Effects of Decentralization on Corruption in China

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Does decentralization exacerbate Chinese corruption? This study uses a unique quasiexperiment of the "province-managing-county" and "county-power-expansion" reforms in China from 2003 to 2015 to address this question. By improving the measures of corruption, decentralization, and institutional conditions, this study finds that decentralization can reduce corruption in China. The results remain robust after the potential endogeneity is controlled. Moreover, the establishment of appropriate institutions, such as legal and market systems, is effective in controlling corruption, whereas the current supervision system does not contribute to the reduction of corruption.

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I. Introduction

Decentralization has been widely recognized as one of the factors that can promote economic growth (*e.g.*, Tiebout 1956; Qian and Weingast 1997; Weingast 2009). Decentralization is advocated in China because of its contribution to the economic transition and favorable economic performance in the past few decades (Shen *et al.* 2012). Previous studies claimed that decentralization can accelerate promarket reform, improve enterprise efficiency, and expand infrastructure investment in China through fiscal incentives and interjurisdictional competition (*e.g.*, Qian and Roland 1998; Li *et al.* 2000; Jin *et al.* 2005).

By contrast, studies that examined the effects of decentralization on corruption in China obtained mixed and typically conflicting results. A majority of the studies argued that decentralization can exacerbate corruption. Wu (2008) and Wu and Wang (2016) tested the effects of fiscal decentralization on corruption and found that decentralization can increase corruption in China. By using similar measures, Luo *et al.* (2015) claimed that decentralization increases the severity of corruption through competition among local government bureaucrats without appropriate supervision. Huang (2006) suggested that the lack of constitutional and legal protection in relationships among government units is one of the factors that can explain how decentralization can positively affect corruption in China.

Other studies reached the opposite conclusion. By using Chinese regional data, Dong and Torgler (2013) found a negative relationship between fiscal decentralization and corruption, which they measured with the ratio of provincial spending per capita to central and regional registered cases of corruption per 100,000 people. The findings of Pan *et al.* (2011) and Chen *et al.* (2018) are consistent with those of the aforementioned study, because they used similar fiscal decentralization and corruption indices, with some differences in the details.

Conventional wisdom holds that decentralization can decrease corruption (*e.g.*, Brennan and Buchanan 1980; Shleifer and Vishny 1993; Weingast 1995; Seabright 1996; Lessmann and Markwardt 2010). The majority of empirical studies that used cross-country data concluded that decentralization can lead to decreased corruption. By using several corruption indices and the fiscal expenditure decentralization index, Fisman and Gatti (2002a) found that fiscal decentralization is associated with reduced corruption. Similarly,

Ivanyna and Shah (2011) revealed that decentralization, measured by the empowerment of local governments, can reduce incidence of corruption. Choudhury (2023) showed that fiscal decentralization in terms of taxes and revenues can decrease firm-level bribery. Some studies examined contexts in which decentralization can affect corruption. For example, Kyriacou and Roca-Sagalés (2011) observed that the positive impact of fiscal decentralization on government quality decreases when a country is politically decentralized. Lederman *et al.* (2005) discussed the different effects of local government autonomy and expenditure decentralization on corruption and stated that the negative effect of the latter is due to the accountability that it increases.

However, a small number of studies reached opposite conclusions. By employing eight decentralization indices, Treisman (2002) found a positive relationship between the degree of corruption and the number of government tiers. In addition, Fan *et al.* (2009) determined that countries with numerous government tiers and local public employees reported frequent instances of bribery. This finding corroborates that of Prud'homme (1995), who argued that decentralization can undermine efficiency, including allocative and production efficiency, as well as corruption. The corruption formula (corruption = monopoly + discretion – accountability or transparency) developed by Klitgaard (1988) indicates that decentralization, which can provide local governments with a certain degree of discretion, may cause corruption.

One important factor that can explain the different conclusions reached by Chinese and cross-country studies is their use of different decentralization indicators (Treisman 2002; Goel and Nelson 2011). In their meta-analysis, Baskaran *et al.* (2016) suggested that different decentralization measures could affect the results significantly. Thus, the effect of fiscal decentralization may depend on the choice of measurements. Cross-country analyses typically use the following decentralization measures: government size, subnational autonomy, fiscal decentralization, federalism, and number of government tiers (Treisman, 2000, 2002; Lederman *et al.* 2005; Freille *et al.* 2007). By contrast, regional studies within a country generally use the fiscal decentralization index as a decentralization indicator, which refers to the ratio of the regional fiscal expenditure to the national expenditure. However, Lin and Liu (2000) pointed out that the indicator suffers from the same denominator problem and represents fiscal capacity, rather than the extent of decentralization. In addition, subregional revenues or

spending shares are not necessarily linked with fiscal autonomy; thus, the indicator is based on the assumption that subregional governments have complete autonomy in collecting and using revenue (Thornton 2007).

Corruption measures are also problematic. In most cross-country analyses, subjective indices from various surveys, such as the corruption perception index from Transparency International, the index from the International Country Risk Guide, and the worldwide governance indicators from the World Bank, were used as the corruption indicators. By contrast, such international standard indices are rarely available for regional studies within a country. In this case, researchers used measures such as the number of corruption cases or of officers convicted of corruption (*e.g.*, Goel and Rich 1989; Goel and Nelson 1998; Fisman and Gatti 2002b). However, such measures have been questioned for their appropriateness, because they may reflect not only incidence of corruption but also anticorruption efforts (Nie 2014; Xu and Yano 2017; Wang *et al.* 2018).

This study contributes to the literature in three aspects. First, we employ a novel measure of decentralization developed from decentralization reforms and implemented at the county level in China. Unlike previous measures of decentralization, our measure is derived directly from records in reform documents and thus arguably more orthogonal to noise. The Chinese government introduced a fiscal decentralization reform (i.e., "province managing county") in 2003 that allowed provincial governments to directly manage counties' fiscal affairs, instead of indirectly through the city. Before this reform, cities, as an upper-level government unit, administratively managed counties; thus, city governments typically deducted or intercepted the transfer payments provided by the provincial governments for the counties (Li *et al.* 2016). This practice was regarded as one of the factors that hindered the development of counties. During this period, China also launched an administrative decentralization reform (i.e., "county power expansion") that aimed to enlarge economic management power at the county level. With this reform, counties can exercise administrative power over certain important areas, such as project investment, licensing, and land use approval. The two reforms were implemented gradually, starting with a small number of counties, but were expanded over time. The implementation year and the counties included in the reforms were decided by the provincial government, so the timing and

scope of the reforms varied by province (Jin 2022). We use the share of reformed counties in the total number of counties, which can measure the diffusion of the decentralization reforms in a province, as the decentralization reform indicator for the province. With this variable, which can measure subregional authority and autonomy directly, within-country studies can investigate the effect of not only fiscal decentralization but also administrative decentralization.

Second, we address the potential endogeneity of decentralization. Previous studies highlighted the reverse causality problem, that is, the extent of corruption may affect the degree of decentralization (Fisman and Gatti 2002a; Enikolopov and Zhuravskaya 2007; Kyriacou and Roca-Sagalés 2011). For example, because decentralized power may give way to corruption, bureaucrats in regions where corruption is prevalent are likely to demonstrate a conservative attitude toward decentralization policies. Enikolopov and Zhuravskaya (2007) and Kyriacou and Roca-Sagalés (2011) used the geographic area of countries as an instrumental variable (IV) for decentralization in cross-section estimates and the lagged term of decentralization as an instrument in panel estimates. For the latter, studies using panel data have limited choices other than the lagged term, which will likely be closely related to corruption, because finding a time-variant variable that is related to decentralization but not to the residuals is difficult. In this study, we use time-varying information on provincial officials as an IV for the decentralization reforms to address the endogeneity problem.

Third, we comprehensively control for factors relevant to anticorruption. On the one hand, substantial anticorruption efforts may lead to increased corruption cases, which may result in bias in the dependent variable and regression outcomes. Hence, we employ an additional control of anticorruption efforts to increase the feasibility of our within-country corruption measure. On the other hand, the literature suggested that corruption is significantly affected by institutional quality (*e.g.*, Brennan and Buchanan 1980; Shleifer and Vishny 1993; Seabright 1996). Thus, we control for major institutional factors regarding the legal and market systems, transparency, and media supervision. We use the above factors, which reflect anticorruption efforts and institutional quality to repress corruption, in the regressions as the explanatory variables.

We find that in China, decentralization can reduce corruption. Specifically, we observe that administrative decentralization has a

significant negative impact on corruption, and fiscal decentralization can reduce corruption, but its effect is mostly insignificant. The results remain robust after we control for the potential endogeneity. Moreover, we find that the legal system and the market system are effective in reducing corruption, but the effect of the supervision system is insignificant.

The remainder of this paper is structured as follows: Section II describes the data and empirical methodology used in this study, Section III presents the estimation results and addresses the potential endogeneity problem, and Section IV concludes the study.

II. Data and Empirical Methodology

We handpicked the fiscal and administrative decentralization measures from the relevant documents at the province level.[1] Some of the documents were published on the official website of the province; however, several provinces disclosed policy information only recently; thus, we encountered problems in obtaining documents. Hence, we used news and articles about the reforms and the literature on the effects of reforms in individual provinces for the missing variables. The content of the reforms is different; therefore, we carefully read and categorized them accordingly. In some provinces (*e.g.*, Hebei, Henan, Sichuan, and Yunnan), the administrative decentralization reform encompasses major elements of fiscal reform; thus, we recorded such provinces as implementing both reforms simultaneously. Furthermore, we excluded five minority autonomous regions, four municipalities, and two special provinces, namely, Hainan and Zhejiang, from our sample, because they were not included in the reform scope. We retained 20 provinces for the analysis.[2]

[1] Gong *et al.* (2021) independently developed a measure for administrative decentralization from 2000 to 2008, which was subsequently used in regressions on the effect of such decentralization on economic growth.

[2] In municipalities, the county level is under the jurisdiction of the provincial level, because municipalities are provincial-level cities governed by the central government. The fiscal system of minority autonomous regions follows the National Regional Autonomy Law and is outside the scope of the reforms (Zhang 2017). Hainan implemented a fiscal reform in the 1980s, and Zhejiang implemented the reform in the 1950s; therefore, they are excluded from the object of the reforms.

We measured the degree of administrative and fiscal decentralization by using the provinces' share of reformed counties in the total number of counties. In this study, county refers to the county level, because some provinces (*e.g.*, Shandong, Shanxi, and Yunnan) include the county-level municipal districts ("*qu*") in the scope of the reforms.[3] Thus, the variable had a minimum value of 0 and a maximum value of less than 1. Figures 1 and 2 show the proportion of the counties within a province that introduced the decentralization reforms in 2003, 2009, and 2015. Moreover, some of the authorized counties were reorganized into municipal districts under the jurisdiction of the city, which resulted in a decrease in the number of decentralized counties in a province. This reorganization caused the decline of the fiscal reform diffusion in Jiangxi and Qinghai Provinces in 2015 compared with that in 2009 (Figure 2).[4]

We also used a set of comprehensive provincial-level data from multiple sources to examine the effect of decentralization on corruption. The first set was measures of corruption and anticorruption. Specifically, we used the number of individuals accused of corruption per 10,000 public officials as a measure of corruption. We obtained the data from the China Procuratorate Yearbook, which includes the annual work report of the people's procuratorate of each province. However, as mentioned above, this measure was criticized, because it may reflect anticorruption efforts. Thus, we attempted to control for anticorruption efforts, as well as institutional factors that may affect corruption. For anticorruption efforts, we used the number of articles containing keywords related to "corruption" published in official provincial newspapers. In China, the government will not likely report incidence of corruption without expressing its intention to suppress it (Qu *et al.* 2018). Therefore, the measure can capture the extent to which anticorruption efforts work. We obtained the data from the China Core Newspapers Full-text Database.

[3] The county level comprises counties, county-level cities, and municipal districts. Municipal districts are generally under the jurisdiction of the city; therefore, they are not included in the scope of the decentralization reforms.

[4] Nankang City (county-level city), Guangfeng County, and Xinjian County in Jiangxi Province were reorganized into municipal districts in 2013, 2015, and 2015, respectively. Ping'an County in Qinghai Province was reorganized into a municipal district in 2015.

We relied on the literature to measure the quality of institutions that can affect corruption. First, studies found that effective legal and market systems can reduce corruption (Iwasaki and Suzuki 2012; Gong and Zhou 2015; Luo *et al.* 2015). Some studies used the spending shares of legal agencies to measure the quality of the legal system (Ko and Zhi 2013; Chen *et al.* 2018); however, this variable will likely increase as corruption worsens. We used the number of lawyers per 10,000 people, which will not likely be affected by the level of corruption. We obtained the data mainly from the Statistical Yearbook of each province and collected the missing data from the Chinese Yearbook of Lawyers. Next, we used the cumulative number of industry associations per 10,000 people to measure the quality of the market system. Each province in China has various industry associations, which obtain membership fees from the member enterprises and are obligated to work to benefit the member enterprises. Therefore, firms can negotiate with the government through industry associations if they are well developed and fully utilized in a certain region. However, if such market organization is lacking, then firms will likely go through improper channels to negotiate with the local government. We manually collected the data from the official website of the China Social Organization Public Service Platform.[5]

Second, the quality of institutions responsible for the supervision of government officials is considered to be effective in controlling corruption (Brunetti and Weder 2003; Reinikka and Svensson 2005; Lessmann and Markwardt 2009; Lindstedt and Naurin 2010; Dong and Torgler 2013). Transparency and monitoring by the media are prime examples. We used the fiscal transparency score from the China Financial Transparency Report published by the Shanghai University of Finance and Economics as an indicator of transparency.[6]

[5] The source of the data is http://www.chinanpo.gov.cn. Only the entire social organization is disclosed, and information on the association classification is not provided; thus, we searched for the keywords. We obtained 13 categories, including "industry association," "product association," and "chamber of commerce."

[6] The Public Policy Research Center of Shanghai University of Finance and Economics conducted this annual evaluation through surveys of all 31 provincial governments in Mainland China. The score of each province consists of two components: (1) the quantity and quality of the fiscal information collected and (2) the overall attitude and responsibility of the government in the survey process

Regarding media supervision, we employed three separate indices: the Internet penetration rate, the number of journalists and editors per 10,000 people, and the proportion of local newspapers among all the newspaper types published in the country. We obtained information on the Internet penetration rate from the China Information Almanac. One may question this measure, because the media is monitored in China. Nevertheless, as argued by King *et al.* (2013), the main monitoring targets are collective action or information that can threaten the system, and criticisms on individual officials are not strictly controlled. Moreover, the Chinese government is not likely to object to such accusations to convince the masses that they have freedom of speech. Besides, the government can also use the method to identify hidden corrupt officials and improve their bureaucratic performance (Egorov *et al.* 2009; Lorentzen 2014). Therefore, the Internet penetration rate can be used to represent mass supervision.

We obtained the data on the number of journalists and editors per 10,000 people from the China Journalism Yearbook. Chen *et al.* (2018) used the total number of employees in media-related industries, such as journalism, radio, movie, and television, and several unrelated industries as an indicator of press freedom. Instead of the aforementioned indicator, we considered the number of journalists and editors to be a more precise and appropriate measure. Last, we obtained the data on the proportion of local newspapers in the total newspaper types published in the country from the China Publishers' Yearbook. According to Qin *et al.* (2018), lower-government-level newspapers are less likely to provide distorted information. However, many provinces have no or very few county-level newspapers; thus, we used the sum of the city- and county-level newspapers as the proportion of the local newspapers in all the newspaper types published in the country. The data on all the other controls were from the China Statistical Yearbook.

Table 1 summarizes the variable descriptions and the data sources used in this study, and Table 2 presents the descriptive statistics of the variables used in the regression. We obtained 260 standard

(Deng *et al.* 2013; Liu *et al.* 2010). The report was first published in 2009, but the data used in the 2009 report were from 2006, which indicated a three-year gap (Jiang and Liu 2009). Since 2013, this interval has been reduced to two years, so the 2010 data are missing. Owing to the numerous missing years, we filled the 2010 data with the average of the 2009 and 2011 data, as suggested by Li (2016).

observations, but some of the variables had missing data. We controlled for the per capita GDP and growth rate to represent the economic level and change in a province. We used their lagged terms, because the GDP can be significantly inversely affected by the degree of corruption. In addition, we included population, openness, investment, government consumption, human capital, and industries as the control variables, based on the literature. We measured openness with the total import and export volume as a percentage of the GDP. We divided investment, government consumption, and industries by the GDP to balance the size of each province. We measured human capital as the ratio of the population of secondary school graduates to the total population.

We estimated the following regression model using the variables explained above:

$$Corruption_{it} = \beta_0 + \beta_1 Dec_{it} + \beta_2 I_{it} + X_{it} + u_i + y_t + \varepsilon_{it}, \quad (1)$$

where $Corruption_{it}$ denotes the natural logarithm of the number of people accused of corruption per 10,000 public officials in province i in year t;[7] Dec_{it} depicts the vector of the diffusion of administrative and fiscal decentralization, which is measured as the share of decentralized counties in the total counties; I_{it} represents the institution variables; X_{it} is the vector of the control variables; u_i and y_t represent the province and year fixed effects, respectively; and ε_{it} is the error term.

III. Results

A. Baseline results

Table 3 reports the estimation results of the effect of the decentralization reforms on corruption in current terms. The first column shows the results in which the institutional factors are not controlled, and the other columns show the results in which the institutional variables are each controlled. In all the columns, administrative decentralization exerts a significant negative impact on corruption, whereas in most of the columns, fiscal decentralization has only a minor effect. In the baseline results, the significance of the

[7] We used the logarithm, because the value was right skewed.

administrative reform is 10%; however, it improves to 5% in nearly all the cases after we control for the institutional variables. This outcome indicates that the differences between the institutional systems in China and in other countries can explain some of the opposite effects of decentralization on corruption.

The result of decentralization reducing corruption is consistent with that of the majority of studies conducted outside China, which can be explained theoretically from several aspects. First, economic competition exists. A corrupt environment can significantly hinder foreign investment, but in a decentralized system, local governments are driven to compete with one another to attract labor and foreign investment by optimizing the business environment (Haley 2000; Alemu 2012), which will motivate them to control and reduce corruption (Brennan and Buchanan 1980; Shleifer and Vishny 1993). Second, political competition matters. Previous studies argued that decentralization can reduce corruption when a sufficiently high level of political competition and promotion incentives for local governments exist (*e.g.*, Blanchard and Shleifer 2001; Albornoz and Cabrales 2013). According to Blanchard and Shleifer (2001), the two competition effects mentioned above may be effective under a system of rewards and punishments implemented by a central government, such as in China. The last aspect is related to monitoring and direct accountability. High-level politicians are perceived to be highly corrupt (Francois and Méon 2021). Decentralization can bring the government closer to the people, which can lead to intense bottom-up supervision (Oto-Peralías *et al.* 2013). Given the increased number of direct tasks and accountability, the link between efforts and rewards will become direct and clear (Seabright 1996; Lessmann and Markwardt 2010). All the mechanisms mentioned above may be equally applicable to China.

The different results of the two decentralization reforms can be explained by the dissimilarities in the reform content. The administrative reform contains specific content on the functions of counties, such as directly reporting plans, directly declaring a project, directly approving land use applications, and directly issuing licenses. Meanwhile, the fiscal reform delegates limited power to counties and expands their fiscal power by separating them from the city and allowing them to be directly governed by the province in terms of their fiscal affairs and not need to seek the city's approval (Jin 2022). However, a certain degree of autonomy regarding fiscal expenditure existed at the county level

before the implementation of the fiscal reform; thus, in many cases, the counties continued to report their decisions to the city government after the reform, and the fiscal power expanded by the fiscal reform was weaker than the power expanded by the administrative reform (Jin 2022).

As expected, the anticorruption efforts variable has a significant positive effect on the corruption measure. As illustrated previously, the number of corruption cases and officials accused of corruption may increase as anticorruption efforts increase. We control for anticorruption efforts, which is significant, and use the number of corrupt officials to reflect the degree of corruption to enhance the accuracy of our estimates.

Among the variables related to institutions, only the number of lawyers and the number of industry associations per 10,000 people can reduce corruption significantly. This finding indicates that legal and market systems are important factors that can control corruption effectively. By contrast, the fiscal transparency and media supervision indicators demonstrate an insignificant impact. This finding reflects the weakness of the supervision system in China, which plays an insignificant role in governance, at least during the sample period between 2003 and 2015. Instead, we find that the decentralization of administrative power, together with the legal and market systems, are the key factors that can reduce corruption.

Among the other control variables, investment rate and government consumption can increase corruption, whereas population, openness, and the proportion of the secondary and tertiary industries can reduce corruption in certain cases. The results are consistent with the conclusions reached by previous studies (*e.g.*, Treisman, 2000; Dong and Torgler 2013; Chen *et al.* 2018).

However, corruption is typically an inherent problem, and expecting a sudden change within a short period may be unreasonable. Thus, we perform a five-year-average analysis. Table 4 shows that the impact of the reforms on corruption is close to that in the baseline results, except the significance of the results is improved. The number of lawyers and that of industry associations continue to exert a strong impact on the reduction of corruption, with increasing significance. This finding suggests that the two institutional factors are not only effective but also sustainable in controlling corruption. However, fiscal transparency and media supervision remain insignificant.

B. Endogeneity

One important issue is the possible endogeneity of our key variables. The implementation and diffusion of the decentralization reforms may be related to the initial level of corruption of the province. In other words, decentralization will likely be implemented in regions with low corruption levels to avoid the combined impact of authority and corruption. Therefore, a counter-causality problem may exist in the independent variables; thus, we perform two-stage least-squares analysis (2SLS) to check the robustness of our results.

We use *whether the secretary of the provincial party committee is from a county* ("from county") as an IV for the decentralization reforms. Building on the assertion expressed by Zhang (2017) that a provincial governor with county leadership experience may have a deep understanding of the financial challenges experienced at the county level and thus will likely implement the fiscal reform, we make adjustments to effectively reflect the decentralization dynamics. First, the provincial secretary has actual power, whereas the governor is generally responsible for administrative affairs; therefore, we infer that the provincial secretary plays an important role in implementing and diffusing the reforms. Second, even without county leadership experience, the secretary may possess insights into the economic difficulties faced by counties if they are from a county. In this case, the secretary can actively implement reforms that would benefit counties. Thus, a secretary from a county may have a positive effect on the diffusion of the decentralization reforms, which suggests a positive relationship with our independent variables. Moreover, given the secretary's general focus on economic affairs and our additional control of anticorruption efforts in the model, we believe that the IV can hardly exert a direct influence on corruption. We use the lagged term of the variable for the analysis, because planning, proposing, and implementing policies take time. The data are from the China Stock Market & Accounting Research Database.

We combine the two reforms into one variable, that is, *PC_reform,* for the principal component analysis,[8] then apply the IV. According to

[8] The Kaiser–Meyer–Olkin index is 0.5, and Bartlett's test is significant at < 0.001, with a chi-squared value of 38.041, which meet the applicability

the regression results, the IV has no direct impact on corruption and is unrelated to the error terms. The first-stage analysis demonstrates the significant impact on *PC_reform.* In addition, we incorporate the variable "From county" in the baseline model as a control (Table A1 in the Appendix) and reveal its consistent insignificant impact on corruption. This finding can help address the concern about endogeneity. Therefore, we believe that the variable can be regarded as an appropriate IV for the decentralization reforms. Table 5 reports the results of the first- and second-stage analyses[9] and shows that decentralization has a significant effect, and the coefficients of anticorruption efforts remain stable after we control for the potential endogeneity.

IV. Conclusion

By using a novel measure of decentralization, collected directly from records in reform documents, and improved control variables in the corruption equation, this study investigates the effects of decentralization on corruption in China. Unlike the findings of the majority of existing studies, our findings reveal that decentralization can reduce corruption. In other words, Chinese decentralization may contribute to the competition among local bureaucrats, bring the government closer to its people, and improve the direct accountability of local governments. Moreover, we find that administrative decentralization is more effective in reducing corruption than fiscal decentralization. The results remain robust in the analysis using the variables averaged for five years.

We observe that the result of decentralization reducing corruption is robust after we control for the endogeneity by using the time-varying information of provincial officials as an IV for the decentralization reforms. Among the control variables related to institutions, the number

assumptions of the factor analysis.

[9] We also use a structural equation model for the robustness tests. In this case, we determine the level of corruption and the decentralization reform diffusion simultaneously. We use anticorruption efforts as an IV for corruption and whether the secretary of the provincial party committee was born in a county and whether they came from the province as IVs for the decentralization reforms. The unreported results consistently show the significant effects of the decentralization reforms on the reduction of corruption.

of lawyers and the number of industry associations per 10,000 people are negatively correlated with corruption, whereas fiscal transparency and media supervision have minimal effects on corruption. This finding indicates that improving the legal and market environments will be more effective in reducing corruption than supervising government officials.

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Figures and Tables

Figure 1
Proportion of counties that introduced administrative decentralization reform

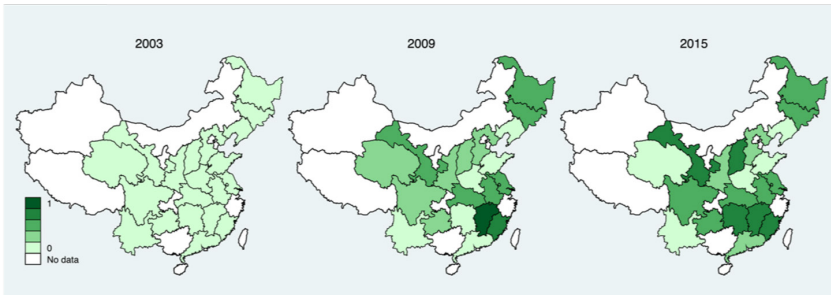

Figure 2
Proportion of counties that introduced fiscal decentralization reform

TABLE 1

VARIABLE DEFINITIONS AND DATA SOURCES

Variables	Description	Sources
Dependent variable		
Corruption	Natural logarithm of number of people accused of corruption per 10,000 public officials	China Procuratorate Yearbook
Independent variables		
Admin dec.	Share of counties that implemented administrative decentralization reform in total counties	Reform documents of provincial governments
Fiscal dec.	Share of counties that implemented fiscal decentralization reform in total counties	Reform documents of provincial governments
Control variables		
Institutional controls		
Anticorruption	Number of articles containing "corruption" keyword in official newspapers	China Core Newspapers Full-text Database
Lawyer	Number of lawyers per 10,000 people	Provincial Statistic Yearbook, Chinese Yearbook of Lawyers
Association	Number of industry associations per 10,000 people	China Social Organization Public Service Platform
Transparency	Fiscal transparency score	China Financial Transparency Report
Internet	Internet penetration rate	China Information Almanac
Journalist	Number of journalists and editors per 10,000 people	China Journalism Yearbook
Newspaper	Share of local newspapers in all newspaper types published in the country	China Publishers' Yearbook
General controls		
GDP per capita	Natural logarithm of GDP per capita at t-1	China Statistic Yearbook
GDP per capita growth	GDP per capita growth rate at t-1	
Population	Natural logarithm of total population	
Openness	Total import and export volume as percentage of GDP	
Investment	Total investment as percentage of GDP	
Government consumption	Total government consumption as percentage of GDP	
Human capital	Ratio of population of secondary school graduates to total population	
Secondary industry	Share of secondary industries in GDP	
Tertiary industry	Share of tertiary industries in GDP	
IV		
From county	Dummy variable of whether the secretary of the provincial party committee is from a county	China Stock Market & Accounting Research Database

TABLE 2
DESCRIPTIVE STATISTICS

Variables	Obs.	Mean	Std. Dev.	Min.	Max.
Dependent variable					
Corruption	244	0.355	0.093	0.207	0.753
Independent variables					
Admin dec.	260	0.255	0.252	0	0.852
Fiscal dec.	260	0.265	0.258	0	0.808
Control variables					
Institutional controls					
Anticorruption	256	0.014	0.007	0.003	0.055
Lawyer	248	1.022	0.437	0.256	2.731
Association	260	0.155	0.105	0.011	0.606
Transparency	200	30.583	14.023	14.000	70.010
Internet	260	0.258	0.175	0.023	0.724
Journalist	220	0.947	0.303	0.455	1.843
Newspaper	260	0.565	0.089	0.341	0.789
General controls					
GDP per capita	260	9.544	0.538	8.009	10.766
GDP per capita growth	260	0.105	0.042	-0.008	0.330
Population	260	8.441	0.634	6.280	9.292
Openness	260	0.242	0.313	0.036	1.843
Investment	260	0.540	0.146	0.286	1.367
Government consumption	260	0.142	0.039	0.085	0.301
Human capital	260	0.612	0.099	0.295	0.794
Secondary industry	260	0.494	0.053	0.318	0.615
Tertiary industry	260	0.381	0.044	0.286	0.532
IV					
From county	259	0.629	0.484	0	1

TABLE 3

BASELINE RESULTS OF DECENTRALIZATION REFORMS

Dependent:	Corruption						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Admin dec.	-0.198*	-0.183**	-0.258***	-0.297***	-0.199*	-0.340***	-0.199**
	(0.097)	(0.083)	(0.085)	(0.098)	(0.101)	(0.112)	(0.094)
Fiscal dec.	-0.138	-0.238**	-0.072	-0.147	-0.132	-0.183	-0.147
	(0.127)	(0.100)	(0.129)	(0.146)	(0.129)	(0.134)	(0.119)
Anticorr.	4.929***	4.406**	4.003**	2.645*	5.040***	3.550**	4.755***
	(1.613)	(1.595)	(1.900)	(1.273)	(1.617)	(1.328)	(1.562)
Lawyer		-0.208*					
		(0.105)					
Association			-1.727***				
			(0.521)				
Transparency				-0.001			
				(0.001)			
Internet					0.454		
					(0.505)		
Journalist						0.041	
						(0.194)	
Newspaper							-0.383
							(0.684)
Controls				Yes			
Province FEs				Yes			
Year FEs				Yes			
R-squared value	0.415	0.437	0.482	0.507	0.419	0.493	0.418
Observations	243	232	243	193	243	211	243

Notes: Standard errors are in parentheses; * p<0.1, ** p<0.05, and *** p<0.01

TABLE 4

FIVE-YEAR-AVERAGE ANALYSIS RESULTS

Dependent:	Corruption						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Admin dec.	-0.631***	-0.567***	-0.620***	-0.639***	-0.634***	-0.635***	-0.669***
	(0.124)	(0.098)	(0.096)	(0.118)	(0.127)	(0.135)	(0.151)
Fiscal dec.	-0.158	-0.257**	-0.156	-0.155	-0.162	-0.160	-0.135
	(0.121)	(0.099)	(0.104)	(0.116)	(0.129)	(0.120)	(0.151)
Anticorr.	13.711***	14.495***	13.400***	13.142***	13.765***	13.659***	14.740***
	(3.792)	(3.202)	(3.462)	(4.291)	(3.797)	(4.160)	(4.299)
Lawyer		-0.315**					
		(0.131)					
Association			-1.813***				
			(0.620)				
Transparency				0.002			
				(0.003)			
Internet					0.190		
					(0.605)		
Journalist						0.017	
						(0.291)	
Newspaper							0.726
							(1.339)
Controls				Yes			
Province FEs				Yes			
Year FEs				Yes			
R-squared value	0.663	0.700	0.730	0.668	0.664	0.663	0.669
Observations	60	60	60	60	60	60	60

Notes: Standard errors are in parentheses;* p<0.1, ** p<0.05, and *** p<0.01

TABLE 5

2SLS REGRESSION RESULTS

	Baseline	Lawyer	Association	Transparency	Internet	Journalist	Newspaper
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
First stage							
From county	0.283*	0.276*	0.281*	0.295*	0.280*	0.276*	0.268
	(0.158)	(0.154)	(0.167)	(0.158)	(0.163)	(0.144)	(0.164)
Anticorr.	-10.178	-7.838	-9.970	-0.481	-10.237	-7.939	-10.505
	(10.995)	(10.390)	(10.805)	(9.161)	(11.085)	(8.056)	(11.096)
Lawyer		-1.092*					
		(0.614)					
Association			0.270				
			(2.124)				
Transparency				0.003			
				(0.003)			
Internet					-0.429		
					(2.535)		
Journalist						1.177	
						(0.850)	
Newspaper							-1.153
							(1.321)
Controls				Yes			
Province FEs				Yes			
Year FEs				Yes			
Second stage							
PC_reform	-0.163**	-0.157**	-0.120*	-0.179**	-0.154**	-0.207**	-0.193**
	(0.081)	(0.076)	(0.068)	(0.083)	(0.074)	(0.090)	(0.093)
Anticorr.	3.946*	4.032**	3.209*	2.534*	4.086**	2.547	3.451
	(2.176)	(1.920)	(1.801)	(1.350)	(2.044)	(1.763)	(2.492)
Lawyer		-0.278*					
		(0.143)					
Association			-1.531***				
			(0.519)				
Transparency				-0.001			
				(0.001)			
Internet					0.341		
					(0.345)		
Journalist						0.186	
						(0.214)	
Newspaper							-0.673
							(0.729)
Controls				Yes			
Province FEs				Yes			
Year FEs				Yes			
R-squared value	0.096	0.194	0.263	0.191	0.123	0.162	0.015
Observations	243	232	243	193	243	211	243
Underid. (P)	0.073	0.080	0.090	0.075	0.081	0.063	0.106
Weak id. (Cragg-Donald Wald F)	11.172	11.030	10.753	12.334	10.678	11.362	9.579

Notes: Standard errors are in parentheses; * p<0.1, ** p<0.05, and *** p<0.01

Appendix

Table A1

Baseline results with "From county" as a control

Dependent:	Corruption						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
From county	-0.031	-0.024	-0.019	-0.032	-0.028	-0.034	-0.037*
	(0.021)	(0.021)	(0.019)	(0.022)	(0.019)	(0.021)	(0.019)
PC_reform	-0.054**	-0.072***	-0.053**	-0.070**	-0.053**	-0.084***	-0.055**
	(0.021)	(0.020)	(0.020)	(0.026)	(0.020)	(0.028)	(0.021)
Anticorr.	5.057***	4.701**	3.876*	2.586*	5.113***	3.522**	4.897***
	(1.670)	(1.644)	(1.976)	(1.402)	(1.671)	(1.337)	(1.662)
Lawyer		-0.185					
		(0.112)					
Association			-1.550***				
			(0.531)				
Transparency				-0.001			
				(0.001)			
Internet					0.384		
					(0.454)		
Journalist						0.041	
						(0.202)	
Newspaper							-0.515
							(0.709)
Controls				Yes			
Province FEs				Yes			
Year FEs				Yes			
R-squared value	0.420	0.440	0.476	0.509	0.423	0.495	0.426
Observations	243	232	243	193	243	211	243

Notes: Standard errors are in parentheses; * p<0.1, ** p<0.05, and *** p<0.01

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