



# Does flattening government improve economic performance? Evidence from China<sup>☆</sup>



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## ABSTRACT

This paper examines a causal relationship between the flattening of a government hierarchy and economic performance by exploiting a panel data set on government reorganization in China from 1995 to 2012. Delaying has led to increases in revenue and inter-governmental transfers for county governments, but the associated enlarged span of control makes it difficult for upper-level governments to coordinate and monitor local ones. This has led to a reduction in county governments' total public expenditure and pro-growth expenditure, as well as an increase in land corruption. Overall, the flattening of the government hierarchy has a negative effect on economic performance.

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## 1. Introduction

The design of an organization's hierarchies deeply influences the information flow, agents' incentives, and ultimately performance. Among all the relevant attributes, the organization's depth—the number of vertical layers—and width—the spans of control—are attracting markedly increased attention. Organization structure involves a trade-off between horizontal coordination and vertical control (Mookherjee, 2006). Although considerable progress has been made in empirically understanding corporate hierarchies (Rajan and Wulf, 2006), whether results based on firms can be

reliably generalized to public organizations remains unknown. There have been few attempts to evaluate the effects of organizational structure on performance in the public sector in either a developed or a developing country context, largely due to the lack of fully compelling identification.

In this paper, we provide quantitative evidence about how a government's productivity measured by per capita GDP varies with the number of vertical layers in its hierarchy. Government bureaucracy is a hierarchical organization with official functions and well-established formal rules (Weber, 1947). It plays an important role in providing public goods, facilitating economic growth, and reducing income inequality (Besley and Persson, 2010). In cross-country comparisons, lower-income countries tend to have more local government tiers of larger size than in higher-income countries (Ivanyina and Shah, 2014). However, it is difficult to establish causality between organization shape and development, as the number of tiers is itself endogenous. To make progress, this study exploits a quasi-natural experiment—China's province-managing-county (PMC) reform since 2003. After the reform, a provincial government could by-pass the prefecture level and directly administer county governments with respect to fiscal matters in the same

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way it manages prefectural governments. In the period considered, there were rich spatial variations in the timing of the adoption of the PMC system, constituting a unique laboratory for studying the effect of delayering on the outcomes of interest. To the best of our knowledge, this is among the first pieces of empirical analysis to establish a robust connection between government organization and economic performance.

Improving the economic development of counties has become a priority for policy makers in China because of its large county-level population and concerns about rural poverty and inequality. On 72% of the Chinese territory, counties directly administer 70% of the total population and yet generate only 37% of the national gross domestic product (GDP).<sup>1</sup> Against this background, the PMC flattening reform we evaluate aims to relieve financial strain on county-level governments, improve administrative efficiency, and stimulate local economic growth.

Our analysis proceeds in three stages. We first investigate the link between the PMC reform and a county's economic performance. Specifically, do PMC counties experience higher or lower per capita GDP over time? Then, to support a causal interpretation of our findings, we shed light on the channels through which the PMC system might influence economic performance. Specifically, what is the nature of the reform—does it involve simply the removal of one layer in the fiscal hierarchy, with authority moved from prefectures to provinces, or does it also involve subtle changes in revenue and expenditure assignment among various layers of government? If the former, does the flattening on average improve a county's fiscal revenue and inter-governmental transfers—the goals of the reform? How does increased span of control impact the upper-level government's ability to coordinate and monitor spending and land sales? Third, we examine how the PMC reform affects other economic outcomes, such as household income, consumption, and inequality.

The analysis involves constructing a novel data set from a large number of official sources. The data cover 1809 counties between 1995 and 2012. They contain very detailed information not only about GDP, fiscal revenue, transfers and expenditure, but also about changes in government organization. For each county, we measure the change in organizational structure with: (1) a PMC reform indicator, and (2) the span of control of the county government's supervising body. Such comprehensive panel data allow for an examination of China's county economies before and after the PMC reform, and the mechanism underlying such impacts.

The key challenge in identifying the effect of PMC reforms is selecting appropriate control groups for the treatment group. The validity of the difference-in-differences (DD) methods applied and the causal interpretation of the results rely on the assumption that non-PMC counties and counties that adopted PMC later are valid counterfactuals for what would have happened to earlier adopters in the absence of the PMC reform. However, the reformed counties are not randomly selected. To address the identification challenge, we control for the differences in the trends in outcomes between PMC counties and non-PMC counties depending on the key determinants in the selection of PMC counties, a strategy used by [Gentzkow \(2006\)](#). Beyond that, we restrict the sample to PMC counties, increasing confidence in the comparability of the treated and control groups. We also conduct a placebo test by randomly assigning the adoption of PMC reforms to counties. Finally, we use an event study to estimate year-wise changes in economic performance before and after the PMC reform with a window of eight years.

The analysis yields several main findings. First, the adoption of PMC reforms reduces a county's GDP per capita by an average of 3.9%, which translates into a 0.44% drop in the annual growth rate. These findings indicate that in this context a flattened hierarchy is detrimental to economic performance.

Second, both de-jure and de-facto evidence suggests that the PMC reform is mostly a flattening initiative, with the fiscal authority moved from the prefectures to the province. The counties' fiscal revenue and transfers tend to increase after the elimination of the intermediate layer of city government in fiscal management. However, the enlarged span of control for the provincial government has weakened its monitoring and coordination capacity. In particular, total public expenditure and pro-growth investment in PMC counties have declined on average after the reform. More land was sold through negotiation instead of market mechanisms, and at lower prices in the affected counties, pointing to increased land corruption after the PMC reform. This, in turn, may have negatively influenced economic performance. These results demonstrate that such organizational change may well impose costs on the economies concerned that exceed the benefits, and they may also have implications for the design of an effective and productive organization.

Third, using alternative measures of performance, no significant effects on household income or income inequality are evident. Reassuringly, a negative and significant effect on consumption suggests that PMC reform does not in general improve social welfare.

This paper fits into a large existing literature on organizational forms. An important line of research has looked at hierarchical organization with boundedly-rational members ([Garicano and Van Zandt, 2013](#)). In a horizontal hierarchy, information flows smoothly across vertical layers of administration, resulting in fast execution ([Pataconi, 2009](#)). However, this calls for intensive information processing, communication, and coordination at the top of the hierarchy ([Williamson, 1975](#)). There are limits to communication and the cognitive abilities of upper-level managers. A broad span of control will be demographically heterogeneous, and large groups may create coordination and communication problems ([Bandiera et al., 2014](#)). While prior research has mainly focused on theoretical models, the empirical evidence of this study can help forge links between theory and data. Specifically, the findings confirm the theoretical logic that although flattening is expected to decrease delay, the increased span of control could cause distortions.

There has also been a broad strand of theoretical work that focuses on the role of incentives in hierarchies ([Besley and Ghatak, 2005](#); [Mookherjee, 2013](#)). [Qian \(1994\)](#) has demonstrated that the benefit of having fewer tiers is that there is a reduction in cumulative loss across hierarchical levels, whereas the cost is that the effectiveness of supervision to reduce moral hazard decreases as a result of the increased span of control. [Rajan and Zingales \(2001\)](#) develop a theoretical framework to study the incentive problems resulting from different-shaped organizations. The main incentive problem in a vertical hierarchy is expropriability among upper-level managers. However, managers have an incentive to specialize due to their positional power. In a horizontal hierarchy, expropriability is dealt with, but this gives managers very little positional power, and therefore little incentive to specialize. The empirical findings of this study linking hierarchical change to organizational performance are consistent with these theories, predicting that expropriability should decrease after flattening, and that the monitoring capacity of higher levels would be adversely affected.

This study also complements a number of works on the organization of China's government. Several economic system analyses have compared China's multi-divisional structure with the unitary structure of the former Soviet Union. [Maskin et al. \(2000\)](#) examine how organizational forms affect the quality of incentive

<sup>1</sup> These numbers were computed based on the *China Statistical Yearbook 2013* and the *China City Statistical Yearbook 2013*.

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