

# The Bureaucrat's Decision Rule and Government Efficiency

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## Declaration

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## Summary

This thesis focuses on the decision problem of local bureaucrats and the impact on government performance. Chapter 1 outlines the context of the thesis and provide a description of the thesis structure.

Chapter 2 investigates the efficiency of decentralised targeting programmes and the distribution of public benefits. In Vietnam, village and commune officials decide whether a household is qualified to be classified as poor in order to get access to public transfers. This chapter focuses on the role of political connections in the poverty identification process and shows that political connections play a vital role. Households with relatives working in commune level government have an advantage in signalling their needs and are more likely to be classified as poor households. This is due to better knowledge of the process of identification. Social connections help identified households maintain social networks and reduce the probability of disagreement about the list and reporting corruption behaviour.

Chapter 3 examines the effect of grand corruption, corruption at higher levels of government in China. Using a career concern model, there are underlying differences in the behaviour of politicians with different incentives. Rent-seeking politicians are motivated to maximise private gain and raise fiscal revenue for the purpose of grabbing more rents. From 2002, the central government added individual and cooperate income taxes into the central-local shared tax category and took half of the income tax revenue from local governments. I use a difference-in-differences approach to compare the performance between rent-seeking and office-seeking politicians pre and post the policy change. The results show that provinces with more corrupt officials have

relatively higher fiscal capacity. In contrast, office-seeking politicians prioritise career advancement over other targets and have a strong incentive to promote economic growth. I find that corrupt provinces have relatively lower fiscal capacity post-2001 due to the shrinking space for corruption after the increase in fiscal pressure.

Chapter 4 focuses on the political incentives of provincial politicians in China. The performance-based promotion scheme has binding age limits on promotion prospects. As such, provincial officials change their incentives with age. The conceptual framework shows that officials change office-seeking motives to rent-seeking motives because of a negative expectation of future career progression. Using provincial data and the data on the characteristics and career paths of politicians, I confirm this incentive shift by showing that the growth rate of GDP dramatically drops at the cutoff age, while the focus on collecting revenue increases.

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# Chapter 1

## Introduction to the Thesis

### 1.1 Context and background

Government decentralization is a process whereby central authorities redistribute power and responsibilities among sub-national governments. Bureaucrats are the agents of government and are the empowered authority in the management of state affairs. The challenge of local bureaucrats is how to balance interests between different levels of government and the agents they represent. The aim of this thesis is to analyse bureaucrat's decision problems and the impact on government efficiency.

Chapter 2 investigates the role of political connections in the poverty alleviation programme in Vietnam. Chapters 3 and 4 explore political incentives of provincial bureaucrats in China. Chapter 3 finds a positive relationship between rent-seeking incentives and the fiscal capacity of provincial governments. Chapter 4 concentrates on the shift in political incentives at the cutoff age based on age limits in political promotion.

### 1.2 Overview of the thesis

Chapter 2 is a working paper co-authored with Prof. Carol Newman. It explores the relationship between households' political connections and their access to public benefits through poverty-targeting programmes in Vietnam. Using panel data we find evidence that households with connections to local government are more likely to be classified as poor than other households with similar economic and living con-

ditions, which is the main determinant of whether households receive public benefits/supports. We show that social connections play a role by allowing politically connected households to receive supports without being reprimanded by their local community. We further explore the channels through which households exploit their connections to obtain the poverty classification. We show that families with non-obvious connections to political elites benefit the most through this mechanism rather than immediate families, perhaps due to fear of detection by the central authority. We conclude that information campaigns may be an effective means of eliminating local level corruption in poverty-targeting programmes.

Chapter 3 examines the impact of corruption on government performance and test whether the number of corrupt politicians influences the growth in fiscal capacity in China. Based on provincial panel data and the curriculum vitae of politicians holding leading positions for the period 1995 to 2013, I use a difference-in-differences approach to compare the fiscal capacity between provinces with corrupt politicians and other regions pre and post 2001. In 2001, the central government converted locally collected income taxes into central-local shared taxes. The empirical results show that provinces with a higher number of corrupt politicians are more likely to have lower fiscal capacity compared with provinces with less corruption after the policy change. I explain this result through differences in the incentives of corrupt compared with non-corrupt politicians. The incentive of corrupt politicians is rent-seeking and so they maximise their private gains. The growth in fiscal capacity is reduced by theft and the embezzlement of funds by corrupt bureaucrats.

Chapter 4 analyses political incentives of bureaucrats and investigates the effect of the age-limit for promotion of local officials on their behaviour in relation to provincial economic performance. In particular, it focuses on how political incentives change across age intervals. Using individual panel data, the result suggests that the cutoff

age for future promotion results in a shift from office-seeking to rent-seeking incentives. Because of intensive political competition and age limits, politicians over 55 are more likely to leave leading positions and wait for retirement. Using a regression discontinuity design I show that office-seeking incentives are dramatically reduced at the cutoff age. Officials at the cutoff age are more likely to increase their level of effort in relation to revenue collection, which is suggestion of a shift to rent-seeking activities.

Chapter 5 concludes the thesis. Appendices to all chapters are jointly presented at the end of the thesis.





# Chapter 2

## Connections and The Allocation of Public Benefits

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This chapter is based on a research paper that is co-authored with Prof. Carol Newman and was presented at the 28th Irish Economics Association Annual Conference, held in Limerick, Ireland, on 8-9 May 2014, and at the Nordic Conference on Development Economics 2014, held in Helsinki, Finland, on 16-17 June 2014. Our thanks to the Development Economics Research Group at the University of Copenhagen, Denmark, and the Central Institute for Economics Management, Hanoi, Vietnam, for permitting use of the data. Special thanks to Finn Tarp, Gaia Narciso, Tara Mitchell, and Ivar Kolstad for comments and to participants at various conferences and seminars. The usual caveats apply.

## 2.1 Introduction

Poverty alleviation remains a key focus of developing countries and in many cases government transfers are an important source of income in the daily lives of the poorest and most vulnerable. Whether households most in need receive public benefits is an important question, especially in rural areas where resources are limited and who the most vulnerable households are is often not clear to central authorities. A decentralized decision-making process has the potential to lead to a more efficient allocation of benefits given that local information can be used in the distribution of government supports. This is particularly the case in rural areas where the cost of identifying who the most vulnerable households are is high. Decentralized decision-making, however, also lends itself to corruption, particularly where self-interested bureaucrats are responsible for the distribution of benefits. In this paper, we investigate the extent to which political connections impact on who receives public transfers where decisions in relation to who receives the benefits are fully decentralized.

Our study is set in the context of Vietnam which is an ideal testing ground for exploring the relationship between connections and poverty targeting and the underlying mechanisms at work. In Vietnam, the allocation of aid resources and other benefits (e.g. loans, health care, job training, etc.) depends on being identified as poor by the Ministry of Labour, Invalids and Social Affairs (MoLISA). The classification process takes place largely at village level. The main rationale for a decentralized process of identifying poor households is that, in the absence of resources to support all eligible poor households, village and commune leaders have more information on the vulnerability of households in their local area and so are better placed than centralized government authorities to identify the most deserving recipients. The list of identified poor households is updated annually and is used by local authorities for the distribution of public benefits. The criteria for inclusion on the list are unknown to the general public. The ambiguity surrounding the procedure for identifying poor households provides sig-

nificant scope for households to use connections to influence the process.

Using a detailed household panel dataset for the period 2008-12 for Vietnam we illustrate the role of connections in determining the households that receive state benefits under the main decentralized government poverty-targeting programme. We examine whether households with connections to the political elite, who participate in the procedure for identifying the poor within communes, are more likely to be classified as poor.<sup>1</sup> We also explore the role of social connections in this process on the basis that the stronger a household's social ties the less likely household members will be reprimanded within their local community if they are unfairly included in the list. We use propensity score matching to match politically connected households with unconnected households that have similar characteristics. We use these households as a control group to test for the impact of political connections on the poverty identification process. We find that whether or not a household has political connections is an important determinant for whether they are classified as poor. Our results are strongest for households with relatives holding positions in commune level government. We also find evidence that social connections matter for poverty identity, but only for households that are politically connected. We identify access to information as the main channel through which households use their political connections to obtain the poverty identity.

The role that decentralization can play in improving the efficiency of government programmes and the allocation of benefits is well documented. Bardhan and Mookherjee (2005, 2006) highlight that centralized systems of delivery of anti-poverty programmes are more prone to bureaucratic corruption than decentralized systems and that the latter are therefore more cost-effective. Galasso and Ravallion (2005) and Alderman (2002) show that programmes directly targeting the poor are more efficient and eq-

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<sup>1</sup>Maintaining political connections is a common strategy that households use in developing countries Ruud (2000).

uitable when implemented at the local level than when implemented through a centralized process. In particular, Alderman (2002) finds that communes have local information that central authorities cannot possess, which assists in the targeting process. Similarly, Besley et al. (2005) investigate the relationship between participation in village meetings and the distribution of welfare programmes in South India. They find that poor and vulnerable groups are more likely to attend village meetings and that participation in meetings improves targeting of the poor for redistribution purposes. Their work highlights the potentially positive role that political participation can play in the allocation of public benefits.

Our paper speaks to the literature questioning the efficiency of decentralized targeting programmes, primarily owing to the potential for corruption (for a review, see Conning and Kevane (2002)). Seminal theoretical work in this area shows that local officers have an incentive to exploit the regulations of anti-poverty programmes in controlling the allocation of public resources Banerjee (1997). Pande (2007) highlights that it is more common for local officers to exploit political connections in poor countries because of the high economic returns. Besley and Coate (2003b) also show that decentralized poverty targeting may create bureaucratic corruption and that the transparency and accountability of local governments is under a high level of capture by local elites because of voting pressure. Mansuri and Rao (2013) argue that elite capture tends to be greater in communities that are poor and not managed directly by the central government.

We add to the body of empirical literature that identifies shortcomings of decentralized targeting programmes. For example, Baird et al. (2013) show that households with better information, that are active in village affairs, and that are related to village elites are more likely to become beneficiaries of community-driven development initiatives in Tanzania. Broussard et al. (2014) examine the allocation of food aid in

Ethiopia and find that households with local influence are more likely to receive aid. Olken (2007) finds evidence from a field experiment in Indonesia to suggest that grassroots monitoring has the potential to reduce corruption but is also open to free-rider problems and elite capture. Deshingkar et al. (2005) examine the Food-For-Work programme in India and find that the poorest are excluded from local democratic forums and have very little influence over the selection of beneficiaries.

A key point of departure of our paper is that we consider also the role that social connections in the allocation of benefits to the poor through decentralized targeting programmes. The role of social capital in poverty reduction and economic development is well documented in the literature (see, for example, Coleman (1988); Lin (1999); Krishnan and Sciubba (2009); Puttnam et al. (2002); Fafchamps and Minten (2002); Adato et al. (2006)). However, role of social connections in poverty identification has not been given much attention. Some exceptions include Caeyers and Dercon (2012) who highlight that households with large social networks are likely to have more information on the benefits that are available, how to apply for them, and how to influence the process. They are also likely to be treated more favourably where there is community engagement in the targeting process. It is also likely that there are interactive effects with political connections. For example, Arcand and Fafchamps (2012) show that households that have family ties with village authorities are more likely to join community-based organizations. Pande (2007) examines the relationship between social norms and political corruption and finds that citizens in low-income countries are more willing to condone corruption and even vote for it. To our knowledge there have been no studies that examine how social and political connections interact in poverty targeting.

The paper is organized as follows. Section 2.2 provides more detail on the process of poverty identification in Vietnam and presents a conceptual framework that explains

the link between political and social connections and poverty identification that we have in mind. The data, descriptive statistics, and our empirical approach are presented in Section 2.3. In Section 2.4 we present our empirical results, while Section 2.5 concludes.

## **2.2 Background and conceptual framework**

### **2.2.1 Poverty identification in Vietnam**

Decentralized poverty targeting began in Vietnam in 2005. MoLISA is the official authority at central government level responsible for monitoring poverty and setting the criteria for identifying poor households. MoLISA sets the national poverty line for each five-year period. The process of identifying poor households that will receive benefits begins each November when the Department of Labour, Invalids and Social Affairs (DoLISA) the provincial level authority sets the local guidelines, drafts the required documents, and prepares for the training of officials directly involved in the identification process (see MoLISA (Ministry of Labour and Affairs) (2007)). A Commune Survey Board consisting of village leaders and representatives of social unions and associations is established to assist in implementation at the local level. A list of households that are at risk of falling into poverty, or that are likely to escape from poverty, is prepared for review. In practice, this list is prepared by the village leaders Mai et al. (2013). A household survey to gather information on all listed households is then conducted. Detailed demographic information and information on employment, land, and income are collected.

The next step after data collection is the classification of households at the commune level. On the basis of data collected, the Commune Survey Board identifies listed households that are at risk of falling into poverty and that are likely to escape from poverty. The Board then organizes a meeting where a vote is taken on the households

that will receive the poverty identity.<sup>2</sup> Participants at this meeting include village leaders, representatives of the Communist Party Committee, Commune Peoples Committee (CPC) officials, households included in the list, and representative households from the rest of the commune. It is required that the last category makes up over half of all participants at the meeting. The vote is cast by a show of hands or a ballot and the selection must be approved by a majority of participants. The results of this process are submitted to the CPC for review. Once signed off by the leader of the CPC, the list of selected households is submitted by the Commune Survey Board to DoLISA who is responsible for evaluating the list and formally approving the list of households identified as poor. If at this stage of the process there is any suspicion about the suitability of the selected households, the list is sent back to the Commune Survey Board to be rechecked. In practice, however, as highlighted by Van and Zeller (2016) and Mai et al. (2013), the final decision is rarely changed by district and provincial level authorities.

Once the list is signed by the leader of the District Peoples Committee, DoLISA informs the Commune Survey Board and submits the list to the provincial level authorities for further approval. DoLISA checks the list against the results of the household survey and if there is no disagreement, the list is signed by the leader of the Provincial Peoples Committee and submitted to MoLISA.

For the period 2006-2010 a household is defined as living in poverty if the average income is no more than VND 200,000 per capita per month in rural areas and VND 230,000 per capita per month in urban areas. From 2011 to 2015, MoLISA published a new poverty line of average income below VND 400,000 per capita per month in rural areas and VND 500,000 per capita per month in urban areas. In addition, priority is given to households with female heads, ethnic minority households, the elderly,

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<sup>2</sup>In November 2012, after the time frame of our analysis, a new regulation was introduced requiring that the primary list of candidate households be posted at the Commune People's Committee office, in the local village and on mass media for five days to ensure its accuracy and fairness. Prior to this no such checks were in place.

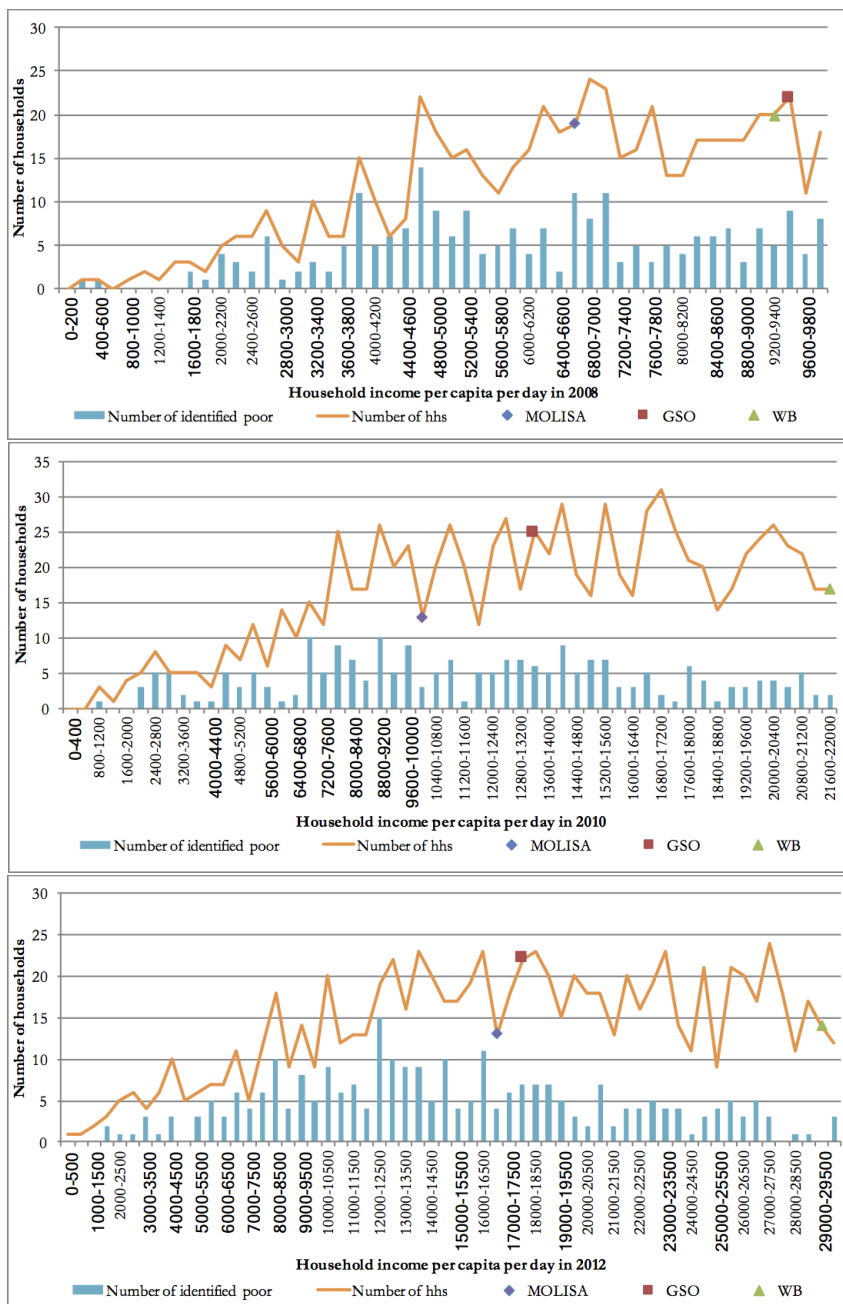
people living with disabilities and children. Further criteria used locally in the classification process include significant changes in income, housing conditions, changes in the family structure, natural disasters or other income shocks . Mai et al. (2013).

There is scope for corruption at a number of different stages of this process. First, given that local authorities define the local assessment criteria, this stage can be heavily influenced by connections between members of the community and local authorities. Banerjee (1997) shows that it is common for local officers to exploit the regulations of anti-poverty programmes in controlling the allocation of public resources in order to seek gains for themselves. Caeyers and Dercon (2012) find evidence that households that are politically connected are more likely to be selected by local leaders compared with other households with the same economic conditions but without connections. Second, connected households will have information on the local assessment criteria that unconnected households will not have. They can use this information in responding to the household questionnaire to ensure that their information meets the requirements and guidelines for selection. Third, given that the final selection is based on a vote at the village meeting, political connections give a household more sway in the voting process. Social connections may also be important, particularly where the vote is by a show of hands. Arcand and Fafchamps (2012) show that households that have family ties with village authorities are more likely to join community-based organizations. Moreover, given that the results of the process are published locally, having a good social network may be important in avoiding complaints being made against ineligible households that are selected for poverty identification.

Evidence exists that there is bias in the identification of MoLISA poor households. MoLISA (Ministry of Labour and Affairs) (2009) highlight that 10% of beneficiaries from targeted programmes are not the real poor households when compared with the national poverty line in 2006. Moreover, about 52% of poor households are not identi-



Figure 2.1: The per capita income distribution relative to poverty lines



Note: For the sake of legibility, net household income per capita per day is cut off at the World Bank poverty line, which includes about 40% of households living in poverty.

fied as poor according to the data from the VHLSS. Figure 2.1 shows the distribution of identified poor households by net income per capita per day excluding public transfers.<sup>3</sup> There is an obvious gap between the number of identified poor and the real poor households in each year. A number of households with income per capita below the MoLISA poverty line fail to obtain the poverty. Furthermore, between 2008 and 2012, an average of about 60% of households identified as poor in the data are above the national poverty lines. We also illustrate the same numbers using poverty lines used by General Statistics Office in Vietnam (GSO) and the World Bank (WB).<sup>4</sup> The mismatch between identified poor and actual poor is also evident in these figures.

### 2.2.2 Conceptual framework

A key feature of the decentralised poverty identification process in Vietnam is that local bureaucrats have the opportunity to use their local knowledge about the extent of vulnerability of households that may not be reflected in income levels alone (such as exposure to natural disasters or other local circumstances) and to use this knowledge in the selection of households. However, in practice, the local assessment criteria are not available to the public. Households therefore cannot know the exact criteria that are applied in the selection process. This information asymmetry creates an opportunity for corruption. The scarcity of government aid means that the process of obtaining the poverty identity is a competitive one and households have an incentive to attempt to influence the process if the cost of doing so is less than the benefits they receive from the public transfers. One strategy is to use their connections with local bureaucrats to persuade them to help them to be identified as poor.

For example, the bureaucrat could provide the connected household with information

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<sup>3</sup>Figure 2.1 includes households at the bottom low income households accounting for about 35% of total observations. Most of the identified poor households are distributed around the official poverty line. However, there are many identified poor households whose income is apparently higher above than the poverty line.

<sup>4</sup>More details about the GSO and WB poverty lines are shown provided in the Appendix B.

on the process for selection, which can help the household to be selected. There is minimal risk of getting caught to the bureaucrat and the household. This is particularly the case with close political connections where there is trust between the household and the bureaucrat (such as connections with friends and relatives). Moreover, corruption is most likely to occur at the level of government where decisions are made, that is, where the bureaucrats are the most powerful. In the case of Vietnam, this is where the initial list of qualified households is drawn up (village level) and where the final decision on the households to be identified as poor is made (commune level). As such, we expect connections at the village and commune level to be more effective for households in becoming classified as poor than connections at higher levels of governance. There are two ways in which connections can help households. First, households can receive information through their political connections on the criteria for being identified as poor and can attempt to manipulate the process. Second, local officials can influence the vote to help the households they are connected with be selected.

The decentralized identification process is managed by local bureaucrats who can manipulate the identification and voting process by influencing other officials, such as village heads and leaders of mass organizations. We assume the household income level is observable to local bureaucrats, as is consistent with the setting in Vietnam where a household survey is conducted to collect local information before households are reviewed. Bureaucrats have an incentive to allocate the poverty identity to rich households above the national poverty line but willing to pay more bribes rather than poor candidates. This is one reason why households with political connections are more likely to be classified as poor. The other reason is that connected households have greater motivation to obtain poverty identity given that they will have more information on the identification process and the extent of the benefits available. Because of information asymmetry, few rural households have this knowledge. As such, households with political connections who can obtain this information from local bu-

reacrats, may be are more willing to pay bribes to get the poverty identity.

Both households and local bureaucrats face the probability of being caught by higher authorities. The government has a mechanism, however, for detecting the type of a specific household. In the case of Vietnam, this is achieved through the checks that are in place at the various levels of government working up from the most decentralized level (the commune) to the central government. We assume that there is a positive probability of central authorities detecting the misuse of power by bureaucrats. If detected misusing power, the government will impose a punishment on bureaucrats. Such punishment includes administrative or internal party punishments, being discharged and demoted. The probability of detecting an unfair allocation is positively correlated with the closeness of the relationship between the bureaucrat and the candidate households. The closer the relationship, the lower the probability of detection. From the local officials perspective, he will be more willing to offer help where the relationship with the applicant household is a close one. The bureaucrat faces a trade-off between maximizing the benefits to himself and minimizing the probability of being caught. As such, bureaucrats are more likely to use connections where the risk of getting caught is lowest, i.e. where households are connected through close ties, such as relatives.

Within the local community there is also the possibility of community members detecting an unfair allocation. In the case of Vietnam, detection is possible given that the lists of eligible households and those identified as poor are published in the local community and in mass media. If a rich household is detected on the list, the name will be removed from the list of beneficiaries and the local community can impose a social cost on it. Therefore, ineligible households are motivated to minimise the probability of being reported. For these households, one strategy is to make use of their social networks. Investments in maintaining good social relationship improve their role in the

informal insurance networks and, more importantly in this context, ensure that they are not reported by others in the village. The above framework suggests two hypotheses: i) households connected with local officials are more likely to be identified as the poor; ii) social connections facilitate households in using their political connections to obtain the poverty identity.

### 2.3 Data and empirical approach

The data used in this paper come from the Vietnam Access to Resources Household Survey (VARHS) designed to collect information about dynamic changes in rural Vietnam for 2008, 2010, and 2012<sup>5</sup> covering 12 provinces<sup>6</sup> from northwest to the south central coast of Vietnam. VARHS provides rich information on household welfare, political connections and social capital. It also includes an indicator for whether a household is identified as poor. Our sample includes 2,112 households from 461 communes in 138 districts in rural areas. About 17 of households in our sample are classified as poor. About 40% of these live below the national poverty line. The rest have income levels that are above the poverty line. In fact, in some cases, the income of some identified poor households is even ten times higher than the poverty line. Moreover, there are a large number of households living below the poverty line that do not have the poverty identity. These summary statistics provide further motivation for our analysis.

Table 2.1 illustrates selected summary statistics for the characteristics of identified poor and non-poor households in our dataset in each year. We choose 12 indicators related to the criteria that the CSB uses for the review and village leaders consider in the preparation of preliminary lists, such as income, labour force, living condition and shocks. In general, households with the poverty identity have characteristics that are consistent

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<sup>5</sup>The survey was developed collaboratively by the Development Economics Research Group (DERG), Department of Economics, University of Copenhagen and the Central Institute of Economic Management (CIEM), the Institute for Labour Studies and Social Affairs (ILSSA), and the Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD), Hanoi, Vietnam.

<sup>6</sup>There are three provinces with poor districts identified by the central government to receive special aids due to poverty.

with the national policy, i.e. that the priority is given to households living below the poverty line, ethnic minority households, female-headed households, people living with disability and households with children. In relation to the criteria used by local officials in the assessment of households, the statistics show that households identified as poor have poorer living conditions with fewer durable goods, are more likely to be split families, and are more vulnerable to natural shocks. The proportion of households classified as poor declines gradually from 2008 to 2010 but remains high in 2012 in some provinces, which is due to the increase of the national poverty line for the period 2011–2015.

While there is some consistency in household characteristics of those classified as poor and the national policies, the very large mismatch between the poverty identity and household income is puzzling. Almost two-thirds of households classified as poor have income levels above the national poverty line or even higher.

Table 2.1: Characteristics of households identified as the poor by MoLISA

Variable	2008			2010			2012		
	Poor	Non-poor		Poor	Non-poor		Poor	Non-poor	
Log net income	9.132	9.915	***	9.513	9.915	***	10.128	10.951	***
Ethnicity	0.401	0.160	***	0.413	0.160	***	0.457	0.146	***
Gender_h	0.722	0.804	***	0.697	0.804	***	0.702	0.796	***
Married_h	0.729	0.843	***	0.705	0.843	***	0.664	0.816	***
Childn	1.374	0.941	***	1.135	0.941	***	1.121	0.720	***
HH size	4.635	4.532		4.361	4.532		4.309	4.211	
Ill member (%)	12.287	8.075	***	19.872	8.075	***	19.662	11.472	***
Disabled member (%)	0.016	0.009	*	0.032	0.009	**	0.036	0.016	***
Alcoholism	0.249	0.283		0.240	0.283	**	0.121	0.144	
Flush toilet	0.031	0.187	***	0.035	0.187	***	0.083	0.358	***
Clean water	0.075	0.131	**	0.080	0.131	***	0.088	0.182	***
Natural shocks	0.524	0.413	***	0.517	0.413	**	0.457	0.293	***
Observations	1698	414		1824	288		1749	363	
Proportion (%)	80.4	19.6		86.4	13.6		82.8	17.2	

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . All variables are explained in Appendix A1. Balanced panel of households is divided by whether a household is classified as the poor by MoLISA in each year. The total number of households is 2,112.

We measure political connections as how rural households are connected to local authorities. Specifically, we consider whether a household has household members,

relatives or friends working as village leaders or holding positions in local governments. The indicators of political connections we use are based on questions in the household survey that ask whether a household has household members<sup>7</sup> or relatives<sup>8</sup> that hold any office in commune government and/or have leadership positions in mass organizations. Here we classify political connections along four dimensions: (i) whether a household has political connections in general; (ii) the type of political connections: whether it is a family member or relative; (iii) the level of political connections: whether the household is connected with the commune level government or mass organizations. Since these measures are based on family ties, we can avoid some sources of reverse causality in that households with good information will realise the importance of the political connections, thereby obtaining relationship with local officials. It is hard for households to seek out close relatives working in commune government for the purpose of gaining the poverty identity. We define social connections as whether a household member engages with the local community through expenditure on social activities or membership in social unions. We consider three measures: (i) the proportion of total income spent on social activities; (ii) an indicator variable for whether household members join social unions<sup>9</sup>; and (iii) the number of union memberships per household member.

Table 2.2 presents summary statistics for the measures of political and social connections for households classified as poor and those not classified. Non-poor households have more connections with local governments and associations compared with identified poor households. This is not surprising since richer households are more likely to connect with local elites. Households without poverty identity have on average closer links with local government officials through family ties given that they have a

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<sup>7</sup>Households members are defined as a person who shares lodging, income and expenditure for more than six months in last twelve months.

<sup>8</sup>In the measurement, relatives include father/mother (in-laws), sister/brother (in-laws), son/daughter (in-laws), cousin and others.

<sup>9</sup>We select households with active membership (leader, secretary or always participating group meetings) in three largest social unions (Women's Union, Farmer's Union, and Veteran's Union).

greater number of family members and relatives working in local governments and social unions. However, both types of household manage well connections with village leaders and social groups, which shows the importance of political connections at the village level for rural households. One advantage of these indicators is that network relations with local officials are relatively stable due to family ties, i.e. a household is less likely to suddenly find/lose a family member or relative holding positions in governments/social organizations, which helps to reduce some potential reverse causality.

In 2008 and 2010, we find no significant difference in the proportion of social expenditures to total income between the two groups of households. In 2012, however, identified poor households spend more on social activities than those without poverty identity. Although non-poor households join more social unions, there is no significant difference in the number of union memberships per capita within the household between two groups.

Table 2.2: Political connections and social capital of identified poor households

Variable	2008		2010		2012				
	Poor	Non-poor	Poor	Non-poor	Poor	Non-poor			
General PC	0.200	0.312	***	0.264	0.332	*	0.157	0.264	***
PC: commune	0.101	0.137		0.094	0.122		0.069	0.079	
PC: village	0.029	0.052	*	0.038	0.048		0.019	0.042	*
PC: HH member	0.014	0.054	***	0.017	0.055	**	0.017	0.043	*
PC: relative	0.121	0.150		0.149	0.163		0.083	0.116	
Social expenditure	0.036	0.031		0.034	0.032		0.031	0.008	**
Membership per capita	0.251	0.256		0.290	0.283		0.312	0.305	
Women's union	0.336	0.362		0.319	0.425	***	0.284	0.379	***
Farmer's union	0.217	0.230		0.236	0.307	*	0.248	0.275	
Veteran's union	0.063	0.121	***	0.056	0.135	***	0.058	0.116	**
Observations	1698	414		1824	288		1749	363	
Proportion (%)	80.4	19.6		86.4	13.6		82.8	17.2	

Note: Same as for Table 2.1.

We use household fixed effects to exploit within-household variation in poor status and political and social connections to identify the effects; all time-invariant confounders are controlled for. Time-varying controls include income, vulnerability to natural risks,



the value of durable goods, living conditions, the share of dependent members, ethnicity, and other factors that according to national policy are used to determine the eligibility of households for the poverty identity. The full list of control variables is provided in Appendix A1. The baseline estimation for the impact of political connections on poverty identity is given by:

$$PI_{it} = \beta PC_{it} + \gamma SC_{it} + \varphi VA_{it} + \theta X_{it} + \alpha_i + \tau_t + e_{it} \quad (2.1)$$

where  $PI_{it}$  is an indicator variable for whether household  $i$  is identified as poor in time period  $t$ ;  $PC_{it}$  is a vector of indicator variables for whether the household has political connections<sup>10</sup>;  $SC_{it}$  is a vector of indicator variables for the extent of social connections of the household;  $VA_{it}$  is a vector of variables capturing the vulnerability of the household, including indicators used by village leaders in assessing households (e.g. accommodation conditions, marital status of the household head, etc.) and criteria as mandated in national policies;  $X_{it}$  is a vector of control variables capturing other time-varying household characteristics;  $\alpha_i$  are household fixed effects;  $\tau_t$  are time dummies; and  $e_{it}$  is a statistical noise term.

Of importance for our identification strategy is the extent of within-household variation in poverty identity and political and social connections over the time frame of our analysis. Between 2008 and 2010, 5% of households in our sample obtain the poverty identity whereas 11% move from having the poverty identity in 2008 to not having it in 2010. The corresponding proportions for the change between 2010 and 2012 are 9% and 5%, respectively. For the variation in political connections, we find that 19% of households become politically connected between 2008 and 2010 while 15% lose their political connections. Between 2010 and 2012 the proportions are 13% and 21%, respectively. This variation can be attributed to turnover in positions as a result of ill-

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<sup>10</sup>There is a question in the survey about whether the household is identified as the poor by MOLISA or not.

ness, death, or retirement/removal from positions. The main social networks variable is the proportion of total expenditure spent on social occasions, which has an average within-household standard deviation of 4% of total expenditure for the 2008-12 period.

Although the inclusion of household fixed effects and a wide range of time-varying control variables eliminates many potential sources of endogeneity, our analysis is based on observational data and so we do not observe the counterfactual outcome; that is, whether politically connected households would be classified as poor if they did not have such connections. In addition, exploring the role of political connections does not easily lend itself to an experimental design. To further refine our identification strategy, for our second regression model we use propensity score matching to select a control group of households. These are households that are not politically connected but are identical in every other observable way to households that are<sup>11</sup>. The outcome variable is whether household obtains the poverty identity and the treatment variable<sup>12</sup> we use is whether the household gained a political connection in 2010 or 2012; in other words, we do not consider households that had a political connection in 2008 as a treated household for the purpose of selecting the matched sample. Using propensity score matching set whether the household obtains the poverty identity or not as the outcome variable, we find nearest neighbours to these connected households on the basis of a range of economic and social characteristics in 2008<sup>13</sup>. Matching households on the basis of their characteristics prior to obtaining a political connection ensures that the variables used for matching are not themselves influenced by being politically connected. We choose variables that can simultaneously affect being politically connected and being classified as poor. These include household characteristics

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<sup>11</sup>This approach requires that the conditional independence assumption holds in that all variables that simultaneously affect being politically connected and being classified as poor are observed. We cannot rule out the possibility that there is bias due to unobservables using this approach.

<sup>12</sup>Given that we have a single binary treatment outcome we use a probit model to estimate the propensity scores. Using a logit model yields a similar matched sample (90% of matches are the same) and leads to the same results in the second stage. Results are not presented but are available on request.

<sup>13</sup>Given that the treatment is the newly established political connections after 2008, there is not enough observation for the matching with multiple treatments.

(household size, ratio of female to male members, number of dependent members, living conditions, etc.), income from specific sources (agriculture, wage work, common property resources, etc.), assets (durable goods, savings and loans), vulnerability to external shocks, and indicators of social capital. We use the nearest-neighbour algorithm and sample without replacement so that each control household is used only once in the matching<sup>14</sup>. Using this approach all balancing tests are satisfied (see Appendix C) and all treatment households are within the common support. The sample we use for this part of the analysis consists of 1,106 households<sup>15</sup>, 553 with political connections and 553 without. The full panel of matched households therefore consists of 3,312 observations.

There are potential endogeneity problems with our estimation model. For example, political connections may be affected by the acquisition of the poverty identity in that identified poor households may be motivated to obtain political connections. Robustness checks for this type of endogeneity are discussed further below.

## 2.4 Results

Table 2.3 presents the relationship between public transfers and the poverty identity and between public transfers and political connections. The dependent variable is the logarithmic value of public transfers households received from all targeted programmes and channels in the last 12 months. Whether a household is classified as poor by MoLISA is positively and statistically significantly correlated with public transfers. Compared with other villagers, identified poor households are more likely to receive more public benefits, which is consistent with the fact that the poverty identity deter-

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<sup>14</sup>As a robustness check we apply a range of different tolerance levels on the maximum propensity score distance. We consider distances ranging from 0.1 to 0.001. The proportion of matches that are the same as when using the basic nearest-neighbour approach ranges from 89% to 72%. Moreover, using these alternative samples leads to very similar results in the second stage. Results are not presented but are available on request.

<sup>15</sup>The size of matched sample is half of the unmatched, because we select households newly connected with local officials after 2008. The impact of reduced sample size on the result is quite limited.

mines whether a household is eligible to get access to public goods and services. As to the impact of political connections, households with family members holding position in local authorities and connected with village organizations are more likely to obtain public transfers. The results for the interaction effects between the poverty identity and political connections show that there is no significant difference in the actual amount of public transfers among identified poor households that are politically connected and those that are not. The negative sign on the interaction term is suggestive of potential rents taken by local officials in the allocation process, i.e. the price those connected households have to pay for being identified as the poor, but given that it is not statistically significant we cannot conclude that this is the case.

Table 2.3: Poverty identity, political connections, and social connections - full sample

Variable	Logarithmic value of public transfers					
	(1)	(2)	(3)	(4)	(5)	(6)
Interaction		-0.528 (0.375)		-0.281 (0.925)		-1.221 (0.785)
Poverty identity	1.808*** (0.154)	1.865*** (0.160)	1.801*** (0.154)	1.808*** (0.155)	1.808*** (0.154)	1.846*** (0.154)
<i>Political connections indicators</i>						
General PC	0.203 (0.137)	0.283* (0.148)				
PC: HH member			0.833*** (0.271)	0.854*** (0.285)		
PC: relative			0.151 (0.132)	0.151 (0.132)		
PC: commune					0.125 (0.148)	0.122 (0.148)
PC: village					0.408* (0.220)	0.538** (0.225)
<i>Social connections indicators</i>						
Social network	-0.538*** (0.193)	-0.538*** (0.194)	-0.535*** (0.193)	-0.535*** (0.193)	-0.535*** (0.194)	-0.536*** (0.193)
Membership per capita	-0.154 (0.274)	-0.157 (0.274)	-0.164 (0.274)	-0.164 (0.274)	-0.160 (0.273)	-0.154 (0.273)
Women's Union	-0.024 (0.105)	-0.023 (0.105)	-0.028 (0.105)	-0.028 (0.105)	-0.024 (0.105)	-0.027 (0.105)
Farmer's Union	-0.036 (0.122)	-0.040 (0.122)	-0.046 (0.122)	-0.045 (0.122)	-0.038 (0.122)	-0.034 (0.122)
Veteran's Union	0.075 (0.181)	0.073 (0.181)	0.066 (0.181)	0.065 (0.181)	0.072 (0.181)	0.068 (0.181)
Observations	6,325	6,325	6,325	6,325	6,325	6,325
R-squared	0.093	0.094	0.095	0.095	0.094	0.094
No of households	2,112	2,112	2,112	2,112	2,112	2,112

*Note:* Each model includes time-varying household control variables, year fixed effects and household fixed effects. Detail variable definitions are in Appendix A1. Robust standard errors clustered as the household level are presented in parenthesis. \*  $P < 0.10$ , \*\*  $P < 0.05$ , \*\*\*  $P < 0.01$ .

Table 2.4 presents the results for the baseline model of the determinants of poverty identity given in Equation (2.1) for the full sample of households. The model is estimated using household fixed effects and time fixed effects. Hence the identification of the relationship between political and social connections and poverty identity comes from the within-household variation in poverty identity and connections over time, controlling for all time-invariant household characteristics and all time-variant observable characteristics. Results for the baseline specification, excluding political and social connections, and for the control variables are presented in Appendix D. We include a range of indicators of the extent of political connectedness of households. We find that households with relatives holding positions in local government are significantly more likely to be classified as poor (column (2)), which suggests that political connections play an important role in the poverty classification process. Our measures of social connections include the proportion of spending on social activities to total income and indicators for membership in social unions. None of these variables, however, are found to be well determined.

Although our interest lies specifically in the impact of political and social connections, it is important to highlight that the results for the control variables are as expected. They show that the living conditions of poor households are worse than those of other households; they tend to have fewer assets, have lower income levels, and are suffered from natural shocks. It is also interesting to note that indicators that capture the criteria set out in national policy and factors that form part of the local assessment criteria for poverty identification are not found to be statistically significant. In the national identification criteria, none of them is significantly correlated with the poverty identity. As to the local criteria, the majority is not significant, which contains variables varying and constant over time. This may due to the fixed effect method excluding the time-invariant variables. But those significant variables, such as housing conditions and durable goods, are easy to pretend that households would not improve these as-

Table 2.4: Relation between poverty identity and political connections - full sample

Dummy variable: =1 if HH obtains poverty identity			
	(1)	(2)	(3)
<i>Political connections indicators</i>			
General PC	0.013 (0.014)		
PC: HH member		0.019 (0.022)	
PC: relative		0.024* (0.013)	
PC: commune			0.015 (0.015)
PC: village			0.008 (0.018)
<i>Social connections indicators</i>			
Social network	0.030 (0.032)	0.030 (0.032)	0.030 (0.032)
Membership per capita	-0.024 (0.032)	-0.025 (0.032)	-0.024 (0.032)
Women's Union	0.012 (0.010)	0.011 (0.010)	0.012 (0.010)
Farmer's Union	-0.005 (0.013)	-0.005 (0.013)	-0.005 (0.013)
Veteran's Union	0.016 (0.016)	0.015 (0.016)	0.016 (0.016)
Observations	6,325	6,325	6,325
R-squared	0.033	0.034	0.033
No of households	2,112	2,112	2,112

Note: Same as for Table 2.3.

pects even though they can afford the expenditure.

As discussed in Section 2.3, because our study does not lend itself to an experimental design, we use propensity score matching to select a more appropriate control group for comparing outcomes rather than using the sample as a whole. A detailed description of how the sample was matched is provided in Section 2.3. The results of the main specifications using the matched sample are presented in Table 2.5<sup>16</sup>. Having political connections in general, having relatives working in local government and having political connections at the commune level are significant in determining poverty identity. These corroborate our findings from Table 2.4 and show that even when we condition on similar households, political connections play a vital role in the poverty identification process<sup>17</sup>.

<sup>16</sup>Results for the control variables are not presented but are available on request. They are very similar to those found for the baseline model.

<sup>17</sup>We also compare near-poor households below the national poverty line but not classified as poor

Table 2.5: Effects of political connections on poverty identity (PSM)

Dummy variable: =1 if HH obtains poverty identity			
	(1)	(2)	(3)
<i>Political connections indicators</i>			
General PC	0.041*		
	(0.024)		
PC: HH member		0.003	
		(0.040)	
PC: relative		0.041**	
		(0.020)	
PC: commune			0.054**
			(0.026)
PC: village			-0.004
			(0.032)
<i>Social connections indicators</i>			
Social network	0.008	0.007	0.008
	(0.057)	(0.056)	(0.056)
Membership per capita	-0.014	-0.013	-0.014
	(0.040)	(0.041)	(0.040)
Women's Union	0.000	-0.000	0.000
	(0.015)	(0.015)	(0.015)
Farmer's Union	0.004	0.005	0.004
	(0.017)	(0.017)	(0.017)
Veteran's Union	0.017	0.017	0.016
	(0.022)	(0.022)	(0.022)
Observations	3,317	3,317	3,317
R-squared	0.030	0.031	0.031
No of households	1,106	1,106	1,106

Note: Same as for Table 2.3.

These results are consistent with the conceptual framework, set out in Section 2.2, which suggests that there is scope for political corruption in decentralized systems for allocating public transfers. The mechanism we propose is that where households are politically connected, in particular where connections are through close ties, the probability of detection where ineligible households are classified as poor is low. Moreover, connections are more likely to play a role at the level of government where local officials have the power to make important decisions; that is, in this case, at the commune level where the final decision of beneficiaries is made.

Our model also suggests that social connections may play a role in this process by reducing the probability of detection. We do not find any statistically significant effect with households below and above the poverty line identified as poor. We find that political connections are statistically significant in this reduced sample. Results are not shown but are available on request.

of our social connections indicators on poverty identity (see Table 2.5). The mechanism that we propose in our model is that social expenditures reduce the probability of members of the local community objecting to or reporting an ineligible household being given the poverty identity. Given that the list of households classified as poor is published at the village level to ensure fairness and reliability of the process, it pays for households to be well connected socially to ensure that there are no such objections. If this is the case we would expect social expenditures to be important for politically connected households that obtain the poverty identity. To explore this possibility we re-estimate the baseline model including an interaction term between social expenditures and the indicators for political connections that are found to be of importance. The results are presented in Table 2.6<sup>18</sup>.

In all cases, the interaction term is positive and well determined. This suggests that the impact of political connections on poverty identity increases with the level of social spending of households and that the mechanism through which social spending impacts the poverty identification process is by reducing the probability of a politically connected household that receives the poverty identity being reported by neighbours. These results also rule out the possibility of social connections having an effect through some other mechanism (such as, for example, being used to influence the vote at the selection meeting or through the provision of information), given that the level effect of social connections does not have an independent effect on poverty identity.

In the next part of our analysis, we consider how households use their political connections. There are two possible underlying mechanisms. First, bureaucrats could provide households with information on the classification process that allows them to manipulate it. Second, a more direct corruption route would be one whereby bureau-

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<sup>18</sup>Results are based on a comparison of households classified as poor with matched counterparts using the full sample to select control households. The results for the full sample are similar and lead to the same conclusions. Results are not shown but are available on request.



Table 2.6: Interaction effects of political and social connections on poverty identity matched sample

Dummy variable: =1 if HH obtains poverty identity			
	(1)	(2)	(3)
Interaction	0.454** (0.229)	0.362* (0.191)	0.581*** (0.169)
<i>Political connections indicators</i>			
General PC	0.034 (0.024)		
PC: HH member		0.005 (0.040)	
PC: relative		0.033 (0.021)	
PC: commune			0.046* (0.026)
PC: village			-0.004 (0.033)
<i>Social connections indicators</i>			
Social network	-0.005 (0.054)	-0.009 (0.054)	-0.005 (0.054)
Membership per capita	0.001 (0.015)	0.000 (0.015)	0.001 (0.015)
Women's Union	0.003 (0.017)	0.003 (0.017)	0.004 (0.017)
Farmer's Union	0.014 (0.021)	0.015 (0.021)	0.013 (0.021)
Veteran's Union	-0.015 (0.040)	-0.017 (0.041)	-0.014 (0.040)
Observations	3,317	3,317	3,317
R-squared	0.032	0.033	0.033
No of households	1,106	1,106	1,106
F-statistics	4.62	4.45	14.25
P value	0.032	0.035	0.000

Note: Same as for Table 2.3. *F*-test of joint significance of political connections indicators and the interaction term with social network.

crats attempt to influence the selection process by, for example, attempting to influence the vote at the selection meeting. The former is more likely to be the mechanism in the case of Vietnam. If a bureaucrat simply provides information to connected households his/her actions are less likely to be detected and are less punishable. Moreover, attempting to influence the voting process at the selection meeting is difficult for a bureaucrat given the make-up of the participants in the vote and the fact that ultimately the selection must be validated on the basis of the household survey data.

There is no way for us to observe how bureaucrats vote at the village meeting. We can, however, investigate whether there is evidence for the information channel using data on the ways in which households access information. The VARHS asks households about the main way in which they get information on government policy changes allowing them to select from a list of possible sources including relatives, friends, and neighbours; other social networks; official channels; and mass media. In our model, we include an indicator variable that measures whether households report relatives, friends, and neighbours as the main source of information on policy changes and interaction terms between this variable and the indicators of political connections. If the link between political connections and poverty identity is driven by the information channel we expect this interaction term to be positive and well determined.

The results are presented in Table 2.7. We focus on the interaction between political connections in general, connections with relatives, connections with others in the commune, and connections with relatives within the commune, as these are the main types of political connections identified as being important in our analysis. In all cases, the interaction terms are positive and statistically significant and in most cases render the political connections variables insignificant. This suggests that the main mechanism through which political corruption impacts the poverty identification process is through the provision of information to relatives. We find no evidence of a significant

Table 2.7: Interaction effects of political connections and policy information on poverty identity matched sample

	Dummy variable: =1 if HH obtains poverty identity		
	(1)	(2)	(3)
Interaction	0.194** (0.075)	0.144** (0.065)	0.195** (0.092)
Information	-0.027 (0.022)	-0.029 (0.023)	-0.025 (0.022)
General PC	0.021 (0.025)		
PC: HH member		0.009 (0.040)	
PC: relative		0.025 (0.021)	
PC: commune			0.033 (0.027)
PC: village			-0.002 (0.032)
Social network	0.007 (0.056)	0.005 (0.056)	0.006 (0.056)
Membership per capita	-0.013 (0.040)	-0.013 (0.041)	-0.012 (0.040)
Women's Union	0.001 (0.015)	-0.001 (0.015)	0.000 (0.015)
Farmer's Union	0.004 (0.017)	0.004 (0.017)	0.004 (0.017)
Veteran's Union	0.017 (0.022)	0.016 (0.022)	0.016 (0.022)
Observations	3,317	3,317	3,317
R-squared	0.033	0.033	0.033
No of households	1,106	1,106	1,106
F-statistics	8.84	7.48	6.71
P value	0.003	0.006	0.010

Note: Same as for Table 2.3. *F*-test of joint significance of political connections indicators and the interaction term with social network.

interaction between political connections and the provision of information through other channels, nor do we find that the interaction between the provision of information through relatives/friends and political connections at other levels of governance matters in the poverty identification process. The results also hold when we include the interaction term between social expenditures and the political connections variables<sup>19</sup>.

This is an important result from a policy perspective as it suggests that to improve transparency the use of political connections in the poverty identification process could be eliminated through the provision of detailed information on the process of poverty identification to all households. This is a very simple and easily implementable policy that could improve the effectiveness of poverty targeting and is an approach that has proven to be successful in other settings<sup>20</sup>.

As a robustness check on all of our findings, we estimate all models using the full (unmatched) sample of data and find that all results hold. A potential threat to our identification strategy is that there may be an endogenous relationship between being identified as poor and political connections. It could be, for example, that through the classification process households become politically connected because of an increased level of contact with authorities. We explore this possibility by examining whether having the poverty identity has a lagged effect on political connections. The results are presented in Table 2.8 and show no significant positive correlation between being identified as poor and political connections in the subsequent period. This suggests that being classified as poor does not lead to households having closer ties with the local government.

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<sup>19</sup>Results are available on request.

<sup>20</sup>Reinikka and Svensson (2005) find evidence for a reduction in corruption in the allocation of public funds to schools in Uganda through a newspaper campaign that provided schools and parents with information to monitor the handling by local officials of grants for education programmes.

Table 2.8: Relation between political connections and poverty identity in the last period

Variable	(1) General PC	(2) PC: HH member	(3) PC: relative	(4) PC: commune	(5) PC: village
L. poverty identity	-0.035 (0.031)	0.017 (0.016)	-0.087** (0.036)	-0.023 (0.029)	-0.012 (0.021)
Observations	2,212	2,212	2,212	2,212	2,212
R-squared	0.001	0.001	0.005	0.001	0.000
No of households	1,106	1,106	1,106	1,106	1,106

*Note:* The dependent variable is whether a household has political connections in the current year. More detail specification is shown in each column. The independent variable is whether a household was classified as the poor in the last year. Each model includes year fixed effects and household fixed effects. Robust standard errors clustered as the household level are presented in parenthesis. \*  $P < 0.10$ , \*\*  $P < 0.05$ , \*\*\*  $P < 0.01$ .

## 2.5 Conclusion

In this paper, we investigated the potential for bureaucratic corruption in decentralized poverty-targeting programmes. We also considered the role of social connections in the poverty identification process, in particular as a means of avoiding detection and retribution at the local level. Our model is motivated by the decentralized system of identifying poor households for receipt of state benefits in Vietnam. We presented a conceptual framework that builds on standard models of bureaucratic corruption by considering how political and social connections might influence the targeting of poor households.

Using a rich panel dataset that allowed us to control for time-invariant household characteristics through the use of household fixed effects we found that political connections play a vital role in the poverty classification process. This result holds when households identified as poor are compared against the full sample and also when politically connected households are matched to nearest neighbours on the basis of observable household characteristics. Political connections with relatives in positions in commune level government are particularly important. In terms of social connections, we found that expenditures on improving social relationships are important for politically connected households that receive the poverty identity. The identification strategy allows us to detect the impact of different types of political connections specifically.

It also helps to resolve the reverse causality problem that more informed households tend to keep close ties with local officials. We argue that even though informed households may recognise the importance of political connections in the poverty identification process, it is difficult for them to find close relatives work in local government, especially the commune government that has strict requirement on enrolment.

Our results are consistent with our proposed conceptual framework which suggests that decentralized systems for allocating benefits are open to corruption and that the extent of corruption is greater where important decisions are made and where the probability of detection is lowest. In the case of Vietnam, this is at the commune level the most decentralized level of government and where connections are with relatives. Our empirical analysis identified the provision of information as the main mechanism through which households use political connections to obtain the poverty identity. This suggests that an information campaign at the grassroots level which provides all households with detailed information on the conditions for poverty identification and on the process involved could be effective in eliminating corruption in poverty-targeting programmes. This may also be helpful for other developing countries in improving their targeting programmes.

## **Chapter 3**

# **The Impact of Corruption on Provincial Fiscal Capacity in China**

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This chapter was presented at the Nordic Conference in Development Economics (2016) in Oslo, Norway.

### 3.1 Introduction

This paper explores the impact of corruption on local government performance. Governments assume executive authority and civil services to guarantee the functioning of a state ruling system. As its agents, politicians are empowered to control the distribution of resources over regions and social classes. The implementation of a performance-based assessment system is widely used to improve government service. Nevertheless, it is challenging in practice and may result in an illusion that well-performed public institutions are efficient. In particular, the weaknesses in the accountability of the system can facilitate the incubation of corrupt practices that are hidden within the public sector.

China is a good case for examining the impact of corruption on government performance. It is an authoritarian regime with strong political centralization but is fiscally decentralized. Provincial leading officials are assigned by the central government under political centralization. Moreover, China experienced significant economic and fiscal growth in the past three decades, growth which has been attributed to the decentralized system and to the performance of local politicians. However, corruption is still a major concern. In 2015 more than 700 politicians were punished for corruption. This paper explores the contradiction between rising fiscal revenue and unveiled corruption and, in particular, examines the question of how corrupt governments manage to achieve fiscal goals.

One challenge of analysing corruption is collecting solid evidence. It is difficult to measure bribes directly through surveys since corruption is unobservable. In this paper, I use the number of corrupt officials within provinces in China as the measure of corruption. I build a provincial panel database covering economic and fiscal statistics for the 31 provinces in China and match this with the Curriculum Vitae of 2,093



officials that worked in leading positions within provinces between 1995 and 2013<sup>1</sup>. The individual CVs are collected from official announcements made by the central government, which contains all recorded officials<sup>2</sup> that ever took leading positions at provincial or deputy provincial levels between January 1995 and February 2015. Corrupt officials are identified as those that ever got punished by the Central Commission for Discipline Inspection (CCDI) that was established under the direct lead of the President to monitor the behaviour of leading officials. Since corruption is unobservable and ambiguous, the unified data source from the CCDI ensures the reliability of the corruption measure and avoids regional differences in anti-corruption policy and enforcement. In addition, the dataset on corruption contains details of crimes (such as when and where the corruption happened, related evidence and the positions that corrupt politicians held). By comparing the working experience of corrupt officials with the CV dataset, I can map corrupt behaviour to the provincial positions that the politicians held and thus measure corruption when and where it happened.

I assume there are two types of politicians: rent-seeking and office-seeking. I use provinces where corrupt politicians held leading positions as a treatment group to explore whether the number of corrupt bureaucrats influences the growth of government fiscal capacity. From 2002, the central government of China added income taxes into the central-local shared tax category and took half of income tax revenue from the local governments. This significantly reduced the main revenue source for all local governments. I use a difference-in-differences approach to estimate the effect of corruption on government performance in the pre and post 2001 periods. Using this approach, I compare the change in fiscal capacity before and after the policy change between treatment and control groups by controlling for any underlying differences between

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<sup>1</sup>All data are extracted from central publications. Details are provided in Appendix E.

<sup>2</sup>The data on provincial politicians covers most of the officials to the best of my knowledge. The CV information is extracted from all information that is publicly available. However, there is still missing information about individual characteristics on three officials due to the fact that they ever worked in the Ministry of State Security and army.

the two groups in identifying the impact of corruption. I find that fiscal capacity in provinces with corruption is higher than in other provinces so that corrupt politicians can cover up illegal behaviour and facilitate corruption. The expansion of revenue provides more opportunities for them. In addition, corrupt provinces are more likely to be affected by the new policy in that high fiscal pressure reduces rent-seeking incentives and consequently fiscal effort. As a result, corrupt provinces have lower fiscal capacity after the policy change compared with other provinces.

Fiscal capacity is a prerequisite for economic development (Grindle and Hilderbrand (1995); Jin and Zou (2005); Dincecco and Katz (2014); Besley and Persson (2014)) and represents the ability of a government to collect sufficient revenue to finance expenditure (Wang (1995); Martinez-Vazquez and Jameson Boex (1997); Besley and Persson (2011)). It is widely used as an indicator of government efficiency (Smoke (2001); Borge et al. (2008); Baskaran and Bigsten (2013); Bhushan and Samy (2014)), such as in assessing performance for aid allocation (Dahlby and Wilson (1994); Bhushan and Samy (2014)), and as a quantifiable and comparable indicator for central authorities to select candidates and policy-making (Jones et al. (2000); Wang et al. (2012)). There is a long history of research on fiscal capacity (Advisory (1971); Gold (1985); Bahl (1998); Careaga and Weingast (2003)). One of the elements resulting in variation in fiscal capacity across countries is the fiscal effort that is largely determined by bureaucrats incentives. Based on performance-based promotion schemes, the central government successfully motivates local officials, especially politicians at provincial or equivalent levels, to stimulate economic development (Blanchard and Shleifer (2000); Whiting (2006); Persson and Zhuravskaya (2015)). However, in contrast with GDP growth, fiscal capacity is not the main concern of office-seeking politicians because it is not the core criterion in performance evaluation. Since time and effort are limited, bureaucrats have to choose a priority focus. This allows me to separate rent-seeking incentives from office-seeking incentives and investigate the impact of corruption on the behaviour of

local officials. Lei (2015) investigates the importance of political connections between firms and local government based on the fiscal reform in 2001. His results suggest that local governments provide assistance to connected firms, such as loans and tax deductions before the reform. In return, these firms assist local leaders in collecting more revenue at the end of 2001 for the sake of increasing the quota local governments receives in 2002. In this paper, I use this new policy as an exogenous interruption to explore the causal relationship between corruption and fiscal capacity.

The importance of eliminating corruption that induces variations in the quality of governance across countries has been well documented in the literature, both theoretically and empirically. One major strand, which this paper contributes to, explores the impact of corruption on a series of outcomes<sup>3</sup>. A growing literature has shown that corruption hinders economic development (Leite and Weidmann (1999); Mo (2001)) and government efficiency (Boffa et al. (2011); Best et al. (2015); Joanis (2014)). Although some findings show that corruption is not completely unacceptable (Acemoglu and Verdier (1998)), the majority of research concludes that it imposes a negative influence on economic growth (Ruud (2000); Mo (2001); Jones and Olken (2004); Gong and Zhou (2015)). There are many reasons for corruption, such as government structure (Blanchard and Shleifer (2000); Djankov et al. (2002); Acemoglu et al. (2010)), decentralization and a lack of competition (Albornoz and Cabrales (2013); Alexeev and Song (2013)). Perfect democracy and competition are found to reduce corruption and improve efficiency, while findings on decentralization provide contrasting conclusions<sup>4</sup>. Authorities, information, and resources are decentralised to motivate local govern-

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<sup>3</sup>The literature has explored the impact of corruption on fiscal decentralization (Wade (1982); Bardhan and Mookherjee (2000a,b); Khan et al. (2014)), the expansion of firms (Djankov et al. (2002); Svensson (2002); Mian and Khwaja (2004); Paunov (2016)), political elections (Acemoglu et al. (2010); Chong et al. (2015); Klasnja (2015); Klomp and de Haan (2016)) and government performance (Gupta et al. (2000); Hakhverdian and Mayne (2012); Suryadarma and Yamauchi (2013)).

<sup>4</sup>Some papers state that local authorities have superior access to information for the allocation of public transfers and so decentralization impacts positively on development (Tiebout (1956); Wade (1997); Lin and Liu (2000)). In contrast, other findings attribute corruption to decentralization (Bardhan and Mookherjee (2000b)).

ments to stimulate development, which also induces market protection, inefficiency and corruption. This paper highlights the importance of deepening anti-corruption campaigns even under favourable economic circumstances. Well-performing governments may also suffer from corruption problems.

This paper also relates to the literature that links incentive schemes with corruption outcomes. Ferraz and Finan (2007) use audit reports by Brazil's federal government to study the impact of an incentive scheme that discloses information on incumbents' performance. Making audits publicly available significantly improves electoral performance. Fredriksson (2014) concludes that intermediaries originally designed to improve access to government bureaucracy, increase the incentive to create red tape and reduce the welfare of individuals and firms in practice. As for corruption outcomes, most of the related findings focus on government performance in the health and education sector (Gupta et al. (2000)). Kahn et al. (2001) examine the impact of the introduction of performance pay using data from the Brazilian tax collection authority. The introduction of bonuses dramatically improves tax enforcement.

My paper adds to this literature by linking rent-seeking incentives with corruption by exploring its impact on fiscal capacity; the ability of provincial government to perform effectively in raising revenue to maintain its functioning. I assume all officials are opportunistic. The incentive of rent-seeking politicians is to maximise rents while that of office-seeking is further career advancement. This leads to different types of behaviour. The office-seeking politicians will concentrate on economic development, the core criterion of the performance evaluation system that determines the likelihood of being promoted. Corrupt politicians, in contrast, are more likely to invest in the collection of fiscal revenue, through which they have more opportunities to grab government resources and cover up their illegal activities to avoid being caught by the central authorities.

In a similar paper, Brollo et al. (2013) investigate the relationship between federal transfers and corruption in municipal governments using the political-agency model and the audit report containing individual information and the distribution of intergovernmental funds in Brazil. They find that federal transfers have a positive impact on corruption and political selection. The level of corruption is higher and the education level of elected politicians is lower in municipalities in which more federal transfers are allocated. However, they concentrate on the behaviour of the incumbent mayor, and so their results are likely weakened by the influence from other officials included in the decision-making process within the municipality.

As to related studies about China, most findings are based on provincial aggregated data or individual information of the top two leaders at the local level (Jia et al. (2015); Ji et al. (2014); Qiao et al. (2014)). The richness of the database I construct allows me to control for the characteristics of all politicians who play a role in determining fiscal capacity. This diminishes the problem of endogeneity due to missing information about the preferences of other provincial officials.

The paper is organized as follows. Section 3.2 provides background information on corruption, fiscal decentralization and the political structures in China. Section 3.3 presents the conceptual framework used for modelling the link between corruption and provincial fiscal capacity. The data and descriptive statistics are presented in Section 3.4. In Section 3.5 the empirical approach is described and the results are presented in Section 3.6. Section 3.7 concludes.

## **3.2 Background**

China is a dominant one-party regime. The central authority has the most power in the decision-making process and controls most of the state arrangements. Power is con-

centrated at the Paramount Leader — General Secretary<sup>5</sup> — the highest officer of the China Communist Party (CPC) who heads the three most important political offices: the Central Commission for Discipline Inspection (CCDI), the Central Committee and the Central Military Commission (McGregor (2010)). The CCDI is under the direct leadership of the General Secretary for internal-control, the head of which is the member of the Politburo Standing Committee that is the top group of politicians. The CCDI is independent of other executive institutions of the Communist Party and is responsible for improving government efficiency and monitoring corruption. All members are elected by the National Congress for discipline inspection at central and local levels. The CCDI is empowered to supervise government institutions and officials, investigate cases, and punish corrupt politicians. The punishment varies across crimes and includes warning, demotion, being removed from the CPC and the government system.

The administrative structure in China is composed of five levels. Below the national level, there are provincial<sup>6</sup>, city, county, township and village levels. Provincial governments working as the agents of the central authority play an important role in balancing the relationship between central and local interest groups and the importance of this has increased with fiscal decentralization in recent years. There are four main institutions at the provincial level: the Provincial Party Committee (PPC), the Provincial People's Government (PPG), the People's Congress and the People's Political Consultative Conference. The PPC has the highest power in the decision-making process and carries the bill of economic and social development for the next coming year. The PPG is the executive branch dealing with specific social and economic affairs. The People's

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<sup>5</sup>The General Secretary of the Communist Party of China is also the President of the Peoples Republic of China and the Chairman of the Central Military Commission, which is currently held by Xi Jinping who highlighted the importance of strengthening the leadership of the Communist Party of China and the centralization of institutional power.

<sup>6</sup>Provincial or equivalent administrative regimes are 4 municipalities, 23 provinces, 5 autonomous regions, and 2 special administrative regions. In this paper, the province refers to 31 provincial regimes in the mainland under the same management of central authorities excluding specials administrative regions.

Congress is the legislative branch while the People's Political Consultative Conference represents the united front of all parties and groups. These four institutions compose the main body of the local authority while the first two hold influential power, especially in fiscal and economic activities. Hence, I select officials holding leading office in the PPC and the PPG<sup>7</sup> for analysing the actual impact of corruption on the provincial fiscal capacity.

By controlling for professional advancement of leading politicians, the central government implements policies and maintains political stability. At the provincial level, with the exception of leading officials of the main institutions, others are elected locally. All politicians are evaluated through a performance-based promotion scheme annually based on their performance throughout the year. Although there are a series of evaluation criteria as published in official documents, the growth rate of GDP is the core criterion and significantly influences the likelihood of being promoted (Zhou (2007); Xu (2011); Zhou and Jing (2011); Persson and Zhuravskaya (2015); Jia et al. (2015)). Fiscal capacity is not a criterion used in performance evaluation.

There are a series of regulations about the age of officials working at provincial level. In 1992, the Central Committee of the CPC and the Peoples Political Consultative Conference passed a series of regulations on the age of leading officials to break personal networks within the government system and optimise the cadre appointment. The leadership duration at all levels is five years and politicians are required to leave leading positions after the age of 65. As to retirement, members of the CPC cannot be re-elected after 63 and will not be candidates for further advancement after 60. The top two officials of the main two branches, the heads of the PPC and PPG, should be younger than 65. When leading officials in the main two branches are near the maximum age, they are more likely to quit from the political competition and be assigned

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<sup>7</sup>In the following content, the term main two branches refers to the PPC and the PPG.

to the Peoples Congress and the Peoples Political Consultative Conference in preparation for retirement. Under the performance evaluation system and restrictions, local officials face different circumstances and have different incentives.

In 1994, the revenue-assignment system came into force to replace the fiscal contract system for revenue distribution between central and local governments. The fiscal power is concentrated in the centre while local governments keep some power in taxation policies<sup>8</sup>. Tax revenue is divided into three categories: central taxes, local taxes, and central-local shared taxes. Fixed taxes are collected by central or local governments while shared taxes are collected by both of them but separately. Tax sources that are stable, concentrated and with potential space for further development are either controlled by the central government or fall under the shared category. In contrast, those tax sources that are unstable and costly belong to local governments. This creates difficulties in the collection of taxes at the local level. More importantly, local governments are not allowed to raise funds from bond issues in financial market or have a fiscal deficit, i.e. the overall expenditure should equal total revenue.

Generally, the local budget accounting system contains two categories: the budgetary<sup>9</sup> and extra-budgetary accounting system (Figure 3.1). The former is the main source of fiscal revenue and is under the management of the central government. Below it there are two sub-categories, the first of which is tax revenue that is also the stable source of local revenue. The non-tax sub-category is revenue from administrative charges, penalties and intergovernmental transfers. The extra-budgetary category is an independent revenue source from the centre for local governments to maintain expendi-

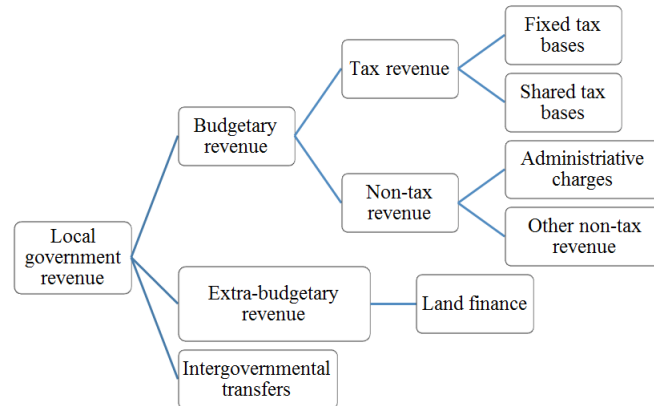
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<sup>8</sup>Provincial governments can adjust the tax rate based on domestic circumstances. In addition, they can use tax refunds and a special tax rate to attract investment in order to activate the development of the local economy. The central government decides tax rates, bases, and responsibilities.

<sup>9</sup>In the budget accounting system, there are separate categories on the balance sheet for general budgetary revenue (tax and non-tax revenue), central transfers (intergovernmental transfers), extra-budgetary revenue, surplus from last year and other categories.



Figure 3.1: Fiscal structure of local government



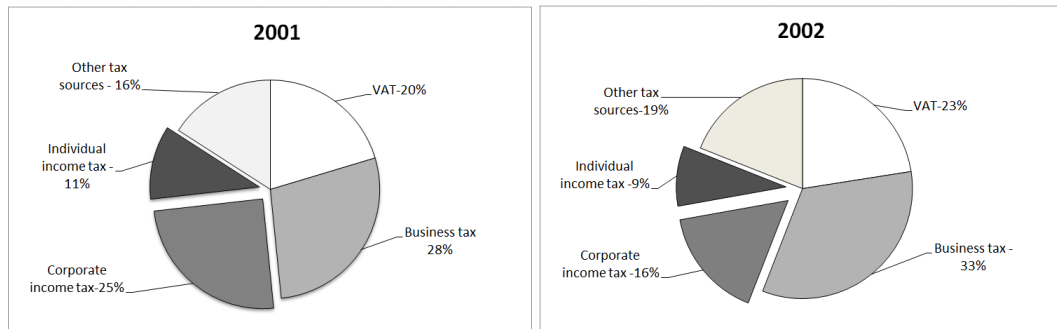
ture<sup>10</sup>. Land transaction fees, for instance, is an additional source. Land finance is a term used to describe the scale of land sales by local governments. It accounts for an abnormally high share in extra-budgetary and even total revenue. It is a typical way of affording expenditure and government debt in the short run. As a result, it is often criticised for leading to an abuse of power and public resources. It represents, however, an important component of revenue for local governments. The measure of fiscal capacity is the sum of both budgetary and extra-budgetary revenue to Gross Regional Product (GRP) considering both formal and additional sources of public funds. I also use the profit from land sales as an indicator of land finance to control for the characteristics of local government in fiscal activities.

At the end of 2001, the State Council declared that from January 2002, income tax, both individual and corporation income taxes, would become a shared tax with the rate between central and local governments set at 50%<sup>11</sup>. Although the rate of shared taxes was adjusted several times between 1997 and 2004 in some shared tax categories, it

<sup>10</sup>In 2010, the central government decided to cancel the extra-budgetary accounting system from 2011 by moving those categories to the budgetary accounting system in order to regulate the management of local revenue and expenditure.

<sup>11</sup>More details are at the website of the Ministry of Finance of the Peoples Republic of China: [http://yss.mof.gov.cn/zhuantilanmu/zhongguocaizhengtizhi/cztzwj/200806/t20080630\\_5299.html](http://yss.mof.gov.cn/zhuantilanmu/zhongguocaizhengtizhi/cztzwj/200806/t20080630_5299.html). The rate was corrected to 60% and 40% between central and local governments in 2003, but there is no significant impact on the estimation of the fiscal capacity. Hence, the period is defined by 2002 in this paper.

Figure 3.2: The share of tax categories in 2001 and 2002



was the first time that fixed taxes of local governments were added into the shared tax category. Given that income tax is the main source of tax revenue for local governments, they imposed great influence on fiscal balancing. The aim of this paper is to investigate whether the change on the fiscal environment exacerbates the influence of corruption on the provincial fiscal capacity.

The new policy came into force in 2002 covering all 31 provinces and stipulated that 50% of income tax revenue should be handed over to the central government. This changed the fiscal structure of local governments. Income tax is the largest revenue source. Changes to the system would therefore significantly affect the decision-making of local officials. The share of different tax categories is listed in Figure 3.2. Individual and corporate income taxes account for over one third of tax revenue. Not only is income tax the main category of tax revenue, but it is also an important source of total government revenue. The share of income tax to total revenue significantly dropped in 2002 compared with 2001 in all 31 provinces. When the central government decided to take half of income taxes from local governments, it had a huge impact on the local budgetary accounting system, thereby affecting the political incentives of local officials.

Provincial officials play a vital role in local development. Leading officials of provincial institutions are appointed by the central government, which is also known as cadre

rotation to restrict localism (Persson and Zhuravskaya (2015)). Here, leading officials means leaders of the main two institutions (PPC and PPG) who are directly involved in the decision-making process. Specifically, the top leader at the provincial level is the Party Secretary (PS) of the PPC, the most influential politician with absolute power in the final decision. Next is the Province Governor (PG) of the PPG, who decides development programmes in practice. Another group of leading officials is the constant members of the PPC. They possess the right of voting and drafting programmes. At last is the Deputy Governor in the PPG who deals with specific social and economic affairs. Although the top leaders are quite influential, the rest of the leading officials hold considerable power in the policy making process.

The employment market within the government system is relatively closed. Officials hold strong career concern since there are limited opportunities outside and the cost of leaving system is high, which also exacerbates intensive competition. Power and treatment (such as payment and welfare) are strictly matched with positions. Even at the provincial level, leading officials and the rest enjoy different rights. Since provincial officials are candidates for the central power group, they are highly motivated by promotion. For leading officials, they are more likely to take full advantage of their current position for the future, but in different ways.

Decentralization provides more space for local officials in economic development, but also more opportunities for corruption. The history of anti-corruption dates back to 1952 when the CPC realised the importance of government efficiency and the CCDI was established to deal with it. Given that provincial leading politicians are the most promising candidates for promotion to the central power group in the future and play a vital role in the decision-making process, their corrupt behaviour has a serious influence on provincial development and public welfare<sup>12</sup>. According to the statistics,

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<sup>12</sup>There are many examples of the negative influence of corruption. Shanxi mine accident was one example that corrupt officials protected some coal mine firms in illegal production from being punished by

the number of convicted corrupt politicians jumped in the last three years and spread from central to grass-root levels. Up to November of 2015, there were 1,630 officials who were punished due to malpractice, corruption, embezzlement and bribe-taking<sup>13</sup>. They were punished by the central government and removed from the system or put into prison. From my data, there is no apparent correlation in the number of punished officials over time or within specific regions. Based on CV information, I match corrupt politicians to the provincial leading position that they held at the time of corruption.

### 3.3 Conceptual framework

This section explains different political incentives and how these incentives lead to different behaviour based on the circumstances of the Chinese system. As the literature has shown, the behaviour of politicians is strongly influenced by their incentives. All political candidates are motivated to maximise their benefit either from political advancement or private gains. I assume there are two types of candidates office seeking and rent-seeking and they differ in the distribution of effort in government affairs. Given that all candidates are opportunistic, their fundamental incentive is the maximization of their payoff. They face the problem of selecting the outcome of interest and the allocation of working effort. Since economic growth is the most influential determinant in the performance evaluation system, political candidates with strong career concern are more likely to spend most of their effort in stimulating economic development in order to please the central government and maximise the likelihood of being promoted. Hence, they prioritise advancement over rents. As a comparison,

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hiding mine blast, which seriously affects public security. Land finance, for instance, is another example that corrupt officials sold national-owned land to firms below the market price in exchange of bribes.

<sup>13</sup>The achievement of anti-corruption campaign is quite impressive that many corrupt politicians at high positions or deeply hidden in the system are caught and punished. There are in total 10 politicians with (deputy) national levels punished due to corruption, such as Bo Xilai and Zhou Yongkang, seven politicians of who ever took positions at the provincial level. There are some studies showing that the political connections with top politicians in the central government affect the likelihood of being promoted (Li and Zhou (2005); Jia et al. (2015)). Because there is a specific pattern of assignment for specific regions and the measure used in this paper is the aggregated number of corrupt politicians at the provincial level, the influence from certain cases has limited influence on the estimation of corruption on fiscal capacity. Moreover, I also use province and year fixed effects to control for the influence of specific event and time.

candidates holding rent-seeking incentives value private benefits over career advancement and are more likely to concentrate on the channels through which they can obtain rents, such as revenue collection. In the meantime, they have to carefully hide their corrupt behaviour and avoid being detected by central authorities. Their strategy is to maintain a national average GDP growth to please the central government, while imposing major emphasis on revenue collection. With more government revenue, less attention is paid by central authorities and theft is less likely to be detected. Therefore, the first hypothesis of this paper is that provinces with more corrupt politicians have higher fiscal capacity than other areas because corrupt politicians tend to invest more time and effort in collecting revenue from all available resources providing them with more opportunities to grab rents.

In 2002, all provincial governments were required to submit fifty percent of income tax revenue to the central government while maintaining the same level of provision of public goods and services. This negatively influenced the amount of revenue local governments could manage. For local politicians, the strategy was to either collect more revenue or reduce the amount of rent they personally gained. In terms of the first strategy, it was difficult in practice due to the limitation of time and effort. The target of office-seeking officials is political advancement. They mainly focus on economic development and are less likely to invest extra effort in revenue collection. As to rent-seeking officials, they already input the majority of effort into fiscal capacity. The space for further improvement is quite limited. Hence, raising revenue was not the strategy local politicians used to deal with fiscal pressure.

The second method is to reduce rents taken from public resources. Political candidates with office-seeking incentives are less likely to be involved in corruption and the amount of reduced rents is restricted even if they ever took rents. So the impact of the policy change on office-seeking politicians was little. Once rent-seeking politicians

had to reduce rents, their rent-seeking incentives were negatively influenced, thereby reducing their focus on the revenue collection; one consequence of this is a decrease in fiscal capacity.

As such, only corrupt politicians are significantly influenced by the policy change. They are less motivated in fiscal affairs due to less rents available for them from public resources. Therefore, provinces with corrupt politicians are more likely to experience a decline in fiscal capacity compared with before the policy change. The second hypothesis is that the growth of fiscal capacity pre and post 2002 in corrupt provinces is lower than that in other areas.

### **3.4 Data**

I use a provincial level panel dataset in China from 1995 to 2013 to investigate the relationship between rent-seeking incentives and corruption. Provincial level information comes from central authorities. Details are provided in Appendix E. The first part of the dataset includes provincial statistics on economic and fiscal development. Information is extracted from three sources. GDP and related statistics are from the China Statistics Yearbook published by the National Statistics Bureau of China. Details on government accounts are from the Finance Yearbook of China published by the Ministry of Finance of the Peoples Republic of China.

The second part of the dataset contains the curriculum vitae of leading officials working in the main four provincial institutions between January 1995 and March 2015 in 31 provinces of mainland China. In total, there are 2,093 officials that ever worked at (deputy) provincial positions. The data includes rich information on individual characteristics, which I aggregate to the provincial level. In addition, it is the first time that data on all leading politicians, rather than the top two leaders have been used in estimating the impact of political incentives on government performance.

The third part of the dataset includes information on leading officials punished by the central government because of corruption and who were removed from the system between January 1995 and December 2015. The information comes from official announcements published online. One weakness of corruption measures using conviction is the ambiguity due to differences in cultural relativism and enforcement. Here, I focus on corrupt politicians detected by the CCDI for consistency. The punishment includes being removed from the government system, put into prison or execution.

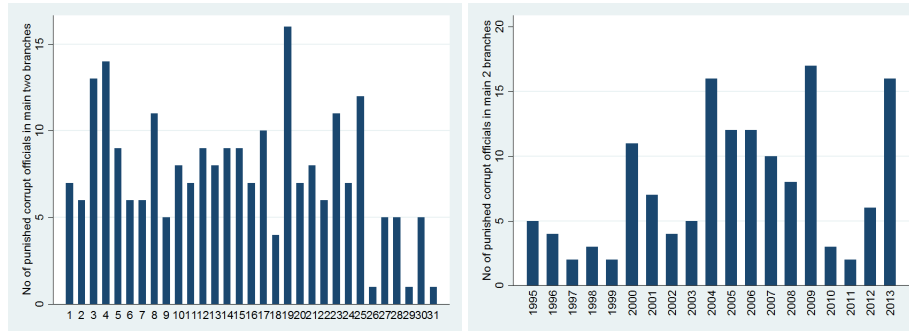
The indicator for corruption is measured by the number of corrupt politicians holding office in a province. I identify corrupt politicians as those that were detected by the CCDI and removed from the government system. I pinpoint the corruption crimes to the provinces and time periods where and when the corruption actually occurred using the CVs of the convicted politicians, so the information records actual corruption where and when it happened at provincial leading positions. I calculate the total number of corrupt politicians by provinces in each year and control for the share of officials older than 60 to measure the potential amount of officials with rent-seeking incentives (because the likelihood of being promoted after 60 is small<sup>14</sup> and they are more likely to hold rent-seeking incentives).

In the dataset, there were about 200 politicians who were punished because of corruption in ministry, province or equivalent positions by the end of 2015. Among five administrative levels, the ratio of corrupt officials to the population of government officials in the provincial level is the highest, which highlights the overflow of grand corruption in provincial positions. I summarise the number of corrupt officials in provincial positions in Figure 3.3. There are variations but no specific pattern over time or obvious features in any particular province.

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<sup>14</sup>See Chapter 4.

Figure 3.3: The number of punished officials in main two institutions



The measurement of corruption is problematic. The biggest concern relates to how effectively convictions capture the extent of corruption. The states with least convictions could be the most corrupt because of connections and networks of local corrupt leaders. To address this possibility, I use the CCDI announcement rather than local reports to eliminate differences in anti-corruption policies among provinces. The CCDI is an independent institution that regularly sends inspection teams throughout the country. The convictions reported by the CCDI thus avoid measurement differences due to local factors. In addition, I choose the number of corrupt politicians holding provincial positions rather than the number of convictions as the indicator of corruption, which also improves the efficiency of the estimation.

For the dependent variable, I use fiscal capacity as the indicator of government performance for estimating the relationship between rent-seeking incentives and corruption outcomes. As discussed, fiscal capacity is not the core criterion in the performance evaluation process and so is not the main concern of office-seeking bureaucrats. It is defined as the ability of provincial governments to collect revenue from all available resources, which is measured by the share of total revenue to Gross Regional Product (GRP). As shown in Section 3.3, total revenue collected by local authorities includes fiscal sources levied from both tax and quasi-tax bases by local government for the purpose of raising funds and maintaining expenditure (Martinez-Vazquez and Jame-



son Boex (1997); Wang (1995)). It is expressed as the sum of budgetary and extra-budgetary revenue under the management of provincial governments:

$$FC = \frac{tax + non\_tax + extra\_budgetary}{GRP} \quad (3.1)$$

GRP represents the size of fiscal resources available. The share of actual collected revenue to potential resources is the fiscal capacity, i.e. the extent to which provincial officials utilize all fiscal bases. In terms of control variables, I select a series of indicators for political and economic characteristics, such as the share of leading officials promoted locally (within the same province), the average length of leadership at current positions of all officials, the ability to compete with other regions<sup>15</sup>, the support from central government, the gross deal price of assignment in land sales<sup>16</sup>, and logarithmic GDP per capita. The ability to compete with other regions is measured by the relative ratio of actually utilised FDI to GDP (Huang (2013)):

$$compete = \frac{(provincial)actual\_utilised\_FDI/GDP}{(national)actual\_utilised\_FDI/GDP} \quad (3.2)$$

where the numerator is the ratio of actually utilised FDI in a province and the denominator is the average ratio across 31 provinces. It is used to measure the ability of competing with other provinces in attracting FDI that is the driver of local GDP growth, which controls the distribution of officials effort between the tax collection and GDP growth. Central support refers to the ratio between fiscal deficit<sup>17</sup> under the general

<sup>15</sup>There are three channels that local governments use to raise funds for local development. Except for central transfers and government revenue, another source is the FDI. Hence, the competition in attracting FDI is an important task of local officials for the purpose of promoting economic growth (Fu and Zhang (2007); Huang (2013)).

<sup>16</sup>I use the gross deal price of land assignment through bidding, auction, quotation and agreement, the largest part of 4 categories of land transaction fees, as the indicator to measure the size of land finance. The name and the definition come from the explanation in the China Land and Resources Almanac.

<sup>17</sup>Here the deficit means the difference between expenditure and revenue under the general budgetary account. In the balance sheet, total revenue should be the same as total expenditure.

budgetary account<sup>18</sup> and intergovernmental transfers as follows:

$$support = \frac{(Budget\_account)real\_rev - real\_exp}{central\_transfers} \quad (3.3)$$

which shows the degree of attention the central government pays to local development. Local governments tend to impose less fiscal pressure if they are substantially subsidised by the central government. In addition, I include the characteristics of the top leaders (PS and PG): whether they are younger than 60 and the leadership duration.

### 3.5 Empirical Approach

The baseline estimation analyses the relationship between corruption and fiscal capacity using provincial fixed effects, which is given by:

$$FC_{it} = \beta D_t + \gamma CP_{it} + \delta pol_{it} + \eta eco_{it} + \theta topL_{it} + \alpha_i + \tau_t + e_{it} \quad (3.4)$$

where  $FC_{it}$  is an indicator variable for fiscal capacity in the time period  $t$  of province  $i$ ;  $D_t$  is the period dummy with value of 1 for the period post 2001;  $CP_{it}$  is the indicator variable for corruption;  $pol_{it}$  and  $eco_{it}$  are vectors of control variables for the time varying political and economic features respectively;  $topL_{it}$  is a vector of control variables for the characteristics of the top leader (PS) in the province;  $\alpha_i$  are provincial fixed effects;  $\tau_t$  are time dummies; and  $e_{it}$  is a statistical noise term. The first step addresses the relationship between the rent-seeking incentive and fiscal capacity by exploring whether provinces with corrupt officials in provincial positions possess higher fiscal capacity.

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<sup>18</sup>At the beginning of a year, provincial institutions are required to make a budgetary plan and report to the central authority. Then the central government distributes intergovernmental transfers to local branches for balancing fiscal capacity between regions. Hence, I use the budgetary value set at the start of each year rather than the actual value calculated at the end of each year.

Addressing potential endogeneity problems is a challenge. The introduction of fixed effects controls time-invariant provincial characteristics and the year dummy controls for factors that may correlated with fiscal capacity and corruption over time. However, there are still some unobservable factors that may impact the estimation, such as changes in the political environment in one province and not another or changes in the extent of local supervision in different provinces. Moreover, control and treatment provinces are likely to be different from the start of the sample period making it difficult to identify the impact of corruption because corruption and fiscal capacity might be codetermined. To address these concerns, I use a differences-in-differences (DID) estimation to compare the average effect of corruption between treatment and control groups pre- and post- 2001 as follows:

$$FC_{it} = \xi D_t * CP_{it} + \beta D_t + \gamma CP_{it} + \delta pol_{it} + \eta eco_{it} + \theta topL_{it} + \alpha_i + \tau_t + e_{it} \quad (3.5)$$

where  $\xi$  is the effect of rent-seeking incentives. The new policy intensifies the fiscal pressure and reduces potential opportunities for corrupt behaviour. If this is the case then the coefficient is expected to be negative and significant indicating a decline in government revenue after the policy change in corrupt provinces compared to non-corrupt provinces. As explained in Section 3.3, motivated by maximising private gain, corrupt officials have to reduce the amount of theft from government resources. This affects their rent-seeking incentive, thereby influencing their concentration on the revenue collection. As a result, the increase of fiscal capacity in corrupt province pre- and post- 2002 should be lower than that in non-corrupt areas.

In the final part, I explore the underlying mechanisms and check for robustness. First, I test for different incentives. I assume the rent-seeking officials focus on revenue while office-seeking officials target GDP. I use the annual growth rate of GDP as the dependent variable and examine its relationship with office-seeking incentives measured in two ways: i) the share of leading politicians younger than 55; and ii) the average num-

ber of promotions that officials received in provincial positions<sup>19</sup>. The former captures the number of young politicians with a relatively higher likelihood of being promoted, the latter is the average capability of officials in political tournaments. Although age is an important factor determining whether an official is considered by the central government in further advancement, there are many unobserved factors involved in the performance evaluation process, such as political connections with top leaders and personal capability (Jia et al. (2015)), which are hard to capture either in quantitative or qualitative measures. The number of times promoted at the provincial level is potentially a good proxy. Whether an official was frequently promoted in the past is related to performance but, more importantly, their capacity in the political competition. By comparing the impact of office-seeking incentives on GDP growth and fiscal capacity I can establish whether office-seeking officials only care about the growth rate. Exploring the relationship between GDP and indicators of corruption allows me to show that rent-seeking officials are motivated by rents and input most of their effort into revenue collection instead of stimulating economic growth.

One potential threat to the identification strategy is that the higher fiscal capacity in corrupt provinces may be driven by the relatively greater expenditure in those areas. Hence, I select real budgetary, extra-budgetary and total expenditure as dependent variables and examine their relationship with corruption. As a robustness check I examine whether the core result is sensitive to the control variables and the measure of corruption used.

The key identifying assumption in the main empirical specification is that corrupt and non-corrupt provinces are the same along the time-varying unobservable factors. While it is not possible to test for this directly we examine the observable characteris-

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<sup>19</sup>By tracking individual information in the CV dataset, I calculate the frequency of assignment in provincial positions. Then I aggregate to the provincial level and get the time of promotion in provincial positions.

tics of both treatment and control provinces before and after the policy change. Table 3.1 summarises provincial characteristics pre and post 2001 and shows significant differences before and after the new policy. Income revenue is significantly lower after the policy change while fiscal capacity remains the same. This indicates that local governments have to find other revenue sources to afford expenditure. It also shows that the central government reduces subsidies to provinces after 2001. As a result, local governments expand land finance to collect more revenue. Economic development is improved in the second period, which is partly due to increased levels of FDI. In terms of corruption, there were more corrupt politicians on positions in the first period because the central government strengthened the enforcement in the anti-corruption campaign in the second period. There is no significant difference in the average age but the share of young officials is slightly higher after 2001. In addition, the mobility of provincial leaders across regions increased.

Table 3.1: Mean comparison of main variables

Variable	Pre 2001			Post 2001			T-test	
	Obs	Mean	Std.Dev.	Obs	Mean	Std.Dev.	Mean Diff.	T stats
FC	215	10.093	(1.97)	372	10.381	(2.56)	-0.288	(-1.42)
CPPPO	217	4.797	(2.32)	403	2.074	(1.75)	2.723***	(16.42)
>60%	215	4.077	(1.64)	403	4.000	(1.21)	0.0773	(0.67)
Prom.Local%	215	96.547	(3.92)	403	92.417	(5.90)	4.130***	(9.23)
Ave.leadership	215	3.432	(0.61)	403	3.819	(0.67)	-0.386***	(-7.02)
FDI/GDP%	217	80.218	(90.41)	370	124.025	(108.57)	-43.81***	(-5.01)
CG support	216	89.585	(57.63)	371	78.944	(36.69)	10.64**	(2.73)
Land finance	184	4.648	(5.56)	372	20.621	(16.65)	-15.97***	(-12.67)
Log_GDP_pc	217	1.810	(0.55)	403	3.072	(0.73)	-1.262***	(-22.32)
Top1<60	217	0.521	(0.50)	403	0.556	(0.50)	-0.0351	(-0.84)
Top1.leadership	216	3.273	(2.34)	403	3.521	(2.34)	-0.248	(-1.26)
LGDPg	217	2.295	(0.21)	403	2.461	(0.21)	-0.166***	(-9.45)
<55%	215	55.072	(11.08)	403	52.591	(11.67)	2.482*	(2.56)
Ave.promote	215	0.700	(21.39)	403	0.675	(18.86)	0.025	(1.48)
RExp%	217	13.058	(9.38)	372	21.337	(16.28)	-8.279***	(-6.86)
ExBExp%	215	3.692	(1.07)	403	1.442	(1.18)	2.250***	(23.27)
TtExp%	215	16.721	(9.03)	372	22.899	(15.96)	-6.178***	(-5.21)
TaxRev%	201	5.470	(1.89)	344	7.210	(2.86)	-1.740***	(-7.70)
Rrev%	217	6.196	(1.72)	372	8.685	(2.92)	-2.488***	(-11.44)
LogExBRev	215	1.910	(1.14)	279	2.356	(1.14)	-0.446***	(-4.31)
LogAllRev	216	3.275	(0.79)	372	4.931	(0.94)	-1.656***	(-21.85)
LogPPO	217	0.096	(0.28)	403	0.196	(0.44)	-0.100**	(-3.02)
LogCase	208	3.473	(0.37)	310	3.258	(0.44)	0.215***	(5.83)
LogCP4	217	1.400	(0.47)	344	0.665	(0.59)	0.734***	(15.51)

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . All variables are explained in Appendix A2.  $t$  statistics in parentheses.

Table 3.2 lists the number of corruption cases by crime. As shown, the theft of government resources is the main channel for corruption. The share misusing power is quite low. Under the crime of corruption, the largest category is bribe taking. But the total number of cases involved in grabbing government funds is the highest. Corruption is caused by many reasons and it is hard to detect its channels. Table 3.2 provides a general description of the reasons and indicates the main source of private gain is from public resources, which explains why corrupt officials are more likely to pay attention to revenue collection. The expansion of government revenue facilitates their corrupt behaviour.

Table 3.2: The number of corruption cases in recent five years

Category	2009	2010	2011	2012	2013
<i>Corruption</i>					
Grabbing public resources	17019	16185	14579	13460	14381
Bribe taking	17794	18458	18023	18472	18885
Embezzlement of public	3910	3188	2813	2826	2839
Group embezzlement	375	322	290	253	212
Huge amount unknown funds	157	182	136	113	129
Others	24	15	11	3	0
<i>Misuse of power</i>					
Abuse of power	4148	3871	3815	4327	4945
Dereliction of duty	4996	4766	4825	5175	5454
Practicing favouritism	1926	1669	1390	1457	1164
Others	1519	1313	951	878	1035

*Information source:* National Bureau of Statistics of China (NBSC).

To provide evidence on the change of rent-seeking incentives pre and post the new policy in 2001, I compare revenue between corrupt and other provinces (Table 3.3). I define two types of corrupt provinces – highly corrupt and extremely corrupt provinces<sup>20</sup> – that are measured by whether a province has more than five/seven corrupt politicians holding office. In the first two columns, provinces with lower corruption and without corruption collect less revenue (tax revenue, budgetary revenue, extra-budgetary revenue and all revenue) than highly corrupt provinces pre-2001, which indicates that corrupt officials perform better in collecting government revenue. Post-2001 the situation is the reverse. Highly corrupt provinces have potentially greater fiscal resources

<sup>20</sup>Only five provinces meet this requirement.

(GDP per capita is higher) but collect less revenue than other provinces. The last two columns compare extremely corrupt provinces with other regions. There is no significant difference over the period, but the direction of the relationship stays the same. Table 3.3 shows that rent-seeking incentives were affected by the new fiscal policy. With growing fiscal pressure and a higher probability of being caught, a shrinking space for corruption reduces the incentive to grab rents, thereby influencing the fiscal effort put into revenue collection.

Table 3.3: Government revenue pre and post 2001

	More than 5		More than 7	
	Pre 2001	Post 2001	Pre 2001	Post 2001
TaxRev	-5.132*	67.25**	-1.175	76.64
	(-2.59)	-2.68	(-0.39)	-1.55
RRev	-5.951**	63.87**	-1.649	69.93
	(-2.66)	-2.71	(-0.50)	-1.38
ExBRev	-4.316***	-0.73	-0.558	0.479
	(-3.78)	(-0.22)	(-0.32)	-0.07
AllRev	-10.68**	115.1**	-3.494	139.9
	(-3.13)	-3.09	(-0.68)	-1.74
GDP_pc	-0.431	-2.169***	0.431	-1.535
	(-1.43)	(-4.36)	-0.97	(-1.41)
No of provinces	217	403	217	403

*Note:* Same as for Table 3.1. The average revenue and income level are compared between corrupt provinces and other regions. The classification of corrupt provinces is divided into two groups: i) province with considerable corruption that there are more than five corrupt politicians holding office in that year; ii) highly corrupt provinces with more than seven corrupt politicians holding office.

### 3.6 Result

The results for the effect of corruption on provincial fiscal capacity are presented in Table 3.4. The baseline estimation (column 1) focuses on the relationship between rent-seeking incentives and government performance as measured by fiscal capacity. The indicator of corruption is positively correlated with fiscal capacity while the period dummy is not significant. Provinces with many corrupt officials holding office are more likely to have a higher fiscal capacity, but there is no significant increase in fiscal capacity between periods. It supports the first hypothesis that rent-seeking officials are highly motivated in collecting fiscal resources in order to create opportunities for

grabbing rents. As for the provincial characteristics, FDI plays an important role in raising local revenue.

Table 3.4: Fiscal capacity, corruption and interaction effect

VARIABLES	(1) Fiscal capacity	(2) Interaction
Interaction		-1.094***
		-0.311
Corrupt	0.690*	1.498***
	-0.351	-0.37
Period dummy	3.733	5.001**
	-2.323	-2.317
>60%	-0.017	-0.019
	-0.039	-0.037
Prom_local%	0.019	0.02
	-0.019	-0.018
Ave_leadership	0.187	0.173
	-0.125	-0.122
FDI/GDP%	0.006***	0.006***
	-0.002	-0.002
CG support	-0.005	-0.004
	-0.003	-0.003
Land finance	0.006	0.008
	-0.009	-0.008
Log_GDP_pc	-0.879	-0.775
	-0.986	-0.967
Top1<60	-0.097	-0.057
	-0.125	-0.128
Top1_leadership	0.013	0.017
	-0.022	-0.022
Year FE	YES	YES
Province FE	YES	YES
Observations	553	553
R-squared	0.299	0.321
No of province	31	31
F-test		6.72
P-value		0.015

*Note:* Robust standard errors clustered at the provincial level are presented in parenthesis. \*\*\*  $P < 0.01$ , \*\*  $P < 0.05$ , \*  $P < 0.10$ . Each model includes year fixed effects. All variables are explained in Appendix A2.

The column (2) shows the core result using the DID approach to compare the performance of control and treatment provinces pre and post 2001 as specified in Section 3.5. The interaction term between the period dummy and the indicator of corruption is negative and significant. The increase in fiscal capacity in corrupt provinces is lower than that in non-corrupt provinces after 2001, which provides evidence for the second hypothesis that the new policy reduces rent-seeking incentives, thereby affecting provincial fiscal capacity. Given that the share of expenditure afforded by local gov-



ernment gradually increases but the share of tax revenue declines, the fiscal pressure jumps after the new fiscal policy came into force. It leaves limited chance for corruption without being caught. The enthusiasm for rent-seeking officials to expand fiscal revenue wanes rapidly, which directly affects the effort input into the collection process.

The analysis in Table 3.5 presents further evidence on different political incentives. Column (1) presents the result for the relationship between office-seeking incentives and fiscal capacity. Neither the likelihood of being promoted nor personal capacity show significant correlation with provincial fiscal capacity, which is consistent with the hypothesis that office-seeking officials pay limited attention to rent-taking and prioritise GDP growth over other targets. Column (2) shows that the share of promising officials ( $< 55$ ) is positive and significant providing evidence that the target of office-seeking officials is economic growth rather than rents, which they use to please the central government and maximise the probability of further advancement<sup>21</sup>. In addition, I examine the relationship between GDP growth and corruption (columns 3 and 4). The number of corrupt officials holding office, the share of officials potentially with rent-seeking incentives and the interaction term between the period dummy and corruption have no significant relationship with the growth rate of GDP<sup>22</sup>. This suggests that fiscal capacity is an appropriate indicator to distinguish rent-seeking incentives from office-seeking incentives. These results support the assumption that there are two types of political incentives that impose different influences on bureaucrats behaviour.

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<sup>21</sup>The negative sign on the likelihood of being promoted ( $< 55$ ) indicates that office-seeking officials tend to pay less attention to revenue. Since their priority is GDP growth rate, they are more likely to devote their effort to stimulating economic growth. The lower effort input in revenue collection results in lower fiscal capacity.

<sup>22</sup>Although corruption is not significant, it shows positive relation with the growth rate of GDP. As explained in Section 3, all political candidates are opportunistic. Officials with rent-seeking incentives are motivated to hold office to maintain the channel of theft. Hence, they keep the average growth rate in case of being removed from leading positions by the central government, i.e. they are required to input certain effort in economic development.

Table 3.5: Different incentives: GDP growth rate and promotion

VARIABLES	(1) FC-PROM	(2) GDP-PROM	(3) GDP-CP	(4) Interaction
Interaction				0.116
Corrupt			0.022	-0.069
>60%			-0.057	-0.076
<55%	-0.005	0.002**	-0.01	-0.01
	-0.007	-0.001	-0.007	-0.007
Ave.promote	0.126	0.074		
	-0.666	-0.091		
Period dummy	2.848	-0.001	-0.22	-0.355
	-2.324	-0.088	-0.308	-0.316
Pol. and eco. control	YES	YES	YES	YES
Top leader control	YES	YES	YES	YES
Regional FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES
Observations	553	553	553	553
R-squared	0.285	0.49	0.487	0.497
No of province	31	31	31	31
F-test				1.34
P-value				0.256

Note: Same as for Table 3.4.

The next step is to test for robustness. One potential threat is the possibility of other driving forces that may affect the interpretation of my results. Table 3.6 tests whether the relatively higher fiscal capacity in corrupt provinces is caused by the large size of government expenditure. The dependent variable in the first two columns is real budgetary expenditure. Provinces with corruption have smaller levels of fiscal expenditure and all provinces spend more after 2001. However, there is no significant interaction effect between the period dummy and the number of corrupt officials holding office. When using extra-budgetary expenditure as the dependent variables, there is no significant effect of corruption. The results for total expenditure (columns 5 and 6) are consistent with the first two columns in that corrupt provinces spend less in total. The analysis indicates that the positive correlation between corruption and fiscal capacity is not driven by expenditure. In fact, rent-seeking officials spend less than other officials. The high fiscal capacity in corrupt provinces is not caused by fiscal pressure in providing public goods, but the incentive of grabbing government resources without

being caught by central authorities.

Table 3.6: Corruption, expenditure and interaction terms

VARIABLES	(1) Budg Exp.	(2) Interaction	(3) Extra-B Exp.	(4) Interaction	(5) Total Exp.	(6) Interaction
Interaction		30.036		3.387		32.956
		-19.679		-2.721		-21.111
Corruption	-62.305*	-84.483**	-4.258	-6.536	-59.643*	-83.977**
	-31.467	-37.997	-3.755	-4.866	-31.067	-38.946
Period dummy	321.059***	286.246***	-5.385	-9.577	296.779***	258.582***
	-97.986	-92.633	-7.162	-7.399	-98.22	-92.386
Pol. and eco. control	YES	YES	YES	YES	YES	YES
Top leader control	YES	YES	YES	YES	YES	YES
Regional FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observation	553	553	462	462	553	553
R-squared	0.856	0.857	0.451	0.46	0.856	0.858
No of province	31	31	31	31	31	31

Note: Same as for Table 3.4.

Table 3.7 presents further robustness tests. The first group includes controls for the characteristics of the top two leaders (PS and PG)<sup>23</sup>, the results of which are shown in the first two columns. In the baseline specification, provinces with corruption are more likely to have higher fiscal capacity. After the new policy was launched, the growth of fiscal capacity in corrupt provinces is relatively lower than other regions. I take regional features into account to check whether the impact of corruption is influenced by differences in economic development. The results still hold. In 2012 and 2013, the central government published a series of fiscal and political policies. I therefore exclude observations in the last two years and the results are similar to those shown in Table 3.4.

Finally, alternative measures of corruption are selected to analyse the impact of rent-seeking incentives on government performance (Table 3.8). The number of punished leading officials working in the main two institutions and the total number of corruption cases detected by local governments are negatively related to fiscal capacity. This

<sup>23</sup>I also estimate the baseline model excluding the characteristics of the top leader, Party Secretary, and the results hold.

Table 3.7: Fiscal capacity, corruption and interaction effect

VARIABLES	Top 2 leaders' control		Regional fixed effects		1995-2011	
	Corruption	Interaction	Corruption	Interaction	Corruption	Interaction
Interaction		-1.124***		-1.094*		-0.923***
		-0.325		-0.098		-0.294
Corruption	0.700*	1.531***	0.69	1.498*	0.724*	1.373***
	-0.362	-0.386	-0.329	-0.226	-0.373	-0.396
Period dummy	3.899	5.210**	3.733	5.001	1.778	2.915
	-2.384	-2.355	-3.997	-3.786	-1.975	-1.981
Pol. and eco. control	YES	YES	YES	YES	YES	YES
Top leader control	YES	YES	Top 2	Top 2	YES	YES
Province FE	Region	Region	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observation	553	553	553	553	493	493
R-squared	0.304	0.327	0.299	0.321	0.236	0.256
No of province	31	31	31	31	31	31
F-statistic		6.96		2.62		12.02
P-value		0.013		0.352		0.002

Note: Same as for Table 3.4.

suggests that the degree of anti-corruption campaigns have a negative influence on rent-seeking incentives. Provinces with higher enforcement against corruption have less rent-seeking officials. Reduced concentration on the revenue collection induces lower fiscal capacity. Moreover, I select the number of corrupt officials working in the main four institutions as the independent variable and the results are consistent with the baseline results.

Table 3.8: Fiscal capacity, corruption and interaction effect

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Punish	Interaction	Cases	Interaction	Main 4	Interaction
Interaction		0.287		-0.628*		-0.852***
		-0.443		-0.321		-0.255
Punish	-0.263*	-0.487	-0.658*	-0.234	0.648**	1.277***
	-0.139	-0.436	-0.38	-0.362	-0.253	-0.244
Period dummy	2.795	2.792	-0.258	1.788	3.43	4.227*
	-2.385	-2.396	-0.885	-1.123	-2.373	-2.369
Pol. and eco. control	YES	YES	YES	YES	YES	YES
Top leader control	YES	YES	YES	YES	YES	YES
Regional FE	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES
Observations	553	553	489	489	525	525
R-squared	0.289	0.29	0.245	0.253	0.285	0.305
No of province	31	31	31	31	31	31
F-statistic		0.92		1.68		4.93
P-value		0.345		0.204		0.034

Note: Same as for Table 3.4.

The other potential threat to the identification strategy is reverse causality with corruption more likely to exist in provinces with more fiscal resources. In China, the cadre rotation system was designed to curb localism and break up the network of connections among politicians (McGregor (2010); Persson and Zhuravskaya (2015)). Leading politicians, especially the top two leaders, are assigned to other provinces at the end of their term. As explained in Section 4, there is no specific feature (such as the geographic location and the reservation of natural resources) shared by provinces with high corruption. This leads me to conclude that the incentive to maximise private gain rather than provincial characteristics leads to corrupt behaviour.

### **3.7 Conclusion**

This paper examines political incentives and the performance of bureaucrats to analyse the impact of rent-seeking incentive on corruption related outcomes. Under political centralization and fiscal decentralization, provincial officials are empowered with authority and incentives in relation to local development. I build a provincial panel data covering all provinces in China with the CV information of leading officials in order to compare the performance in raising fiscal revenue pre- and post- a new policy reform that changed the extent of the rents available for extraction. The result shows that different incentives induce different behaviour with rent-seeking officials more likely to devote their effort to improving fiscal capacity for the purpose of creating more opportunities for the theft of government resources. Using differences-in-differences, I find the growth of fiscal capacity in corrupt provinces is lower than that in non-corrupt provinces after the new policy came into force. Rent-seeking incentives waned rapidly with rising fiscal pressure, which significantly reduces the effort put into the rent-collection process.

The empirical findings points out the weakness of the performance-based promotion system in China. Although corrupt officials are more likely to engage in collecting fis-

cal resources, the expansion of government revenue is affected by corruption, thereby affecting the provision of public goods and services. Moreover, it is necessary for central authorities to guide the incentives of local officials. From the perspective of political candidates, they are motivated to hold office and achieve their personal ambitions. Updating the performance evaluation system could be a way of incentivising local governments to perform more efficiently in relation to economic growth objectives.

## **Chapter 4**

**Political Incentives and The Behaviour of Politicians:**

**Evidence From China**

## 4.1 Introduction

This paper focuses the relationship between political incentives and the performance of bureaucrats. While the relationship between managerial incentives and performance is a well-explored topic in industrial organisation, less is known about how incentives change the performance of bureaucrats except through award scheme, such as assignment and payment. In this paper, I analyse how expectations about professional promotion influence political incentives and the behaviour of local politicians under the performance-based cadre evaluation scheme in China. Due to strict age limits on promotion and retirement, whether a politician will be promoted by the central government in China is greatly determined by age. Here, I use a term called a concrete ceiling to describe the decision problem of politicians at the watershed of their political career. Strict rules relating to promotion and retirement are central features of Chinas cadre management and form a concrete ceiling which is a visible and unbreakable barrier that keeps politicians of a certain age from professional advancement.

I assume there are two types of political candidates office-seeking and rent-seeking and they differ in the level of effort they extend in government affairs. Given that all candidates are opportunistic, they are motivated to maximise their benefit either from political advancement or private gain. Due to strict age limits on promotion and retirement, only political candidates younger than 55 are considered by the central government for further advancement. This concrete ceiling affects the decisions of local bureaucrats who face two career periods: a promising period and a stagnating period. The promising period is an age interval younger than 55, in which politicians have a higher likelihood of being promoted by the central government and hold a positive expectation of future career progression. In contrast, politicians in the stagnating period are 55 or older are less likely to be promoted. Hence, they are pessimistic about their career. Politicians younger than 55 hold strong office-seeking incentives and are more likely to spend most of their effort in stimulating economic growth in order to please



the central government and maximise their likelihood of being promoted. Once they realise there is no more space for professional advancement, beyond the age of 55, they are more likely to shift their incentives to maximise their private benefits.

To explore this possibility, I construct an individual panel dataset of 1,992 officials that worked in provincial leading positions from 1995 to 2013. The dataset contains annual economic statistics and detailed data on the work experience of officials at provincial level. I examine the performance of officials before and after the age cutoff of 55 to determine whether their incentives change once they no longer have any possibilities. The introduction of regression discontinuity design helps to reduce potential endogeneity caused by omitted variable. By comparing officials with similar backgrounds around the threshold, individual unobserved characteristics, such as personal capacity, family backgrounds and regional factors, are shared between treatment and control groups on both sides of the threshold. The results show that the growth rate of GDP (the office seeking incentive) dramatically drops at the cutoff age. Moreover, fiscal revenue generation and fiscal capacity (the rent-seeking incentive) increase after the cutoff age. The results are consistent using different bandwidths and samples of provincial politicians.

This paper speaks generally to the literature on incentives and performance but is in particular related to the literature that examines how incentives change the performance of politicians.<sup>1</sup> There are abundant empirical and theoretical studies. Kahn et al. (2001) find that the introduction of performance-based wages significantly raises fine collection. Ferraz and Finan (2007) highlight the role of transparency in electoral

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<sup>1</sup>Von Neumann and Morgenstern (2007) build a theory about zero-sum games of two persons to describe motives and behaviour of individuals. Holmstrom (1999) studies how the career concern affects incentives and performance. When performance is visible, the performance pay scheme allows employers to observe the managers ability by keeping track of the average productivity, which provides employees with the incentive to work hard and eliminates moral hazard problems. Many studies focus on the effectiveness of incentive scheme on education and find payment conditional on performance helps to improve teachers incentive and student test scores (Duflo and Hanna (2005); Muralidharan and Sundararaman (2009)).

performance. In 2003, publicly released audit reports by Brazil's federal governments make a contribution to reducing information asymmetry and reward non-corrupt officials. In most studies, however, the improved incentive scheme considered is always related to performance payment and transparency. My paper differs in that it focuses on expectations about future political career which differs across bureaucrats and consequently impacts on their behaviour. The total payoff bureaucrats obtain from their current position comes from two channels: political ambition and rents. How they evaluate the two types of benefits directly influences their preference in choosing working priority and patterns. By comparing economic performance (the main criteria under which promotion is determined) with fiscal performance (which gives opportunities for rent-seeking behaviour), I investigate how political incentives impact on bureaucrat behaviour in China.

This paper also speaks to the literature analysing the influence of political structure on economic development (Maskin et al. (2000); Svobik (2013); Wang (2013)). This literature generally focusses on the different impacts of democratic vs. authoritarian regimes (Besley and Coate (2003b); Svobik (2013); Boffa et al. (2016)). In particular, it has been shown that political competition has a positive effect on economic efficiency (Persico et al. (2011); Vasilyeva and Nye (2013); Acemoglu et al. (2014); Yu et al. (2016)) and that the way in which political participation is determined influences both policies and bureaucrat behaviour (Shi (1999); Besley and Coate (2003a); Boffa et al. (2016)). China is a dominant one-party regime, the main feature of which is political centralization and fiscal decentralisation.<sup>2</sup> This provides an ideal setting for examining the impact of promotion scheme on efficiency outcomes. For example, Persson and Zhuravskaya (2015) show that the way in which the promotion mechanism is determined influences the incentives and behaviour of provincial party secretaries with different career backgrounds in China. They find that secretaries promoted locally are more likely to invest

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<sup>2</sup>In fact, the outstanding performance of the Chinese economy in recent times has been attributed to this system Qian and Xu (1993); Maskin et al. (2000)

in health and education. They are, however, less likely to be promoted because the promotion scheme rewards investment in infrastructure and construction. Qiao et al. (2014) investigate the importance of economic performance in determining the relative rank of city leaders within a province. City leaders are motivated to compete with each other to generate high GDP growth for promotion, which is particularly significant before the age limit. This paper adds further evidence on the role of the cadre evaluation system, and in particular how different incentives impact on economic outcomes.

The paper is organized as follows. Section 4.2 provides a background on the political and economic situation in China. Section 4.3 provides a conceptual framework to explain the incentives and motivation of bureaucrats. Section 4.4 describes the data and empirical specification and Section 4.5 presents the results. The conclusion is provided Section 4.6.

## **4.2 Background**

China is a central planned economy characterized by political centralization and fiscal decentralization. Specifically, the central government holds absolute power in deciding state affairs and controls the personnel management. Local governments are self-constraint institutions given freedom in practising fiscal policies adapted to regional conditions, which partly attributes to the spectacular economic development in recent decades. Under the performance-based promotion scheme, officials motivated by career concern pay great attention to economic growth. The most important way for the central authority to accomplish state objectives is the assignment of local leading politicians. Known as the one-step management principle, local government officials are appointed by upper-level authorities. For the sake of maintaining efficiency, compulsory retirement was introduced in 1982 to eliminate oligarchy and prevent political networks of particular interest groups. At the provincial level, the top two politicians, the Party Secretary (PS) of the Provincial Party Committee (PPC) and the Provincial

Governor (PG) of the Provincial Peoples Government (PPG) are required to leave their positions after the age of 65, and the regulation of other leading politicians is the age of 60. At the meantime, the central government strongly encourages young politicians to become involved in political tournaments. According to related policies, there should be at least two officials in the PPG who are younger than 50 and at least one official younger than 45.

Age is an important component of the performance evaluation process. The central government sets age limits for promotion. A concrete ceiling is defined in this paper to describe such a circumstance. The probability of being promoted after a certain age is almost zero, which incentivises local officials that are highly motivated to become promoted to perform well before the cutoff age. Although there is no official document with details of such a concrete ceiling, in practice the top two politicians over 60 and deputy politicians over 55 in provincial leading positions are outside the promising period and less likely to be considered for professional advancement Wang et al. (2011); Xu (2011); Qiao et al. (2014); Yu et al. (2016)). The promising period is defined as the age interval before 55, the peak of which is around 54 when officials have the highest likelihood of further promotion at provincial level. Then the stagnating period starts from the age of 55 when the chance of advancement to leading positions is quite limited. This age ceiling is observable to all political candidates.

In terms of the decision-making at the provincial level, the PPC, the institution with the highest power holds a meeting after receiving the orders from the central authorities to discuss the social and economic plan for the next year. The PS is the most influential politician. A policy cannot come into force unless passed by other constant members of the PPC. The PPG deals with policy implementation. The PG has the chief responsibility but the deputy Governors also participate in the discussion and manage specific affairs. Therefore, it is hard to ignore the role of the other leading politicians in provin-

cial development.

The cadre evaluation process starts at the end of each year. The likelihood of being promoted is based on performance throughout a year. Under the performance-based scheme, the growth rate of GDP is the core criterion used in the evaluation. During the evaluation, local officials are promoted or are left in their current position<sup>3</sup>. In addition to age and GDP growth, there are other factors considered by central authorities, such as education, personal capability and experiences (Wang et al. (2011); Jia et al. (2015); Shih et al. (2012)). But there is no doubt that the GDP growth is the regime-wide core target to obtain higher ranking in the Party.

### **4.3 Conceptual framework**

This section explains the decision problem of local bureaucrats who are motivated to maximise their benefit either from political advancement or private gain. I assume there are two types of political candidates – office-seeking and rent-seeking – and they differ in the distribution of effort in government affairs. Given that all candidates are opportunistic, their fundamental incentive is the maximization of the payoff. They face the problem of selecting the outcome of interest and the allocation of working effort. The total payoff obtained from the current position comes from two channels: political ambition and rents. The priority of a candidate is professional advancement based on the expectation of future career progression.

Under political centralization, the central government possesses the highest power in personnel arrangement. Performance evaluation is the process that the central government uses to identify the excellent candidates for political promotion. It is a zero-sum game in that only a few candidates can win the opportunities for further advancement. The political competition is extremely intense at the provincial level where the

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<sup>3</sup>Local politicians cannot be considered for promotion once they exceed the age limit.

most promising candidates are selected to join the central power group. About 70% of provincial politicians will not be promoted and will have to leave the leading positions at the end of their term once they exceed the age limit, which can be viewed as the end of their political career. This fiercely competitive situation attributes to the decision problem of political candidates that they must maximise the probability of being promoted before it is too late and choose other compensation if they fail. The strategy of selecting the right target to maximise private benefits is based on the expectation of future political career. Whether a candidate is considered for promotion by the central government is determined by age. Specifically, the probability of being considered is a discontinuous function of age at 55, i.e. politicians will not be qualified once they are older than 55. This concrete ceiling is observable to all candidates and cannot be manipulated by individuals. In addition, it is unconditional on performance.

The actual likelihood of being promoted is determined by the current position and corresponding performance. Although the criteria vary from particular positions in practice, the growth rate is the core criterion used in the performance evaluation system for all candidates. When officials are in the promising period, younger than 55, they have a positive expectation of advancement and fully devote their efforts to the political competition. They hold strong office-seeking incentives and are more likely to spend most of their effort in stimulating economic growth in order to please the central government and maximise the likelihood of being promoted. As a consequence, they prioritise advancement over rents. The first hypothesis is thus that officials concentrate in accelerating economic growth before the cut-off age of 55.

Once they pass the promising period, the opportunity for further promotion is quite limited. Officials then have a negative expectation of their career progression prospects and start seeking alternative targets. Hence, we would expect that the office-seeking incentive is deflated at the cutoff age. In the stagnating period, one possible strategy is

to focus more on gaining rents, i.e. maximise private gains before leaving the current position. As found in Chapter 3, this manifests itself in collecting revenue for the sake of grabbing more rents. As such, the second hypothesis is that officials perform better in raising government revenue past the cut-off age of 55.

## 4.4 Empirical approach and data description

### 4.4.1 Database construction

I build a database of annual provincial statistics and curriculum vitae of provincial officials. It covers 31 provinces<sup>4</sup> and 1,992 officials<sup>5</sup> who ever worked in provincial leading positions between 1995 and 2013. All provincial data are taken from official publications of the central authorities. I use materials that are available online and restrict my analysis to particular sources to ensure data consistency<sup>6</sup>.

Curriculum vitae of local officials are derived from three sources: Baidu Encyclopaedia, New China and Peoples Daily. All new assignments are announced by central/local governments and published on mass media, which allows me to track their working experiences over time. As explained in Section 4.2, this paper focuses on officials in provincial leading positions, i.e. provincial or deputy provincial offices in PPC and PPG; these are the offices involved in the decision-making process in relation to local policies. The personal information gathered covers a wide range of individual characteristics, such as age, gender, the place of birth, education<sup>7</sup>, PCP membership, and the direction of assignment<sup>8</sup>. Annual information on economic and financial statistics at

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<sup>4</sup>The database includes 31 administrative areas in mainland China under uniform management of the central government, which are 4 municipalities, 5 autonomous regions and 22 provinces.

<sup>5</sup>The data on provincial politicians covers most of the officials that ever worked in leading positions to the best of my knowledge. But there are three politicians without personal details due to their background in the military and security bureau.

<sup>6</sup>Details of sources are provided in Appendix E.

<sup>7</sup>The database contains both full-time and part-time programmes. And I use the highest degree as the indicator of education.

<sup>8</sup>The direction means whether an official is promoted from local institutions, other regions or the central government.

the provincial level is obtained from four sources: China Statistics Yearbook, Finance Yearbook of China, China Land Almanac and China Land and Resources Almanac<sup>9</sup>. The indicator for land finance is the total profit from land sales<sup>10</sup> found in the last two sources.

#### 4.4.2 Empirical approach

The main outcome of interest is government performance. This, as explained above, is closely connected with political incentives. I examine whether performance differs across the age threshold of 55 using the following empirical specification.

$$\Delta GDP_{j,t} = \alpha + \beta D_{i,t} + \gamma I_{i,t} + \varphi P_{i,t} + e \quad (4.1)$$

where  $\Delta GDP_{j,t}$  is the growth rate of GDP<sup>11</sup> in year  $t$  and province  $j$ ,  $\alpha$  is the intercept,  $D_{i,t}$  is the treatment dummy,  $I_{i,t}$  and  $P_{i,t}$  are the vectors of variables indicating individual and provincial characteristics, such as education, leadership duration, actually utilised FDI, the support from the central government and GDP per capita, and  $e$  is the error term. Moreover, to examine whether there is a shift to rent-seeking incentives beyond the cutoff of age 55, I also consider the size of fiscal revenue as an additional dependent variable in the analysis.

The main challenge in examining the shift of political incentives is potential endogeneity due to omitted variable bias. There are a number factors, such as personal capacity, family background, and political ambition that cannot be observed that could influence the timing of promotion. The approach I use to control for these factors is a

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<sup>9</sup>There is no published data about land sales in 1997. The China Land Almanac contains land information from 1995 to 1996 and the China Land and Resources Almanac covers from 1998 to 2013.

<sup>10</sup>Because of different statistical scopes over time and missing values, it is hard to calculate actual value of total land transaction fees. The total profits are the gross deal price of land assignment through bidding, auction, quotation and agreement. Those are the largest 4 categories of land transaction fees and appropriate indicator of the size of land finance.

<sup>11</sup>GDP and its indices are calculated based on the China National Accounting System (CNAS) in 2002, which follows the rules and methods of the System of National Accounts by the UN in 1993. Systematic revisions have been made on the GDP figure for historical data.



regression discontinuity design that examines the incentives of politicians right before and right after the cutoff age. By comparing political officials beside the threshold, individual unobserved and time variant characteristics of politicians on both side of the threshold are controlled for. This reduces most of the potential endogeneity caused by omitted variables. In addition, the assignment of provincial leading positions by central authorities may not be completely exogenous to economic performance<sup>12</sup>. To address this possibility I consider an additional group of officials that stay in the same province throughout their political career.

#### 4.4.3 The assignment variable

The assignment variable of the RD approach is the age of the local officials and the threshold is defined as age 55<sup>13</sup>. The distance from the specified point to the cutoff is calculated by the balance test of windows. The smallest bandwidth is from age of 52 to 58 based on a balance test of windows. A closer distance will not be large enough to effectively examine the relationship. Although observations close to the threshold are more comparable in analysing the causal inference, it is necessary to use data away from the threshold to produce a rational and reasonable result. A large bandwidth from age 45 to 65 is also considered to expand the number of observations. I also consider a bandwidth of age 50 to 60.

The selection of provincial politicians focuses on positions and working experience. Given that the age limit of the top two leaders (PS and PG) can be wider than the rest of the politicians, a group of politicians excluding the top two leaders is also considered. As explained above, I also consider a sub-sample of politicians that never worked outside of their current province. I consider this sample to avoid potential endogeneity caused by the re-assignment of certain politicians to other provinces by the central

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<sup>12</sup>It is possible that some promising candidate are sent to local governments for practising management skills and preparing to join the central decision-making group.

<sup>13</sup>The age of 55 is set as threshold. I also check alternative possibilities besides 55. And there is no significant correlation at other age using regression discontinuity design and fixed effects approaches.

government. Table 4.1 summarises the size of the samples considered by bandwidth and sub-sample selection.

Table 4.1: The size of selected provincial politicians

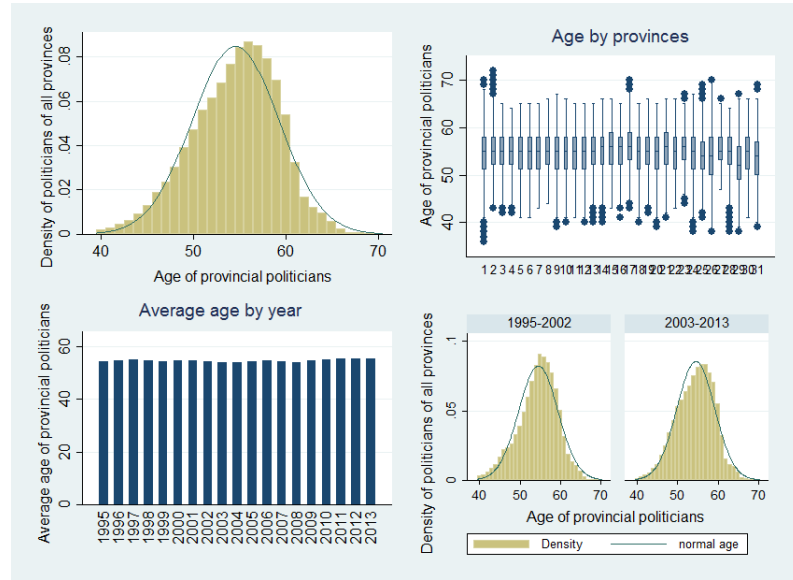
	[45, 65]	[50, 60]	[52, 58]
Provincial positions	1,964	1,816	1,598
No top 2 leaders	1,870	1,740	1,532
Stay in the same province	1,436	1,313	1,133

For the purpose of checking whether the underlying specification is valid, I firstly examine the assignment variable (Figure 4.1). Age is irreversible and observed to all political candidates. In general, the age of officials is close to a normal distribution but skewed to right. There are more officials older than 55, which is due to the long progression of local promotion. It takes a long period for a politician promoted from the grass-root level to the provincial level. As a result, the youngest age of officials in provincial leading positions should be at least 40. For officials in the stagnating period, it is hard for them to win the chance of further promotion, not only because of similar experiences and backgrounds, but also a large number of competitors.

For specific provinces and years, whether a leading official is in the promising or stagnating period appears random. There are two potential threats to the identification strategy. On one side, the age at which an official is promoted to the leading position depends on personal capacity and experiences. On the other side, the central government prefers to provide more professional opportunities to young candidates. However, the assignment, age, cannot be manipulated by either officials or the central authority. From the graphs, it appears that there is no apparent difference in average age across provinces or years. The distribution of age is balanced but slightly varies across provinces. From 1995 to 2013, there were two Paramount Leaders<sup>14</sup>. In case their personal preference imposes any influence on the selection of politicians, I com-

<sup>14</sup>Jiang, Zemin was the top politicians from 1993 to 2003 and Hu, Jintao was from 2003 to 2013.

Figure 4.1: Description of the assignment variable – age



pare the age distribution between the two in the last graph of Figure 4.1. Both graphs are normally distributed, but there are relatively more elderly officials in the period from 1995 to 2002<sup>15</sup>. The RD Manipulation Test using local polynomial density estimation is also included to check the density of the officials age. The P-value based on the robust bias-corrected method is 0.470, which provides evidence in favour of the validity of the RD design.

#### 4.4.4 Covariates

As indicated, a number of individual and provincial indicators are included as control variables in the estimation. A list of all variables is provided in Appendix A3. Another condition of the RD design is whether baseline characteristics have the same distribution above and below the cutoff.

Table 4.2 presents the mean comparison of the main variables that are significantly different across age groups. The number of promotions and the length of leadership

<sup>15</sup>It was a transition period, in which many veteran cadres were still at office, after the retirement of which many young candidates were selected to take positions.

at the provincial level are significantly lower for the young than the old, which is not surprising. Young officials have less experience but are more educated. They are more likely to have Master or higher degree. Due to the fact that all leading politicians were trained in the Party School established by the CPC, I only consider the experience of full-time and part-time education outside the Party School. Provinces with more young officials have a relatively higher growth rate and greater support from the central government. In contrast, provinces with more elderly officials have a larger amount of government revenue and perform well in attracting foreign investment.

Table 4.2: Summary of main variables

Variable	Young age			Old age			T-test
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	
Age	6,237	50.401	3.162	7,319	58.057	2.494	-7.656***
Advance	6,237	1.331	0.636	7,409	1.546	0.891	-0.215***
Postedu	6,237	0.563	0.496	7,409	0.374	0.484	0.189***
Leadership	6,237	2.877	1.930	7,409	4.169	2.560	-1.292***
FDI%	6,216	0.042	0.061	7,379	0.047	0.063	-0.00519***
Transfers	6,224	83.300	43.880	7,392	82.852	47.679	0.448
GDP per capita	6,237	2.541	0.856	7,409	2.622	0.875	-0.0803***
GDP.growth	6,237	11.567	2.374	7,409	11.435	2.381	0.132**
Ave_GDP_2	4,142	11.677	2.183	6,112	11.490	2.227	0.186***
Ave_GDP_3	2,750	7.844	1.385	4,944	7.687	1.414	0.157***
Fiscal revenue	6,237	63.061	93.250	7,409	76.473	105.862	-13.41***
Land.trans	5,939	32.249	63.883	7,047	40.690	72.381	-8.440***

Note: Means of observations are summarise by groups based on the selection of involved politicians. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . All variables are explained in Appendix A3.

The first two graphs of Figure 4.2 also present individual characteristics across the cutoff. Both education and leadership duration have a similar distribution over age. Specifically, the education level is a decreasing and a linear function of age, which fits the fact that many veteran cadres joined the Party during the war and educational sources were quite limited at that time. As a comparison, young officials are better educated, especially in recent years when professional background became more highly valued. The length of leadership for young officials is shorter while that of the old is more stable. Provincial controls are described in the last three graphs. Even though the distribution is not strictly linear, there is no significant difference at the threshold. In sum, the control variables used in the estimation are continuous and similarly dis-

tributed in the promising and stagnating periods.

Figure 4.2: Covariates and age

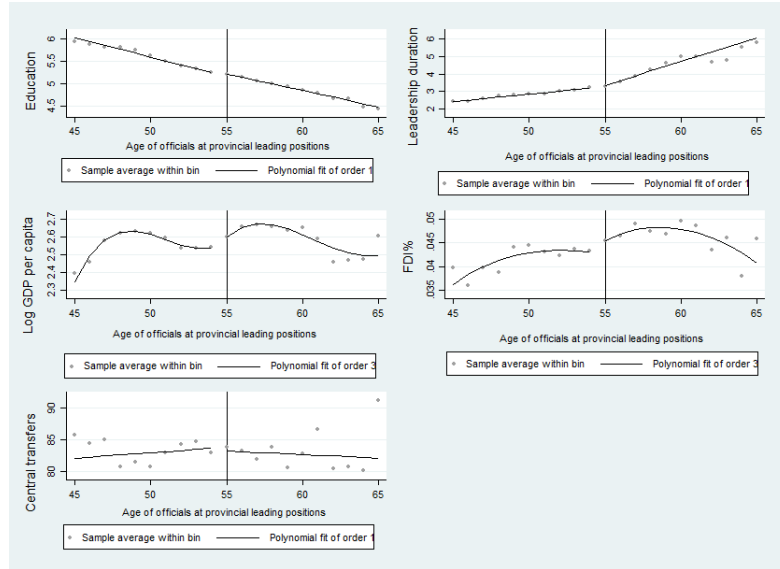


Figure 4.3 summarises the number of officials in provincial leading positions in PPC and PPG by times of promotion and age<sup>16</sup>. The age interval from 45 to 65 covers the majority of promotion<sup>17</sup>. In the robustness check, I select different groups of local officials to estimate the impact of age on political incentives based on the distance to the cutoff: i) full sample including all officials in the database, ii) restrict sample close to threshold and including officials from 50 to 60.

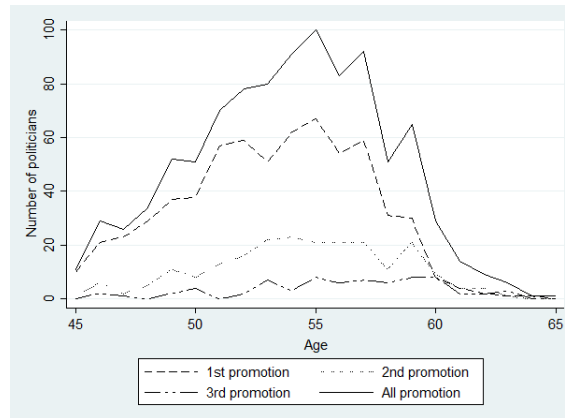
Given that the assignment decision is made by evaluating performance in the previous year, the actual difference in the likelihood of advance happens at the age of 54. Hence, it is appropriate to choose 55 as the threshold. Specifically, the number of promoted politicians rapidly climbs until 54 while starts declining from 55. This supports the assumption that political candidates are more likely to be promoted and have a strong

<sup>16</sup>The richness of the individual data allows me to track the age when an official got promoted and count the number how many times an official have been promoted. All promotion happens at provincial leading positions.

<sup>17</sup>About 98% of promotion in my database is included in this age interval.

career concern from 45 to 54, defined as the promising period. Then they tend to have a negative expectation on future career due to limited opportunity of promotion. The stagnating period thus refers to age over 55.

Figure 4.3: Definition of threshold: times of promotion and age



In terms of further advance (dot line and long-dash-short-dash line in Figure 4.3), there are certain increases at 57<sup>18</sup> and 59<sup>19</sup> owing to different age limits between positions<sup>20</sup>. For the Party Secretary and the Governor, the promising period is wider because it takes a longer time to reach such a high position. In the robustness check, I compare the results excluding the top two politicians with the baseline estimation to eliminate any potential bias. Another reason for the increase at 59 is that officials that have made an important contribution to the nation but are too old to be promoted to higher leading positions are usually assigned to a sinecure in central departments<sup>21</sup>.

<sup>18</sup>There is a customary to describe the huge difference between the age of 57 and 58 Qishang Baxi-awhich means the year of 57 is the very last chance of being promoted at provincial leading positions except the top 2 leaders. And it is almost impossible to be promoted at 58.

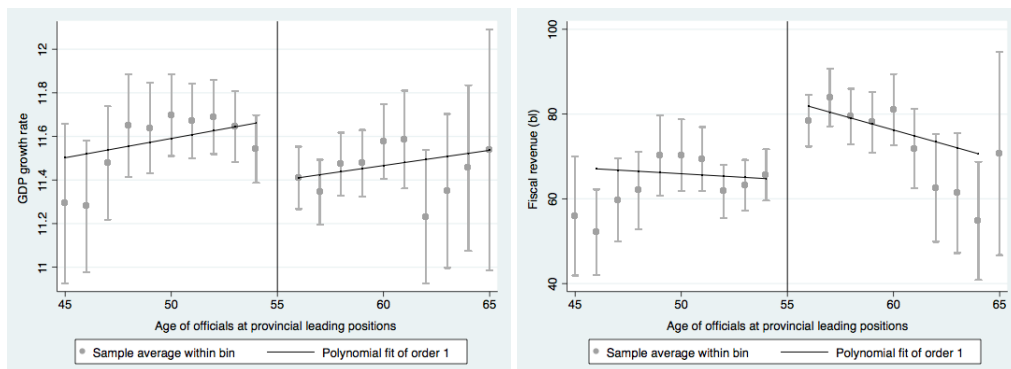
<sup>19</sup>The upper age limit for the Party Secretary and the Governor is 59 or 60.

<sup>20</sup>I also check the possibility of alternative threshold and there is no evidence either above or below the age of 55.

<sup>21</sup>Even though they are not empowered with great authority in the decision-making process, their political status quo is higher and the treatment after retirement is quite different. Another reason is promotion at equivalent levels. In practice, there are still differences in those equivalent assignments. Firstly, although the title is the same, the size/development of the new position can be quite different, such as the assignment from a remote province to a develop region. In addition, the actual power can be different as well, which means the content of the new position is more closed to economic development and political stability that are the areas directly related to the criteria of promotion. In this paper, I view this situation as promotion.

Figure 4.4 shows the discontinuity at the cutoff age that illustrates waned office-seeking incentives in the stagnating period and explains how rent-seeking incentives changed at the cutoff age, which supports hypotheses described in Section 4.3. The impact of the concrete ceiling in age is illustrated by the significant drop in GDP growth at the threshold, which can be expressed by the RD estimate, the gap at the threshold. The growth rate declines dramatically at the cutoff age. This suggests that enthusiasm in promoting economic development is deflated once officials pass the promising period. Before the age of 55 local officials have stronger career concern given that they have a higher likelihood of being promoted, while the opportunity for professional advancement beyond 55 is quite limited. Hence, they have a negative expectation of future career progression and are less likely to concentrate on growth objectives.

Figure 4.4: Regression discontinuity plot GDP growth rate and fiscal revenue



*Note:* The solid line is a first-order polynomial in age. The gray lines are the 95 percent confidence interval.

As a comparison, government revenue jumps at the cutoff age, which supports the second hypothesis that the change in the officials age leads to a shift in political incentives. When officials leave the promising period and enter the stagnating period, they are more likely to hold rent-seeking incentives, thereby inputting greater effort in collecting fiscal resources. As explained in Chapter 3, the expansion of fiscal revenue creates more chances for rent grabbing through the theft of resources. In order to

hold office and cover up corruption, rent-seeking officials impose a major emphasis on revenue collection for grabbing more rents.

## 4.5 Results

I first estimate the impact of age on political incentives by exploring whether the cutoff age influences economic performance. Table 4.3 presents the results of the RD estimation using different samples of local politicians by age and working experience. The first group is politicians holding provincial positions. It shows that there is a significant drop in the growth rate of GDP at the threshold in three bandwidths. This indicates that performance in stimulating economic growth wanes once the official leaves the promising period (younger than age of 55) and enters the stagnating period where they are less likely to be promoted. It provides evidence for the first hypothesis that passing the threshold imposes a negative influence on office-seeking incentives, thereby weakening economic performance. Then I check whether the baseline result is sensitive to the size of the sample by estimating the same specification with a smaller sample restricting the age from 50 to 60 and from 52 to 58. Results are shown in columns 2 and 3 and are consistent with the baseline result that the RD estimator is negative and significant. The significance gradually decreases when the selection of observations is close to the threshold, which is due to fewer observations.

Table 4.3: The impact of age limit on the GDP growth rate

	[45, 65]	[50, 60]	[52, 58]
<i>Provincial positions</i>	-0.290*** (0.108)	-0.264** (0.116)	-0.212* (0.126)
Number of officials	1,964	1,816	1,598
<i>No top 2 leaders</i>	-0.253** (0.111)	-0.262** (0.120)	-0.183 (0.130)
Number of officials	1,870	1,740	1,532
<i>Stay in the same province</i>	-0.372*** (0.131)	-0.347** (0.142)	-0.214 (0.155)
Number of officials	1,436	1,313	1,133

*Note:*  $t$  statistics of RD estimates are presented in parentheses. \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . The dependent variable is the annual GDP growth rate. The covariate-adjusted estimation includes individual and provincial characteristics (include age and second-order polynomial). Standard errors are clustered at the individual level.



The second estimation tests whether the baseline result is affected by political positions in local institutions by excluding the Party Secretary and Governor. The result is similar to the baseline even when conditioned on deputy provincial politicians. The officials age is significant in determining their economic performance; when the official is in the stagnating period economic performance is negative and highly significant. Although the growth rate of GDP is not the chief responsibility of deputy politicians, it is still a core criterion in the performance evaluation process and is closely connected with the likelihood of being promoted by the central government. In addition, those leading politicians play an important role in the decision-making process and/or are directly involved in policy implementation. Hence, their incentives also influence government performance.

To summarise, the RD estimation suggests that entering the stagnating period (older than 55) negatively impacts GDP growth. Before the age of 55, local officials are in the promising period with a high likelihood of professional advancement. They tend to input major effort into stimulating growth to please the central government in order to progress their career. However, the opportunity of being promoted is quite limited after 55. They are more likely to hold a negative expectation of their future career prospects. As a result, waned office-seeking incentives influence their performance in economic development, which is indicated by a significant drop in the growth rate at the cutoff age.

As discussed in Section 4.4, the result may be influenced by potential endogeneity in that the assignment of provincial leading positions by central authorities may not be completely exogenous to economic performance. The last step compares officials that stay in the same provinces between control and treatment groups to alleviate concerns that politicians with a greater likelihood of promotion are assigned to better performing provinces. Here (the last group of Table 4.3) the sample of politicians excludes

officials that: i) ever worked outside the current province; and ii) got promoted to other provinces, i.e. politicians in the last group stay in the same province throughout their political career until leaving provincial leading positions. The RD estimator is negative and significant, i.e. the GDP growth rate dramatically dropped at the cut-off age. There is no significant correlation when I restrict observations to closer to the threshold but the coefficient is still negative. These results are consistent with the conceptual framework that passing the promising period but entering the stagnating period significantly reduces office-seeking incentives. Local officials are less likely to devote themselves to economic development if they realise that the likelihood of further advancement is limited.

I also consider the economic performance of local politicians in the previous few years to examine whether it influences the evaluation process in the current period. The specification in Table 4.4 is the same as that presented in Table 4.3, but the dependent variables is the average growth rate in the last two/three years. Compared with the RD estimator in the baseline test, the result based on the average growth rate in the past two years is of a larger magnitude while that in the past three years is relatively lower. All results are well determined. In all cases, the impact of the age limit in political promotion is negative and highly significant. This suggests that entering the older stage deflates the office-seeking incentive of local politicians, thereby affecting their economic performance. The results are consistent with previous findings that officials are more likely to have strong career concern, especially in promoting economic growth and pleasing central authorities when they are more likely to be considered in the next round of promotion. The causal effect of the cutoff age on political incentives is robust in different samples of officials<sup>22</sup> and measures of the outcome variable.

In the next step, I test the second hypothesis, whether waned office-seeking incentives

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<sup>22</sup>The result holds when the bandwidth restricts to age from 50 to 60 and the selection of provincial politicians excluding top two leaders.

Table 4.4: The impact of age limit on the GDP growth rate

3-year average	2-year average		
	Provincial positions	Stay in the same province	Provincial positions
Stay in the same province			
RD estimate	-0.354***	-0.483***	-0.232***
-0.349***	(0.111)	(0.136)	(0.081)
(0.099)			
Number of officials	1,775	1,278	1,618
1,134			

Note: Same as Table 4.3.

are followed by a rise in rent-seeking incentives. Political candidates are assumed to be opportunistic and motivated to maximise benefits, either in self-actualization or personal interest. The specification presented in Table 4.5 is the same as the baseline specification but the dependent variables are fiscal revenue and fiscal capacity. The dependent variable in the first group is the total value of actual fiscal revenue collected by local governments, which is the sum of tax revenue and non-tax revenue (e.g. administrative charges and penalties). The dependent variable in the second group is provincial fiscal capacity measured by the ratio of fiscal revenue to Gross Regional Product.

Table 4.5: The impact of age limit on rent-seeking incentives

	[45, 65]	[50, 60]	[52, 58]
Fiscal revenue	5.436*	4.564	3.295
	(2.966)	(3.115)	(3.182)
Fiscal capacity	-0.290***	-0.264**	-0.212*
	(0.108)	(0.116)	(0.126)
Number of officials	1,964	1,816	1,598

Note: Same as Table 4.3.

The sample includes local officials holding provincial positions. Results show that officials passing the cutoff age are more likely to expand fiscal revenue. The RD estimator is positive and significant. There is an increase in both fiscal revenue at the cutoff, although this is only significant at the 10% level. The improvement in fiscal capacity is strongly significant. When local officials are older than 55 with limited op-

opportunities for promotion, they are more likely to pay attention to revenue collection. Chapter 3 finds that focusing on the expansion of government revenue is a feature of rent-seeking politicians. Therefore, there is a tendency that the officials in the stagnating period have a greater incentive to maximise private gain.

Table 4.6: The impact of age limit on rent-seeking incentives

Variables	(1) [45, 65]	(2) [50, 60]	(3) [52, 58]
<i>Provincial positions</i>			
Treatment*Age	0.023 (0.073)	-0.139 (0.101)	-0.344* (0.180)
Treatment	-1.553 (3.956)	7.347 (5.529)	18.710* (9.815)
Age	0.233 (0.380)	-1.583* (0.924)	-5.886** (2.562)
Age <sup>2</sup>	-0.213 (0.380)	1.501* (0.886)	5.484** (2.418)
Observations	12,164	9,618	6,767
R-squared	0.087	0.088	0.106
Marginal effect at cutoff age (55)			-0.21
<i>No top 2 leaders</i>			
Treatment*Age	0.023 (0.079)	-0.144 (0.107)	-0.309* (0.187)
Treatment	-1.549 (4.321)	7.642 (5.838)	16.828 (10.228)
Age	0.306 (0.441)	-1.586 (0.978)	-5.343** (2.669)
Age <sup>2</sup>	-0.286 (0.439)	1.508 (0.938)	4.968** (2.519)
Observations	10,946	8,871	6,289
R-squared	0.085	0.086	0.102
Marginal effect at cutoff age (55)			-0.167
<i>Stay in the same province</i>			
Treatment*Age	-0.002 (0.090)	-0.121 (0.122)	-0.386* (0.210)
Treatment	-0.308 (4.912)	6.285 (6.632)	21.011* (11.439)
Age	0.156 (0.488)	-1.271 (1.104)	-7.229** (2.967)
Age <sup>2</sup>	-0.106 (0.485)	1.237 (1.058)	6.721** (2.799)
Observations	7,976	6,597	4,647
R-squared	0.087	0.088	0.109
Marginal effect at cutoff age (55)			-0.219

*Note:* The dependent variable is the annual GDP growth rate. Robust standard errors clustered at the individual level are presented in parentheses. \*\*\*  $P < 0.01$ , \*\*  $P < 0.05$ , \*  $P < 0.10$ . The dependent variable is the annual GDP growth rate. The treatment variable is the age dummy whether a politician is older than 55. Regression include cluster-robust variance estimation at the individual level. The result of control variables including individual and provincial characteristics are excluded here.

In the last part of the analysis, I include an interaction term between the running variable, age, and the treatment dummy. Results are divided by bandwidths and sub-

samples considered (Table 4.6). In column (3) which presents the results for the bandwidth from 52 to 58, the age of provincial politicians is negatively correlated with the GDP growth rate at the cutoff age, which indicates that the age intensifies the influence of age limits on economic performance although the significance is not statistically strong. The marginal effect of age on the GDP growth rate at the cutoff age is -0.210, -0.167 and -0.219 when: i) the selection of politicians is restricted to all provincial positions; ii) the top two leaders are excluded; and iii) only politicians that stay in the same province throughout political career are considered. There are no significant interaction effects in the other two bandwidths.

#### **4.6 Conclusion**

The aim of this paper is to investigate how a shift in political incentives impacts on the behaviour of politicians. When politicians are outside the promising period for political promotion (before the age of 55) and have negative expectations about future career progression, they are more likely to shift from office-seeking incentives to rent-seeking incentives, which is indicated by the fact that the growth rate of GDP drops and the level of fiscal revenue earned increases at the cutoff age. My evidence suggests that this is the result of the performance-based promotion scheme.

Recently, the central government in China has decided to correct the performance evaluation system by taking additional criteria into consideration. My results suggest that this will have a limited impact unless the incentive problem is resolved. Political ranking and administrative position should be separated from each other in order to provide more opportunities for officials with excellent capability but restricted by their age to be promoted. In addition, a performance-pay scheme could be considered in practice to correct for rent-grabbing incentives.

More importantly, many studies show that the outstanding economic performance in

recent years is largely attributed to the strong career concern of local politicians. The performance-based cadre evaluation system, however, may result in false prosperity based on rent-seeking behaviour and destructive development with a huge environmental price. My results suggest that it may be necessary to reduce government intervention and enforce market transition for the purpose of sustainable development in the long-run.

# Chapter 5

## Conclusions

The aim of this thesis was to analyse bureaucrats' decision problems in decentralised programmes, which determines government efficiency at local levels. Chapter 2 discusses the effect of political connections in the poverty identification process in Vietnam and shows that local officials prefer connected households in this process. For rural households with limited access to financial markets, public transfers are the core channel to escape from poverty. The chapter highlights the role of political connections in the identification process and shows that politically connected households are more likely to get the poverty identity and therefore receive public benefits. We attribute this to connected households having better access to information about the identification process in advance. Social connections also play an important role by which households maintain harmonious social networks in order to minimise the probability of being reported.

Chapter 3 explores the impact of corruption on provincial fiscal capacity in China by connecting corrupt incentives with bureaucrats performance. Under political centralization and fiscal decentralization, provincial officials have control over the collection of tax at local levels. Rent-seeking officials prioritise private gain over others and enlarge fiscal revenue for the purpose of creating more opportunities for grabbing rents. I use a difference-in-differences approach to compare the fiscal capacity between provinces with corruption and other regions pre and pro the new fiscal policy that the central government added income taxes into central-local shared tax category. Com-

pared with office-seeking officials, rent-seeking officials are more affected by the policy change and reduce their concentration on collecting revenue. This provides evidence of a link between corruption and economic performance.

Chapter 4 analyses political incentives and how the promotion process for bureaucrats impacts on their behaviour. Due to age limits in the performance-based promotion scheme, officials change their incentives once they pass the age threshold based on the expectations about future career advancement. It is shown that office-seeking incentives significantly wane at the cutoff age while rent-seeking incentives rise.

Chapter 2 contributes the literature by highlighting the shortcomings of decentralised programmes and fills the gap in evaluating the poverty identification process that determines whether a household is qualified to receive public benefits in Vietnam. It shows the vital role of political connections in helping rural households to get the poverty identity, thereby receiving transfers. In addition, we investigate the mechanism through which connected households gain advantage in signalling their needs. Due to limited information about the policy and identification criteria, households without connections are less likely to get access to public benefits. This highlights the importance of transparency in decentralised programmes and suggests a role for information campaigns in delivering efficient anti-poverty targeting programmes.

The literature examining how incentives change the behaviour of bureaucrats is quite limited. The contribution of this thesis is to provide evidence on the differences in political incentives and the impact on government performance. It shows how improving incentives can potentially reduce corruption outcomes and lead to better economic and welfare outcomes more generally.

To the best of my knowledge, there is no other research analysing government per-



formance in China using an individual panel data including all officials in leading positions. Most of the existing literature focuses on health and education and only considers the role of the top two politicians (Party Secretary and Governor). This thesis makes two contributions in this regard. It provides evidence on the role of political incentives of local bureaucrats in determining fiscal capacity. Since they are the agents of central authorities and directly deal with local affairs, their decisions impose a significant impact on social welfare and government efficiency. Therefore, it is necessary for the central government to pay attention to the incentives of local politicians in managing local level bureaucracies. The thesis also highlights the importance of incentives in the system for professional advancement of local politicians. Once they are not qualified to compete for promotion, they tend to lose motivation in improving local development turning instead to maximizing personal benefits.

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# Appendices

## A Appendix: Definition of variables

Table A1: Definition of variables used for estimation and matching in Chapter 3

Variable name	Definition
Political connections (PC) indicators	
General PC	Whether the household has political connections in general
PC: HH member	Whether the household has members holding positions in local government
PC: relative	Whether the household has relatives holding positions in local government
PC: friends	Whether the household has friends holding positions in local government
PC: district	Whether the household has connection with district level government
PC: commune	Whether the household has connection with commune level government
PC: village	Whether the household has connection with village level government (mass organizations)
PC: HH member + district	Whether the household has members holding positions in district level government
PC: relative + district	Whether the household has relatives holding positions in district level government
PC: friend + district	Whether the household has friends holding positions in district level government
PC: HH member + commune	Whether the household has members holding positions in commune level government
PC: relative + commune	Whether the household has relatives holding positions in commune level government
PC: friend + commune	Whether the household has friends holding positions in commune level government
PC: HH member + village	Whether the household has members holding positions in mass organizations
PC: relative + village	Whether the household has relatives holding positions in mass organizations
PC: friend + village	Whether the household has friends holding positions in mass organizations
Social connections indicators	
Social network	Proportion of social expenditures to total income
Membership per capita	Average number of memberships in social unions per capita
Women's union	Whether the household has members join the women's union
Farmer's union	Whether the household has members join the farmer's union
Veteran's union	Whether the household has members join the veteran's union
Control variables for regressions	
Married_h	Whether the household head is married or not
HH size	Size of the household
Ill member (%)	Proportion of ill household members
Disabled member (%)	Share of disabled household members
Alcoholism	Whether the household has member involved in alcoholism
Flush toilet	Whether the household has flush toilet (with septic tank or sewage pipes)
Clean water	Whether the main source of water is clean tap water
Log net income	Natural logarithm of net income in the last 12 months
Log total saving	Natural logarithm of total savings
Log durable goods	Natural logarithm of the value of all durable goods
Natural shocks	Whether the household suffered from natural shocks in the last two years
Gender_h	Gender of household head
Age_h	Age of household head
Egrade_h	Educational level of household head
Memage	Average age of all household members
Childn	Number of children under 15 years
Memedu	Average education level of household members
Committee	Distance from household to People's Committee Office
Pschool	Distance from household to primary school
Ethnicity	Whether the household is of Kinh ethnicity
Land	Total area of land the household has the right to manage
Additional variables for propensity score matching	
lwage	Natural logarithm of wage income
lagri	Natural logarithm of agriculture income
lproperty	Natural logarithm of income from common property resources
larent	Natural logarithm of rental income
lasale	Natural logarithm of income from sales of assets
lnonfarm	Natural logarithm of non-farm and non-wage income
lprtrans	Natural logarithm of income from private transfers
lotherin	Natural logarithm of other income
lfoodexp	Natural logarithm of food expenditure in the last four weeks

Table A2: Definition of variables Chapter 4

Variable	Label
FC	Provincial fiscal capacity: share of both budgetary and extra-budgetary revenue based on GRP
CPPO	The number of corrupt officials in position before punishment
Corrupt	Log number of corrupt officials in position before punishment
Period dummy	Period dummy: =1 from 2002
>60%	The ratio of officials older than 60
Prom_local%	The ratio of officials promoted locally
Ave_length	Average length of leadership of all officials at leading office of PPC and PG
FDI/GDP%	The ability to compete: relative share of actually utilized FDI to GDP
CG support	Support from the central government: the share of fiscal gap to central transfers
Land finance	The proportion of land finance to all revenue available to local governments
Log_GDP_pc	Logarithmic GDP per capita
Top1<60	Dummy: whether the Party Secretary is younger than or equal to 60
Top1.length	Party Secretary: the length of leadership in current position
LGDPg	Logarithmic GDP growth rate
<55%	The ratio of officials younger than 55
Ave_promote	Average promoted times of all officials
RExp%	The share of actual budgetary expenditure to GRP
ExBExp%	The share of extra-budgetary expenditure to GRP
TtExp%	The share of total budgetary expenditure to GRP
TaxRev%	The share of tax revenue to GRP
Rrev%	The share of actual budgetary revenue to GRP
LogExBRev	The share of extra-budgetary revenue to GRP
LogAllRev	The share of all revenue to GRP
LogPPO	Logarithmic number of punished officials removed from office
LogCase	Logarithmic number of corruption cases
LogCP4	Log number of corrupt officials at office before punishment in main four institutions

Table A3: Definition of variables Chapter 5

Variable	Label
Age	Age in each year
Postedu	Whether an official is postgraduate: 1 for Masters or a higher degree
Leadership	The length of leadership in current position
FDI%	Relative share of actually utilized FDI
Transfers	Fiscal support from the central government
GDP per capita	Log value of GDP per capita
GDP growth	Annual GDP growth rate
Ave.GDP_2years	Average GDP growth rate in the past two years
Ave.GDP_3years	Average GDP growth rate in the past three years
Rev	Provincial real revenue (billion)
Land	Land transaction fees (billion)

## B Appendix to Chapter 2: Comparison of poverty lines

The official poverty line used in the poverty alleviation programmes is defined by the Ministry of Labour, Invalids, and Social Affairs (MOLISA) that conducts poverty census and annual review to collection information about household income for the measurement of MOLISA poverty line. The definition is bases on the expenditure on food and non-food. The former equals to the expenditure to obtain on average 2,100 calories per capita per day, about 60 per cent of the daily need. The later takes the rest 40 per cent including the cost for housing, education, health care, social expenditure, etc. The MOLISA poverty line applied for the period from 2006 to 2010 is that the average income is lower than VND 200,000 per capita per month in rural areas and VND 230,000 per capita per month in urban areas. In 2008, MOLISA adjusted the poverty line because of increasing CPI to VND 300,000 per capita per month in rural areas and VND 390,000, which was used in the poverty identification process of 2010. A new poverty line was used from 2011-2015 that a household is considered as the poor is the average income below VND 400,000 per capita per month in rural areas and VND 500,000 per capita per month in urban areas.

Table A4: Three poverty lines used in Vietnam (1,000 VND per capita per month)

Year	MOLISA	GSO	World Bank
2008	200	290	280
2010	300	400	653
2012	500	530	871

The second official poverty line in Vietnam is set by the General Statistics Office (GSO). It is also known as the national food poverty line and was constructed using the Vietnam Living Standards Survey (VLSS) and Vietnam Household Living Standards Surveys (VHLSS), which is also calculated by average household income per capita per month. Table A2.2 summarises the setting by year.



Table A5: Three poverty lines used in Vietnam (1,000 VND per capita per month)

Year	Rural	Urban
1998	149	149
2002	160	160
2004	170	220
2006	200	260
2008	290	370
2010	400	500
2012	530	660
2013	570	710
2014	605	750

Source: GSO, <https://www.gso.gov.vn>. The criterion used in 2010 was based on the government poverty line for 2011-2015.

The most widely used concept is the poverty line defined by World Bank (WB), which is a general poverty line for classifying poor households and extremely poor households in developing countries. As it is defined in the World Development Report 1990, the poverty line is at annual consumption of \$275 per capita a year for the extremely poor and \$370 per capita a year for the poor in terms of PPP dollars in 1985. This translates into the 1 dollar per day poverty line. A large literature is based on this poverty line which is usually adjusted according to the country in question and the year. After re-assessment of the extent of poverty with new data, a series of new poverty lines were defined based on different targets, such as \$1.25 per day in terms of 2005 PPP line and \$2.50 a day for the median of all countries except the bottom 15. As to the case in Vietnam, WB cooperates with GSO to construct a specific poverty line based on two components (food and non-food) from VHLSS. The WB-GSO poverty line was VND 280,000 in 2008 Office) (2010), VND 653,000 in 2010 Kozel (2014) and VND 871,000 in 2012 Demombynes and Vu (2015).

## C Appendix to Chapter 2: Balancing tests

Table A6: Propensity score matching of politically connected (treated) households

Variable	Unmatched			Matched		
	Treatment	Control	Significance	Treatment	Control	Significance
Social connections indicators						
Social network	0.032	0.032		0.032	0.03	
Membership per capita	0.236	0.255		0.236	0.233	
Women's union	0.354	0.334		0.354	0.383	
Farmer's union	0.262	0.19	***	0.262	0.255	
Veteran's union	0.146	0.071	***	0.146	0.11	*
Control variables for regressions						
Married_h	0.853	0.794	***	0.853	0.85	
HH size	4.658	4.437	**	4.658	4.642	
Ill member (%)	0.1	0.087		0.1	0.085	
Disabled member (%)	0.011	0.01		0.011	0.01	
Alcoholism	0.293	0.368		0.293	0.278	
Flush toilet	0.137	0.137		0.137	0.141	
Clean water	0.121	0.118		0.121	0.136	
Log net income	9.844	9.634	***	9.844	9.81	
Log total saving	4.494	3.977	**	4.494	4.383	
Log durable goods	8.378	7.732	***	8.378	8.283	
Natural shocks	0.472	0.379	***	0.472	0.459	
Gender_h	0.814	0.767	**	0.814	0.81	
Age_h	51.361	51.415		51.361	50.584	
Egrade_h	7.948	7.581	**	7.948	8.094	
Memage	34.411	34.766		34.411	33.557	
Childn	1.018	1.065		1.018	1.081	
Memedu	8.171	7.824	***	8.171	8.231	
Committee	2.313	2.251		2.313	2.34	
Pschool	1.548	1.61		1.548	1.561	
Ethnicity	0.244	0.216		0.244	0.226	
Land	9226	6792	***	9226	7969	
Additional variables for propensity score matching						
lwage	4.66	4.896	***	4.66	4.741	
lagri	8.208	7.827	***	8.208	8.202	
lproperty	2.068	2.291		2.068	2.132	
larent	0.032	0.023		0.032	0.036	
lasale	0.471	0.426		0.471	0.54	
lnonfarm	2.403	2.586		2.403	2.526	
lprtrans	2.202	2.495		2.202	2.062	
lotherin	0.374	0.28		0.374	0.305	
lfoodexp	6.021	5.824	***	6.021	6.02	
Observations	576	1536		553	553	
LR test	LR chi2: 104.32; P-value: 0.000; reject null			LR chi2: 15.43; P-value: 0.998; do not reject null		

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ . There is a balancing test to check the comparability in terms of all control variables used for the propensity score matching between matched and unmatched sample. In the first step, we compare the mean and the t-test result between two groups (the main body of the table). Then we check the distribution in different percentiles before and after the matching (excluded in the table). In the last line, it shows the overall measure of covariate imbalance using probit estimation. LR test shows joint insignificance of all regressors.

**D Appendix to Chapter 2: Baseline specification and control variable results**

Table A7: Poverty identity and household characteristics full sample

VARIABLES	(1) Baseline	(2) General PC	(3) PC_level	(4) PC_type
Control variables for regressions				
Married_h	-0.037 (0.029)	-0.041 (0.029)	-0.042 (0.029)	-0.041 (0.029)
HH size	-0.002 (0.008)	-0.001 (0.008)	-0.001 (0.008)	-0.001 (0.008)
Ill member (%)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Disabled member (%)	0.078 (0.061)	0.078 (0.061)	0.079 (0.061)	0.077 (0.061)
Alcoholism	0.002 (0.011)	0.002 (0.011)	0.002 (0.011)	0.002 (0.011)
Flush toilet	-0.038*** (0.010)	-0.038*** (0.010)	-0.039*** (0.010)	-0.038*** (0.010)
Clean water	-0.034** (0.014)	-0.033** (0.014)	-0.032** (0.014)	-0.033** (0.014)
Log net income	-0.017*** (0.006)	-0.021*** (0.007)	-0.021*** (0.007)	-0.021*** (0.007)
Log total saving	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.003** (0.001)
Log durable goods	-0.014*** (0.005)	-0.014*** (0.005)	-0.014*** (0.005)	-0.014*** (0.005)
Natural shocks	0.031*** (0.010)	0.031*** (0.010)	0.030*** (0.010)	0.031*** (0.010)
Gender_h	-0.009 (0.036)	-0.008 (0.036)	-0.009 (0.036)	-0.008 (0.036)
Age_h	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Egrade_h	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)
Memage	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)
Childn	0.004 (0.011)	0.004 (0.011)	0.004 (0.011)	0.004 (0.011)
Memedu	-0.008* (0.005)	-0.008* (0.005)	-0.008* (0.005)	-0.008* (0.005)
Land	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
Year 2010	-0.033*** (0.010)	-0.032*** (0.010)	-0.032*** (0.010)	-0.032*** (0.010)
Year 2012	0.033** (0.013)	0.038*** (0.014)	0.039*** (0.014)	0.038*** (0.014)
Constant	0.586*** (0.117)	0.621*** (0.124)	0.621*** (0.124)	0.621*** (0.124)

*Note:* Robust standard errors clustered at the household level are presented in parenthesis. \*\*\* $P < 0.01$ , \*\* $P < 0.05$ , \* $P < 0.10$ . Each model includes year fixed effects and household fixed effects. It is the result of control variables excluded in the table 2.4. In the baseline estimation, both political and social connections are excluded. As to the result in the estimation for the matched sample, it is not presented here but available on request.

## E Appendix to Chapter 3: Information source

Table A8: Publication

Dataset	Period	Source	Publisher
Fiscal statistics	1995-2013	Finance Yearbook of China	China Financial and Economic Publishing House
Land finance	1995-1996	China Land Almanac	China Central People's Publishing House
Land finance	1998-2013	China Land and Resources Almanac	China Land and Resources Almanac Press

Table A9: Website

Dataset	Period	Source	Website
Provincial statistics	1995-2013	National Bureau of China	<a href="http://www.stats.gov.cn/tjsj/ndsj/">http://www.stats.gov.cn/tjsj/ndsj/</a>
Corruption	1995-2015	Encyclopaedia of Anti-corruption	<a href="http://www.fanfuzhi.com/">http://www.fanfuzhi.com/</a>
Provincial officials	1995-2015	Encyclopaedia of Baidu	<a href="http://baike.baidu.com/">http://baike.baidu.com/</a>
Provincial officials	1995-2015	the News of the Communist Party of China	<a href="http://www.people.com.cn/">http://www.people.com.cn/</a>