# Devolution and Household Venture

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## Abstract

We conduct a comparative analysis to explore the causal impact of fiscal and administrative devolution on household entrepreneurship, using two quasi-natural experiments of devolution reforms in China. Our identification strategy leverages the phased implementation of the County Purview Expansion (CPE) and Province-Managed County (PMC) reforms, which devolved greater administrative and fiscal responsibilities to county governments, respectively. We find that administrative devolution (the CPE reform), but not fiscal devolution (the PMC reform), causes a significant increase in household propensity for entrepreneurship. We provide suggestive evidence regarding the extent to which the CPE and PMC reforms improved public spending efficiency and service delivery, eased household liquidity constraints, and promoted interjurisdictional competition as potential mechanisms. We find that the administrative devolution effectively improved public spending efficiency and service delivery, in addition to increasing interjurisdictional competition.

## Keywords

Entrepreneurship; devolution; Province-Managed County reform; County Purview Expansion reform; China

## 1. Introduction

Globally, there is a trend towards decentralising fiscal, administrative, and political powers from central authorities to subnational and local governments. By the beginning of the new millennium, over 80 per cent of 75 sampled developing countries had undertaken some form of decentralisation reform (Garman *et al.*, 2001). Another study of 42 developed countries finds that 70 per cent had decentralised government functions since 1950 (Hooghe *et al.*, 2010).

One motivation for decentralisation is the conventional wisdom that local governments, due to their information advantages, are better positioned than the central government to effectively provide public goods that align with citizens' preferences (Oates, 1972). Additional theoretical arguments favouring decentralisation suggest that it can help mitigate agency problems, increase local government's accountability to constituents, encourage reliance on local revenue resources and enhance interjurisdictional competition. Increased competition can, in turn, help restrain the size of the public sector, reduce corruption, and improve institutional quality (Altunbaş & Thornton, 2012; Kyriacou & Roca-Sagalés, 2011; Tiebout, 1956).

According to Rondinelli (1981), decentralisation reforms can be of three types: deconcentration, delegation, and devolution, which vary in terms of the degree of functions transferred to lower levels of government. This study focuses on devolution, where governments devolve authority for finance and administration to (quasi-)autonomous units of local government. We examine whether, and to what extent, administrative and fiscal devolution influence the household propensity for entrepreneurship and explore the underlying mechanisms driving this relationship. To do so, we exploit two quasi-natural experiments of devolution to subnational governments in China. The first is the Province-Managed County (PMC) reform, via which county governments were granted greater financial responsibility (Li *et al.*, 2016), representing fiscal devolution. The second is the County Purview Expansion (CPE) reform, which transferred certain authority and decision-making powers from prefecture-level government to county governments (Gong *et al.*, 2021), representing administrative devolution.

Endogeneity is a problem when examining the relationship between decentralisation and economic outcomes such as entrepreneurship. To address endogeneity, we adopt two main approaches. First, we employ a difference-in-differences (DID) approach within a quasi-natural experimental framework, leveraging the staggered implementation of the two devolution programs. Second, we use an instrumental variable (IV) approach combined with DID to further mitigate potential endogeneity issues due to the non-random selection of counties into the PMC and CPE reforms, which may be influenced by local conditions that also affect business startups (Li et al., 2016). Specifically, we instrument for a county's PMC or CPE reform status using the interaction between the geographical distance to its affiliated prefecture city and the length of its affiliated province's reform exposure since the first wave of each reform.

We find that exposure to the CPE fiscal devolution significantly increases the household's

probability of engaging in entrepreneurial activity, while exposure to PMC administrative devolution does not have a significant impact. We offer suggestive evidence on the extent to which the CPE and PMC reforms improved public spending efficiency and service delivery, eased liquidity constraints, and promoted interjurisdictional competition as potential mechanisms and find that the CPE reforms were effective in promoting public spending efficiency and service delivery, as well as increasing interjurisdictional competition.

Our research makes three important contributions to the literature. First, a growing body of literature has examined the effects of decentralisation on macroeconomic outcomes, such as economic growth, income inequality, and public spending (see Martínez-Vázquez et al., 2017 for a review). There is, however, little research on microeconomic outcomes of decentralisation at the enterprise or household level (Jin, 2023). This represents a significant gap in the literature, given that second-generation theories of decentralisation emphasise that local governments promote enterprises as a vehicle to increase taxation revenue (see, e.g., Weingast, 2009). In particular, we lack evidence on the causal effect of decentralisation on entrepreneurship. Patel and Wolfe (2022) examine the correlation between the decentralisation of economic activities and individual entrepreneurship across 33 countries; but as they acknowledge, they cannot fully account for the influence of unobservables, which means that their results are not causal.

We add to the scant evidence on the microeconomic outcomes of decentralisation by conducting the first study on the causal effect of decentralisation on the propensity for household entrepreneurship. In doing so, we provide insights into the potential mechanisms underpinning existing findings for macroeconomic outcomes and contribute to the understanding of second-generation theories of decentralisation as to why local governments choose to promote private enterprise. In the extant literature on the effects of decentralisation, several studies have examined the relationship between decentralisation and economic development. A key finding from such studies is that decentralisation promotes economic growth (Baskaran *et al.*, 2016). Given that entrepreneurship is critical for stimulating economic growth, innovation and jobs (Sutter *et al.*, 2019), our research contributes to a better understanding of the mechanism through which decentralisation can fuel economic development.

Second, we explore the heterogeneous effects of decentralisation by examining the distinct impacts of administrative and fiscal devolution on entrepreneurship. Previous research has suggested that in a variety of settings administrative and fiscal devolution have distinct effects that are not necessarily complementary (ltunbaş & Thornton, 2012; Kis-Katos and Sjahrir, 2017; Martínez-Vázquez *et al.*, 2017). The CPE and PMC reforms delegated different types of authority to county governments. As we discuss in more detail in Section 3, we expect the CPE reform to be more conducive to promoting entrepreneurship than the PMC reform because it is likely to be more effective in easing liquidity constraints, promoting interjurisdictional competition between county governments, and embedding an institutional environment that is more favourable for starting new business ventures.

Third, we extend the literature on the PMC and CPE reforms in China to examine their effects on household entrepreneurship. While existing research has utilised these two reforms as quasi-natural experiments to explore their effects on various county-level socioeconomic outcomes, such as economic growth (Gong et al., 2021; Li et al., 2016; Ma & Mao, 2018), government incentives and transparency (Jia *et al.*, 2023; van der Kamp *et al.*, 2017), local tax enforcement (Jia *et al.*, 2020), and public expenditure and social service provision (Bo *et al.*, 2020; Huang *et al.*, 2017; Jia *et al.*, 2014), there is very little evidence for microeconomic outcomes. Jin's (2023) study of the relationship between the PMC and CPE reforms and firm-level performance is an exception, but the results in that study are not causal. Our study is the first to consider the effects of the PMC and CPE reforms on entrepreneurship.

## 2. Overview of administrative and fiscal devolution in China

Before the devolution reforms, China had a hierarchical structure of government with five layers of administration: the central government, provinces, prefectures (i.e., prefecture-level cities), counties, and townships (see Figure 1a.). Under this hierarchical structure, each lower level of government was fiscally and politically subordinate to the level immediately above it.

This structure of government, combined with the fact that the promotion of government officials depended on evaluations by officials at higher tiers, created two problems (Liu & Alm, 2016). First, provinces set targets for prefecture-level cities to generate fiscal revenue and achieve economic growth. This created a strong incentive for prefecture-level cities to retain intergovernmental transfers intended for counties or to intervene in the allocation of these transfers, thereby reducing the fiscal autonomy of county governments (Jia et al., 2020). Additionally, the expansion of prefecture-level discretion undermined communication between county and provincial/central governments, hampering the realisation of policy objectives set by the higher-level authorities (Martinez-Vazquez *et al.*, 2008).

**[Figure 1 here]**

The second issue with this hierarchical structure was that it caused misalignment between revenue and expenditure at lower levels of government. While the central government increased its revenue share to tighten control over the fiscal system, it simultaneously shifted expenditure responsibilities to local governments. This disparity between expenditure and revenue was most stark at the county level. County governments were tasked with managing agricultural production, compulsory education, public health, and social security. On average, this expenditure accounted for approximately 30 per cent of total government spending and over 60 per cent of spending on education and health (Bhattasali & Wong, 2020). Thus, county governments faced fiscal pressure to finance public goods and services while receiving progressively less intergovernmental revenue transfers from prefecture-level governments.

To address these issues and strengthen the role of county governments in local governance, China introduced the PMC reform, which flattened the governance hierarchy by severing the

fiscal relationship between the prefecture and county governments (see Figure 1b) and allowed provincial governments to interact directly with county governments on nearly all fiscal affairs.

Following the PMC reform, provincial governments were given the authority to decide on tax rebates, fiscal transfers, and other subsides, allocating these resources separately and directly to both prefectures and counties. County governments were permitted to retain a higher proportion of tax revenue generated within their jurisdictions, thereby enhancing local tax autonomy and eliminating the need to share this revenue with prefectural governments. Prefectural governments were restricted from retaining intergovernmental transfers allocated to counties by central or provincial governments, intervening in the use of these transfers, or shifting their expenditure responsibilities onto county governments.

The PMC reform was implemented in a staggered manner across counties and over time, with the initial pilot implemented in rural counties in central and northern China in 2003. By 2012, 1,052 counties from 22 provinces had adopted the PMC reform, accounting for approximately 56 per cent of all counties in China (Li et al., 2016). Figure 2 illustrates the timeline of PMC rollout across counties, highlighting the variation in adoption over time.

**[Figure 2 here]**

During the same period, China implemented a parallel devolution measure known as the CPE reform. Unlike the PMC reform, which altered fiscal relationships, the CPE reform focused on transferring more decision-making powers from prefectural to county governments without changing the existing hierarchical governance structure (see Figure 1c) (Li et al., 2016). Specifically, the CPE reform granted county governments the authority to create preferential tax policies to attract investment, issue business licenses, approve local projects and formulate annual land sale plans – powers that prefectural governments previously held.

The rationale behind the CPE reform was to empower county governments with greater control over local affairs, thereby enhancing their incentives to improve government efficiency, facilitate investment, and foster local economic growth (Gong et al., 2021). The CPE reform was first piloted in selected counties in 2002 and, similar to the PMC reform, was gradually rolled out across counties over time. Although there was still significant variation in implementation across provinces, the CPE reform was generally broader in scope than the PMC reform (Jin. 2023). By 2010, 692 counties in 19 provinces had adopted the CPE reform, representing 37 per cent of all counties in China (Song *et al.*, 2020). Figure 3 depicts the timeline of CPE rollout across counties, emphasising the differences in the timing of adoption.

**[Figure 3 here]**

## 3. Devolution and entrepreneurship

Conceptually, there are several potential channels through which the devolution reforms may influence household entrepreneurial choice. First, the devolution reforms could promote

economic growth (Gong et al., 2021; Ma & Mao, 2018), which eases liquidity constraints (Abbas *et al.*, 2023), making it easier for households to invest in new ventures (Adelino *et al.*, 2015; Fairlie & Krashinsky, 2012; Wennekers & Thurik, 1999; Zheng & Du, 2020). Higher economic growth results in agglomeration economies, improving access to financial capital and infrastructure and increasing household wealth. Moreover, there is considerable evidence that disadvantaged families are more likely to benefit from decentralisation reforms in terms of income improvement and poverty reduction, which could significantly ease liquidity constraints, making it easier for them to start a new venture (Chen *et al.*, 2023b).

Second, the impact of fiscal and administrative devolution on the household propensity to start a new business venture may be mediated by interjurisdictional competition. Decentralisation could generate interjurisdictional competition, which incentivises local governments to adopt pro-business expenditures, tax policies, and strategies to attract capital and talent (Qian & Weingast, 1997). Interjurisdictional competition may also enhance accountability (Bardhan & Mookherjee, 2006) and reduce corruption (Altunbaş & Thornton, 2012). Such policies are conducive to starting new business ventures. However, a potential downside of interjurisdictional competition is that it could exacerbate market segmentation and local protectionism among counties (Cheng & Zhu, 2021), which can impede the free flow of goods and production factors and, consequently, hinder entrepreneurial activity.

Third, decentralisation is traditionally believed to generate two types of efficiency: allocative efficiency, where local governments are better informed about local demands, and production efficiency, where decentralised governments can deliver public services at a lower cost. These improvements can lead to better service delivery (Oates, 1972), which is conducive to the propensity for household entrepreneurship (Acs *et al.*, 2016; Glancey & McQuaid, 2000).

Research on the PMC and CPE reforms indicates that counties with more fiscal and administrative powers invest more in capital construction, such as transportation infrastructure, which enables entrepreneurship (Gong et al., 2021; Ma & Mao, 2018). There is also evidence that the PMC and CPE reforms have facilitated investment in education and health (Chen *et al.*, 2023a; Faguet & Sánchez, 2014; Huang et al., 2017). Enhanced human capital can improve the household's propensity to engage in entrepreneurship by improving cognitive and non-cognitive skills and expanding social capital (Akgüç *et al.*, 2016).

The above discussion relates to the potential effect of decentralization on the propensity for entrepreneurship in general. However, based on the existing literature on the CPE and PMC reforms, we expect administrative decentralisation to have stronger effects on promoting household propensity for entrepreneurship than fiscal decentralisation.

First, with respect to our first mooted channel through economic growth easing liquidity constraints, there is more evidence that the CPE reforms have had a larger and more consistent positive effect on economic growth compared to the PMC reform (Gong et al., 2021; Huang et

al., 2017; Ma & Mao, 2018). The CME reform streamlined and fast-tracked approval processes, which reduced transaction costs and enabled private business owners and entrepreneurs to seize opportunities more quickly and efficiently.[1] More broadly, evidence suggests that in some instances, fiscal devolution, as exemplified by the PMC reform in China and similar programs in other developing countries, has had adverse effects on economic growth (Davoodi & Zou, 1998; Li et al., 2016; Zhang & Zou, 1998). In the case of the PMC reform, while it alleviated financial pressure on county governments and reduced tax enforcement, the increased span of control – where the average number of subordinates under a provincial government rose from 12 to 52 – significantly weakened the monitoring and coordination capacities of upper-level governments. This unintended consequence reduced total public expenditure and pro-growth investment at the county level, ultimately hampering economic growth (Li *et al*., 2016). Jin (2023) finds that the PMC reform was associated with higher firm debt, which subsequently reduced the firm's return on assets and proved to be an unsustainable source of growth.

Second, as a form of administrative devolution, the CPE reform is likely to foster more intense interjurisdictional competition than the PMC reform. Beyond fiscal powers, such as the authority to decide on tax reductions and exemptions, the CPE reform has granted county governments greater discretion in local economic management. This includes powers to approve business licenses, oversee construction projects, and streamline land approval processes, which are considered critical factors for starting new businesses in China. Substantial evidence indicates that institutional arrangements significantly influence entrepreneurship in China, particularly government regulations (He *et al.*, 2019).

Third, while some studies suggest that the PMC reform, as a form of fiscal devolution, could stimulate economic growth, these positive effects may be offset by a deterioration in the institutional environment (Bo et al., 2020; Li et al., 2016). Specifically, the PMC reform has been shown to exacerbate land corruption due to monitoring and coordination problems (Li et al., 2016). Furthermore, weak local accountability can make local officials more susceptible to elite capture, resulting in inefficient provision of public goods and disadvantaging people experiencing poverty (Galiani *et al.*, 2008). These factors can undermine entrepreneurial activity despite the PMC reform's potential to boost economic growth.

## 4. Data and descriptive analysis

Data on propensity for entrepreneurship and its correlates are from the 2011, 2013, 2015, 2017, and 2019 waves of the China Household Finance Survey (CHFS), administrated by the Survey and Research Center for China Household Finance at Southwestern University of Finance and

[1] Anecdotal evidence suggests that local businesses have benefited from the CME reform. In 2009, Zhejiang province delegated 618 socioeconomic administrative powers to Yiwu county, one of China's major manufacturing hubs. For example, Lanswe, one of the largest garment manufacturers in Yiwu county, reported that the approval process for certain items was reduced from one month to just one week, fast-tracking their business operations in a competitive market (see https://finance.sina.cn/sa/2009-11-26/detail-ikkntiam4794153.d.html).

Economics.[2] CHFS is a nationally representative longitudinal survey that employs a stratified, multistage sampling design with a probability proportion to size sampling method. The sampling process involves three stages: first, selecting rural counties or urban districts; second, selecting urban neighbourhood committees or rural villages; and third, selecting households.

In the 2011 baseline wave, the survey was administered to 29,324 individuals and 8,438 households from 85 counties or urban districts across 25 mainland provinces. Approximately 75% of these households were re-surveyed in subsequent waves, with new households added. Consequently, the unbalanced panel consists of 28,141 households in 2013, 37,289 households in 2015, 40,011 households in 2017, and 34,643 households in 2019, covering 450 rural counties or urban districts in each wave.

The CHFS provides comprehensive data on household entrepreneurship, including the year businesses were established and a broad range of characteristics related to the household head and family. CHFS also provides information on the county in which the household resides, which allows us to link county-level implementation of the CPE and PMC reforms with household characteristics. The authors manually collected data on the county-level implementation and timing of the PMC and CPE reforms from official decrees issued by provincial governments.[3]

We apply several restrictions to our analytical sample to assess exposure to the PMC and CPE reforms on household propensity for entrepreneurship. First, we exclude all urban districts under the control of prefecture governments. Second, we omit counties in Beijing, Tianjin, Shanghai, Chongqing, Hainan, and Zhejiang, as they were directly supervised by municipal or provincial governments before the PMC reform was piloted in 2004. Third, we exclude counties that underwent name changes or administrative reassignment during our sample period. Households that established their business ventures before 2002, when the two devolution reforms were first trialled, are also excluded from the sample. Finally, we limit our analysis to households with heads aged between 18 and 65 years. After removing observations with missing data for critical variables, our analytical sample consists of 2,075 households from 43 counties in the 2011 wave, 8,046 households from 128 counties in the 2013 wave, 10,573 households from 163 counties in the 2015 wave, 10,255 households from 155 counties in the 2017 wave, and 9,398 households from 171 counties in the 2019 wave.

Household entrepreneurs are defined as households that reported starting a new venture either without employees (solo entrepreneurs) or with employees (employer entrepreneurs) in 2002 or later. Table 1 presents summary statistics for the rate of entrepreneurship based on exposure to the CPE and PMC reforms. Within the analytical sample, 17,262 households from 291 counties were exposed to the CPE reform, representing 43 per cent, while 19,770 households

[2] For a detailed description of the CHFS, see Gan *et al*. (2014).
[3] Li *et al.* (2016), Jia *et al.* (2020), and Song *et al.* (2020) provide detailed information on policy regulations and the list of counties that adopted the PMC and CPE reforms.

from 335 counties were exposed to the PMC reform, accounting for 49 per cent.

Overall, the rate of entrepreneurship among households exposed to the CPE reform is slightly higher compared to those not exposed to the reform, whereas the opposite trend is observed for households exposed to the PMC reform. Specifically, the proportions of entrepreneurs and solo and employer entrepreneurs among households in counties subject to the CPE reform are 12.94 per cent, 8.53 per cent, and 2.88 per cent, respectively. These figures are 0.12 to 1.19 percentage points higher than in counties not exposed to the CPE reform. Conversely, in counties affected by the PMC reform, the proportions of entrepreneurs and solo and employer entrepreneurs, as subgroups, are 11.68 per cent, 7.72 per cent, and 2.51 per cent, respectively, which are 0.12 to 1.19 percentage points lower than those in counties not subjected to the PMC reform. Mann–Whitney tests find statistically significant differences in the proportion of household entrepreneurs and the two subgroups of entrepreneurs between reformed and non-reformed counties, except for employer entrepreneurs between CPE and non-CPE counties.[4]

In our analytical sample, approximately 30 per cent of households were exposed to both devolution reforms. In robustness checks, we exclude these households and compare those exposed only to the CPE reform with those exposed to both the CPE and PMC reforms.

To complement our primary analysis using CHFS survey data on household entrepreneurship, we also utilise administrative data on all new firm registrations at the county level from 2001 to 2021. The advantage of using administrative data is that it offers continuous annual coverage, in contrast to the CHFS, which is conducted biennially. This extended and uninterrupted time span allows us to conduct a robustness check on the results obtained from the CHFS data.

**[Table 1 here]**

## 5. Methods

To assess the relative effects of the CPE and PMC reforms on the propensity for entrepreneurship, we employ a DID identification strategy that exploits the temporal and spatial variation in the implementation timing of the two devolution reforms across counties.

Our empirical specification is as follows:

$$Y_{ict} = \alpha + \beta \mathrm{CPE}_{ict} + \gamma \mathrm{PMC}_{ict} + \delta \mathbf{X}_{ict} + \mu_i + \sigma_t + \varepsilon_{ict} \quad \ldots(1)$$

where $Y_{ict}$ is a dichotomous outcome variable denoting the propensity of household $i$ from county $c$ for entrepreneurship in wave $t$ (yes = 1; no = 0). The primary variables of interest,

[4] The test results are as follows: For households between CPE and non-CPE counties, the results are: entrepreneur: z-statistic=-3.604, p-value = 0.0003; solo entrepreneur: z-statistic=-3.375, p-value = 0.0007; employer entrepreneur: z-statistic=-0.699, p-value = 0.4846. For households between PMC and non-PMC counties, the results are: entrepreneur: z-statistic=3.462, p-value = 0.0005; solo entrepreneur: z-statistic=1.900, p-value = 0.0574; employer entrepreneur: z-statistic=3.454, p-value = 0.0006.

$CPE_{ict}$ and $PMC_{ict}$, are dummy variables (1 if exposed; 0 otherwise) indicating whether household *i* from county *c* was exposed to the CPE and PMC reforms in wave *t*, respectively.

The vector $\mathbf{X}_{ict}$ consists of control variables representing the household head's personal and family characteristics that are correlated with entrepreneurship. Appendix Table A1 presents the definitions and descriptive statistics for these control variables. The model also includes household fixed effects $\mu_i$, time (survey wave) fixed effects $\sigma_t$, and the error term $\varepsilon_{it}$.

Equation (1) is estimated using a two-way fixed effects (TWFE) panel regression model. The TWFE estimator eliminates potential bias from unobserved time-invariant household characteristics and time-varying characteristics common to all households across waves. Nonetheless, there are several threats to identification, including the endogeneity of devolution reforms, the parallel trend assumption before and after the reforms, and unobserved time-varying heterogeneity arising from the staggered rollout of these programs. To address this limitation, we conduct additional analyses, which are detailed below.

A primary threat to identification is the correlation between the implementation of the PMC and CPE reforms and local conditions (Jia et al., 2020). Provinces had considerable discretion in selecting counties for the PMC reforms, with key factors including the county's financial position, role as a major food producer, poverty rate, and level of urbanisation (Li et al., 2016).[5] Although most provinces did not specify criteria for the CPE reform, some, such as Anhui and Sichuan, prioritised counties based on high food and oil production, poverty rates, urbanisation levels, and economic development potential.[6] As a result, both observed and unobserved county-level heterogeneity, such as differences in institutional environments, likely influenced the rollout of the two devolution reforms and the propensity for entrepreneurship.

We adopt the identification strategy proposed by Jia et al. (2020) to address potential endogeneity. Specifically, we instrument the county-level implementation of the CPE and PMC reforms by using the interaction between the geographical distance from a county to its affiliated prefecture-level city and the length of provincial-level exposure to the respective reforms since the first wave. The intuition is that counties located further from their affiliated prefectures are more likely to be selected for the CPE and PMC reforms. Prefectures generally opposed those devolution reforms because they reduced their authority and resources. In response, prefectural governments often merged surrounding counties with urban districts to exclude them from the reforms. As a result, counties more distant from their affiliated prefectures were more frequently chosen to pilot the reforms (Jia et al., 2020).

Similarly, the CPE reform was more likely to be implemented in relatively remote counties, as

[5] The rate of urbanisation is defined as the proportion of non-agricultural population relative to the total population in a county.

[6] For detailed information, see the provincial government decree on the implementation of the CPE reform in Anhui province, here: https://www.ah.gov.cn/szf/zfgb/8121401.html, and in Sichuan province here: https://www.sc.gov.cn/10462/10464/10684/13652/2009/5/8/10369809.shtml.

one of its main objectives was to stimulate economic growth by devolving socioeconomic administrative powers to local governments, thereby fostering development in surrounding areas. Remote counties with better economic performance and development potential were preferred for the CPE reforms, as opposed to those closer to urban centres that had already experienced substantial urban development. Reinforcing this reasoning, studies suggest that to minimise political backlash and reduce the risk of failure, reforms in China are often initially implemented in poor, remote, and mountainous areas (Chen et al., 2023b; Li et al., 2016).

In our sample, the average distance between counties selected for the PMC and their affiliated prefectures is 58.17 km, whereas for the counties selected for the CPE, the average distance is 55.02 km. These distances are notably greater – by 9.65 km for PMC counties and 3.03 km for CPE counties – compared to counties not selected for the corresponding reforms. These statistically significant differences support our conjecture that counties located further from their prefectural cities are more likely to be chosen for the reforms.[7] Furthermore, the longer the exposure duration of a province to the reforms, the higher the probability that a county within that province will be selected as a pilot county.

The identifying assumption underlying the DID strategy is that counties exposed to the reforms would have followed a parallel trend to those not exposed to the reforms in the absence of the two devolution reforms. To validate the common trends hypothesis during the pre-reform period and to explore the dynamics of treatment effects after the reforms, we employ an event study to estimate year-by-year changes in household propensity for entrepreneurship during both the pre- and post-treatment periods (Jacobson *et al.*, 1993).

Specifically, we estimate the following dynamic specification:

$$Y_{ict} = \alpha + \sum_{j=-2}^{16} \beta(\mathrm{D}^{\mathrm{j}} \times \mathrm{CPE}_{ict}) + \sum_{k=-11}^{16} \theta(\mathrm{D}^{\mathrm{k}} \times \mathrm{PMC}_{ict}) + \delta \mathbf{X}_{ict} + \mu_i + \sigma_t + \varepsilon_{ict} \quad \ldots(2)$$

where $Y_{ict}$ is a dichotomous outcome variable as defined in Equation (1). $\mathrm{D}^{\mathrm{j}}$ and $\mathrm{D}^{\mathrm{l}}$ are two vectors of dummy variables indicating the number of years before and after the introduction of the CPE and PMC reforms, respectively. The baseline category is $j$ = -1 or k = -1, representing the reference period, i.e., the year immediately before the reforms. The aim is to assess whether the trends in household propensity for entrepreneurship were parallel prior to the reforms and to measure the treatment effects over time, capturing the dynamic impact of both reforms.

The TWFE estimator does not account for unobserved time-varying heterogeneity specific to individual households and counties, which may still affect the propensity for entrepreneurship. Recent literature suggests that the TWFE-DID estimator may produce biased estimates if the

[7] The Mann–Whitney test results are as follows: Between PMC and non-PMC counties: z-statistic = -27.730, p-value = 0.0000; between CPE and non-CPE counties: z-statistic = -10.650, p-value = 0.0000.

staggered rollout of a treatment program introduces variation in treatment timing across units. Specifically, there is potential for bias in the TWFE-DID estimator if the treatment effect evolves over time and if units transition between treatment and control conditions throughout the study period. This bias could suppress the observed treatment effects, underestimating the program's true impact. To address this concern, we first employ the Goodman-Bacon (2021) approach to evaluate the potential bias of our TWFE-DID estimates. This method decomposes the TWFE estimator into a weighted average of all possible two-group, two-period DID estimators, allowing us to identify potential sources of bias due to treatment timing variation.

Second, as a robustness check on the main TWFE-DID results, we apply the Callaway and Sant'Anna (2021) DID estimator, which is robust to dynamic treatment effects and stagged treatment timing. This approach provides a valuable check on the causal impact of the CPE and PMC reforms on the household propensity for entrepreneurship by directly accounting for the potential complexities introduced by the staggered implementation.

## 6. Main results

Table 2 presents estimates from ordinary least squares (OLS), fixed effects (FE), fixed effects two-stage least squares (FE-IV), and random effects two-stage least squares (RE-IV) models for the relationship between exposure to the CPE and PMC reforms and household propensity for entrepreneurship, where entrepreneurship is defined as both solo and employer entrepreneurs. In all estimations, the standard errors are clustered at the county level.

The OLS and FE results in columns (1) and (2) are almost identical, suggesting that being exposed to the two devolution reforms is associated with a higher propensity for entrepreneurship. Specifically, the FE estimates suggest that exposure to the CPE and PMC reforms is associated with a greater likelihood of households becoming entrepreneurs by 8.11 and 2.07 percentage points, respectively. These values represent 66.15 per cent and 16.88 per cent increases relative to the mean entrepreneurship rates. These findings align with our conjecture that the CPE reforms are more likely than the PMC reforms to be associated with higher rates of entrepreneurship and with findings from previous studies that the CPE reform is more effective than the PMC reform in promoting economic growth (Gong et al., 2021; Ma & Mao, 2018) and in reducing disparities in urban-rural public spending (Huang et al., 2017).

**[Table 2 here]**

To draw causal inferences about the relationship between the CPE and PMC reforms and propensity for entrepreneurship, we turn to the IV estimates in columns (3) and (4), which address endogeneity arising from the non-random rollout of the two devolution reforms across counties based on local conditions. The first-stage results show that remote counties in provinces that have adopted the two reforms earlier than other provinces were more likely to be selected to pilot the reform, consistent with the findings in Jia et al. (2020). The F statistics suggest that the two IVs are valid and not weak. The FE-IV estimates in column (3) show that

exposure to the CPE reforms significantly increases the household probability of involvement in entrepreneurial activity by 12.31 percentage points, while the effect of exposure to the PMC reforms on the household entrepreneurship propensity is insignificant. The slightly higher magnitude of the FE-IV estimates than the FE estimates suggests that the latter may represent lower-bound estimates. Implementing the FE-IV model in column (3) leads to a 24 per cent reduction in sample size. To check whether the smaller sample size might bias our FE-IV estimates, we re-estimate the impact of exposure to the CPE and PMC reforms on the probability of becoming an entrepreneur using a RE-IV model. The results, reported in column (4), are qualitatively consistent with the FE-IV estimates, and the magnitude of the estimated effect of the CPE reform closely aligns with the FE estimates presented in column (2).

In Column (5), we examine the effects of the two devolution reforms on the household propensity for entrepreneurship at the intensive margin. The FE results in column (5) suggest that the length of exposure to the CPE reform is significantly and positively associated with the likelihood that households will start a new business, while the impact of exposure to the PMC reform is not significant, consistent with our IV results. Specifically, a one standard deviation increase in the length of the CPE reform exposure (1.15 years) is associated with a 3.96 percentage points increase in the probability of involvement in entrepreneurial activity.

Next, we use an event study to examine the dynamic impacts of reform exposure on entrepreneurship. Figures 4 and 5 depict the FE estimates of the coefficients for exposure to the CPE and PMC reforms and the 90 per cent confidence intervals, respectively. The results show no significant difference in the probability of involvement in entrepreneurial activity between households in counties participating in the reforms and those in counties not participating during the pre-treatment period. This suggests that households in both types of counties followed similar time trends, validating our DID identification strategy. After the reform, the treatment effect of the CPE reform emerged in the first year, fluctuated over the next four years, and then stabilised at a relatively higher level in the subsequent years. In contrast, the treatment effect of the PMC reform remained insignificant in the post-treatment period, consistent with our main findings reported in columns (3) to (5) of Table 2.

**[Figure 4 here]**

**[Figure 5 here]**

To further address potential concerns arising from the staggered implementation of the devolution programs, where counties move in and out of treatment and control groups over time, we employ the Goodman-Bacon (2021) decomposition. This method breaks down the multi-period TWFE-DID estimates into four types of comparisons: earlier-treated vs. later-treated, later-treated vs. earlier-treated, treated vs. never-treated, and treated vs. already treated. The later-treated vs. earlier-treated comparison is particularly concerning because it involves the later-treated group as the treatment group and the earlier-treated group as the

control group, which might introduce a 'bad comparison' problem. This decomposition allows us to assess the extent of any bias in our multi-period TWFE-DID estimates.

The results in Panel A of Appendix Table A2, which pertain to the CPE reform, show that most of the weight comes from the treated vs. never-treated comparison, while the weight associated with the potentially biased comparison (later-treated vs. earlier-treated) is zero. Similarly, Panel B, which examines the PMC reform, indicates that most of the weight is also from the treated vs. never-treated comparison, with zero weight for the later-treated vs. earlier-treated comparison. These findings suggest that the TWFE-DID estimates are not significantly biased by the staggered implementation, reinforcing the reliability of our results.

Finally, in Table A3, we report the results for the Callaway and Sant'Anna (2021) DID estimator, which is robust to dynamic treatment effects and staggered treatment timing. Consistent with our preferred FE-IV findings in Table 2., after accounting for the staggered implementation of the devolution programs, the estimates for the CPE reform remain significantly positive, while those for the PMC reform are not significant. The similarity between the results from the TWFE-DID and the Callaway and Sant'Anna (2021) DID estimators is consistent with a recent study by Li *et al.* (2023), who examine the effects of the CPE reforms on economic growth and environmental protection in China. Together with the results from the Goodman-Bacon (2021) decomposition, this provides us with confidence that our TWFE-DID estimates are not systematically biased. Therefore, in subsequent analyses and extensions for consistency and its ability to accommodate the two devolution reforms in empirical specifications.

Overall, our results are consistent with our expectations that the CPE reform will have stronger effects than the PMC reform on entrepreneurship and with previous findings for a wide range of macroeconomic outcomes that administrative and fiscal devolution have distinct effects that are not necessarily complementary (Altunbaş & Thornton, 2012; Kis-Katos & Sjahrir, 2017; Martínez-Vázquez et al., 2017). Our findings differ from Jin (2023), who argues that CPE and PMC reforms mutually reinforced a positive impact on the performance of large, established firms with annual sales over 20 million RMB.

Several potential explanations exist for why our results differ from Jin (2023). First, large firms are more likely to receive preferential treatment from local governments, face fewer budget and credit constraints, and be less affected by spillover or negative effects of devolution due to their established nature, irrespective of their exposure to the devolution reforms. Second, compared to household entrepreneurs, these established firms are better positioned to capture the benefits of both devolution reforms through institutionalised clientelistic relationships with the local government (Cheng, 2022). Another explanation is that, as Jin (2023) acknowledges, the absence of an IV approach complicates causal inference. In our results, Columns (1) and (2) of Table 2 present OLS and FE results without using an IV approach, showing that both the CPE and PMC reforms have a positive relationship with household propensity for entrepreneurship. However, when we apply an IV approach, the PMC reform no longer demonstrates a positive

impact on the household propensity for entrepreneurship.

## 7. Mechanisms

In this section, we present suggestive evidence on the proposed mechanisms outlined in section 3, which include: (a) improving public spending efficiency and service delivery, (b) easing liquidity constraints, and (c) promoting interjurisdictional competition.

To examine public spending efficiency and service delivery as a mechanism, we utilise three sets of proxies to measure the outcomes of these factors. First, we consider alternative household spending measures closely related to the improved provision of local infrastructure under devolution reforms, namely, household expenditure on transportation, telecommunications and online shopping. Improved infrastructure lowers costs associated with these expenditures. Given that Chinese households exhibit high elastic demand for relatively 'luxury' consumption, such as online purchases, dining out and transportation in response to price changes (Qu & Chen, 2024), we anticipate that the enhanced provision of local infrastructure under devolution reforms will boost household spending in these areas.

Second, we use a dichotomous indicator of whether a household receives government subsidies or humanitarian relief, covering poverty alleviation, medical care, natural disaster relief, bereavement relief and temporary financial assistance. Increased fiscal power in allocating and managing aid and relief programs is vulnerable to corruption, misallocation, waste, and mismanagement in China (Quah, 2013; Shen *et al.*, 2014). Therefore, we anticipate that fiscal devolution will lower the probability of households receiving official relief and subsidies.

Third, we use a dichotomous indicator, denoting whether an entrepreneur has online sales and income from online sales to proxy public spending efficiency and service delivery. Since e-commerce requires investment in infrastructure, including roads, industrial parks, modern commercial parcel services that facilitate logistics and broadband internet that improves market access and information flows (Couture *et al.*, 2021; Fan *et al.*, 2018; Guo *et al.*, 2024), we conjecture that lower public spending efficiency, resulting from the PMC reform, lowers the probability that households will engage in e-commerce and reduces income from online sales.

Table 3 presents the results for each proxy for public spending efficiency and service delivery. For the full sample of all households (Panel A), the CPE reform results in higher household spending on transportation, communication and online shopping. This result suggests that the CPE reform improves the efficiency of public spending and service delivery, which is likely driven by enhanced infrastructure – such as roads, telecommunications, and logistics – that facilitated higher private expenditure in each of these areas. Column (A1) shows that the PMC also increases household expenditure on transportation, likely due to the local government having more fiscal resources to improve roads and related infrastructure. However, the PMC reduces government subsidies to households, potentially signalling corruption or misuse of funds. This aligns with previous findings that the PMC reform results in land corruption and

mismanagement of public funds. Additionally, Columns (B1) and (B2) in Panel B show that PMC reduces the likelihood of entrepreneurs engaging in online sales and lowers their online sales income, implying lower public spending efficiency, which is consistent with our expectations.

**[Table 3 here]**

In Table 4, we examine the extent to which the reforms ease liquidity constraints on entrepreneurs. To do so, we restrict our sample to households involved in startup activity since 2002. Due to limited variation in the timing of the reforms for this restricted sample and the availability of relevant information on government support in only a few CHFS waves, we assess the impact of the length of exposure to the devolution reforms on the probability of receiving a preferential tax rate, accessing financial support from local government, and experiencing tax and fee burdens.[8] The results suggest that households exposed to the PMC reform for a longer period are more likely to benefit from tax advantages and financial support from the government and face relatively lower tax and fee burdens. In contrast, the impact of the CPE reform exposure length is insignificant. This discrepancy may stem from the different policy objectives of the two reforms: the PMC reform focuses on devolving fiscal resources, while the CPE reform shifts socioeconomic administrative powers to local governments. Under the PMC reform, enhanced fiscal conditions enable local governments to offer more financial support for entrepreneurship. However, the PMC reform's positive effects in easing liquidity constraints on firms are likely offset by reduced monitoring and coordination capacity of higher-level governments, as well as diminished public spending efficiency and service delivery. Moreover, Jin (2023) argues that while the PMC reform eases liquidity constraints, it also leads to higher debt accumulation in firms, which is conducive to growth.

**[Table 4 here]**

In Table 5, we examine whether spillover effects to urban districts generated by the CPE and PMC reforms might be a potential mechanism underlying the observed effects of reform exposure on household entrepreneurship. The literature suggests that the pro-business environment created by the decentralisation reform can foster interjurisdictional competition and attract capital and talent, including potential entrepreneurs from nearby urban districts (Jia et al., 2020; Ma & Mao, 2018). In Table 5, we focus on households in urban districts to assess the presence of such a spillover effect. The results indicate that exposure to the CPE reform in counties within the same prefecture city – where a dummy variable indicates the presence of at least one CPE county subordinate to the same prefecture as the urban district – significantly reduces the probability of involvement in entrepreneurial activity among households in the urban districts, while the effects of the PMC reform are statistically insignificant. This suggests

[8] The CHFS collects information on whether household entrepreneurs enjoy preferential tax rates in the 2015, 2017 and 2019 waves, information on whether they receive financial support from local governments in the 2017 and 2019 waves, and information on self-reported tax and fee burdens, measured on a five-point scale ranging from one (very low) to five (very high), in the 2019 wave.

that improvements in the business environment in counties subject to the CPE reform have led to a concurrent movement of potential entrepreneurs from neighbouring urban districts.

**[Table 5 here]**

## 8. Robustness checks

We conduct several robustness checks to examine the reliability of our main findings. First, we perform two placebo tests (Cui *et al.*, 2019). In the first placebo test, we assume that the CPE and PMC reforms were implemented in 2001 and 2003, respectively, one year earlier than when they were actually first introduced. We construct placebo CPE and PMC reform exposures similarly to our main treatment measures. Table 6 shows that both the FE and FE-IV estimates reveal no significant association between the placebo reform exposures and household probability of entry into entrepreneurship. These results suggest that the observed effects are attributable to the actual devolution reforms rather than other unobserved factors.

**[Table 6 here]**

Next, we conduct a permutation test by randomly assigning the effective year of the PMC and CPE reforms to each household, constructing placebo reform exposure statuses, and then examining the actual and placebo treatment effects on household propensity for entrepreneurship. This random assignment is performed 2,000 times to approximate the permutation distribution. Figure 6 plots the distributions of FE estimates of the relationship between the two placebo reform exposures and the probability of starting a business. The placebo treatment effects cluster around zero, and the placebo CPE treatment effect notably differs from the actual CPE treatment effect. The placebo estimates for the CPE reform are uniformly smaller in absolute value compared to the estimated effect of the actual reform, with only 9.65 per cent of the placebo coefficients being significant and positive.

**[Figure 6 here]**

Second, we assess whether our estimates are sensitive to the inclusion of specific counties and ethnic autonomous regions. To do so, we perform a leave-one-out analysis, dropping one county at a time and re-estimating the effects of exposure to the PMC and CPE reforms on the household propensity for entrepreneurship with the reduced samples. Figure 7 shows the distributions of the FE estimates and their corresponding t-values. All estimated coefficients for exposure to the CPE reform from the reduced samples are significant, and their distribution centres around the FE estimates obtained from the full sample. The upper and lower bounds of the distribution maintain the same sign as the baseline estimates.

**[Figure 7 here]**

We examine whether our main findings are influenced by households from the ethnic autonomous regions (Inner Mongolia, Guangxi, and Ningxia). The fiscal systems in these autonomous regions differ significantly from those in other parts of China, and none of these

regions adopted the PMC reform during its early stage (Ma & Mao, 2018). We exclude households from these three autonomous regions and re-estimate the association between CPE and PMC reform exposure and propensity for entrepreneurship. The FE, FE-IV, and RE-IV estimates in Table 7 show that the CPE reform exposure remains significantly and positively associated with the likelihood of starting new business ventures, while the impact of the PMC reform exposure is insignificant. The magnitudes and significance of the CPE reform exposure are nearly identical to those reported in columns (2) to (4) in Table 2.

**[Table 7 here]**

Third, since the rollout of the CPE and PMC reforms was not random and seemed to correlate with local conditions (Li et al., 2016), we examine whether some predetermined county-level characteristics might confound our estimates of the effects of reform exposure. To address this, we incorporate a comprehensive set of county-specific time trends to account for shared trends in our outcome variable and assess whether our main estimates are influenced by unobserved county-year-specific heterogeneity. Including county-specific trends helps mitigate potential selection bias (Storeygard, 2016). The results in column (1) in Table 8 show that this more flexible specification does not qualitatively alter our main findings. Exposure to the CPE reform continues to significantly and positively impact household propensity for entrepreneurship. Moreover, the magnitude of the treatment effect is considerably larger than the FE estimates reported in column (2) in Table 2, providing strong evidence that the FE estimates likely underestimate the true effect of the CPE reform.

**[Table 8 here]**

Fourth, we include interactions between several potential confounding factors and either a third-order polynomial function of the time trend or a set of year dummies in our main specification (Campante & Yanagizawa-Drott, 2015; Li et al., 2016). We consider eleven selection criteria that may be associated with the timing of the CPE and PMC reforms, namely, whether the county is a county-level city, whether the county is designated as having poverty status, whether the county is on the boundary of a bordering province, whether the county is a major grain/cotton producer, county-level GDP per capita, the proportion of secondary and tertiary industry in the county, the fiscal gap, and altitude and average slope. These predetermined factors are set to their values one year before the first implementation of the CPE or PMC reforms. The results in columns (2) to (5) in Table 8 suggest that flexibly controlling for the time effects of these pre-treatment characteristics does not qualitatively alter our baseline findings. The estimated effect of CPE reform exposure remains significant and positive, with effect sizes closely aligning with those reported in columns (2) to (4) in Table 2.

Fifth, one potential concern is that different forms of devolution might interact with each other, and the simultaneous implementation of multiple devolution reforms could diminish their individual benefits (Martínez-Vázquez et al., 2017; Altunbaş & Thornton, 2012). To address this

concern, we exclude households from countries that have adopted both the CPE and PMC reforms and re-estimate the association between reform exposure and household propensity for entrepreneurship. The FE and FE-IV estimates in Table 9 are consistent with our main findings in Table 2. Compared to the results from the full sample, the relatively larger magnitude of the point estimates for CPE reform exposure suggests that the concurrent administrative and fiscal devolution may mitigate the benefits of the CPE reform. This result is consistent with the suggestive evidence we present, indicating that the PMC reform has had an adverse impact on public spending efficiency, service delivery, and the institutional environment, while showing no significant effect on promoting interjurisdictional competition. While we find some evidence suggesting that the PMC reform eases liquidity constraints for households, previous studies indicate that this has not translated to higher economic growth (Bo et al., 2020).

**[Table 9 here]**

Finally, instead of employing household data, we use two decades of administrative data on new firm registration from 2000 to 2021 at the county level to rerun our model. Column (1) in Table 10 shows that for total firms, the CPE reform significantly boosts growth in new firm registrations, aligning with our FE-IV and RE-IV findings in columns (3) and (4) in Table 2. In the retail sector, as shown in Column (2), the PMC reform significantly reduces growth, while the CPE reform significantly enhances retail firm growth, emphasising the positive impact of fiscal devolution. Similarly, Column (4) demonstrates that the CPE reform significantly improves service sector growth, whereas the PMC reform has a detrimental effect on the growth of new businesses in this sector. Taken together, these results are consistent with our main conclusion that the CPE reforms, but not the PMC reforms, promote new venture creation.

**[Table 10 here]**

## 9. Conclusion

This study has examined the causal relationship between each of fiscal and administrative devolution and household propensity for entrepreneurship by exploiting temporal and spatial variation in the county-level rollout of the CPE and PMC reforms in China. Our main findings suggest that exposure to the CPE reform (fiscal devolution) has a significant and positive effect on the household probability of engaging in entrepreneurial activity. In contrast, exposure to the PMC (administrative devolution) reform has no significant impact on household entrepreneurship. Our main findings are robust to sensitivity checks that address concerns related to dynamic treatment effect bias, omitted variable bias, sample selection bias, the potential influence of confounding factors, and possible interactions between the two devolution reforms.

In terms of potential mechanisms, we offer suggestive evidence on the extent to which the CPE and PMC reforms improved public spending efficiency and service delivery, eased liquidity constraints and promoted interjurisdictional competition are underpinning channels. We find

that the CPE reform, but not PMC reform, is effective in promoting public spending efficiency and service delivery, as well as increasing interjurisdictional competition. While we find that the PMC reform eased liquidity constraints, which could support entrepreneurial activity, it is likely that the PMC reform also contributed to lower economic growth and a deterioration in the institutional environment, which offset this positive impact.

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**Table 1. Household entrepreneurship by county exposure to CPE and PMC reforms**

| County devolution exposure | Observations of households (%) | Entrepreneur | Solo entrepreneur subgroup | Employer entrepreneur subgroup |
|---|---|---|---|---|
| CPE reform (administrative devolution) | | | | |
| Yes | 17,262 (42.78%) | 12.94% | 8.53% | 2.88% |
| No | 23,085 (57.22%) | 11.75% | 7.59% | 2.76% |
| PMC reform (fiscal devolution) | | | | |
| Yes | 19,770 (49.00%) | 11.68% | 7.72% | 2.51% |
| No | 20,577 (51.00%) | 12.82% | 8.52% | 3.11% |

**Table 2. Devolution reforms and entrepreneurship**

| | (1) OLS | (2) FE | (3) FE-IV | (4) RE-IV | (5) FE |
|---|---|---|---|---|---|
| CPE reform | 0.0776** | 0.0811*** | 0.1231** | 0.0924** | |
| | (2.40) | (2.64) | (2.54) | (2.25) | |
| PMC reform | 0.0262* | 0.0207* | -0.0034 | 0.0153 | |
| | (1.81) | (1.89) | (-0.04) | (0.20) | |
| Length of CPE reform exposure | | | | | 0.0344*** |
| | | | | | (2.95) |
| Length of PMC reform exposure | | | | | 0.0045 |
| | | | | | (0.56) |
| Control variables | Yes | Yes | Yes | Yes | Yes |
| Household fixed effects | No | Yes | Yes | No | Yes |
| Wave fixed effects | Yes | Yes | Yes | Yes | Yes |
| N | 40347 | 40347 | 30516 | 39902 | 40347 |
| adj. $R^2$ | 0.1104 | 0.0355 | -0.4833 | 0.1127 | 0.0354 |
| Kleibergen–Paap rk Wald F statistic | | | 83.65 | 224.09 | |
| *First stage results* | | | | | |
| County to prefecture distance × length of provincial level CPE reform | | | 0.0677*** | 0.0671*** | |
| | | | (14.99) | (18.63) | |
| County to prefecture distance × length of provincial level PMC reform | | | 0.1296*** | 0.1370*** | |
| | | | (12.74) | (17.34) | |

Notes: t statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01. Standard errors are clustered at the county level. All specifications include the full set of controls listed in Table A1; full results are available from the authors.

**Table 3. Public spending efficiency and service delivery as a mechanism**

| **Panel A: All households** | (A1) Household transportation expense | (A2) Household communication expense | (A3) Household online shopping expense | (A4) Household receives relief from government (yes = 1; no = 0) |
|---|---|---|---|---|
| CPE reform | 0.6192*** | 0.0979** | 0.7988** | 0.0077 |
| | (2.83) | (2.01) | (2.00) | (0.34) |
| PMC reform | 0.2544* | 0.1722 | -0.0754 | -0.0579* |
| | (1.75) | (1.30) | (-0.15) | (-1.92) |
| Control variables | Yes | Yes | Yes | Yes |
| Household fixed effects | Yes | Yes | Yes | Yes |
| Wave fixed effects | Yes | Yes | Yes | Yes |
| *N* | 40301 | 40313 | 14202 | 40327 |
| adj. $R^2$ | 0.0686 | 0.1009 | 0.2771 | 0.5789 |
| **Panel B: Entrepreneurs only** | (B1) Has online sales (yes = 1; no = 0) | (B2) Income from online sales | | |
| CPE reform (admin dev) | -0.0073 | 0.1726 | | |
| | (-0.19) | (0.48) | | |
| PMC reform (fiscal dev) | -0.0514** | -0.5576** | | |
| | (-2.01) | (-2.44) | | |
| Control variables | Yes | Yes | | |
| Household fixed effects | Yes | Yes | | |
| Wave fixed effects | Yes | Yes | | |
| *N* | 4947 | 4929 | | |
| adj. $R^2$ | 0.0399 | 0.0345 | | |

Notes: t statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01. Standard errors are clustered at the county level. All specifications include the full set of controls listed in Table A1; full results are available from the authors.

**Table 4. Easing liquidity constraints as a mechanism**

| | (1) Access to tax benefits (yes = 1; no = 0) | (2) Access to official finance (yes = 1; no = 0) | (3) Tax and fee burdens (very low = 1; very high = 5) |
|---|---|---|---|
| Length of CPE reform exposure | 0.0504 | -0.1078 | 0.0724 |
| | (0.78) | (-0.87) | (0.61) |
| Length of PMC reform exposure | 0.2039** | 0.2649* | -0.6716*** |
| | (2.25) | (1.86) | (-3.22) |
| Control variables | Yes | Yes | Yes |
| Household fixed effects | Yes | Yes | No |
| Wave fixed effects | Yes | Yes | No |
| County fixed effects | No | No | Yes |
| N | 4041 | 3011 | 245 |
| adj. $R^2$ | 0.0146 | 0.0316 | 0.0411 |

Notes: t statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01. All specifications include the full set of controls listed in Table A1; full results are available from the authors.

**Table 5. Interjurisdictional competition as a mechanism: spillover effects to urban districts**

| | Urban districts |
|---|---|
| CPE reform in counties within the same city | -0.0266*** |
| | (-2.67) |
| PMC reform in counties within the same city | -0.0066 |
| | (-0.72) |
| Control variables | Yes |
| Household fixed effects | Yes |
| Wave fixed effects | Yes |
| N | 41649 |
| adj. $R^2$ | 0.0393 |

Notes: t statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01. All specifications include the full set of controls listed in Table A1; full results are available from the authors.

**Table 6. Robustness check – placebo tests**

| | (1) FE | (2) FE-IV |
|---|---|---|
| Placebo CPE reform | 0.0244 | 0.5930 |
| | (1.24) | (1.64) |
| Placebo PMC reform | 0.0372 | -0.7405 |
| | (1.40) | (-1.28) |
| Control variables | Yes | Yes |
| Household fixed effects | Yes | Yes |
| Wave fixed effects | Yes | Yes |
| N | 40347 | 30516 |
| adj. $R^2$ | 0.0349 | -0.5809 |
| Kleibergen–Paap rk Wald F statistic | | 2.606 |

Notes: t statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01. All specifications include the full set of controls listed in Table A1; full results are available from the authors.

**Table 7. Robustness check – excluding autonomous regions**

| | (1) FE | (2) FE-IV | (3) RE-IV |
|---|---|---|---|
| CPE reform | 0.0989*** | 0.1179** | 0.0986** |
| | (2.97) | (2.29) | (2.17) |
| PMC reform | 0.0213* | -0.0699 | -0.0502 |
| | (1.95) | (-0.85) | (-0.73) |
| Control variables | Yes | Yes | Yes |
| Household fixed effects | Yes | Yes | Yes |
| Wave fixed effects | Yes | Yes | Yes |
| N | 37972 | 28792 | 37527 |
| adj. $R^2$ | 0.0361 | -0.4844 | 0.1123 |
| Kleibergen–Paap rk Wald F statistic | | 91.07 | 198.55 |
| *First stage results* | | | |
| County-city distance × length of provincial level CPE reform | | 0.0714*** | 0.0685*** |
| | | (13.33) | (15.87) |
| County-city distance × length of provincial level PMC reform | | 0.1763*** | 0.1813*** |
| | | (13.32) | (17.32) |

Notes: t statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01. All specifications include the full set of controls listed in Table A1; full results are available from the authors.

**Table 8. Robustness check – controlling for selection criteria**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| CPE reform | 0.3373** | 0.0733*** | 0.0974*** | 0.1030*** | 0.1584*** |
| | (2.32) | (2.64) | (3.19) | (3.07) | (4.82) |
| PMC reform | 0.0794*** | 0.0147 | 0.0542*** | 0.0417** | 0.0767*** |
| | (10.84) | (0.91) | (2.66) | (2.12) | (3.32) |
| Selection criteria × trend | No | Yes | Yes | Yes | No |
| Selection criteria × trend$^2$ | No | No | Yes | Yes | No |
| Selection criteria × trend$^3$ | No | No | No | Yes | No |
| Selection criteria × year dummies | No | No | No | No | Yes |
| Control variables | Yes | Yes | Yes | Yes | Yes |
| Household fixed effects | Yes | Yes | Yes | Yes | Yes |
| County fixed effects | No | Yes | Yes | Yes | Yes |
| Wave fixed effects | No | Yes | Yes | Yes | Yes |
| County × wave fixed effects | Yes | No | No | No | No |
| *N* | 40347 | 37174 | 37174 | 37174 | 37174 |
| adj. *R*2 | 0.0527 | 0.0357 | 0.0368 | 0.0373 | 0.0427 |

Notes: t statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01. All specifications include the full set of controls listed in Table A1; full results are available from the authors.

**Table 9. Robustness check – dropping counties that have adopted both CPE and PMC reforms**

| | (1) FE | (2) FE-IV | (3) FE | (4) FE-IV |
|---|---|---|---|---|
| CPE reform | 0.1181*** | 0.2368*** | | |
| | (2.95) | (3.93) | | |
| PMC reform | | | 0.0185* | 0.0968 |
| | | | (1.72) | (1.23) |
| Control variables | Yes | Yes | Yes | Yes |
| Household fixed effects | Yes | Yes | Yes | Yes |
| Wave fixed effects | Yes | Yes | Yes | Yes |
| N | 20577 | 15051 | 23085 | 17042 |
| adj. $R^2$ | 0.0435 | | 0.0733 | |
| Kleibergen–Paap rk Wald F statistic | | 146.448 | | 183.527 |
| *First stage results* | | | | |
| County-city distance × length of provincial level CPE reform | | 0.0738*** | | |
| | | (12.10) | | |
| County-city distance × length of provincial level PMC reform | | | | 0.1986*** |
| | | | | (13.55) |

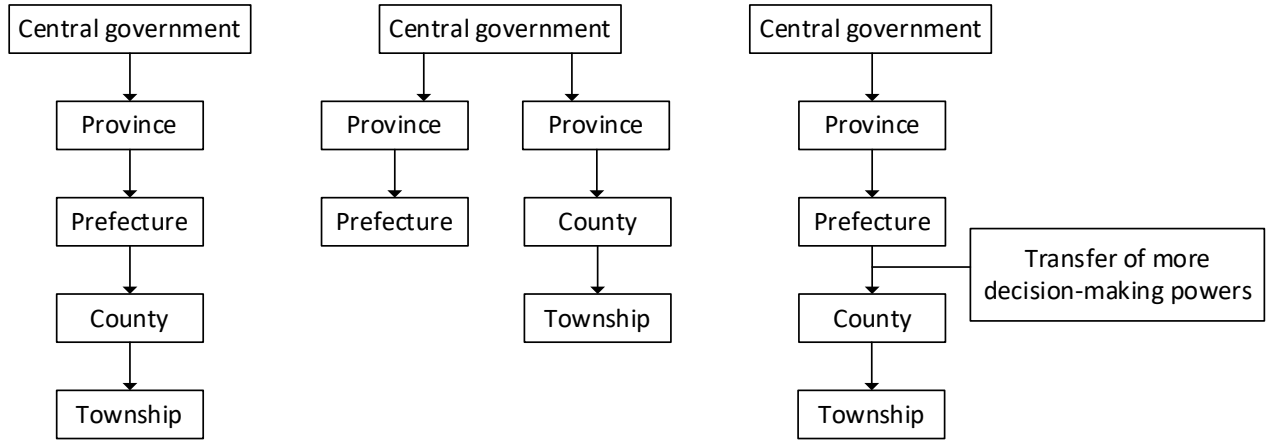
Notes: t statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01. All specifications include the full set of controls listed in Table A1; full results are available from the authors.

**Table 10. Annual growth rate of new firms using administrative data**

| | (1) All new firms | (2) Retail firms | (3) Agricultural-related firms | (4) Service firms |
|---|---|---|---|---|
| CPE reform | 0.0841** | 0.2025** | -0.0185 | 0.1581* |
| | (1.99) | (2.47) | (-0.26) | (1.85) |
| PMC reform | -0.0640 | -0.1698* | -0.1026 | -0.1552* |
| | (-1.33) | (-1.78) | (-1.14) | (-1.71) |
| Control variables | Yes | Yes | Yes | Yes |
| County fixed effects | Yes | Yes | Yes | Yes |
| Year fixed effects | Yes | Yes | Yes | Yes |
| N | 33671 | 33625 | 32514 | 33464 |
| adj. $R^2$ | 0.0270 | 0.0290 | 0.0168 | 0.0418 |

Notes: t statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01. All specifications control for county GDP, population, fiscal gap, industrial structure, administrative area, number of primary and high school students, number of hospital beds, and use of agricultural machinery. Full results are available from the authors.

**Figure 1. China's government structure before and after the two devolution reforms**




**(a) Before the reforms** **(b) PMC reform** **(c) CPE reform**

**Figure 2. Counties selected for the Province-Managed County reform (administrative devolution), 2003-2022**

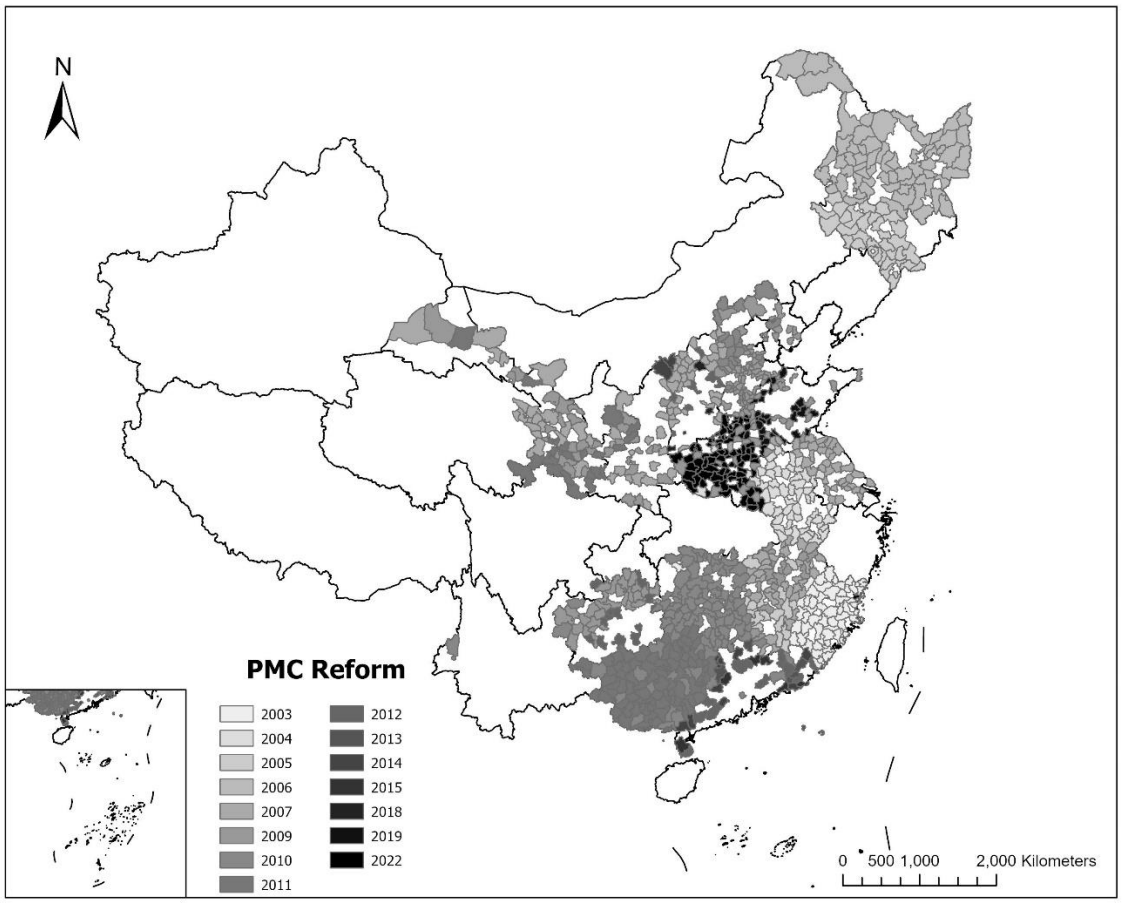


**Figure 3. Counties selected for the County Purview Expansion reform (fiscal devolution), 2003-2015**

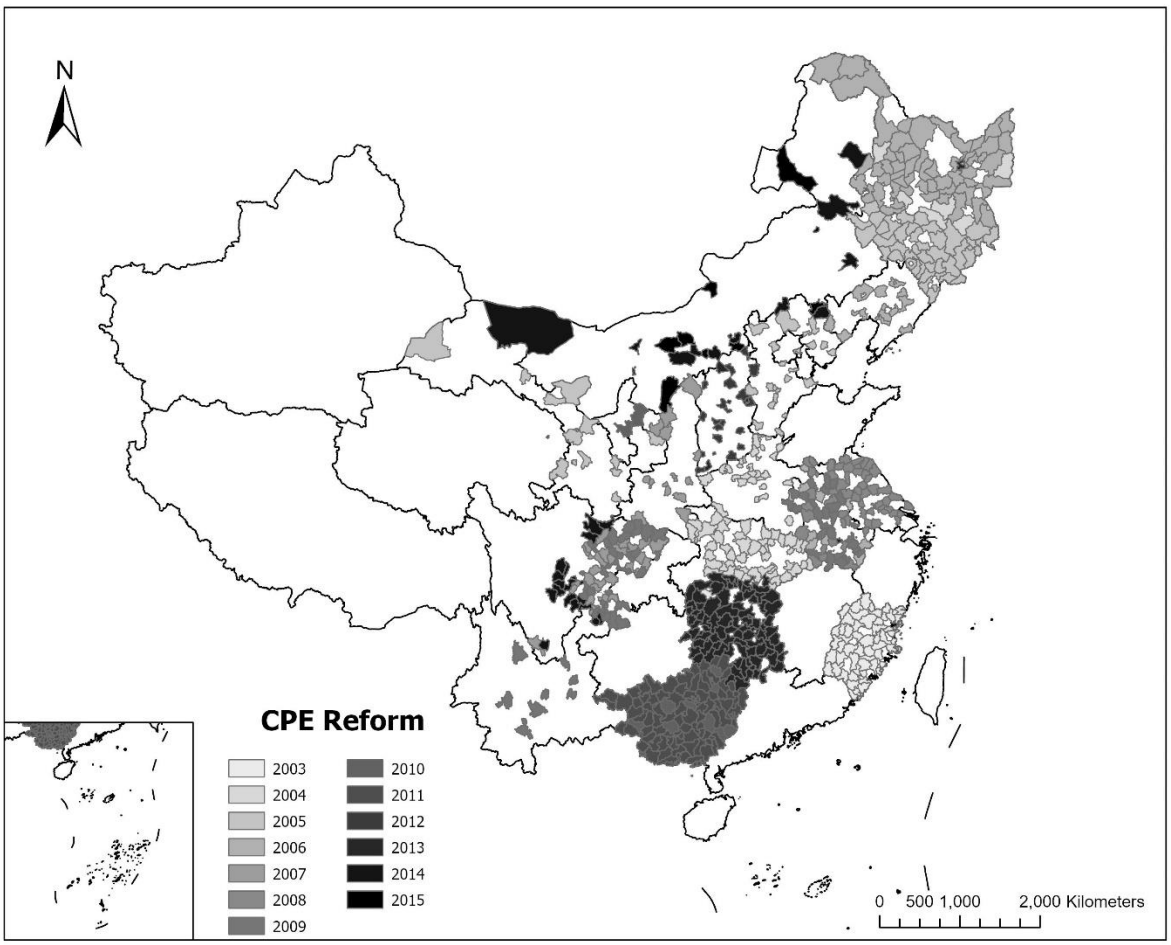


**Figure 4. Event study of the CPE reform and entrepreneurship**

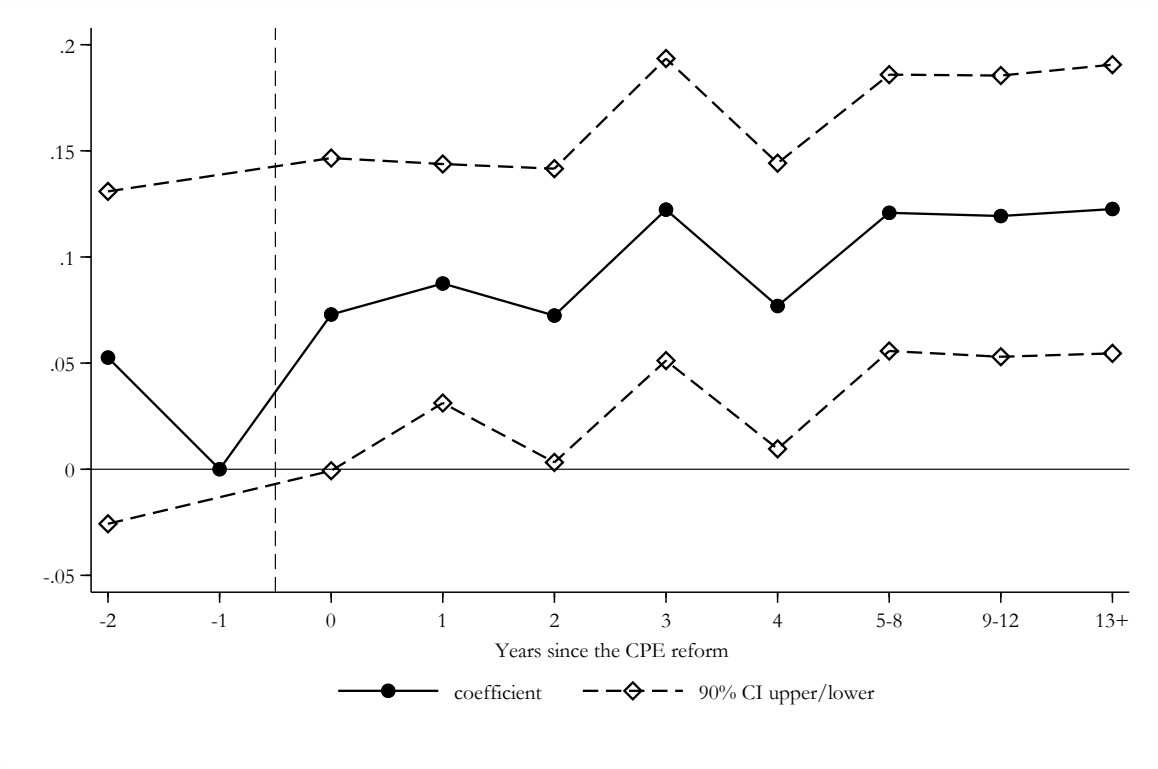



**Figure 5. Event study of the PMC reform and entrepreneurship**

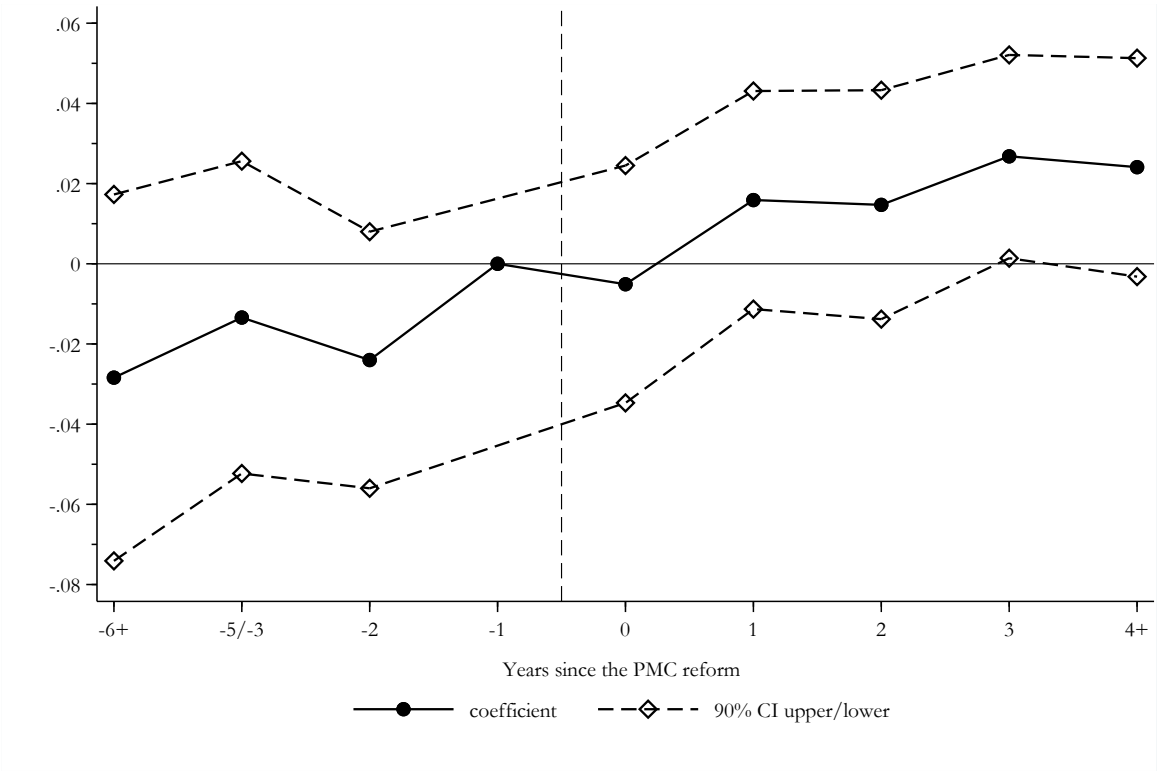


**Figure 6. Robustness check – permutation test**

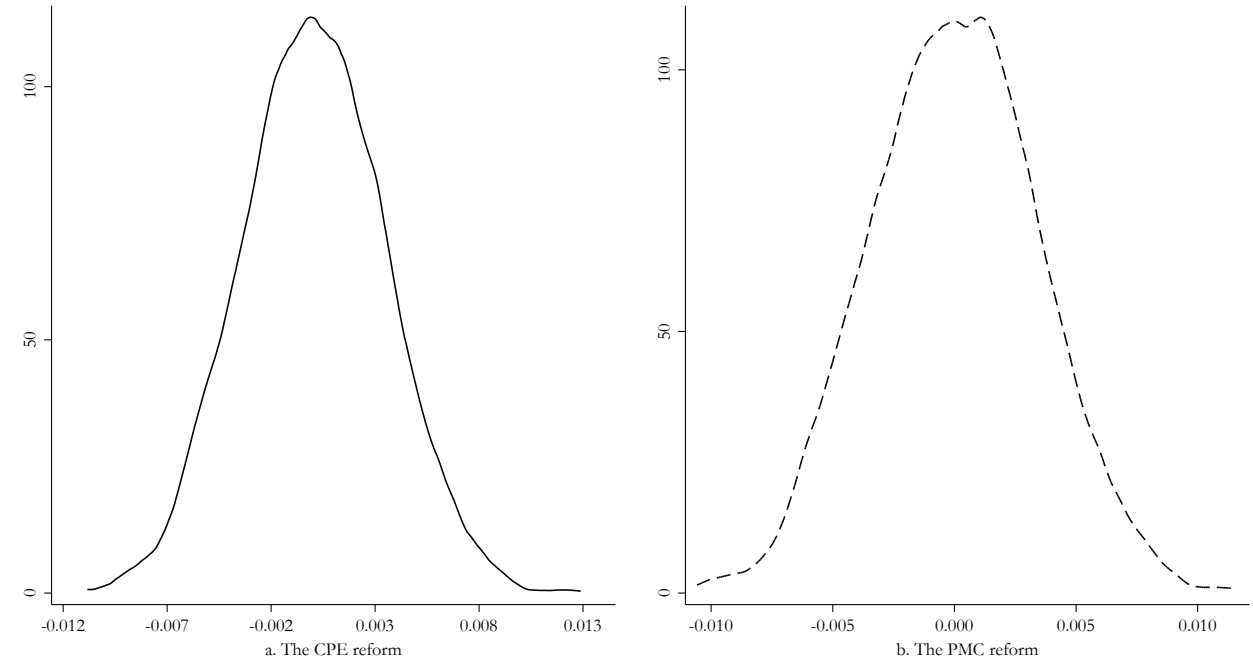
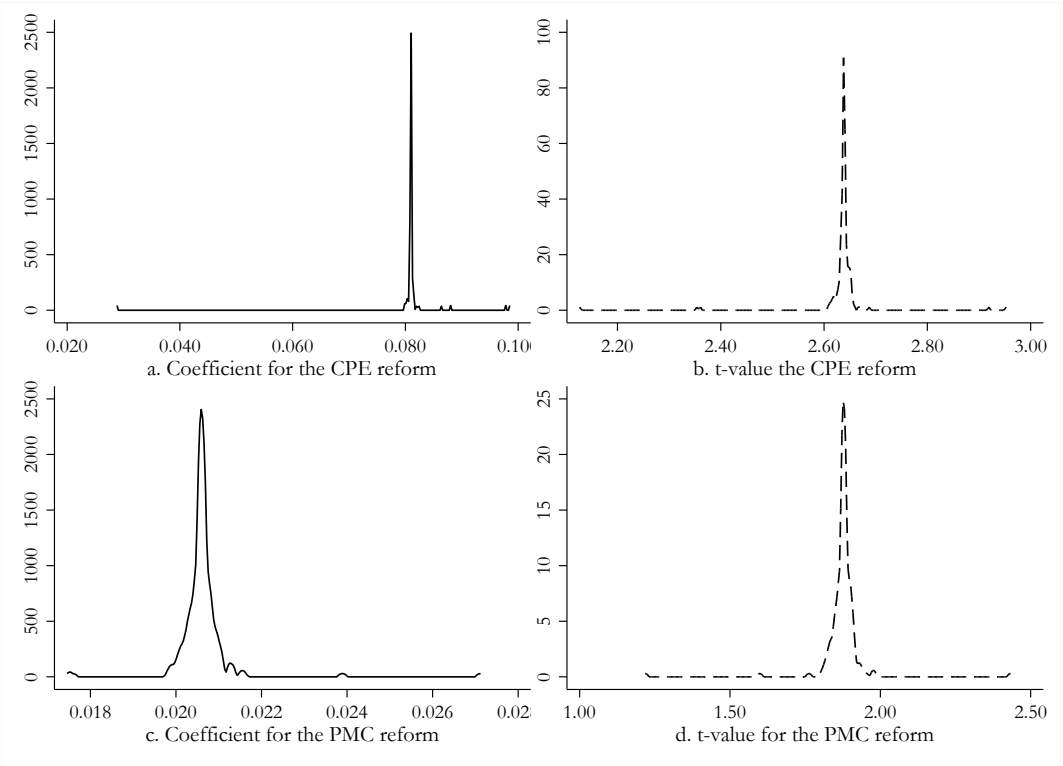



**Figure 7. Robustness check – dropping one county at a time**



## Appendix

### Table A1. Summary statistics for control variables

| Variable | Definition | Mean | Std. Dev. |
|---|---|---|---|
| Male | Male=1, female=0 | 0.84 | 0.36 |
| Age | Years | 49.71 | 9.80 |
| Education | Years of formal education | 8.42 | 3.71 |
| CCP member | Member of the Chinese Communist Party: yes=1; no=0 | 0.11 | 0.32 |
| Agricultural *hukou* | Agricultural *hukou*=1, non-agricultural *hukou*=0 | 0.93 | 0.26 |
| Local *hukou* | Local *hukou*=1, non-local *hukou*=0 | 0.78 | 0.41 |
| Marital status | | | |
| Single | Reference group | 0.03 | 0.16 |
| Married | | 0.91 | 0.29 |
| Other | | 0.06 | 0.24 |
| Health status | Scale: very unhealthy =1; very healthy =5 | 3.12 | 1.10 |
| Superannuation | Has superannuation: yes = 1; no = 0 | 0.75 | 0.43 |
| Medical insurance | Has medical insurance: yes = 1; no = 0 | 0.93 | 0.25 |
| Family size | Number of family members | 3.82 | 1.65 |
| House | Number of houses owned | 1.05 | 0.53 |
| Cadre | Number of cadres in the household | 0.06 | 0.27 |
| Labour | Number of working-age population in the household | 2.31 | 1.25 |
| Children | Number of children under 15 years old in the household | 0.68 | 0.89 |
| Household assets | Total household assets in RMB in logarithm | 12.15 | 1.43 |

### Table A2. The Goodman-Bacon (2021) decomposition of DID estimates

| DID comparison | Weight | Average DID estimates |
|---|---|---|
| **Panel A: CPE reform (fiscal dev)** | (A1) | (A2) |
| DID estimate: 0.075*** | | |
| Earlier treated vs. later treated | 0.000 | 0.329 |
| Later treated vs. earlier treated | 0.000 | -0.018 |
| Treated vs. never treated | 0.577 | 0.074 |
| Treated vs. already treated | 0.423 | 0.077 |
| **Panel B: PMC reform (admin dev)** | (B1) | (B2) |
| DID estimate: 0.019* | | |
| Earlier treated vs. later treated | 0.000 | 0.046 |
| Later treated vs. earlier treated | 0.000 | 0.086 |
| Treated vs. never treated | 0.511 | 0.020 |
| Treated vs. already treated | 0.489 | 0.019 |

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

**Table A3. The Callaway and Sant'Anna (2021) DID estimates**

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | CPE reform | PMC reform | CPE reform | PMC reform |
| Average treatment effect on the treated (ATT) | 0.1400*** | 0.0960 | 0.1033*** | 0.0823 |
| | (3.32) | (1.30) | (3.32) | (1.60) |
| Average ATT by group | 0.1400*** | 0.1069 | 0.1033*** | 0.0823 |
| | (3.32) | (0.83) | (3.34) | (1.61) |
| Average ATT by calendar period | 0.1280*** | 0.0919 | 0.1008*** | 0.0662 |
| | (3.31) | (0.86) | (3.43) | (1.34) |
| Average ATT in the post-treatment period | 0.1408*** | 0.0670 | 0.1041*** | 0.0596 |
| | (2.79) | (0.81) | (3.26) | (0.91) |
| N | 12946 | 15411 | 8075 | 7825 |

Notes: t statistics in parentheses; * p < 0.10, ** p < 0.05, *** p < 0.01. All specifications control for county GDP, population, fiscal gap, industrial structure, administrative area, number of primary and high school students, number of hospital beds, and use of agricultural machinery power and the full set of controls listed in Table A1. Full results are available from the authors. The Callaway and Sant'Anna (2021) DID estimator uses pair-balanced observations, which reduces the sample size. Results in columns (1) and (2) are based on the full sample, while results in columns (3) and (4) are based on households from counties that have adopted either the CPE or PMC reforms, but not both.