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Yuan Li
Stockholm School of Economics

Stockholm School of Economics Asia Working Paper
No. 26

August 2013

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Yuan Li
Stockholm School of Economics

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1 Stockholm School of Economics, P.O. Box 6501, SE-113 83 Stockholm, Sweden. Email: yuan.li@hhs.se. I want to thank Susan Shirk, Barry Naughton, Hongbin Li, Emilio Colombo, Mario Gilli, Massimo Bordignon, Giovanni Ferri, Christos Kotsogiannis, Edmund Malesky, Xun Wang, Ling Chen, Derek Tai-wei Liu, Dong Seong Lee for their comments and insights. I thank Hongbin Li, Avraham Ebenstein, Ekaterina Zhuravskaya for sharing their data. I thank comments from the participants of 16th Annual Conference of the International Society for New Institutional Economics, the Second Asia-Europe Forum on Methods and Perspectives of Risk Analysis, the European Public Choice Society Meeting in Zurich, the Volkswirtschaftliches Forschungsseminar at University of Duisburg-Essen, the WIP seminar at University of Milan-Biccoca and CERC Brown Bag Seminar at Stockhom School of Economics.

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ABSTRACT

Will autocratic governments implement policies to satisfy the people's demands in order to prevent large scale social unrest? This paper explores this question through quantitatively analysis of the political economy of public goods provision in Chinese provinces. I collected data on the number of labor disputes to measure collective actions. My sample includes provincial leaders whose incentives to deliver public goods can either be explained as a result of upward accountability towards the Center or downward accountability towards the citizens. The confounding factor of upward accountability is ruled out by using two-step estimation; and the reverse causality between public goods provision and collective actions is controlled by using instrumental variables. Result suggests that provincial leaders will implement policies more in favor of the citizens in response to intensified labor disputes.

JEL Codes: H11; H40; D74; P26
Key Words: Accountability; Collective Actions; Public Goods

1. INTRODUCTION

In recent years, many people have speculated that popular anger is propelling China toward a 'social volcano' of protest activity and instability that could challenge Chinese Communist Party (CCP) rule (Whyte, 2010). However, surveys find the Chinese to be among the most satisfied people in the world. In the 2010 survey by the Pew Research Center, 87 percent of the Chinese participants said they were satisfied with the way things were going in their country[2]. The result of the survey seems to debunk the speculation of the end of CCP rule by social unrest. The myth of the social volcano lies in the Chinese leaders' downward accountability to address public concerns in responses to social unrest.

Although autocratic, the Chinese government has exhibited a certain degree of accountability in the reform era, challenging commonly held presumptions about autocracies, which are often associated with abuses of political power, repression and lack of government accountability. What then are the mechanisms that induce accountable behavior of politicians in autocratic polity? My suggestion is that accountable behavior of politicians in autocracies stems from their downward accountability towards the revolution threats by citizens, because the autocratic leaders want to avoid large scale social unrest which may lead to the overthrown of the existing regime. This paper tries to provide empirical evidences to support this argument through studying the political economy of public goods provision in Chinese provinces.

The background to this paper consists of two bodies of literature: the literature on accountability issues in autocracies and the literature on public goods provision in China.

One existing view on accountability in autocracies is that the concern of political survival drives the political leader to satisfy the demand of the people in order to avoid large scale revolution. Acemoglu and Robinson (2001, 2006) argue that in nondemocratic societies, the poor are excluded from political power, but pose a revolutionary threat. The rich (elite) will try to prevent revolution by making concessions to the poor, for example, in the form of income redistribution. In a series of recent papers, Bueno de Mesquita and Smith (Smith, 2008; Bueno de Mesquita and Smith, 2008, 2011) suggest that if a leader faces a revolutionary threat, he can dissipate the threat by either expansion or contraction of the public goods supply. Expansion of public goods supply can buy off potential revolutionaries while contraction of certain public goods can reduce the ability for the people to coordinate and succeed in a revolution. Which response a leader chooses depends on the structure of government finances. However, the focus of Bueno de Mesquita et. al's research is not on downward accountability in autocracies *per se*; instead, their focus is on the likelihood of revolution and the leaders' best responses to revolutions. Gilli and Li (2012) use the political-agency approach to study the accountability issues in autocracies. By setting up a three-player political-agency model with the leader, the

2 *Pew Global Attitudes Project*, 2010.

selectorate[3] and the citizens, they find that there are two channels of accountability in autocracies: the selectorate accountability and the citizenry accountability. The noncongruent leader may adopt the congruent policies in order to avoid revolutions by the citizens even when the selectorate is captured. They also argue that the success of Chinese economic reform was in part due to the effectiveness of the citizenry accountability channel in China after the 1990s. Just as Shirk (2007) has pointed out, China is a fragile superpower and Chinese leaders' top concern is the survival of communist party rule; therefore, the Chinese leadership makes great efforts to maintain a high growth rate to prevent widespread unrest. However, no systematic empirical test on political leader's accountability to collective actions by the citizens appears to be available in the literature. This may partly be due to the difficulties in accessing data to measure collective actions which are politically sensitive issues in most countries, and may also partly be due to the complexity in dealing with the endogeneity problems embedded in public goods provision and collective actions. Therefore, this paper contributes to the body of research through addressing the gap in the existing literature and providing a rigorous empirical test on political leaders' accountability to collective actions by the citizens. I collected data on the number of labor disputes in each province inside China from 1996 to 2004 to measure collective actions. My sample includes provincial leaders who could be treated as semi-national leaders. Their incentives to provide public goods due to their upward accountability towards the Center is controlled by using two-step estimation; and the endogeneity between public goods provision and collective actions is dealt with using an instrumental variable approach.

One of the most contentious issues in literature concerning Chinese political economics is how the mechanism of public goods provision is determined. Existing presumptions include: elite capture, career incentives and local elections. First, the theory of 'elite capture' focuses on the patron-cliental relationship between provincial leaders and their clients. It assumes that provinces under the leadership of party secretaries, who built their careers within the province, have higher public goods provision. Persson and Zhuravskaya (2009) provide empirical evidence to support this theory. Second, the theory of 'career incentives' focuses on the provincial leaders' upward accountability to the Center in the delivery of public goods to the people. As Beijing prefers to provide as many public goods as are needed to maintain social stability, local leaders, who aspire to be promoted in the future, have greater incentive to focus on public goods provision (Liu 2011). Third, in recent years, there is emerging literature on grass root democracy and its effect on public goods provision in China. Primarily, this literature argues that village elections have increased village leader accountability towards villagers, and thus increased public goods provision (Gan, Xu and Yao, 2012; Martinez-Bravo et. al, 2011; Wang and Yao, 2007; Zhang et. al, 2004). However, in China, local elections are only restricted at the village level, and only a tiny fraction of public goods are provided by village governments. The most crucial public goods, education and health care, are beyond the control of the

3 Refers to the group of people that in a given political regime have the actual possibility to depose a leader. Detailed discussions on the selectorate accountability in China can be found in Shirk (1993), Gilli and Li (2013).

village governments. Thus, the phenomenon of local elections does not adequately account for the entire mechanism of public goods provision in China. In this paper, I contribute to the debate in the existing literature by providing a different explanation for the mechanism of public goods provision in China. My results suggest that collective actions can significantly affect governance outcomes. Provincial leaders will implement policies in favor of the citizens in response to more intensive labor disputes.

The paper proceeds as follows. I first outline the relevant institutional structure in China that can induce downward accountability of provincial leaders to illustrate the logic of my theory. Next, I discuss the empirical model and my research design, followed by the strategy to deal with the endogeneity issues. I then describe the data used in this study, which has been acquired from various sources. After presenting my empirical results, I conclude.

2. PROVINCE LEADERS AND THEIR DOWNWARD ACCOUNTABILITY

For many people, economic and political life in China is filled with several seemingly contradictory trends. On the one hand, China is becoming one of the most decentralized countries in the world, while at the same time, China remains as a unitary country under strong control of an authoritative government. In 2009, local governments accounted for 80 percent of all government spending (figure 1). Many scholars have argued that decentralization may lead to the erosion of central state authority by creating power clusters that could gradually develop into a source of political opposition (Weingast 2000; Oksenberg and Tong, 1991). Nevertheless, the capacity of the Chinese central authority to control local governments has not been weakened, but rather consolidated and strengthened (Blanchard and Shleifer, 2000; Yang, 2006; Cai and Treisman, 2006). What is the explanation for these contrasting assessments of the Chinese political reality? What is the underpinning reason for maintaining central control in an era of fiscal decentralization? An essential explanation is that personnel management is the ‘glue that turns the fragments of the Chinese local state into a coherent – albeit colorful – mosaic’ (Landry, 2008, p79).

In China, the personnel management system lies at the core of the political system as a key institutional channel through which the Party exercises routine political authority (Landry, 2008, p16). Although many bold measures had been undertaken to reform the Soviet style central commanding system, China’s post-reform leadership reasserted that the principle of the exclusive Party control over the bureaucracy must be maintained (Manion, 1985). Therefore, in contrast to Western style decentralization, where local government exercises autonomy in the realm of personnel management, the Chinese central government controls the appointment of lower level government officials and, due to this, local governments do not have real bargaining power against higher levels of government. Officials in China do not need to compete with each other through elections to advance to a

higher position; the upper level authorities hold complete discretion over the nomination and decision making processes. Therefore it is natural to assume that local officials are only accountable to the few constituents in the upper level authority, rather than all citizens in the jurisdiction under their government.

Under such a bureaucratic system, in which local officials solely aim to please the center and get promoted to Beijing, how can downward accountability of provincial leaders exist? The answer to this question lies in the pivotal role of provincial leaders in the Chinese political system.

According to the Constitution of the People's Republic of China, Article 30, the country has a five levels government: (1) central; (2) provincial; (3) prefecture; (4) county; and (5) township. Provinces are the second level of China's political hierarchy.[4] The top position at the provincial level is that of the provincial party secretary, followed immediately by the provincial governor. In Chinese mass media, all four levels of government officials, from provincial down to township, are usually referred to as the local officials. However, it is necessary to distinguish between the provincial leaders and the prefecture, or lower-level, officials. Provincial leaders are not only motivated by their own career promotion, but also share the interest of the central leadership, which considers regime survival the top priority. First, all 62 provincial chiefs – party secretaries and governors or mayors – hold full membership on the Central Committee, and some are even members in the Politburo. Hence, provincial leaders are *de facto* national leaders. Huang (1996) refers to provincial leaders who hold office at both the national and local level as 'concurrentists'. Their interests are in accordance with Beijing, as they recognize that their long-term career prospects lie with the center, rather than with their current provincial posts. Second, top leadership positions in China's provinces have, to a certain extent, become the most important stepping stones to national political offices in the country. Today's provincial chiefs may be in line for top national leadership positions, only a few steps behind the supreme leaders of the country. For example, the number of Politburo members who have previously served as provincial leaders increased from 55 percent in 1992 to 68 percent in 1997, to 83 percent in 2002, and to 80 percent in 2012. Cao (2011) suggests that 'local leaders' should only be referred to prefecture or lower-level officials, and that both provincial and central leaders should be considered as 'national leaders'. Therefore, in this paper, I treat provincial leaders as semi-national leaders, and their incentives to provide public goods can be attributed to downward accountability to the citizens, after controlling for their career incentives. This logic justifies the empirical strategy used in this study.

3. EMPIRICAL MODEL AND RESEARCH DESIGN

4 As of today, excluding Taiwan, Hong Kong, and Macau, China has 31 provincial units—4 centrally administrated cities (Beijing, Shanghai, Tianjin, and Chongqing), 22 provinces and 5 autonomous regions (Xinjiang, Tibet, Inner Mongolia, Ningxia, Guangxi).

This study primarily aims to determine whether collective actions by the people have induced the provincial leaders to become more accountable to their province constituencies. Specifically, a major step towards this goal is to determine how local policies change as a result of a hypothesized change in accountability in response to collective actions. I distinguish between two types of policies on the basis of whether or not the Center and citizens have conflicting preferences. The first type comprises policies for which the people and the Center have opposing preferences. This type of policy, whereby provincial leaders implement policies that favor the people, can only be explained by downward accountability towards the citizens. For example, the One Child Policy is very unpopular with the people but the Center wants strict controls. Repeated surveys have found that, given a choice, most Chinese couples prefer to have two children, ideally of the opposite gender, and two sons are an acceptable alternative (Greenhalgh, 1993; Huang and Yang, 2004). A survey of 826 women who already had one child in the countryside of Hubei province in 1989 found that 74.7 percent of the respondents wanted to have at least two children (Cheng Du, 1991, p. 194). Thus the One Child Policy runs counter to the needs and desires of the people. The second type includes policies for which there is no obvious conflict of interest between the citizens and the Center. The effects of downward accountability towards the citizens on these policies are less obvious because there is no obvious disagreement between the people and the Center. It is difficult to say whether the implementation of these policies is enabled by downward accountability to the people or upward accountability to the Center, as implementing these policies can impress the Center thereby increasing the chance of promotion to Beijing. Examples of this type of policy include the provision of public goods, such as education and health care. The central government values political stability and hence wants the provinces to provide enough public goods to satisfy the people's needs. Therefore, the Center agrees with the preferences of the citizens. In order to rule out the confounding factor of upward accountability in providing public goods by provincial leaders, it is necessary to control for their career incentives. I thus use two-step estimation, where I calculate the prospects of future promotion or demotion for provincial leaders in the first step.

3.1 The Econometric Specification

3.1.1 Model One

For the first type of policy, whereby the center and the people have contrasting interests, we can examine directly how collective actions relate to the implementation of these policies. The empirical model is as follows:

$$fine_{it} = \beta disputes_{it} + \gamma X_{it} + \epsilon_{it} \quad . \qquad (1)$$

In equation (1), $fine$ is the dependent variable, which is fines on excessive fertility, a measure of strictness of the implementation of the One Child Policy. In China, the central authorities want strict control over the One Child Policy, while the citizens want loosened control over the same policy. Strict implementation of the One

Child Policy (using a high fine rate) can be explained by provincial leaders' career incentives to please the center. However, loosened control (using a low fine rate) could be explained by provincial leaders' downward accountability towards the people.

The main explanatory variable on the right hand side, $disputes$, is defined as the number of labor disputes which occur in each province every year. I use labor disputes as proxy for the intensity of collective actions which are a potential threat to the political survival of the regime. Measuring the collective actions by the citizens in China is not straightforward. The most obvious measure is to use the number of protests or petitions; however, there is no reliable data on it because these numbers are very sensitive in China. In this paper, I use labor dispute as a proxy, which is defined as controversies between employees and employers, including collective negotiations, strikes or even violent unrests. Labor dispute is a good candidate to act as a proxy for collective action. First, labor disputes are the most important form of collective actions in China, which are listed as the 'troika' for social unrest together with land disputes and protests over pollution. Second, our objective is not to measure the 'true' extent of collective actions in China, instead our principal objective is to characterize the potential threat of revolution facing the policy maker over time. Moreover, labor dispute has exhibited similar growing trend to collective action in recent years (See figure 2)[5]. Potential bias caused by the use of proxy will be discussed in later subsection. Although there are no reliable official statistics, recent trends show that mass incidents are increasing in number and size and are becoming better organized. The number of mass incidents has surged from 12100 in 1993 (Tanner 2004), to about 90000 in 2006 (Keidel, 2005), and rocketed to 180,000 in 2010.[6] These incidents also take various forms, from peaceful small group petitions and sit-ins to marches and rallies, labor strikes, merchant strikes, student demonstrations, ethnic unrest, and even armed fighting and riots (Tanner 2004). I also note that collective actions could arise as a result of strict fines, and I further explore this endogeneity problem in the following subsection.

Moreover, β is the coefficient of labor disputes; it should have a negative sign if the hypothesis holds.

The main hypothesis is as follows:

Hypothesis 1: Provincial leaders will adopt lighter fines on excessive fertility in response to larger rates of labor disputes.

I also include a set of control variables: X, which can affect the strictness of the implementation of the One Child Policy. Population density of a province can affect the strictness of the One Child Policy, because the pressures to control population

[5] Figure 2 illustrates the total number of labor disputes and the estimated number of collective actions in China. Note that the estimated number of mass incidents comes from various sources; therefore figure 2 shows only a rough trend of collective actions.

[6] Bloomberg News, May 27, 2011. http://www.bloomberg.com/news/2011-05-26/china-tops-india-as-asian-country-most-likely-to-maintain-economic-growth.html

growth may be higher for regions with dense populations. In China, regions with the most rigid control of family planning are also the highly populated provinces and municipalities, such as Shanghai, Beijing, Jiangsu and Sichuan; but in sparsely populated areas, such as Qinghai, Xinjiang, Hainan and Tibet, people are granted authorization to have two or more children (Guo et al., 2003). Besides population density, I also include variables capturing personal characteristics of leaders, such as age, education and birth place.

3.1.2 Model Two

For the second type of policy, whereby the center and the people share the same interests, we need to rule out the confounding factor of upward accountability of provincial leaders by controlling for their career incentives. I conduct the estimation in two steps.

Specifically, in the first-step estimation, I estimate the turnover of a provincial leader using an ordered probit model.

$$promotion^*_{it} = \beta_1 X_{1it} + \epsilon_{1it}, \qquad (2)$$

$$promotion_{it} = -1, \; if \; promotion^*_{it} \leq \alpha_1,$$

$$promotion_{it} = 0, \; if \; \alpha_1 \leq promotion^*_{it} \leq \alpha_2,$$

$$promotion_{it} = 1, \; if \; promotion^*_{it} \geq \alpha_2.$$

Note that $promotion$ is a categorical variable representing the turnover of provincial leaders, where $promotion = -1, 0, 1$, corresponding to demotion, lateral move and promotion. $promotion^*$ is a continuous variable which can be seen as the unobserved evaluation score that the central government gives each provincial leader every year, forming the basis for promotion and termination decisions. Define α_1 and α_2 as the two cut-off points. X_1 is a vector of exogenous variables which affect the turnover of a provincial leader (detailed analysis on X_1 is in the next subsection).

Then, I use the fitted predicted values from the probit model to generate some indices (*promote1, promote2, promote3*) to represent the future probabilities of demotion, lateral move and promotion for each province-year observation. The predicted values of promotion can be seen as perspective for the provincial leaders' career advancement, which is the crucial source of career concerns for Chinese provincial leaders.

In the second-step estimation, these indices are included as control variables for the leaders' career incentives.

$$public\ goods_{it} = \beta_2 X_{2it} + \gamma_1 dispute_{it} + \gamma_2 promotion\_predicted_{it} + \epsilon_{2it}. \qquad (3)$$

In equation (3), $public\ goods$ is a continuous variable representing the amount of public goods provided by the leader. X_2 is a set of exogenous variables affecting

the provision of public goods. ϵ_2 is the error term which is assumed not to be contemporaneously correlated with ϵ_1.

Controlling for the career incentives, the effects of labor disputes on public goods provision could be explained as the provincial leaders' downward accountability to the people, rather than their career concerns to reduce social unrest and please Beijing. The main hypothesis is as follows:

Hypothesis 2: Controlling for their career incentives, provincial leaders will provide more public goods in response to larger rates of labor disputes.

To measure public goods provision in a province, I use the *per capita* social service expenditure, number of beds in hospitals, and teacher-student ratio (number of teachers for every student) in primary schools.

3.2 What Determines Promotion?

One of the most mysterious things in Chinese politics is how the decisions to promote or demote high ranking officials are made. Essentially, there are two contrasting views in the literature; one emphasizes the extra institutional factors and the other embraces the institutional explanations.

Chinese politics has long been regarded as essentially informal and much attention has been devoted to how extra institutional factors, such as a certain political figure or a network of politicians, exert decisive influence on Chinese politics (Nathan, 1973; Dittmer, 1995; Dittmer and Wu, 1995). Shih (2004) and Shih et al. (2012) quantitatively measure the provincial factional affiliation with standing committee members of the Politburo and its impact on the elite ranking. They find that factional ties with top leaders can bring substantial advantages in obtaining scarce resources, such as bank loans in the system. Li (2001, 2008) suggests that China's decision makers are by no means a monolithic group of elites who share the same views, values, and visions; he systematically studies the factional politics of Chinese leaders through their educational backgrounds, family connections and career paths. Under such a system, personnel appointment, the main source of patronage used by leaders to reward their followers and build their support coalitions, may unavoidably be affected by factional ties (Voslensky, 1984; Manion, 1985; Burns, 1989). Clients of top leaders are more quickly promoted through the hierarchy (Naughton, 2005). One example often referred to in the literature, is the quick rise of officials who had worked together with Jiang Zemin in Shanghai, after he became General Secretary of the party (Li, 2001, 2004).

At the same time, another school argues that political institutionalization is an integral part of Chinese politics, and that, together with its amazing economic achievements, the Chinese political institution has undergone substantial changes in the past three decades (Shirk, 1993; Bo, 2004; Landry, 2008; Gehlbach and Keefer, 2011). Mao Zedong created and destroyed political institutions for the sake of ideology. However, after Mao's death, Deng Xiaoping pushed numerous actions to

accelerate the long delayed process of institutionalization within the Party. In his influential speech in August 1980, Deng recommended abolishing life tenure in leading posts and promoting young and middle-aged cadres. Following the political agenda laid out by Deng, the Party gradually institutionalized the procedures for elite recruitment. From 1983 to 1985, about 20 million cadres were made redundant in accordance with the new mandatory retirement rules (Manion, 1992).[7] In 2002, the Party Central Committee issued a document entitled 'Regulations on Selection and Appointment of Party and Government Leading Cadres'[8], which is nicknamed the 'Constitution' in the realm of personnel management. In recent years, it also issued a series of documents concerning open selection, term limits, rule of avoidance and the resignation of Cadres.[9]

In addition to the promulgation of formal regulations, actual criteria for recruiting senior-level cadres were also altered. Some suggest that economics became the top criterion for official promoting in the post-1978 context, as the current government stresses development as the fundamental principle (Dickson, 2002). Hence, career-minded provincial officials compete with each other in the tournament-like competitions and, as a result, develop local economies. Employing the turnover data of top provincial leaders in China between 1979 - 1995 and 1979-2002, Li and Zhou (2005), and Cheng, et al (2005) find that the likelihood of promotion of provincial leaders increases with their economic performance, while the likelihood of termination decreases with their economic performance. But the validity of the results of the tournament thesis is questionable. Given the extreme diversity in regional endowments, to condition official promotion on economic performance, would be equal to rewarding cadres for developments beyond their control. Tao, et al (2010) find that the strong empirical evidence for the previous tournament thesis was due to coding errors, and after correcting these coding errors, the significant causal relationship between economic growth and the promotion of leaders disappears. Shih et al (2012) use a novel Bayesian model of rank to estimate the impact of covariates on elite ranking in China, but find no evidence that provincial officials who generated higher-than-average growth were rewarded with higher party ranks.

Given the unresolved debate concerning determinants of cadre promotion in China, I consider all the factors mentioned above as explanatory variables for the regression function, in order to identify those which significantly affect the turnovers of government officials.

Note that in the sample, I include only the provincial party secretaries (the number one leader), but not the governors (the number two leader). Therefore, the term 'provincial leader' refers to 'provincial party secretary' for the rest of the paper.

7 Some of the retired cadres, especially those with revolutionary experiences were given honorary positions in the Central or Local Advisory Commission, who can still influence policy making behind the scene. The Advisory Commissions were abolished after the 17th National Congress in 1992.

8 People's Daily, July 23, 2002.

9 See the Announcement on the issuance of 'Interim provisions on the open selection of party and government leading cadres' and other four regulatory documents by the General Office of the Central Committee on April 8, 2004.

I code the promotion of provincial leaders,[10] using the criteria outlined by Su, at el (2011).[11]

3.3 The Endogeneity Issue

There are several types of potential endogeneity bias inherent in both model one and model two. In this subsection, I will discuss the causes, the ways to alleviate them, and the caveats of the current analysis.

(1) Endogeneity due to reverse causality between the corresponding dependent variables and collective actions. The main hypotheses are that increasing collective actions can cause the leader to choose policies that are more in favor of the citizens; but that collective actions in turn could be triggered by the implementation of these policies. For example, the people want more freedom on fertility choice; they care about health care for themselves and their family; and they want their children to have better educational opportunities. If these demands cannot be satisfied, due to coercive government family planning policies or undersupply of basic public goods, citizens' aversion to the government authority may increase, potentially inciting collective action.

I solve this problem by using Instrumental Variable estimation. I use the efficiency of law firms in every province per year as the instrument for labor dispute. This variable is selected as an instrument because, on the one hand, the efficiency of law firms correlates with the number of labor disputes, as it encourages and facilitates workers to fight for their own rights; but on the other hand, the efficiency of law firms is not likely to lead to any changes in the strictness of the One Child Policy, or to the number of beds in hospitals or the teacher-student ratio. The variable used as an instrument is a sub-index taken from *Index of Marketization of China's Provinces: 2009 Report* (Fan, Wang and Zhu, 2010), an index measuring the efficiency of law firms and accountant firms which is acquired from survey of enterprises through posing the question: *'How good do you think the operation of such market intermediaries such as law firms and accountant firms in your locality?*'. The answers to this question are: *'1.Very good. 2. Fairly good. 3. Normal. 4. Fairly bad. 5. Very bad*'.

(2) Endogeneity due to measurement error. Labor dispute is used as proxy for 'collective action' in the analysis, because I cannot collect data to perfectly measure such variable. When an imprecise measure of a variable is used in a regression model,

10 Coding the promotion of a provincial leader in the Chinese political system involves several technical hurdles. For example, there are numerous instances of lateral promotion where someone is promoted from a poor province to a rich province. There are also instances of nominal promotion but de facto demotion, such as a promotion to the National or Provincial People's Congress (NPC) and National or Provincial People's Political Consultative Conference (NPPCC) (Shih 2004).

11 The promotion for provincial secretaries includes membership of the Politburo or the Politburo Standing Committee, membership of the State Council, the vice premiership, the premiership and, the chairmanship and vice chairmanship of the NPC and NPPCC. A demotion in this paper means a move by a provincial leader to standing committee membership of the NPC or NPPCC, chairmanship of provincial People's Congress or the provincial People's Political Consultative Conference, membership of the central or provincial consultative committee. It also includes transfer to deputy position in equal-ranking positions in ministries or commissions at the center, and to provincial governor. Lateral moves are defined as transferences among equal-ranking positions across provinces and to corresponding positions in central departments.

the model inevitably contains measurement error. Under the classical errors-in-variables (CEV) assumption, the estimated effect will be attenuated (Woodridge, 2012). This kind of attenuation bias is not likely to cause serious problems to the result, because if a significant effect of labor dispute is observed, it means the real effect of collective action has an even higher magnitude. However, if the CEV assumption is violated, for example, in case the measurement error is negatively correlated with labor dispute and the weight of which is larger than labor dispute, it is possible that we observe a negative effect of labor dispute even when the true effect of collective action is positive. Due to the limit of the data, I cannot test the validity of the CEV assumption. This is a caveat of the current analysis.

(3) Endogeneity due to omitted variable. This type of endogeneity problem could bias the estimates, and furthermore, potentially invalidate the IV strategy used. The first type of omitted variable may be some kind of general institutional development that correlated with the intensity of collective actions, which could in turn affect the policy outcomes. The second type of omitted variable may be some unobserved personal characteristics of the provincial leaders, for example, a provincial leader's liberal attitude. A liberal provincial governor could be more tolerant about the labor disputes and more likely to promote efficiency of law firms. Such leader would also be more likely to loosen the implementation of the One-child Policy, as well as to promote more social expenditures in health and education. I will address the potential threats due to omitted variable in more details in section 6.

4. DATA

The study uses provincial-level panel data from 30 provincial units.[12] I set up a new data set through merging data from various sources whose time span varies substantially with each other. The data on labor disputes is only available from 1996 and the indices on the efficiency of law firms are only available from 1997. Data indicating the factional ties of the provinces with the Center is unavailable after 2004. Consistent recording of the economic fines on excessive fertility discontinued after 2002, when the new law on Family Planning was issued and the old system was abolished. As a result, I select balanced panel data from 1996 to 2002 for model one and from 1996 to 2004 for model two.

4.1 Backgrounds and careers of provincial party secretaries

In order to study the promotion of leaders I need data on personal characteristics and career tracks of the provincial party secretaries. Most of this information could be found in their openly available online CVs published on two official government websites of China, *www.people.com.cn* and *www.xinhuanet.com*. The only concern in using this information is that coding errors may occur in the transformation process to produce computer analyzable data. Thankfully, some well-coded data sets can be found in the literature. For example, Li and Zhou (2005), Cheng, Li, and Zhou (2005)

[12] Tibet is excluded from the sample because Tibet has a very special policy status.

and, Persson and Zhuravskaya (2009) have studied the backgrounds of provincial leaders in China and have coded their CVs accordingly. In order to avoid coding errors, I compare coding methods used and use variables if no controversy is present. I then recode variables with controversial coding methods.

For the undisputed data on the provincial party secretaries' age, education level, place of birth, as well as the starting and ending time of their term, I directly adopt variables from Persson and Zhuravskaya (2009).

The most highly disputed variable has been the coding of leadership turnovers. The reason for the debates has been analyzed previously, and in this paper, I recode the promotion, lateral move and demotion for a provincial party secretary following Tao, et al (2010) between 1996 and 2004. Among the 269 provincial-year observations, there are 16 promotions, 220 lateral moves and 33 demotions or retirements.

In order to control the influence of connections with central leaders in promotion, I use data from Shih (2004). This data captures some of the provincial factional affiliation with standing committee members of the Politburo. It is the sum of a set of dummy variables which include whether or not a province in a given year has a provincial party secretary or governor who has the same birthplace, attended the same high education institution, and had previously worked for over half a year in the same system (*xitong*) as a member of the standing committee of the Politburo, and who was a participant of the Long March. The four provincial units having the highest score in connection with the Center are Shanghai, Chongqing, Beijing and Tianjin, the four municipalities directly under the central government. All the variables used in the study of the turnovers of provincial leaders are summarized in Panel A, Table 1A.

4.2 Labor Disputes and Policy Outcomes

The main predictor in this study is the number of labor disputes, which is used as a measure of intensity of collective actions. After the socialist transformation of capitalist industry and commerce in China in 1955, the Leninist thought that labor dispute should not exist in socialist country as the conflict of interest between the working class and the state had been eliminated actuated the authorities to abolish the institutions for labor dispute settlement. Strikes were seen as illegal and monstrous crime. As a result, from 1955 to 1986, labor disputes had been treated like petitions, and the bureau of petitions was in charge of handling labor disputes (Shi, 1999). The restoration of the labor disputes settlement system began from 1987, and the number of labor disputes had increased fast year by year since then. This study uses provincial level labor dispute data from Year Book of Labor Statistics of China. This data is only available after 1995 when China's *Labor Law* came into force. I collect panel data on labor disputes from 1996 to 2004 in 30 provincial units. The number of labor disputes reflects a similar pattern as in mass incidents, which increased from 85962 in 1996 to 259392 in 2006, an increase of approximately 3.02 times. There are various causes of the disputes. Some disputes are caused by economic dissatisfaction in labor remuneration and welfare; some are caused by termination of labor contract and laid-off; and some are caused by management malfeasance and corruption which

generate distrust and anger that converts underlying economic disaffection into open social unrest. Unfortunately, existing data cannot be discerned into different types of labor dispute, and I only have data on the unconstrained category of dispute. In the regression, I use the population density of labor dispute (number of labor disputes divided by population) instead of using labor dispute itself, because I find that the absolute numbers of labor disputes vary in different provinces according to a certain pattern. Highly populated provinces, such as Guangdong, Beijing and Shanghai, usually have extraordinarily large numbers of labor disputes. The population density of labor dispute actually captures the intensity of labor dispute, and is thus a more relevant factor than the number of labor dispute itself in the provincial leaders' decision making processes.

Policy outcomes are the dependent variables in our model, which should vary with the changing number of labor disputes accordingly. I separate the dependent variables into two categories to fit model one and model two, according to whether or not the Center's preference coincides with that of the citizens. For model one, where the Center and the citizens have converse preferences, I use the fines on excessive fertility as a measure of policy outcomes. Population control is a very controversial policy in China, with critics emphasizing human rights abuses, while supporters credit it for addressing China's overwhelming demographic challenges. The One Child Policy was first brought forward in an 'open letter' issued by the CCP Central Committee in September 1980, urging all party and youth league members to 'take the lead' in having one child (Huang and Yang, 2004). After a short time period, mandatory birth control was made official policy in China. The central authorities want strict control over the One Child Policy; while the citizens want loosened control. In order to strengthen the enforcement of systematic birth control, the Center forced local governments to mobilize numerous methods to regulate reproductive behavior. Economic fines are commonly adopted by provinces as financial disincentives for excess fertility (Scharping, 2003). However, there are both temporal and regional variations among the fine rates across different provinces. It allows us to study the downward accountability of provincial leaders by exploiting the variations in the fine rates. The data on the fines for excess fertility is from Ebenstein (2010), who imputes the fine rates for each province from 1979 to 2000. I extend Ebenstein's sample to 2002, the year before the new *Population and Family Planning Law* was introduced. Furthermore, birth control policy has varied from province to province. Some provinces, such as Beijing, Tianjin, Shanghai, Jiangsu, and Sichuan, have strict implementation of one child per couple, whereas provinces like Qinghai, Xinjiang, Hainan and Tibet are allowed to have two or more children (Guo, et al, 2003). Gu et al. (2007) have classified each of the 31 provinces and autonomous regions of China into a 1, 1.5, or 2 child zones. In the estimation, I use the effective fine rates on excess fertility by making adjustments for the regions that are granted authorization for a second child.

For the dependent variables in model two, where the Center and the people share the same interests, I consider available measures of public goods provision. I use the teacher-student ratio in primary schools to measure public goods provision of

education, and hospital beds per 1000 persons to measure public goods provision of healthcare. I also use government expenditure on public goods per capita as monetary measure of pubic goods provision. Unfortunately, I only have the information on the unconstrained category of total government spending on education, healthcare, culture and science for each province, by which I divided the provincial population, and henceforth refer to it as social expenditure per capita. Controlling for their upward accountability, the incentives for the provincial leaders to implement policies in favor of the citizens should be explained by their downward accountability. If our theory is correct, we could expect that increased occurrence of collective actions has a positive effect on public goods provision, *ceteris paribus*. All the data sets used here to measure public goods provision are from China Statistical Yearbook. All the variables used in the study of the relationship between labor disputes and policy outcomes are summarized in Panel B, Table 1A. See also Table 1B for the summary of the mean of some variables by province.

5. RESULTS

5.1 Turnover of Provincial Party Secretaries

In this section, I first present results on the determinant of turnover of provincial party secretaries. Table 2 reports the estimated results of an ordered probit model including all the relevant factors that can affect the turnover of provincial leaders. To allow for heterogeneity across observations, I estimate the ordered probit model with the robust standard errors option. The left column reports the result controlled for the average GDP growth, the provincial leader's term, age, high education and relationship with the Center. The right column includes additional province and year dummies in order to control the possibility that difference in economic performance among provinces may translate into political gains for officials posted in rich localities or political losses for officials posted in poor localities, and to control for time-specific shocks that are not explicitly encapsulated in the model.

The results show that average GDP growth has no significant influence on promotion after controlling for province and year dummies, confirming the findings in Tao, et al (2010). The results also show that ties with the Center have no real impact on promotion either. As expected, age is highly significant. Increased age in the same position has a negative effect on promotion. Although the rule of 'retirement at age 65' is not strictly adhered to, reaching the age of 65 will reduce the probability of promotion. Additionally, higher education has a significant positive effect on promotion in the sample.

5.2 The Effect of Collective Actions on Fines of Excess Fertility

Because the Center and the people have contrasting preferences on family planning, model one is used to directly estimate the effect of collective actions on the fines of excess fertility. The main concern for the estimation is to disentangle the

reverse causality between strict implementation of family planning and collective actions. In order to solve this problem, I adopt the IV method, where I use the efficiency of law firms in every province per year as the instrument for labor dispute.

The result is reported in Table 3. I run both the fixed-effects model and panel IV regression. The coefficient of labor dispute is negative but not significant in the fixed-effects model. The insignificance is probably due to the reverse causality. After controlling for the reverse causality using IV estimation, the coefficient of labor disputes becomes negatively significant. The results mean that provincial leaders respond to intensified labor disputes with loosening control of 'One Child Policy': the higher the intensity of labor disputes, the lower the fines on excess fertility. This confirms Hypothesis 1. As a robustness check, I control for the prospects of career advancement of the provincial leaders and run the estimation again. This is because some literature argues that career incentives might affect how vigorously local government pursues policy enforcement in China (Kung and Chen, 2011). The outcomes reported in Colum 3 indicate the negative effect of labor disputes on the 'One Child Policy' still holds.

To test whether the instrument is weak, I report the results from the first-stage regression of the endogenous variable labor disputes on the exogenous variable the efficiency of law firms. As column 4 of Table 3 shows, the first-stage regression has reasonable explanatory power, and the coefficient of the efficiency of law firms is positive, as expected, and highly statistically significant. The Cragg-Donald Wald F statistic shows that the efficiency of law firms is not a weak instrument.

5.3 The Effect of Collective Actions on Public Goods Provision

For public goods provision, the Center and the people have similar preferences, model two is fitted where the career incentive of provincial party secretaries can be estimated by a first step estimation to control for the upward accountability of provincial leaders' incentives in providing public goods. After the first step estimation on the turnover of leaders, I generate two variables, *promoion3* and *promotion1*, the expected probability of promotion and demotion, which are used as controls in the second step estimation on the effects of collective actions on public goods provision.

The second step estimation suffers the same reverse causality problem between collective actions and public goods provision. To solve this problem, the variable *law* is used here again as the instrument for labor disputes, because the development of market intermediary organizations such as law firms encourages and facilitates workers to fight for their own rights, but is not likely to lead to any changes in social expenditure per capita, the number of hospitals beds, or the number of teachers in primary schools.

Tables 4 to 6 present the baseline results. All of them are organized in the same way. Each table displays the results for one policy outcome, explained in the caption of the table, and consists of four columns. Column 1 presents the basic regression results controlling for the fixed-effects; Column 2 presents the results of the panel IV estimation with the option to control for the fixed-effects; Column 3 presents the results of the Panel IV estimation after removing outliers in the top and bottom 1

percent tails of the dependent variables' distribution; Column 4 presents the results of the first-stage regression from the IV estimation. Both *promoion3* and *promotion1* are used as control variables, and in order to rule out the effect of socioeconomic development on public goods provision, I control for GDP per capita, local revenue and population in each province.

First, Column 4s in Table 4 to 6 report results from the first-stage regressions of the panel IV estimation, where the efficiency of law firms is used as an instrument for the intensity of labor disputes. All the results show that the first-stage regressions of the panel IV estimation have reasonable explanatory power, and the coefficients of the efficiency of law firms are positive, as expected, and highly statistically significant. Besides, the Cragg-Donald Wald F statistics are much bigger than the rule-of-thumb critical value of 10. All these tests indicate the efficiency of law firms is not a weak instrument for labor disputes.

Then, I present the effect of labor disputes on monetary provision of public goods, the social expenditure spent on every citizen measured in 1 hundred yuan. Both the fixed-effects and panel IV estimations show labor disputes can significantly increase social expenditure per capita. One unit increase in labor disputes per 10,000 people will increase the social expenditure per capita by 14.3 yuan according to the panel IV estimation. Thus, the provincial governments respond to collective actions by expanding expenditure on public goods supply to local citizens, in order to appease potential revolutionaries, confirming Hypothesis 2. As expected, GDP per capita have significant positive effects on social expenditure; a one thousand yuan growth in GDP per capita increases social expenditure per capita by 33 yuan. But it seems that social expenditure is not increasing with local revenue, which corroborates with the public observation that although the government's revenue grows with ever increasing speed in China, but social welfare development lags behind.

Finally, I present the results of non-monetary measures of public goods provision which considers the benefits received by local citizens from local policies. As is shown in Table 5, labor disputes have positive effects on teacher-student ratios; the more intensive the labor dispute, the larger the number of teachers per student in primary schools. The result is significant at 10 percent, and could be interpreted as the following: provincial governments respond to increasing occurrence of collective actions by providing better primary school education for local citizens. The two variables on the promotion/demotion of provincial leaders are insignificant. Thus, the incentives for the provincial leaders to provide better hospitals are more likely due to downward accountability to the local people than upward accountability to the Center. As expected, GDP per capita has significant positive effects on teacher-student ratio.

Collective actions also have positive effects on the number of beds in hospitals. According to panel IV estimation in Column 2 of Table 6, one unit increase in the intensity of labor disputes will increase the number of hospital beds per 1000 persons by 1.153, and the result is significant at 5 percent. Both the two variables on the turnover of provincial leaders are insignificant. The increase of GDP per capita does not increase the number of beds in hospitals, but local revenue has significant positive effects on it.

Since the data set I am using is not very big, the estimates may be sensitive to the inclusion of one or several observations. As a robustness check, I take out the possible outliers from the data and rerun the estimations. I remove the outliers in the top and bottom 1 percent tails of the distribution and run the estimations again. The outcomes reported in Colum 3s in table 4 to 6 indicate the above findings are not driven by extreme data values.

6. ROBUSTNESS

The validity of the above panel IV estimates assumes the IV, say, the efficiency of law firms, cannot be correlated with the same unobserved variables or have any direct impact on the outcome variables. To be cautious, this section will discuss and address the potential threats of omitted variables.

The first type of omitted variable may be some kind of general institutional development that correlated with the intensity of collective actions, which could in turn affect the policy outcomes. In this regard, the panel IV estimates would be biased. In order to check the robustness of the baseline results, I estimate the model again by controlling for other institutional variables. A common measure of institutional development in China is to use Fan, Wang and Zhu's (2010) regional marketization index which measures the relative progress of marketization in different regions in China. The results are report through Table 7 to 10. Column 1s in each of the tables report the results of estimation when the progress of marketization is controlled for. The results are similar to the previous findings. Only the effect on social expenditure per capita become insignificant, but it still shows some weak support that provincial leaders increase social expenditure in response to collective actions by the people.

The second type of omitted variables may be some unobserved personal characteristics of the provincial leaders, for example, a provincial leader's liberal attitude. A more liberal-minded provincial leader may be more tolerant about the labor disputes and such environment may be more conducive to the development of law firms; and meanwhile this leader may be more prone to loose policy with smaller fines on the One Child Policy as well as increase public goods provision. One possible way to alleviate this problem is to control the fixed effects of the individual provincial leader, because a person's liberal attitude is a relatively stable personal character for a given time span. As a robustness check, I generate a set of personal dummies for each provincial leader and include them as control variables. Column 2s in Table 7 to 10 report the results of estimation when personal dummies are controlled for. Except for the effect on teacher-student ratio, the previous findings on provincial leaders' downward accountability to the people still hold. I also check the robustness of the findings by controlling for both marketization and personal dummies, and the results still support the baseline findings (see column 3s in Table 7 to 10).

The analysis employs a two-step model and uses the fitted values of 'promotion' in the first stage regression as regressors, therefore, the second stage errors might be biased. Whereas the econometric model under investigation is quite complicate, the first-stage estimation is a probit model and the second-stage estimation is panel IV,

hence the conventional method to adjust the second-stage errors becomes impossible, as the analytical expressions are too complicate. I check the robustness of the baseline findings by bootstrapping the standard errors[13]. I also take into account the clusters of the data when bootstrapping the standard errors. Table 11 reports the bootstrapped standard errors and they support the baseline findings.

7. CONCLUSION

Results presented suggest that collective actions can significantly affect governance outcomes, even in an autocratic context. Although there are no elections, and thus no formal downward accountability channels, the provincial leaders will reduce fines on excess fertility and provide more public goods in response to intensive collective action. I exclude the possibility of upward accountability in public goods provision by controlling for the career incentives of provincial leaders. I also rule out the reverse causality between collective actions and policy outcomes by using instrumental variables. Therefore, I conclude that the provincial leaders' responses to collective actions are attributable to their downward accountability towards the people. This is due to the fact that they care about the survival of the regime, which in turn is a result of their pivotal role as semi-national leaders in China.

The policy implication to be drawn from this research is that: for autocratic countries like China, where the instrument to discipline local politicians via elections is absent, and at the same time, the ability of the Center to supervise local officials is limited, small scale riots and social unrest could serve as an alternative disciplining device to increase local politicians' downward accountability to their local constituencies. Therefore, if the Central authorities care about the regime's survival and want to avoid the eruption of the 'social volcano'; they should tolerate small riots which can be used as a multipurpose governance tool, and thus transform the 'social volcano' into 'scattered boilers'.

[13] Personal dummies are not included in the bootstrapping.

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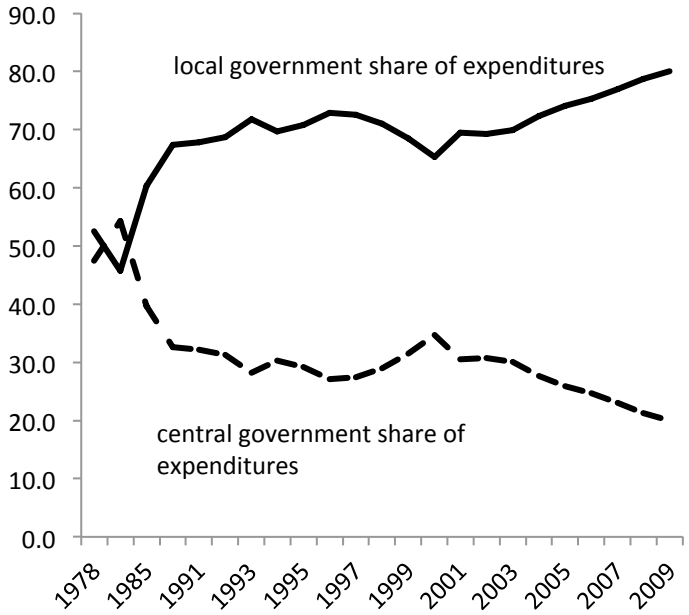

Figure 1. Percentage of Local Government Expenditures versus central government Expenditures.

Data source: Year Book of China 2010.

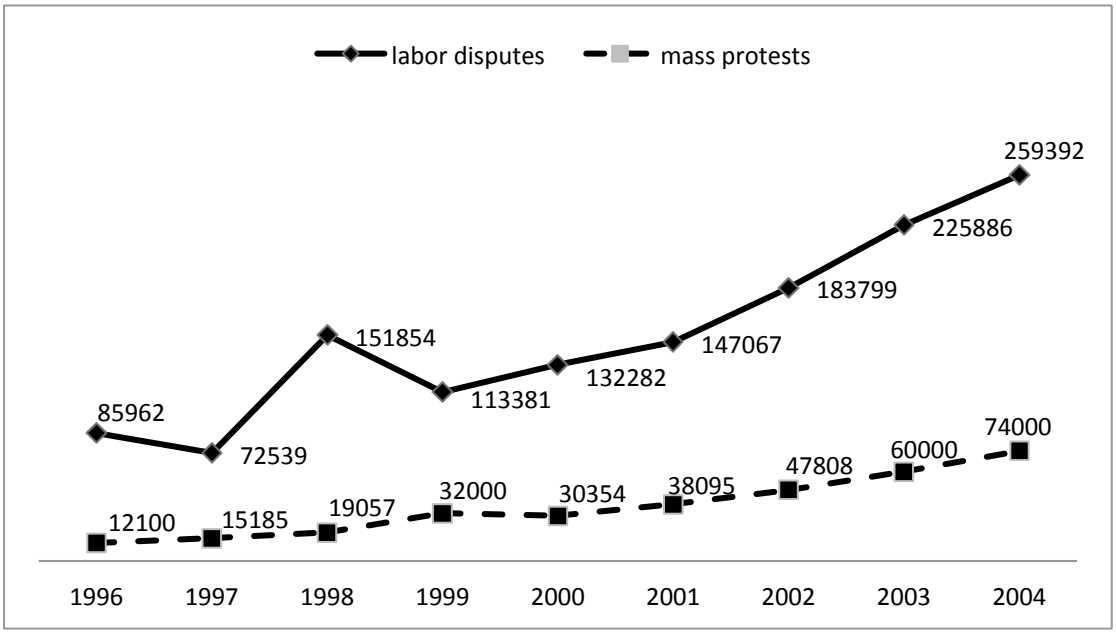

Figure 2. Number of Labor Disputes and Estimated Number of Mass Incidents.

Data Source: Year Book of Labor Statistics of China. Tanner (2004), Liaowang (2004), and South China Morning Post (7/7/2005), Liaowang (09/2008) , Blue Book of China's Society (2005).

Table 1A. Summary Statistic of Variables

Panel A					
Variable	N	Mean	Standard Deviation	Min	Max
Promotion	269	-0.06	0.42	-1	1
Average GDP growth	269	110.5	1.8	105.1	115.6
Term	269	4.0	2.2	1	12
Age	269	59.2	3.9	47	66
Age65	269	0.06	0.23	0	1
Sum of ties	269	1.5	1.0	0	4
High education	269	0.95	0.22	0	1
Panel B					
Density of labor disputes(1)	269	1.35	1.63	0.24	10.67
Fines of excess fertility	210	1.8	1.0	0.2	6
Teacher-student ratio	260	0.05	0.01	0.03	0.09
Hospital beds per 1000 persons	252	28.3	11.4	15	65
Social expenditure per capita(2)	270	2.65	2.09	0.52	14.00
Promotion3	269	0.07	0.13	0.00	0.84
Promotion1	269	0.12	0.18	0.00	0.95
Population density(3)	270	376	462	7	2810
Origin	269	0.2	0.3	0	1
High education	269	0.9	0.2	0	1
GDP(4)	270	350.8	299.7	18.4	1886.5
GDP per capita(5)	270	9.3	7.3	2.0	46.3
Local revnue (6)	270	23.4	22.8	1.0	141.9
Population (7)	270	41.8	25.6	4.9	114.3
Efficiency of law firms	240	1.741	1.896	-0.47	11.28

Note: The observation unit is province-year. promotion3 and promotion1 are the fitted predicted value from the probit regression, where promotion3 is the predicted probability of being promoted and promotion1 is the predicted probability of demotion or retirement. (1) Unit: number of labor disputes per 10,000 people. (2) Unit: hundred yuan. (3) Unit: number of people per square kilometer. (4) Unit: billion yuan. (5) Unit: thousand yuan. (6) Unit: billion yuan. (7) Unit: million.

Table 1B. Summary Statistic of the mean of variables by province

Province	Labor disputes	Fines of excess fertility	Teacher-student ratio	Hospital beds	Social expenditure	Efficiency of law firms
Beijing	4.2	4.4	0.078	62.3	8.30	8.022
Tianjin	2.4	1.1	0.06	42.8	5.00	3.614
Hebei	0.8	1.7	0.042	24.8	1.78	0.756
Shanxi	0.9	0.9	0.052	31.7	2.08	2.32
Inner Mongolia	0.6	1.4	0.067	27.6	2.36	1.275
Liaoning	1.7	2.6	0.055	45.7	2.47	1.93
Jilin	0.9	0.4	0.064	34.4	2.42	1.085
Heilongjiang	1.0	1.1	0.067	-	2.20	1.397
Shanghai	5.2	3.0	0.057	57.1	8.98	7.595
Jiangsu	2.8	3.1	0.042	21.4	2.59	1.32
Zhejiang	1.5	1.5	0.045	25.2	3.28	2.16
Anhui	0.5	0.7	0.042	-	1.35	0.756
Fujian	1.1	1.9	0.05	26.0	2.78	1.34
Jiangxi	0.4	2.8	0.051	21.4	1.50	0.534
Shangdong	1.4	0.8	0.052	23.3	2.03	1.094
Henan	0.6	1.4	0.041	21.0	1.33	0.631
Hubei	1.1	1.9	0.042	22.2	1.58	1.004
Hunan	0.7	1.3	0.047	21.7	1.32	0.996
Guangdong	2.5	2.3	0.039	22.6	3.54	2.322
Guangxi	0.7	3.1	0.037	17.7	1.64	0.591
Hainan	0.8	1.5	0.047	24.7	2.09	1.375
Chongqing	1.3	2.6	0.042	21.2	1.46	1.561
Sichuan	0.7	2.4	0.041	22.7	1.27	1.035
Guizhou	0.4	2.3	0.035	15.0	1.58	0
Yunnan	0.4	1.5	0.045	18.0	2.54	0.83
Shaanxi	0.8	1.2	0.041	25.8	1.80	1.22
Gansu	0.6	1.3	-	23.1	1.86	0.564
Qinghai	0.6	0.8	0.056	32.7	2.80	1.254
Ningxia	1.5	1.7	0.051	23.1	2.61	1.806
Xinjiang	2.3	1.8	0.053	37.1	3.07	1.835
Total	1.4	1.8	0.05	28.3	2.65	1.741

Table 2. Ordered Probit Regressions: Political turnover of Provincial Party Secretaries, 1996 - 2004

	Dependent variable: Promotion	
	(1)	(2)
Average GDP growth	0.105*	0.024
	(0.04)	(0.09)
Term	-0.017	-0.040
	(0.05)	(0.07)
Age	-0.064*	-0.163***
	(0.03)	(0.05)
Age65	-0.819	-1.078
	(0.56)	(0.58)
Sum of ties	0.030	-0.052
	(0.09)	(0.13)
High education	0.915**	1.185*
	(0.34)	(0.54)
Cutoff point 1	7.328	-10.831
	(4.66)	(10.15)
Cutoff point 2	10.262*	-6.520
	(4.69)	(10.13)
Number of observations	269	269
Pseudo R-squared	0.100	0.364

Note: Promotion is an indicator variable that takes three values, -1=demotion or retirement, 0=lateral move, 1=promotion. Column 1 is regression without province and year dummies, Column 2 is regression with province and year dummies. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent.

Tabel 3. The Effect of Collective Actions on Fines of Excess Fertility

	Dependent variable: Fines of excess fertility			
	(1) FE	(2) Panel IV	(3) Panel IV	(4) First-stage regression
Intensity of labor disputes	-0.077	-0.234	-0.295	
	(1.32)	(1.88) *	(2.22)**	
Promotion3	0.545		1.195	
	(1.40)		(2.44)**	
Promotion1	0.136		0.228	
	(0.52)		(0.72)	
Population density	0.000	0.003	0.004	0.012
	(0.22)	(1.13)	(1.53)	(0.002) ***
Origin	-0.343	-0.331	-0.272	-0.064
	(2.32)**	(1.86) *	(1.48)	(0.209)
High education	0.007	-0.016	0.028	-0.142
	(0.03)	(0.06)	(0.09)	(0.309)
GDP	-0.000	0.001	0.000	0.000
	(0.30)	(0.77)	(0.02)	(0.001)
_cons	1.820	0.857	0.477	-4.154
	(2.86)***	(0.86)	(0.45)	(0.798) ***
Efficiency of law firms				0.639
				(0.093) ***
Observations	208	179	179	179
Number of prov	30	30	30	30
Within R-squared	0.0576	.	.	0.572
Between R-squared	0.0245	0.096	0.1110	0.664
Overall R-squared	0.0321	0.077	0.0899	0.373
Cragg-Donald Wald F statistic		47.099	42.174	

Note: Column 1 is the Fixed-effects model controlling for province and year fixed-effects. Column 2 is the Panel IV estimation using the efficiency of law firms as instrument for labor disputes and, the fixed-effects has been controlled. Column 3 is the results of the Panel IV estimation after controlling for prospects of career advancement. Column 4 is the results of first-stage regression from the IV estimation. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent.

Table 4. The Effect of Collective Actions on Social Expenditure

	Dependent variable: Social Expenditure per capita			
	(1) FE	(2) Panel IV	(3) Outlier Removed	(4) First-stage regression
Intensity of labor disputes	-0.023	0.143	0.142	
	(0.91)	(1.80)*	(1.83)*	
Promotion3	0.715	0.513	0.512	0.272*
	(3.71)***	(2.10)**	(2.05)**	(0.53)
Promotion1	-0.031	-0.246	-0.251	0.849**
	(0.23)	(1.36)	(1.40)	(0.37)
Origin	-0.087	-0.095	-0.086	0.025
	(1.23)	(1.03)	(0.91)	(0.21)
High edu	0.192	0.126	0.122	0.144
	(1.72)*	(0.78)	(0.75)	(0.36)
GDP per capita	0.375	0.330	0.332	0.180***
	(30.02)***	(15.29)***	(16.72)***	(0.03)
Local revenue	-0.010	-0.014	-0.014	0.031***
	(3.12)***	(2.69)***	(2.72)***	(0.01)
Population	-0.006	0.016	0.016	-0.122**
	(0.57)	(0.62)	(0.63)	(0.05)
_cons	-0.554	-1.045	-1.051	2.938
	(1.34)	(1.03)	(1.03)	(2.22)
Efficiency of law firms				0.486***
				(0.09)
Observations	268	239	236	239
Number of prov	30	30	30	30
Within R-squared	0.9281	0.9033	0.5799	0.6405
Between R-squared	0.915	0.8303	0.5026	0.5069
Overall R-squared	0.9025	0.8399	0.3582	0.3882
Cragg-Donald Wald F statistic		31.090	34.670	

Note: Column 1 is the Fixed-effects model controlling for province and year fixed-effects. Column 2 is the Panel IV estimation using the efficiency of law firms as instrument for labor disputes and, the fixed-effects has been controlled. Column 3 is the results of the Panel IV estimation after removing outliers in the top and bottom 1 percent tails of the social expenditure distribution. Column 4 is the results of first-stage regression from the IV estimation. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent.

Table 5. The Effect of Collective Actions on Teacher-student Ratio

	Dependent variable: Teacher-student Ratio			
	(1) FE	(2) Panel IV	(3) Outlier Removed	(4) First-stage regression
Intensity of labor disputes	-0.001	0.002	0.001	
	(2.94)***	(1.84)*	(1.84)*	
Promotion3	0.002	-0.001	-0.001	0.238
	(0.84)	(0.25)	(0.29)	(0.54)
Promotion1	-0.001	-0.004	-0.003	0.821**
	(0.70)	(1.64)	(1.49)	(0.40)
Origin	0.001	0.001	0.001	0.028
	(1.68)*	(1.41)	(1.49)	(0.21)
High edu	-0.001	-0.003	-0.003	0.131
	(1.10)	(1.43)	(1.83)*	(0.37)
GDP per capita	0.002	0.001	0.001	0.181***
	(11.32)***	(4.55)***	(7.09)***	(0.03)
Local revenue	-0.000	-0.000	-0.000	0.030***
	(1.41)	(2.91)***	(3.12)***	(0.01)
Population	0.000	0.001	0.001	-0.118**
	(1.44)	(2.59)**	(2.33)**	(0.05)
_cons	0.032	0.012	0.016	2.766
	(6.66)***	(1.04)	(1.47)	(2.27)
Efficiency of law firms				0.503***
				(0.09)
Observations	258	231	227	231
Number of prov	30	30	30	30
Within R-squared	0.5887	0.4537	0.4573	0.6462
Between R-squared	0.0737	0.1137	0.0789	0.5305
Overall R-squared	0.1253	0.0582	0.0369	0.4042
Cragg-Donald Wald F statistic		32.142	49.294	

Note: Column 1 is the Fixed-effects model controlling for province and year fixed-effects. Column 2 is the Panel IV estimation using the efficiency of law firms as instrument for labor disputes and, the fixed-effects has been controlled. Column 3 is the results of the Panel IV estimation after removing outliers in the top and bottom 1 percent tails of the teacher-student ratio distribution. Column 4 is the results of first-stage regression from the IV estimation. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent.

Table 6. The Effect of Collective Actions on Hospital Beds per 1000 Persons

	Dependent variable: Hospital Beds per 1000 Persons			
	(1) FE	(2) Panel IV	(3) Outlier Removed	(4) First-stage regression
Intensity of labor disputes	0.539	1.153	1.246	
	(3.28)***	(2.44)**	(2.14)**	
Promotion3	0.050	-1.373	-1.040	0.312
	(0.04)	(0.92)	(0.69)	(0.57)
Promotion1	1.242	0.224	0.185	0.897**
	(1.34)	(0.20)	(0.16)	(0.39)
Origin	0.569	0.390	0.414	0.007
	(1.14)	(0.65)	(0.68)	(0.24)
High edu	-1.242	-0.917	-0.935	0.207
	(1.46)	(0.83)	(0.83)	(0.43)
GDP per capita	-0.375	-0.529	-0.546	0.183***
	(4.62)***	(4.08)***	(4.44)***	(0.03)
Local revenue	0.091	0.081	0.076	0.031***
	(4.51)***	(2.72)***	(2.06)**	(0.01)
Population	-0.043	-0.137	-0.122	-0.120**
	(0.68)	(0.88)	(0.75)	(0.06)
_cons	31.721	36.350	35.547	2.671
	(11.71)***	(5.99)***	(5.61)***	(2.32)
Efficiency of law firms				0.487***
				(0.09)
Observations	250	223	221	239
Number of prov	28	28	28	28
Within R-squared	0.1869	0.1128	0.0793	0.6474
Between R-squared	0.2805	0.0018	0.0058	0.5078
Overall R-squared	0.1443	0.0046	0.0006	0.3900
Cragg-Donald Wald F statistic		29.323	22.791	

Note: Column 1 is the Fixed-effects model controlling for province and year fixed-effects. Column 2 is the Panel IV estimation using the efficiency of law firms as instrument for labor disputes and, the fixed-effects has been controlled. . Column 3 is the results of the Panel IV estimation after removing outliers in the top and bottom 1 percent tails of the beds distribution. Column 3 is the results of first-stage regression from the IV estimation. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent.

Tabel 7. Robustness Check of the Effect of Collective Actions on Fines of Excess Fertility

	Dependent variable: Fines of excess fertility		
	(1) M controled	(2)P controled	(3)M&P controled
Intensity of labor disputes	-0.350	-0.272	-0.291
	(2.02)**	(2.02)**	(1.75)*
Promotion3	1.217	1.833	1.848
	(2.41)**	(2.95)***	(2.92)***
Promotion1	0.240	0.104	0.107
	(0.74)	(0.24)	(0.24)
Population density	0.005	0.005	0.005
	(1.57)	(1.62)	(1.61)
Origin	-0.247	-0.475	-0.463
	(1.28)	(1.07)	(1.02)
High education	0.033	-0.260	-0.261
	(0.11)	(0.49)	(0.48)
GDP	-0.000	-0.001	-0.001
	(0.18)	(0.64)	(0.63)
marketization	0.081		0.035
	(0.55)		(0.19)
_cons	0.038	0.723	0.847
	(0.03)	(0.63)	(0.61)
Observations	179	179	179
Number of prov	30	30	30
Within R-squared	.	0.1942	0.1836
Between R-squared	0.1141	0.0424	0.1027
Overall R-squared	0.0917	0.0458	0.0953
Cragg-Donald Wald F statistic	26.120	38.746	25.736

Note: Column 1 is the Panel IV estimation controlling for marketization. Column 2 is the Panel IV estimation controlling for personal dummies. Column 3 is the Panel IV estimation controlling for both marketization and personal dummies. Province and year fixed-effects have been controlled for all the estimation. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent.

Table 8. Robustness Check of the Effect of Collective Actions on Social Expenditure

	Dependent variable: Social Expenditure per capita		
	(1) M controled	(2)P controled	(3)M&P controled
Intensity of labor disputes	0.086	0.156	0.111
	(1.26)	(2.51)**	(1.99)**
Promotion3	0.574	0.131	0.193
	(2.56)**	(0.56)	(0.91)
Promotion1	-0.213	0.278	0.250
	(1.29)	(1.41)	(1.40)
Origin	-0.027	-0.258	-0.210
	(0.31)	(1.30)	(1.16)
High edu	0.136	0.330	0.278
	(0.92)	(1.34)	(1.25)
GDP per capita	0.305	0.266	0.231
	(13.24)***	(12.67)***	(10.79)***
Local revenue	-0.015	0.008	0.001
	(3.20)***	(1.35)	(0.11)
Population	0.008	-0.037	-0.043
	(0.33)	(1.55)	(1.99)**
Marketization	0.185		0.233
	(3.60)***		(4.08)***
_cons	-1.260	1.413	0.877
	(1.33)	(1.47)	(1.01)
Observations	239	239	239
Number of prov	30	30	30
Within R-squared	0.9179	0.9482	0.9578
Between R-squared	0.8304	0.8459	0.8518
Overall R-squared	0.8439	0.8503	0.8583
Cragg-Donald Wald F statistic	32.373	47.221	48.007

Note: Column 1 is the Panel IV estimation controlling for marketization. Column 2 is the Panel IV estimation controlling for personal dummies. Column 3 is the Panel IV estimation controlling for both marketization and personal dummies. Province and year fixed-effects have been controlled for all the estimation. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent.

Table 9. Robustness Check of the Effect of Collective Actions on Teacher-student Ratio

	Dependent variable: Teacher-student Ratio		
	(1) M controled	(2)P controled	(3)M&P controled
Intensity of labor disputes	0.002	0.000	0.000
	(1.91)*	(0.75)	(0.55)
Promotion3	-0.001	0.000	0.001
	(0.22)	(0.20)	(0.27)
Promotion1	-0.003	0.002	0.002
	(1.64)	(1.27)	(1.25)
Origin	0.002	0.002	0.002
	(1.46)	(1.11)	(1.19)
High edu	-0.003	-0.000	-0.000
	(1.43)	(0.12)	(0.18)
GDP per capita	0.001	0.001	0.001
	(3.84)***	(6.49)***	(5.37)***
Local revenue	-0.000	-0.000	-0.000
	(2.87)***	(0.00)	(0.34)
Population	0.001	0.000	0.000
	(2.59)**	(0.60)	(0.54)
Marketization	0.000		0.001
	(0.33)		(1.06)
_cons	0.012	0.029	0.028
	(1.02)	(3.31)***	(3.27)***
Observations	231	231	231
Number of prov	30	30	30
Within R-squared	0.4617	0.8143	0.8193
Between R-squared	0.1157	0.0420	0.0458
Overall R-squared	0.0592	0.0950	0.1018
Cragg-Donald Wald F statistic	38.504	49.740	50.778

Note: Column 1 is the Panel IV estimation controlling for marketization. Column 2 is the Panel IV estimation controlling for personal dummies. Column 3 is the Panel IV estimation controlling for both marketization and personal dummies. Province and year fixed-effects have been controlled for all the estimation. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent.

Table 10. Robustness Check of the Effect of Collective Actions on Hospital Beds per 1000 Persons

	Dependent variable: Hospital Beds per 1000 Persons		
	(1) M controled	(2)P controled	(3)M&P controled
Intensity of labor disputes	1.423	1.290	1.542
	(3.16)***	(3.13)***	(3.75)***
Promotion3	-1.653	-2.715	-3.038
	(1.09)	(1.66)*	(1.85)*
Promotion1	0.034	1.672	1.864
	(0.03)	(1.19)	(1.32)
Origin	0.076	-0.088	2.594
	(0.12)	(0.02)	(0.64)
High edu	-0.986	1.899	4.286
	(0.87)	(0.78)	(1.67)*
GDP per capita	-0.418	-0.480	-0.291
	(2.75)***	(3.40)***	(1.82)*
Local revenue	0.090	0.049	0.087
	(2.86)***	(1.32)	(2.18)**
Population	-0.100	-0.076	-0.044
	(0.64)	(0.47)	(0.27)
Marketization	-0.861		-1.291
	(2.54)**		(3.03)***
_cons	37.447	31.679	30.957
	(5.99)***	(4.65)***	(4.53)***
Observations	223	223	223
Number of prov	30	30	30
Within R-squared	0.0780	0.3994	0.3958
Between R-squared	0.0160	0.0224	0.1326
Overall R-squared	0.0217	0.0036	0.1421
Cragg-Donald Wald F statistic	34.387	45.219	45.910

Note: Column 1 is the Panel IV estimation controlling for marketization. Column 2 is the Panel IV estimation controlling for personal dummies. Column 3 is the Panel IV estimation controlling for both marketization and personal dummies. Province and year fixed-effects have been controlled for all the estimation. * significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent.

Table 11. Robustness of Standard Errors

	Panel IV Estimation of the effect of collective actions on the following outcome variables			
	(1) Fine	(2)Spending	(3)T/S Ratio	(4)Beds
Intensity of labor disputes	-0.350	0.086	0.002	1.423
	(2.42)**	(1.96)*	(2.89)***	(3.59)***
Promotion3	1.217	0.574	-0.001	-1.653
	(2.42)**	(1.60)	(0.08)	(0.16)
Promotion1	0.240	-0.213	-0.003	0.034
	(1.51)	(0.83)	(1.50)	(0.03)
Origin	-0.247	-0.027	0.002	0.076
	(1.22)	(0.15)	(1.66)*	(0.10)
High edu	0.033	0.136	-0.003	-0.986
	(0.18)	(0.85)	(1.14)	(1.18)
GDP per capita	-0.000	0.305	0.001	-0.418
	(0.41)	(9.10)***	(3.68)***	(3.49)***
Local revenue		-0.015	-0.000	0.090
		(1.80)*	(1.89)*	(1.93)*
Population	0.005	0.008	0.001	-0.100
	(1.14)	(0.14)	(1.10)	(0.53)
Marketization	0.081	0.185	0.000	-0.861
	(2.81)***	(4.03)***	(0.31)	(4.88)***
_cons	0.038	-1.260	0.012	37.447
	(0.02)	(0.58)	(0.44)	(5.67)***
Observations	223	239	231	223
Number of prov	30	30	30	30

Note: The standard errors are bootstrapped standard errors controlling for clusters.

* significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent.