The Home Stretch: County-Level Policy Implementation and Regional Financial Development in China

Abstract:

Hierarchical structures, where central authorities delegate powers to local governments, are ubiquitous but face implementation challenges resulting from weak accountability. This study presents one of the first evidence of how local officials' policy implementation affects regional financial development in China—a deeply hierarchical polity with a historical struggle to bridge the "last mile" of policy execution. We develop a new index of county-level Central Financial Policy Implementation Index (CFPI) based on over 6.32 million news releases of county governments on their websites between 2009 and 2023. We find that stronger CFPI implementation is positively associated with local loan innovation, a proxy for financial development. We further document that these effects are more substantial for counties where the officials have a finance-related background and stronger promotion incentives. The commendation tools used by central governments are also useful in improving the efficiency of the implementation. Our paper highlights the importance of addressing the "last mile" issue in policy implementation in a decentralized administrative system.

Keywords: Financial Development; Policy Implementation; Textual Analysis; Government Releases

JEL Classification: G28, O16, O53, R58

1. Introduction

Hierarchies—layers of sequential authorities—are ubiquitous in government organizations. Government organizations often have a structured system of authority, where different levels of officials or decision-makers are organized in a hierarchical manner.

The concept of delegation is closely related to the hierarchical structure and has significant implications for governance. In political organizations, delegation often involves central government bodies granting powers to local governments to implement policies. Although delegation can streamline decision-making processes, it can also lead to a lack of accountability (Fan et al., 2009). As suggested by Anderson et al. (2019), not all higher-level directives are effectively implemented by lower levels, especially those from the central government. This situation is akin to the saying, "Heaven is high, and the emperor is far away" (Zhou, 2016).

While the popular media as well as economic and political literature long stressed the importance of accountability (Mookherjee, 2006; Mookherjee, 2015), namely the efficient implementation of central policies by the local officials in Hierarchies,[1] empirical literature has had relatively little to say about it. This is largely due to methodological limitations in quantifying local officials' policy implementation. The prior literature usually measures the final performance of local officials, but not their implementation intensity. It causes problems for research to empirically understand how sub-tier agencies react to top-tier officials, and the mechanism by which implementation effort affects the outcome of the hierarchy system

Understanding the implementation by local officials is important practically. "Designing good policies is one thing, implementing them is another", as suggested by the World Bank (Artuc et al., 2020). Developing countries are plagued by inefficient administrative systems, which hinder the success of sound policies. It is the main reason for the frustrating performance of foreign aid in driving development outcomes in these

[1] It stems from agency costs, local capture, monitoring difficulties, and subcontracting inefficiencies (Mookherjee, 2006)

countries (Artuc et al., 2020). A good way to measure the policy implementation at the local official level is to improve their accountability, resource allocation, and institutional coherence in decentralized systems.

This study addresses this gap by examining policy implementation in China, a vast and deeply hierarchical polity. It is an ideal laboratory to investigate this issue in China for two reasons. First, the central government has struggled with the issue of "directives not reaching beyond Zhongnanhai," a popular saying before 2012 that referred to the weak implementation of top-level policies.[2] The central government has repeatedly emphasized the need to bridge the "last mile" of policy execution, recognizing that even the best policies are ineffective without proper implementation.

Second, and more importantly, measuring local governments' compliance with central policies was difficult in the past, as we lacked structured data to assess the extent to which local officials were implementing these policies. Fortunately, with the advancement of government digitization, we now have the opportunity to measure local governments' compliance with central policies. Since 2000, county-level governments have started to maintain formal official websites and disclose updates on meetings, research activities, and personnel changes. Currently, almost all county governments have established their own official websites where news releases are posted. We manually collected over 6.32 million government news releases from 1,269 counties between 2000 and 2023. Using text analysis techniques, we develop a county-level Central Financial Policy Implementation Index (CFPI).[3]

In this study, we investigate how policy implementation affects county-level economic performance. Specifically, we study the relationship between financial policy implementation and regional financial development. We focus on the implementation of financial policy instead of other policies because financial policy is a central matter,

[2] For example, on January 30, 2015, the chairman of Chinese Communist Party, Xi Jinping mentioned the need to address the "last mile" in reform promotion during the ninth meeting of the Central Leading Group for Comprehensively Deepening Reforms. On June 29, 2020, during the twenty-first collective study session of the 19th Central Political Bureau, Xi emphasized that central and national agencies are the "first mile" in implementing the decisions of the central government, while grassroots Party organizations represent the "last mile."

[3] This methodological framework has received attention in recent literature, such as the construction of the Geopolitical Risk Index (Caldara and Iacoviello, 2022).

with local governments mainly responsible for execution and generally not formulating differentiated policies. Financial policymaking in China is under central authority, and local governments are mainly responsible for implementing policies with limited discretion. Therefore, we can focus more on policy implementation instead of policy design by local officials.

We first investigate the economic consequences of policy implementation at the local governmental level. Using our innovatively constructed county-level CFPI (Central Financial Policy Index), we explore whether counties' stronger implementation of central financial policies promotes regional financial development, measured by local loan innovation. After matching the CFPI with county-level statistics and incorporating 7,120 observations from 969 counties between 2009 and 2023, we document that a higher level of financial policy implementation is related to higher local loan innovation.

Endogeneity is a potential concern in our analysis, as it may arise from reverse causality or unobserved confounding factors. For instance, local political capacity, leadership quality, or pre-existing financial infrastructure may affect both the efficiency of policy implementation and regional financial outcomes such as loan innovation. While we attempt to mitigate this issue by including a comprehensive set of control variables, we acknowledge that unobserved heterogeneity may remain. To address this concern, we employ an instrumental variable (IV) strategy. Specifically, we exploit the exogenous shock to local policy implementation induced by the leadership transition following the rotation of the General Secretary of the Communist Party of China (CPC) in 2012. This central political change triggered top-down pressure for policy enforcement at the local level. To capture regional variation in responsiveness to this policy shock, we further examine the academic backgrounds of county-level administrative heads. We argue that regions led by officials with stronger academic background are more likely to respond effectively to central directives, thus exhibiting differential implementation intensity. This interaction between the 2012 leadership transition and the characteristics of local leadership creates exogenous variation in financial policy implementation across counties. We use this variation as a source of

identification to mitigate endogeneity and strengthen the causal interpretation of our findings.

Lastly, we go a step further by examining how regional features, local officials' characteristics, and central government behavior modify this relationship. Empirical results suggest that younger county secretaries or heads of administration with a financial background could increase the positive impact of financial policy implementation. This indicates that bureaucrats with stronger promotion incentives or greater expertise achieve better results. We also find that higher levels of fiscal capacity and industrial endowments strengthen the impact of financial policy implementation on local financial growth. Furthermore, we find Confucian culture dampens the effects of CFPI on financial development, extending the findings of Chen et al. (2022). Finally, we find the central government's commendation tool can amplify the positive impact of CFPI on regional financial development, emphasizing the role of the central government in improving policy implementation.

Our paper is related to several strands of literature. First, it relates to the research that uses textual analysis techniques to analyze policy texts and quantify government attitudes or preferences. This approach stems from a consensus in the literature that government policy texts are an important channel for understanding officials' policies, preferences, and positions (Benoit et al., 2009). Existing studies have also utilized party manifestos from multiple countries for textual analysis to identify party positions or examine policy changes (Tavits, 2007; Linder et al., 2020; Laver, 2014; Gethin et al., 2022). We have collected a large set of unique county-level government announcement text data, which allows us to quantify and compare regional implementation of central financial policies. In terms of text analysis methods, we extend textual analysis frameworks (Baker et al., 2016; Caldara and Iacoviello, 2022; Agoraki et al., 2022; Giglio et al., 2023) to quantify policy implementation, offering a blueprint for future research on administrative responsiveness and decentralization.

Second, our paper is related to the literature on policy implementation in administrative systems. One way to improve policy implementation is through monitoring, which can be summarized as either post-program monitoring or pre-event

monitoring-threat (incentive) schemes (Muralidharan et al., 2021). For example, Muralidharan et al. (2021) study how to improve "last-mile" public-service delivery in India, specifically policy implementation at the local officials' level. They find that phone-based monitoring of a program improved implementation, leading to a 7.6% reduction in the number of farmers who did not receive transfers from the agriculture subsidy policy. They argue that the improvement is due to the fact that local officials know their efforts can be easily measured by supervisors through phones. Rogger and Somani (2023) argue that the layering of hierarchy prevents information acquisition and thus deters proper policy implementation. Our paper is among the first studies to quantify the implementation intensity of top-tier policies by local officials. By constructing this measure, we can study the economic effect of the "last-mile" policy implication.

Our paper is also related to the literature on political hierarchies and decentralization. The accountability of local officials to top-level governors is a crucial issue, similar to the classical principal-agent problem (Mookherjee, 2006). The cost of layering arises when local officials cater to vested local interest groups, resulting in corruption and the inability of the central government to effectively supervise through a layered structure (Mookherjee, 2015). Many studies compare incentive schemes and local officials' accountability to the central government across different political hierarchies, such as the multi-division structure in China and the unitary divisional structure in the Soviet Union (Markevich and Zhuravskaya, 2011; Qian and Xu, 1993). Another strand of literature examines the accountability of local officials to local citizens rather than to higher-level authorities. Some studies find that such bottom-up accountability can enhance the provision of public services (Mookherjee, 2015) and even reduce civil conflict (Fetzer and Kyburz, 2024). However, Cassidy and Velayudhan (2024) argue that these benefits may be limited. They show that the proliferation of local governments can hinder economic growth, as the potential gains from local responsiveness are offset by reduced economies of scale and diminished bureaucratic capacity. In these strands of literatures, few studies have operationalized local governments' responsiveness to top-tier priorities in a quantifiable way. Our

implementation intensity measure fills this void, enabling future research to test hypotheses about bureaucratic responsiveness and the trade-offs between centralized control and local autonomy (Bo and Cheng, 2021; Jia et al., 2021; Li et al., 2016; Wong et al., 2017).

Finally, our paper is also related to the extensive literature analyzing the factors influencing financial development, which mainly focuses on political and institutional aspects. Political factors include political stability and political institutions (Girma and Shortland, 2008; Huang et al., 2010), while institutional factors include the legal system, the banking system, and trade policies (Porta et al., 1998; Andrianova et al., 2008; Mishkin, 2009; Zhang et al., 2015). We extend this strand of literature by examining the role played by central financial policies. We also provide additional evidence that in regions with favorable economic endowments, officials with specialization and strong promotional incentives achieve optimal economic outcomes in policy implementation. This provides valuable insights for future regional efforts to improve the implementation of central policies.

The remainder of the paper is organized as follows: Section 2 discusses measuring county effectiveness in implementing central financial policies. Section 3 introduces the data and empirical design, Section 4 presents the empirical results, Section 5 reports implications for further research, and Section 6 concludes.

2. Text-based Measurement of Financial Policy Implementation

2.1 Hierarchical Policy Implementation System in China

The governance system is crucial to China's development model (Bardhan, 2020). To govern a populous and vast country, China's central government adopts a nested, multi-layered administrative structure, in which higher levels of government manage and supervise lower levels, thus extending the central government's control throughout various regions (Jia et al., 2021). A distinctive feature of China's political hierarchy is the complete subordination of lower levels to higher ones, with the upper echelons wielding greater power, because they determine the career paths of lower-level officials

(Xu, 2011; Lee, 2024)

In line with this objective, China's administrative hierarchy is divided into four vertical levels: the central government, provincial governments, prefectural governments, and county governments (Han and Wu, 2024). The central government formulates national plans, followed by provincial and prefectural governments that create their plans, with GDP growth targets as prime examples (Li et al., 2019). Provincial and prefectural governments also function as intermediaries, transmitting governance tasks both upwards and downwards, ultimately placing a heavy burden on grassroots governments, namely county-level governments (Li et al., 2016).

The primary problem in China's hierarchical governance system, lies in the "last mile" challenge of policy implementation—a systemic disconnect between central directives and effective execution at lower administrative levels (Bardhan, 2016; Markevich and Zhuravskaya, 2011). This issue stems from the interrelated tension within the hierarchical system. Centralized systems struggle to balance delegating authority for local responsiveness while maintaining oversight to prevent mission drift (Zhou, 2016). As decision-making power diffuses downward, agents gain flexibility to address local complexities but may deviate from collective goals due to asymmetric incentives. Simultaneously, rigid institutional frameworks often fail to accommodate decentralized execution, creating implementation bottlenecks that undermine both policy fidelity and adaptive innovation. Therefore, improving the effectiveness of governance is the main goal of China's hierarchical governance system.

2.2 Text-Based Policy Analysis Review

Policy texts are not just scripts but vessels for political phenomena. They are essential channels for understanding politicians' attitudes, positions, and relationships (Benoit et al., 2009). Therefore, to understand administrative officials' thoughts and policy directions, it is crucial to understand their statements and actions (Grimmer and Stewart, 2013). However, prior research acknowledges that the vast array of political texts, including policy documents, official announcements, and programmatic writings, poses significant challenges for analysis, especially quantitative analysis.

With advances in textual analysis techniques, researchers are increasingly

undertaking systematic studies of large political texts. These studies fall into three categories. First, political texts are used to analyze party positions quantitatively. For instance, Gethin et al. (2022) analyze party manifestos from 21 countries before general elections, categorizing the content into income distribution and socio-cultural issues and scoring the party stances. Similarly, Laver (2014) summarizes the attributes of these manifestos that represent party positions. Second, several studies focus on the content of policy texts, analyzing changes in the policy philosophies of parties or governments, such as policy bill similarity or shifts in party policies (Tavits, 2007; Linder et al., 2020). The third category of literature focuses on novel techniques for policy text analysis, such as the Wordscores technology and the WORDFISH algorithm (Lowe, 2008; Slapin and Proksch, 2008).

There is also a strand of literature focusing on Chinese policy documents, given that China is largely driven by political decisions. The previous literature mainly focuses on the effects of specific policies. For example, the ecological benefits of the Natural Forest Conservation Program (NFCP) and the Grain-to-Green Program (GTGP) (Liu et al., 2008), the policy characteristics of China's Medium- and Long-Term Plan for the Development of Science and Technology (2006-2020) (Liu et al., 2011), and the institutional and ecological perspective evaluation of China's "ecological red line" policy (Bai et al., 2018). In the financial domain, Klingelhöfer and Sun (2019) derive macroprudential policy indicators, while Das and Song (2023) extract precise timestamps of monetary policy events to reveal the complexity of monetary policy transmission to interest rates.

2.3 Central Financial Policy Implementation (CFPI) Index

In this study, we focus on the implementation of central financial policies for two reasons. Firstly, financial policy is a unique national policy. Its formulation is mainly the central government's responsibility, with local governments having limited power in this area. County-level governments mainly implement these policies, reducing concerns about conflating policy formulation with policy implementation.[4] Secondly,

[4] In the 7th issue of the official policy research of the People's Bank of China in 2020, titled 'Design and

financial policy is a particularly dynamic area for the Chinese central government, characterized by frequent policy changes to actively respond to short-term market fluctuations (Brunnermeier et al., 2022).

2.3.1 Data source of policy texts

To construct an indicator of county-level government implementation of central financial policies, we need to obtain comprehensive and comparable policy texts from county-level governments that reflect their proactivity in executing these policies. Therefore, we collect government releases from the official websites of county-level governments, accumulating approximately 6.32 million texts from 2000 to 2023, covering 1,269 counties.[5][6] **Figure 1** illustrates the geographical distribution of the counties from which we obtain data, showing that the sampled counties are spread across various regions and provinces in China, rather than being concentrated in financially developed areas or eastern coastal cities. This helps to alleviate concerns about the robustness of our conclusions due to our sample's uneven distribution.

[PLEASE INSERT FIGURE 1 HERE]

In May 2008, China's highest administrative authority, the State Council, officially implemented the *Regulations on Government Information Disclosure*, which mandated county-level and above governments to increase transparency. As part of this initiative, most county-level governments in China established official websites (Chen et al.,

Effect Analysis of the Coordination Mechanism between Central and Local Financial Regulation,' it is explicitly stated that 'financial management is mainly a central authority, and local financial supervision serves as an effective supplement.'

[5] Specifically, obtaining the government releases involves several steps. First, we identify the official websites of all counties. We start by gathering the official websites of all prefecture-level cities, which typically provide links to the websites of their subordinate counties, ensuring comprehensive coverage of all county government websites. Second, we locate the sub links for government releases. This step is the most time-consuming, as we manually identify the module names for government releases on each website. Depending on the website, this module could be named differently, such as "Updates", "Important News", "Government Activities", "Local Headlines", or "Today's News". Third, we collect all texts from the government releases modules.

[6] The total number of county in China is 1301. A small number of government releases from certain counties is missing, due to restrictions on access to website data, the absence of a government releases module, or an insufficient volume of texts.

2016). Before this, county-level governments didn't need to establish official websites and release information. To address the sample bias caused by the lack of compulsory information release, our analysis only includes government release data from 2009 to 2023, including approximately 6.22 million texts from 1,269 counties, representing over 98.4% of the total data collected. The blue bars in **Figure 2** depict the average number of government release texts per county by year, revealing a significant increase in the average number of texts after the implementation of the regulations compared to the period before.

[PLEASE INSERT FIGURE 2 HERE]

2.3.2 CFPI Measure construction

To achieve our research objectives, we adopt a dictionary-based approach by constructing a dictionary containing terms that reflect the central financial policies of county-level governments. Following the methodologies of dictionary-based index construction in the literature (Baker et al., 2016; Azzimonti, 2019), we first identify three sets of terms representing the categories of 'central (**C**)', 'financial policy (**FP**)', and 'implementation (**I**)'. Government releases must contain terms from all three categories to meet our criteria. Since our research objective is not directly observable and no data is available to train a supervised model, supervised or unsupervised algorithms or predefined dictionary methods are less suitable (Caldara and Iacoviello, 2022). We have designed a rigorous process to construct the index, as illustrated in **Figure 3**, which we will detail step by step.

[PLEASE INSERT FIGURE 3 HERE]

How do we specify the terms for our dictionary? As shown by Baker et al. (2016) and Azzimonti (2019), commonly used methods often involve some degree of subjectivity in determining the vocabulary content. In contrast, our paper posits that such subjective judgment may introduce bias into the index construction. To address this potential problem, we adopt a relatively objective method to create the term sets.

The Chinese central government's official website provides an excellent material

source through its Government Information Disclosure module. This module categorizes policy documents at the central level, including those from State Council agencies, are categorized. Figure A1 shows the original website, which includes a category labelled 'Fiscal, Financial, and Auditing'. We first obtain all the policy texts under this category and split the texts into individual words, removing high-frequency but meaningless words such as "below" or "also", as well as common non-financial terms such as "government". We then count the frequency of the remaining words, retaining the high-frequency words and categorizing them into the three predetermined sets of terms. During this process, words unrelated to these three categories are excluded. The final term sets are shown in **Table 1**. This method of constructing the term sets effectively avoids the bias introduced by human intervention, thereby enhancing the replicability and credibility of the index construction.

[PLEASE INSERT TABLE 1 HERE]

After determining the term sets, we scan all the government release texts. Following Baker et al. (2016) and Azzimonti (2019), we search for texts containing at least one keyword from each of the three categories, requiring the co-occurrence of these keywords. Texts that meet this criterion are labelled as CFPI-related government releases. From 2009 to 2023, there are approximately 0.55 million CFPI-related government releases, accounting for approximately 8.8% of all government releases. The black line graph in **Figure 2** shows the annual average proportion of CFPI-related government releases. It can be seen that the proportion fluctuates significantly before 2008 due to the smaller number of texts, but stabilizes after 2009. The proportion is significantly higher during the 2008-2009 financial crisis and has shown an upward trend since 2020.

To measure the county-level implementation of central financial policies, we calculate the CFPI index using the following formula:

$$CFPI_{i,t} = \frac{\text{CFPI} - \text{Related Government Releases}_{i,t}}{\text{Government Releases}_{i,t}} \quad (1)$$

where we obtain the CFPI index by calculating the proportion of CFPI-related

government releases to the total number of government releases for county *i* in year *t*. By using the total number of releases to scale the CFPI-related releases, we could avoid biases introduced by the varying sizes of counties.

3. Data and Empirical Strategy

3.1 Data and Sample

Based on the government release data of 1,269 county-level websites obtained in Section 2.3, we first limit our research sample to these 1,269 counties from 2009 to 2023. We then collect statistical data for the sampled counties. Due to differences in statistical data collection methods, there are missing values in the different county databases. To construct a more complete county-level panel data, we primarily source county-level statistics from the CEInet database[7], and supplement missing values from the China Stock Market & Accounting Research (CSMAR) database and the Chinese Research Data Services (CNRDS) platform where possible. To construct the panel data for the empirical analysis, we match the CFPI data with the county-level statistical data and exclude samples that lack financial development indicators. This process yields 7,120 county-year observations across 969 counties.

3.2 Main Variables

We examine the relationship between the county-level government implementation of central financial policies and regional financial development. Section 2.3 and Equation (1) have already explained the construction and calculation of the core independent variable, namely the CFPI index. To measure county-level financial development, we refer to the approaches of Zhang et al. (2012) and Zhang et al. (2015). Given the availability of county-level financial statistical data, we introduce the ratio of financial institutions' loan balances to GDP as the dependent variable.

To control for potential factors influencing county-level financial development,

[7] This comprehensive database consolidates information from regional statistical yearbooks and the "China County Statistical Yearbook," providing statistical data on county-level investment, consumption, and finance, covering nearly all counties nationwide.

we introduce three categories of control variables. First, we include county-level economic variables (Han and Wu, 2024; Guo et al., 2016), such as the share of GDP from the primary sector (*Primary GDP Share*), GDP growth rate (*GDP Growth*), and population growth rate (*Population Growth*). Second, we also incorporate fiscal variables (Bu and Liao, 2022; Fan et al., 2012), including the ratio of general public fiscal budget expenditure to general public fiscal budget revenue (*Expenditure Ratio*), per capita general public fiscal budget expenditure (*Per Capita Expenditure*), and the natural logarithm of general public fiscal budget expenditure (*lnExpenditure*). Finally, we include demographic variables (Faber, 2014; Guo et al., 2025), namely the ratio of the number of students enrolled in junior and senior high schools to the total population (*Students Ratio*), as well as the ratio of the total population to the land area (*People Density*). The main variables and their definitions are presented in **Table 2**.

[PLEASE INSERT TABLE 2 HERE]

Panel A in **Table 3** presents the summary statistics of the main variables. The mean and median of the dependent variable, *Financial Development*, are approximately 0.85 and 0.49, respectively. The core independent variable, *CFPI*, has a mean of around 0.10 and a median of about 0.07. On average, the sample counties have a primary sector GDP proportion of about 18.43%. The GDP and population growth rates are about 8.90% and 0.14%, respectively. In Panel B in **Table 3**, we further divide the sample by *GDP Growth*, *People Density*, and Year, and report the descriptive statistics of CFPI for each subsample. It can be observed that counties with lower population density and higher GDP growth tend to have a slightly higher mean CFPI. Additionally, the mean CFPI has increased over time.

[PLEASE INSERT TABLE 3 HERE]

3.3 Empirical Strategy

To identify the impact of county-level government implementation of central financial policies on regional financial development, we introduce the following reduced-form model:

$$Financial\ Development_{i,t} = \alpha_0 + \alpha_1 CFPI_{i,t} + \boldsymbol{X}'\boldsymbol{\gamma} + \mu_i + v_t + \varepsilon_{i,t} \quad (2)$$

where $\boldsymbol{X}$ stands for the vector of control variables mentioned in Section 3.2. μ_i and v_t represent county and year fixed effects, respectively. $\varepsilon_{i,t}$ is the error term, and standard errors are clustered at the county level to address potential heteroskedasticity and serial correlation. The coefficient of interest, α_1, captures the influence of implementation capacity on regional financial development.

4. Empirical Findings

4.1 Main Results

Table 4 reports our main regression results. Column (1) includes only the core independent variable *CFPI*. Column (2) further introduces county fixed effects and year fixed effects. Column (3) adds county-level economic control variables, and column (4) incorporates additional control variables. It can be observed that the coefficient estimates for *CFPI* are significantly positive, at least at the 5% level in all columns. Focusing on column (4), the coefficient estimate for *CFPI* is 0.1417, indicating that a 1% increase in county-level implementation of central financial policies corresponds to an approximate 0.14% improvement in regional financial development.

[PLEASE INSERT TABLE 4 HERE]

Several studies have confirmed that local government actions, including legislation and credit policies, can significantly influence regional financial development (Allen et al., 2005). Our results show that county-level governments with strong financial policy implementation capabilities can effectively bridge the "last mile" for implementing central financial policies. In such cases, central financial policies can effectively guide regional financial development in a positive direction. By enhancing their implementation capabilities, regions can improve the quality and efficiency of their financial development.

4.2 Instrumental Variable Results

There may be potential bias issues related to our econometric estimations. On the one hand, the regression variables are based on historical data, which may be subject to

measurement error. On the other hand, the results could be biased by unobserved confounding factors (Narciso and Severgnini, 2023). There may be unobserved factors that influence both the level of policy implementation and financial innovation. For example, local political capacity, leadership quality, or pre-existing financial infrastructure could simultaneously affect CFPI scores and loan innovation outcomes. If such variables are not adequately controlled for, the estimated effect of CFPI could be biased.

To address these potential issues, we construct instrumental variables based on the rotation of the General Secretary of the Communist Party of China (CPC) in 2012. Since the 18th CPC National Congress, China has emphasized addressing the "last mile" problem in policy implementation, aiming to overcome the problem that *Directives do not reach beyond Zhongnanhai*. It caused an exogenous shock on the extent to which county-level officials implement the central government's policies. We introduce a dummy variable *Post*, which takes the value of 1 for years after 2012 and 0 otherwise.

It should be noted that the 2012 transition constitutes a one-time policy shock and, by itself, may not provide sufficient identification in a regional setting. To capture cross-regional variation in responsiveness to this shock, we further examine the academic backgrounds of county-level administrative heads. We argue that counties led by officials with stronger academic or technocratic credentials are more likely to respond effectively to central directives. Following the approach proposed by Geng et al. (2023), we construct the variable *Finance Degree*, which captures whether a county-level administrative head holds a formal academic qualification in finance. Specifically, the variable takes the value of 1 if the official has an undergraduate or graduate degree in finance, and 0 otherwise. The interaction term *Post* × *Finance Degree* thus captures exogenous variation in policy implementation intensity across regions, providing a more credible identification strategy to address endogeneity concerns.

Using the introduced instrumental variables (IV), we perform a two-stage least squares (2SLS) regression, with results reported in **Table 5**. Columns (1) and (2) do not include control variables, while columns (3) and (4) incorporate them. All columns control for year and county fixed effects, with standard errors clustered at the county

level. Columns (1) and (3) present the first-stage regression results, and columns (2) and (4) present the second-stage regression results. The first-stage results indicate that the IVs are jointly significant (with F-statistics greater than 3), suggesting a strong correlation between the IVs and county-level implementation of central financial policies. The second-stage results show that the coefficient estimates for the core independent variable are significant, at least at the 5% level in all specifications, supporting the view that higher *CFPI* is associated with higher levels of regional financial development. Therefore, the results in **Table 5** further confirm the causality between county-level implementation of central financial policies and regional financial development.

[PLEASE INSERT TABLE 5 HERE]

4.3 Robustness Checks

To ensure the robustness of our study's main results, we conduct several tests based on the financial development literature, such as Zhang et al. (2015).

First, we consider concerns about reverse causality and the lagged effects of policy implementation. In the baseline regression, a natural question arises: Do counties with higher levels of financial development also exhibit stronger implementation of central financial policies? This potential issue suggests the presence of reverse causality. To further address endogeneity caused by reverse causality and to account for the potential lagged effects of policy implementation on regional financial development, we introduce $Financial\ Development_{i,t+1}$ as the dependent variable. The results are reported in columns (1) and (2) of **Table 6**. Even with these considerations, the coefficient estimates of the core independent variable remain significantly positive at the 5% level. This finding further confirms our main conclusion that county-level implementation of central financial policies positively impacts regional financial development.

Second, we consider the impact of counties governed by municipalities directly under the central government. On one hand, these counties differ significantly in administrative rank compared to other samples. On the other hand, these counties typically exhibit better economic conditions and higher levels of financial development.

Our baseline regression already includes county-level fixed effects to mitigate the impact of sample variability. However, as a robustness check, we further exclude these counties from the sample to address potential biases in causal identification. The results are presented in columns (3) and (4) of **Table 6**. The regression results indicate that, after excluding these counties, the significance and magnitude of the coefficient estimates remain consistent with the baseline regression results. This suggests that the counties governed by directly administered municipalities do not affect the baseline regression results, further confirming our main conclusion.

[PLEASE INSERT TABLE 6 HERE]

5. Modification factors

We have already provided evidence that a stronger implementation of central financial policies by local governments can improve regional financial development. However, how regional features, local officials' characteristics, and central government behavior modify this relationship remains underexplored. These factors are important because they provide implications for improving the efficiency of policy implementation. We investigate them in this section.

5.1 The Effects of Specialized Bureaucracy

The implementation of financial policies fundamentally relies on the specific actions of key local officials (Tukiainen et al., 2024). This raises the question: Do the characteristics of these officials, especially those with a background in finance, affect a county's effectiveness in implementing central financial policies? We manually collect information on the sample counties' party secretaries and administrative heads from online sources, including their names, birthdates, academic backgrounds, and educational levels. We have collected data on 2,508 party secretaries and 2,586 administrative heads.

First, we examine how officials' financial academic background influences the

effectiveness of financial policy implementation on regional financial development. If either the Party Secretary or the Chief Administrator in a given year has a finance-related degree, we assign a value of 1 to the variable *Finance Degree*; otherwise, it is assigned a value of 0. We interact it with the variable *CFPI*, and the regression results are shown in columns (1) and (2) of **Table 7**. The interaction term is significantly positive at the 5% level. This suggests that when the Secretary or Chief Administrator has a financial background, the impact of CFPI on regional financial development is greater. These findings offer some interesting insights: while local governments can actively enhance the implementation of central financial policies, the professional expertise of leadership significantly affects the effectiveness of such implementation.

[PLEASE INSERT TABLE 7 HERE]

Additionally, we further investigate how the officials' age and highest educational level influences the effectiveness of central financial policy implementation, which has been documented in the existing literature (Su et al., 2012). Based on the personal information of local officials, we construct two variables, *Young* and *Master*. If both the party secretary and the administrative head are under 50 years old, *Young* equals 1. If either the party secretary or administrative head has a master's degree or higher, *Master* equals 1. By introducing the interaction terms *Young* × *CFPI* and *Master* × *CFPI*, the results are shown in **Table 7**. The findings indicate that when both the party secretary and administrative head are under 50 years old, the positive impact of CFPI on regional financial development is enhanced, while the influence on educational level is not significant. If these officials have strong promotion incentives, they can address the "last mile" problem to promote regional financial development, and better implementation outcomes are achieved, in line with administrative tournament theory.

5.2 The County Endowment Matters

Regional endowment can also influence the effective implementation of financial policies and their outcomes. While previous sections treat the endowment of all counties as homogeneous, there are significant endowment differences among counties. Specifically, such an effect may be influenced by local endowments, including fiscal

capacity, and the mix of industries.

First, we assess the fiscal capacity endowment of county governments. We introduce *Group(Per Capita Expenditure)*$_{i,t}$, which takes a value of 1 if the per capita fiscal expenditure of county *i* in year *t* exceeds the median, indicating a sample with higher fiscal capacity, and 0 otherwise. Column (2) of **Table 8** reports the results of this test. The coefficient estimate of the interaction term is significantly positive at the 10% level, indicating that stronger fiscal capacity enhances the benefits of implementing financial policies at the county level.

Second, we consider the local industry mix. The development of the county's secondary industry could affect policy implementation effiiciency. We measure the strength of the secondary industry by using the ratio of total industrial output to GDP and the proportion of the labor force in the secondary industry. By introducing dummy variables to divide the sample into two categories and adding interaction terms, we find that the better the secondary industry endowment, the stronger the positive effect of CFPI on financial development. As noted by Haraguchi et al. (2019), the opportunities for manufacturing development and its importance to economic growth have not diminished. Similarly, Liu et al. (2020) found that manufacturing provides demand for financial services.

[PLEASE INSERT TABLE 8 HERE]

5.3 The Impact of Regional Culture

The effectiveness of a county's implementation capacity for central financial policies could hinge on regional culture, especially the Confucian culture. Unlike Western cultural traditions, under the influence of Confucian culture, China has relied on clan systems and kinship ethics to achieve cooperation among relatives since the Han Dynasty (Greif and Tabellini, 2017; Cheng et al., 2024). Chen et al. (2022) found that deeply rooted Confucian family traditions have historically stifled and continue to inhibit the demand and supply of external financing in China.

To test whether Confucian culture influences the impact of CFPI on financial development, we consider Confucian temples as important physical carriers of

Confucian ideology. These temples play a significant role in educating local residents about Confucian ethics (Kung and Ma, 2014). We introduce the proxy variable *Group(Confucian)*, which takes a value of 1 if the number of Confucian temples in the province where the county is located exceeds the median, and 0 otherwise. Additionally, Chen et al. (2022) argued that Zhu Xi (1130-1200 AD) played a crucial role in spreading the Confucian lifestyle at the grassroots level by encouraging clans to establish ancestral halls, with Zhu Xi academies becoming centers for propagating operationalized Confucianism. Thus, we introduce another proxy variable *Group(Shuyuan)*, which takes a value of 1 if the number of Zhu Xi academies in the province where the county is located exceeds the median, and 0 otherwise.

[PLEASE INSERT TABLE 9 HERE]

After introducing the interaction terms between these two variables and CFPI, the regression results are presented in **Table 9**. The results show that the coefficient estimates for the interaction terms are significantly negative. This indicates that, consistent with the findings of Chen et al. (2022), the stronger the presence of Confucian culture in a county, the more the positive effect of CFPI on financial development is curbed.

5.4 Central Government Commendations

Since the 18th National Congress, the central government has designed top-level frameworks to improve policy implementation, exemplified by the State Council's office conducting inspections and rewarding effective regions. Since 2016, the State Council annually evaluates the impact of major policy measures across regions and rewards regions for effective policy implementation. Specifically, regarding financial policy, 5–6 provinces are commended annually for their enthusiasm, initiative, and creativity in financial policy implementation. [8]

[8] Since 2016, the policy to increase incentives and support for regions with effective implemen tation has been in effect. The document can be accessed at https://www.gov.cn/gongbao/content/ 2016/content_5145564.htm. In 2018, the policy was further intensified, and the document can b e accessed at https://www.gov.cn/gongbao/content/2018/content_5350045.htm. In 2021, the superv

[PLEASE INSERT TABLE 10 HERE]

Thus, we set a dummy variable, *Practice*. If the county's province received incentives in a given year, it is coded as 1; otherwise, it is 0. Based on publicly available information, we only collect the lists of 31 provinces that were commended from 2016 to 2021.[9] In columns (1) and (2) of **Table 10**, we first introduce the dummy variable Practice alone, without CFPI. Column (1) uses the same sample as the main regression, while column (2) extends the sample to the annual panel data of all sample counties. Considering that commendations are for past performance, all dependent variables in **Table 10** are lagged by one year. The results show that the variable Practice significantly enhances regional financial development, confirming the positive effect of central commendations on regional policy implementation. Columns (3) and (4) further introduce the interaction term between Practice and CFPI. The results show that the interaction term is significantly positive, indicating that the central government's commendations amplify the positive impact of CFPI on regional financial development.

6. Conclusions

This paper addresses a critical gap in empirical literature by quantifying the intensity of local officials' policy implementation using text analysis of over 6.32 million county-level government news releases (2000–2023). Constructing a novel Central Financial Policy Implementation Index (CFPI) provides a granular measure of how effectively local governments execute central financial policies, a task previously hindered by methodological limitations.

---

ision and incentive measures were further strengthened, and the document can be accessed at https://www.gov.cn/xinwen/2021-12/20/content_5662066.htm.

[9] The provinces commended by the General Office of the State Council for effective implementation of financial policies were as follows: In 2016, Fujian, Shandong, Shanghai, Sichuan, and Zhejiang were commended. In 2017, the commended provinces were Guangdong, Guizhou, Henan, Jiangxi, Zhejiang, and Chongqing. For 2018, the provinces included Guangdong, Hebei, Hubei, Jiangsu, and Chongqing. In 2019, Guangdong, Jiangxi, Shanghai, Sichuan, and Zhejiang were recognized. The year 2020 saw Beijing, Guangdong, Jiangsu, Shandong, and Zhejiang being commended. Finally, in 2021, Beijing, Jiangsu, Shandong, Shanghai, and Zhejiang were the commended provinces.

Specifically, we investigate how county effectiveness in implementing central financial policies impacts regional financial development. Our findings indicate that the more effectively counties implement central financial policies, the higher the level of regional financial development. It reveals that stronger implementation drives higher local loan innovation, underscoring the importance of “last-mile” execution in economic development.

We also analyze the impacts of official characteristics, regional culture, and the central government’s commendation scheme. First, when officials have a background in finance and stronger promotion incentives, the CFPI has a greater impact on regional financial development. Second, regional endowments, particularly fiscal capacity and industrial structure, significantly influence the effectiveness of financial policy implementation. Third, in areas with a stronger Confucian culture, the effects of the CFPI are suppressed. Fourth, the central government’s commendation tool can amplify the positive impact of CFPI on regional financial development.

While existing literature extensively analyzes economic and political drivers of financial development, most studies rely on international data or focus on provincial/municipal levels. Our paper uniquely examines the “last mile” of policy implementation at the county level, identifying factors influencing local financial development and revealing how regional governance shapes policy outcomes. Given China’s top-down policy framework, this research helps to advance our understanding of hierarchical governance and provides actionable strategies for policymakers seeking to bridge the “last mile” of policy execution, particularly in decentralized systems.

References

[1] Agoraki, M. E. K., Aslanidis, N., & Kouretas, G. P. (2022). US banks’ lending, financial stability, and text-based sentiment analysis. Journal of Economic Behavior & Organization, 197, 73-90.

[2] Allen, F., Qian, J., & Qian, M. (2005). Law, finance, and economic growth in China. Journal of Financial Economics, 77(1), 57-116.

[3] Anderson, S. E., Buntaine, M. T., Liu, M., & Zhang, B. (2019). Non-governmental monitoring of local governments increases compliance with central mandates: A national-scale field experiment in China. American Journal of Political Science, 63(3), 626-643.

[4] Andrianova, S., Demetriades, P., & Shortland, A. (2008). Government ownership of banks, institutions, and financial development. Journal of Development Economics, 85(1-2), 218-252.

[5] Artuc, E., Cull, R., Dasgupta, S., Fattal, R., Filmer, D., Giné, X., ... & Woolcock, M. (2020). Toward successful development policies: Insights from research in development economics.

[6] Azzimonti, M. (2019). Does partisan conflict deter FDI inflows to the US? Journal of International Economics, 120, 162-178.

[7] Bai, Y., Wong, C. P., Jiang, B., Hughes, A. C., Wang, M., & Wang, Q. (2018). Developing China's ecological redline policy using ecosystem services assessments for land use planning. Nature Communications, 9(1), 3034.

[8] Baker, S. R., Bloom, N., & Davis, S. J. (2016). Measuring economic policy uncertainty. The Quarterly Journal of Economics, 131(4), 1593-1636.

[9] Bardhan, P. (2016). State and development: The need for a reappraisal of the current literature. Journal of Economic Literature, 54(3), 862-892.

[10] Bardhan, P. (2020). The Chinese governance system: Its strengths and weaknesses in a comparative development perspective. China Economic Review, 61, 101430.

[11] Benoit, K., Laver, M., & Mikhaylov, S. (2009). Treating words as data with error: Uncertainty in text statements of policy positions. American Journal of Political Science, 53(2), 495-513.

[12] Bo, S., & Cheng, C. (2021). Political hierarchy and urban primacy: Evidence from China. Journal of Comparative Economics, 49(4), 933-946.

[13] Brunnermeier, M. K., Sockin, M., & Xiong, W. (2022). China's model of managing the financial system. The Review of Economic Studies, 89(6), 3115-3153.

[14] Bu, D., & Liao, Y. (2022). Land property rights and rural enterprise growth: Evidence from land titling reform in China. Journal of Development Economics,

157, 102853.

[15] Caldara, D., & Iacoviello, M. (2022). Measuring geopolitical risk. American Economic Review, 112(4), 1194-1225.

[16] Cassidy, Traviss, Tejaswi Velayudhan (2024). Government fragmentation and economic growth. Review of Economics and Statistics, 1-46.

[17] Chen, J., Pan, J., & Xu, Y. (2016). Sources of authoritarian responsiveness: A field experiment in China. American Journal of Political Science, 60(2), 383-400.

[18] Chen, Z., Ma, C., & Sinclair, A. J. (2022). Banking on the Confucian clan: Why China developed financial markets so late. The Economic Journal, 132(644), 1378-1413.

[19] Cheng, M., Fan, Z., Feng, C., & Tian, B. (2024). Cultural norms and tax compliance: Evidence from China. Journal of Economic Behavior & Organization, 227, 106720.

[20] Das, S., & Song, W. (2023). Monetary policy transmission and policy coordination in China. China Economic Review, 82, 102032.

[21] Faber, B. (2014). Trade integration, market size, and industrialization: Evidence from China's National Trunk Highway System. Review of Economic Studies, 81(3), 1046-1070.

[22] Fan, C. S., Lin, C., & Treisman, D. (2009). Political decentralization and corruption: Evidence from around the world. Journal of Public Economics, 93(1-2), 14-34.

[23] Fan, S., Li, L., & Zhang, X. (2012). Challenges of creating cities in China: Lessons from a short-lived county-to-city upgrading policy. Journal of Comparative Economics, 40(3), 476-491.

[24] Fetzer, Thiemo, Stephan Kyburz (2024). Cohesive institutions and political violence. Review of Economics and Statistics 106, 133-150.

[25] Geng, C., Li, D., Sun, J., & Yuan, C. (2023). Functional distance and bank loan pricing: Evidence from the opening of high-speed railway in China. Journal of Banking & Finance, 149, 106810.

[26] Gethin, A., Martínez-Toledano, C., & Piketty, T. (2022). Brahmin left versus merchant right: Changing political cleavages in 21 western democracies, 1948-

2020. The Quarterly Journal of Economics, 137(1), 1-48.

[27] Giglio, S., Kuchler, T., Stroebel, J., & Zeng, X. (2023). Biodiversity risk (No. w31137). National Bureau of Economic Research.

[28] Girma, S., & Shortland, A. (2008). The political economy of financial development. Oxford Economic Papers, 60(4), 567-596.

[29] Greif, A., & Tabellini, G. (2017). The clan and the corporation: Sustaining cooperation in China and Europe. Journal of Comparative Economics, 45(1), 1-35.

[30] Grimmer, J., & Stewart, B. M. (2013). Text as data: The promise and pitfalls of automatic content analysis methods for political texts. Political Analysis, 21(3), 267-297.

[31] Guo, N., Huang, W., & Wang, R. (2025). Public pensions and family dynamics: Eldercare, child investment, and son preference in rural China. Journal of Development Economics, 172, 103390.

[32] Guo, Q., Liu, C., & Ma, G. (2016). How large is the local fiscal multiplier? Evidence from Chinese counties. Journal of Comparative Economics, 44(2), 343-352.

[33] Han, Y., & Wu, M. (2024). Inter-regional barriers and economic growth: Evidence from China. Journal of Development Economics, 167, 103197.

[34] Haraguchi, N., Cheng, C. F. C., & Smeets, E. (2017). The importance of manufacturing in economic development: Has this changed? World Development, 93, 293-315.

[35] Huang, Y. (2010). Political institutions and financial development: An empirical study. World Development, 38(12), 1667-1677.

[36] Jia, J., Liang, X., & Ma, G. (2021). Political hierarchy and regional economic development: Evidence from a spatial discontinuity in China. Journal of Public Economics, 194, 104352.

[37] Klingelhöfer, J., & Sun, R. (2019). Macroprudential policy, central banks and financial stability: Evidence from China. Journal of International Money and Finance, 93, 19-41.

[38] Kung, J. K. S., & Ma, C. (2014). Can cultural norms reduce conflicts?

Confucianism and peasant rebellions in Qing China. Journal of Development Economics, 111, 132-149.

[39] Laver, M. (2014). Measuring policy positions in political space. Annual Review of Political Science, 17, 207-223.

[40] Lee, M. Y. (2024). Enacting decentralized authority: The practices and limits of moving beyond hierarchy. Administrative Science Quarterly, forthcoming.

[41] Li, P., Lu, Y., & Wang, J. (2016). Does flattening government improve economic performance? Evidence from China. Journal of Development Economics, 123, 18-37.

[42] Li, X., Liu, C., Weng, X., & Zhou, L. A. (2019). Target setting in tournaments: Theory and evidence from China. The Economic Journal, 129(623), 2888-2915.

[43] Linder, F., Desmarais, B., Burgess, M., & Giraudy, E. (2020). Text as policy: Measuring policy similarity through bill text reuse. Policy Studies Journal, 48(2), 546-574.

[44] Liu, F. C., Simon, D. F., Sun, Y. T., & Cao, C. (2011). China's innovation policies: Evolution, institutional structure, and trajectory. Research Policy, 40(7), 917-931.

[45] Liu, J., Li, S., Ouyang, Z., Tam, C., & Chen, X. (2008). Ecological and socioeconomic effects of China's policies for ecosystem services. Proceedings of the National Academy of Sciences, 105(28), 9477-9482.

[46] Liu, X., Mattoo, A., Wang, Z., & Wei, S. J. (2020). Services development and comparative advantage in manufacturing. Journal of Development Economics, 144, 102438.

[47] Lowe, W. (2008). Understanding wordscores. Political Analysis, 16(4), 356-371.

[48] Markevich, A., & Zhuravskaya, E. (2011). M-form hierarchy with poorly-diversified divisions: A case of Khrushchev's reform in Soviet Russia. Journal of Public Economics, 95(11-12), 1550-1560.

[49] Mishkin, F. S. (2009). Globalization and financial development. Journal of Development Economics, 89(2), 164-169.

[50] Mookherjee, D. (2006). Decentralization, hierarchies, and incentives: A mechanism design perspective. Journal of Economic Literature, 44(2), 367-390.

[51] Mookherjee, D. (2015). Political decentralization. Annual Review of Economics, 7(1), 231-249.

[52] Muralidharan, K., Niehaus, P., Sukhtankar, S., & Weaver, J. (2021). Improving last-mile service delivery using phone-based monitoring. American Economic Journal: Applied Economics, 13(2), 52-82.

[53] Narciso, G., & Severgnini, B. (2023). The deep roots of rebellion. Journal of Development Economics, 160, 102952.

[54] Porta, R. L., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. Journal of Political Economy, 106(6), 1113-1155.

[55] Qian, Y., & Xu, C. (1993). The M-form hierarchy and China's economic reform. European Economic Review, 37(2-3), 541-548.

[56] Rogger, D., & Somani, R. (2023). Hierarchy and information. Journal of Public Economics, 219, 104823.

[57] Slapin, J. B., & Proksch, S. O. (2008). A scaling model for estimating time-series party positions from texts. American Journal of Political Science, 52(3), 705-722.

[58] Su, F., Tao, R., Xi, L., & Li, M. (2012). Local officials' incentives and China's economic growth: Tournament thesis reexamined and alternative explanatory framework. China & World Economy, 20(4), 1-18.

[59] Tavits, M. (2007). Principle vs. pragmatism: Policy shifts and political competition. American Journal of Political Science, 51(1), 151-165.

[60] Tukiainen, J., Blesse, S., Bohne, A., Giuffrida, L. M., Jääskeläinen, J., Luukinen, A., & Sieppi, A. (2024). What are the priorities of bureaucrats? Evidence from conjoint experiments with procurement officials. Journal of Economic Behavior & Organization, 227, 106716.

[61] Wong, H. L., Wang, Y., Luo, R., Zhang, L., & Rozelle, S. (2017). Local governance and the quality of local infrastructure: Evidence from village road projects in rural China. Journal of Public Economics, 152, 119-132.

[62] Xu, C. (2011). The fundamental institutions of China's reforms and development. Journal of Economic Literature, 49(4), 1076-1151.

[63] Zhang, C., Zhu, Y., & Lu, Z. (2015). Trade openness, financial openness, and

financial development in China. Journal of International Money and Finance, 59, 287-309.

[64] Zhang, J., Wang, L., & Wang, S. (2012). Financial development and economic growth: Recent evidence from China. Journal of Comparative Economics, 40(3), 393-412.

[65] Zhou, L. A. (2016). The administrative subcontract: Significance, relevance and implications for intergovernmental relations in China. Chinese Journal of Sociology, 2(1), 34-74.

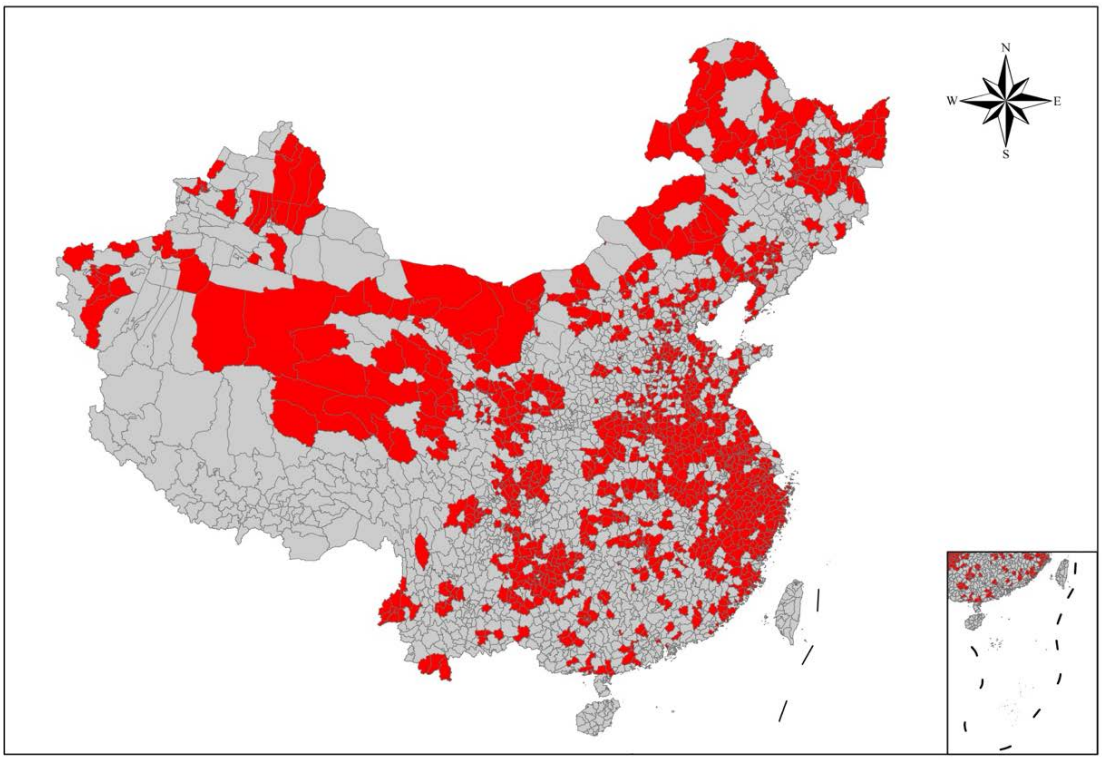

Figure 1: Illustration of Government Website Text Accessibility

Notes: This Figure depicts the administrative divisions of Chinese districts and counties. We collect text data from the government websites of 1,269 Chinese districts and counties. After matching this data with other district and county data, the effective sample size is reduced to 969, which are marked in red on the map.

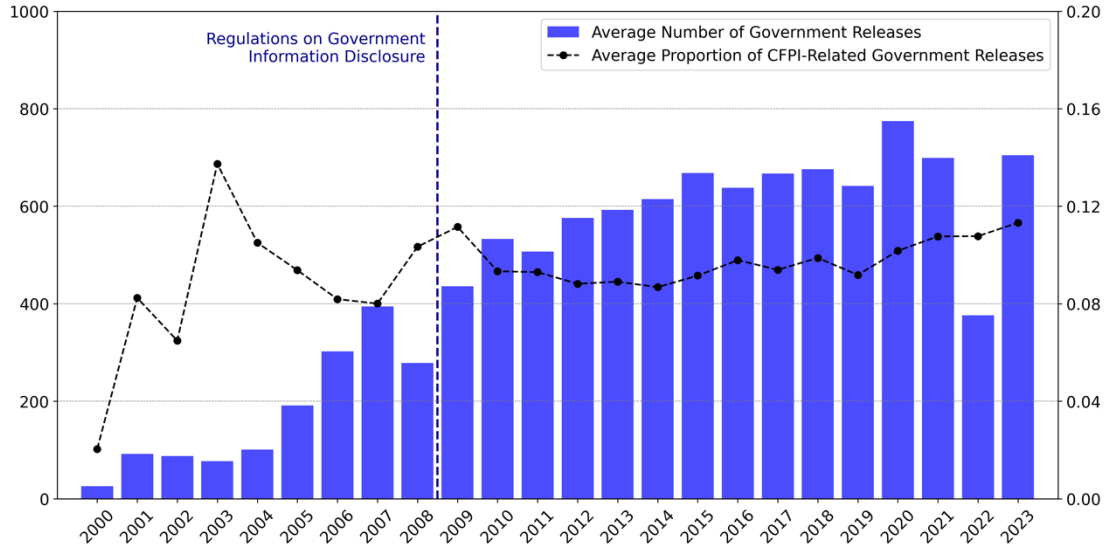

Figure 2: The Dynamics of County-Level Government Website Texts

Notes: The Figure provides an annual summary of the average number of news articles on sample district and county government websites, as well as the average proportion of articles related to the implementation of central financial policies. The former is presented with blue bar charts, while the latter is shown with a line graph.

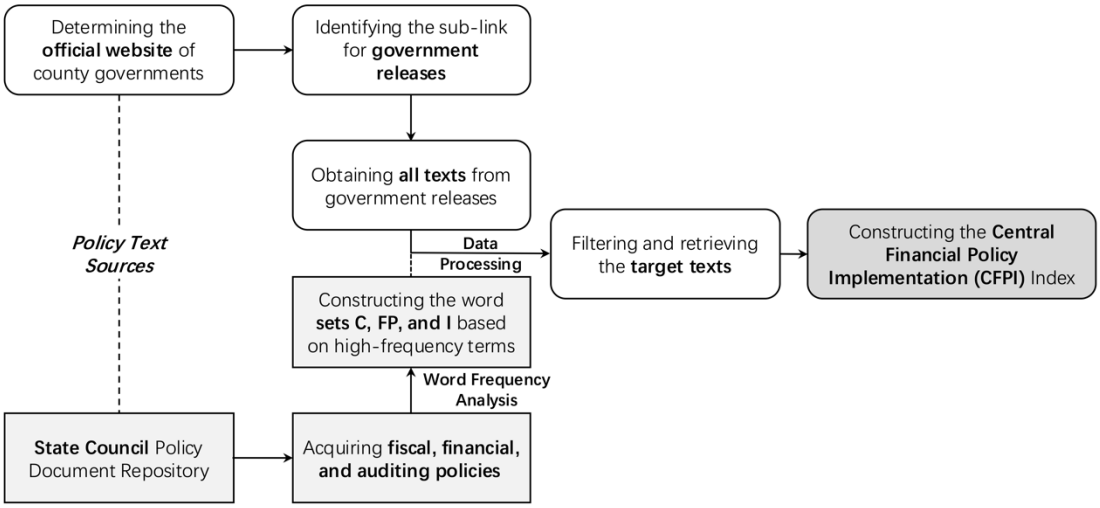

Figure 3: Flowchart for CFPI Index Construction

Notes: This Figure illustrates the process used to construct the CFPI index, which is divided into three core modules: building the database of district and county government website texts, developing the CFPI index vocabulary, and constructing the CFPI index.

Table 1: CFPI Vocabulary Set

Category	Content
Central (***C***)	Central Government; National; State Council; Ministry of Finance; China Insurance Regulatory Commission (CIRC); China Banking Regulatory Commission (CBRC); China Securities Regulatory Commission (CSRC)
Financial Policy (***FP***)	Insurance; Capital; Banking; Financial; Fiscal; Investment; Budget; Credit; Financing; Payment; Assets; Mutual Fund; Audit; Loan; Revenue; Expenditure; Guarantee; Issuance; Securities
Implementation (***I***)	Work; Operate; Regulate; Develop; Strengthen; Serve; Undertake; Require; Reform; Manage; Support; Assume; Construct; Refine; Notify; Initiate; Comply (with the law); Establish; Implement; Provide; Utilize; Execute; Draft; Advance; Approve; Elevate; Oversee; Standardize; Fulfill; Assess; Adjust; Apply.

Notes: This Table presents the subset used in constructing the CFPI index.

Table 2: Variable Definition

Variable	Definition
Financial Development	Ratio of financial institutions' total loan balances to GDP
CFPI	Ratio of target texts to total government website texts
Primary GDP Share	Ratio of primary industry's added value to GDP
GDP Growth	GDP growth rate
Population Growth	Growth rate of registered population
Expenditure Ratio	Ratio of general public budget expenditures to general public budget revenues
Per Capita Expenditure	Per capita general public budget expenditure
lnExpenditure	Natural logarithm of general public budget expenditure
Students Ratio	Ratio of primary and secondary school students to registered population
People Density	Ratio of registered population to land area

Notes: This Table reports the variables primarily used in our paper, along with their corresponding definitions or construction methods.

Table 3: Descriptive Statistics

Panel A: Descriptive statistics of key variables

Variable	Obs.	Mean	S.D.	P10	Median	P90
Financial Development	7,120	0.8512	0.4891	0.3441	0.7336	1.5048
CFPI	7,120	0.0991	0.0649	0.0317	0.0878	0.1743
Primary GDP Share	7,107	0.1843	0.1222	0.0428	0.1673	0.3434
GDP Growth	7,100	0.0890	0.0961	0.0029	0.0855	0.1906
Population Growth	6,979	0.0014	0.0180	-0.0102	0.0003	0.0139
Expenditure Ratio	7,062	5.3420	5.6495	1.3546	3.6767	10.4937
Per Capita Expenditure	6,973	0.3347	0.3906	0.0665	0.1943	0.7908
lnExpenditure	7,088	3.4666	0.6496	2.6312	3.4799	4.2848
Students Ratio	6,938	0.1144	0.0360	0.0694	0.1136	0.1581
People Density	6,942	0.0381	0.0369	0.0031	0.0264	0.0863

Panel B: Descriptive statistics of *CFPI* grouped by regional characteristics

Variable	Group	Obs.	Mean	S.D.	Median
People Density	High	3,649	0.0924	0.0613	0.0833
	Low	3,471	0.1063	0.0681	0.0946
GDP Growth	High	3,570	0.0998	0.0665	0.0877
	Low	3,550	0.0986	0.0635	0.0882
Year	[2009, 2013]	1,145	0.0913	0.0691	0.0826
	[2014, 2018]	2,544	0.0964	0.0638	0.0858
	[2019, 2023]	3,431	0.1039	0.0642	0.0921

Notes: This Table provides descriptive statistics for the main variables, including the number of observations, mean, variance, 10th percentile, median, and 90th percentile. All continuous variables have been subjected to winsorization at the 1% level at both the upper and lower tails.

Table 4: Main Results

Variable	(1)	(2)	(3)	(4)
CFPI	0.5503***	0.2001***	0.1703**	0.1641**
	(0.174)	(0.074)	(0.071)	(0.071)
Primary GDP Share			0.7047***	0.8128***
			(0.172)	(0.169)
GDP Growth			-0.4114***	-0.4046***
			(0.038)	(0.039)
Population Growth			-0.0864	-0.2564
			(0.151)	(0.156)
Expenditure Ratio				-0.0015
				(0.003)
Per Capita Expenditure				-0.0577
				(0.046)
lnExpenditure				0.1176***
				(0.040)
Students Ratio				-0.4431
				(0.345)
People Density				4.3547**
				(1.704)
Constant	0.7966***	0.8302***	0.7416***	0.2217
	(0.023)	(0.007)	(0.033)	(0.149)
County FEs	NO	YES	YES	YES
Year FEs	NO	YES	YES	YES
Obs.	7,120	7,073	6,913	6,778
Adjusted R^2	0.0052	0.8517	0.8620	0.8641

Notes: This Table reports the main regression results. The dependent variable is the level of financial development. The core explanatory variable is the CFPI. Column (1) includes only the CFPI variable. Column (2) introduces county fixed effects and year fixed effects. Column (3) includes basic control variables, and column (4) further introduces additional control variables related to fiscal revenues and expenditures. Standard errors in all columns are clustered at the county level. *, **, and *** denote significance levels at 10%, 5%, and 1% respectively, with standard error in parentheses.

Table 5: 2SLS Results

Variable	First Stage	Second Stage	First Stage	Second Stage
	(1)	(2)	(3)	(4)
Post × Finance Degree	-0.0456**		-0.0445**	
	(0.019)		(0.020)	
Finance Degree	0.0432**		0.0447**	
	(0.018)		(0.018)	
CFPI		6.0558**		3.4892**
		(2.447)		(1.380)
Primary GDP Share			0.0066	0.7737***
			(0.027)	(0.146)
GDP Growth			-0.0136*	-0.3536***
			(0.008)	(0.048)
Population Growth			-0.0351	0.0012
			(0.039)	(0.228)
Expenditure Ratio			0.0011**	-0.0054*
			(0.001)	(0.003)
Per Capita Expenditure			-0.0164**	0.0491
			(0.008)	(0.046)
lnExpenditure			-0.0036	0.0806**
			(0.007)	(0.033)
Students Ratio			0.1478**	-0.9535**
			(0.068)	(0.385)
People Density			0.3918	3.2837**
			(0.300)	(1.497)
County FEs	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES
Obs.	5,473	5,473	5,244	5,244
F Statistic	3.08		3.23	

Notes: This table reports the 2SLS regression results using instrumental variables. The dependent variable is the level of financial development. The variable *Post* is set to 1 for years after 2012 and 0 otherwise. The variable *Finance Degree* is set to 1 if the county-level executive has a finance degree, and 0 otherwise. Columns (1) and (2) present the regression results without control variables, while columns (3) and (4) include control variables. Standard errors in all columns are clustered at the county level. *, **, and *** denote significance levels at 10%, 5%, and 1% respectively, with standard error in parentheses.

Table 6: Robustness Tests

Variable	Incorporating *Financial Development*$_{t+1}$		Excluding Municipalities Sample	
	(1)	(2)	(3)	(4)
CFPI	0.1887**	0.1717**	0.2016***	0.1654**
	(0.077)	(0.078)	(0.074)	(0.071)
Primary GDP Share		0.4736***		0.8171***
		(0.177)		(0.169)
GDP Growth		-0.3301***		-0.4001***
		(0.037)		(0.039)
Population Growth		-0.0835		-0.2572*
		(0.142)		(0.156)
Expenditure Ratio		-0.0024		-0.0015
		(0.003)		(0.003)
Per Capita Expenditure		-0.0183		-0.0603
		(0.047)		(0.046)
lnExpenditure		0.1181***		0.1183***
		(0.044)		(0.040)
Students Ratio		-0.3412		-0.4390
		(0.333)		(0.345)
People Density		2.9470*		4.3537**
		(1.726)		(1.705)
Constant	0.8478***	0.3330**	0.8291***	0.2171
	(0.008)	(0.160)	(0.007)	(0.149)
County FEs	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES
Obs.	5,991	5,834	7,055	6,760
Adjusted R^2	0.8630	0.8684	0.8512	0.8636

Notes: This Table presents the results of the robustness tests. Columns (1) and (2) use *Financial Development*$_{t+1}$ as the dependent variable to address concerns of reverse causality. Columns (3) and (4) exclude samples from municipalities directly under the central government in the regression sample. Columns (1) and (3) include only the CFPI and fixed effects, while columns (2) and (4) further incorporate control variables. Standard errors in all columns are clustered at the county level. *, **, and *** denote significance levels at 10%, 5%, and 1% respectively, with standard error in parentheses.

Table 7: The Effects of Official's Background

Variable	(1)	(2)	(3)	(4)	(5)	(6)
Finance Degree	-0.2670*	-0.2346**				
	(0.138)	(0.118)				
Finance Degree × CFPI	1.9695**	1.8724**				
	(0.882)	(0.741)				
Young			-0.0178	-0.0202*		
			(0.013)	(0.012)		
Young × CFPI			0.2138*	0.2359**		
			(0.110)	(0.106)		
Master					0.0045	0.0033
					(0.017)	(0.017)
Master × CFPI					0.1363	0.1911
					(0.126)	(0.124)
CFPI	0.1867**	0.1537**	0.1496	0.1016	0.0899	0.0115
	(0.077)	(0.074)	(0.093)	(0.088)	(0.119)	(0.117)
Controls	NO	YES	NO	YES	NO	YES
Constant	YES	YES	YES	YES	YES	YES
County FEs	YES	YES	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES	YES	YES
Obs.	6,402	6,141	6,421	6,151	6,996	6,709
Adjusted R^2	0.8492	0.8593	0.8556	0.8668	0.8550	0.8656

Notes: This Table reports the heterogeneous effects of CFPI due to differences in the academic background and highest degree of county party secretaries and administrative heads. In columns (1) and (2), the variable *Finance Degree* is assigned a value of 1 when the party secretaries or administrative heads have a finance-related background. In columns (3) and (4), the variable *Young* is set to 1 if both the county-level Party Secretary and the executive are under 50 years old, and 0 otherwise. In columns (5) and (6), the variable *Master* is set to 1 if either the party secretary or the administrative head has a master's degree or higher, and 0 otherwise. All columns include control variables and fixed effects. Standard errors in all columns are clustered at the county level. *, **, and *** denote significance levels at 10%, 5%, and 1% respectively, with standard error in parentheses.

Table 8: The Heterogeneity across County Endowment

Variable	(1)	(2)	(3)	(4)
Group(Financial Development)	0.2551***			
	(0.020)			
Group(Financial Development) × CFPI	0.2226**			
	(0.109)			
Group(Per Capita Expenditure)		-0.0355*		
		(0.021)		
Group(Per Capita Expenditure) × CFPI		0.2399*		
		(0.124)		
Group(Industrial Output)			-0.0130	
			(0.023)	
Group(Industrial Output) × CFPI			0.2588*	
			(0.150)	
Group(Secondary Worker Share)				-0.0277
				(0.019)
Group(Secondary Worker Share) × CFPI				0.2295**
				(0.114)
CFPI	0.0096	0.0496	-0.0228	-0.1087
	(0.062)	(0.080)	(0.101)	(0.084)
Controls	YES	YES	YES	YES
Constant	YES	YES	YES	YES
County FEs	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES
Obs.	6,778	6,778	4,072	3,683
Adjusted R^2	0.8890	0.8642	0.8845	0.9000

Notes: This Table reports the heterogeneous effects of the CFPI attributable to differences in district and county endowments. We classify different sample groups annually based on the median values of *Financial Development*, *Per Capita Expenditure*, *Industrial Output*, and *Secondary Worker Share*. *Group(Variable)* is a dummy variable, assigned a value of 1 when greater than the median. All columns include control variables and fixed effects. Standard errors in all columns are clustered at the county level. *, **, and *** denote significance levels at 10%, 5%, and 1% respectively, with standard error in parentheses.

Table 9: The Impact of County Culture

Variable	(1)	(2)	(3)	(4)
Group(Confucian)	-0.0129	-0.0185		
	(0.025)	(0.026)		
Group(Confucian) × CFPI	-0.2498**	-0.2592**		
	(0.119)	(0.119)		
Group(Shuyuan)			0.0503**	0.0369*
			(0.024)	(0.022)
Group(Shuyuan) × CFPI			-0.2962**	-0.2540*
			(0.141)	(0.136)
CFPI	0.2969***	0.2669***	0.3243***	0.2731***
	(0.094)	(0.092)	(0.092)	(0.092)
Controls	NO	YES	NO	YES
Constant	YES	YES	YES	YES
County FEs	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES
Obs.	6,730	6,472	7,073	6,778
Adjusted R^2	0.8504	0.8623	0.8519	0.8642

Notes: This Table reports the heterogeneous effects of the CFPI attributable to differences in district and county culture. We classify different sample groups annually based on the median values of province-level Confucian temple (*Confucian*) and *Shuyuan*. *Group(Variable)* is a dummy variable, assigned a value of 1 when greater than the median. All columns include control variables and fixed effects. Standard errors in all columns are clustered at the county level. *, **, and *** denote significance levels at 10%, 5%, and 1% respectively, with standard error in parentheses.

Table 10: The Impact of Central Government Commendations

Variable	(1)	(2)	(3)	(4)
Practice	0.0159*	0.0477***	-0.0208	-0.0148
	(0.009)	(0.008)	(0.018)	(0.016)
Practice × CFPI			0.2969*	0.3279**
			(0.162)	(0.156)
CFPI			0.1445**	0.1216*
			(0.073)	(0.072)
Controls	YES	YES	NO	YES
County FEs	YES	YES	YES	YES
Year FEs	YES	YES	YES	YES
Obs.	5,771	39,660	5,920	5,771
Adjusted R^2	0.8692	0.7074	0.8633	0.8695

Notes: This Table reports the effects of financial policy implementation commended by the central government. Since 2016, the central government has annually recognized provinces that have shown tangible progress in the financial sector. Based on this, we construct the dummy variable *Practice*, which is assigned a value of 1 for districts and counties in provinces recognized in that year. Columns (1) and (2) include the variable *Practice*, with the former using the same sample as the main regression and the latter using a sample from all national districts and counties. Columns (3) and (4) include an interaction term between *Practice* and CFPI, with column (3) excluding control variables and column (4) further including them. All columns include fixed effects. Standard errors in all columns are clustered at the county level. *, **, and *** denote significance levels at 10%, 5%, and 1% respectively, with standard error in parentheses.

Appendix

Figure A1: The Government Information Disclosure module

Notes: This figure is sourced from the Government Information Disclosure module on the State Council website, where all policies of the Chinese State Council are publicly available and categorized by theme. For our analysis, we selected policies from the “Finance, Financial, and Audit” submodule.

Figure A2: Example of Obtaining County-Level Government Releases Process

Notes: These two subfigures illustrate how we locate the government releases for counties, using the example of Hailing District in Taizhou, Jiangsu Province, China. As described in Section 2.3, we first navigate to the government website of Taizhou, shown in the first figure. At the bottom, links to the government websites of its subordinate counties can be found. By following the link to the Hailing District government website, shown in the second figure, we can see that the site has a total of eight modules. The government releases a module on the Hailing District website called the "News Center." This exemplifies the challenge in our data processing, as each county website requires individual identification of the government releases module and the development of specific programs to extract the data.