while column (2) and (5) also includes other control variables, including age, gender, ethnics and education level of local leaders, as well as local population, unemployment rate, the number of state-owned and private-owned firms. Columns (3) and column (6) exploit the specification of regression (1.3), including province-year fixed effect to handle the

influence through MTR. The results are quite robust to different specifications and consistent with our hypothesis that connection decreases trade costs in bilateral trade. Results suggest compared to the unconnected leaders, connection between local leaders would increase interregional trade by 10%. It is not surprising that the effect of connections decreases somewhat after controlling for the province-year fixed effect, as the latter absorbs much of the effect, particularly that from the construction of infrastructure (e.g.,highways and high speed railway).

Table 1.5: Social Networks and Interprovincial Trade Flows

	(1) LogTrade	(2) LogTrade	(3) LogTrade	(4) LogTrade	(5) LogTrade	(6) LogTrade
$WorkTie_{ij,t}$	0.086*	0.076*	0.057			
	(0.047)	(0.045)	(0.037)			
$Connection_{ij,t}$				0.086**	0.105***	0.046*
				(0.036)	(0.033)	(0.027)
$LogGDP_{i,t}$	0.967***	1.107***		0.960***	1.216***	
	(0.131)	(0.132)		(0.131)	(0.133)	
$LogGDP_{j,t}$	1.319***	0.492***		1.312***	0.581***	
	(0.132)	(0.147)		(0.132)	(0.147)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	No	Yes	No
Region-Year FE	No	No	Yes	No	No	Yes
N	12165	12109	12165	12165	12109	12165
Adjust R^2	0.741	0.768	0.870	0.741	0.765	0.870

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows how the connections between local leaders changes interprovincial trade. The first three columns construct the connections by shared work experience, and the last three columns also include both education tie and social tie. The results show that connections between local leaders increase interprovincial trade.

The Effect of Career Concern

Next we focus on how career incentive would influence interregional trade volumes, specially, how the bilateral trade flow would change when local leaders in both regions have promotion incentives. Remember in all columns in Table (1.6), $Incentive_{it}$ and $Incentive_{jt}$ are included as controls. The first three columns in Table (1.6) apply the regression specifications (4) and (5), and show how political competition between local leaders influences the inter-provincial trade. The dependent variable is the log of trade volumes between province i to province j, and as in Table (1.5), the controls for the characteristics of local leaders and regions are included in column (2), and MTR is considered in column (3). Results are similar under different sets of controls. The estimation shows that compared to those pair-provinces where local leaders are not political competitors, in situations where local leaders in both provinces have strong career incentives, trade volume decreases. Unlike the literature, which suggests that the incentive to be promoted should mobilize local leaders to behave in ways beneficial to local economic growth, the result in Table (1.6) is more consistent with hypothesis (1.2b), which emphasizes the negative role of career incentives in internal trade. When local leaders must compete with one another in a promotion tournament, the economic activities between them decreases significantly, as they are wary of conducting activities that could increase the evaluations of their competitors, and might also thus have less of impact in terms of their own candidacy for promotion. The magnitude of coefficient β_2 is also large: compared to region pairs where local leaders are not competitors, bilateral trade flow between region pairs with motivated leaders would be decreased by 8%. This result is also in contrast to the aim of the central government to

58

prompt market integration and highlights the limitations of a regionally decentralized authoritarian system.

Columns (4) to (6) in table (1.6) include both the status of connections and political competition between pair-provinces, helping to alleviate the concern that the effect of one factor is absorbed by another. The estimation shows that the results are similar to when we test these two factors separately. In sum, connections between local leaders increase the interprovincial trade, but promotion tournaments decrease it. As a robust check, Table (A.1.6) in appendix show the results using only connection to PSC members as the measurement for career concern of local leaders, as Jia (2017). The results are similar.

Table 1.6: Career Incentives and Interprovincial Trade Flows

	(1) LogTrade	(2) LogTrade	(3) LogTrade	(4) LogTrade	(5) LogTrade	(6) LogTrade
$Incentive_{i,t} \times Incentive_{j,t}$	-0.079**	-0.105***	-0.079***	-0.084**	-0.110***	-0.081***
	(0.039)	(0.037)	(0.030)	(0.039)	(0.036)	(0.030)
$Connection_{ij,t}$				0.088**	0.084***	0.049*
				(0.036)	(0.030)	(0.027)
$LogGDP_{i,t}$	0.978***	1.136***		0.970***	1.129***	
	(0.131)	(0.129)		(0.131)	(0.129)	
$LogGDP_{i,t}$	1.329***	0.494***		1.321***	0.487***	
	(0.131)	(0.144)		(0.131)	(0.144)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	No	Yes	No
Region-Year FE	No	No	Yes	No	No	Yes
N	12165	12109	12165	12165	12109	12165
Adjust R^2	0.747	0.776	0.870	0.747	0.776	0.870

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows how the career incentives of province secretaries influence interprovincial trade. Career incentive is measured by connections to PSC members and the age ineligibility rule. Columns (1) to (3) show that competition between local leaders decreases interprovincial trade, and columns (4) to (6) show that the results are similar after considering connection status. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

One concern is that above results are driven by some unobserved variables which determine both the assignment of local province secretaries and local economic policies, especially interprovincial trade policies. To investigate this argument and distinguish whether it is, in fact, social networks that influence interprovincial trade volumes, we test a modified regression, which includes dummies that check whether the trade flows will be influenced by connection statuses in the future or were in past years. Specifically, we run Regression (1.8) and Regression (1.9):

$$\log Trade_{ij,t} = \alpha + \sum_{\tau=-2}^{+2} \beta_\tau Connection_{ij,t+\tau}$$
$$+ \log GDP_{i,t} + \log GDP_{j,t} + \tau_t + \lambda_{ij} + \epsilon_{ijt} \qquad (1.8)$$

$$\log Trade_{ij,t} = \alpha + \sum_{\tau=-2}^{+2} \beta_\tau Incentive_{i,t+\tau} \times Incentive_{j,t+\tau}$$
$$+ \log GDP_{i,t} + \log GDP_{j,t} + \tau_t + \lambda_{ij} + \epsilon_{ijt} \qquad (1.9)$$

In regression (1.8), $Connection_{ij,t+\tau}$ represents the connection status of the pair-provinces i and j in the period from $Year_{t-2}$ to $Year_{t+2}$. For example, $Connection_{ij,t-2}$ means that although the specific pair-provinces are unconnected in year t, they were connected two years earlier. Oppositely, $Connection_{ij,t+2}$ means that certain unconnected pair-provinces will be connected two years later. τ_t and λ_{ij} are year fixed effect and pair-province fixed effect respectively. Based on the econometric spec-

ification, the reference group is those observations that are unconnected at least around $t-2$ to $t+2$. If the trade volumes in the current period are influenced by connection statuses in previous years, then our finding is not driven by the variable $Connection_{ij}$, but some other variables that determine decide both the assignment of local leaders and interprovincial policies. Regression (1.9) follows the similar specification. Instead of focusing on connections between regional leaders, regression (1.9) includes the political competition between local leaders as interested variables. $Incentive_{i,t}$ and $Incentive_{j,t}$ are both included.

Table (1.7) shows the dynamic effect of connections and promotion tournaments. The first two columns focus on the connections. Although connections will be formed in one or two years, the trade volumes in the current period between this specific pair-provinces is not influenced by the upcoming ties. When the connection is later lost, the trade volumes return to normal levels immediately. In addition, the insignificant β_{-1} and β_{-2} show that there are no strong pre-trends. Connections between provinces affect trade volumes only once they are actually connected. This result is consistent with our Hypothesis (1.1) and shows that there is no relationship between connections in the past or the future and current bilateral trade volumes. These results also deny any endogenous allocation of local leaders. Columns (3) and (4) focus on competitions, and again there is no pre-trends and the effect disappear when at least one of leaders in those regions lose promotion incentive. Columns (1) and (3) include all the basic controls and columns (2) and (4) include region-year fixed effect. Similarly, $Incentive_{it}$ and $Incentive_{jt}$ are included as controls.

Table 1.7: Dynamic Effect of Social Network and Career Concern

	Social Network			Promotion Tournaments	
	(1)	(2)		(3)	(4)
	LogTrade	LogTrade		LogTrade	LogTrade
2 Years before Connection	0.004	0.009	2 Years before Competition	-0.043	-0.044
	(0.033)	(0.030)		(0.029)	(0.030)
1 Year before Connection	0.016	-0.002	1 Year before Competition	-0.046	-0.044
	(0.035)	(0.034)		(0.030)	(0.034)
Connection Year	0.085**	0.021	Competition Year	-0.080*	-0.065*
	(0.036)	(0.033)		(0.042)	(0.038)
2nd Year of Being Connected	0.068*	0.029	2nd Year of Being Competition	-0.132***	-0.124**
	(0.040)	(0.038)		(0.048)	(0.050)
3rd+ Year of Being Connected	0.102**	0.084*	3rd+ Year of Being Competition	-0.158***	-0.141**
	(0.049)	(0.050)		(0.059)	(0.059)
The Year Losing Connection	0.006	-0.001	The Year Losing Competition	0.031	-0.050
	(0.037)	(0.032)		(0.034)	(0.039)
2nd Year after losing Connection	0.005	-0.024	2nd Year after Losing Competition	0.025	-0.042
	(0.038)	(0.031)		(0.032)	(0.036)
Year FE	Yes	Yes	Year FE	Yes	Yes
Pair-Province FE	Yes	Yes	Yes Pair-Province FE	Yes	Yes
Controls	Yes	No	Controls	Yes	No
Region-Year FE	No	Yes	Region-Year FE	No	Yes
N	12109	12165	N	12109	12165
Adjust R^2	0.768	0.870	Adjust R^2	0.768	0.870

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows the dynamic effect of social network and career concern. Connections have positive effect only in the years when regions are actually connected, but not the years before or the years after. The negative effect of promotion tournaments is induced only when regional leaders become competitors. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

The Joint Effect of Social Networks and Career Concern

Table (1.8) shows how bilateral trade is influenced by social networks and career incentives of local leaders, taken together. $Incentive_{it}$ and $Incentive_{jt}$ are also included as controls. The dependent variable is still the log of trade volumes between province i to province j. Columns (1) to (2) exploit the econometric specifications in regression (1.6). Column(2) shows the results while controlling for the characteristics of local leaders and regional level controls, like population and unemployment rate. The estimation with regression (1.7) is presented in column (3). In all four columns, we observe a negative effect of promotion competition on inter-regional trade, although this negative influence is offset if the local leaders are connected. Coefficients for $Connection_{ij}$ are all positive, confirm-

62

ing that connections between local leaders at least partially come from lower negotiation costs. Yet the effect of connections when local leaders are competitors is insignificant and the magnitude of the coefficients for the interaction term $Connection_{ij} \times Incentive_i \times Incentive_j$ is quite marginal. In this sense, there is less evidence that if local leaders are connected, they would conduct more trade and help each other to get promotion. This results show that connections influence the interprovincial trade through the channel of political in-group favoritism just slightly.

Table 1.8: Joint Effect of Social Networks, Career Concern and Inter-Province Trade Flow

	(1) LogTrade	(2) LogTrade	(3) LogTrade
$Connection_{ij,t}$	0.081**	0.080**	0.050
	(0.041)	(0.035)	(0.030)
$Incentive_{i,t} \times Incentive_{j,t}$	-0.090**	-0.113***	-0.081***
	(0.040)	(0.037)	(0.031)
$Incentive_{i,t} \times Incentive_{j,t} \times Connection_{ij}$	0.044	0.024	-0.003
	(0.065)	(0.059)	(0.054)
$LogGDP_{i,t}$	0.969***	1.129***	
	(0.131)	(0.129)	
$LogGDP_{j,t}$	1.320***	0.487***	
	(0.131)	(0.144)	
Year FE	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes
Controls	No	Yes	No
Region-Year FE	No	No	Yes
N	12165	12109	12165
Adjust R^2	0.747	0.776	0.870

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows how connections as well as career incentives change interprovincial trade. Connection increases interregional trade volume mostly through reduced information asymmetry, but only marginally come from political in-group favoritism. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

Besides cross-politician effect, we also look at within-politician effect, to alleviate the concern that our results are driven by the possibility that

ability of politicians would be correlated with their networks, both among their peers and with their superiors, by including politician fixed effect. The results are shown in Table (1.9). All the results are similar compared to our baseline regressions: Even same politician, would like to increase trade with regions when his trading partners become his friends during his governance; And when he has the career incentives, would be more prone to decrease trade between his competitors compared to the case when he loses the incentives.

Table 1.9: Social Network, Career Concern and Inter-Province Trade Flow (within Politician FE)

	(1) LogTrade	(2) LogTrade	(3) LogTrade	(4) LogTrade	(5) LogTrade	(6) LogTrade
$Connection_{ij,t}$	0.061**	0.062**	0.049*	0.059**	0.060**	0.050
	(0.027)	(0.027)	(0.027)	(0.030)	(0.030)	(0.030)
$Incentive_{i,t} \times Incentive_{j,t}$	-0.071**	-0.076**	-0.081***	-0.073**	-0.077**	-0.081***
	(0.030)	(0.030)	(0.030)	(0.031)	(0.031)	(0.031)
$Incentive_{i,t} \times Incentive_{j,t} \times Connection_{ij,t}$				0.013	0.010	-0.003
				(0.053)	(0.054)	(0.054)
$LogGDP_{i,t}$	0.494***	0.777***		0.493***	0.776***	
	(0.110)	(0.119)		(0.110)	(0.119)	
$LogGDP_{j,t}$	0.819***	0.240**		0.818***	0.240**	
	(0.107)	(0.113)		(0.108)	(0.113)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	No	Yes	No
Politician FE	Yes	Yes	Yes	Yes	Yes	Yes
Region-Year FE	No	No	Yes	No	No	Yes
N	12164	12109	12164	12164	12109	12164
Adjust R^2	0.851	0.856	0.870	0.851	0.856	0.870

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows how connections as well as career incentives change interprovincial trade; connections between local leaders offset the negative impact of political competition. This table includes politician FE. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

1.6.3 Open Market or Import Restriction

Rather than the unidirectional trade volumes, observing change in average trade volume between provinces might provide a more intuitive way to depict interregional cooperation. While in the baseline results, we look at the trade volume from province A to province B and from province B to province A separately, in this subsection, we examine average trade

volume between province A and province B.

There are several advantages to investigating the interregional trade activities by the average trade flow between provinces. First, this allows to test whether the baseline results are driven by non-equivalent trade flows between provinces, which might also be extreme enough to influence the estimation. Second, it provides the possibility of further understanding the effect of career incentives. Specifically, looking at average trade flows facilitates identifying the effect of career incentive in situations where only one of the local leaders has a strong career concern.

Since promotion partially depends on GDP growth, province secretaries strive to help local firms grow. To this end, there are two different strategies they can adopt. The first is to open the market. Much literature recognizes open markets increase social welfare and GDP growth in the long run. Local leaders could thus decrease trade barriers through both short-term policies (e.g., relaxing the restrictions on quotas or easing administrative discrimination) and long-term policies (e.g., constructing a high-speed railway) to help the local market develop. Or, on the other contrary, local leaders could implement import restrictions in an effort to push the growth of local firms. For the export side, local leaders could use subsidies to encourage local firms to expand markets, while for the import side they could increase trade barriers to decrease competitions and protect local firms. If local leaders with career concerns are generally more likely to implement an open market policy, average trade flows should increase even if there is only one province secretary with career incentive. If the local leaders lean towards import restriction, then change in average trade flows will depend on the relative magnitude of encouraged export

65

and import restriction.

To identify change in average trade flows between regions, following the model specification described above, and in the spirit of Baldwin and Taglioni (2006), we modify the gravity equation as:

$$\sqrt{V_{ij}V_{ji}} = \sqrt{G^2 \frac{M_i^2 M_j^2}{\phi_{np,ij}^2} \times e^{2(\alpha C_{ij} - \beta T_{ij})}}$$

Which gives us the econometric specification:

$$\frac{logV_{ij} + logV_{ji}}{2} = logG + \alpha C_{ij} - \beta T_{ij} + log(M_i \times M_j) - log\phi_{np,ij} \quad (1.10)$$

The only difference between gravity equations (1.1) and (1.10) is that the variable on the left hand side is not trade flow from province i to province j, but the average trade flow between province i and province j. Since now we look at the average trade flows, we can also add a dummy which equals 1 when only one of the local leaders in the pair-province has career incentive. The regression function then becomes:

$$
\begin{aligned}
Ave\log Trade_{ijt} = {} & \alpha + \beta_1 Connection_{ij} + \beta_2 Incentive_{i(j)t} \times [1 - Incentive_{j(i)t}] \\
& + \beta_3 Incentive_{it} \times Incentive_{jt} + \log(GDP_{it} \times GDP_{jt}) \\
& + \tau_t + \lambda_{ij} + \epsilon_{ijt} \quad\quad\quad\quad\quad (1.11)
\end{aligned}
$$

The second term in regression (1.11), $Incentive_{i(j)t} \times [1 - Incentive_{j(i)t}]$,

66

indicates the situation in which only one of the local leaders has career incentive. However, the results from this specification should be interpreted with caution since in this case MTR cannot be controlled. The average of $Incentive_{it}$ and $Incentive_{jt}$ are included. Tables (1.10) and (1.11) show the results using average trade volumes as the dependent variable. The estimation in Table (1.10) show a similar pattern to the baseline regressions: connection status between local leaders increases interprovincial trade flows by 8%, but promotion tournaments hamper trade volumes by 8% as well. Moreover, Table (1.11) shows if only one of the local leaders in the pair-provinces has career incentive, the trade volumes is slightly higher compared when neither leader has high hope of being promoted. In comparison to the open market policy, these results support the claim that local leaders prefer to implement import restrictions in order to help local firms grow.

Table 1.10: Social Networks, Career Incentives, and Average Trade Flows

	(1) AveLogTrade	(2) AveLogTrade	(3) AveLogTrade	(4) AveLogTrade	(5) AveLogTrade
$WorkTie_{ij,t}$	0.076*				
	(0.046)				
$Connection_{ij,t}$		0.082***		0.085***	0.081**
		(0.030)		(0.030)	(0.035)
$Incentive_{i,t} \times Incentive_{j,t}$			-0.103***	-0.108***	-0.111***
			(0.037)	(0.037)	(0.038)
$Incentive_{i,t} \times Incentive_{j,t} \times Connection_{ij,t}$					0.023
					(0.060)
$AveLogGDP_{ij,t}$	1.615***	1.605***	1.641***	1.628***	1.628***
	(0.245)	(0.245)	(0.242)	(0.242)	(0.242)
Year FE	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes
N	6047	6047	6047	6047	6047
Adjust R^2	0.936	0.936	0.936	0.936	0.936

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows how connections as well as career incentives change interprovincial trade and all the estimations are similar with baseline results. Besides the interaction term, the average of variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

To provide more direct evidence on how the career incentives of local leaders influence outflows and inflows, we apply the same gravity equa-

Table 1.11: Career Incentive and Inter-Province Trade Flow

	(1) AveLogTrade	(2) AveLogTrade	(3) AveLogTrade	(4) AveLogTrade
$Incentive_{i(j),t} \times [1 - Incentive_{j(i),t}]$	0.017	0.015	0.017	0.017
	(0.022)	(0.021)	(0.022)	(0.021)
$Incentive_{i,t} \times Incentive_{j,t}$	-0.042	-0.073**	-0.046	-0.073**
	(0.035)	(0.034)	(0.034)	(0.034)
$Connection_{ij,t}$			0.089**	0.085***
			(0.036)	(0.030)
$AveLogGDP_{ij,t}$	2.319***	1.641***	2.304***	1.628***
	(0.264)	(0.242)	(0.263)	(0.242)
Year FE	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes
N	6075	6047	6075	6047
Adjust R^2	0.923	0.936	0.923	0.936

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows how the career incentives of province secretaries influence interprovincial trade. Career incentive is measured by connection to PSC members and the age ineligibility rule. The last two columns include the variable $Connection_{ij}$. There is marginal positive effect on interregional trade when one of the local leaders have career interest. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

tion but instead of the dummy variable indicating whether local leaders in both provinces are competitors, we focus on whether the leaders in the outflow province or inflow province have the career incentive. To be clear, we design regression (1.12) as:

$$\log trade_{od,t} = \alpha + \beta_1 Incentive_{o,t} + \beta_2 Incentive_{d,t}$$
$$+ \log GDP_{o,t} + \log GDP_{d,t} + \epsilon_{odt} \tag{1.12}$$

Here instead of average trade flows between two provinces, the dependent variable is the trade flow from origin to destination. β_1 represents how the outflow would change if the province secretary has career incentive, and

68

β_2 shows how the inflow would be influenced by career concerns. If local leaders are more inclined to implement an open market, then β_1 and β_2 should be positive. That is, local leaders would like to decrease trade barriers and engage in more interprovincial economic activities. If, however, province secretaries are more supportive of import restrictions, then β_1 is expected to be positive, as local leaders are expected to help local firms expand markets in other regions, while β_2 should be negative. As in the baseline results, pair-province fixed effect and year-fixed effect are included. The standard error is robust and clustered at the pair-province level. Different sets of control variables are also included. Again, however, the results from regression (1.12) should also be interpreted with caution since we cannot control MTR by including the province-year fixed effect, as it would entirely absorb the effect of career incentive of leaders, measured at region-year level.

Table (1.12) shows how trade flows are influenced by the career incentives of local leaders. Columns (1) to (2) show the results from specification (1.12), and columns (3) and (4) check whether there is an further change in trade volumes when leaders are competitors. Columns (5) and (6) show the results when connection status is considered. In all columns, the coefficients for the variable $Incentive_o$ are all positive and the coefficients for the variable $Incentive_d$ are always negative, consistent with the story of local protectionism and import restriction. In columns (3) to column (6), we observe that the coefficients of the interaction terms $Incentive_o$ and $Incentive_d$ are negative, indicating that although import restrictions decrease trade flows from province o to province d, interregional trade volume drops further when local leaders in both provinces have career incentives. This results complements our baseline result that promotion

tournaments decrease trade flows between each provinces.

Table 1.12: Effect of Career Concern on Inflow and Outflow

	(1) LogTrade	(2) LogTrade	(3) LogTrade	(4) LogTrade	(5) LogTrade	(6) LogTrade
$Incentive_{o,t}$	0.164***	0.201***	0.190***	0.236***	0.191***	0.239***
	(0.033)	(0.033)	(0.035)	(0.035)	(0.035)	(0.035)
$Incentive_{d,t}$	-0.178***	-0.238***	-0.152***	-0.203***	-0.152***	-0.201***
	(0.032)	(0.034)	(0.036)	(0.037)	(0.036)	(0.037)
$Incentive_{o,t} \times Incentive_{d,t}$			-0.079**	-0.105***	-0.090**	-0.113***
			(0.039)	(0.037)	(0.040)	(0.037)
$Connection_{od,t}$					0.081**	0.080**
					(0.041)	(0.035)
$Incentive_{o,t} \times Incentive_{d,t} \times Connection_{od,t}$					0.044	0.024
					(0.065)	(0.059)
$logGDP_{o,t}$	0.974***	1.133***	0.978***	1.136***	0.969***	1.129***
	(0.131)	(0.129)	(0.131)	(0.129)	(0.131)	(0.129)
$logGDP_{d,t}$	1.325***	0.491***	1.329***	0.494***	1.320***	0.487***
	(0.131)	(0.145)	(0.131)	(0.144)	(0.131)	(0.144)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes
N	12165	12109	12165	12165	12109	12165
Adjust R^2	0.746	0.776	0.747	0.776	0.747	0.776

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows that when local leaders have career incentive, they prefer to increase outflow but decrease inflow. Trade volume drop further when both leaders have career incentive. Connection is constructed by shared work experience, education background, or hometown. Career incentive is measured by both the connection to PSC members and the age ineligibility rule. Different sets of controls are included as a robustness check.

Similarly, we look at the within-politician effect of career concern on out-flows and inflows, by controlling the politician fixed effect . Results are shown in Table (1.13). Specifically, we add the politician fixed effect in the regressions, and the coefficients are similar with those in Table (1.12) both in signs and magnitudes. Politicians would be more likely to make more outflow and restrict inflow, and decrease even more trade with their competitors when they are actually having career concerns, com-pared to the time when they only have smaller chance to get promotion. This analysis alleviate the concern that those results are driven by some smart politicians who went to good schools and worked in better places, and form a strong networks in those places.

70

Table 1.13: Effect of Career Concern on Inflow and Outflow(within Politician Effect)

	(1) LogTrade	(2) LogTrade	(3) LogTrade	(4) LogTrade	(5) LogTrade	(6) LogTrade
$Incentive_{o,t}$	0.167***	0.118***	0.185***	0.138***	0.187***	0.140***
	(0.036)	(0.034)	(0.037)	(0.035)	(0.037)	(0.035)
$Incentive_{d,t}$	-0.111***	-0.116***	-0.093***	-0.096***	-0.092***	-0.094***
	(0.033)	(0.031)	(0.034)	(0.033)	(0.034)	(0.033)
$Incentive_{o,t} \times Incentive_{d,t}$			-0.068**	-0.077***	-0.073**	-0.081***
			(0.030)	(0.029)	(0.031)	(0.031)
$Connection_{od,t}$					0.059**	0.059**
					(0.030)	(0.030)
$Incentive_{o,t} \times Incentive_{d,t} \times Connection_{od,t}$					0.013	0.006
					(0.053)	(0.053)
$logGDP_{o,t}$	0.484***	0.539***	0.491***	0.543***	0.493***	0.546***
	(0.110)	(0.115)	(0.110)	(0.115)	(0.110)	(0.115)
$logGDP_{d,t}$	0.809***	0.064	0.816***	0.068	0.818***	0.070
	(0.107)	(0.110)	(0.107)	(0.110)	(0.108)	(0.110)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Politician FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes
N	12165	12109	12165	12165	12109	12165
Adjust R^2	0.851	0.857	0.851	0.857	0.851	0.857

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows that when local leaders have career incentive, they prefer to increase outflow but decrease inflow. There is an additional decrease in trade volumes when both leaders have career incentive. Connection is constructed by shared work experience, education background, or hometown. Career incentive is measured by both the connection to PSC members and the age ineligibility rule. Different sets of controls are included as a robustness check. Politician FE are included to estimate within politician effect of career concerns on outflow and inflow. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

Besides, we also look at the heterogeneous effects of career concerns in developed and developing regions by adding the interaction term between career concerns of local leaders and $logGDP_t$ in specification (1.12). Table (1.14) presents in results.

Generally speaking, we find the sign of coefficients for all the parameters are similar compared to Table (1.12). However, local leaders would conduct less distortions in developed compared to developing regions: The coefficients for the interaction terms of career concerns and GDP have opposite signs compared to those for $Incentive_{o,t}$ and $Inventive_{d,t}$ separately, while the magnitudes are quite small. This results could be driven by two mechanism: Firstly, political institutions are usually more transparent in places with better economy performance so there is less space for politicians to conduct policy discrimination. According to a survey

Table 1.14: Career Incentive, Inflow and Outflow (Heterogeneous Effect)

| | (1) | (2) | (3) | (4) |
	LogTrade	LogTrade	LogTrade	LogTrade
$Incentive_{o,t}$	0.512^{**}	0.561^{**}	0.506^{**}	0.555^{**}
	(0.254)	(0.242)	(0.253)	(0.242)
$Incentive_{d,t}$	-0.610^{**}	-0.447^{*}	-0.616^{**}	-0.452^{*}
	(0.260)	(0.258)	(0.259)	(0.256)
$Incentive_{o,t} \times Incentive_{d,t}$			-0.082^{**}	-0.104^{***}
			(0.039)	(0.036)
$Incentive_{o,t} \times logGDP_{o,t}$	-0.038	-0.040	-0.035	-0.035
	(0.028)	(0.027)	(0.028)	(0.027)
$Incentive_{d,t} \times logGDP_{d,t}$	0.048^{*}	0.023	0.051^{*}	0.027
	(0.029)	(0.029)	(0.029)	(0.028)
$logGDP_{o,t}$	0.985^{***}	1.139^{***}	0.988^{***}	1.141^{***}
	(0.131)	(0.129)	(0.131)	(0.128)
$logGDP_{d,t}$	1.308^{***}	0.489^{***}	1.310^{***}	0.491^{***}
	(0.131)	(0.145)	(0.131)	(0.144)
Year FE	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes
N	12165	12165	12165	12165
Adjust R^2	0.747	0.776	0.747	0.776

t statistics in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows that when local leaders have career incentive, developed areas would have less distortions than developing areas.

conducted by Renmin University in 2018, regions with best business environment in China are Beijing, Shanghai and Zhejiang, which are all economic developed places.[18] Secondly, from the demand side, politicians do not have to manipulate interregional trade policies so much, since politicians in regions with strong economic performance can have more policy tools to make local economy boost, for example, to attract more investments easily.

---

[18]The Ranking and Enlightenment of Current Political and Business Relations in Chinese Cities. Renmin University. 2018

1.6.4   Comparative Advantage or Input Provision

One concern of above analysis is that raw materials, like coal and mineral ores, take the highest weights in railway transportation. For example, in 2010, among 3.1 billion tons of total volume of railway cargo in China, transportation of coals is around 1.6 billion tons and other mineral ores takes around 0.6 billion tons, equivalent to 50% and 20% of the total volume respectively. In the data, we only observe the total weight of bilateral railway cargo, but not the volume in specific categories or their values, then the importance of heavy goods (and generally speaking, lower value) could be over-emphasized in our analysis. Even more, our results might be only driven by those goods, but not the final goods. However, if the raw materials are the reason why the trade between regions with motivated leaders are decreased, then it might not come from comparative advantage, but just because regions would restrain the outflow of input to support the development of competing regions, but not because of helping local firms to grow.

The first best solution to distinguish those two mechanisms is to check the change of trade flows in different good categories among region pairs under competition. But since we do not observe goods categories in the data, it is impossible. However, besides the total volume of trade flows, *China Railway Yearbook* also documents the bilateral trade flows of coals among region pairs. Then as the second best solution, we could explore whether the bilateral trade flows of coals have the similar pattern compared to trade flows excluding coals. If those two flows change similarly among competing regions, then we cannot deny the possibility that our results are from input provision channel but not comparative advantage.

Table 1.15: Social Network, Career Concern and Inter-Province Trade Flow (Excluding Coal)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	LogTrade	LogTrade	LogTrade	LogTrade	LogTrade	LogTrade	LogTrade
$Connection_{od,t}$					0.067*	0.067*	0.031
					(0.040)	(0.034)	(0.030)
$Incentive_{o,t} \times Incentive_{d,t}$			-0.093**	-0.117***	-0.099**	-0.119***	-0.078**
			(0.038)	(0.036)	(0.038)	(0.037)	(0.032)
$Incentive_{o,t}$	0.096***	0.121***	0.126***	0.160***	0.127***	0.161***	
	(0.029)	(0.029)	(0.032)	(0.031)	(0.031)	(0.031)	
$Incentive_{d,t}$	-0.110***	-0.154***	-0.079***	-0.116***	-0.079**	-0.114***	
	(0.027)	(0.029)	(0.031)	(0.033)	(0.031)	(0.033)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes	No
Region-Year FE	No	No	No	No	No	No	Yes
N	12165	12108	12165	12108	12165	12108	12165
Adjust R^2	0.751	0.779	0.751	0.779	0.751	0.779	0.869

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. The dependent variable in this table is bilateral trade volumes excluding coal. This table shows how social networks and promotion tournaments would influence trade volumes excluding coal. All the results are similar compared to baseline results except the magnitudes of coefficients for the effect of career concern on outflow and inflow become smaller. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

Table (1.15) shows the results using the bilateral trade flows excluding coals. All the results are consistent to the baseline results. Specifically, compared to the baseline results, where the coefficients is around 8% for connections and -10% for promotion tournaments, the magnitudes of coefficients in columns (5) to (7) in Table (1.15) are also quite similar, implying coal is not the reason why we can observe more trade in connected regions and less trade in competing regions. Columns (1) to (4) follows the specification in Table (1.12). Compared to Table (1.12), the magnitudes of $incentive_o$ and $incentive_d$ are much smaller, implying same as other goods, regions with motivated leaders would push the outflow and restrain the inflow of coals. However, coefficients of the interaction term $Incentive_o \times Incentive_d$ becomes even larger in magnitude, re-confirm that coal transportation is not the reason for the decrease of trade flows in promotion tournaments.

Table (1.16) follows the same analysis to coal transportation. Since three

Table 1.16: Social Network, Career Concern and Inter-Province Trade Flow (Only Coal)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Log(Coal+1)	Log(Coal+1)	Log(Coal+1)	Log(Coal+1)	Log(Coal+1)	Log(Coal+1)	Log(Coal+1)
$Connection_{ij,t}$					0.065	0.047	0.026
					(0.040)	(0.039)	(0.039)
$Incentive_{i,t} \times Incentive_{j,t}$			-0.030	-0.049	-0.028	-0.046	-0.048
			(0.048)	(0.047)	(0.050)	(0.049)	(0.047)
$Incentive_{o,t}$	0.262***	0.337***	0.272***	0.353***	0.272***	0.354***	
	(0.060)	(0.060)	(0.059)	(0.060)	(0.059)	(0.060)	
$Incentive_{d,t}$	-0.317***	-0.431***	-0.307***	-0.414***	-0.307***	-0.413***	
	(0.057)	(0.058)	(0.060)	(0.059)	(0.060)	(0.059)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes	No
Region-Year FE	No	No	No	No	No	No	Yes
N	12180	12124	12180	12124	12180	12124	12180
Adjust R^2	0.547	0.576	0.547	0.576	0.547	0.576	0.699

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows how social networks and promotion tournaments would influence coal transportations. Since three quarters of observations has zero trade flows of coals, dependent variable in this table is the log of coal transportation $+ 1$. Social network between regions would not increase the bilateral trade flow of coals. When local leaders have career interests, they will increase the outflow and restrict the inflow of coal, but they would not decrease it further if they are trading with their competitors. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

quarters of region pairs have zero trade flows in coal, the dependent variables in Table (1.16) is the log of one plus the trade flow of coal. As shown in columns (5) to (7), connected regions would not increase coal transportations between each other. Moreover, as general firms, when local leaders have career concern, they will increase the outflow, but restrict the inflow of coals, but they will not decrease the trade of coals further even if they are trading with their competitors, as shown in columns (1) to (4).

Although for bilateral railway cargo data, we can only observe the volume of total freight and coal, but since coal takes the dominant position in total railway cargo, comparing the trade flows of coal and trade flows excluding coal provide some messages: The decreased trade volume given promotion tournaments are less likely to be induced by raw materials, but the final goods, which is around 20% of total freight. Moreover, it is not the case that when having promotion incentives, local leaders would not support each other via providing less inputs, but because they are protect-

ing their own firms by setting up higher trade barrier.

1.7   Mechanisms

In this section, we discuss several possible mechanisms behind the above results.

1.7.1   Deliberate Allocation of Local Leaders

Although the results support the conclusion that connections between local leaders increase interregional trade flows, reverse causality should still be considered. If the central government realizes that local governments are more likely to cooperate if provincial secretaries are connected, then when they wish to build a close relationship between a specific pair of provinces, they might allocate connected leaders to those regions, accompanied by an administrative order to cooperate. In other words, it is not the connection status between local leaders that leads to increased trade flows, but the will of the central government.

Although we cannot directly detect administrative order from the central government, it is possible to use the tenure of local leaders stay at the same positions to test whether this channel of deliberate allocation is true. If the central government wishes to enhance the collaboration between two regions by assigning the connected politicians, they should keep these local leaders in their positions longer, knowing that a change of leaders might induce less cooperations. Figure (1.11) shows the distribution of working length for connected and unconnected pairs of local leaders. The dark column represents the unconnected politicians and the light

represents the connected ones. As we can see from Figure (1.11), distribution of working length is quite similar for those two groups, showing that connected politicians do not work for longer periods of time compared to unconnected leaders. Actually more connected leader pairs work only one to three years together at their positions, and compared to connected leaders, larger fractions of unconnected pairs work longer. One explanation for this result is connected leaders trade more with each other and get promotion successfully, so generally they work shorter. We also run the typical Kolmog-Smirnov test and we cannot reject the null hypothesis that those two distributions are different and the results are shown in Table (A.1.7). Graphic result and Kolmogorov-Smirnov test both suggest central government does not exploit allocation as an instrument to systematically enhance regional cooperation.

1.7.2   Repeated Investment

A lot of literature have documented the fact that in order to increase GDP, local leaders would like to invest in specific industries to get more government revenue. Some industries providing large tax, for example, Car and Tobacco. Thus there is a concern that the decreased trade volumes between regions where local leaders both have career concern, is not because they both have lower incentive to cooperate with each other, but the decreased demand because of the similar production structure induced by repeated investment. To check whether if this channel is true, we collect and output of twenty-one specific industries from *Industry Statistical Yearbook* and construct the dependency rate of each industry in a given year. If the motivated regional leaders are more inclined to do repeated investments, then we should find the dependency rates of those industries

Figure 1.11: The Distribution of Working Length for Connected and Unconnected Politicians
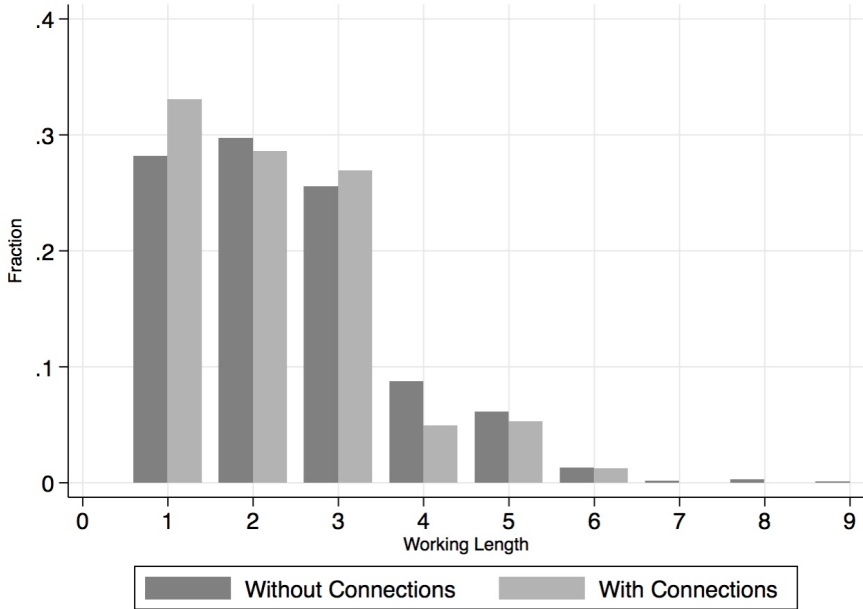
with highest weight in national tax revenue are higher when local leaders have career concern. Table (1.17) shows the top-10 industries taking the highest weight in national tax revenue. In this table, tax revenue is the sum of income tax and value-added tax, but the orders are similar if we considered those taxes separately.

More specifically, dependency rate of industry i in region j at year t is given by the ratio between the output of industry i and local GDP in each

year:

$$Dependency_{ij,t} = \frac{Output_{ij,t}}{GDP_{j,t}} \tag{1.13}$$

Then we test if the dependency rate of some industries is systematically higher when local leaders have the career incentive by regression (1.12) as:

$$Dependency_{ij,t} = \alpha + \beta_1 Incentive_{j,t} + \log GDP_{j,t} + X_t + \tau_t + \gamma_i + \epsilon_{ijt} \tag{1.14}$$

Similar as specification before τ_t is the year fixed effect, γ_j is the region fixed effect, and the interested variable is β_1. If β_1 is positive, that means when local leaders are motivated, they are more likely to develop some industry and the trade volumes among those regions might decrease because of normal market decision, instead of the competition between local leaders. X_t are other controls similar to baseline regressions. Standard errors are clustered on region level. Figure (1.12) plots the estimation results for industries with high weight in national tax revenue. None of coefficients is significant different with 0, which shows that the reason behind decreased trade volume when local leaders are competitors is not the motivation to develop specific industry.

Table 1.17: Top-10 Industries with Highest Weights in National Tax Revenue

Code	Industry
44	Production and Distribution of Electric and Heat Power
26	Manufacture of Chemical Raw Materials and Products
37	Transport Equipment
06	Coal Mining and Dressing
31	Nonferrous Metals Products Manufacturing
40	Post and Telecommunications
39	Electric Equipment and Machinery
08	Smelting and Pressing of Ferrous Metals
35	Manufacture of General Purpose Machinery
25	Petroleum Processing

This table contains the information on the Top-10 industries which provide highest weight in the National tax revenue in the data periods (2001-2015). Tax revenue is calculated by the sum of value-added tax and Income tax. Information about tax is collected through National Bureau of Statistics of China.

1.7.3   News Reporting of Economic Cooperations

Although there is some evidence that interregional trade volumes vary depending on the relationship between local leaders, there is a lack of direct evidence on the influence of local leaders themselves. Ideally, direct evidence would be gathered from official documents, recording preferential treatment when local firms do business with certain provinces. If, however, these documents do exist, they are certainly confidential, since they contrasts with part of the central government's strategy to promote an integrated market.

Although it is not possible to access official documents, we can collect information on events related to interregional economic cooperation from local newspapers. When such collaboration is realized or organized, it is supported by governments, and followed by preferential government policies. This information can be used to reveal the preferences of local

Figure 1.12: Career Concern and Industry Dependency Rate
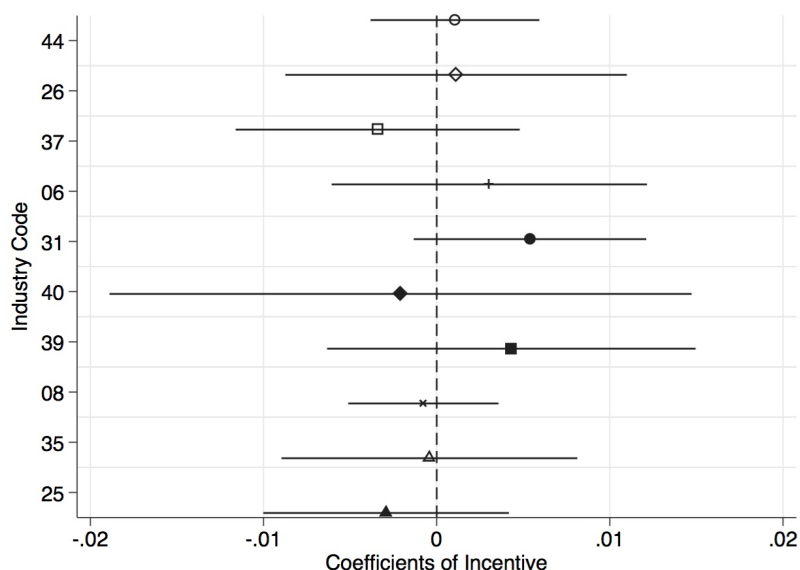
Notes: Figure (1.12) checks whether the dependency rate of top-10 industries which provides most tax revenue in the data periods is correlated with the career concern of local leaders. None of those coefficients is different from 0.

leaders and the efforts they make to increase economic activities between provinces. To this end, we use the China National Knowledge Infrastructure (CNKI) set of databases, which contain the content of newspapers published in mainland China since 2000, to gather all articles in government-owned newspapers mentioning the official visits of local leaders to other regions. Articles published in these government-owned newspapers (also called Party Dailies), are monitored by the local propaganda department, tasked with informing the public relative to recent activities and decisions from local government (Qin, Strömberg and Wu, 2018). We choose these newspapers as the information about leaders' ac-

tivities is more accurate.

Local leaders regularly visit other provinces, during which time they often discuss issues related to lowering trade barriers so as to promote the economic development of both places. For example, when the local leaders from Guangxi Province visited Gansu Province in 2015, during the meeting leaders from both provinces agreed to reinforce economic cooperation by building up highways and setting up more air routes between each other. Another example is the official visit of Zhejiang leaders to Sichuan province in 2015. In this meeting, Xia Baolong, the local province secretary in Zhejiang Province, said:

'Although the endowment in Sichuan and Zhejiang is different...both provinces are faced with the important mission of industry upgrading. ***We must help each other....we will continue to deepen the cooperation and exchanges between Zhejiang and Sichuan in different areas...'***

As a respondence, Local party secretary in Sichuan Province, Wang Dongming, said the following in the same meeting:

*'...****We will promote the cooperation of manufacturing industry and combine the industrial advantages of the two provinces****... and enhance the effective allocation of resources.'*

Besides the expressing the intention of economic cooperations, during such official meetings, local leaders sometimes bring business people with them and help them to expand their market in other provinces. Local leaders also occasionally take part in meetings with business people from

other provinces and implement preferential policies aimed at attracting investment.

Since the data on interprovincial trade is composed of the trade volume among 29 provinces, we collected all the articles mentioning economic cooperations in government-owned newspapers in 28 provinces. The remaining newspaper of Shandong Province, the $Dazhong\ Daily$ is not included in the CNKI database. We exclude articles that are irrelevant to economic issues or collected mistakenly. The number of newspaper articles talking about official visits between region i and j documented in the party daily of region i in year t is treated as the effort made on the part of the local governments in province i and j to work with each other in year t, which at least partially reflects the trading preferences. Before 2005, articles in some newspapers are not collected by the dataset, then observations of those regions before 2005 are omitted in the sample[19].

We use an econometric specification similar to specification (1.6) to test how the connections and competition statuses of local leaders affect the number of newspaper articles mentioning collaboration with one another. $News_{ijt}$ represents the number of articles published in the party daily of province i mentioning economic cooperations with province j. To avoid the influence of extreme values and zero articles for some observations, we use $log(News_{ijt}+1)$ as the dependent variable. The results are shown in Table (1.18).

The first column shows the positive relationship between articles and in-

---

[19]Before 2004, articles in official newspapers in Guangdong, Guizhou, Ningxia, Tianjin and Heilongjiang are not included in the CNKI database

Table 1.18: Social Network, Career Concern and Leaders' Visits

	(1) LogTrade	(2) Log(News+1)	(3) Log(News+1)	(4) Log(News+1)
$News_{ij,t}$	0.050***			
	(0.017)			
$Connection_{ij,t}$		0.026**	0.026**	0.029**
		(0.013)	(0.012)	(0.012)
$Incentive_i \times Incentive_j$		-0.034***	-0.030***	-0.036***
		(0.011)	(0.011)	(0.011)
$Incentive_i \times Incentive_j \times Connection_{ij}$		0.042	0.039	0.028
		(0.032)	(0.032)	(0.029)
Year FE	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes
Controls	Yes	No	Yes	No
Region-Year fe	No	No	No	Yes
N	11200	11200	11150	11200
Adjust R^2	0.772	0.090	0.094	0.122

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows how relationships between local leaders influence news articles on interprovincial economic cooperation. The first column shows the positive relationship between articles and interprovincial trade, while the last three columns show that connections between local leaders increases the reporting of interprovincial economic cooperation, but that competition status between leaders decreases it. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

terprovincial trade volumes, confirming the assumption that more news means more interprovincial economic activities and thus greater trade volumes. The last three columns show that relationship between local leaders in fact affects the intensity of interprovincial activities. Specifically, if the local leaders are connected, the news reporting of interprovincial cooperation increase by around 0.26 log points. If, however, local leaders are competitors in promotion tournaments, news reporting decreases by 0.34 log points, although if they are also connected, this negative effect is compensated. The results are robust under different sets of controls.

This subsection provides a second-best method to show the trade preferences of local leaders, and provides evidence of a mechanism through which interregional trade is influenced by the status of local leaders. This result is consistent with our assumption: when local leaders are con-

nected, they push collaboration between provinces, but when they are competitors, the collaboration is weaker, unless they are connected. One concern is that party dailies might not report all interprovincial activities, such that our estimation does not include all the information. However, this concern is alleviated by our selection of newspapers. First, party daily is the most important newspaper published by the local government, and reporters are permitted to record all important activities of local leaders. Second, the content of these articles is monitored by the local government, with the main goal of propaganda, such that any intentional attention or omission is fundamentally the will of the government, again, reflecting the preference of local leaders.

1.8   Robustness Checks

We carry out a series of robustness checks to make sure that our analysis is consistent when using different proxies of career incentive and diverse samples.

First, in the baseline results, we use a dummy variable to indicate whether local leaders have career incentive and whether they are eligible for the promotion tournament. One might also consider the intensity of career incentives. Theoretically, promotion tournaments are more competitive where the local leaders have stronger career incentives, and trade flow should be even lower. Although we cannot observe the intensity of career incentives directly, we can use the number of connections to PSC members as a proxy. The more connections local leaders have, the greater their likelihood of being promoted and thus the larger their career con-

cern. Also, the competition would be more severe if both leaders have the similar number of connections to PSC members. In columns (1) to (3) of Table (1.19), we include the absolute value of difference in number of connections to PSC members both leaders have as controls. The outcome is similar compared to the baseline results.

Second, instead of this stratified intensity, we also use the exact number of connections as a proxy for intensity to test regression (1.12), for which results are shown in Table (1.19). Columns (4) to (5) in Table (1.19) show that the outcomes is once again similar to the results in first two columns in Table (1.12). Specifically, the more connections to PSC members local leaders have, they will induce more outflow and less inflow.

Third, we employ subsamples to check the consistency of the results. Since the party secretaries of Beijing and Shanghai are considered to be special in Chinese politics[20], their promotion might depend on different factors other than age and connections to PSC members. Moreover, Beijing and Shanghai are the most important regions in China and they receive the largest transfers and economic support from the central government. To check whether the results are driven by some unobserved factors only applicable to Beijing and Shanghai, we exclude from the sample those the trade flows in which Beijing and Shanghai are involved. Table (1.20) shows that the results remain consistent. We use another subsample to check whether the effect we observe comes from only the regions with large trade volume of raw material. In other words, we want to know

---

[20]They are, for example, always members of the Politburo and highly expected to be PSC members in the future.

Table 1.19: Intensity of Career Concern and Interprovincial Trade

	Intensity is the No. of Connections to PSC Members				
	(1)	(2)	(3)	(4)	(5)
	LogTrade	LogTrade	LogTrade	LogTrade	LogTrade
$Connection_{ij,t}$	0.079*	0.079**	0.050*		
	(0.041)	(0.035)	(0.030)		
$Incentive_{i,t} \times Incentive_{j,t}$	-0.059*	-0.083***	-0.071*		
	(0.030)	(0.029)	(0.038)		
$Incentive_{i,t} \times Incentive_{j,t} \times Connection_{ij,t}$	0.053	0.031	-0.002		
	(0.065)	(0.059)	(0.054)		
$Difference\ in\ Intensity_t$	0.021**	0.017*	0.007		
	(0.009)	(0.009)	(0.014)		
$Intensity_{i,t} \times AgeCeiling_{i,t}$				0.057***	0.086***
				(0.017)	(0.017)
$Intensity_{j,t} \times AgeCeiling_{j,t}$				-0.068***	-0.096***
				(0.018)	(0.018)
$LogGDP_{i,t}$	0.940***	1.098***		0.977***	1.128***
	(0.132)	(0.132)		(0.132)	(0.129)
$LogGDP_{j,t}$	1.292***	0.483***		1.333***	0.492***
	(0.133)	(0.146)		(0.132)	(0.145)
Year FE	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	No	Yes
N	12165	12109	12165	12165	12109
Adjust R^2	0.741	0.768	0.870	0.744	0.773

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows how social network and promotion tournaments would influence interregional trade when considering the intensity of career concern, proxied by the number of connections to PSC members local leaders have. The first three columns include the difference in number of connections to PSC members as control, and columns (4) and (5) show the more connections local leaders have, they will do more outflow and less inflow.

if social network and career concern influence both developed and developing regions. Specifically, we run the baseline regression but exclude Shanxi and Nei Mongol, where local economy all rely on coal and oil industry. Table (1.21) shows the estimation and it is consistent with the results before.

We also did some additional tests and the results are shown in appendix and all the results are similar compared to the baseline results. Firstly we excluded those region pairs in which one of bilateral trade flows is 0, in case that there is some measurement error. The results are shown in Table (A.1.8). Secondly, since the dependent variables in our regressions

Table 1.20: Social Networks, Career Incentives, and Interprovincial Trade Flows (without Beijing and Shanghai)

	(1)	(2)	(3)	(4)	(5)	(6)
	LogTrade	LogTrade	LogTrade	LogTrade	LogTrade	LogTrade
$Connection_{ij,t}$	0.078**	0.091***	0.053*	0.067	0.084**	0.054*
	(0.038)	(0.032)	(0.029)	(0.044)	(0.038)	(0.032)
$Incentive_{i,t} \times Incentive_{j,t}$	-0.104**	-0.117***	-0.084***	-0.112***	-0.122***	-0.083**
	(0.041)	(0.038)	(0.032)	(0.041)	(0.039)	(0.033)
$Incentive_{i,t} \times Incentive_{j,t} \times Connection_{ij,t}$				0.060	0.034	-0.002
				(0.067)	(0.061)	(0.055)
$LogGDP_{i,t}$	0.665***	1.294***		0.663***	1.294***	
	(0.150)	(0.148)		(0.150)	(0.148)	
$LogGDP_{j,t}$	1.020***	0.293*		1.018***	0.292*	
	(0.151)	(0.166)		(0.151)	(0.166)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	No	Yes	No
Region-Year FE	No	No	Yes	No	No	Yes
N	10518	10518	10518	10518	10518	10518
Adjust R^2	0.743	0.781	0.871	0.743	0.781	0.871

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. Beijing and Shanghai are excluded from the sample since local leaders in these two region are PSC members by default. This table shows how connections as well as career incentives change interprovincial trade. Results show that connections between local leaders offsets the negative impact of political competition. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

Table 1.21: Social Networks, Career Incentives, and Interprovincial Trade Flows (without Shanxi and Nei Mongol)

	(1)	(2)	(3)	(4)	(5)	(6)
	LogTrade	LogTrade	LogTrade	LogTrade	LogTrade	LogTrade
$Connection_{ij,t}$	0.102**	0.090***	0.061*	0.090**	0.081**	0.055*
	(0.042)	(0.034)	(0.031)	(0.045)	(0.037)	(0.033)
$Incentive_{i,t} \times Incentive_{j,t}$	-0.099**	-0.111***	-0.079**	-0.111**	-0.119***	-0.085**
	(0.043)	(0.041)	(0.034)	(0.044)	(0.042)	(0.036)
$Incentive_{i,t} \times Incentive_{j,t} \times Connection_{ij,t}$				0.105	0.075	0.053
				(0.083)	(0.074)	(0.072)
$LogGDP_{i,t}$	1.244***	1.342***		1.243***	1.342***	
	(0.160)	(0.153)		(0.160)	(0.153)	
$LogGDP_{j,t}$	1.536***	0.777***		1.534***	0.777***	
	(0.162)	(0.161)		(0.162)	(0.161)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	No	Yes	No
Region-Year FE	No	No	Yes	No	No	Yes
N	10463	10463	10515	10463	10463	10515
Adjust R^2	0.760	0.786	0.865	0.760	0.786	0.865

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. Shanxi and Nei Mongol are excluded from the sample because those regions rely on the product of raw material. This table shows how connections as well as career incentives change interprovincial trade. Results show that connections between local leaders offsets the negative impact of political competition. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

are in the form of log, then we apply Poisson regression and the results are shown in Table (A.1.9). Thirdly, considering trade also influence the regional GDP, instead of using GDP in current periods as control variables in the econometric specifications, we use GDP in last periods as controls. The results are shown in Table (A.1.10).

1.9   Conclusion

This paper examines how the carer incentives and social networks of local leaders in China influence interregional trade. Using data on interprovince railway cargo, we find, on the one hand, that connections between local leaders lead to increased interregional trade flows. This effect is mainly induced by lower information asymmetry among participants with similar backgrounds and marginally from political in-group favoritism. On the other hand, contrary to conventional expectations, career incentives play a negative role relative to trade: a tough promotion tournament decreases trade between competitors. These results are robust under different measurements of trade flows and career incentive, as well as different subsamples.

In order to investigate the sort of policy that motivated bureaucrats choose relative to interregional trade, we observe how inflow and outflow change when local leaders have career concerns. Consistent with the brokerage role of local leaders, we find, on the one hand, that when politicians have incentive of promotion, outflow increases, implying that they help local firms to expand their markets in other provinces. On the other hand, inflows significantly decreases. Although not directly testable, this de-

creased inflow could be attributable to the high weight given to local economic development in promotion tournaments. To attract the attention of the central government, motivated local leaders might adopt local protectionism to help local firms grow, rather than focusing on the welfare of local people, as they have less choices on the market.

To test the underlying mechanisms behind increased interregional trade flows, we first exclude the possibility that higher trade flows are the results of central government orders and not connections. We also reject the possibility that the decreased trade between regions governed by motivated leaders are induced by less demand for trade between them, because of repeated investment. We then analyze the number articles published in the subnational government-owned newspaper that mention economic cooperation with other regions. Interregional activities are greater among connected local leaders and less when they are competitors. This results suggest local leaders work as 'brokers' and reduce the information cost of local firms to find trading partners in other regions.

This paper complements discussion on the role of local leaders in local economic growth, and raising a new source of trade costs and showing how connections could alleviate certain challenges. It is the first paper to address the spillover effect of career concern and provides evidence that to seek higher GDP growth, motivated leaders do not just focus on projects affecting GDP in short-term, for example, large government spending, but also indirect instruments like trade policies.

Some papers look at other types of interregional communications. For example, Shi et al. (2019) focuses on interregional investment and points

out that is for rent-seeking. Compared to interregional trade, interregional investment involves more government interventions, thus provides more opportunity for rent-seeking. However, interregional trade involves both the regulation of government and the cooperations of local enterprises, so local politicians are less profitable to extract the economic rents by manipulating the trade policy. Although the motive for rent seeking might be one reason why local leaders subjectively choose to decrease the trade barrier, it is not the main purpose, which is also suggested by the results about leaders' visits.

The influence of political factors on domestic trade remains understudied among trade economists, but could play a very important role in decentralized societies where the free market and an effective legal system are absent. Although this project focuses on China, it is applicable to all countries where the central government tries to regulate the behavior of local leaders through the promotion system. That said, due to the limited interregional trade data available in this case, there remains much room for improvement. More disaggregated trade data is clearly needed in order to further test the specific mechanism and understand change in kinds of goods in outflows and inflows. In addition, given the considerable increase in road transportation in China, the analysis would be more complete if information on road cargo could be traced.

1.10 Appendix

Table A.1.1: Relationship between Promotion and GDP
Growth

	(1) Promotion	(2) Promotion	(3) Promotion
Real GDP Growth	1.979**	1.640*	2.003*
	(0.953)	(0.925)	(1.063)
Controls	No	Yes	Yes
Veteran Controls	No	No	Yes
N	102.000	102.000	91.000
Adjust R^2	0.032	0.119	0.110

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. This is a simple replicate of the literature about promotion results of provincial leaders in China. Veteran controls include the number of years the politician serves in the government or The Chinese Communist Party (CCP). Column(1) to (3) show local leaders would have more chance to get promotion if the real GDP grow faster under his governance averagely.

Table A.1.2: Weight Carried by Different Transportation. Units: billion Ton

Year	Total	Railway	Railway(Percentage)	Road	Road(Percentage)	Water	Water(Percentage)
2001	14.02	1.91	13.62%	10.56	75.32%	1.33	9.49%
2002	14.83	2.05	13.82%	11.16	75.25%	1.42	9.58%
2003	15.64	2.24	14.33%	11.60	74.14%	1.58	10.10%
2004	17.06	2.49	14.59%	12.45	72.96%	1.87	10.98%
2005	18.62	2.69	14.46%	13.42	72.06%	2.20	11.80%
2006	20.37	2.88	14.15%	14.66	71.98%	2.49	12.21%
2007	22.76	3.14	13.81%	16.39	72.04%	2.81	12.36%
2008	25.86	3.30	12.78%	19.17	74.12%	2.95	11.39%
2009	28.25	3.33	11.80%	21.28	75.32%	3.19	11.29%
2010	32.42	3.64	11.24%	24.48	75.52%	3.79	11.69%
2011	36.97	3.93	10.64%	28.20	76.28%	4.26	11.52%
2012	41.00	3.90	9.52%	31.88	77.76%	4.59	11.19%
2013	40.99	3.97	9.68%	30.77	75.06%	5.60	13.66%
2014	41.67	3.81	9.15%	31.13	74.71%	5.98	14.36%
2015	41.76	3.36	8.04%	31.50	75.43%	6.14	14.69%

The table shows the the trading volume by different transportations from 2001 to 2015. Original data is from National Bureau of Statistics of China. Percentage is calculated by the original data.

Table A.1.3: Cargo Turnover with Different Transportation Modes.
(Units: Trillion Ton × KM)

Year	Total	Railway	Railway(Percentage)	Road	Road(Percentage)	Water	Water(Percentage)
2000	44.32	13.77	31.07%	6.13	13.83%	23.73	53.55%
2001	47.71	14.69	30.80%	6.33	13.27 %	25.99	54.47 %
2002	50.69	15.66	30.89%	6.78	13.38%	27.51	54.28%
2003	53.86	17.25	32.02%	7.10	13.18%	28.72	53.32%
2004	69.45	19.29	27.78%	7.84	11.29%	41.43	59.66%
2005	80.26	20.73	25.82%	8.69	10.83%	49.67	61.89%
2006	88.84	21.95	24.71%	9.75	10.98%	55.49	62.46%
2007	101.42	23.80	23.46%	11.35	11.20%	64.28	63.39%
2008	110.30	25.11	22.76%	32.87	29.80%	50.26	45.57%
2009	122.13	25.24	20.67%	37.19	30.45%	57.56	47.13%
2010	141.84	27.64	19.49%	43.39	30.59%	68.43	48.24%
2011	159.32	29.47	18.49%	51.37	32.25%	75.42	47.34%
2012	173.80	29.19	16.79%	59.53	34.25%	81.71	47.01%
2013	168.01	29.17	17.36%	55.74	33.17%	79.44	47.28%
2014	181.67	27.53	15.15%	56.85	31.29%	92.77	51.07%
2015	178.36	23.75	13.32%	57.96	32.49%	91.77	51.45%

The table shows the cargo turnover by different transportations in China from 2000 to 2015. Cargo turnover is the product of average weight and average distance. Original data is from National Bureau of Statistics of China. Water takes the largest proportion in cargo turnover, since water is the most popular transportation modes in international trade, while road is the second after 2008 and railway takes the 3rd position.

Table A.1.4: Relationship between Promotion and Connections to PSC Members

	(1) Promotion	(2) Promotion	(3) Promotion
$PSCConnect_i$	0.120***	0.080**	0.115**
	(0.032)	(0.032)	(0.050)
Controls	No	Yes	Yes
Politician FE	No	No	Yes
N	435	435	435
Adjust R^2	0.531	0.596	0.848

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust. This table shows the positive relationship between connection to PSC members and promotion results. Column(2) includes the age of local leaders, whether local leaders have college degree, regional GDP and regional population. Column(3) includes politician fixed effect.

Table A.1.5: The Correlation between Number of Connections Regional Leaders have and other Characteristics

	(1) No.Connection	(2) No.Connection	(3) No.Connection	(4) No.Connection	(5) No.Connection	(6) No.Connection
$GDP\ Growth_{t-1}$	-0.050			0.850		
	(-0.14)			(1.22)		
$Average\ GDP\ Growth_{t-3\ to\ t-1}$		0.507			0.837	
		(0.88)			(0.86)	
$Average\ GDP\ Growth_{t-5\ to\ t-1}$			0.283			0.494
			(0.48)			(0.38)
$LogGDP_t$	0.042	0.047*	0.044	0.183	0.174	0.194
	(1.45)	(1.71)	(1.57)	(1.04)	(0.99)	(1.01)
$LogPopulation_t$	-0.008	0.002	-0.002	-0.035	-0.058	-0.074
	(-0.25)	(0.06)	(-0.06)	(-0.12)	(-0.20)	(-0.25)
$Minority$	-0.049	-0.054*	-0.052*	-0.172	-0.124	-0.147
	(-1.61)	(-1.82)	(-1.79)	(-0.37)	(-0.25)	(-0.28)
Age	-0.004	-0.004	-0.004	-0.007	-0.007	-0.007
	(-1.18)	(-1.06)	(-1.11)	(-1.46)	(-1.44)	(-1.46)
$College$	0.021	0.020	0.020	0.001	0.002	0.003
	(1.07)	(0.98)	(1.01)	(0.02)	(0.07)	(0.11)
$Gender$	-0.110***	-0.121***	-0.117***	-0.117	-0.123*	-0.119
	(-3.39)	(-3.67)	(-3.55)	(-1.65)	(-1.72)	(-1.57)
$Number\ of\ State-Owned\ Firms$	-0.056*	-0.067**	-0.061*	-0.096	-0.101	-0.102
	(-1.81)	(-2.10)	(-1.99)	(-1.40)	(-1.49)	(-1.51)
$Number\ of\ Private\ Firms$	-0.025	-0.032	-0.029	-0.003	-0.001	0.009
	(-1.06)	(-1.41)	(-1.28)	(-0.09)	(-0.03)	(0.20)
$Unemployment\ Rate$	-0.010	-0.010	-0.010	-0.031	-0.030	-0.030
	(-0.85)	(-0.85)	(-0.86)	(-1.47)	(-1.41)	(-1.41)
Year FE	No	No	No	Yes	Yes	Yes
Region FE	No	No	No	Yes	Yes	Yes
N	434	434	434	434	434	434
Adjust R^2	0.014	0.016	0.015	0.009	0.007	0.006

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. This table shows there is no correlation between the number of connections regional leaders have and economic fundamentals in previous periods.

Table A.1.6: Career Incentives and Interprovincial Trade Flows

	(1) LogTrade	(2) LogTrade	(3) LogTrade	(4) LogTrade	(5) LogTrade	(6) LogTrade
$PSCConnect_{i,t} \times PSCConnect_{j,t}$	-0.113***	-0.066**	-0.116***	-0.068**	-0.106***	-0.061**
	(0.031)	(0.027)	(0.031)	(0.027)	(0.032)	(0.027)
$Connection_{ij,t}$			0.086***	0.049*	0.112***	0.071**
			(0.030)	(0.027)	(0.040)	(0.031)
$PSCConnect_{i,t} \times PSCConnect_{j,t} \times Connection_{ij,t}$					-0.083	-0.071
					(0.062)	(0.054)
$LogGDP_{i,t}$	1.114***		1.108***		1.109***	
	(0.132)		(0.132)		(0.132)	
$LogGDP_{j,t}$	0.514***		0.508***		0.509***	
	(0.147)		(0.147)		(0.147)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	No	Yes	No	Yes	No
Region-Year FE	No	No	Yes	No	No	Yes
N	12165	12109	12165	12165	12109	12165
Adjust R^2	0.769	0.870	0.769	0.870	0.769	0.870

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows how the career incentives of province secretaries influence interprovincial trade. Career incentive is measured by connections to PSC members and the age ineligibility rule. Columns (1) to (3) show that competition between local leaders decreases interprovincial trade, and columns (4) to (6) show that the results are similar after considering connection status. Motivation are measured by whether local leaders are connected to PSC members only. Besides the interaction term, variables $PSCConnect_{i,t}$ and $PSCConnect_{j,t}$ are also included as controls.

Table A.1.7: Kolmogorov-Smirnov Test of Tenure for Connected and Unconnected Politician Pairs

Smaller group	D	P-value
Unconnected	0.0000	1.000
Connected	-0.0521	0.301
Combined K-S:	0.0521	0.585

This table shows the results of Kolmogorov-Smirnov test. We cannot reject the hypothesis that the distribution of tenure for unconnected and connected leader pairs are equal.

Table A.1.8: Social Network, Career Incentive and Inter-Province Trade Flow (No Zeros)

	(1) LogTrade	(2) LogTrade	(3) LogTrade	(4) LogTrade	(5) LogTrade	(6) LogTrade
$Connection_{ij,t}$	0.089**	0.085***	0.049*	0.082**	0.081**	0.049*
	(0.035)	(0.030)	(0.027)	(0.040)	(0.034)	(0.030)
$Incentive_{i,t} \times Incentive_{j,t}$	-0.081**	-0.108***	-0.078***	-0.086**	-0.111***	-0.078**
	(0.039)	(0.037)	(0.030)	(0.040)	(0.037)	(0.031)
$Incentive_{i,t} \times Incentive_{j,t} \times Connection_{ij,t}$				0.041	0.023	-0.003
				(0.064)	(0.059)	(0.054)
$LogGDP_{i,t}$	0.975***	1.133***		0.975***	1.133***	
	(0.131)	(0.129)		(0.131)	(0.129)	
$LogGDP_{j,t}$	1.328***	0.494***		1.327***	0.494***	
	(0.131)	(0.144)		(0.131)	(0.144)	
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	No	Yes	No
N	12150	12094	12150	12150	12094	12150
Adjust R^2	0.746	0.775	0.870	0.746	0.775	0.870

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. This table shows how connections as well as career incentives change interprovincial trade; connections between local leaders offset the negative impact of political competition. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

Table A.1.9: Social Networks, Career Incentives, and Interprovincial Trade Flows with Poisson

	(1) LogTrade	(2) LogTrade	(3) LogTrade	(4) LogTrade	(5) LogTrade	(6) LogTrade
$Connection_{ij,t}$	0.021**	0.020**	0.022**	0.020***	0.021**	0.020**
	(0.009)	(0.008)	(0.009)	(0.008)	(0.010)	(0.009)
$Incentive_{i,t} \times Incentive_{j,t}$			-0.017*	-0.023**	-0.018*	-0.023**
			(0.010)	(0.010)	(0.010)	(0.010)
$Incentive_{i,t} \times Incentive_{j,t} \times Connection_{ij,t}$					0.006	0.000
					(0.015)	(0.015)
$LogGDP_{i,t}$	0.238***	0.278***	0.240***	0.284***	0.240***	0.284***
	(0.037)	(0.038)	(0.037)	(0.037)	(0.037)	(0.037)
$LogGDP_{j,t}$	0.335***	0.108***	0.337***	0.103***	0.336***	0.103***
	(0.037)	(0.040)	(0.037)	(0.040)	(0.037)	(0.040)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Individual Controls	No	Yes	No	Yes	No	Yes
N	12165	12109	12165	12165	12109	12165

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. This results are from Poisson estimation. Standard error is robust and clustered at the pair-province level. This table shows how connections as well as career incentives change interprovincial trade; connections between local leaders offset the negative impact of political competition. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

Table A.1.10: The Joint Effect of Social Network and Career Concern on Inter-Province Trade Flow, with GDP in $T-1$

	(1) LogTrade	(2) LogTrade	(3) LogTrade	(4) LogTrade	(5) LogTrade	(6) LogTrade
$Connection_{ij,t}$	0.085**		0.081*	0.084***		0.085**
	(2.30)		(1.92)	(2.65)		(2.30)
$Incentive_{i,t} \times Incentive_{j,t}$		-0.054*	-0.063**		-0.079***	-0.082***
		(-1.75)	(-1.97)		(-2.72)	(-2.68)
$Incentive_{i,t} \times Incentive_{j,t} \times Connection_{ij,t}$			0.035			0.005
			(0.54)			(0.09)
$LogGDP_{i,t-1}$	0.946***	0.967***	0.960***	1.065***	1.087***	1.082***
	(7.08)	(7.24)	(7.17)	(7.94)	(8.13)	(8.07)
$LogGDP_{j,t-1}$	1.298***	1.320***	1.312***	0.467***	0.489***	0.483***
	(9.64)	(9.80)	(9.74)	(3.10)	(3.26)	(3.22)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Pair-Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	No	No	Yes	Yes	Yes
Region-Year FE	No	No	Yes	No	No	Yes
N	11312	11259	11312	11312	11259	11312
Adjust R^2	0.742	0.742	0.742	0.768	0.768	0.768

Standard errors in parentheses,* $p < 0.1$,** $p < 0.05$, *** $p < 0.01$. Standard error is robust and clustered at the pair-province level. GDPs in last periods are included as controls in the estimation, to alleviate the concern that trade outcomes also influence GDP. Besides the interaction term, variables $Incentive_{i,t}$ and $Incentive_{j,t}$ are also included as controls.

Figure A.1.1: Connection Status and Interregional Trade Volume
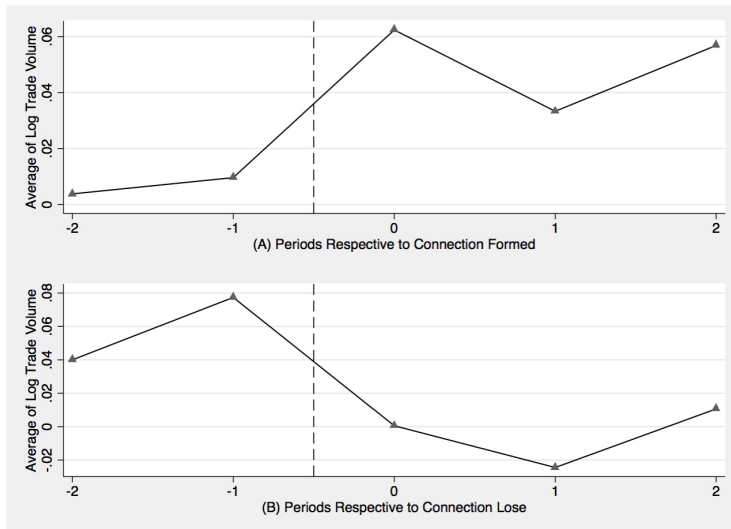
Notes: Figure (A.1.1) shows how the connection status influence the trade volume between regions in the window[-2,2], after controlling for the Year fixed effect and Pair-Province fixed effect. Sub-figure (A) shows at the year of connection gained, trade volumes between regions is increased, and this effect lasts when those regions are still connected in further periods. Sub-figure (B) shows in the year when connection is lost, trade volume drops a lot and this effect also lasts if regions are still unconnected.

Figure A.1.2: Career Concern and Interregional Trade Volume
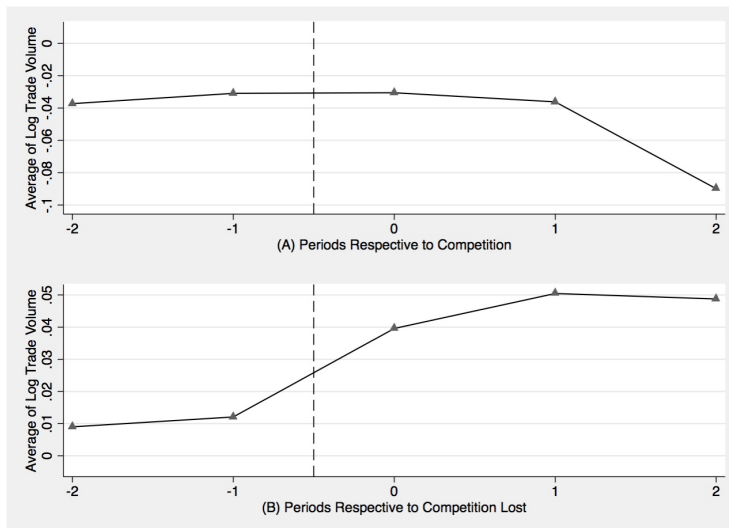
Notes: Figure (A.1.2) shows how the connection status influence the trade volume between regions in the window[-2,2], after controlling for the Year fixed effect and Pair-Province fixed effect. Sub-figure (A) shows at the year of when local leaders in both regions have career incentive, trade volumes between regions is decreased, and this effect lasts when leaders in both regions are still motivated in further periods. Sub-figure (B) shows in the year when at least one of those leaders lose promotion incentive, trade volume drops less and this effect also lasts if regions until they become competitors again in the promotion tournament.

99

Chapter 2

THE POWER OF SPEECH: EVIDENCE FROM CHINA

2.1   Introduction

The turbulence of the stock market is attributed to the expectation of firm's profitability (fundamentals) and the mood of investors (sentiments). However, do all investors experience the same emotions when receiving identical information? Is it possible that different cultural backgrounds would lead to different interpretations, and thus inconsistent economic outcomes in segmented markets?

This study tries to answer these questions by looking at the influence of politicians' speeches on stock markets in both mainland China and Hong Kong. These two stock markets are well segmented in terms of investors but not in terms of firms: Investors in both markets must go through complicated procedures to open accounts in the other stock market, but main-

land firms are easy to list in Hong Kong. During the term of Wen Jiabao, the Premier of China from 2003 to 2013, housing prices rose sharply, resulting in large bubble (Glaeser, Huang, Ma and Shleifer, 2016). Under social pressure, Wen made several public speeches relating his opinions on the real estate industry. Investors receive information, but how they interpret it depends on their own understanding. Compared to Hong Kong, which is regarded as one of the districts with the greatest economic freedom, mainland China is considered mostly restricted, because of significant government spending and intervention. [1] Following the idea that one reason a culture evolves is the existence of entrenched institutions (Tabellini, 2008; Lowes, Nunn, Robinson and Weigel, 2015), mainland investors should be expected to be highly sensitive to government policy-making because of the active government intervention. However, Hong Kong investors should be much less sensitive because of the tradition of a free market. Therefore, the discrepancy in culture is expected to result in a different understanding of Wen Jiabao's speeches, which would be reflected in the stock market turbulence, even if those speeches are not correlated to any fundamental change. Wen's speeches are a perfect way to test whether the sensitivity to policy-making, as part of a culture, would cause investors to have different expectations and to change their investment behavior. Note this change in investment behavior might be either persistent or temporary.

The starting point is to analyze the content of the speeches. I collected 55 speeches made by Wen in different situations and classified them as containing positive or negative information on housing markets, depending

---

[1]Index of Economic Freedom by The Heritage Foundation and *The Wall Street Journal*

on the appearance of key words, as used in Tetlock (2007) and Tetlock, Saar-Tsechansky and Macskassy (2008). Using event study methodology, I test the stock performance of housing firms on the mainland China and Hong Kong stock markets both in terms of stock returns and trading volume after the speeches were publicly reported. Later, I investigate the mechanisms behind the turbulence of stocks performance and rule out alternative explanations.

The results of the study are highly consistent with the hypothesis, which is that mainland investors will react immediately after speeches are published online and that the influence of positive and negative speeches is rather symmetric. Generally speaking, the speeches influence the abnormal return by 0.41%, which is 7% compared to the normal level of the abnormal returns. A positive speech would increase the abnormal return by 0.44%, and a negative speech would decrease it by 0.4%. This effect vanishes in the subsequent three days. Moreover, the opposite effect is observed several days after, which suggests the change in investment strategy is likely to be irrational and corrected soon. Larger trading volumes are observed on the dates when speeches are published. In contrast, neither the abnormal returns nor the trading volume changes significantly in the Hong Kong stock market on the event date. The baseline results are robust using three-day and five-day event windows.

To determine whether it is the political information or fundamental factors contained in the speeches that drives the reaction of mainland investors, I look at the stock performance of related industries on the event date, based on the idea that related industries should be influenced as well if the speeches contained anything accurate about policy making. However,

these speeches do not have any significant effect on stock performance in the banking, financial, or construction industries, and that implies the different actions of mainland investors and Hong Kong investors in housing firms is due to the different level of sensitivity to political information. The same piece of information would induce different reactions in people with different cultural backgrounds, especially when the interpretation requires specific experience or knowledge, such as political information.

Alternative explanations are also investigated. One concern is the information barrier; that is the Hong Kong investors might not get the content of speeches as easily because it is uploaded on a mainland website. However, this concern is mediated by the fact that Hong Kong residents can access mainland websites freely, including the websites of the central government. In addition, the speeches are reprinted in the local media relatively quickly. Another concern is the structures of investors in both stock markets; individual investors are dominant in the mainland stock market, while institutional investors are dominant in the Hong Kong stock market. However, institutional investors can be emotionally influenced, as shown in studies with US stock markets (Tetlock, 2007; Tetlock, Saar-Tsechansky and Macskassy, 2008; Engelberg, Sasseville and Williams, 2012). The large increase in trading volume also contradicts this explanation. The last concern the firm structure; if the firms listed in the mainland and Hong Kong stock markets have different profit shares in mainland China, then it is rational that Hong Kong investors do not pay so much attention. To address this concern, first, instead of using the whole sample of housing firms listed on the Hong Kong Exchanges (HKEX), I only pick up the firms that claim their core business is in mainland China. Second, I test the stock performance of those firms when policy announcements

from the central government instead of politician's speeches, are made. Policy announcements induced similar reactions in both markets in terms of stock returns and trading volume. Both results reject the hypothesis that the heterogeneity of firms is the main reason to observe the baseline results.

This study contributes to the literature addressing the influence of culture in economic activities. Culture is defined as the shared values, beliefs, and attitudes in a specific group, and it also directs the actions of group members in daily life. Many papers have focused on how culture, which is usually termed "social capital", affects human decisions and furthers economic outcomes. The evolution of culture can be traced to historical events (Nunn and Wantchekon, 2011; Guiso, Sapienza and Zingales, 2004), religion (Norenzayan, 2014), or institutional settings, and it has a large influence on GDP growth (Knack and Keefer, 1997; Algan and Cahuc, 2010) and even different parts of social life on both the macro and micro levels (Greif, 1994; Greif and Tabellini, 2017; Chen, 2013; Fernandez, 2007; Alesina and Angeletos, 2005; Alesina and Giuliano, 2010). Culture is also widely used to explain the investment behavior in financial economics. Trust attracts much attention because it helps to overcome the free-rider problem and prompts investment activities (Guiso, Sapienza and Zingales, 2008, 2009). Other components of culture in addition to trust are documented in studies of the stock market (Beugelsdijk and Frijns, 2010; Anderson, Fedenia, Hirschey and Skiba, 2011; Chui, Titman and Wei, 2010; Beracha, Fedenia and Skiba, 2014). This paper contributes to the literature by investigating the influence of another component of culture: the sensitivity to government behavior. Particularly in developing countries, governments are likely to use policy tools for econ-

omy development, and whether this works or not depends on how fast people acquire the information and how they interpret it. Therefore the sensitivity to government is quite important in the modern economy. This paper provides an example of how different levels of sensitivity affect the performance of individual stocks.

This paper also contributes to the literature on the sentimental determinants of stock performance. Much research has discussed how people's sentiments are influenced and how they induce stock market turbulence. One channel through which this happens is media coverage. Media attention can provide more information about stock market firms, such as comments made by financial analysts (Tetlock, 2007; Tetlock, Saar-Tsechansky and Mackassy, 2008) or television shows (Engelberg, Sasseville and Williams, 2012). Some papers have found the appearance of firms in media platforms itself matters even if no new information is revealed (Huberman and Regev, 2001; Barber and Odean, 2008; Engelberg and Parsons, 2011). However, some papers have looked at announcements that would affect profitability in the future, such as the unexpected death of senior executives (Johnson, Magee, Nagarajan and Newman, 1985), policy uncertainty (Pastor and Veronesi, 2012), political ties (Fisman, 2001), political elections (Snowberg, Wolfers and Zitzewitz, 2007), violent conflict (Guidolin and La Ferrara, 2007), and coup authorization (Dube, Kaplan and Naidu, 2011). However, papers in this literature have only looked at a single stock market and assume participants understand the information in the same way. In reality, however, people with different backgrounds may interpret information differently and therefore make disparate investment decisions. There are no empirical studies testing the different reactions in the stock market, and this study fills this gap by an-

alyzing stock performance in the mainland China and Hong Kong stock markets when investors are exposed to the same information.

This paper also relates to the literature on behavioural finance. Different than the theory of the efficient market (Malkiel, 1962; Fama, 1965), the theory of behavioural finance suggests the asset price might not reflect only the information but also the sentiment of investors with the respect to the information (De Bondt, 2000). It looses the assumption of rational investors (Barberis and Thaler, 2003) and emphasizes the importance of the psychology of market participants in understanding the price of assets (De Bondt, 1985; Statman, 2008). Several behavioral factors are addressed, such as overconfidence (Malmendier and Tate, 2005), risk tolerance (Guiso, Sapienza and Zingales, 2018), and herd mentality bias (Scharfstein and Stein, 1990). This paper complements this literature by providing an empirical evidence about how the different interpretations of political speeches would influence the expectations of market investors, and further drive the market fluctuations.

Finally, this paper also complements the literature on political economy by providing a new angle to look at how politicians may affect the economy. In a society where people are used to government intervention and concentrated political power, politicians' behavior, which might not have been intended to affect the economy directly, may become a source of economic turbulence in addition to, for example, policy making or corruption.

The rest of this paper is organized as follows: Section (2.2) provides background information on both stock markets. Section (2.3) describes

the data. Section (2.4) discusses the empirical strategy. Section (2.5) presents the results. Section (2.6) talks about alternative mechanisms, and the last section concludes.

2.2 Background Information

2.2.1 The Economic System in Mainland China and Hong Kong

Hong Kong has been part of China since 214 BC, but after the First Opium War in 1842, Hong Kong Island became a British colony, followed by Kowloon Peninsula in 1860 and the New Territories in 1898. During the Second World War, Hong Kong was occupied by Japan, but British control resumed in 1945. In July 1997, Hong Kong become part of China again after negotiations between the Chinese and British governments; however, it works as a Special Administrative Region with a high degree of autonomy (Hong Kong reunification). Hong Kong has its own government, president, and even a judicial system. Hong Kong is seen as an example of laissez-faire capitalism because the local government insists on a passive role in the economy. This policy is called "positive non-interventionism" (started by John Cowperthwaite, the Financial Secretary in Hong Kong in the 1970s), which means the government should only focus on providing regulatory and physical infrastructure but not influence the market-based decision-making process. Hong Kong residents are used to the market economy without government intervention.

On the contrary, the People's Republic of China has had a Soviet-style

planned economy since 1949. Economic reforms began in 1978, and China became a mixed economy under one-party rule. Although the economy has been growing quickly in the past three decades, China is still an example of big government.China has a high level of total government spending as a percentage of its GDP, and the government sometimes conducts policies to directly influence the market. Entrepreneurs state that one of biggest challenges is the risk of government intervention, including the high tax rate and unexpected policies.[2] For example, in 2007, the selling price of instant noodles increased by 20%, and the World Instant Noodles Association (China) claims it was due to the increase in the cost of raw materials. However, in August 2007, the National Development and Reform Commission (NDRC) announced that increase was due to price collusion and was intended to disturb the market. Indeed, some firms were later punished. [3]

Figure (2.1) shows the expenditure fro, 1960 to 2015 of the general government's final consumption in both China and Hong Kong, including all current government expenditures for purchases of goods and services. [4] The solid line represents China's government consumption, and the dashed line represents that of Hong Kong's; the vertical line indicates 1997, the time of Hong Kong Reunification. While government consumption in Hong Kong jumped from 8% to 10% of GDP in 1998, government consumption in China has been around 14% for the last three decades. Mainland residents are used to significant government intervention in the market and in economic development, but the residents of Hong Kong

---

[2]Chinese provincial Business Operating Environment Index 2013 Report
[3]The Story of High Price Instant Noodles. *Sina News*
[4]Data Source: World Bank

expect the government to only takes a limited role.

Figure 2.1: General Government Final Consumption Expenditure(% of GDP)
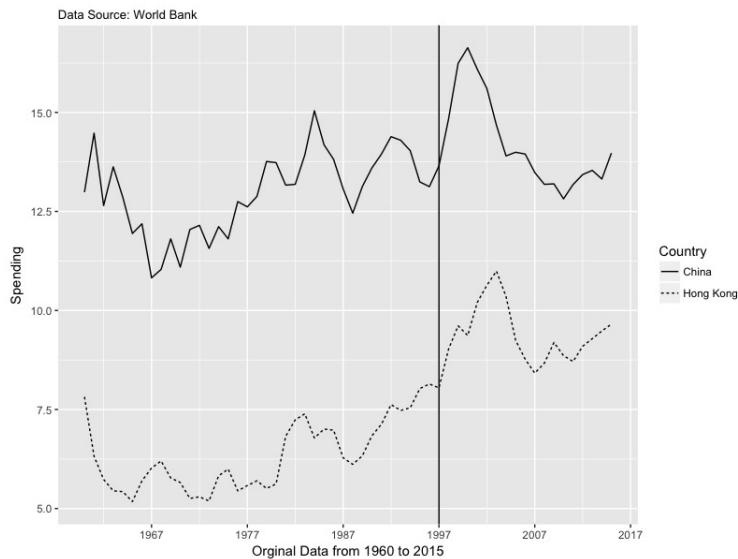
Notes: Figure (2.1) shows the comparison of Mainland China and Hong Kong about government spending, compared to the local GDP. Although the difference is smaller after the return of Hong Kong in 1997, the weight of government spending in local GDP is still much lower than Mainland China. Original data is from World Bank.

In these different situations, the attitude of residents toward government responsibility differs. I extracted some questions from the World Value Survey (Wave 6) that was conducted in Mainland China in 2012 and in Hong Kong in 2013. I aimed to compare the answers from mainland and Hong Kong residents and gather direct evidence regarding their beliefs about government roles. The questions I chose are all related to the importance of the government in market intervention, especially in redistribution. Higher scores mean respondents are more supportive of the

110

Figure 2.2: Attitude of Residents to Government Responsibility

Data Source: World Value Survey, 2012/2013
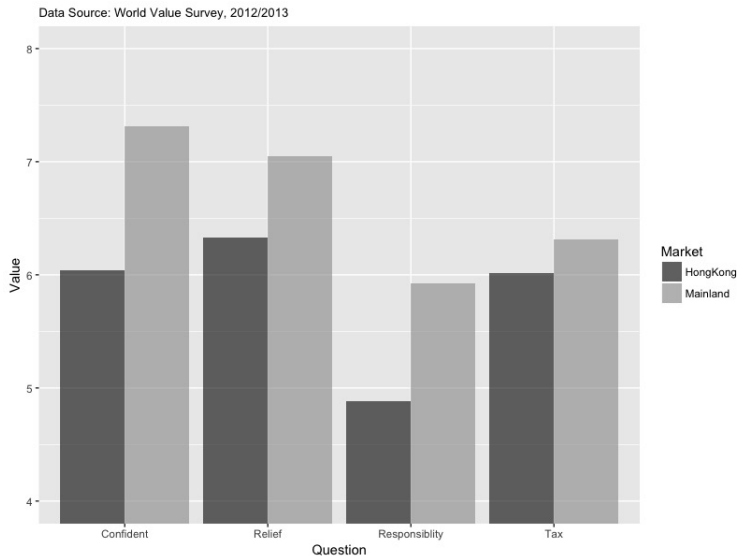
Notes: Figure (2.2) shows the expectation of Mainland residents and Hong Kong residents towards the responsibility of governments. Original data is extracted from World Value Survey (2012, 2013). In all of the four questions, Mainland residents response with a higher grade. Compared to Hong Kong residents, they are used to a higher level of government intervention in economy.

statements. The statements I picked include the following: "V115: Is it a great deal of confidence in the government (in your nation's capital) (Confident)", "V134: People receive state aid for unemployment is an essential characteristic of democracy (Relief)", "V98: Government should take more responsibility to ensure that everyone is provided for (Responsibility)", and "V131: Governments tax the rich and subsidize the poor is an essential characteristic of democracy (Tax)". The average scores given by mainland and Hong Kong residents to these four statements are shown in Figure (2.2). The X-axis indicates the questions, and the Y-axis shows the answers; the higher the value the more the interviewee relies on the

111

central government and expects a larger government role in redistribution. The black column (left side) is for Hong Kong residents, and the gray column (right side) is for mainland residents. As Figure (2.2) shows, compared to Hong Kong residents, mainland residents are more confident to the central government and prefer that the central government play an active role in the economy, such as taxing the rich and taking care of the unemployed and the poor. For example, in column 3, people were asked whether they agree government should ensure that everyone gets what they need. Compared to the average of 4.8 in Hong Kong, the average in mainland China was significantly higher at 5.9..

2.2.2   Stock Markets in Mainland China and Hong Kong

There are two stock markets in mainland China: the Shanghai Stock Exchange (SSE) and the Shenzhen Stock Exchange (SZSE). They were both founded in December 1990. The idea behind this was to divide the market. Although the two are slightly different in their requirements, the biggest difference is that large and state-owned firms are inclined to be listed in the SSE and small firms are on the SZSE. In both stock exchanges, individual investors have a dominant position in terms of the number of accounts but not in terms of holding values[5]. In both the SSE and the SZSE, the price turbulence of individual stocks per day is not allowed to exceed 10% otherwise, the transactions are stopped immediately.

The first stock exchange in Hong Kong was founded in 1891. Although there were several stock exchanges in the past, now there is only one, the HKEX, founded in 1986. Compared to the SSE and the SZSE, the HKEX

---

[5]Shanghai Stock Exchange Statistical Annual, 2012

has no limit for daily price turbulence. Institutional investors take a dominant position in terms of holding values in both the mainland and Hong Kong stock exchanges.

The mainland stock markets and the Hong Kong stock market were well segmented in terms of the structure of investors before the opening of the Shanghai-Hong Kong Stock Connect in November 2014. Before 2014, to open accounts in the SSE or SZSE, investors needed an ID card from mainland China, which is impossible for Hong Kong residents. To open accounts in the HKEX, investors needed to open a bank account in Hong Kong and buy Hong Kong dollars. Considering the fact that mainland residents need to apply for a special document[6] to go to Hong Kong, it is difficult for them to make transactions in the HKEX. As a result, mainland residents dominate the mainland stock market, while only a few of them make investments in the HKEX.

Although there is a large difference between the political system and the economic system, the business barrier between the mainland and Hong Kong is not so large. Since 1979, firms from Hong Kong have been permitted to invest in mainland China, and firms from mainland China have been allowed to list on the HKEX. The first firm to do this was Tsingtao Brewery in 1993. Until November 30th 2015, 936 firms from the mainland were listed in the Hong Kong stock market. [7] Some analysts have argued that the HKEX is a better place for public financing, mostly

---

[6]Mainland residents have to apply for 'Exit-entry permit for travelling to and from Hong Kong and Macao' from the local government first. After that, every time when they want to travel to Macao or Hong Kong, they need to apply for another endorsement in the local police stations.

[7]From the website of the Hong Kong Stock Exchange

because there are fewer political risks.[8]

2.2.3   The Sensitivity of Investors to Political Information

Mainland residents live in a business environment with a high degree of government intervention, and are quite used to it. As a result, mainland investors are sensitive to any signal from the government or other officials. For example, on May 7, 2015, Chinese Premier Li Keqiang visited Zhong Guan Village (the so-called Silicon Valley of China), where many Internet enterprises are located. This visit was regarded as a signal that government policies would benefit internet enterprises in the future. The composite index for the mainland stock market, CSI300, suffered a decrease of 1.83% on that date; however, at the same time, the stocks in the Internet sector increased by 2.47% before noon. [9] Interestingly, the firm with the same name as Zhong Guan Village, had its stock price increased by 4.25% the same day. However, this is not an internet enterprise.[10]

In addition to the individual stocks, the market index is responsive to government activities. *People's Daily* is an official newspaper of the government, and some articles are written by politicians. Some important articles are even censored by the Department of Propaganda before publication and are seen as a reflection of government will. On December 16th, 1996, the commentary titled *Think about the Stock Market in a Cor-*

---

[8]Hong Kong: An Ideal Place for Mainland Firms to List? *Caixin News*

[9]Li's Visit in 'Zhong Guan Village' Makes Stock Price Increases over 4%. *Sina News*

[10]The Firm 'Zhong Guan Village' is an innovation corporation which focus on medicine production and service.

rect Way defined the bull market during that period as irrational, and the market index decreased by over 9% immediately. This commentary did not mention any upcoming policy, but the market still reacted quickly. Huaiding Yang, who is called the Million Yang, was the first investor to earn over a million RMB (around 210,000 dollars in 1990) on the mainland stock market. He claimed that the first priority in the Chinese stock market is to determine the government attitude from different sources, including the official newspaper.[11]

Mainland investors are sensitive to the government's views towards the stock market and individual stocks. At the same time, politicians in Hong Kong seldom express their attitude about the stock market to the general public, and the sensitivity of Hong Kong residents to the government is supposed to be low.

2.2.4   Housing Prices in Mainland China

In mainland China, housing prices have increased quickly in the last few decades. Fang, Gu, Xiong and Zhou (2015) use bank loan data to estimate the boom of the mainland housing market. Figure (2.3) shows housing prices from 2003 to 2013. In the figure, Tier 1 includes the four largest and most important cities: Beijing, Shanghai, Guangzhou, and Shenzhen. Tier 2 includes the province capitals, autonomous municipalities and some vital commercial/industry centers, and Tier 3 includes less important cites. The housing prices in Tier 1 cities in 2013 are fives times higher than in January 2003. Those in Tier 2 and Tier 3 cities are four and three times higher, respectively. The disposable income per capita is

---

[11]The Story of Yang HuaiDing. *Ifeng Finance*

twice as great.[12] However, considering the high level of inequality and the problem of the sample bias (only those who get loans are included in the sample, as argued in Glaeser, Huang, Ma and Shleifer, 2016), the pressure on residents to buy houses is still significant, especially in large and important cities.

Figure 2.3: The Housing Price in Different Tiers of Cities in Mainland China
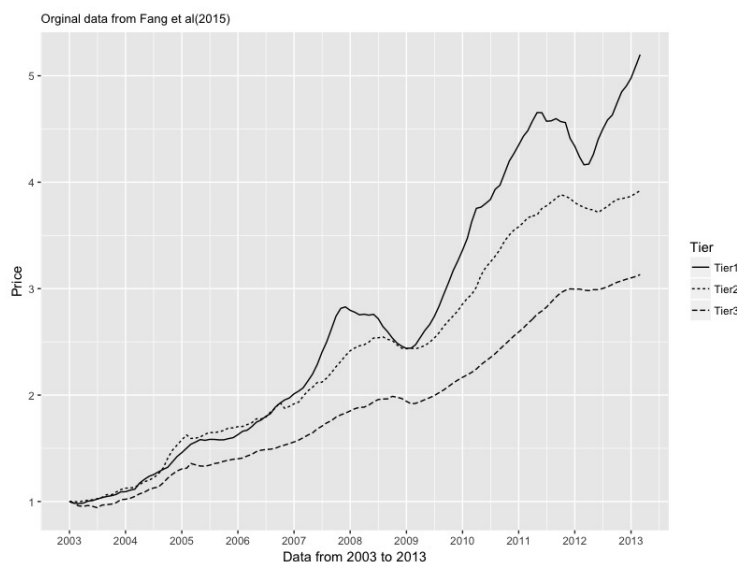
Notes: Original data is from Figure (2.3) shows the evolvement of housing price in China from 2003 to 2013, grouped by the magnitude of cities. Tier 1 includes four most important cities in China: Beijing, Shanghai, Guangzhou and Shenzhen. Tier 2 includes cities with great commercial importance, for example, province capitals. Tier 3 includes other cities. Housing price of Tier 1 cities in 2013 is four times compared to 2003. Original data comes from Fang, Gu, Xiong and Zhou (2015).

Because of the high and increasing housing prices, residents in mainland China care about how the government plans to control them. Premier

---
[12]From National Bureau of Statistics

Wen Jiabao has expressed his opinions regarding the high housing prices and the government's plan to control them in different situations. For example, during a meeting with reporters on March 14 2012, Wen stated "The housing price is far away from a reasonable level". He also led the policy-making discussions to control the prices during the executive meetings of the State Council. Wen made several speeches during his term from 2003 to 2013, but not all of them contained information that would directly affect the end results, and some of them were just cheap talks. The government did not publish any policies in the months following the speeches, and the housing prices remained high, no matter where the Premier made those speeches. The general public could not distinguish which speeches implied policy-making and which did not. Some policies were announced during Wen's term, such as one to design different tax rates for buyers with more than two houses. However, this policy only targeted the mainland market and influenced the profitability of those firms with business in mainland China.

If implemented, the policies announced by Wen would affect the fundamentals of the mainland market and thus the profitability, so if the general public cared about what Wen said and believed it would affect or reflect the policy-making, their expectations regarding the real estate industry should have changed and it would have reflected in their investment decisions. On the contrary, if the general public did not care about the information or did not believe it, then their investment actions should not have changed. The mainland China and Hong Kong stock markets provide a perfect setting to check the influence of culture on investments, as many firms listed on the HKEX also conduct business in mainland China. However, investors in these two stock markets have different knowledge

about the scope of government intervention, which is rooted in history.

2.3   Data

To test the influence of government speeches on investment decisions, two kinds of data were collected. One is stock performance, including the stock return and trading volume. To calculate the abnormal return, the historical data of the market index were collected. Since this paper only considers the speeches of Wen Jiabao, whose term was from March 15th 2003 to March 15th 2013, only the data from this period were collected. Historical data of the stock market is from CSMAR, a financial database that provides the information of companies listed on both the mainland China and Hong Kong stock markets. In terms of individual stocks on the mainland China stock market, the daily return and daily trading volume of 109 stocks in the real estate industry were collected. Regarding market performance, the CSI300 index is used as the market index for mainland China because it combines the two market indexes (Shenzhen Stock Market and Shanghai Stock Market). The CSI300 has been published on every transaction day since April 11, 2005. I also collected information about firm characteristics, including assets, leverage, cash, and income growth rate.

There were 135 housing firms on the Hong Kong stock market in the study period, but I focus on only 46 firms that claimed their core business is in mainland China. Wen's speeches only targeted the mainland market and would not influence firms' profitability if they only do business in Hong Kong or other countries such as Singapore, so those stocks should

not be affected at all. Information about the core business of those firms was collected from their websites and annual reports.

Another source of data is the speeches made by Premier Wen Jiabao. *Xinhuanet.com* is an official news agency that records the activities of major politicians, such as visits to local corporations and online discussions with the general public. Wen's speeches at national conferences, including the National People's Congress, the Central Economic Work Conference, and the State Council Executive meeting, are downloaded from *gov.cn*, the official website of China's government. Finally, 55 of Wen's other speeches from April 11, 2005 to March 15, 2013 were collected. Timing is quite important in this study. In principle, I want to assign the date of speeches as the date when the the general public heard the speeches and had enough time to react in the stock market. I therefore use the date when the text of the speech was published online as the proxy for the date when general public received the information. As *Xinhuanet.com* is the official media source and its reporters are in charge of propaganda regarding official activities, there should not be a significant lagged reporting problem. To avoid any problems regarding inadequate time to react, if the speeches were published half an hour before the closing time of the local stock market, then I assigned the date as the next trading day following the speech. As a robustness check, I also used three-day and five-day event windows to take care of any information leakage or late reporting problems.

Wen's speeches do not express a consistent attitude towards the housing market during the whole period. For example, during the financial crisis from 2008 to 2009 Wen said, "We want the housing market to make a steady and healthy growth in the financial crisis because it is closely re-

lated to everybody's life", but in 2010, he said, "The policies conducted to control the housing price are not manipulated well and we need to do more work in two ways: increasing the supply of indemnificatory housing and suppress the speculation activities", when the housing price is increased too fast. Even during the period of the housing boom, Wen proposed some policies to make housing affordable. This was a good signal for the development of the real estate industry, for example, as the supply of land increased and the procedure for housing firms to build houses was simplified. Similar to the text analysis used in Tetlock, Saar-Tsechansky and Mackassy (2008), I used the dictionary method to check the appearance of keywords and assign value to speeches. The rule of classification is discussed in the next section. I have 21 positive speeches and 34 negative speeches in total, with their content and the time they were published.

Although the speeches could be just cheap talks, there were also policy announcements about the real estate industry from 2003 to 2013. Before the Financial Ministry and the Housing Ministry announced any specific policy, the central government would publish an instructive document. These documents would state what kind of policy would be conducted later thus influencing the demand and supply of the mainland real estate industry. As a result, the expected profits of all firms with business in mainland China would be affected, no matter whether they are listed in the mainland or the Hong Kong stock markets. For example, a document published on December 8th, 2008 stated "We should expand the channels for Real Industry to do financing". The general public should have taken this is as a good sign for the real estate industry and all firms should benefit from this policy. I assign a value to those policies using the same method as when classifying the speeches.

2.4 Methodology

2.4.1 The Classification of Speeches

The classification of speeches follows the dictionary method used in previous literature. In his speeches, Wen did not express his attitude using emotional words (e.g., happy, angry). Yet, his attitude can still be inferred by his comments about the housing market and regulation policies. I gathered the keywords in his comments and assigned them values depending on whether they indicate good or bad signs for further growth of housing markets. The words were classified into one of three categories: (A) the role of the housing industry in economic development, (B) comments about housing policies, and (C) description of housing markets. If a speech included keywords that were a good sign for housing firms, the speech was treated as a positive event, and if a speech included words that were a bad sign, it was treated as a negative event. The words classification is shown in Table (A.2.8), in the the Appendix. Of 55 events, 21 were defined as positive and 34 as negative.

Two things are notable. First, most of the speeches only contain Wen's own opinion. A few of the speeches include words about policy instructions, such as increasing the housing supply, but none provides any details, such as what kind of policy the government will implement to increase the supply. Also, there are too much cheap talk, and investors were unable to distinguish whether the speeches were just lip service or implied policy announcements. What they know is just the attitude of politicians. Second, some speeches include keywords in more than one category. In those cases, words in these three categories have different weights; words

in category A takes the largest weights and C takes the smallest. In other words, if a speech includes words from both categories A and B, then the attitude of this speech is determined by the sign of keywords in category A. The weights are consistent with how people organize the speeches. For example, if politicians claim the housing industry is crucial in increasing total demand (category A), although they might mention the government wants to increase the supply of indemnificatory apartments (category C) in the same speech, people realize politicians would like the housing market to continue growing because it helps economic growth.

The first category includes words indicating the importance of the housing industry in economic growth. For example, on August 15th, 2005 Wen stated that the housing industry is the cornerstone of China's economy. For the general audience, this speech implies that Wen regarded the development of the housing industry as important and that further policies, if any, would support its growth and not block it. Therefore, this event is classified as a positive event. Keywords in this category have the most weight because if these words indicate the importance of the housing industry in the economy, no matter what Wen said in the rest of his speeches, people know the regulation policy, if any, would not be so strict as to make housing firms unprofitable.

Keywords in category (B) show Wen's attitude towards (B1) general regulation policy and (B2) the supply side. Words about general policy have more weight than those about the supply side, as they consider the demand side as well. For example, in one speech Wen mentioned he was satisfied with the market regulation so far and wanted to stop market intervention, while some years later, he said the regulation does not provide the

expected results because of the uncooperative activities of local governments. The former is coded as a positive event for housing firms because the looser regulation made it possible for them to expand their business, while the latter implies the regulations would be stricter, which is bad for them. Words in category (B2) are about the housing supply, including commercial housing (coded as a positive event), and safe housing (coded as a negative event).

The last category contains keywords about Wen's descriptions of the housing markets. It is the least important category because keywords in this category only indicate Wen's own opinion, without any clue about upcoming policy. However, residents in mainland China are very sensitive to Wen's own attitude. When he mentioned housing prices were too high, the general public would try to guess whether he would implement policies to make the housing prices lower and more stable. Therefore, this is coded as a negative event.

2.4.2 Econometric Specification

To analyze the effect of politicians' speeches on the stock market, the event study method is appropriate for several reasons. First, event study is a standard method to estimate the influence of released political information on stock market turbulence. Fisman (2001) uses articles about Suharto's health as a way to check the market reaction in Indonesia. DellaVigna and La Ferrara (2010) use information about stock market reactions as a way to determine illegal arms trading. Calomiris, Fisman and Wang (2010) examine the market response to an announcement of the sale of government-owned shares to estimate the value of government

ownership in China. Second, the speeches are made in different situations without prior discussion, which means the information is unexpected in the market. Third, although the detailed policy tools are unclear, the attitude of politicians towards the housing industry is quite clear in each speech, which allows the possibility of assigning a value to those events. Therefore, this study use the speeches as events to test whether investors in mainland China and Hong Kong have similar reactions regarding the stock market when speeches are published online.

In the context of China, financial factors are hard to find, and other stock market models fit the data badly. Therefore the standard market model by MacKinlay (1997) is used to calculate the abnormal return in China to rule out the influence of the economic environment, similar to study by Calomiris, Fisman and Wang (2010). More specifically, the predicted return of an individual stock on a single day could be estimated by the past performance of that stock and the market index during the previous 60 days, and the abnormal return determined based on the difference between the predicted return in that day and the actual return.

$$r_{i,t} = \alpha_{i,t} + \beta_{i,t} r_{m,t} + \epsilon_{i,t}$$
$$\hat{r_{i,t}} = \hat{\alpha_{i,t}} + \hat{\beta_{i,t}} r_{m,t}$$
$$ra_{i,t} = r_{i,t} - \hat{r_{i,t}}$$

In the above regressions, $r_{i,t}$ is the daily return of stock i on date t, and $r_{m,t}$ is the daily return for the market index on date t. The coefficient for each individual stock in each date, $\alpha_{i,t}$ and $\beta_{i,t}$, are estimated using the data in the previous 60 days. $\hat{r_{i,t}}$ is the return of individual stocks pre-

dicted from the market return. In the last equation, $ra_{i,t}$ is the abnormal return, which represents the abnormal movements of daily returns of individual stocks, after excluding the impact of the economic environment. Because the speeches are unexpected, the abnormal return in a one-day event window is the variable of interest. Abnormal returns in a three-day event window [-1,1] and a five-day event window [-2,2] are considered robustness checks.

Therefore, the effect of speeches on the investors' expectations and thus the performance of individual stocks can be estimated by:

$$ra_{i,t} = \alpha + \beta S_t + \epsilon_{i,t} \qquad (2.1)$$

where S_t is equal to 1 if there is a speech published on date *t* and that speech represents a positive attitude to the real estate industry. S_t is -1 if a speech is published that is bad for the industry, and S_t equals 0 if no speech is made. The coefficient of interest is β_s. If β_s is positive, that means the speeches would affect the expectations of investors and thus the stock performance in the direction consistent with the attitude indicated in the speeches. If it is negative, that means the expectations of investors would move in the opposite direction. If it is insignificant, that means the speeches have no influence.

In addition to running regression (2.1) for the mainland stock market and the Hong Kong stock market separately, it is helpful to compare the reactions of both stock markets in the same regression. More specifically, I assume M_i is a variable indicating whether the stock *i* is listed in the mainland stock market. If the stock is on the mainland stock market, then

the dummy M_i is 1; otherwise it is 0. The estimation would then be:

$$ra_{i,t} = \alpha + \beta_1 S_t + \beta_2 S_t \times M_i + \beta_3 M_i + \epsilon_{i,t} \qquad (2.2)$$

In regression (2.2), the variables of interest are β_1 and β_2. β_1 indicates whether the Hong Kong stock market would be affected by the speeches, and β_2 indicates if there is any difference between the influence caused in the two stock markets. If β_2 is positive, it means the investors on the mainland are more sensitive to the politician's speeches, compared to the Hong Kong investors. To catch the potential problem of leaking or lagged information, the mean of the abnormal return in a different event window is used as a robustness check.

In addition to the abnormal return, which represents the turbulence of the returns of individual stocks, volatility is another variable of interest. One index of volatility is trading volume, which is a classic proxy for attention, as used in Hou, Xiong and Peng (2010). If investors think the information contained in the speeches is valuable, they should increase their trading volume. If positive information is published, investors are expected to buy more, and they will sell more than when the negative information is released. Therefore if investors care about the speeches, a larger trading volume should be detected when speeches are reported, for both positive and negative information.

The proxy for abnormal trading volume is calculated using the same method as in the literature, specifically, the studies about the influence of revealed accounting information on stock performance, such as DeFond, Hung and Trezevant (2007) and Landsman, Maydew and Thornock (2012). Abnor-

126

mal trading volume is represented by the natural log of the ratio between trading volume on each date and the expected trading volume. For each stock and each date t, the expected trading volume is the average of the trading volume during the period from $t - 70$ to $t - 40$ to $t + 40$ to $t + 70$. If v_{it} is the trading volume and ve_{it} is the expected trading volume for stock i in time t, then the abnormal trading volume is represented by:

$$va_{i,t} = log(\frac{v_{it}}{ve_{it}})$$

To catch the possibility of lagged awareness of the speeches, for a robustness check, instead of using the ratio of trading volume at each date as the numerator when calculating va_{it}, I use trading volume in the three-day window [-1,1]. That is,

$$\bar{v_{i,t}} = \frac{v_{i,t-1} + v_{i,t} + v_{i,t+1}}{3}$$
$$va_{i,t} = log(\frac{\bar{v_{i,t}}}{ve_{it}})$$

To test whether the trading volume is larger when the speeches are published, the same specification as before is used, but now the independent variable is not the attitude contained in the speech, but whether there is a speech published online or not. If $H_t = 1$ means there is a speech about the real estate industry made on date t, and $H_t = 0$ means there is none, then the influence of a speech on trading volume can be estimated by:

$$va_{i,t} = \alpha + \beta_h H_t + \epsilon_{i,t} \tag{2.3}$$

The coefficient of interest is β_h in regression (2.3). If investors care about the politician's speeches and base investment decisions on the information

heard in those speeches, β_h should be significantly positive. In contrast, if investors ignore the speeches, the coefficient β_h should be insignificant.

2.5 Results

This section presents the empirical results. The first part presents the summary statistics of the dataset. The second part presents the baseline results about the effects on abnormal returns when Permier Wen made a speech. The third part discusses the turbulence of the trading volume of those stocks on the event date, as measured by method used in the a from Accounting literature.

2.5.1 Descriptive Statistics

Before showing the the empirical results, Table (2.1) presents the descriptive statistics of the dataset. I collected 55 speeches and 24 policies. More than half of the speeches and policies are negative events. I have data for 109 housing firms listed in mainland stock markets and more than 170,000 observations for the data periods. In terms of firms in the Hong Kong stock market, I mostly focus on those with their core business in mainland China, as indicated in their annual reports or on the official websites; this results in that provides 46 firms and more than 60,000 observations in the data periods. The mean and standard deviations of individual stocks listed on mainland stock markets are lower than those listed on the Hong Kong stock markets. Firms listed in Hong Kong are on average larger than firms listed on mainland stock markets; they have more assets, leverage and, cash. In addition, firms listed on mainland stock markets in general show a higher income growth rate.

Table 2.1: Descriptive Statistics

Variable	N	Mean	SD	Min	Max	P50
Events						
Speech	55	-0.2364	0.9806	-1	1	-1
Policy	24	-0.250	0.989	-1	1	-1
Mainland Stock Market						
abnormal return (One Day Window)	176531	-0.00390	2.411	-16.02	16.55	-0.138
abnormal return (Three Days Window)	176529	-0.0117	4.329	-27.99	31.08	-0.118
abnormal volume (One Day Window)	163962	-1.850	0.682	-10.60	0.990	-1.848
abnormal volume (Three Days Window)	163962	-1.802	0.605	-9.208	0.800	-1.801
Assets (units: million RMB)	176531	11568	28203	3.0708	479205	4706
Leverage (units: million RMB)	176531	8019	21511	1.227	373766	2905
Income Growth	174641	27.21	566.6	-1	14883	0.137
Cash (units: million RMB)	175945	1566	3932	0	51120	581.3
Hong Kong Stock Market						
abnormal return (One Day Window)	62958	-0.00820	3.445	-62.92	84.48	-0.146
abnormal return (Three Days Window)	62957	-0.0245	5.839	-81.21	127.0	-0.259
abnormal volume (One Day Window)	60457	-1.462	1.051	-15.35	3.431	-1.359
abnormal volume (Three Days Window)	60457	-1.325	0.845	-8.523	3.058	-1.269
Assets (units: million RMB)	57764	41488	42393	8.531	348148	27362
Leverage (units: million RMB)	57764	28031	30856	7.509	268806	18278
Income Growth	57764	0.638	1.980	-0.910	28.91	0.240
Cash (units: million RMB)	62908	4247	4731	0.160	40118	2777

This table shows the descriptive statistics for the data set. In general I collected the text of 55 speeches and 24 policy announcements. There are 109 housing firms on the mainland stock markets and provide more than 160,000 observations, while on the Hong Kong stock market, there are 46 housing firms which claim their core business is in the mainland China, and they provide nearly 60,000 observations. Regarding the firm characteristics, firms listed in Hong Kong are in general large in terms of assets and leverage.

Next, I present some detailed statistics for abnormal returns of individual stocks. Figure (2.4) shows the abnormal returns using a box plot. Outliers, as defined in Tukey (1977), are ignored in this graph[13]. Although in general the box plot is quite noisy, compared to stocks in the Hong Kong stock market, the distributions of the abnormal returns of firms in the mainland stock market are somewhat different depending on the value of the speeches. On the left side of the graph, for stocks listed in the mainland stock market, the mean of the abnormal returns is lower on average

---

[13]The whiskers of the boxplot is drawn according to rule that the last observed value $<=$ 1.5*IQR above the upper quartile/below the lower quartile.

when negative speeches are published and higher when positive ones are published. Different from the box plot for the mainland China stock market, there is no obvious difference in the stock performance in the Hong Kong stock market, as the three boxes look similar. The box plot shows the pattern is consistent with the hypothesis.

Figure 2.4: The Box Plot of Abnormal Return

Original Data comes from CSMAR.
Outside values are excluded and the definition follows Tukey (1977).
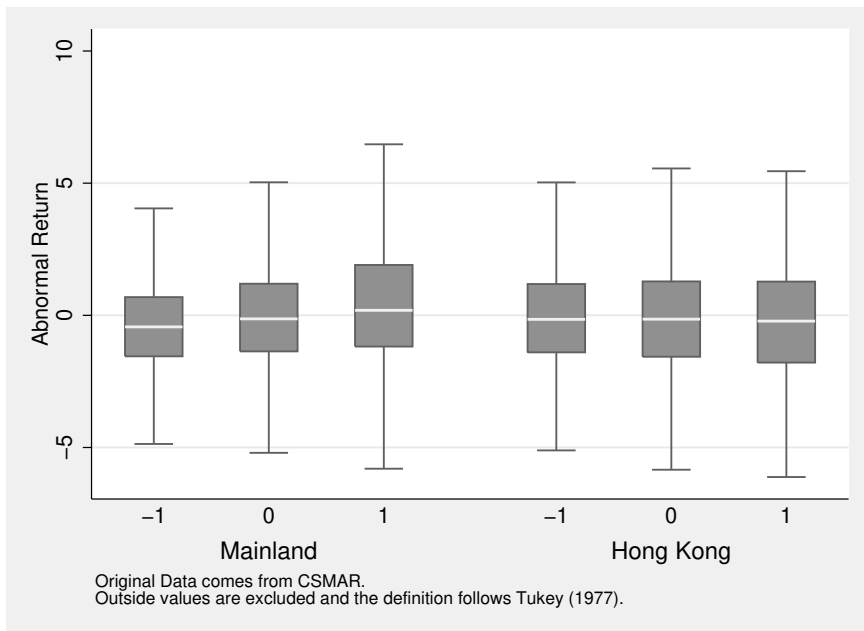
Notes: Figure (2.4) shows the box plot of abnormal return. This figure shows in the day when a positive speech is made, the abnormal return for firms listed in mainland market is higher, and in the day with a negative event, the abnormal return is lower. While firms listed in Hong Kong market does not show systematic difference. X-Axis is the classification of speeches. Outliers are ignored. 109 Mainland Firms and 46 Hong Kong Firms are included.

Table (2.2) shows descriptive statistics for abnormal returns. Essentially, the days without any speeches published, the stocks in both stock markets show a similar pattern; the mean of abnormal returns is -0.00041 and

-0.0069 for stocks in mainland and Hong Kong stock markets, respectively. Eighty percent of observations are in the range of [-2.72, 2.92] for the mainland stock market and in the range of [-1.566, 1.281] in HKEX. However, when there are speeches published online, the abnormal returns are much different. On the dates with a speeches are published online, the mean of the abnormal returns of firms in mainland stock markets is 0.452 and -0.262, depending on the value of events. However, this pattern disappears for stocks on the HKEX; the mean of the abnormal returns is close to 0 when a negative speech is published online.

Table 2.2: Descriptive Statistics: Abnormal Return by Location and Speech

Mainland Stock Market								
Speech	N	Mean	SD	Min	Max	P10	P50	P90
Negative	3355	-0.384	2.193	-10.34	12.07	-2.886	-0.437	2.035
No Speech	171151	-0.00140	2.413	-16.02	16.55	-2.720	-0.134	2.927
Positive	2025	0.410	2.493	-8.755	12.16	-2.359	0.190	3.506
Total	176531	-0.00390	2.411	-16.02	16.55	-2.720	-0.138	2.921
Hong Kong Stock Market								
Negative	1373	0.0439	3.160	-12.51	42.41	-1.458	-0.169	1.171
No Speech	60771	-0.00690	3.455	-62.92	84.48	-1.565	-0.144	1.285
Positive	814	-0.191	3.138	-15.18	19.82	-1.839	-0.261	1.150
Total	62958	-0.00820	3.445	-62.92	84.48	-1.566	-0.146	1.281

This table shows the descriptive statistics for abnormal return. In the mainland stock market, the abnormal returns of housing stocks on the dates when positive speeches are published, are in general higher compared to the dates when there are no speech are observed. The opposite is true for abnormal returns of housing stocks on the dates when negative speeches are published. No similar patterns are observed in Hong Kong stock market.

2.5.2   Effects on Abnormal Returns

Table (2.3) shows the baseline results based on specification (2.1), for stocks listed on the mainland stock markets and on the Hong Kong stock market. The table focuses on the effects in a one-day event window, as the published date is quite clear.

131

Table 2.3: Effect of Speech on Abnormal Return in One Day Event Window

Dep.Var: Abnormal Return	Mainland Stock Markets			Hong Kong Stock Market		
	(1)	(2)	(3)	(4)	(5)	(6)
Speech	0.4127***	0.4405***	-0.4017***	-0.0963	-0.0542	0.1224
	(0.0329)	(0.0479)	(0.0389)	(0.0609)	(0.1263)	(0.0913)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	All	Pos	Neg
No.of Events	55	21	34	55	21	34
No.of Firms	109	109	109	46	46	46
Num of Obs	173764	174055	174055	57714	57714	57714

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. Column (4) to (6) use only firms in Hong Kong Stock Market claiming their core business is residential housing in mainland China, shown in their websites or annual reports. Observations are in the period of 11th April, 2005 to 15th March, 2013.

The first three columns show the effect of speeches on the mainland stock markets, and the rest of the columns show the effect on the Hong Kong stock market. The first column uses 55 speeches as events, including both the speeches showing positive attitudes and those showing negative attitudes, and it shows that when a speech was published online, investors in mainland China would change their expectations regarding firms in the real estate industry in the direction consistent with the speeches. Because 80% of the abnormal returns are located between -2.72 and 2.92, it means the speeches by Wen could affect the abnormal returns by nearly 7%. To check whether the magnitude of the effect that positive speeches and negative speeches induced are similar, regression (2.1) is estimated again, but the positive speeches and negative speeches are considered separately. In the second column, all the negative speeches are dropped so it shows the influence of 21 positive events, that is, S_t equals 1 in the case of positive speeches and 0 otherwise. The magnitude of the coefficient is similar:

one positive speech on that day would increase the abnormal returns by 9%. In contrast, in the third column, all the positive events are dropped, that is, S_t equals 1 if there is a negative speech published on that day and 0 otherwise. The results show the abnormal returns would be decreased by 8%. The first three columns in Table (2.3) show the investors in the mainland China stock market would react when receiving the information from Wen's speeches and that their reaction is in the same direction with the attitude of the politician.

The next three columns in Table (2.3) show the results from the Hong Kong stock market. Generally, they show that Hong Kong investors would not have any reaction to the speeches by Wen. Specifically, the fourth column shows the result using 46 housing firms listed in the Hong Kong stock market and all 55 events. The coefficient is negative, economically small, and insignificant. This means the stock performance on average would not be influenced by the speeches. The fifth and sixth columns show the market reactions to positive and negative speeches, respectively, and these two coefficients are both negative and insignificant. No causal inference could be made.

Table (2.3) clearly shows how investors in the mainland stock market and the Hong Kong stock market react differently to the Wen's speeches. Mainland investors believe the politician's attitude is important and so they buy more when positive speeches are made and sell more when negative ones are made; however, investors in Hong Kong do not care about the speeches and do not have any reaction. This result is consistent with our hypothesis. Mainland investors think the speeches imply a policy change in the near future because a politician's own attitude is crucial in

policy-making and are therefore sensitive to the speeches, but Hong Kong investors lack such sensitivity. As a robustness check, instead of only using the firms with their core business in mainland China, I also show the results using all the housing firms listed on the HKEX. The results shown in Table (A.2.1) and they are similar with the results in Table (2.3).

Figure (2.5) shows the effect of the speeches on the abnormal returns from four days before to four days after the speeches were published online. The dark and light lines show the effects on the stocks on the mainland and Hong Kong stock markets, respectively. In general, I could not find any pre-trends. Speeches affect the abnormal return of stocks on the mainland stock market on the event date and two days after, and would have a negative effect on the third and fourth days. However, I cannot find significant effects in Hong Kong market. Figure (2.5) also shows it is not the case that market players in Hong Kong receive the information and react later. Moreover, Figure (2.5) implies the move of market participants is inefficient; they will buy the stocks when the speeches are published but sell them quickly when they find the speeches might not represent any policy decisions.

As a robustness check, Table (2.4) shows the results with specification (2.1) but uses a three-day event window [-1,1] to check the possibility of information leakage or late reporting. The results shows a similar pattern with those in Table (2.3). The mainland investors react according to the politician's attitude, but the Hong Kong investors do not seem to have any reactions. This result rules out the possibility that the difference in influence is the consequence of the different timing of receiving information in the mainland and Hong Kong. In addition, in Table (2.4), for the

Figure 2.5: Effects of Speeches in One Event Window

Original Data: CSMAR and The Chinese Central Government's Official Web
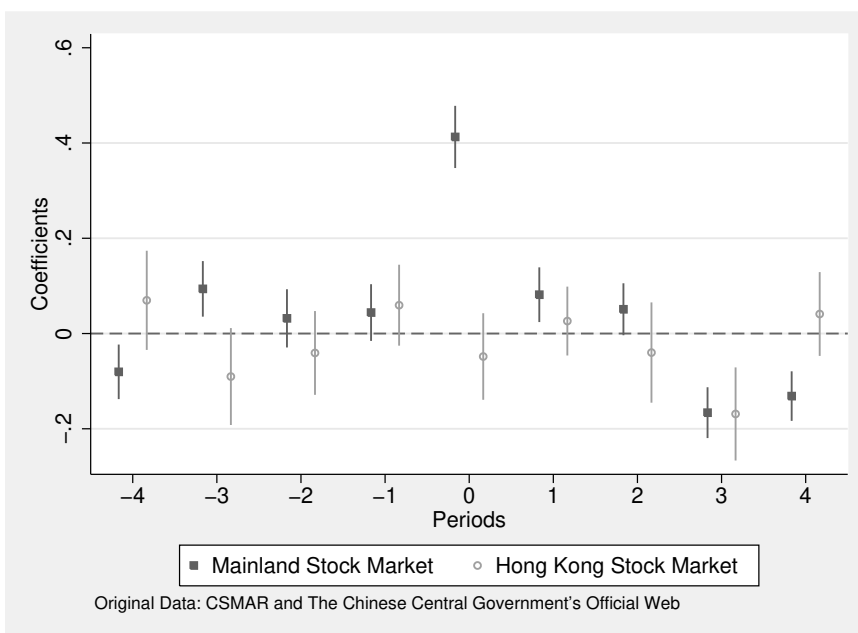
Notes: This figure shows the coefficients of Speeches on abnormal return of individual stocks from four days before the Speeches are published to four days after. No pre-trend is observed. There is a huge influence of Speeches on abnormal return in Mainland stock market in the event date, and this effects lasts for nearly three days, but there is no effect in Hong Kong stock market.

mainland stock market, the magnitude of the coefficient is much smaller than in a one-day event window. This is also evidence that there is no early reporting and that mainland investors received the information in a timely manner; thus, the speech shock is absorbed on the event day and dispersed quickly. I also show the results using a five-day event window, and the results are quite similar, shown in Table (A.2.2) in appendix.

Table 2.4: Effect of Speech on Abnormal Return in Three Days Event Window

Dep.Var: Abnormal Return	Mainland Stock Markets			Hong Kong Stock Market		
	(1)	(2)	(3)	(4)	(5)	(6)
Speech	0.1793***	0.3047***	-0.1048***	-0.0252	0.0188	0.0514
	(0.0195)	(0.0294)	(0.0206)	(0.0353)	(0.0788)	(0.0441)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	All	Pos	Neg
No.of Events	55	21	34	55	21	34
No.of Firms	109	109	109	46	46	46
Num of Obs	176313	176313	176313	57632	57632	57632

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. Column (4) to (6) use only firms in Hong Kong Stock Market claiming their core business is residential housing in mainland China, shown in their websites or annual reports. Observations are in the period of 11th April, 2005 to 15th March, 2013.

Table 2.5: Effect of Speech on Abnormal Return with Pooling Sample

Dep.Var: Abnormal Return	One Day Event Window			Three Days Event Window		
	(1)	(2)	(3)	(4)	(5)	(6)
Speech	-0.0900	-0.0575	0.1137	-0.0230	0.0139	0.0467
	(0.0597)	(0.1266)	(0.0790)	(0.0345)	(0.0689)	(0.0464)
Speech × Mainland	0.5005***	0.4988***	-0.5124***	0.2015***	0.2876***	-0.1528***
	(0.0675)	(0.1351)	(0.0872)	(0.0390)	(0.0745)	(0.0500)
Mainland	0.0049	-0.0046	0.0112	0.0036	-0.0013	0.0051
	(0.0077)	(0.0074)	(0.0080)	(0.0076)	(0.0073)	(0.0077)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	Pos	All	Neg
No.of Events	55	21	34	55	21	34
No.of Firms	155	155	155	155	155	155
Num of Obs	231769	231769	231769	231482	231482	231482

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. The firms in Hong Kong Stock Market all claim their core business is residential housing in mainland China, shown in their websites or annual reports. Observations are in the period of 11th April, 2005 to 15th March, 2013.

In addition to the estimated influence of speeches on the mainland stock market and the Hong Kong stock market individually, specification (2.2) provides a way to check whether investors in the two markets behave differently in a single regression function. The result is shown in Table (2.5).

In Table (2.5), the coefficients of the variable $Speech$ for both a one-day event window and a three-day event window are insignificant, meaning stocks in the Hong Kong stock market are not influenced no matter which event window is used and no matter the value of the events. When there is a positive (negative) speech, the interaction term is positive (negative). This result shows that compared to the stocks listed in the Hong Kong stock market, the abnormal returns of stocks listed in the mainland stock market would vary according to the attitude contained in the politician's speeches, which is consistent with the hypothesis. But again, the magnitude of the coefficient of interest is smaller in the three-day event window. Table (A.2.3) and Table (A.2.4) show the results using five-day event window.

2.5.3 The Effect on Trading Volume

This section discusses the influence of speeches on trading volumes in both markets. If investors receive and care about the information contained in the speeches, they would increase their trading volume. The results shown in Table (2.6) to Table (2.8) are based on specification (2.3).

In Table (2.6), I show the effect of speech on the abnormal volume change in the one-day event window. The first three columns show the results for the mainland stock markets, and the next three columns show the results

Table 2.6: Effect of Speech on Abnormal Volume in One Day Event Window

Dep.Var: Abnormal Volume	Mainland Stock Markets			Hong Kong Stock Market		
	(1)	(2)	(3)	(4)	(5)	(6)
Speech	0.0583***	0.0617***	0.0554***	-0.0062	-0.0113	-0.0031
	(0.0092)	(0.0125)	(0.0114)	(0.0187)	(0.0372)	(0.0210)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	All	Pos	Neg
No.of Events	55	21	34	55	21	34
No.of Firms	109	109	109	46	46	46
Num of Obs	162206	162206	162206	55086	55086	55086

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. Column (4) to (6) use only firms in Hong Kong Stock Market claiming their core business is residential housing in mainland China, shown in their websites or annual reports. Observations are in the period of 11th April, 2005 to 15th March, 2013. The abnormal trading volume is computed by the window [-40,70] and [40,70].

for the Hong Kong stock market. In the first three columns, the coefficients for the variable $Speech$ are both positive and significant, no matter if I look at all or part of the speeches. The first column shows the abnormal volume would be increased by 0.0583 on the days when the speeches are published. This result is consistent with the hypothesis that mainland investors care about the speeches made by Wen and increase trading volume when they receive the information. Column (2) and column (3) focus on the effects of positive and negative speeches, respectively. In general, positive speeches would increase the abnormal trading volume by 0.0617 and negative events would increase it by 0.0554. The effects are symmetric. Columns (4) to (6) show the results for the Hong Kong stock market, and no matter which kind of speech is given, speeches made by Wen change nothing in the investment decisions of Hong Kong investors; Hong Kong investors would not increase their trading volume. Table (2.7) shows the results using a three-day event window, and the results are similar to those shown in Table (2.6).

138

Table 2.7: Effect of Speech on Abnormal Volume in Three Days Event Window

Dep.Var: Abnormal Volume	Mainland Stock Markets			Hong Kong Stock Market		
	(1)	(2)	(3)	(4)	(5)	(6)
Speech	0.0440***	0.0493***	0.0403***	-0.0038	-0.0079	-0.0014
	(0.0076)	(0.0110)	(0.0099)	(0.0127)	(0.0274)	(0.0174)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	All	Pos	Neg
No.of Events	55	21	34	55	21	34
No.of Firms	109	109	109	46	46	46
Num of Obs	162206	162206	162206	55086	55086	55086

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. Column (4) to (6) use only firms in Hong Kong Stock Market claiming their core business is residential housing in mainland China, shown in their websites or annual reports. Observations are in the period of 11th April, 2005 to 15th March, 2013. The abnormal trading volume is computed by the window [-40,70] and [40,70].

In Table (2.8), I follow specification (2.2) but use the abnormal volume as the dependent variable. The first three columns use the one-day event window and the rest show the results with a three-day event window. Again, I find that in general, the speeches themselves would not affect trading volumes but only the stocks listed in mainland stock markets. No matter if the information contained in the speeches are positive or negative, the abnormal trading volume would increase.

The next section discusses the mechanisms and why there is difference in the actions of mainland investors and Hong Kong investors when speeches about the real estate industry are published online.

Table 2.8: Effect of Speech on Abnormal Volume with Pooling Sample

Dep.Var: Abnormal Volume	One Day Event Window			Three Days Event Window		
	(1)	(2)	(3)	(4)	(5)	(6)
Speech	-0.0189	-0.0374	-0.0077	-0.0109	-0.0367	0.0042
	(0.0180)	(0.0378)	(0.0216)	(0.0132)	(0.0287)	(0.0185)
Speech $\times$ Mainland	0.0825***	0.1102***	0.0647**	0.0582***	0.0978***	0.0342
	(0.0205)	(0.0402)	(0.0260)	(0.0158)	(0.0314)	(0.0224)
Mainland	-0.3145***	-0.3134***	-0.3133***	-0.4284***	-0.4278***	-0.4273***
	(0.0543)	(0.0542)	(0.0545)	(0.0382)	(0.0380)	(0.0383)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	All	Pos	Neg
No.of Events	55	21	34	55	21	34
No.of Firms	155	155	155	155	155	155
Num of Obs	215431	215431	215431	215431	215431	215431

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. The firms in Hong Kong Stock Market all claim their core business is residential housing in mainland China, shown in their websites or annual reports. Observations are in the period of 11th April, 2005 to 15th March, 2013. The abnormal trading volume is computed by the window [-40,70] and [40,70].

2.6   Mechanisms

The baseline results show the investors in the mainland stock market would change their investment behavior when they receive information from the speeches of Premier Wen. At the same time, the investors in the Hong Kong stock market do not have any reaction. The firms listed in the Hong Kong stock market are those whose main business is in mainland China and who would be influenced by any policies regarding the housing industry. If Hong Kong investors believe the politician's attitude towards the housing industry matters for policy-making, they would take action as well, which contradicts the previous result. The first three sections talk in detail about the mechanisms behind why the investors in the two markets would behave in different ways. The last section looks deeper into why the mainland investors care about the speeches.

2.6.1 Information Friction

The first possibility is that Hong Kong residents did not receive the information about Wen's speeches, that is, if there is much information friction. However, the information friction explanation is unlikely for several reasons. First, the speeches were all published on the official website, that is, $Xinhua.net$ in a timely manner, so if investors are sensitive enough they can always get access. Although China bars access to some websites, such as Google, there is no evidence about the existence of an internet block or speed restriction in the opposite direction. Second, Xinhua News Agency, the official media group in China, has many branches worldwide, including in Hong Kong, Macao, and the United States. The responsibility of these branches is to distribute the information from the head office in mainland China to the local news agency[14] to make sure local media groups can receive important news in a timely manner, news in which the important visits of leaders and conference talks are surely included. Third, articles about these speeches were printed in the local mainstream newspapers, such as $TaKungPao$ and $WenWeiPao$. Sometimes, the articles were directly reprinted from *Xinhua News Agency*, and sometimes they were written by reporters from local newspapers. Although the content of the speeches was easier to access on the mainland, Hong Kong investors also had access.

2.6.2 The Structure of Investors

If investors in both markets receive the same information, the next question is whether the investors in Hong Kong care about the speeches or

---

[14]From the website of Xinhua Agency

not. The different investment behavior might be blamed on the investors themselves. Individual investors have a dominant position in the mainland stock market, both in the Shanghai and Shenzhen stock markets, but institutional investors dominate the Hong Kong stock market. If individual investors are assumed to be more impulsive and institutional investors are more careful and would not make any investment decision if no crucial information about policy change is revealed in speeches, then the inconsistency of stock performance in the two stock markets may be due to a difference in investors themselves. However, this is not likely for two reasons.

First, previous studies including Engelberg and Parsons (2011) and Tetlock, Saar-Tsechansky and Macskassy (2008), show how the US stock market fluctuates when sentimental information that is uncorrelated with the profits of firms is revealed, such as recommendations on television shows or the tone of newspaper articles. In the US, the institutional investors dominate the market just like in Hong Kong, and it seems they are easily influenced by the message without any information about the fundamentals, just as individual investors are. If institutional investors cannot be assumed to be rational and prudent when making investment decisions, then the difference in investors cannot be blamed for the inconsistency of reactions to speeches in relation to the two stock markets.

Second, the empirical results contradict this explanation as well. Compared to institutional investors, individual investors have a smaller share of market value, so they are not supposed to induce a large fluctuation without the actions of institutional investors. This creates two possibilities. The first is that if individuals decide to increase or decrease their in-

vestment because of the speeches, and institutional investors ignore such news and do nothing out of prudence, then the larger trading volume when speeches are published should not be observed in Table (2.6) and Table (2.7), for mainland China. The second is that institutional investors could do the opposite to gain profits when individual investors make decisions if they are more tactful. For example, if individual investors think the positive attitude of Wen means a policy change and they increase their investment, the institutional investors could sell their stocks if they believe the speeches are just noise. Because institutional investors have more money and hold a larger share of market value, a negative return should be detected, which contradicts the results in Table (2.3) and Table (2.4).

To sum up, it is likely that institutional investors also react to the speeches both theoretically and empirically, and the difference in the nature of investors is not an explanation for the inconsistent reactions to speeches in these two stock markets.

2.6.3   Firm Characteristics

Another reason why investors in Hong Kong may not care about the speeches is the characteristics of the firms listed. For example, if for the firms in the Hong Kong stock market, the share of profits from business in mainland China is relatively small, then it is reasonable for Hong Kong investors not to pay much attention to the speeches made by Wen. To check this possibility, the first best strategy is to collect information about the compositions of profits for each firm and add this information as a control variable in the regression function. However, this kind of information is inaccessible and does not exist even in the firms' annual

reports. Instead, two other strategies are used to address this concern.

The first strategy is restricting the samples to those whose core business is in mainland China. In Table (2.3) and Table (2.4), the last three columns only contain the 46 firms in the Hong Kong stock market, and the results show that their abnormal returns did not fluctuate when the speeches were made. Although these 46 firms include some Hong Kong firms, all of them claim their business focus is in mainland China, which should be influenced by any policy targeting the mainland market. If investors believe the speeches might contain some information about policy changes in the near future, they should care about the speeches, and the abnormal returns of these 46 firms should change. However, the results contradict this argument, and it seems the absence of reaction in the Hong Kong stock market is not because the firms listed there do not care about business in mainland China.

The second strategy focuses on whether Hong Kong investors react when the policies are made. If the investors in Hong Kong do not care about the speeches because of the firms' characteristics, then they should not pay attention to the policies. In this section, 24 policy documents published by the central government, including the content and their announcement dates, were collected and treated as events to see whether the investors in Hong Kong react consistently with mainland investors. The policies promoting and suppressing the housing industry are coded as +1 and -1, respectively, like the speeches in the previous sections. The econometric specification (2.1) is checked, but instead of focusing on the speech event $Speech$, the influence of the policy event $Policy$ is estimated.

Table 2.9: Effect of Policy on Abnormal Return in One Day Event Window

Dep.Var: Abnormal Return	Mainland Stock Markets			Hong Kong Stock Market		
	(1)	(2)	(3)	(4)	(5)	(6)
Policy	0.2010***	0.2982***	-0.1460***	0.3359***	0.5129**	-0.2554**
	(0.0521)	(0.1071)	(0.0505)	(0.1054)	(0.2297)	(0.1216)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	All	Pos	Neg
No.of Events	24	9	15	24	9	15
No.of Firms	109	109	109	46	46	46
Num of Obs	174055	174055	174055	57714	57714	57714

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. The firms in Hong Kong Stock Market all claim their core business is residential housing in mainland China, shown in their websites or annual reports. Observations are in the period of 11th April, 2005 to 15th March, 2013.

Table 2.10: Effect of Policy on Abnormal Return in Three Days Event Window

Dep.Var: Abnormal Return	Mainland Stock Markets			Hong Kong Stock Market		
	(1)	(2)	(3)	(4)	(5)	(6)
Policy	0.3030***	0.5095***	-0.1853***	0.2421***	0.3460**	-0.1951***
	(0.0291)	(0.0573)	(0.0316)	(0.0661)	(0.1433)	(0.0645)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	All	Pos	Neg
No.of Events	24	9	15	24	9	15
No.of Firms	109	109	109	46	46	46
Num of Obs	173849	173849	173849	57713	57713	57713

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. The firms in Hong Kong Stock Market all claim their core business is residential housing in mainland China, shown in their websites or annual reports. Observations are in the period of 11th April, 2005 to 15th March, 2013.

Table (2.9) and Table (2.10) show the results for one-day and three-day event windows, respectively. In Table (2.9), the reactions in the mainland stock market and the Hong Kong stock market look similar. investors in both markets care about the policy announcements and would react

in the investment decisions. A policy conducive to the development of the housing industry makes investors confident, and the abnormal returns are increased in both markets, while the repressive policy induces a negative atmosphere. Specifically, in the results for the one-day event window, speeches could influence the abnormal returns by 4% and 6% in the mainland stock market and the Hong Kong stock market, respectively.

Table 2.11: Effect of Policy on Abnormal Return with Pooling Sample

Dep.Var: Abnormal Return	One Day Window	Three Days Window
	(1)	(2)
Policy	0.3467***	0.2534***
	(0.1031)	(0.0660)
Policy × Mainland	-0.1490	0.0428
	(0.1149)	(0.0723)
Mainland	-0.0099	-0.0083
	(0.0095)	(0.0095)
Year FE	Yes	Yes
Controls	Yes	Yes
Events	All	All
No.of Events	24	24
No.of Firms	155	155
Num of Obs	231769	231481

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. The firms in Hong Kong Stock Market all claim their core business is residential housing in mainland China, shown in their websites or annual reports. Observations are in the period of 11th April, 2005 to 15th March, 2013.

Table (2.11) includes pooling samples from the mainland stock market and the Hong Kong stock market, that is, specification (2.2) using the *Policy* as an independent variable. The result is consistent with Table

Table 2.12: Effect of Policy on Abnormal Volume

Dep.Var: Abnormal Volume	Mainland Stock Markets		Hong Kong Stock Market	
	(1)	(2)	(3)	(4)
Policy	0.1300***	0.1795***	0.0984***	0.1415***
	(0.0129)	(0.0341)	(0.0118)	(0.0269)
Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Events	All	All	All	All
Event Window	One Day	Three Days	One Day	Three Days
No.of Events	24	24	24	24
No.of Firms	109	109	46	46
Num of Obs	162206	53225	162206	53225

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. The firms in Hong Kong Stock Market all claim their core business is residential housing in mainland China, shown in their websites or annual reports. Observations are in the period of 11th April, 2005 to 15th March, 2013. The abnormal trading volume is computed by the window [-40,70] and [40,70].

(2.9) and Table (2.10). The coefficients for the variable $Policy$ are positive and significant, meaning the investors in Hong Kong care about the policy announcements as well. The coefficients for the interaction term are insignificant, which implies there is no difference between the reaction in the mainland stock markets and the Hong Kong stock market.

The results in Table (2.9) to Table (2.11) all show that Hong Kong investors care about the policy announcements, and the abnormal returns of those firms would be influenced when a new policy is published. Hong Kong investors believe the profits of business in mainland China matter and that they should pay attention to any signal about policies. Therefore, the characteristics of firms could not be a reason why investors do not pay attention to the speeches. The only reason is that compared to the mainland investors, Hong Kong investors do not take the speeches of politicians as indications of policy changes in the future. Table (2.12) checks

whether the trading volume would be increased in both stock markets when polices are announced. The coefficients for the mainland stock markets and the Hong Kong stock market are positive and significant, which shows trade increases when the central government introduces measures to influence the real estate industry.

To summarize, Hong Kong investors have access to the speeches either from the official site of $Xinhua Agency$ or the local mainstream newspaper. Although they can get the information, they do not really care about it. This is not because they do not care about the firms' profits on the mainland but because they do not realize the speeches could provide any reference to policy change. In other words, in their minds, the politician's attitude is not important in terms of policy-making. However, mainland investors are aware of how important politicians' words can be. Even though speeches may not bring policy changes in the near future and some speeches are even just lip service, mainland investors still take action. In this sense, when making investment decisions, mainland investors are too sensitive to the politician's attitude and Hong Kong investors are too apathetic about it.

2.6.4 Political Effect or Fundamental Effect

This section talks about the reasons why stockholders in mainland China react so much to the speeches. There are two effects these speeches can have on the expectations of mainland investors. One effect is the politician effect. Stockholders think the politician's attitude is crucial in policy-making and that in the near future policies consistent with Wen's attitude would be published. In this case, stockholders change their behavior

because of the politician's attitude. The other effect is the fundamental effect. Investors can catch information about policy change from the speeches, and know how the fundamentals of the housing market would perform in the near future. In this case, stockholders change their behavior because they have received some useful information about fundamentals, but not the political implications. This section tries to distinguish these two effects, based on the idea that if the fundamental effect is larger and stock market participants can forecast how the housing market will change, other industries correlated to the housing industry would be affected as well.

In detail, if the political effect dominates, investors panic, but they lack more detailed information. What they would do is to buy or sell the stocks in the housing industry, depending on the politician's attitude. They would not think about other industries but just try to follow what the politician is saying, because they do not know what will happen. However, if the fundamental effect is the main effect, investors learn more about the changes in fundamentals in the housing market. They would change their investment behavior not only for stocks in the housing industry, but also for stocks in related industries, like the banking industry, the financial industry, and construction industry. As a result, by using data in other industries in specifications (1) and (2), this section provides a method to test which effect is dominant.

Table (2.13) shows the influence of speeches on banking firms. The first three columns are the outcomes from specification (2.1) but with the 16 firms from the banking industry. In four events, the Premier mentioned the banking industry or other events related to the banking industry hap-

Table 2.13: Effect of Speech on Abnormal Return in Banking Industry

Dep.Var: Abnormal Return	One Day Event Window			Three Days Event Window		
	(1)	(2)	(3)	(4)	(5)	(6)
Speech	0.0096	0.0098	-0.0095	-0.0099	0.0122	0.0255
	(0.0348)	(0.0663)	(0.0315)	(0.0260)	(0.0404)	(0.0301)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	All	Pos	Neg
No.of Events	51	21	30	51	21	30
No.of Firms	16	16	16	16	16	16
Num of Obs	24998	24998	24998	24976	24976	24976

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. Four Speeches are ignored where WEN mentioned Banking Industry. Observations are in the period of 11th April, 2005 to 15th March, 2013.

pening on the same date; therefore, only 51 events are considered in the regression. For example, on April 4, 2012, in a national conference, besides regulating the housing prices, Wen also mentioned the central government would try to break the monopoly in the banking industry.[15]

If an increase in abnormal returns for housing firms is due to the fundamental effect, the profits of banks would be influenced, and the stock prices of banking firms would fluctuate as well. If the increase is due to the political effect, then the abnormal returns for banking stocks should be unchanged. Table (2.13) shows results that none of these estimators is significant for either the one-day or three-day event windows. In Table (2.14), the construction industry is considered, and four events are ignored because the construction industry is mentioned. The results look similar to those for the banking industry; there is no evidence of the influence of speeches on construction firms. Table (2.15) shows the results of pooling

---

[15]Wen Jiabao: The Central Government has decided to break the monopoly in Banking Industry, *Chinanews*

samples, which include the observations from the housing industry, and the banking industry or the construction industry. The coefficient for the interaction terms are all positive and significant, meaning that compared to the banking firms, the housing firms are being greatly influenced by the speeches. The results shown in these three tables support the explanation of the politician effect; speeches catch investors' attentions not because investors can detect the fundamental change but because what really matters is the politician's words, in other words, government will. The results for financial firms are shown in Table (A.2.5) and Table (A.2.6) in the appendix and reveal a similar pattern to the banking industry.

Table 2.14: Effect of Speech on Abnormal Return in Construction Industry

Dep.Var: Abnormal Return	One Day Event Window			Three Days Event Window		
	(1)	(2)	(3)	(4)	(5)	(6)
Speech	-0.0659	-0.0800	0.0598	0.0109	0.0151	-0.0089
	(0.0668)	(0.1010)	(0.0754)	(0.0287)	(0.0490)	(0.0372)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Events	All	POS	NEG	ALL	POS	NEG
No.of Events	51	18	33	51	18	33
No.of Firms	42	42	42	42	42	42
Num of Obs	45763	45763	45763	45704	45704	45704

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. Four Speeches are ignored where WEN mentioned Construction Industry. Observations are in the period of 11th April, 2005 to 15th March, 2013.

Table 2.15: The Power of Speeches: Pooling Samples in Related Industries

Dep.Var: Abnormal Return	Banking Industry		Construction Industry	
	(1)	(2)	(3)	(4)
Speech	0.0117	-0.0107	-0.0517	0.0227
	(0.0333)	(0.0256)	(0.0657)	(0.0280)
Speech × Housing	0.3608***	0.1821***	0.4628***	0.1313***
	(0.0460)	(0.0321)	(0.0741)	(0.0338)
Housing	0.0052	0.0069	0.0173*	0.0140
	(0.0096)	(0.0096)	(0.0093)	(0.0091)
Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Events	All	All	All	All
Event Window	One Day	Three Days	One Day	Three Days
No.of Events	51	51	51	51
No.of Firms	125	125	151	151
Num of Obs	199053	198825	219818	219553

Robust standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. Four speeches are ignored for Banking Industry and Construction Industry respectively, since WEN mentioned the corresponding industries. Observations are in the period of 11th April, 2005 to 15th March, 2013.

2.7 Conclusion

This paper focuses on stock market performance when new information is released in the context of a politician's speeches. Different than hard information, such as profits or the death of a CEO, the influence of political information on financial markets depends on how the participants in the stock market interpret it. By checking the performance of the mainland and Hong Kong stock markets, this paper shows that mainland stockholders, who are more used to government intervention in the economy, are more sensitive to speeches made by Premier, Wen Jiabao, while participants in the Hong Kong stock market, who live in a society with a free market tradition, are less influenced.

The difference in investment behavior is not due to the information frictions, the different structure of the stock markets, or the characteristics of firms (including profits distributions). The absence of influence in the banking, financing, and construction industries imply mainland investors care about the political implications of the politician's speeches but not about fundamentals. How investors perform depends on how they interpret the political implications from the speeches. Mainland residents live in a big-government environment and are used to government intervention, so they are more likely to change investment decisions when receiving anything from a politician's attitude. However, Hong Kong investors are more used to following the market rule, so they are not influenced. The investment behaviour of mainland market participants is inefficient; they often realize there is no information contained in the speeches and sell the stocks quickly some days after.

Although this paper takes a look in a very special context, it complements the literature about how political information and the expectations of the general population affect market performance. The influence of political information depends on how investors interpret it, which is in turn rooted in culture and traditions. Therefore, if politicians want to influence investors or the general population they must understand that people with different cultures and traditions cannot be treated in the same way. The methodology used in this paper can be used in different topics, such as to measure the policy credibility or political power of politicians in different regions/nations.

2.8   Appendix

Table A.2.1: Effect of Speech on Abnormal Return in Hong Kong Stock Market

Dep.Var: Abnormal Return	One Day Event Window			Three Days Event Window		
	(1)	(2)	(3)	(4)	(5)	(6)
Speech	-0.0482	-0.0753	0.0325	0.0124	0.0233	-0.0060
	(0.0458)	(0.0887)	(0.0582)	(0.0279)	(0.0498)	(0.0312)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	All	Pos	Neg
No.of Firms	135	135	135	135	135	135
Num of Obs	139915	139915	139915	139725	139725	139725

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. Sample includes all the housing firms listed in Hong Kong Stock Market. Observations are in the period of 11th April, 2005 to 15th March, 2013.

Table A.2.2: Effect of Speech on Abnormal Return in Five Days Event Window

Dep.Var: Abnormal Return	Mainland Stock Markets			Hong Kong Stock Market		
	(1)	(2)	(3)	(4)	(5)	(6)
Speech	0.1241***	0.2273***	-0.0624***	-0.0004	0.0175	0.0110
	(0.0138)	(0.0219)	(0.0147)	(0.0206)	(0.0404)	(0.0251)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	All	Pos	Neg
No.of Events	55	21	34	55	21	34
No.of Firms	109	109	109	46	46	46
Num of Obs	173643	173643	173643	57550	57550	57550

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. Column (4) to (6) use only firms in Hong Kong Stock Market claiming their core business is residential housing in mainland China, shown in their websites or annual reports. Observations are in the period of 11th April, 2005 to 15th March, 2013.

Table A.2.3: The Power of Speeches: Baseline Result in HKEX in Five Days Event Window

	Dep.Var: Abnormal Return		
	(1)	(2)	(3)
Speech	-0.0090	-0.0353	-0.0068
	(0.0217)	(0.0389)	(0.0236)
Year FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Events	All	Pos	Neg
No.of Events	55	21	34
No.of Firms	135	135	135
Num of Obs	139535	139535	139535

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. All housing firms listed in Hong Kong stock markets are included. Observations are in the period of 11th April, 2005 to 15th March, 2013.

Table A.2.4: Effect of Speech on Abnormal Return in Five Days Event Window in Pooling Sample

Dep.Var: Abnormal Return	Whole Sample			Core Business in Mainland		
	(1)	(2)	(3)	(4)	(5)	(6)
Speech	-0.0040	-0.0298	-0.0105	0.0006	0.0119	0.0073
	(0.0214)	(0.0383)	(0.0234)	(0.0204)	(0.0398)	(0.0247)
Speech × Mainland	0.1260***	0.2557***	-0.0502*	0.1220***	0.2156***	-0.0675**
	(0.0252)	(0.0436)	(0.0275)	(0.0244)	(0.0452)	(0.0285)
Mainland	0.0080*	0.0041	0.0081*	0.0028	-0.0006	0.0033
	(0.0046)	(0.0046)	(0.0046)	(0.0074)	(0.0073)	(0.0074)
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	All	Pos	Neg
No.of Events	55	21	34	55	21	34
No.of Firms	155	155	155	46	46	46
Num of Obs	313182	313182	313182	231195	231195	231195

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. Column (1) to (3) includes all the firms listed in Hong Kong Stock Market. Column (4) to (6) use only firms in Hong Kong Stock Market claiming their core business is residential housing in mainland China, shown in their websites or annual reports. Observations are in the period of 11th April, 2005 to 15th March, 2013.

Table A.2.5: Effect of Speech on Abnormal Return in Finance Industry (One Day Event Window)

Dep.Var: Abnormal Return	Finance			Finance and Housing
	(1)	(2)	(3)	(4)
Speech	-0.0816	-0.0903	0.0770	-0.0670
	(0.0698)	(0.1103)	(0.0623)	(0.0745)
Speech × Housing				0.4364***
				(0.0835)
Housing				0.2197***
				(0.0729)
Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	All
No.of Events	51	21	30	51
No.of Firms	46	46	46	155
Num of Obs	56431	56431	56431	230486

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. Four Speeches are ignored where WEN mentioned Finance Industry. Observations are in the period of 11th April, 2005 to 15th March, 2013.

Table A.2.6: Effect of Speech on Abnormal Return in Finance Industry (Three Days Event Window)

Dep.Var: Abnormal Return	Finance			Finance and Housing
	(1)	(2)	(3)	(4)
Speech	-0.0516	-0.0666	0.0424	-0.0511
	(0.0362)	(0.0486)	(0.0425)	(0.0366)
Speech $\times$ Housing				0.2201***
				(0.0438)
Housing				0.2193***
				(0.0730)
Year FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes
Events	All	Pos	Neg	All
No.of Events	51	21	30	51
No.of Firms	46	46	46	155
Num of Obs	56360	56360	56360	230209

Robust standard errors in parentheses,* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in stock level. Four Speeches are ignored where WEN mentioned Finance Industry. Observations are in the period of 11th April, 2005 to 15th March, 2013.

Table A.2.7: The World Value Survey: 2012/2013

V115	"Is it a great deal of confidence in the government in your nation's capital"
V134	"People receive state aid for unemployment is essential for democracy"
V98	"Government should take more responsibility to ensure that everyone is provided for "
V131	"Governments tax the rich and subsidize the poor"

These questions are from the World Value Survey(Wave 6). The Survey in China is collected in 2012 and in Hong Kong is in 2013. Questions are same in both surveys.

Table A.2.8: The Classification of Keywords in WEN's Speech

Words Category	Positive Words	Negative Words
A: The Role of Housing Industry in Economic Development	Cornerstone Industry Important for Total Demand	
B: Comments on Housing Policy **B1: Policy Instructions**	Push the Development of Housing Markets House Buyers should be Confident Satisfied with Current Regulation Result	Enhance Regulation Keep Regulating Local Government Should Prompt Regulation Regulation should not be Loosed
B2: Details on Supply Side	Commercial Housing should be More	Safe Housing should be More
C: Description of Current Housing Markets		Housing Price is Too High Housing Price should be in Reasonable Level Owning Apartment is Hard

This table shows the classification of words. Keywords implying politician's attitude are classified into three categories. Category A includes words about the position of housing industry in economic development. Category B includes words about the current policy. Words in category C describe the current situation of house markets. In case that words in different categories appear in the same speech, words in category A take the highest weights. This is because if politicians admit the importance of housing industry, people know politicians would not conduct too strict policies to make housing industry unprofitable. Among keywords in category B, words about the general instructions take larger weight than words about supply side, since general instructions also take demand side into considerations. Words in category C take the lowest weight, because they are just WEN's own opinion without clues for policies to further.

158

Chapter 3

LANGUAGE STANDARDIZATION AND POLITICAL PARTICIPATION: EVIDENCE FROM CHINA

3.1 Introduction

Language unification has played an essential part in national-building efforts throughout history.[1] From the Qin dynasty (221 BC) in China to modern Europe, language unification has been an important instrument to promote market integration, to increase state capacity, and to consolidate centralized political power. However, the extent to which these efforts af-

---

[0]This is chapter is coauthored with Sebastian Ellingsen (Universitat Pompeu Fabra)

[1]French government tried to push the use of French in their colonies. For example, the education syllabus of Algeria issued in 1892 clearly stated that the purpose of the local education system in Algeria is to spread French.

fect political participation at the local level is rarely discussed. This paper tries to fill in this gap.

From the perspective of the state, the unification of languages facilitates public communication. From the side of general public, the understanding of the official languages is directly correlated with how much information and propaganda they are exposed to. On the one hand, more information can increase the sense of belonging and help developing a national identity, and thus promote political participation. On the other hand, this argument ignores the effect of government propaganda: political elites in a non-democracy might produce biased information to gain more trust from the general public. Then people would lose the incentive to participate the political activities, because of the overestimation of performance of local officials. As a result, how the standardization would affect the political participation of general public is theoretically ambiguous.

Specifically, this paper focuses on how the campaign of promoting *Putonghua* (Standard Mandarin), the official language in modern China, would influence the political participation of Chinese citizens. China is a country with more than 130 local languages, and there is a large difference among those languages. Since the foundation of People's Republic of China (PRC) in 1949, the central government enacted several language policies to promote the usage of Putonghua, which follows the Beijing Mandarin in pronunciation and *Baihuawen* (Written vernacular Chinese) in grammar. At the meantime, the Ministry of Broadcasting and Television published the policy that news has to be broadcast by Putonghua, except for only few regions with sizeable minority populations. Thus people with better skills in Putonghua would face a lower barrier in accessing

news, and they are also more able to understand the content of the information. At the meantime, China is also one of the countries the highest degree of government control of the mass media (King, Pan and Roberts, 2013; Qin, Strömberg and Wu, 2018). How well people speak Putonghua is directly related to how much information people can receive from the news and the exposure to the government propaganda.

We use an instrumental variable approach to test the casual effect of Putonghua proficiency on the political participation in China. The main dataset we use comes from a large scale survey: *The China Family Panel Studies* (CFPS). CFPS has been widely used in scientific research in economics, sociology and psychology. The survey has been conducted with more than 40,000 individuals over 25 provinces in China since 2010, and cover questions about health, education, financial status, values and political participation.[2] At the end of the survey, interviewers would grade the skills of Putonghua of each respondent. To solve the endogeneity problem, we use the linguistic difference of the local languages where the respondents are born and the standard Mandarin by Automated Similarity Judgment Program (ASJP), as an instrument for the skills of Putonghua of individuals. The validity of the empirical strategy is based on the assumption that how well people can speak Putonghua is correlated with the environment where they grow up. If they live in the places where the local language is very similar to the standard Mandarin, they will have a lower learning cost and a higher probability of being proficient in Putonghua in the future. This assumption is consistent with linguistic literature, such as Lennerberg (1967), Hartshorne, Tenenbaum and Pinker (2018)

---

[2]Trial versions of CFPS have been conducted in three regions (Beijing, Shanghai and Guangdong) in 2008 and 2009.

and Karayayla and Schmid (2020). The exclusion restriction seems to be satisfied since the local language is the evolved during the past hundred years[3], and to provide some statistical evidence, we show there is no correlation between the linguistic distance and provincial level characteristics.

Results show people who can speak better Putonghua are less likely participate in the voting in the county-level elections, when justifying the choice, people claim it is not because they do not know such information, but because they believe their voting cannot make any difference. These results also confirm people who can speak better Putonghua have easier access to political information. Moreover, we did not find any significant influence of the Putonghua skills on the participation of social organization, such as joining Communist Party or becoming representatives of People's Congress.

Our results are consistent with three mechanisms explaining this pattern: First, people with better Putonghua skills are more exposed to government propaganda, and will lose the incentive to participate in political activities because they have higher trusts in the current bureaucrats. Evidence denies this possibility and suggests there is no correlation between the language skills and how well people trust local officials. Second, they might be better treated during the communication with local governments, and thus have higher evaluations on the performance of local governments and believe current officials are effective enough. They lose the incentive

---

[3]For example, Cantonese, the local language in Guangong Province, began to be formed from the integration of local languages in the south and the north, since the King of Qin Dynasty (Qin Shi Huang) conquered the south in 218 BC

to participate because they will have high benefits from the outside option. However, evidence shows that people with better Putonghua skills in general have worse experience communicating with local governments, and furthermore, when facing unfair treatment from local officials, they are less likely to look for the support from other government departments or courts, but choose to do nothing and swallow the insults. These results suggest why people choose not to participate in political activities is not because they are satisfied with government officials.

The last possibility is that people with better Putonghua have more exposure to the media consumption, and are more likely to have a different perspective on how political institutions are running and think their participation in political activities cannot change anything. In other words, they would have a low expected gain if they choose to participate. Although we cannot find the direct evidence on citizen's views on the expected gain from political participation, we find that better language skills lead to more media consumption. In general, people who can speak better Putonghua, will spend more time on TV and radio, but not on the internet. According to the same survey, more than 70% of individuals claim their access to information is through TV and only 11% claim they use Internet to get the information. As a result, better Putonghua help people acquire information. Moreover, people who can speak better Putonghua would be more likely to pay attention to the political relevant topics, such as legal issues and rural issues, but not sports. These results are consistent with the role of the standard languages in propaganda: people who are exposed to the propaganda would be more sensitive to the political topics instead of entertaining topics. Moreover, we find people with better skills of Putonghua in general think there are more social problems wait-

ing to be fixed, especially issues about medical service and social security.

In summary, results suggest better Putonghua reduce the incentive of Chinese citizens to participate in political activities, and this is not because they are more likely to be satisfied with government officials, but more likely to be induced by the higher media consumption. All these results in this paper are robust to different selections of observations, and different methods of construction of ASJP score.

This paper contributes to different strands of the literature. Firstly, this paper is relevant to the literature about the effect of languages in social lives. Language is important for the cross-country trade (Melitz and Toubal, 2014) and human development (Eriksson, 2014; Taylor and von Fintel, 2016; Adesera and Pytlikova, 2015). Latin and Ramachandran (2016) follow the framework of cross country analysis, shows in colonial Africa, people who can speak better official languages, such as French or English, would be healthier because of the more accessibility to health information and accumulation of human capital. Also, there are many papers talking about how the standard language would affect migrants. Liu, Xu and Xiao (2015) shows in China, regions where the local languages are similar would have more labor migrations among each other. Fouka (2019) finds the ban of teaching in German in primary schools in US after WWI, does not succeed in integrating immigrant groups, but caused a backfire and boost the sense of identity among Germans. This paper differs from the literature by looking at political participation.

This paper also contributes to the discussion about how to increase the political participation of general population. Many factors are believed

to affect the voter turnout, like electoral system (Blais, 2006), the regulation about voting age (Franklina, Lyons and Marsh, 2004) and social pressure (Gerber, Green and Larimer, 2008). Literature also provides evidence that education can affect the political participation. Specifically, Cantoni, Chen, Yang, Yuchtman and Zhang (2017) focuses on the effect of curriculum reform on the view of political participation among Chinese students. They find people studying under the new curriculum, which is meant to shape youths' ideology and contains more information about Chinese Democracy, tend to believe people have larger influence in the local elections and are more likely to believe China is democratic. Many papers focus on the influence of new technology of media on the voter turnout and their decisions, like the TV (Gentzknow, 2006; Dellavigna and Kaplan, 2007; Enikolopov, Petrova and Zhuravskaya, 2011; Martin and Yurukoglu, 2017) , phone (Manacorda and Tesei, 2020) and broadband (Campante, Durante and Sobbrio, 2019). However, most of the literature focuses on democratic countries and assume the more access to the political information would increase the political participation. This paper, instead, looks at the effect of easier access to information on political activities in a non-democracy with high level of media censorship and propaganda.

Lastly, this paper relates with the broad literature about nation building. Government elites would take different measures to keep the regime stable, such as providing a large scale primary education to gain the support from general population (Mulligan, Gil and Sala-i-Martin, 2004; Alesina, Giuliano and Reich, 2013; Aghion, Jaravel, Persson and Rouzet, 2019) and to improve the functioning of political institutions (Glaeser, Ponzetto and Shleifer, 2007). Specifically, Bandiera, Mohnen, Rasul and Viarengo

(2019) shows the during the Age of Mass Migration, American government undertook much financial investment to compulsory schooling to instill the civic values to migrants. Alesina, Reich and Riboni (2017) points out the threat of wars in modern times and the desire to have a large army make the state leaders increase the state capacity by public policies and propaganda. Central government can also provide more preferential policies towards minorities to speed up the integration of different ethnics (Mylonas, 2013). This paper focuses on the effect of another common policy: language standardization.

This paper is organized as follows: Section (3.2) presents background information about local dialects in China and the history of language reforms in modern China. Section (3.3) describes the data. Section (3.4) presents the empirical strategy. Section (3.5) shows the results and Section (3.6) concludes.

3.2   Background Information

3.2.1   Languages in Modern China

China is ethnically and linguistically diverse. According to the official survey, there are more than 130 different languages and 30 scripts in China. Except for the standard mandarin (Putonghua), there are a large number of local languages in different regions.

The local languages in China can be divided into two categories: Chinese dialects and languages of minority groups. Chinese dialects are varieties of Chinese in different regions, and the difference among some

dialects are larger than the difference among some European languages, and for this reason, some linguists would rather think of those dialects as independent languages, than different branches under the same language group: Chinese. Researchers divide the Chinese dialects into seven large groups: Mandarin, Yue, Xiang, Kejia, Min, Wu and Gan. Mandarin is the most widespread dialect in China and cover more than half of the regions. Within the same large group, there are subgroups. For example, Mandarin can be divided into Northern Mandarin, Jianghuai Mandarin, Southwest Mandarin and Central Mandarin. Except for Jianghuai Mandarin, people who speak other three subgroup languages of Mandarin can basically understand each other. The current standard language in China, Putonghua, is based on the pronunciations, grammars and vocabularies of the northern dialects, especially the local language in Beijing. As a result, Putonghua is more similar with Mandarin, but not other dialects.

Except for the Chinese dialects, the traditional languages of minority groups is another part of local languages. Besides Han ethnics, which takes 91.5% of population, there are another 55 large minority groups, including Zhuang (16 million), Hui (10.58 million) and Man (10.38 million), etc. All these minority groups, except for Zhuang and Hui, which both adopt Chinese in their daily lives, all the rests have their own languages. Figure (3.1) shows the distribution of the large groups of Chinese dialects. The green areas are the places where the main local languages is different subgroups of Mandarin. As shown in the map, Mandarin is mostly used in the Northern and Central regions, with higher language diversity in the southern provinces. This is mostly reflecting migration and war over the past hundreds of years.

Figure 3.1: Language Map in China

Map from *Language Atlas in China, 1987*. This figure shows the distribution of Chinese dialects in China, in 1987. The green areas the regions where the different subgroups of Mandarin are the main local languages.

3.2.2 Language Policy in China

The first language reform ever happened in China's history can be traced to Qin dynasty (221 BC), where the Emperor launched the first policy to standardize the different kinds of Chinese scripts, and together with other policies, like the standardization of the currencies and the widths of axles, his reform is believed to promote the state-building and economy development in the Kingdom (Norman, 1988). After Qin dynasty, emperors over different dynasties also conducted some language policies, for example, the name of Chinese, Han Language, is the outcome of reform in Han dynasty.

The foundation of People's Republic of China starts the language reform of Chinese in modern time. After its foundation in 1949, Communist party and central government are facing the difficult mission of managing a number of populations from different regions and ethnicities. In 1954, the Committee for the Reform of the Chinese Written Languages is established. In October 1955, the Symposium on the Standardization of Modern Chinese made a resolution that Putonghua, which is based on the vocabulary and grammar of the Northern dialects (Mandarin) with pronunciations of Beijing dialects, as the standard for the national languages, and its written grammar should be consistent with works written in *Baihuawen*, which is the contemporary vernacular literary languages. This is the first document about the definition of Putonghua. On February 6th, 1956, the Premier, Zhou Enlai signed 'Instructions Concerning the Promotion of Putonghua'. This is the first executive order about the national campaign on the promotion of Putonghua, and in this report, Zhou Enlai pointed out:

> *Many unintelligible dialects have hindered the communication between people from different dialect communities and caused many inconveniences for China's socialist construction . . . these phenomena must be effectively eliminated in order to protect the interest of China's political, economic, cultural and national defense development. (Zhou, 1956)*

After the executive orders in 1956, several policies were published by different government departments. For example, in 1958, the Ministry of Education issued the *Circular on Teaching the Pinyin Alphabet in Primary, Middle and Teacher Training Schools* and pushed the teaching of

Putonghua in schools. However, this campaign is de facto stopped later because of the chaos during 60s and 70s. During Anti-Rightist Campaign (1957-1959) and Cultural Revolution (1966-1976), governments and research institutes cannot work efficiently. The language reforms restarted after The Third Plenary Session of the Eleventh Central Committee in 1978 (Rohsenow, 2004).

The Constitution in 1982 is the first Constitution saying the government should promote the use of Putonghua in the whole nation, and two years later, National People's Congress in 1984 passed PRC Regional Autonomy Law for Minority Nationalities, in which students from minority groups are asked to learn Mandarin in senior years in primary school or early years in secondary school. Also, in 1986, the National Language and Character Work Committee and the Ministry of Radio, Film and Television jointly issued the document *Some Provisions on the Correct Use of Languages and Words in Radio, Film and Television*, which clearly states that the radio stations and TV programs have to be broadcast by Putonghua, except for a few autonomous regions if minority groups and several special areas.

Although the language reform kept going in 80s and 90s, it is not so effective, and according to a scale survey about Putonghua in 2000, only 50% in the nation use Putonghua in daily communication, and this number drops to 43% in rural areas [4]. To improve such situation, on 31st December, 2000, Standing Committee the National People's Congress approved *People's Republic of China's law on the national commonly-used lan-*

---

[4]Zhongguo Yuyan Wenzi Shiyong Qingkuang Diaocha Ziliao [Survey on the Use of Chinese Language and Characters], 2006, Beijing: Yuwen Press

guage and script and it is the first specific law about Putonghua.

The national campaign of promoting the usage of Putonghua includes many specific policies. For example, provincial governments set up the tests for the skills of Putonghua, mainly focus on the oral and listening skills, and it is compulsory that applicants have to pass a certain level of test before applying for the positions in local governments, and teachers in primary and secondary schools, especially the teachers in Chinese need to have even a higher score to take their jobs. National Radio and Television Administration also published several documents banning the usage of dialects in the translation of imported films, and in 2014, it requires all the TV and radio stations only use Putonghua in their programs. The third week in September every year is the National Week for Promotion of Putonghua and many related activities would be held during that week.

3.3 Data

3.3.1 CFPS Survey

China Family Panel Studies (CFPS) is a national survey conducted by Peking University from 2010, with trail versions conducted in three regions (Beijing, Shanghai and Guangdong province) in 2008 and 2009. CFPS did the baseline survey in over 16000 families and more than 40,000 individuals across 25 regions in 2010, and the same individuals are followed up in every two years. However, in each round of survey, nearly 10% of interviewees are lost because of death or migration, so some families not in the baseline survey are visited in later years. Most questions are the same in different rounds of surveys and some questions are only

asked in specific years. For each adult respondent, information about their economic conditions, health, employment, education, value, time management and so on is collected. CFPS also has a different questionnaire for children and children over than 9 years old would answer these questions personally, while children below 9 years old would have their parents to answer these questions for them. At the end of the survey, interviewers are required to take a note about their feelings to the interviewees, like whether they think interviewees answered the questions seriously and how well they speak Putonghua, in a scale of 0 to 7.

The main dataset we are using is CFPS 2010. The birth places on provincial-level of individuals are reported only in CFPS 2010 but not after. Thus we lost around 1/3 observations when we are using data from CFPS 2014 or CFPS 2016 since their birthplaces cannot be distinguished. Moreover, although CPFS collects the information about the locations and birthplaces of the respondents the county-level, to protect the privacy of interviewees, only the codes but not the names of counties are reported publicly. The database of county information is only available when a separate application is approved. Figure (3.2) shows the skills of Putonghua for people belonging to different age groups, using the data from CFPS 2010. It is shown that in general older people would have a lower skills of Putonghua, with an average score of 4.5 for people under 40, and 3 for people above 60.

Figure 3.2: Age Groups and Skills of Putonghua
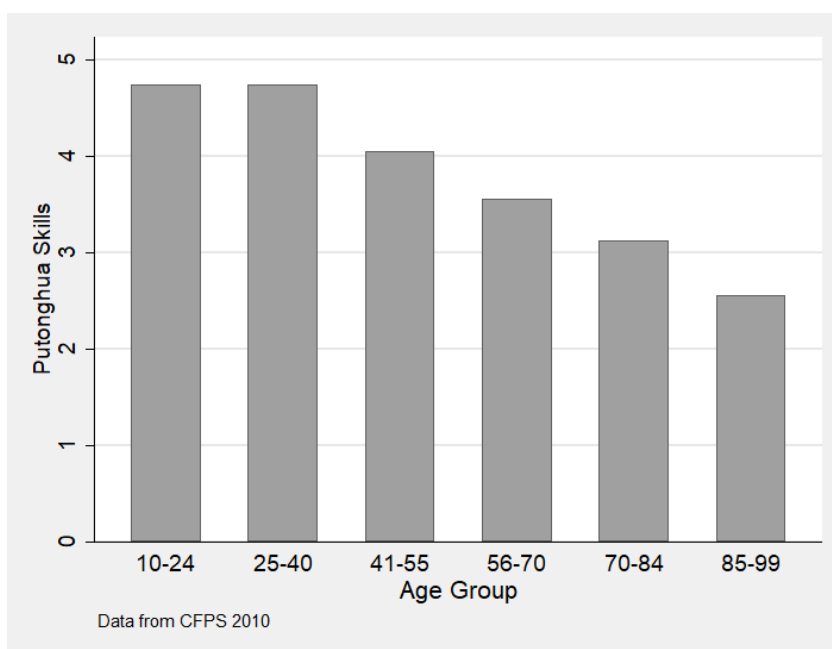
This figure shows the Putonghua skills of citizens in different age groups, using the data from CFPS 2010. In general, younger people speak better Putonghua.

3.3.2 Automated Similarity Judgment Program (ASJP)

Automated Similarity Judgment Program (ASJP) database, produced by Max Planck Institute for the Science of Human History, is a collaborative project to measure the linguistic difference between pairs of language by computation methods (Brown, Holman, Wich and Velupillai, 2009). ASJP is originally used to look at the development of languages families around the world. This database contains 40-item basic vocabulary lists for more than half of languages in the worlds, and for part of languages, it contains 100-item vocabulary lists. For each pair of languages, the similarity score is measured by normalized Levenshtein Distance di-

Table 3.1: 40-items vocabulary lists in ASJP

I	You	We	One	Two	Person
Fish	Dog	Louse	Tree	Leaf	Skin
Blood	Bone	Horn	Ear	Eye	Nose
Tooth	Tongue	Knee	Hand	Breast	Liver
Drink	See	Hear	Die	Come	Sun
Star	Water	Stone	Fire	Path	Mountain
Night	Full	New	Name		

This table contains the 40-items vocabulary lists used in ASJP database. For each languages, ASJP collects the pronunciations of words representing the meaning of those vocabularies.

vided (LDND). This approach firstly counts Levenshtein Distance (LD), that is, the minimum changes it has to take, like the insertion, deletion, or substitution of a symbol, to convert one word into another, and then generate normalized LD (LDN) by dividing LD by the number of symbols of the longer of the two compared words. Last stage of ASJP calculation is to generate LDN divided (LDND) by dividing the average LDN of words pairs showing the same meaning by the average LDN of word pairs showing different meaning. To summarize, if the ASJP score is lower, that means the words showing the same meaning are similar, and those words showing different meaning are distinctive. Table (3.1) shows the 40-item basic vocabulary list in ASJP, and Figure (3.3) is a screenshot of the database.

In the Chinese context, ASJP collects the word lists for three types of standard Mandarin based on word lists organized by previous studies, as well as 65 local languages. Three types of Mandarins are highly correlated, with the ASJP score 44.89, 52.94 and 55.11 for pairwise comparisons. Our data of local languages follows *A Comprehensive Dictionary of Chinese Dialects*, which reports the local languages in each cities and even counties, in the sense of both large languages groups and subgroups. Part

Figure 3.3: ASJP Database for Language 'Mandarin' (Part)

No.	Meaning	Concepticon	Word	Loan
1	I	I	wo	False
2	you	THOU	ni men	False
3	we	WE	wo men	False
4	this	THIS	cu	False
4	this	THIS	Ce	False
5	that	THAT	na	False
6	who	WHO	Swei	False
6	who	WHO	ho jen	False
7	what	WHAT	Sen mo	False
7	what	WHAT	cen yaN te	False
8	not	NOT	buh	False
9	all	ALL	Cy~uan buh	False
10	many	MANY	CuN to te	False
11	one	ONE	i	False
12	two	TWO	el	False
13	big	BIG	ta te	False
14	long	LONG	CarN	False
15	small	SMALL	Seau	False
16	woman	WOMAN	fuh neu	False
17	man	MAN	nan ren	False
18	person	PERSON	jen	False

This figure shows the one screenshot of the ASJP database for the language 'Mandarin'. For each item in the word list, it includes the meaning and pronunciation of the word.

of those local languages are similar types of Mandarin, like Beijing Mandarin and Chengdu Mandarin, and some of them show a quite different pattern, like Cantonese and Wu, which are widely used in Guangdong Province and Shanghai respectively. Table (3.2) shows some of local languages and its ASJP scores with Mandarins.

At this stage, because CFPS only reports the locations and birthplaces of interviewees in province level, then we only have one language for the same province. Then provincial-ASJP score is measured by the local languages of the provincial capitals and standard Mandarin, with one exception: the local language in Shijiazhuang, the provincial capital of Hebei

Table 3.2: ASJP Score of Local Languages and Mandarin

Local Languages	Province	Provincial Capital	Areas	ASJP Score
Mandarin Beijing	Beijing	Beijing	Northern	45.44
Mandarin Changchun	Jilin	Changchun	Northeast	53.25
Gan	Jiangxi	Nanchang	Southeast-central	63.34
Mandarin Chengdu	Sichuan	Chengdu	Southwest	60
Wu	Shanghai	Shanghai	Southeast	83.49
Cantonese	Guangdong	Guangzhou	Southern	83.49

This table shows the ASJP score between some local languages in China and the standard Mandarin. As shown in the table, comparable with local languages in southern areas, like Cantonese and Wu, local dialects in northern areas are in general more close to the standard Mandarin.

Province, is missing in ASJP database, then we use the local language in Tianjin, where according to *A Comprehensive Dictionary of Chinese Dialects*, the same dialects *Jilu Mandarin* is largely spreading, to replace the local language in Shijiazhuang. Note the assignment of a single language in the same province assumes people live in the same province speak the same local language. This assumption is, however, not accurate enough. Although local languages in the same province are more closed to each other in general, in some extreme circumstances, they can be quite different and people from the same province, cannot understand each other.

3.4   Empirical Strategy

We use instrumental variable approach to test the effect of language standardization. An OLS regression might generate biased estimates because the Putonghua skills of individuals can be correlated with several unobserved factors. To remedy this, we use the local languages at the birthplace of the respondent as an instrument for the Putonghua skills. As the literature shows, people learn languages fast before 10 years old, and their languages skills when growing up are highly correlated with lan-

guage environment in their childhoods. CFPS does not report where the respondents lived when they were children, but they report an identifier of whether they were staying in the same place as the birthplace, and more than 95% of observations answered 'Yes' in this question. So the local language where people are born is a good proxy for the language they used during childhood.

The first stage of our IV regression function is as follows:

$$Putonghua_{ifj} = \beta_1 ASJPLoc_i + \mathbf{X_i}\gamma_1 + \mathbf{X_f}\gamma_2 + County_j + \epsilon_{ij}. \quad (3.1)$$

The first stage regression generates the fitted value of Putonghua skills of individual i in family f and county j, based on the ASJP scores between local languages where they were born and standard Mandarin, and some individual and family level control variables, as well as county fixed effect. The dependent variable $Putonghua_i$ is the score for the Putonghua skills of respondents, which is recorded by team members at the end of the survey. Although this score is hardly comparable across years due to the change of interviewers, this score is still trustworthy in the cross-section. $\mathbf{X_i}$ includes individual-level control variables like the age, gender, education level, employment, individual income, marriage status of the respondents and, membership in the Communist party. $\mathbf{X_f}$ includes family-level controls such as the family income per person and the amount of subsidy this family received from government in the last year. County fixed effect is included to alleviate the concern that people living in different areas might differ in unobservables.

The second stage looks at how the fitted value of Putonghua skills would

177

affect their answers to questions regarding their access to political information, their experience with government and opinions with government issues.

$$Y_{ifj} = \beta_2 \widehat{Putonghua}_{ifj} + \mathbf{X_i}\phi_1 + \mathbf{X_f}\phi_2 + County_j + \epsilon_{ij} \qquad (3.2)$$

The key assumptions of our identification strategy are: 1) Individuals born in the places where local languages are similar with standard Mandarin, could speak better Putonghua when they grow up. 2) The difference in languages would only affect individual's opinion through skills of Putonghua but not through other unobserved factors. 3) There is a monotonic impact of linguistic distance on Putonghua proficiency. Under these assumptions the IV-estimates identifies the local average treatment effect (LATE). The relevance condition is satisfied because from several linguistic studies, people are learning languages which are similar with their mother tongue much faster than those different ones. The exclusion restriction, while untestable, is also highly plausible to be satisfied since local languages are evolved from hundred years ago and unlikely to be correlated with any other individual- or family-level conditions today. Table (3.3) shows the correlation between the linguistic difference of local languages and province characteristics. As shown in Table (3.3), the linguistic difference is uncorrelated with the log of GDP per capita, log of population, log of public expenditure, log of average wage, unemployment rate and population density in the city area. This provides support for the identifying assumptions.

Table 3.3: Correlation between Linguistic Difference and Provincial Level Characteristics

	(1) Language Difference	(2) Language Difference
log of GDP	3.343	2.020
	(3.000)	(3.295)
log of Population	-3.501	-1.403
	(3.541)	(4.030)
log of Unemployment Rate	-0.663	-0.174
	(1.429)	(1.497)
Log of Average Wage	-1.156	3.711
	(5.058)	(6.908)
City Density	-0.000593	-0.000518
	(0.000705)	(0.000717)
Log of Public Expenditure per capita	0.903	2.863
	(4.540)	(4.997)
Num of Obs	207	207
Year FE	No	Yes

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. This table shows the correlation between the linguistic difference of local languages and provincial level characteristics, using the data from 2010 to 2016. Original data is collected from National Bureau of Statistics. As shown in the table, the linguistic difference is uncorrelated with the log of gdp per capita and other factors. Column (2) includes the Year fixed effects. The exclusion restriction is likely to be satisfied.

3.5   Results

This part presents the preliminary results on how the unified languages would change people's access to information and willingness to participate in political activities. Part (3.5.1) presents some descriptive statistics and part (3.5.2) shows OLS results for children. Part (3.5.3) presents the results from IV estimation.

3.5.1 Descriptive Statistics

Table (3.4) shows the basic summary statistics for the dataset in CFPS 2010. There are in total 36,000 observations with valid data about skills of Putonghua, and around 33,000 of them are adults, with the average age of 42 years old. 3,000 of those observations are children (below 16 years old) and note only children over 10 years old did personal interviews in the survey. In the dataset, 45% of them live in the urban area and 55% of them live in the rural area. About 48% of observations in the dataset are unemployed, including those who are out of the labor market. Nearly 8% of the observations are members of Communist Party and much fewer attend other democratic parties. The average education level of adults in the database are secondary schools. 10% of individuals have received subsidies from the government. Although we are using the survey results in CFPS 2014 and CFPS 2016, we focus on those respondents who were also included in CFPS 2010, so the summary statistics are very similar.

3.5.2 Children

This section shows the results from Children. Figure (3.4) shows the popularity of Putonghua in school activities, using the data from CFPS 2010 and CFPS 2016, respectively. The dark (light) grey column shows the proportion of children said they mostly use Putonghua to communicate with classmates in school in 2010 (2016). In 2010, nearly 30% to 40% of students answered mostly they use Putonghua to talk with their friends and this number increase to 60% in 2016. This figure shows the achievement of pushing the usage of Putonghua in the campus.

Table 3.4: Descriptive Statistics in CFPS 2010

Variable	N	Mean	SD	Min	Max	P25	P50	P75
Putonghua	36165	4.100	1.900	1	7	2	4	6
Putonghua (Adult)	32867	4.040	1.910	1	7	2	4	6
Putonghua (Child)	3298	4.750	1.600	1	7	4	5	6
Age	36165	42.53	18.30	10	110	28	43	56
Age (Child)	3298	12.51	1.720	10	15	11	13	14
Age (Adult)	32867	45.54	16.40	16	110	33	45	57
Urban	36165	0.450	0.500	0	1	0	0	1
Gender	36165	0.490	0.500	0	1	0	0	1
Han Ethnicity	36165	0.910	0.280	0	1	1	1	1
Employment	31610	0.480	0.5	0	1	0	0	1
Marriage	32863	2.080	0.840	0	5	2	2	2
CCP	36165	0.0700	0.250	0	1	0	0	0
DemParty	36165	0	0.0300	0	1	0	0	0
Graduation	32847	2.500	1.300	0	8	1	2	3
School Child	3298	2.380	0.510	1	5	2	2	3
Log of Income	21389	8.730	1.640	0	13.59	8.010	9	9.740
Log of Family Income per capita	34179	8.600	1.070	0.510	13.82	7.980	8.640	9.270
Subsidy	31261	0.100	0.300	0	1	0	0	0

This tables shows the summary statistics of the basic variables in CFPS 2010. In general, there are 33,000 adults observations and the mean of objective evaluation of their Putonghua skills is around 4.1, and the average age is around 43 years old. There are also 3,000 children observations and the average level of Putonghua skills is around 4.5. Note only children over 10 are included in the data file.

Next, we present the OLS results about how the Putonghua skills of children would be correlated with the basic knowledge of politics. CFPS 2010 asked children over 9 years old about correct names of the Chairman and Premier in China, as well as the the US President. If children answer those questions correctly, then the value would be 1, otherwise it is 0. Here we cannot use instrument variables to claim causality since most children still stay in the same place where they are born, thus those effects are absorbed by county fixed effect. Age, education level, family income per person, education level of parents, gender and ethnics and county FE are included as controls. OLS results in Table (3.5) show that children with a better skill in Putonghua have a larger chance to answer those questions correctly, showing Putonghua level is positively corre-

Figure 3.4: The Popularity of Putonghua in School
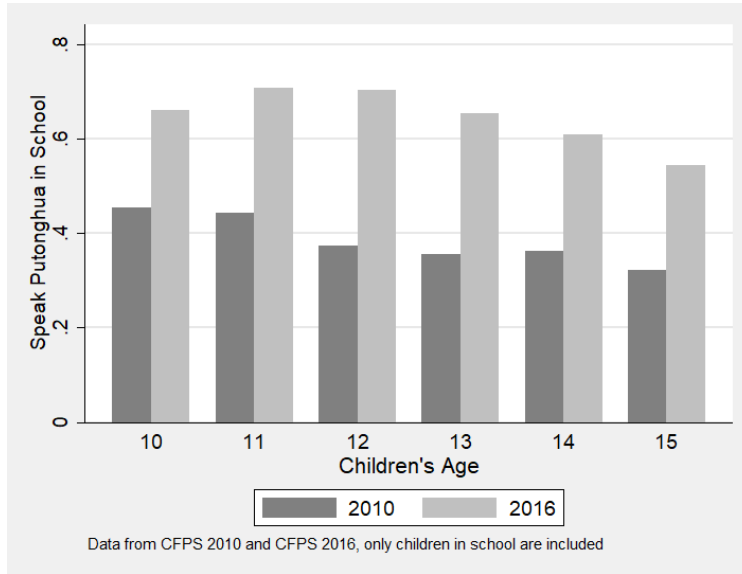
This figure shows popularity of Putonghua in School, using the response from children in CFPS 2010 and CFPS 2016, respectively. In general, in 2016, more children said they mostly speak Putonghua in school.

lated with the political knowledge of children. Column (1) to (3) in Table (3.5) include the responses from all the children, while columns (4) to (6) only those from children who attended school in 2010.

3.5.3   IV Estimation

This part shows the results for IV-estimation. First, we study how Putonghua proficiency affects political participation in local elections and political organizations. Second, we investigate the mechanisms with a

Table 3.5: Children's Putonghua and Basic Political Knowledge in 2010

	(1) Chair	(2) Premier	(3) USPre	(4) Chair	(5) Premier	(6) USPre
Putonghua	0.0358***	0.0320***	0.0421***	0.0368***	0.0328***	0.0450***
	(0.00904)	(0.00780)	(0.00700)	(0.00920)	(0.00834)	(0.00709)
Age	0.0249***	0.0350***	0.0169**	0.0511***	0.0737***	0.0504***
	(0.00824)	(0.00930)	(0.00818)	(0.00513)	(0.00578)	(0.00562)
Ethnics	-0.00470*	-0.00224	0.000593	-0.00286	-0.000693	0.000648
	(0.00240)	(0.00310)	(0.00244)	(0.00246)	(0.00325)	(0.00247)
School	0.175***	0.256***	0.231***	0.00777	0.0142**	0.0192***
	(0.0421)	(0.0435)	(0.0382)	(0.00538)	(0.00551)	(0.00438)
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Only Those Going to School				Yes	Yes	Yes
All Children	Yes	Yes	Yes			
Num of Obs	3140	3140	3140	3247	3247	3247

Robust standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual- and family level controls are included. This table shows the correlation between the Putonghua skills of children and their basic knowledge about politics. Column (1) to (3) include the response from all the children , while columns (4) to (6) includes those from children who attended school in 2010. Results show that children who can speak better Putonghua, are more likely to know the correct names of the Chairman and Premier in China, and the US President.

particular emphasis on how Putonghua proficiency shapes exposure to information through mass media.

Linguistic Distance and Putonghua Proficiency

The first column in Table (3.6) shows the first stage of the IV-estimation. The variable 'Putonghua' is in the scale of 0 to 7 and it is given by the interviewers at the end of the survey based on their communications. The higher value means the interviewers think the respondent can speak better Putonghua, and this score is only about the oral and listening skills of Putonghua. As shown in the first column, the skills of Putonghua is negatively correlated with the semantic distance between the local languages where they were born and standard Mandarin. In other words, people born in the places where the local dialects are different with to standard

183

mandarin, would be less likely to have good skills in Putonghua as adults. This result is consistent with our expectation as well as linguistic literature.

Political Participation

This section presents the results regrading whether the skills of Putonghua would influence the political participation of individuals. On one hand, people who can speak better Putonghua have more access to the political news and believe there are more social problems, so they should participate more; On the other hand, those people might participate less. People with more exposure to propaganda might overestimate the performance of government and choose to trust those officials; And if they learn more about politics and social problems, they might think they cannot change it so they will not participate.

Columns (2) to (6) in Table (3.6) shows the results on voting. In CFPS 2014, respondents are asked whether they have voted in the last election in their own county: Yes = 1, No = 5. Column (2) to (4) shows whether the turnout is affected by their skills of Putonghua. Column (2) shows the OLS results, column (3) include the whole sample and column (4) includes only people living in county areas. All these results suggest people who can speak better Putonghua are less likely to vote in the elections. Column (5) and column (6) show why individuals choose to vote or not. The dependent variable in Column (5) takes 1 if the respondents chose to vote is because they are forced by their superiors, and 0 if it is not, and results show this decision is not influenced by the Putonghua skill. The dependent variable in Column (6) is equal to 1 if the reason why respon-

184

dents did not go to vote is because they do not know the information about election, and equal to 0 if they do not believe their votes can make any difference. The results show among people who did not vote, compared with those people who cannot speak Putonghua, those with a better skill in Putonghua receive the information of elections, but choose not to participate because they do not believe their votes matter. In case the skill of Putonghua is correlated with some other controls, like the CCP membership and family income, Table (A.3.1) estimates the same regression but only includes age, gender and ethnics as controls. The results are similar.

Table 3.6: Skills of Putonghua and Voting Behavior

	(1) Vote	(2) Putonghua	(3) Vote	(4) Vote	(5) Forced Vote	(6) No Information
Language Distance	-0.0129***					
	(0.00242)					
Putonghua		0.0450***	1.355***	1.980**	-0.676	-0.144*
		(0.00892)	(0.352)	(0.919)	(0.451)	(0.0808)
Age	-0.0283***	-0.0204***	0.0169*	0.0307	-0.0177	-0.00355
	(0.00106)	(0.00106)	(0.0102)	(0.0255)	(0.0129)	(0.00228)
Ethnics	-0.00272	-0.0430***	-0.0396***	-0.0302**	0.0119	0.000522
	(0.00393)	(0.00496)	(0.00711)	(0.0127)	(0.00957)	(0.00142)
CCP	0.0904***	-0.100***	-0.218***	-0.290***	0.0790	0.00467
	(0.0234)	(0.0237)	(0.0491)	(0.101)	(0.0934)	(0.00848)
Graduation	0.0430***	0.0710***	0.0151	0.00511	0.0638**	0.00396
	(0.00609)	(0.00706)	(0.0183)	(0.0297)	(0.0256)	(0.00326)
F Statistics	28.4705					
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Num of Obs	20342	20342	20342	10132	8769	11455
Regression	IV	OLS	IV	IV	IV	IV
Observations	All	All	All	County	All	All

standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual- and family level controls are included. Column (1) shows the first-stage result. Column (2) shows shows the OLS estimate, and the rests show the results from IV regressions. Column (3) use the whole sample and column (4) only include people in county areas. This table shows people with better Putonghua are less likely to vote in the election. Among people who voted, people with better Putonghua are more likely to go there by themselves, and if they did not vote, it is more likely that they think they cannot change any results.

Table (3.7) shows the how the skills of Putonghua would influence the participation of individuals in various political organizations. Respondents are asked if they are (1) Members of Communist Party, (2) Members of any other democratic parties, (3) Representatives of People's Congress, (4) Communist Youth League, (5) Belonging to any social groups. As shown in Table (3.7), people who can speak better Putonghua, are not joining social groups significantly more than other people. Table (A.3.2) shows the results that only have age, ethnics and gender as controls, and the results are similar.

Table 3.7: Skills of Putonghua and Participation in Social Organizations

	(1) CCP	(2) Democratic Party	(3) People's Congress	(4) Communist Youth League	(5) Any Organization
Putonghua	0.0312	-0.001000	-0.00100	-0.0172	-0.0283
	(0.0239)	(0.00182)	(0.00202)	(0.0357)	(0.0392)
Age	0.00524***	0.0000525	0.000119**	-0.00133	0.00372***
	(0.000598)	(0.0000497)	(0.0000584)	(0.000875)	(0.000966)
Ethnics	0.00125*	-0.0000665	-0.0000213	0.000207	0.00446***
	(0.000696)	(0.0000505)	(0.000119)	(0.000758)	(0.00106)
Graduation	0.0489***	0.00186***	0.00223***	0.0732***	0.137***
	(0.00780)	(0.000683)	(0.000697)	(0.0116)	(0.0127)
County FE	Yes	Yes	Yes	Yes	Yes
Num of Obs	30962	30962	30962	30962	30962

Robust standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual- and family level controls are included. This tables shows how the skills of Putonghua would influence the participation of individuals in social organizations. Results show speaking better Putonghua would not make people prone to become members of social organizations.

Taken together, knowing more Putonghua would not make people participate more in political activities, and they even will have a lower turnout in elections. The results are robust to different sample restrictions, for example, including only the observations appeared in all 2010, 2014 and

186

2016 survey, or excluding the observations who are staying in the different regions other than the birthplace when they are 12 years old. Results are also similar if we only look at the answers from respondents appearing in 2010 and use the Putonghua score in 2010 to replace the one in 2014 or 2016. These results are also robust if we use different word lists for standard Mandarin to construct the ASJP score.

Mechanisms

Trust. The above results show people with lower cost of accessing information but they are less likely to participate in the political activities. There might be three mechanisms behind the results. The first channel is people who speak better Putonghua have more trust in the local officials, and thus would have a higher expected value of not joining in the political activities. This claim is consistent with the argument about successful propaganda: Governments could polish their public images in the general population and thus gain their support.

Table (3.8) uses the questions in CFPS 2016 to show how the Putonghua skill would influence the trust to local officials. Respondents are asked in CFPS 2016 about how well they trust their neighborhoods, Americans, strangers and local officials, in the range of 0 to 10. Results show compared with other people, those who can speak better Putonghua does not trust local officials more. This result denied the claim that the reason why people with better skills in Putonghua do not participate in political actions is because they believe local officials are trustworthy. Results with only age, gender and ethnics as controls are similar, as shown in Table (A.3.3).

Table 3.8: Skills of Putonghua and Social Trust

	(1) Neighborhoods	(2) Americans	(3) Strangers	(4) Officials
Putonghua	0.108	-1.026	-0.180	0.258
	(0.606)	(0.843)	(0.603)	(0.759)
Age	0.0120	-0.0316	-0.00908	0.0355*
	(0.0163)	(0.0224)	(0.0162)	(0.0203)
Ethnics	-0.00210	-0.0432***	-0.0146	-0.0204
	(0.0116)	(0.0159)	(0.0116)	(0.0144)
CCP	0.319**	0.445**	0.196	0.690***
	(0.158)	(0.213)	(0.156)	(0.195)
Graduation	0.00928	0.340**	0.206*	-0.0713
	(0.111)	(0.155)	(0.111)	(0.140)
County FE	Yes	Yes	Yes	Yes
Num of Obs	19620	19336	19575	19547

Robust standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual- and family level controls are included. This table shows people with better Putonghua are not likely to trust local officials more. This result is contrasting with claim that the reason why individuals choose not to vote is because they think local officials work well and are trustworthy.

Treatment by Government. The second mechanism is about the government treatment. Since the central government require local officials have to speak standard Mandarin but not local language, then people speaking better Putonghua might have a higher evaluation on government performance, and thus believe local officials can improve the society efficiently. In other words, they also have a higher expected gain when they decide not to participate in the political activities. Table (3.9) show how the Putonghua skills would affect the communicating of individuals with local governments. In CFPS 2010, respondents are asked question about

whether they have experienced (1) Unfair treatment by local officials, (2) conflicts with government officials, (3) Unreasonably delayed when seeking for government services, (4) Unreasonable charges when seeking for government services. Respondents either choose 'Yes' = 1 or 'No' = 5 if they have ever communicated with officials in local governments. Although the requirement about the Putonghua skills of local officers should improve the access to service for people who can speak good Putonghua, however, in reality they have worse experience with local governments. One of the explanations is people who can speak good Putonghua know more information about the administration process and thus would realize it when they are unfairly treated. This claim is supported by the results that people with better Putonghua skills are more likely to claim they are overcharged. Only the people who knows how much they need to pay for the government service would know whether they are overcharged or not. Column (5) reports how would respondents would evaluate the performance of local government in the last year in a scale of 1 (Very Good) to 5 (Very Bad). People who can speak better mandarin think local governments perform better very marginally. This results are also very interesting in the sense that people think they are treated badly in the communication with local governments, but they in general think local officials work well. Table (A.3.4) shows the results that only have age, ethnics and gender as controls, and the results are similar.

Table (3.10) shows how would individuals responds when facing unfair treatment. CFPS 2014 asked what kind of actions respondents would like to take, if facing unfair treatment by local governments: (1) Looking for support from superior, (2) Looking for support from other departments in local governments, (3) Bringing a lawsuit in the courts, (4) Looking for

189

Table 3.9: Skills of Putonghua and Treatment in Government Matters

	(1) Unfair	(2) Conflict	(3) Delay	(4) Overcharge	(5) Evaluation
Putonghua	-0.152	-0.197*	-0.242	-0.486***	-0.115
	(0.152)	(0.120)	(0.182)	(0.172)	(0.0840)
Age	-0.00583	-0.00649**	-0.00281	-0.00960**	-0.00786***
	(0.00382)	(0.00299)	(0.00461)	(0.00434)	(0.00215)
Ethnics	-0.000767	0.00290	0.00911*	-0.000965	-0.00476**
	(0.00472)	(0.00369)	(0.00512)	(0.00489)	(0.00226)
CCP	0.144***	0.0554	0.0873	0.214***	-0.0784***
	(0.0486)	(0.0385)	(0.0552)	(0.0515)	(0.0253)
Graduation	0.0612	0.0894**	-0.0171	0.0814	0.0265
	(0.0468)	(0.0365)	(0.0549)	(0.0524)	(0.0257)
County FE	Yes	Yes	Yes	Yes	Yes
Num of Obs	24141	23709	23481	23269	28814

Robust standard errors in parentheses and are clustered in county level, $*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$. Individual- and family level controls are included. This table shows whether people who can speak better Putonghua would receive favoritism when communicating with local governments. Generally speaking, people with a better skill in Putonghua would be less likely to be face unfair treatment from government, and they will have a marginal higher evaluation towards local government.

support in traditional or social media, (5) Doing nothing. If general public do think local officials are trustworthy and can solve their problems, we should find people who speak better Putonghua will look for more support from government or courts. However, as Table (3.10) shows, people who can speak better Putonghua, would be less likely to looking for support from superiors, other departments, courts, but will be more likely to do nothing. Table (A.3.5) shows estimates same regression but only includes age, gender and ethnics as controls. The results are similar. All the above results contradict with the claim that why people with better Putonghua skills choose not to vote in local elections is because they believe local officials are good enough.

Table 3.10: Skills of Putonghua and Response when Facing Unfair Treatment

	(1) Superior	(2) Gov	(3) Court	(4) Media	(5) Nothing
Putonghua	-0.0148	-0.146*	-0.215***	0.0515	0.136**
	(0.0730)	(0.0793)	(0.0742)	(0.0592)	(0.0644)
Age	-0.00237	-0.00601***	-0.00756***	-0.00465***	0.00813***
	(0.00210)	(0.00229)	(0.00214)	(0.00170)	(0.00186)
Ethnics	-0.000948	0.000544	-0.00277*	0.00207**	0.00149
	(0.00133)	(0.00144)	(0.00145)	(0.00104)	(0.00109)
CCP	0.00387	0.0327***	0.0283***	0.0103	-0.0355***
	(0.00971)	(0.0110)	(0.00989)	(0.00730)	(0.00927)
Graduation	-0.00353	0.0107***	0.00964***	0.0130***	-0.0107***
	(0.00360)	(0.00395)	(0.00373)	(0.00276)	(0.00337)
County FE	Yes	Yes	Yes	Yes	Yes
R Square	20348	20348	20348	20348	20348

Robust standard errors in parentheses and are clustered in county level, $*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$. Individual- and family level controls are included. This table shows how the skills of putonghua would influence the actions respondents would take when facing unfair treatment by local governments, using the data from CFPS 2014.

Media Consumption. The third mechanism is people with more access to information have a different understanding about to which extend their participation in political activities can change the society, and they will not take actions if they have a low expected value about taking action. This channel cannot be tested directly because of the lack of relevant question, however, we can check that how the language skills would affect the media exposure and how they think about the severity of social problems. Table (3.11) present the results about how the skills of Putonghua would influence the time spending of individuals on entertainment, which can imply how much information people can actually receive.

Table 3.11: Skills of Putonghua and Time Management on Entertainment

	(1) TraMedia	(2) TV	(3) Internet	(4) Play	(5) Social
Putonghua	0.0508	0.388***	-0.110**	0.0510	0.106
	(0.0316)	(0.0913)	(0.0455)	(0.0760)	(0.0657)
Age	0.000882	0.00553**	-0.00729***	-0.00215	0.000955
	(0.000816)	(0.00229)	(0.00120)	(0.00217)	(0.00162)
Ethnics	-0.000796	-0.00718**	0.000743	-0.00502	-0.00273
	(0.00101)	(0.00339)	(0.000888)	(0.00358)	(0.00180)
CCP	0.0178*	-0.112***	-0.00498	-0.0269	-0.0583***
	(0.00923)	(0.0250)	(0.0117)	(0.0178)	(0.0157)
Graduation	0.0184*	-0.168***	0.0548***	-0.0515**	-0.0634***
	(0.00954)	(0.0278)	(0.0143)	(0.0234)	(0.0204)
County FE	Yes	Yes	Yes	Yes	Yes
Num of Obs	28741	28741	28741	28741	28741

Robust standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual- and family level controls are included. This table shows how the skills of Putonghua of respondents would affect their time spending on different kinds of entertainment during weekends, using the data from CFPS 2010.

Columns in Table (3.11) show how Putonghua proficiency affects the time respondents would like to spend on different kinds of entertainment. In the CFPS 2010, respondents were asked 'How much time you spent on the following activities in the weekends per day in last months': (1) Traditional media including magazines and newspapers, (2) TV and radios, (3) Reading, watching movies and playing video games on Internet, (4) Playing cards and video games on computers, going to cinemas and theaters, and visiting museums, (5) Social interactions like meeting friends and writing letters. Then the dependent variable is the proportion of time spending on the specific activities on the total hours spent on the entertainments.

Results in column (2) show that people with better skills in Putonghua

will spend more time on TV and radios. These results are not surprising. Given nowadays most TV and radio programs, especially the news, are broadcast by standard mandarin, then only people with better skills in Putonghua can actually understand the content. This would affect the incentives of individuals who are lack of skills of Putonghua to seek out the information. On the other hand, people with better Putonghua spend less time on Internet, as shown in column (3). Table (A.3.6) shows similar results when we only have age, ethnicity and gender as controls. One explanation for this is the desire of information is substituted by watching TV and listening to radios. These results are similar if we look at the time management of individuals in weekdays. Figure (3.5) shows the importance of different intermediaries in the access of information. The most common ways to get information are TV, discussion with other people and traditional media: Almost 70% of respondents claim they get information by watching TV programs and only 15% of them says they use Internet to receive information. So the increased consumption on TV and radio suggest a higher exposure to political news. However, these results have to be interpreted with caution because several papers suggest the opposite effects: the increased use in TV or Internet might reduce the access to political information, because people will spend more time on the entertainment programs but not news (Gentzknow, 2006; Campante, Durante and Sobbrio, 2019). In this dataset we cannot observe the which program respondents are watching, but to provide more evidence, we can indirectly test the effect of increased media consumption by looking at the news topics people paid attention and the how serious social problems are.

Table (3.12) and Table (3.13) show the results on how Putonghua proficiency would affect the topics of news respondents would like to read. In

Figure 3.5: Importance of Different Intermediaries in Access of Information

Data from CFPS 2010
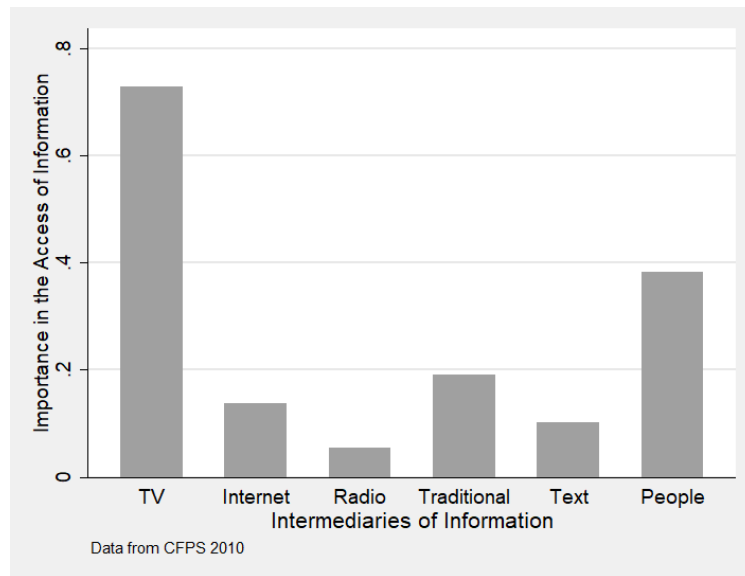
This figure shows the popularity of different intermediaries to access the information. More than 70% of observations claim they use TV to get the information, and nearly 40% of them claim they get information from other people.

the CFPS 2010, respondents are asked if they pay attention to the news about following topics: (1) Corruption, (2) Legal Issues, (3) International Issues, (4) Economy, (5) Sports, (6) Medicine and Hygiene, (7) Agriculture and Rural Issues, (8) Social Issues. As shown in Table (3.12) and Table (3.13), people who can speak better Putonghua care more about political news, like legal issues and rural issues. These results are consistent with the political purpose of Putonghua movements: People speak better Putonghua are exposed to more propaganda and thus care more about the political issues of their own country. However, better Putonghua would not make people interested more in topics like sports or medicine, which

194

re-confirms on one hand, Putonghua helps to expand the access of information, on the other hand, this expansion has a larger weight in political topics. Table (A.3.7) and Table (A.3.8) show the results that only have age, ethnics and gender as controls, and the results are similar.

Table 3.12: Skills of Putonghua and Topics of News

	(1) Corruption	(2) Law	(3) Rural (Urban)	(4) Rural (Rural)	(5) Social Issues
Putonghua	-0.0220	0.152***	0.172**	0.124**	0.0170
	(0.0426)	(0.0464)	(0.0776)	(0.0483)	(0.0411)
Age	-0.000514	0.00400***	0.00761***	0.00286**	0.00146
	(0.00109)	(0.00118)	(0.00187)	(0.00133)	(0.00104)
Ethnics	-0.00141	-0.00132	0.00816***	-0.00101	0.000345
	(0.00104)	(0.00112)	(0.00277)	(0.00123)	(0.000955)
CCP	0.115***	0.0708***	0.0438**	0.0916***	0.0787***
	(0.0132)	(0.0147)	(0.0182)	(0.0216)	(0.0135)
Graduation	0.0930***	0.0287**	-0.0361*	0.0190	0.0474***
	(0.0133)	(0.0145)	(0.0209)	(0.0146)	(0.0128)
County FE	Yes	Yes	Yes	Yes	Yes
R Square	30962	30962	9098	21800	30962

Robust standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual- and family level controls are included. This tables shows how the skills of Putonghua would influence the topics of news individuals would like to perceive. Results shows people with better Putonghua are more interested in topics of law and rural issues, no matter if they are from urban area or rural areas.

The next question is how would the more access to information would change people's opinion in the social problems. This effect is unclear in advance. On one hand, with more access to information, people would be more likely to get the true type of society. On the other hand, more

Table 3.13: Skills of Putonghua and Topics of News (Continue)

| | (1) | (2) | (3) | (4) |
	International	Economy	Sports	Medical
Putonghua	-0.0393	-0.0310	-0.0136	-0.0103
	(0.0443)	(0.0436)	(0.0410)	(0.0433)
Age	0.00119	-0.000657	-0.000573	0.00208*
	(0.00113)	(0.00111)	(0.00104)	(0.00110)
Ethnics	-0.0000946	-0.000765	-0.0000816	-0.000281
	(0.00103)	(0.00100)	(0.000961)	(0.000942)
CCP	0.0940***	0.0742***	0.0557***	0.0681***
	(0.0141)	(0.0141)	(0.0134)	(0.0140)
Graduation	0.0720***	0.0757***	0.0688***	0.0607***
	(0.0139)	(0.0136)	(0.0128)	(0.0135)
County FE	Yes	Yes	Yes	Yes
R Square	30962	30962	30962	30962

Robust standard errors in parentheses and are clustered in county level, *
$p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Individual- and family level controls
are included. This tables shows how the skills of Putonghua would influence
the topics of news individuals would like to perceive. Results shows the
skills of Putonghua would make respondents care less on the news about in-
ternational issues, economy, sports and medical issues in a marginal manner.

exposed to the propaganda would induce the underestimation of social
problems and if that is true, we should observe that people who can speak
better Putonghua and thus get more information from TV and Radios, be-
lieve there are less social problems.

We answer these questions using the data in CFPS 2014. In CFPS 2014,
respondents are asked to grade the severity of different kinds of social
problems in a scale of 0 (Not Severe) to 10 (Very Severe). Table (3.14)
shows how the grading is affected by the Putonghua skills of individu-
als. In general, people who can speak better Putonghua think there are
more social problems, especially in medical services and social security.
Table (A.3.9) shows the results that only have age, ethnics and gender as

controls, and the results are similar.

Table 3.14: Skills of Putonghua and The Severity of Social Problems

	(1) Corruption	(2) Inequality	(3) Unemployment	(4) Education	(5) Medical Services	(6) Social Security
Putonghua	0.480	-0.0493	-0.191	0.415	0.784**	1.126***
	(0.355)	(0.328)	(0.358)	(0.365)	(0.380)	(0.421)
Age	-0.00761	-0.0227**	-0.0326***	-0.0239**	-0.00841	-0.00211
	(0.00996)	(0.00930)	(0.0101)	(0.0104)	(0.0109)	(0.0119)
Ethnics	0.0215***	0.00558	-0.00593	0.0137*	0.0185**	0.0174**
	(0.00723)	(0.00640)	(0.00656)	(0.00719)	(0.00750)	(0.00811)
CCP	-0.0407	0.0627	0.0790*	0.0566	-0.0168	-0.0665
	(0.0473)	(0.0422)	(0.0444)	(0.0469)	(0.0484)	(0.0551)
Graduation	0.0180	0.0521***	0.0656***	0.0381*	0.0196	0.00402
	(0.0195)	(0.0173)	(0.0193)	(0.0196)	(0.0205)	(0.0228)
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Num of Obs	19810	20117	19915	20022	20174	20002

Robust standard errors in parentheses and are clustered in county level, $*$ $p < 0.1$, $**$ $p < 0.05$, $***$ $p < 0.01$. Individual- and family level controls are included. This table shows how would the individual's feeling about the severe of social problems are influenced by their skills of Putonghua. People who can speak better Putonghua in general think there are some problems in medical services and social security.

In general, people with better skills in Putonghua thus having a lower cost in receiving the information, would have a higher consumption in newspapers, TVs and radios, and are also more interested in the news about political matters, and also think there are more problems in the society. The lower participation in political activities is not because they do not care about the society or believe the current society is perfect. All the above results rule out other possibilities and imply the lower cost in the access to information leads to lower expected gain in the political participation.

3.6 Conclusion

This paper studies how the political participation is influenced by proficiency of standard language in China. Although the better handling of the language induces a higher exposure to news and propaganda, people are less likely to vote in the county-level elections, and there is no evidence that they will join in more social organizations than others. This phenomenon is not because people with better skills in Putonghua trust government officials more.

The empirical strategy we are using at this stage only emphasize the importance of the language environment in childhood, but ignore the crucial effect of the exposure to language environment when they grow up. A better identification strategy lies on the usage of the ASJP scores of both the local languages where people are living now and their birthplaces, once the detailed information about counties are available. Moreover, literature suggest different regions adopted the policies of Putonghua campaign in a different timing, this might generate some good variations for us to employ the difference in difference framework to double check the effects.

One of the goals of this paper is to revisit the assumption that more access to information leads to more participation in political activities. Although we only look at China, but our results are general can be applied to many other countries. The existence of propaganda and media censorship might induce an overestimation of the performance of local officials, and the more knowledge about the how the government institutions are running might both reduce their incentives to vote or ask for the support of governments when facing troubles.

3.7   Appendix

Table A.3.1: Skills of Putonghua and Voting Behavior (Less Controls)

	(1) Vote	(2) Putonghua	(3) Vote	(4) Vote	(5) Forced Vote	(6) No Information
LanDis3Birth	-0.0128***					
	(0.00235)					
Putonghua		0.0536***	1.523***	2.017**	-0.858	-0.132*
		(0.00875)	(0.368)	(0.964)	(0.551)	(0.0775)
Age	-0.0322***	-0.0235***	0.0241**	0.0390	-0.0262	-0.00373
	(0.000650)	(0.000849)	(0.0120)	(0.0319)	(0.0171)	(0.00248)
Ethnics	-0.00733**	-0.0431***	-0.0328***	-0.0148	0.0112	-0.00105
	(0.00347)	(0.00427)	(0.00707)	(0.0160)	(0.00972)	(0.00135)
F Statistics	29.6248					
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Num of Obs	21344	21344	21344	10659	9222	11998
Regression	IV	OLS	IV	IV	IV	IV
Observations	All	All	All	County	All	All

Robust standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered in county level. Only age, ethnics and gender are included as controls. Column (1) shows the first-stage result. Column (2) shows shows the OLS estimate, and the rests show the results from IV regressions. Column (3) use the whole sample and column (4) only include people in county areas. This table shows people with better Putonghua are less likely to vote in the election. Among people who voted, people with better Putonghua are more likely to go there by themselves, and if they did not vote, it is more likely that they think they cannot change any results.

Table A.3.2: Skills of Putonghua and Participation in Social Organizations (Less Controls)

	(1) CCP	(2) Democratic Party	(3) People's Congress	(4) Communist Youth League	(5) Any Organization
Putonghua	0.0133	-0.00212	-0.00140	-0.171***	-0.222***
	(0.0325)	(0.00223)	(0.00373)	(0.0577)	(0.0705)
Age	0.00264**	-0.0000675	0.0000273	-0.0123***	-0.0114***
	(0.00126)	(0.0000880)	(0.000147)	(0.00224)	(0.00274)
Ethnics	0.00127*	-0.0000621	-0.0000298	0.000425	0.00444***
	(0.000700)	(0.0000480)	(0.000111)	(0.00101)	(0.00138)
County FE	Yes	Yes	Yes	Yes	Yes
Num of Obs	32787	32787	32787	32787	32787

Robust standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Only age, ethnics and gender are included as controls. This tables shows how the skills of Putonghua would influence the participation of individuals in social organizations. Results show speaking better Putonghua would not make people prone to become members of social organizations.

Table A.3.3: Skills of Putonghua and Social Trust (Less Controls)

	(1) Neighborhoods	(2) Americans	(3) Strangers	(4) Officials
Putonghua	0.131	-1.309	-0.302	0.271
	(0.653)	(0.990)	(0.670)	(0.823)
Age	0.0111	-0.0608*	-0.0241	0.0334
	(0.0217)	(0.0326)	(0.0222)	(0.0273)
Ethnics	-0.00919	-0.0545***	-0.0193***	-0.0499***
	(0.00566)	(0.00836)	(0.00578)	(0.00704)
County FE	Yes	Yes	Yes	Yes
Num of Obs	19667	19384	19623	19594

Robust standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Only age, ethnics and gender are included as controls. This table shows people with better Putonghua are not likely to trust local officials more. This result is contrasting with claim that the reason why individuals choose not to vote is because they think local officials work well and are trustworthy.

Table A.3.4: Skills of Putonghua and Treatment in Government Matters (Less Controls)

	(1) Unfair	(2) Conflict	(3) Delay	(4) Overcharge	(5) Evaluation
Putonghua	-0.255	-0.213	-0.316	-0.609***	-0.164
	(0.181)	(0.138)	(0.213)	(0.204)	(0.111)
Age	-0.0135**	-0.0114**	-0.00802	-0.0195**	-0.0101**
	(0.00688)	(0.00524)	(0.00802)	(0.00768)	(0.00427)
Ethnics	-0.000314	0.00205	0.00966*	-0.00170	-0.00415*
	(0.00464)	(0.00359)	(0.00499)	(0.00487)	(0.00223)
County FE	Yes	Yes	Yes	Yes	Yes
Num of Obs	25519	25076	24834	24597	30405

Robust standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Only age, ethnics and gender are included as controls. This table shows whether people who can speak better Putonghua would receive favoritism when communicating with local governments. Generally speaking, people with a better skill in Putonghua would be less likely to be face unfair treatment from government, and they will have a marginal higher evaluation towards local government.

Table A.3.5: Skills of Putonghua and Response when Facing Unfair Treatment (Less Controls)

	(1) Superior	(2) Gov	(3) Court	(4) Media	(5) Nothing
Putonghua	-0.0436	-0.186**	-0.235***	0.0267	0.170**
	(0.0728)	(0.0816)	(0.0751)	(0.0591)	(0.0667)
Age	-0.00331	-0.00854***	-0.00996***	-0.00631***	0.0104***
	(0.00237)	(0.00266)	(0.00245)	(0.00192)	(0.00217)
Ethnics	-0.000800	-0.00207	-0.00620***	0.000105	0.00257**
	(0.00131)	(0.00147)	(0.00146)	(0.00104)	(0.00113)
County FE	Yes	Yes	Yes	Yes	Yes
Num of Obs	21352	21352	21352	21352	21352

Robust standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Only age, ethnics, and gender are included as controls. This table shows how the skills of Putonghua would influence the actions respondents would take when facing unfair treatment by local governments, using the data from CFPS 2014.

Table A.3.6: Skills of Putonghua and Time Management on Entertainment (Less Controls)

	(1)	(2)	(3)	(4)	(5)
	TraMedia	TV	Internet	Play	Social
Putonghua	-0.0435	0.481***	-0.264***	0.00165	0.119
	(0.0425)	(0.131)	(0.0765)	(0.0989)	(0.0859)
Age	-0.00498***	0.0147***	-0.0173***	-0.00350	0.00327
	(0.00166)	(0.00507)	(0.00300)	(0.00392)	(0.00330)
Ethnics	-0.000244	-0.00629*	0.000820	-0.00430	-0.00215
	(0.00103)	(0.00341)	(0.00123)	(0.00345)	(0.00171)
County FE	Yes	Yes	Yes	Yes	Yes
Num of Obs	30413	30413	30413	30413	30413

Robust standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Only age, ethnics and gender are included as controls. This table shows how the skills of Putonghua of respondents would affect their time spending on different kinds of entertainment during weekends, using the data from CFPS 2010.

Table A.3.7: Skills of Putonghua and Topics of News (Less Controls)

	(1)	(2)	(3)	(4)	(5)
	NewsCorrupt	NewsLaw	NewsRural	NewsRural	NewsSocial
Putonghua	-0.106*	0.165***	0.158**	0.170***	-0.0458
	(0.0619)	(0.0606)	(0.0634)	(0.0609)	(0.0555)
Age	-0.00724***	0.00412*	0.00935***	0.00553**	-0.00345
	(0.00239)	(0.00235)	(0.00239)	(0.00240)	(0.00215)
Ethnics	-0.00156	-0.00130	0.00863***	-0.000497	0.000443
	(0.00116)	(0.00111)	(0.00270)	(0.00122)	(0.000968)
County FE	Yes	Yes	Yes	Yes	Yes
Num of Obs	32787	32787	9539	23182	32787

Robust standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Only age, ethnics and gender are included as controls. This tables shows how the skills of Putonghua would influence the topics of news individuals would like to perceive. Results shows people with better Putonghua are more interested in topics of law and rural issues, no matter if they are from urban area or rural areas.

Table A.3.8: Skills of Putonghua and Topics of News (Continue, Less Controls)

	(1) International	(2) Economy	(3) Sports	(4) Medical
Putonghua	-0.106*	-0.0540	-0.123**	-0.0328
	(0.0617)	(0.0596)	(0.0600)	(0.0570)
Age	-0.00501**	-0.00419*	-0.00853***	-0.000406
	(0.00239)	(0.00231)	(0.00233)	(0.00221)
Ethnics	0.0000231	-0.000812	-0.000146	-0.000147
	(0.00110)	(0.00102)	(0.00105)	(0.000953)
County FE	Yes	Yes	Yes	Yes
Num of Obs	32787	32787	32787	32787

Robust standard errors in parentheses and are clustered in county level, * $p <$ 0.1, ** $p < 0.05$, *** $p < 0.01$. Only age, ethnics and gender are included as controls. This tables shows how the skills of Putonghua would influence the topics of news individuals would like to perceive. Results shows the skills of Putonghua would make respondents care less on the news about international issues, economy, sports and medical issues in a marginal manner.

Table A.3.9: Skills of Putonghua and The Severity of Social Problems (Less Controls)

	(1) Corruption	(2) Inequality	(3) Unemployment	(4) Education	(5) Medical Services	(6) Social Security
Putonghua	0.720**	-0.0478	-0.257	0.337	0.683*	1.030**
	(0.367)	(0.327)	(0.358)	(0.363)	(0.373)	(0.415)
Age	0.00269	-0.0229**	-0.0371***	-0.0247**	-0.00790	-0.000994
	(0.0116)	(0.0105)	(0.0114)	(0.0116)	(0.0120)	(0.0132)
Ethnics	0.0410***	0.0119*	-0.00716	0.0219***	0.0335***	0.0344***
	(0.00747)	(0.00617)	(0.00640)	(0.00679)	(0.00706)	(0.00767)
County FE	Yes	Yes	Yes	Yes	Yes	Yes
Num of Obs	20761	21096	20873	20988	21154	20967

Robust standard errors in parentheses and are clustered in county level, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Only age, ethnics and gender are included as controls. This table shows how would the individual's feeling about the severe of social problems are influenced by their skills of Putonghua. People who can speak better Putonghua in general think there are some problems in medical services and social security.

Bibliography

[1] N. Ramondo, A. Rodríguez-Clare, and M. Saborío-Rodríguez, "Trade, domestic frictions, and scale effects," *American Economic Review*, vol. 106, no. 10, pp. 3159–84, 2016.

[2] T. Besley and A. Case, "Does electoral accountability affect economic policy choices? evidence from gubernatorial term limits," *Quarterly Journal of Economics*, vol. 110, no. 3, pp. 769–798, 1995.

[3] T. Besley and R. Burgess, "The political economy of government responsiveness: Theory and evidence from india," *Quarterly Journal of Economics*, vol. 117, no. 4, pp. 1415–1451, 2002.

[4] M. Klašnja and R. Titiunik, "The incumbency curse: Weak parties, term limits, and unfulfilled accountability," *American Political Science Review*, vol. 111, no. 1, pp. 129–148, 2017.

[5] D. Coviello and S. Gagliarducci, "Tenure in office and public procurement," *American Economic Journal: Economic Policy*, vol. 9, no. 3, pp. 59–105, 2017.

[6] J. Chen, J. Pan, and Y. Xu, "Sources of authoritarian responsiveness: A field experiment in china," *American Journal of Political Science*, vol. 60, no. 2, pp. 383–400, 2016.

[7] A. Banerjee, A. G. Chandrasekhar, E. Duflo, and M. O. Jackson, "Using gossips to spread information: Theory and evidence from two randomized controlled trials," *The Review of Economic Studies*, vol. 86, no. 6, pp. 2453–2490, 2019.

[8] R. Fisman, D. Paravisini, and V. Vig, "Cultural proximity and loan outcomes," *American Economic Review*, vol. 107, no. 2, pp. 457–92, 2017.

[9] J. Cai and A. Szeidl, "Interfirm relationships and business performance," *Quarterly Journal of Economics*, vol. 133, no. 3, pp. 1229–1282, 2017.

[10] C. Xu, "The fundamental institutions of china's reforms and development," *Journal of Economic Literature*, vol. 49, no. 4, pp. 1076–1151, 2011.

[11] H. Li and L.-A. Zhou, "Political turnover and economic performance: The incentive role of personnel control in china," *Journal of Public Economics*, vol. 89, no. 9-10, pp. 1743–1762, 2005.

[12] R. Jia, M. Kudamatsu, and D. Seim, "Political selection in china: The complementary roles of connections and performance," *Journal of the European Economic Association*, vol. 13, no. 4, pp. 631–668, 2015.

[13] Y. Yao and M. Zhang, "Subnational leaders and economic growth: Evidence from chinese cities," *Journal of Economic Growth*, vol. 20, no. 4, pp. 405–436, 2015.

[14] A. Young, "The razor's edge: Distortions and incremental reform in the people's republic of china," *Quarterly Journal of Economics*, vol. 115, no. 4, pp. 1091–1135, 2000.

[15] S. Poncet, "Measuring chinese domestic and international integration," *China Economic Review*, vol. 14, no. 1, pp. 1–21, 2003.

[16] A. V. Deardorff, "Local comparative advantage: Trade costs and the pattern of trade," *International Journal of Economic Theory*, vol. 10, no. 1, pp. 9–35, 2014.

[17] E. P. Lazear and S. Rosen, "Rank-order tournaments as optimum labor contracts," *Journal of Political Economy*, vol. 89, no. 5, pp. 841–864, 1981.

[18] C. wen Kou and W.-H. Tsai, "âsprinting with small stepsâ towards promotion: Solutions for the age dilemma in the ccp cadre appointment system," *The China Journal*, pp. 153–171, 2014.

[19] R. Jia, "Pollution for promotion," *Working Paper*, 2017.

[20] K. Head and T. Mayer, "Gravity equations: Workhorse, toolkit, and cookbook," in *Handbook of International Economics*, vol. 4, pp. 131–195, Elsevier, 2014.

[21] P. Conconi, G. Facchini, and M. Zanardi, "Policymakers' horizon and trade reforms: The protectionist effect of elections," *Journal of International Economics*, vol. 94, no. 1, pp. 102–118, 2014.

[22] G. M. Grossman and E. Helpman, "Outsourcing in a global economy," *The Review of Economic Studies*, vol. 72, no. 1, pp. 135–159, 2005.

[23] G. M. Grossman and E. Helpman, "Protection for sale," *American Economic Review*, vol. 84, no. 4, pp. 833–850, 1994.

[24] G. M. Grossman and E. Helpman, "Trade wars and trade talks," *Journal of political Economy*, vol. 103, no. 4, pp. 675–708, 1995.

[25] S. Guriev, E. Yakovlev, and E. Zhuravskaya, "Interest group politics in a federation," *Journal of Public Economics*, vol. 94, no. 9-10, pp. 730–748, 2010.

[26] H. V. Milner, "The political economy of international trade," *Annual Review of Political Science*, vol. 2, no. 1, pp. 91–114, 1999.

[27] R. W. Staiger and G. Tabellini, "Discretionary trade policy and excessive protection," *American Economic Review*, pp. 823–837, 1987.

[28] R. Fisman, Y. Hamao, and Y. Wang, "Nationalism and economic exchange: Evidence from shocks to sino-japanese relations," *The Review of Financial Studies*, vol. 27, no. 9, pp. 2626–2660, 2014.

[29] M. Petrova, "Inequality and media capture," *Journal of Public Economics*, vol. 92, no. 1-2, pp. 183–212, 2008.

[30] J. M. Snyder Jr and D. Strömberg, "Press coverage and political accountability," *Journal of Political Economy*, vol. 118, no. 2, pp. 355–408, 2010.

[31] C. Ferraz and F. Finan, "Electoral accountability and corruption: Evidence from the audits of local governments," *American Economic Review*, vol. 101, no. 4, pp. 1274–1311, 2011.

[32] M. Martinez-Bravo, P. Mukherjee, and A. Stegmann, "The non-democratic roots of elite capture: Evidence from soeharto mayors in indonesia," *Econometrica*, vol. 85, no. 6, pp. 1991–2010, 2017.

[33] M. Bertrand, R. Burgess, A. Chawla, and G. Xu, "The glittering prizes: Career incentives and bureaucrat performance," tech. rep., Working Paper, 2017.

[34] A. Ornaghi, "Civil service reforms: Evidence from us police departments," *Working Paper*, 2018.

[35] S. Alder and I. Kondo, "Political distortions and infrastructure networks in china: A quantitative spatial equilibrium analysis," tech. rep., Society for Economic Dynamics, 2018.

[36] P. Persson and E. Zhuravskaya, "The limits of career concerns in federalism: evidence from china," *Journal of the European Economic Association*, vol. 14, no. 2, pp. 338–374, 2016.

[37] V. Shih, C. Adolph, and M. Liu, "Getting ahead in the communist party: Explaining the advancement of central committee members in china," *American Political Science Review*, vol. 106, no. 1, pp. 166–187, 2012.

[38] R. Fisman and Y. Wang, "The distortionary effects of incentives in government: Evidence from china's "death ceiling" program,"

American Economic Journal: Applied Economics, vol. 9, no. 2, pp. 202–18, 2017.

[39] T. Chen and J. K.-s. Kung, "Busting the âprincelingsâ: The campaign against corruption in chinaâs primary land market," *Quarterly Journal of Economics*, vol. 134, no. 1, pp. 185–226, 2018.

[40] Z. X. Shi Xiangyu, Xi Tianyang and Z. Yifan, "Moving âumbrellaâ: Bureaucratic transfers, collusion, and rent-seeking in china," *Working Paper*, 2019.

[41] J. Tinbergen, "Shaping the world economy," *The International Executive*, vol. 5, no. 1, pp. 27–30, 1963.

[42] J. E. Anderson and E. V. Wincoop, "Gravity with gravitas: A solution to the border puzzle," *American Economic Review*, vol. 1, no. 93, pp. 170–192, 2003.

[43] J. Eaton and S. Kortum, "Technology, geography, and trade," *Econometrica*, vol. 70, no. 5, pp. 1741–1779, 2002.

[44] D. Hummels, J. Ishii, and K.-M. Yi, "The nature and growth of vertical specialization in world trade," *Journal of International Economics*, vol. 54, no. 1, pp. 75–96, 2001.

[45] A. K. Rose and E. Van Wincoop, "National money as a barrier to international trade: The real case for currency union," *American Economic Review*, vol. 91, no. 2, pp. 386–390, 2001.

[46] R. Portes and H. Rey, "The determinants of cross-border equity flows," *Journal of International Economics*, vol. 65, no. 2, pp. 269–296, 2005.

[47] S.-J. Wei and J. A. Frankel, "Can regional blocs be a stepping stone to global free trade? a political economy analysis," *International Review of Economics & Finance*, vol. 5, no. 4, pp. 339–347, 1996.

[48] S. L. Baier and J. H. Bergstrand, "Do free trade agreements actually increase members' international trade?," *Journal of International Economics*, vol. 71, no. 1, pp. 72–95, 2007.

[49] A. K. Rose, "One money, one market: the effect of common currencies on trade," *Economic Policy*, vol. 15, no. 30, pp. 08–45, 2000.

[50] N. Nunn, "Relationship-specificity, incomplete contracts, and the pattern of trade," *Quarterly Journal of Economics*, vol. 122, no. 2, pp. 569–600, 2007.

[51] L. Guiso, P. Sapienza, and L. Zingales, "Cultural biases in economic exchange?," *Quarterly Journal of Economics*, vol. 124, no. 3, pp. 1095–1131, 2009.

[52] S. Jha, "Trade, institutions, and ethnic tolerance: Evidence from south asia," *American Political Science Review*, vol. 107, no. 4, pp. 806–832, 2013.

[53] T. Tombe and X. Zhu, "Trade, migration, and productivity: A quantitative analysis of china," *American Economic Review*, vol. 109, no. 5, pp. 1843–72, 2019.

[54] T. Cliff, "The partnership of stability in xinjiang: State–society interactions following the july 2009 unrest," *The China Journal*, no. 68, pp. 79–105, 2012.

[55] L. Y. Li Shantong, Hou Yongzhi and C. Bo, "The analysis on survey of local protection in china domestic market," *Economic Research Journal*, vol. 11, no. 78.84, 2004.

[56] D. M. Finkelstein and M. Kivlehan, *China's leadership in the twenty-First century: The rise of the fourth generation*. Routledge, 2015.

[57] L.-A. Zhou, "The incentive and cooperation of government officials in the political tournaments: An interpretation of the prolonged local protectionism and duplicative investments in china," *Economic Research Journal*, vol. 6, pp. 33–40, 2004.

[58] Y. M. Junyan Jiang and A. Min, "Mandarins make markets: Leadership rotation and inter-provincial trade in china," *Working Paper*, 2015.

[59] J. E. Anderson, "The gravity model," *Annual Review of Economics*, vol. 3, no. 1, pp. 133–160, 2011.

[60] T. Fally, "Structural gravity and fixed effects," *Journal of International Economics*, vol. 97, no. 1, pp. 76–85, 2015.

[61] R. Baldwin and D. Taglioni, "Gravity for dummies and dummies for gravity equations," tech. rep., National Bureau of Economic Research, 2006.

[62] M. L. Z. N. Nie Huihua, Han Donglin, "The ranking and enlightenment of current political and business relations in chinese cities," 2018.

[63] B. Qin, D. Strömberg, and Y. Wu, "Media bias in china," *American Economic Review*, vol. 108, no. 9, pp. 2442–76, 2018.

[64] E. Glaeser, W. Huang, Y. Ma, and A. Shleifer, "A real estate boom with chinese characteristics," tech. rep., National Bureau of Economic Research, 2016.

[65] G. Tabellini, "The scope of cooperation: values and incentives," *Quarterly Journal of Economics*, vol. 123, no. 3, pp. 905–950, 2008.

[66] S. Lowes, N. Nunn, J. A. Robinson, and J. Weigel, "The evolution of culture and institutions: Evidence from the Kuba Kingdom," *NBER Working Paper*, no. w21798, 2015.

[67] P. C. Tetlock, "Giving content to investor Sentiment: The role of media in the stock market," *Journal of Finance*, vol. 62, no. 3, pp. 1139–1168, 2007.

[68] P. C. Tetlock, M. Saar-Tsechansky, and S. Macskassy, "More than words: Quantifying language to measure firms' fundamentals," *Journal of Finance*, vol. 63, no. 3, pp. 1437–1467, 2008.

[69] J. Engelberg, C. Sasseville, and J. Williams, "Market madness? The case of mad money," *Management Science*, vol. 58, no. 2, pp. 351–364, 2012.

[70] N. Nunn and L. Wantchekon, "The slave trade and the origins of mistrust in Africa," *American Economic Review*, vol. 101, no. 7, pp. 3221–3252, 2011.

[71] L. Guiso, P. Sapienza, and L. Zingales, "The role of social capital in financial development," *American Economic Review*, vol. 94, no. 3, pp. 526–556, 2004.

[72] A. Norenzayan, "Does religion make people moral?," *Behaviour*, vol. 151, no. 2-3, pp. 365–384, 2014.

[73] S. Knack and P. Keefer, "Does social capital have an economic payoff? a cross-country investigation," *Quarterly Journal of Economics*, vol. 112, no. 4, pp. 1251–1288, 1997.

[74] Y. Algan and P. Cahuc, "Inherited trust and growth," *American Economic Review*, vol. 100, no. 5, pp. 2060–2092, 2010.

[75] A. Greif, "Cultural beliefs and the organization of society: A historical and theoretical reflection on collectivist and individualist societies," *Journal of Political Economy*, vol. 102, no. 5, pp. 912–950, 1994.

[76] A. Greif and G. Tabellini, "The clan and the corporation: Sustaining cooperation in china and europe," *Journal of Comparative Economics*, 2017.

[77] M. K. Chen, "The effect of language on economic behavior: Evidence from savings rates, health behaviors, and retirement assets," *American Economic Review*, vol. 103, no. 2, pp. 690–731, 2013.

[78] R. Fernandez, "Women, work, and culture," *Journal of the European Economic Association*, vol. 5, no. 2-3, pp. 305–332, 2007.

[79] A. Alesina and G.-M. Angeletos, "Fairness and redistribution," *American Economic Review*, vol. 95, no. 4, pp. 960–980, 2005.

[80] A. Alesina and P. Giuliano, "The power of the family," *Journal of Economic Growth*, vol. 15, no. 2, pp. 93–125, 2010.

[81] L. Guiso, P. Sapienza, and L. Zingales, "Trusting the stock market," *Journal of Finance*, vol. 63, no. 6, pp. 2557–2600, 2008.

[82] S. Beugelsdijk and B. Frijns, "A cultural explanation of the foreign bias in international asset allocation," *Journal of Banking & Finance*, vol. 34, no. 9, pp. 2121–2131, 2010.

[83] C. W. Anderson, M. Fedenia, M. Hirschey, and H. Skiba, "Cultural influences on home bias and international diversification by institutional investors," *Journal of Banking & Finance*, vol. 35, no. 4, pp. 916–934, 2011.

[84] A. C. Chui, S. Titman, and K. J. Wei, "Individualism and momentum around the world," *Journal of Finance*, vol. 65, no. 1, pp. 361–392, 2010.

[85] E. Beracha, M. Fedenia, and H. Skiba, "Culture's impact on institutional investors' trading frequency," *International Review of Financial Analysis*, vol. 31, pp. 34–47, 2014.

[86] G. Huberman and T. Regev, "Contagious speculation and a cure for cancer: A nonevent that made stock prices soar," *Journal of Finance*, vol. 56, no. 1, pp. 387–396, 2001.

[87] B. M. Barber and T. Odean, "All that glitters: The effect of attention and news on the buying behavior of individual and institutional investors," *Review of Financial Studies*, vol. 21, no. 2, pp. 785–818, 2008.

[88] J. E. Engelberg and C. A. Parsons, "The causal impact of media in financial markets," *Journal of Finance*, vol. 66, no. 1, pp. 67–97, 2011.

[89] W. B. Johnson, R. P. Magee, N. J. Nagarajan, and H. A. Newman, "An analysis of the stock price reaction to sudden executive deaths: Implications for the managerial labor market," *Journal of Accounting and Economics*, vol. 7, no. 1-3, pp. 151–174, 1985.

[90] L. Pastor and P. Veronesi, "Uncertainty about government policy and stock prices," *Journal of Finance*, vol. 67, no. 4, pp. 1219–1264, 2012.

[91] R. Fisman, "Estimating the value of political connections," *American Economic Review*, vol. 91, no. 4, pp. 1095–1102, 2001.

[92] E. Snowberg, J. Wolfers, and E. Zitzewitz, "Partisan impacts on the economy: Evidence from prediction markets and close elections," *Quarterly Journal of Economics*, vol. 122, no. 2, pp. 807–829, 2007.

[93] M. Guidolin and E. La Ferrara, "Diamonds are forever, wars are not: Is conflict bad for private firms?," *American Economic Review*, vol. 97, no. 5, pp. 1978–1993, 2007.

[94] A. Dube, E. Kaplan, and S. Naidu, "Coups, corporations, and classified Information," *Quarterly Journal of Economics*, vol. 126, no. 3, pp. 1375–1409, 2011.

[95] B. G. Malkiel, "Expectations, bond prices, and the term structure of interest rates," *Quarterly Journal of Economics*, vol. 76, no. 2, pp. 197–218, 1962.

[96] E. F. Fama, "The behavior of stock-market prices," *The Journal of Business*, vol. 38, no. 1, pp. 34–105, 1965.

[97] W. De Bondt, "The psychology of underreaction and overreaction in world equity markets," *Security Market Imperfections in World Wide Equity Markets*, pp. 65–69, 2000.

[98] N. Barberis and R. Thaler, "A survey of behavioral finance," *Handbook of the Economics of Finance*, vol. 1, pp. 1053–1128, 2003.

[99] W. De Bondt and R. H. Thaler, "Does the stock market overreact?," *Journal of Finance*, vol. 40, no. 3, pp. 793–805, 1985.

[100] M. Statman, "What is behavioral finance?," *Handbook of Finance*, vol. 2, 2008.

[101] U. Malmendier and G. Tate, "Ceo overconfidence and corporate investment," *Journal of Finance*, vol. 60, no. 6, pp. 2661–2700, 2005.

[102] L. Guiso, P. Sapienza, and L. Zingales, "Time varying risk aversion," *Journal of Financial Economics*, vol. 128, no. 3, pp. 403–421, 2018.

[103] D. S. Scharfstein and J. C. Stein, "Herd behavior and investment," *American Economic Review*, vol. 80, pp. 465–479, 1990.

[104] F. G. Wang Xiaolu, Yu jingwen, "Chinese provincial business operating environment index 2013 report," CITIC Press Group, 2014.

[105] R. Inglehart, C. Haerpfer, A. Moreno, C. Welzel, K. Kizilova, J. Diez-Medrano, M. Lagos, P. Norris, E. Ponarin, B. Puranen, *et al.*, "World values survey: Round six-country-pooled datafile version," *Madrid: JD Systems Institute*, p. 12, 2014.

[106] H. Fang, Q. Gu, W. Xiong, and L.-A. Zhou, "Demystifying the Chinese housing boom," in *NBER Macroeconomics Annual 2015, Volume 30*, University of Chicago Press, 2015.

[107] S. DellaVigna and E. La Ferrara, "Detecting illegal arms trade," *American Economic Journal: Economic Policy*, vol. 2, no. 4, pp. 26–57, 2010.

[108] C. W. Calomiris, R. Fisman, and Y. Wang, "Profiting from government stakes in a command economy: Evidence from chinese asset sales," *Journal of Financial Economics*, vol. 96, no. 3, pp. 399–412, 2010.

[109] A. C. MacKinlay, "Event studies in economics and finance," *Journal of Economic Literature*, vol. 35, no. 1, pp. 13–39, 1997.

[110] K. Hou, W. Xiong, and L. Peng, "A tale of two anomalies: The implications of investor attention for price and earnings momentum," *SSRN Working Paper Series*, 2010.

[111] M. DeFond, M. Hung, and R. Trezevant, "Investor protection and the information content of annual earnings announcements: Inter-

national evidence," *Journal of Accounting and Economics*, vol. 43, no. 1, pp. 37–67, 2007.

[112] W. R. Landsman, E. L. Maydew, and J. R. Thornock, "The information content of annual earnings announcements and mandatory adoption of ifrs," *Journal of Accounting and Economics*, vol. 53, no. 1, pp. 34–54, 2012.

[113] G. King, J. Pan, and M. E. Roberts, "How censorship in china allows government criticism but silences collective expression," *American Political Science Review*, vol. 107, no. 2, pp. 326–343, 2013.

[114] E. H. Lenneberg, "The biological foundations of language," *Hospital Practice*, vol. 2, no. 12, pp. 59–67, 1967.

[115] J. K. Hartshorne, J. B. Tenenbaum, and S. Pinker, "A critical period for second language acquisition: Evidence from 2/3 million english speakers," *Cognition*, vol. 177, pp. 263–277, 2018.

[116] T. Karayayla and M. S. Schmid, "First language attrition as a function of age at onset of bilingualism: First language attainment of turkish–english bilinguals in the united kingdom," *Language Learning*, vol. 69, no. 1, pp. 106–142, 2019.

[117] J. Melitz and F. Toubal, "Native language, spoken language, translation and trade," *Journal of International Economics*, vol. 93, no. 2, pp. 351–363, 2014.

[118] K. Eriksson, "Does the language of instruction in primary school affect later labour market outcomes? evidence from south africa,"

Economic History of Developing Regions, vol. 29, no. 2, pp. 311–335, 2014.

[119] S. Taylor and M. von Fintel, "Estimating the impact of language of instruction in south african primary schools: A fixed effects approach," *Economics of Education Review*, vol. 50, pp. 75–89, 2016.

[120] A. Adsera and M. Pytlikova, "The role of language in shaping international migration," *The Economic Journal*, vol. 125, no. 586, pp. F49–F81, 2015.

[121] D. D. Laitin and R. Ramachandran, "Language policy and human development," *American Political Science Review*, vol. 110, no. 3, pp. 457–480, 2016.

[122] L. Yuyun, X. Xianxiang, and X. Zekai, "The pattern of labor cross-dialects migration," *Economic Research Journal*, vol. 10, pp. 134–162, 2015.

[123] V. Fouka, "Backlash: The unintended effects of language prohibition in us schools after world war i," *The Review of Economic Studies*, vol. 87, no. 1, pp. 204–239, 2020.

[124] A. Blais, "What affects voter turnout?," *Annual Review of Political Science*, vol. 9, pp. 111–125, 2006.

[125] M. N. Franklin, P. Lyons, and M. Marsh, "Generational basis of turnout decline in established democracies," *Acta politica*, vol. 39, no. 2, pp. 115–151, 2004.

[126] A. S. Gerber, D. P. Green, and C. W. Larimer, "Social pressure and voter turnout: Evidence from a large-scale field experiment,"

American political Science review, vol. 102, no. 1, pp. 33–48, 2008.

[127] S. DellaVigna and E. Kaplan, "The fox news effect: Media bias and voting," *The Quarterly Journal of Economics*, vol. 122, no. 3, pp. 1187–1234, 2007.

[128] R. Enikolopov, M. Petrova, and E. Zhuravskaya, "Media and political persuasion: Evidence from russia," *American Economic Review*, vol. 101, no. 7, pp. 3253–85, 2011.

[129] M. Gentzkow, "Television and voter turnout," *The Quarterly Journal of Economics*, vol. 121, no. 3, pp. 931–972, 2006.

[130] M. Manacorda and A. Tesei, "Liberation technology: mobile phones and political mobilization in africa," *Econometrica*, vol. 88, no. 2, pp. 533–567, 2020.

[131] F. Campante, R. Durante, and F. Sobbrio, "Politics 2.0: The multifaceted effect of broadband internet on political participation," *Journal of the European Economic Association*, vol. 16, no. 4, pp. 1094–1136, 2018.

[132] C. B. Mulligan, R. Gil, and X. Sala-i Martin, "Do democracies have different public policies than nondemocracies?," *Journal of Economic Perspectives*, vol. 18, no. 1, pp. 51–74, 2004.

[133] A. Alesina, P. Giuliano, and B. Reich, "Nation-building and education," tech. rep., National Bureau of Economic Research, 2013.

[134] P. Aghion, X. Jaravel, T. Persson, and D. Rouzet, "Education and military rivalry," *Journal of the European Economic Association*, vol. 17, no. 2, pp. 376–412, 2019.

[135] E. L. Glaeser, G. A. Ponzetto, and A. Shleifer, "Why does democracy need education?," *Journal of economic growth*, vol. 12, no. 2, pp. 77–99, 2007.

[136] A. Alesina, B. Reich, and A. Riboni, "Nation-building, nationalism and wars," tech. rep., National Bureau of Economic Research, 2017.

[137] H. Mylonas, *The politics of nation-building: Making co-nationals, refugees, and minorities*. Cambridge University Press, 2013.

[138] L. Rong, *Language Atlas in China*. Hong Kong: Longman Press, 1987.

[139] J. Norman, *Chinese*. Cambridge University Press, 1988.

[140] "Gauojia yuyan wenzi zhengce fagui huibian, 1949-1995 [collection of state language and script policies, 1949-1995]," 1996.

[141] J. S. Rohsenow, "Fifty years of script and written language reform in the prc," in *Language Policy in the Peopleâs Republic of China*, pp. 21–43, Springer, 2004.

[142] L. G. O. for Survey of Language Situation in China, *Zhongguo Yuyan Wenzi Shiyong Qingkuang Diaocha Ziliao [Survey on the Use of Chinese Language and Characters]*. Beijing: Yuwen Press, 2006.

[143] C. H. Brown, E. W. Holman, S. Wichmann, and V. Velupillai, "Automated classification of the world's languages: a description of the method and preliminary results," *STUF-Language Typology and Universals Sprachtypologie und Universalienforschung*, vol. 61, no. 4, pp. 285–308, 2008.

[144] X. Baohua and M. Ichiroo, "A comprehensive dictionary of chinese dialects," 1999.