Journal of Development Economics 160 (2023) 102985

Contents lists available at ScienceDirect

Journal of Development Economics

journal homepage: www.elsevier.com/locate/devec

Regular article

The political impacts of land expropriation in China ☆

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ARTICLE INFO

Keywords:
Land expropriation
Political consequences
Governance
Development benefits

ABSTRACT

I study the political consequences of state expropriation of agricultural land in rural China by using national individual-level panel data for the period 2010–2018. Comparing outcomes before and after expropriation with changes among individuals not experiencing expropriation, I find that having one's land expropriated decreases individuals' trust towards local government officials, and increases the incidence of having conflicts with local government officials. I also provide evidence that the adverse political impacts can be mitigated by better local governance, undertaking projects with public benefits, and ex-ante non-agricultural employment.

1. Introduction

State expropriation (also known as "eminent domain") is both common in much of human history and prevalent in today's developing countries.[1] Economists have long been interested in the consequences of state expropriation. Unconstrained executive power may lead the government to extract rents from citizens and to deprive households and firms of secure property rights, especially in the developing world where oftentimes accountability is limited and corruption is pervasive. In such contexts, state expropriation often has unfavorable outcomes. Scholars have provided rich empirical evidence on its economic costs,[2] but little evidence is available on its political consequences. In this paper, I study to what extent state expropriation may have political costs, specifically whether citizens subject to expropriation lose trust in, or have more conflicts with, public officials.

State expropriation is generally justified by the public interest. The state is expected to employ expropriation as a policy tool to provide public goods and to develop the economy more generally.[3] Since these goals deliver benefits to the public, whether expropriation has political costs, and if so, how detrimental the costs are, could be context-dependent. Public perceptions of the motivations for expropriation could influence the extent to which expropriation leads to adverse political impacts. To explore this relationship, this study examines two circumstances that may enable the state to implement expropriation projects without losing citizens' political support. First, if local officials have a reputation for good governance, the expropriation projects are likely to be well managed and justified and the process of expropriation may be implemented in a manner which is more transparent. In this case, state expropriation may not necessarily have high political costs. Second, public use of the expropriated resources may be important. When the projects generate public benefits, the interests of both the government and the citizens are aligned and adverse political impacts may not emerge.

☆ I am deeply indebted to my supervisor Albert Park for his advice and support throughout this project. I am grateful to the editor Gerard Padró-i-Miquel, two anonymous referees, Maitreesh Ghatak, Meixin Guo, Li Han, Guojun He, Ning He, Jean Hong, Ruixue Jia, James Kung, Edward Miguel, Wenwei Peng, Sujata Visaria, Jin Wang, Shaoda Wang, Noam Yuchtman, Y. Jane Zhang, and seminar and conference participants at Berkeley Development Lunch, Berkeley HSSA Symposium, HKUST Empirical Development Seminar, HKUST Applied Micro Seminar, the 12th World Congress of Econometric Society, the 2021 China Meeting of the Econometric Society, the 4th Annual Conference of Government and Economics at Tsinghua ACCEPT, and the 5th International Conference of China Development Studies at SJTU for helpful comments and suggestions. All errors are my own.

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[1] Throughout this paper, I use state expropriation and government expropriation interchangeably, referring mainly to the power of the state (government at various levels) to take land property from local citizens and convert it into public use. In different countries, different terms are used: eminent domain, compulsory purchase, land acquisition, etc. See Besley and Ghatak (2010) for summarized expropriations in selected countries throughout history, and see Anseeuw et al. (2012) for large-scale land acquisitions, which cover 200 hectares or larger, in the developing countries during 2000–2012.

[2] In the existing literature, the economic costs of state expropriation range from undermining investment incentives (e.g., Besley, 1995; Jacoby et al., 2002) to resulting in long-term underdevelopment (e.g., Acemoglu et al., 2001, 2002).

[3] That is, the state needs to extract revenue and resources from its citizens to provide public goods. For example, Tilly (1990, p. 96) argues that, as one of a state's essential minimal activities, extraction is crucial for the state to support other essential minimal activities; Besley and Ghatak (2010, p. 4560) point out that it is common that expropriation supported by legislation was used as a public policy instrument to promote railway construction, milling, and mining during 1870–1910 in the United States (today's paragon for upholding property rights); Besley and Persson (2011, p. 6) argue that the state plays an extractive role in building and strengthening its fiscal ability.

https://doi.org/10.1016/j.jdeveco.2022.102985
Received 15 April 2021; Received in revised form 27 June 2022; Accepted 26 September 2022
Available online 3 October 2022

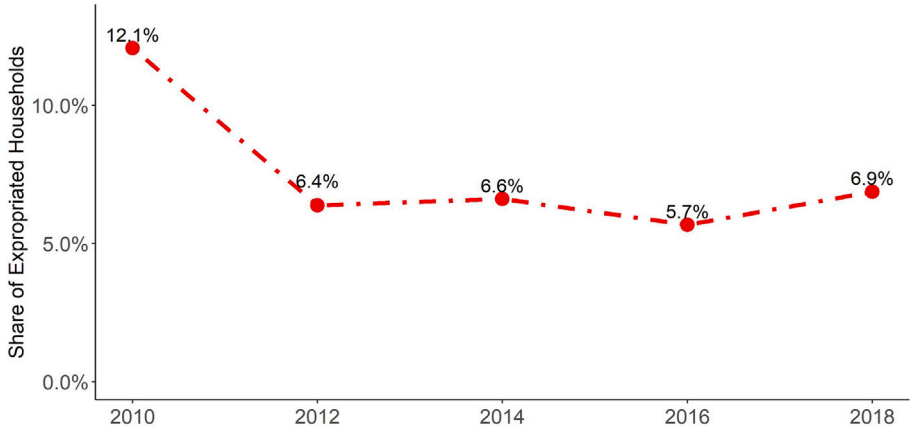

Fig. 1. Share of households who experienced land expropriation. Notes: The red circles indicate the percentages of households who had their land expropriated in the survey years: 2010, 2012, 2014, 2016, and 2018. *In the first wave (2010), the survey asks about all the expropriation events of households in history (i.e., ever-expropriated), thus the share is higher in this year.* The sample includes the rural area only.
Source: China Family Panel Studies.

China provides an excellent empirical setting to study the political consequences of state expropriation. As the world's largest developing country, China has employed land expropriation to support development policies for several decades. Local governments have the authority to seize agricultural land and provide relatively low compensation. It is striking that, according to the China Family Panel Studies (CFPS), a nationally representative longitudinal survey, the proportion of households who have had at least some of their land expropriated by 2018 was 30% (see Fig. 1). There is no doubt that land expropriation has contributed to China's economic development and growth by facilitating infrastructure construction and urbanization.[4] However, are there political costs associated with this development policy? And if so, is it possible for the government to mitigate the costs? Little is known quantitatively about these questions, although they are of great interest and policy relevance.

This paper argues that land expropriation incurs political costs for the Chinese government. The Wukan event, which attracted worldwide attention, provides a vivid illustration.[5] In September 2011, Wukan villagers launched large-scale violent protests against the government after they discovered that the village and township governments transferred more than half of their agricultural land to a private real estate company without ex-ante negotiation or providing proper compensation to villagers. Some managers including the vice-CEO of the private company were village cadres, suggesting that corruption may have occurred at the local level.[6] Before organizing the protests, the villagers petitioned the provincial government but received no satisfactory resolution. After interacting with local government officials, some villagers were arrested and jailed; and one died after being arrested by the police. During the process, the villagers gradually lost their trust in the local government and called for an investigation by the central government. Finally, a peaceful agreement between the villagers and the government was reached after a top provincial leader intervened and acknowledged the villagers' basic demands.

To quantify the political costs of land expropriation, I focus mainly on two outcomes: individuals' trust towards local government officials ("political trust") and whether individuals experienced conflicts with local government officials ("political conflict"). These two outcomes are important for several reasons. First, political trust is the foundation for political support and regime legitimacy (Newton et al., 2018). Second, both political trust and political conflict are critical to government efficiency, especially the effectiveness of policy implementation. For instance, Bargain and Aminjonov (2020) show that the compliance with public health policies during the COVID-19 pandemic in different European countries depends on the level of political trust prior to the crisis. Last but not least, using these two measures, this study investigates how both political attitudes and behavior are shaped by government expropriation. The political consequences of land expropriation identified in this paper also are informative for understanding the political situation in today's China.

I construct a national individual-level panel data set from the CFPS with more than 8,000 households and 25,000 individuals for the period 2010–2018, which enables me to exploit rich variation in China's land expropriation. In the sample, I only include rural villages, i.e., those that have a village committee (Chinese: *Cunweihui*). This is to ensure that the control group include only households and individuals that have agricultural land and thus are "eligible" for treatment.[7] This paper focuses on state expropriation of agricultural land of rural households not programs such as housing demolition that mostly occur in urban areas and typically provide much more generous compensation. In the data, land expropriation occurs at different periods for different households, I thus employ a generalized difference-in-differences approach that compares changes in individual's political trust or political conflict before and after experiencing land expropriation with changes among individuals not experiencing expropriation during the same period. This identifies the treatment effects of land expropriation on the treated.

[4] Most of the expropriated land is used for building infrastructure (e.g., roads and dams), establishing economic special zones and industrial parks, and urbanizing rural and suburban areas, etc. Theoretically, Xiong (2018) constructs a growth model of the Chinese economy in which firm productivity is boosted by infrastructure investment provided by local governments. Empirically, Lu et al. (2019) show that in China establishing special economic zones (SEZ) increases capital investment, employment, output, productivity, wages, and number of firms in the designated areas; Banerjee et al. (2020) find that access to transportation networks moderately caused an increase in per capita GDP level across sectors in China; He et al. (2020) find that China's expressway system created faster growth in GDP for poor rural counties.

[5] Wukan is a village located in Lufeng County, Guangdong Province (one of the most developed provinces in China). The detail of the Wukan event is covered by the Chinese and international media, such as *South China Morning Post* and *New York Times*. Also, see He and Xue (2014) and Mattingly (2019) for more detail about the Wukan event.

[6] The Wukan event also is known as an anti-corruption protest. See Chen and Kung (2019) for corruption in China's land market.

[7] Most households and individuals in urban villages, which have a community committee (Chinese: *Juweihui*), have no agricultural land, and thus are never-takers of land expropriation.

I begin by estimating the overall political impacts. The empirical finding is that if households have directly experienced land expropriation, both political beliefs and political behavior of individuals in these households are affected. Specifically, exposure to land expropriation decreases individuals' trust towards local government officials by 0.07 standard deviations, which is equal to about 36% of the mean difference in political trust between individuals with Chinese Communist Party (CCP) membership and those without. In addition, exposure to land expropriation increases the probability of having conflicts with local government officials by about 2.5%, compared to a sample mean of 5%, which means it increases the incidence of experiencing conflicts with government officials by around 50%. These adverse effects imply that expropriating land is indeed politically costly for local governments. The results are robust to a variety of internal validity checks.

The empirical analysis also yields three important findings, which further have some important political implications. First, the dynamic estimates show that the effects on both political outcomes are not persistent, instead, they eventually attenuate to zero about four years after treatment. Second, I do not find statistically significant spillover effects, suggesting that the control group of non-expropriated individuals is not affected by the expropriation of the land of their neighbors. Last, individuals subject to expropriation also negatively assess government service and quality, but the effects are significant and remarkable only in the short run. Taken together, these results suggest that the adverse political impacts are not persistent and restrictive to those affected only. In other words, to some extent, land expropriation in rural areas may not pose a fatal threat to China's political regime.

The Wukan example is by no means the only way in which how land takings occur in China. It epitomizes the worse possible features of land seizures (i.e., low compensation, no ex-ante negotiation, corruption, abuse of enforcement, no public benefits). Arguably, the outcomes could be different if the expropriation does not occur in that way. For instance, one may ask what would be the consequences if the projects are well managed and justified by local governments and/or the land is taken for public use (e.g., expressways and high-speed rail). To this end, I next turn to consider the role of compensation in determining the political effects, and the extent to which the adverse political impacts depend upon governance quality, the public benefits of projects, and the importance of the agricultural land for affected households.

Of course, many factors could intermediate the relationship between land expropriation and political outcomes. I provide four insights into this link. First, I provide evidence that households' economic well-being is not significantly affected by land expropriation, given that *(i)* land expropriation does not create negative shocks to total household income,[8] and *(ii)* saving asset (bank deposits and cash) of affected households increases, even though it is not persistent. However, compared to the market value of the land, the compensation is very low, indicative of an uneven redistribution of land rents between farmers and local government and property developers, which is likely to be perceived by farmers as unfair. This view is supported by a comparison with urban housing demolition which produces large, positive wealth shocks to affected households and has no impact on political outcomes.[9] Second, I find that the adverse political impacts can largely be avoided by sound local governance as reflected by *(i)* availability of information about the expropriation projects at the village level, *(ii)* high government transparency level, and *(iii)* low government corruption level. Third, the political costs also can be reduced or even eliminated in villages that experience infrastructure improvement (e.g., gaining access to roads and railways or providing electricity or tap water) during the same period when villagers have their land expropriated. Last, the adverse political impacts are less salient for households with at least one member working in the non-agricultural sector before having their land expropriated. In other words, the political costs appear to arise mainly from perceived unfairness of compensation and nontransparent governance and can be reduced when projects generate public benefits or households depend less on agriculture.

This study contributes first to the literature on the role of the state in promoting economic development. The common point in this literature is that the state has to be strong enough to provide secure property rights and market institutions and constrained enough to minimize expropriation risk facing economic actors (e.g., North, 1981; North and Weingast, 1989; Acemoglu et al., 2005; Besley and Ghatak, 2010; Besley and Persson, 2011; Acemoglu and Robinson, 2012, 2019). However, Bardhan (2012, 2016) pointed out that ignoring the developmental role of the state may limit our understanding of the diversity and complexity of the development process. The state also needs to play a critical, active role in ending poverty and in promoting development more generally (see Page and Pande, 2018 for an excellent review). By examining the political impacts of land expropriation which is employed by the Chinese government to develop the economy, this study attempts to provide some new insight on the tension between property rights and development goals. The findings suggest that in the context of state expropriation in developing countries, there could be a trade-off between property rights and potential development benefits when *(i)* there is sound local governance and development projects are well implemented and *(ii)* the government uses the expropriated resources to deliver public goods to citizens.

Second, this study complements the empirical literature on the impacts of state expropriation (or extractive institutions more broadly). Recently, Chen and Yeh (2020) show that state expropriation in the US increases infrastructure construction and growth and raises racial inequality. Some scholars have also documented that expropriation risk reduces investment incentives for households (e.g., Besley, 1995; Jacoby et al., 2002), as well as for firms (e.g., Johnson et al., 2002; Cull and Xu, 2005). In contrast, the secure land property rights induce long-term investment (e.g., Goldstein et al., 2018), reduce inter-sectoral misallocation of labor (e.g., de Janvry et al., 2015), increase rental activity (e.g., Chari et al., 2022), and enhance agricultural productivity (e.g., Lin, 1992; Banerjee et al., 2002; Goldstein and Udry, 2008; Chari et al., 2022). At the most aggregate level, using cross-country data, Acemoglu et al. (2001, 2002) have shown that extractive institutions have led to long-term underdevelopment.[10] Compared to the rich empirical evidence examining the economic impacts of state expropriation, however, the existing literature has provided little empirical evidence, if any, on the political consequences of government expropriation. This paper attempts to extend this strand of literature by studying the political impacts of China's land expropriation.

Third, this paper speaks to the studies on the origins of political trust. Previous studies have emphasized the role of government performance in shaping citizens' trust in the government (e.g., Dahlberg and Linde, 2018).[11] Some scholars have recently started investigating this question in the context of China, focusing on the abolition of school fees (Lü, 2014), educational content (Cantoni et al., 2017), historical experience of famine (Chen and Yang, 2019a), and media censorship (Chen and Yang, 2019b). This study links the decline of

[8] I find that although land expropriation decreases agricultural income, it does not create negative shocks to total household income. Household-level analysis offers one possible explanation for this result: households who had their land expropriated are more likely to have at least one migrated member as well as to earn wage income that may offset the decline in agricultural income.

[9] Note that the political impacts of housing demolition are not necessarily positive if affected household think they deserve the generous compensation package as former housing owners.

[10] Hall and Jones (1999) also provide a related analysis.

[11] See van der Meer (2018) for a comprehensive review in the political science literature.

citizens' trust in the government to a public policy that is intended to develop the economy but could be implemented unevenly at the local level. Closely related to this paper, Cui et al. (2015) also studied the impacts of land expropriation on political trust using cross-sectional data in China. However, the large-scale panel data enables me to credibly identify causality and to study dynamics; moreover, I use a nationally representative sample and focus on a more recent time period; and for the first time I study the political and economic conditions that can mitigate the adverse political effects of land expropriation. Last, this paper is also related to the literature on the relationship between property rights and land conflict (e.g., Alston et al., 1998; Hidalgo et al., 2010). Using qualitative methods, Guo (2001) also draws a connection between land expropriation and rural conflicts in China during the 1990s.

The rest of this paper is organized as follows. Section 2 presents important background information. Section 3 introduces the data. Section 4 explains the empirical strategy. Section 5 reports the main results on political impacts, including baseline estimates, robustness checks, dynamics, spillovers, and effects on additional outcomes. Section 6 provides evidence on the political and economic conditions under which the adverse political impacts of expropriation can be mitigated. Section 7 concludes.

2. Land expropriation in China

In rural China, a unique feature of the (agricultural) land property rights is that the land use rights are private but the ownership remains collectively owned. (The ownership of urban land is state-owned.) After the Rural Land Contracting Law (RLCL) was carried out in 2003, rural households obtain well-defined and exclusive use rights by contracting the land from the village collective, generally with a period of 30 years. While the household contractor cannot be changed, the use rights (i.e., carrying out production separately and claiming residual income exclusively) can be legally transferred in the rental market. Although some scholars believed that the RLCL has strengthened the land rights in rural China (Chari et al., 2022), the land tenure is still insecure and often faces the risk of expropriation, which largely has to do with the ownership structure.

The Chinese laws (e.g., Constitution and Land Administration Law) allow local governments to expropriate land from local households who are actually operating it. It is codified in the *Constitution of the People's Republic of China* that "[...] in accordance with the laws, the state can acquire or expropriate citizens' private properties for the need of the public interest after providing compensation." Likewise, similar articles regarding the land property are codified in the *Land Administration Law of the People's Republic of China*. Under this arrangement of ownership structure, the state (the ruler) tends to maximize his own rents (North, 1981). Compared to western countries where land property rights are completely private and well protected, China's land property rights are insecure.

Two Chinese institutional arrangements provide incentives for local governments to expropriate land. The first is China's fiscal revenue-sharing systems. There are two major sources of fiscal revenue for local governments: budgetary and extra-budgetary revenue. The budgetary (tax) revenue is shared with the central government who takes a great proportion, whereas local governments have exclusive control rights over extra-budgetary revenue (Han and Kung, 2015). Consequently, local governments allocate more effort to obtain extra-budgetary revenue which consists mainly of land conversion income, generating by transferring the land use rights to a third party in the primary land market. The second is the performance-based evaluation system for promotion of local leaders (Li and Zhou, 2005; Xu, 2011). Both infrastructure construction and real estate development are driving forces for economic development and growth in China, incentivizing local leaders to engage in more land expropriation (Wang et al., 2020).

To generate revenue from the primary land market, local governments adopt a two-stage strategy. First, local governments completely control the land by expropriating it with relatively low compensation and convert the legal status of the land's ownership from collective to state-owned to meet the requirement that only state-owned land can be legally exchanged. The second stage is to "privatize" the land use rights to a third party (e.g., real estate developers and infrastructure construction companies) in the primary land market. Local governments are sole legal sellers and are able to charge a relatively high price. Therefore, by expropriating land at a low compensation price and selling it at a high price, this two-stage strategy creates a huge amount of extra-budgetary revenue for local governments.[12]

Given some features embedded in Chinese institutions, land expropriation may have adverse political consequences. In terms of economic institutions, land property rights are poorly protected, with ownership being controlled by the state. The state monopolizes the authority of transferring the land to a third party, which bans the possibility of households transferring the land use rights to companies themselves. Consequently, local governments can offer relatively low compensation to affected households compared to the market value of the land. In terms of political institutions, local political leaders are usually accountable to upper-level leaders rather than citizens because of the centralized personnel control system.[13] The expropriation process thus oftentimes involves aggressive official behavior. Because the media is controlled or heavily censored by the government, citizens who have their land expropriated and feel the compensation is unfair have limited space to voice their concerns. Although these features make it possible for the Chinese government to employ land expropriation as an instrument to develop the economy, it is also extractive in the sense that property rights protection is undermined, as noted by Acemoglu and Robinson (2012, 2019).

Whether and how land expropriation has adverse political consequences depends mainly on four critical aspects. First, whether the compensation is fair affects the political impacts of land expropriation. The Chinese central government sets up a basic scheme of compensation, which varies across localities. The compensation is not based on the market value of the land itself, instead, local governments first estimate the average market value of the annual yield of crops cultivated on the land for the preceding three years and then offer compensation which is no more than 30 times of the estimated value.[14] In practice, as shown in Panel A of Fig. 2, the main form of compensation is cash (about 71%). Other forms of compensation, such as allocating another piece of land, transferring *hukou* from rural to urban, providing jobs, and providing pension insurance, etc., are also possible but are not popular. Remarkably, more than 17% of households receive no compensation.

Much of the expropriated land is not used for public purposes and thus is sold to companies in the primary land market (see Table A.1). In general, the land price in the primary market, which is received by local governments from paid companies, is much higher than the price of expropriated land, which is paid by local governments to households. It is clear that local governments and companies have shared the huge rents generated from the land, while households who were originally operating the land just get a tiny part. This large price difference is indicative of an extremely uneven redistribution of rents between the government and households. Given that information on the market price of land is publicly available, households are well aware of this

[12] See Fig. A.1 in the Appendix for annual land conversion income obtained by local governments.

[13] It is widely known that China's institutions are economically decentralized but politically centralized, which Xu (2011) calls "regionally decentralized authoritarian (RDA) regime."

[14] See Article 47 of the *Land Administration Law of the People's Republic of China* for more detail.

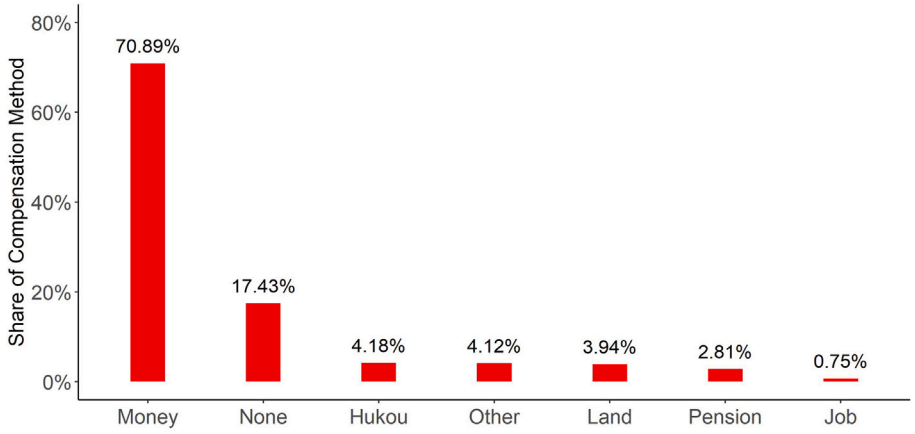

Fig. 2. Compensation methods. Notes: The figure plots the share of different compensation methods. For land expropriation, affected households can receive compensation as follows: money (cash), allocating another piece of land, providing jobs, providing pension insurance, transferring *hukou* from rural to urban, other forms, or no compensation. *Source:* China Health and Retirement Longitudinal Study (CHARLS).

disparity, and so often are not satisfied with the compensation offered by the government, which may lead to political costs.

The second is the justification for state expropriation, namely the public interest. In China, before 1998 the state restricted the public interest to the construction of infrastructure and government and military facilities.[15] But afterwards, the public interest was expanded to include private construction (e.g., urbanization). What this means is that local governments can expropriate collective land for any project related to urbanization. For example, commercial housing construction since 1998 can be categorized as "public interest".

One caveat of my data is that it does not contain information on the usage of expropriated land. Information regarding such usage is described by Ma and Mu (2020), who analyze data from the China Household Finance Survey (CHFS, see: https://chfs.swufe.edu.cn/), a nationally representative survey.[16] According to Ma and Mu (2020), during 2013–2015, many land expropriation projects are related to the public interest: among the households surveyed by the CHFS, 48% report that their expropriated agricultural land is used for highway and railway construction, and 24% report the land is used for community infrastructure construction. At the same time, projects that are not necessarily beneficial for local households also account for a large proportion. Among the households surveyed, 26% and 20% report the land was used for housing development or by firms, respectively.[17] Given that public projects can improve infrastructure conditions and the living environment for local residents and thus can be justified in a easier way, it is expected that the political impacts may differ depending on the usage of expropriated land.

The third crucial aspect is procedural due process, which is related to the quality of governance at the local level and may vary across localities. Before 1998, the laws stipulate that local governments have to negotiate with affected households regarding expropriation acreage, compensation, and resettlement. These relevant legal provisions were deleted from the 1998 amendment to the Land Administration Law. Instead, local governments can solely determine expropriation acreage, compensation, and resettlement, without prior negotiation with affected households. Moreover, from 1998 onward, local governments do not have to suspend land expropriation when affected households have disputes regarding compensation and resettlement.[18]

Nevertheless, once the proposed expropriation project is approved by the provincial government (or the State Council for larger projects), the county or prefectural government (depending on which level of government is in charge) is required to make public announcements that provide detailed information pertaining to compensation and resettlement and so on.[19] In practice, the village committee (Chinese: *Cunweihui*) also will often make announcements. Affected villagers can raise disputes to and/or demand a public hearing from the county or prefectural government, who may feel obligated to increase compensation standards and resettlement conditions. Although this will not stop the implementation of the projects, it does make more information available and hence makes the expropriation procedures more transparent, resulting in better governance and accountability of local governments. Thus, political impacts are expected to differ with the availability of information on expropriation.

There is rich variation in the quality of governance across regions.[20] Wang et al. (2019), who study China's market reform process, calculate a marketization index at the provincial level for the 2008–2016 period, which reveals substantial differences across provinces. Nie et al. (2019), who study the government-business relationship in China, provide indices of government corruption and transparency at the city level in 2018, which also shows a huge dispersion across cities. Both studies suggest that the quality of governance varies across regions in China. I conjecture that local governments with a higher quality of governance handle land expropriation projects in a better way. Below, I also examine the role of governance quality in mitigating the adverse political impacts of land expropriation.

Last but not least, to what extent the households depend on the land itself also could affect the political costs of land expropriation. China has experienced a great economic transformation with rapid industrialization, urbanization, and rural-to-urban migration, which is accompanied by numerous non-agricultural employment opportunities.

[15] Of the various legal stipulations pertaining to land expropriation, significant changes happened in 1998 when the state passed an amendment to the Land Administration Law. See Zhang and Feng (2015) for a detailed review of legal changes regarding land expropriation in China since 1949.

[16] See Table A.1 in the Appendix for more detail, which presents the relevant numbers that are reported in Table 1 and Footnote 28 of Ma and Mu (2020). I cannot calculate the numbers myself because the CHFS does not make the data contain information on the usage of expropriated land publicly available to outside users.

[17] Note that the percentages do not add up to one as one household can report multiple usages.

[18] For example, see the *Regulations on the Implementation of the Land Administration Law of the People's Republic of China (2014 Revision)* for more detail about these two features of land expropriation in China.

[19] See the *Measures for Announcement of Land Expropriation (2010 Amendment)* for more detail.

[20] See Bardhan (2020) for a general discussion about China's governance system.

Table 1
Summary statistics for key variables.
Source: China Family Panel Studies.

	Pooled years			2010	2012	2014	2016	2018
	Obs. (1)	Mean (2)	Std. dev. (3)	Mean (4)	Mean (5)	Mean (6)	Mean (7)	Mean (8)
Land expropriation	148618	0.1966	0.3974	0.1290	0.1650	0.2070	0.2291	0.2645
Trust towards local officials	97557	5.2024	2.6603	–	5.1051	5.2838	5.1389	5.2861
Conflict with local officials	86785	0.0503	0.2186	0.0837	0.0355	0.0482	0.0419	–

Notes: Unit of observation is the individual-year. The table reports descriptive statistics of key explanatory variable and political outcomes for all years, and 2010, 2012, 2014, 2016, and 2018. Land expropriation is a dummy that is 1 if the individual is in a household whose land has ever been expropriated. Trust towards local officials is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust). The 2010 wave does not contain information on political trust. Conflict with local officials is a dummy that equals to 1 if the individual had conflicts with local government officials in the past year for the 2012, 2014, and 2016 waves; in the 2010 wave, conflict with local officials is a dummy that is 1 if the individual has ever had conflicts with local officials, therefore, the corresponding ratio in 2010 is much higher. The 2018 wave does not contain information on political conflict.

Hypothetically, if local households have members working in the non-agricultural sector and thus rely less (or even little) on the agricultural land to generate food and income, then it may matter little when the land is expropriated, whereas those with all adult members working in agriculture should politically react more to land expropriation. In this regard, I expect the political impacts to be different for households with and without members working in the non-agricultural sector before experiencing land expropriation.

3. Data

This paper uses various data sets. I rely mainly on the China Family Panel Studies (CFPS, see http://www.isss.pku.edu.cn/cfps/), which is a nationally representative longitudinal survey of Chinese communities, families, and individuals. It was launched in 2010 and has been carried out every two years since then.[21] My main sample and key variables, which I will describe in detail below, are constructed from the CFPS. I also make use of the 2014 wave of the China Health and Retirement Longitudinal Study (CHARLS, see http://charls.pku.edu.cn/), which is also a nationwide and representative survey, to calculate the expropriated price of agricultural land and the share of different compensation methods for land expropriation.

My main sample is constructed from the CFPS in the following way. First and foremost, although the CFPS covers both rural and urban areas, I restrict the sample to rural villages in which all households cultivate agricultural land and hence are potential victims of land expropriation. Rural villages have a village committee (Chinese: *Cunweihui*) as their administrative body, while urban villages have a community committee (Chinese: *Juweihui*). This condition, which drops about 30% of the villages sampled by the CFPS, ensures that the control group is less heterogeneous and more comparable because most households and individuals in these excluded urban villages have no agricultural land and hence cannot have their land expropriated. In the Appendix, Fig. A.2 plots the time trend of political outcomes by group, indicating that most urban individuals who are not subject to land expropriation have a differential time trend of political trust. Hence, including this group in the sample may lead the control group to be inappropriate, as it violates the parallel trends assumption of the difference-in-differences estimator (see more detailed discussion in Section 4).

Second, up to now, five waves of data (2010, 2012, 2014, 2016, and 2018) are publicly available. However, the 2010 (2018) wave does not contain information on political trust (political conflict), so the time period spans 2012, 2014, 2016, and 2018 for political trust and 2010, 2012, 2014, and 2016 for political conflict. Third, information on political trust (political conflict) is available for individuals aged 10 (15) or above, so the overall sample size for political trust is bigger than that for political conflict. Finally, I construct a five-year panel with more than 8,000 households and 25,000 individuals.

The empirical analysis largely uses the following three variables: *(i)* exposure to land expropriation, the treatment indicator which varies at the household level. I assign one to the individual if some of his or her family's land was expropriated anytime in the past and zero otherwise; *(ii)* trust towards local government officials, which varies at the individual level and is a categorical variable ranging from zero (extremely low trust) to ten (extremely high trust); and *(iii)* conflict with local government officials, which also varies at the individual level. In the 2012, 2014, and 2016 waves, the conflict variable is a dummy that is equal to one if the individual has conflicts with local government officials in the past 12 months and zero otherwise. In the 2010 wave, it takes the value of one if the individual has ever had conflicts with local officials and zero otherwise.

Table 1 reports descriptive statistics for the treatment indicator and political outcomes for all years, and in 2010, 2012, 2014, 2016, and 2018. On average, 20% of individuals in the sample constructed from the CFPS rural sample have experienced land expropriation. In total, about 26% of individuals have had at least some of their land expropriated (column 8).[22] The average level of trust towards local government officials of individuals is 5 on a scale of 0–10. Nearly 5% of individuals have had conflicts with local government officials during 2010–2016. This seems high, possibly due to the broad definition of political conflict used in the CFPS. It is worth emphasizing that I exclude always-treated units in the regressions, so each regression is run by using a data set with first period excluding the treated units. For example, the trust (conflict) regressions exclude those who have their land expropriated in or before 2012 (2010).

In Fig. 3, Panels A and B plot the distribution of political trust and political conflict by year across groups, respectively. In Panel A, one can see that the percentage of individuals who report their political trust level under 5 is higher in the expropriated group than that in the non-expropriated group. This pattern holds consistently for all years. Similarly, one can also see from Panel B that the expropriated group has a higher proportion of individuals who have experienced conflicts with local government officials than the non-expropriated group in all years. Apparently, individuals who have had some of their land expropriated tend to report a lower level of trust in the government and to be more likely to experience conflicts with local officials. That is to say, there is a significant association between land expropriation and the political outcomes of interest.

My key variables suffer from some concerns because of the CFPS survey design and possible political sensitivity of answering such questions in China. Moreover, the sample also suffers from attrition issue. Here I discuss these concerns and how they could lead to biased estimates.

[21] A data-maintaining wave is done in 2011, but it is not a regular wave of the survey.

[22] This is slightly less than 30% which is reported in Fig. 1 because Fig. 1 counts multiple times of land expropriation of a household separately.

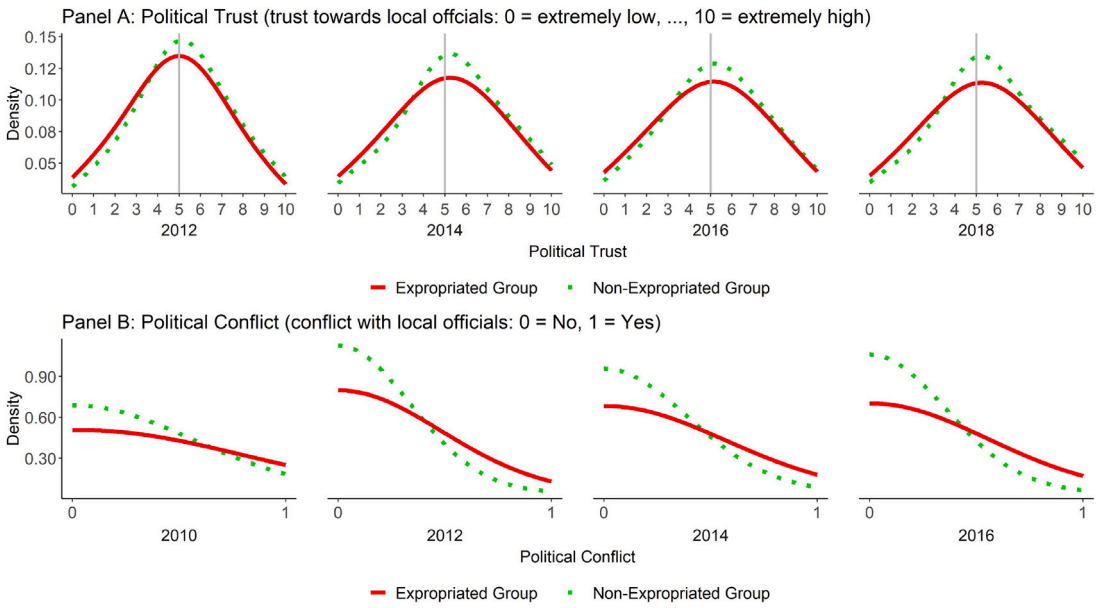

Fig. 3. Distribution of political trust and political conflict. Notes: Panels A and B plot the distributions of political trust and political conflict by group in different years, respectively. Political trust is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust). Political conflict is a dummy that equals to 1 if the individual had conflicts with government officials in the past year for the 2012, 2014, and 2016 waves and 0 otherwise; in the 2010 wave, it is a dummy that is 1 if the individual has ever had conflicts with local officials.
Source: China Family Panel Studies.

One problem of the CFPS is that the survey is conducted every two years, but except for the 2010 wave, the questions utilized by this study only ask about what happened in the past 12 months, resulting in an incomplete measurement of expropriation events between consecutive survey waves. I thus cannot rule out the possibility that some households experienced expropriation during the sample period but are recorded as not having their land expropriated. Given this measurement error, the estimates should be viewed as a lower bound. Another measurement error could arise if among individuals subject to land expropriation only those who become frustrated with the government are more willing to report their experience of expropriation, leading to a mechanical negative relationship between land expropriation and political trust. This is less of a concern since I do not find evidence of a statistically significant correlation between land expropriation and life satisfaction or depression (see Table A.2).

Another problem of the CFPS is that it does not provide a clear definition for political conflict (Chinese: *Chongtu*), meaning that conflict can take any form based on respondents' own definition. Nevertheless, one can think of the minimal case as having disagreements with local officials, the maximal case being participation in protests or physical fights with officials. Given this situation, one should be cautious in generalizing the results to other contexts.

Given the political environment in China, one may worry that the self-reported level of the two political outcomes contains significant reporting bias, especially for political trust. If the misreported level is similar or the same for an individual in all years, then this individual-specific, systematical reporting bias will be differenced out by including individual fixed effects. Another possibility is that respondents over-report (under-report) the level of political trust (political conflict) only after they have been expropriated, possibly because they now interact with the government frequently and fear being mistreated if they truthfully report. However, as depicted in Fig. 3, this is not likely to be the case given that the expropriated group reports a lower level of political trust and a higher level of political conflict each year compared to the non-expropriated group.[23] Also, even if this were the case, the empirical estimates could be viewed as lower bound estimates.

One may also have concerns about attrition. If individuals whose land was expropriated are more likely to drop out of the sample, my estimates could be biased. To address this concern, I plot the attrition patterns for the full, expropriated, and non-expropriated samples in the Appendix, Fig. A.3, revealing no evidence that individuals subject to land expropriation are any more likely to attrit from the sample. Additionally, Table A.3 presents the result of a simple regression-based test, indicating that exposure to land expropriation is not significantly associated with moving out of the sample and the magnitude of the coefficient is negligible.

4. Empirical strategy

To formally study the political consequences of land expropriation, I estimate the following generalized difference-in-differences model, exploiting the variation in the timing of exposure to land expropriation across households:

$$PoliticalOutcome_{ihvt} = \beta \times Land\,Expropriation_{hvt} + \alpha_i + \lambda_t + \epsilon_{ihvt}, \quad (1)$$

where i indexes individuals, h households, v villages, t time periods. $PoliticalOutcome_{ihvt}$ is either trust towards local officials or conflict with local officials. $Land\,Expropriation_{hvt}$ is the treatment indicator of interest, which is equal to 1 after the household has *ever* been expropriated and 0 otherwise. Note that the treatment status for individuals within a household is the same. α_i and λ_t are individual and time fixed effects, respectively. The error term ϵ_{ihvt} is clustered at the village level, allowing for correlation across individuals within a village. β is the coefficient of interest that captures the treatment effect of state expropriation on political trust or political conflict.

Identification comes from how changes in the outcomes of interest are correlated with changes in exposure to land expropriation. In my data, land expropriation changes at different periods for different households. This enables me to control for both individual and time fixed effects with identification based on within-individual before-after

[23] Additionally, Chen and Yang (2019a), who also utilize the CFPS to study political trust, show that it might be the case in reality that the Chinese citizens may face much less pressure to self-censor trust towards local government officials.

Table 2
Balance checks of time-invariant characteristics.
Source: China Family Panel Studies.

	All		Expropriation		Unconditional		Conditional	
			Yes	No				
	Mean (1)	Std. dev. (2)	Mean (3)	Mean (4)	Diff. (5)	p-value (6)	Diff. (7)	p-value (8)
Panel A: Individual-level Characteristics								
Male	0.5012	0.5000	0.4977	0.5025	−0.0048	0.4208	−0.0016	0.6811
Han	0.8908	0.3119	0.8631	0.9009	−0.0379	0.0000	−0.0018	0.6499
CCP membership	0.1246	0.3302	0.1140	0.1284	−0.0144	0.0004	−0.0024	0.6395
Panel B: Household-level Characteristics								
Family genealogy	0.2388	0.4264	0.2353	0.2400	−0.0048	0.6325	−0.0067	0.5123
Distance to nearest high school (km)	19.9515	27.3072	17.8725	20.6811	−2.8085	0.0000	0.7234	0.1826
Distance to nearest medical clinic (km)	1.9325	3.1307	1.7398	1.9996	−0.2598	0.0003	−0.0393	0.5949
Distance to nearest marketplace (min)	34.0081	47.1849	32.4839	34.5406	−2.0568	0.0587	−0.7262	0.5499
Panel C: Village-level Characteristics								
Ancestral hall	0.1291	0.3357	0.1330	0.0833	0.0497	0.3946	−0.0586	0.3540
Any clan with population share >= 10%	0.7790	0.4154	0.7767	0.8056	−0.0288	0.6898	0.0126	0.8930
# of clans with population share >= 10%	1.8206	1.6190	1.8361	1.6389	0.1972	0.4836	0.1874	0.5521
Minority area	0.5142	1.3525	0.4846	0.8611	−0.3766	0.1090	−0.2594	0.4196
Natural resource area	0.5208	1.4158	0.4917	0.8611	−0.3694	0.1331	−0.3038	0.3342
Distance to town center (km)	5.5915	12.9028	5.1041	11.2917	−6.1877	0.0056	−4.4888	0.2765
Distance to county center (km)	27.5405	22.8210	26.7352	36.9583	−10.2232	0.0097	−7.1950	0.0445

Notes: Columns 1–2 present summary statistics; columns 3–4 show the means between expropriated and non-expropriated groups; columns 6–7 report unconditional differences in means and the corresponding p-values; columns 8–9 report differences conditional on village/county fixed effects: that is, I regress the characteristic on the land expropriation dummy each time, controlling for village fixed effects for Panels A–B and county fixed effects for Panel C. Standard errors clustered at the village level. At the individual level, I check for gender dummy, *han* indicator, and Chinese Communist Party (CCP) membership dummy; at the household level, I check for family genealogy dummy, the distance between the household's geographical location to the nearest high school (kilometers), medical clinic (kilometers), and marketplace (minutes by walking); at the village level. I check for whether the village has a ancestral hall or a clan with population share >= 10%, the number of clans with population share >= 10%, whether it belongs to a minority area or a natural resource area, and its distance to town center (kilometers) or county center (kilometers).

comparison. The individual fixed effects, α_i, account for all unobservable individual-specific confounders that are associated with exposure to land expropriation. Thus, identification is driven by individuals who experience changes in exposure during the sample period, who are compared to those who do not experience a change in exposure. In this regard, this paper mainly estimates the treatment effects on the treated. I also include time period fixed effects, λ_t, which absorbs unobservable temporal common shocks to all individuals. Note that in the regressions I exclude always-treated units. After controlling for these two sets of fixed effects, the identifying assumption is that any time-varying individual characteristics that affect the outcomes are uncorrelated with the timing of land expropriation.

My identification strategy creates two concerns. First, after controlling for both individual and time fixed effects, the main threat to identification is the correlation between the timing of land expropriation and the evolution of political outcomes over time. Second, if the control group of non-expropriated individuals is affected by the expropriation of the land of their neighbors, the baseline estimates would be biased towards zero. In what follows, I discuss several strategies to address these concerns, validating the identifying assumption.

It is worth emphasizing first that households (and individuals) do not have the power to influence land expropriation programs. In reality, land expropriation generally involves large-scale development projects, which usually include constructing roads and dams, establishing economic development zones and industrial parks, urbanizing rural and suburban areas, and so on. Thus, it is actually the county- and prefecture-level governments that generally design and initiate these projects, which require further approval by the provincial government or the State Council. This implies that households and individuals are not typical participants in the decision-making process. An extreme but illustrative example is the Three Gorges Dam in which none of the affected households and individuals could influence government policies. One may worry that even if households cannot influence official plans, it is still possible that the plans will be anticipated by households who in turn may behave strategically, for instance by moving to a new location. However, this is not a serious concern in the Chinese context given that land is only allocated to households in the villages where they are officially registered as residents. Furthermore, during the sample period there was no land reallocation in rural villages in China (Zhao, 2020). Therefore, to a large extent, land expropriation cannot be manipulated by households and individuals.

I now examine who is more likely to have their land expropriated. In Table 2, I present the results of mean comparisons of time-invariant characteristics between individuals (Panel A), households (Panel B), and villages (Panel C) with and without land expropriation.[24] Restricting attention to unconditional differences that are statistically significantly different from zero, I find that expropriated individuals are more likely to be from an ethnic minority and less likely to be CCP members, indicating that individuals who are politically less powerful are more likely to be expropriated. I also find that households who are closer to high schools (generally located in the county center in rural Chinese counties), medical clinics, and marketplaces are more likely to have their land expropriated. It makes sense that land expropriation projects are more likely to occur in relatively developed areas where the value of the land is greater. Once I compare mean characteristics of individuals and households within villages, however, there are no longer any significant differences. At the village level, villages with a shorter distance to town or county center are more likely to experience land expropriation; the latter is still true even after I control for county fixed effects. This again suggests that the government develops land closer to urban centers. I do not find evidence that kinship group influence land expropriation when I compare characteristics such as whether a household has family genealogy or whether a village has any ancestral halls or a clan whose population share is larger than 10%.[25]

Taken together, these results suggest that the government selecting locations based on project needs rather than targeting a particular type of households when carrying out land expropriation projects. Even

[24] In Table A.4, I conduct a regression-based analysis and find similar results.
[25] In rural China, the mean of population share of the second-largest clan is about 10% and the first two largest clans are most powerful (Xu and Yao, 2015). My results here are in contrast to the findings of Mattingly (2016).

Table 3
The time-varying determinants of land expropriation.
Source: China Family Panel Studies.

	Land expropriation							
	Household-year panel				Individual-year panel			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log HH income per capita (t-1)	0.0001			0.0002				−0.0014
	(0.0018)			(0.0020)				(0.0030)
Log HH consumption per capita (t-1)		−0.0006		−0.0023				−0.0052
		(0.0031)		(0.0033)				(0.0059)
Log HH asset value per capita (t-1)			0.0020	0.0022				0.0051
			(0.0020)	(0.0022)				(0.0039)
Trust towards local officials (t-1)					0.0011		0.0009	0.0009
					(0.0009)		(0.0009)	(0.0011)
Conflict with local officials (t-1)						−0.0032	−0.0106	−0.0128
						(0.0076)	(0.0106)	(0.0123)
Dep. var. mean	0.0608	0.0604	0.0613	0.0609	0.0644	0.0641	0.0646	0.0646
Dep. var. SD	0.2389	0.2383	0.2398	0.2391	0.2454	0.2450	0.2458	0.2459
# of villages	1830	1846	1810	1721	1794	1836	1786	1516
# of observations	31537	30323	31297	28475	55625	65992	51994	44568
Adj. R-squared	0.1227	0.1228	0.1216	0.1212	0.1571	0.1439	0.1577	0.1464
Household fixed effects	Yes	Yes	Yes	Yes	No	No	No	No
Individual fixed effects	–	–	–	–	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Unit of observation is the household-year for columns 1–4 and the individual-year for columns 5–8. The sample is a five-year panel (2010, 2012, 2014, 2016, and 2018) for columns 1–4, a four-year panel (2012, 2014, 2016, and 2018) for column 5, a four-year panel (2010, 2012, 2014, and 2016) for column 6, and a three-year panel (2012, 2014, and 2016) for columns 7–8. Land expropriation is a dummy that is 1 if the individual is in a household whose land has been expropriated in the past year. Household income, consumption, and asset value per capita refer to average household net income, consumption, and asset value, respectively. Trust towards local government officials is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust) in a given year. Conflict with local government officials is a dummy that equals to 1 if the individual had conflicts with local government officials in the past year for the 2012, 2014, and 2016 waves, and equals to 1 if the individual has ever had conflicts with officials in history for the 2010 wave. All household-level explanatory variables are logged and all explanatory variables are lagged. Note that taking lag of variables will drop one period of data. Always-expropriated households and individuals are excluded in the regressions. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

if there are still differences between treatment and control groups, including individual/household fixed effects will eliminate all threats to identification that arise from differences in time-invariant characteristics. Additionally, and perhaps more importantly, while the results of balance checks suggest that individuals in different villages may systematically differ from one another, the results are robust to including village-by-year fixed effects, a specification that compares individual-level outcomes across the treatment and control groups within the same village and the same year. These treatment and control groups exhibit no significant differences in characteristics. Moreover, I also interact time-invariant characteristics with time dummies to further account for differential time trends.

Turning to time-varying characteristics, I run panel regressions of the treatment dummy on possible time-varying determinants, controlling for household/individual and time fixed effects. Table 3 reports the results. From columns 1–4, one can see that current household income, consumption, and asset value are not predictors of being expropriated in the next period, suggesting that it is not the case that poor households are more likely to be expropriated. From columns 5–7, we see that lagged political outcomes also are not significantly correlated with being treated, suggesting that the identification does not suffer from reverse causality and that it is less likely to be the case that those who have a lower level of trust in the government or a higher likelihood of having conflicts with local officials are more likely to experience land expropriation. Column 8 presents the results of a regression including both household- and individual-level covariates. Overall, being expropriated is not strongly associated with many characteristics after including all fixed effects, which supports the randomness of the timing of land expropriation.

One major concern for difference-in-differences estimates is differential time trends, especially given the long period of time covered by this study. To address this concern, instead of including time fixed effects, I restrict the variation in the following three ways. First, I allow time effects to be village-specific, absorbing shocks that are common to all households and individuals in a village. One caveat of including village-by-year fixed effects is that many villages carried out only one project in a given year, therefore, accounting for village-by-year shocks reduces the variation for identification. Second, to make time effects less restrictive at the village level, I further investigate how including both time fixed effects and village-specific linear time trends affects the results. Last, I account for time shocks at the county level by including county-specific time fixed effects, which is less restrictive than village-year fixed effects.

In addition, to alleviate concern that the results could be driven by time-varying factors, I include two time-varying covariates (age dummies and educational-level dummies) in the regressions.

In my research setting, a standard way to validate the identification strategy is to check whether the treatment and control groups follow similar pretreatment parallel trends using an event-study design. To this end, I estimate the following equation:

$$PoliticalOutcome_{ihvt} = \sum_{\tau=-3,\tau\neq-1}^{2} \beta_\tau \times \mathbf{1}(ExpropriatedPeriod_{hvt} = \tau) + \alpha_i + \lambda_t + \epsilon_{ihvt}, \quad (2)$$

where i indexes individuals, h households, v villages, t time periods. $PoliticalOutcome_{iht}$ is either political trust or political conflict. $\tau = -3$, -2, 0, 1, 2 (the gap between every two consecutive periods is two years); Period -1 ($\tau = -1$, base period) is used as the reference group and hence omitted in the regressions; Period 0 ($\tau = 0$) is the period right after the expropriation occurred. $ExpropriatedPeriod_{hvt}$ stands for the period relative to the base period for household h in year t. A set of dummies, $\mathbf{1}(ExpropriatedPeriod_{hvt} = \tau)$, indicates whether in year t household h is in the τth period before or after the base period. The error term ϵ_{ihvt} is clustered at the village level. In this specification, the β_τ's are informative, we can check for *(i)* the parallel pre-trends assumption when $\tau = -3$, -2; *(ii)* the immediate effects of land expropriation when $\tau = 0$; and *(iii)* the persistence of the effects

Table 4
Effects of land expropriation on political outcomes.
Source: China Family Panel Studies.

	Trust towards local government officials							
	(1)	(2)	(3)	(4)	(5)	(6)	Exclude movers (7)	Balanced panel (8)
Panel A: Effects on political trust								
Land expropriation	−0.1951**	−0.1387**	−0.1687**	−0.1669**	−0.2065**	−0.2288**	−0.2189**	−0.2238**
	(0.0819)	(0.0644)	(0.0845)	(0.0786)	(0.0818)	(0.0980)	(0.0902)	(0.0951)
Land expro. mean	0.0688	0.0688	0.0688	0.0688	0.0688	0.0699	0.0675	0.0721
Land expro. SD	0.2531	0.2531	0.2531	0.2531	0.2532	0.2550	0.2509	0.2587
Dep. var. mean	5.2548	5.2548	5.2548	5.2548	5.2524	5.2618	5.2788	5.3640
Dep. var. SD	2.6610	2.6610	2.6610	2.6610	2.6595	2.6578	2.6619	2.6681
# of villages	2043	2043	2043	2043	2039	450	451	1116
# of observations	78336	78336	78336	78336	77693	61991	70937	44519
Adj. R-squared	0.3238	0.3392	0.3293	0.3313	0.3267	0.3277	0.3211	0.3292
	Conflict with local government officials							
	(1)	(2)	(3)	(4)	(5)	(6)	Exclude movers (7)	Balanced panel (8)
Panel B: Effects on political conflict								
Land expropriation	0.0253**	0.0129*	0.0198**	0.0177*	0.0255**	0.0230**	0.0242**	0.0260***
	(0.0102)	(0.0077)	(0.0099)	(0.0097)	(0.0102)	(0.0105)	(0.0108)	(0.0099)
Land expro. mean	0.0734	0.0734	0.0734	0.0734	0.0729	0.0735	0.0725	0.0735
Land expro. SD	0.2608	0.2608	0.2608	0.2608	0.2600	0.2609	0.2593	0.2609
Dep. var. mean	0.0481	0.0481	0.0481	0.0481	0.0481	0.0490	0.0486	0.0492
Dep. var. SD	0.2140	0.2140	0.2140	0.2140	0.2140	0.2158	0.2151	0.2163
# of villages	1502	1502	1502	1502	1497	454	454	841
# of observations	73459	73459	73459	73459	72789	65220	69748	40673
Adj. R-squared	0.1404	0.1739	0.1521	0.1503	0.1396	0.1439	0.1441	0.1498
Individual fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Village FEs X time FEs	No	Yes	No	No	No	No	No	No
Village FEs X time trend	No	No	Yes	No	No	No	No	No
County FEs X time FEs	No	No	No	Yes	No	No	No	No
Time-varying controls	No	No	No	No	Yes	No	No	No
Time-invariant controls X time FEs	No	No	No	No	No	Yes	No	No

Notes: Unit of observation is the individual-year. The sample is a four-year panel (2012, 2014, 2016, and 2018) for Panel A, and a four-year panel (2010, 2012, 2014, and 2016) for Panel B. Columns 1–6 use the main sample; column 7 excludes those who move out of the villages where they reside in when being surveyed at the first time; and column 8 uses a balanced panel. Individuals who have their land expropriated in or before 2012 (2010) are excluded in the regressions for Panel A (B). Trust towards local government officials is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust) in a given year. Conflict with local government officials is a dummy that equals to 1 if the individual had conflicts with local government officials in the past year for the 2012, 2014, and 2016 waves, and equals to 1 if the individual has ever had conflicts with officials in history for the 2010 wave. Land expropriation is a dummy that is 1 if the individual is in a household whose land has ever been expropriated in a given year. Time-varying control variables include age dummies and educational-level dummies. Time-invariant control variables include all of the variables in Table 2. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

when $\tau = 1, 2, 3$. Note that *(i)* I drop always-treated individuals in the regressions; and *(ii)* the fact that the sample includes a large proportion of never-treated individuals ("a pure control group") could mitigate the underidentification concern in event study designs in absence of such a control group (Borusyak et al., 2022). Furthermore, I also report the results obtained using the method proposed by Sun and Abraham (2021), addressing the concern that the estimates of β_τ's could be contaminated and treatment effect heterogeneity may lead to apparent pre-trends since different households receive the treatment in different periods (i.e., there is variation in treatment timing across units).

Up to now, I have not considered the spillover effects of land expropriation projects from individuals whose land was expropriated to those whose land was not expropriated. Such spillovers could exist, especially across individuals within regions (e.g., villages or counties). In the empirical setting of this paper, I do not have a strong prior on the direction of the spillovers. For instance, unaffected individuals might have sympathy for neighbors whose land is expropriated and hence distrust the government and have conflicts with local officials. On the other hand, since individuals not experiencing land expropriation could be better-off if land expropriation helps improve the infrastructure conditions or increase the provision of public goods, there might be no spillover effects, or the spillovers may even work in the opposite direction. In reality, whether one has her or his family's land expropriated and whether one is in a village that carries out land expropriation programs are likely highly correlated.[26] Thus, it may not be proper to examine the spillover effects by including individual- and village-level land expropriation experience in the same regression. To this end, I use two other ways to study the spillover effects. First, I augment Eq. (1) with the share of individuals subject to land expropriation within counties to examine the possible spillovers across individuals within counties. Second, I exclude treated units and construct a sample that includes the control individuals only. Then, I regress the political outcomes of interest on the ratio of treated villagers by using the newly constructed sample to examine the possible within-village spillovers.

5. Political impacts

5.1. Baseline results and robustness checks

The baseline results, obtained from estimating Eq. (1), suggest that land expropriation has adverse political consequences (Table 4).

[26] I thank both referees for pointing this out.

Table 5
Effects of land expropriation on non-political trust.
Source: China Family Panel Studies.

	General trust (1)	Trust in parents (2)	Trust in neighbors (3)	Trust in Americans (4)	Trust in strangers (5)	Trust in doctors (6)
Land expropriation	0.0594	−0.0471	−0.1156	−0.0810	0.0250	−0.1105
	(0.0637)	(0.0474)	(0.0730)	(0.0877)	(0.0759)	(0.0749)
Land expro. mean	0.0688	0.0688	0.0688	0.0693	0.0689	0.0687
Land expro. SD	0.2531	0.2530	0.2531	0.2539	0.2532	0.2530
Dep. var. mean	2.8310	9.2460	6.6619	2.3758	2.0394	6.9547
Dep. var. SD	1.9929	1.5369	2.2138	2.5087	2.1420	2.3375
# of villages	2045	2044	2047	2035	2045	2045
# of observations	78515	78373	78583	76689	78381	78557
Adj. R-squared	0.2307	0.2159	0.3063	0.2925	0.2713	0.2824
Individual fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Unit of observation is the individual-year. The sample is a four-year panel (2012, 2014, 2016, and 2018). Individuals who have their land expropriated in or before 2012 are excluded in the regressions. General trust takes value of 1 (low trust) or 5 (high trust). Trust towards parents, neighbors, doctors, strangers, and Americans are categorical variables ranged from 0 (extremely low trust) to 10 (extremely high trust). Land expropriation is a dummy that is 1 if the individual is in a household whose land has ever been expropriated in a given year. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

Individuals who have their land expropriated have trust towards local government officials that is lower by 0.2, which is equivalent to about 0.07 standard deviations (Panel A, column 1). The sample mean of political trust for individuals with CCP membership is 5.69 and is 5.15 for non-party members; thus, this effect equals about 36% of the mean difference in political trust between individuals with and without CCP membership. In Panel B, column 1 shows that having one's land expropriated also increases the probability of having conflicts with local government officials by 2.5%, compared to a sample mean of 5%, which means it increases the incidence of having conflicts with local officials by about 50%. This large effect is consistent with the high frequency of land-related conflicts in China.[27] The baseline findings are not sensitive to a variety of robustness checks.

Columns 2–4 of Table 4 report the results of the specifications that control for differential time trends flexibly. First, I replace time fixed effects with village-by-year dummies, absorbing shocks that are common to all households and individuals in the same village-year (column 2). Compared to the baseline estimates, the effects on both outcomes shrink, but remain economically large and statistically significant. Second, I add a village-specific linear time trends, which does not appreciably change the effect magnitude (column 3). Finally, I control for county-by-year fixed effects (column 4). The effects are actually larger than the ones obtained from column 2.

Column 5 of Table 4 further includes two time-varying covariates (age and educational-level dummies) in the regressions. The estimated effects are almost the same as the baseline results. The minimal changes suggest that time-varying characteristics are not likely to drive the results.

Column 6 of Table 4 presents the results of the specification, which includes interaction terms between time dummies and individual-, household-, and village-level time-invariant characteristics in Table 2. The data shows that villages located closer to the county center are likely to have a earlier expropriation project. While my specification includes individual fixed effects that account for all time-invariant differences due to being closer to the county center, allowing the time effects to depend on proximity to the county center further controls for differences in political outcomes over time that are due to villages with earlier expropriation programs being closer to the county center. The estimated effects are very similar to the ones obtained from the baseline specification (column 1).

In summary, the estimates reported in columns 2–6 of Table 4 show that the baseline results are robust to using various ways of controlling for differential time trends, the main identification threat to the empirical strategy of this paper, confirming that land expropriation leads to adverse political impacts.

Column 7 of Table 4 excludes movers (including migrants) who move out of villages where they are officially registered as residents, addressing potential endogeneity caused by migration. For example, movers or migrants may experience differential changes in political outcomes after the land expropriation projects due to reasons other than land expropriation, which in turn drives the baseline results. Column 8 of Table 4 reports the results using a balanced panel, which drops a large proportion of the observations, addressing the concern that the sample composition changes over the study period. In all cases, the estimated effects are similar to (or slightly larger than) the baseline estimates.

Last, I conduct two sets of placebo tests. Using non-political trust variables as placebo outcomes, I provide a set of placebo tests for political trust. In the CFPS, other variables measuring social trust are available: general trust and individuals' trust towards parents, neighbors, Americans, strangers and doctors. I regress these non-political trust variables on exposure to land expropriation. Table 5 presents the results, showing that none of the non-political trust variables are affected by land expropriation.[28] These results lend strong support to the causal link between land expropriation and political trust.

Following Chen and Yang (2019a), I also conduct one additional placebo test for both outcomes. Under the null that there is no association between pseudo-exposure and the political outcomes for the control group, randomly assigned pseudo-exposure (to land expropriation) to control households would not affect the political outcomes. To formally test this logic, I first drop the actual treatment group and resample a certain proportion of households without replacement in each year and code them as "expropriated" households (pseudo-treatment group); the proportions correspond to the percentages depicted in Fig. 1. The remaining households serve as a new control group. Using the newly constructed sample and pseudo-treatment group, I then reestimate the baseline model at the individual level to obtain the pseudo-treatment effect. I follow this procedure 5,000 times, randomly assigning pseudo-exposure to land expropriation.

Fig. 4 plots the distribution of t-statistics from the 5,000 estimated pseudo-treatment effects on political trust (Panel A) and political

[27] Landesa (2012) suggests that more than 65 percent of the mass conflicts are related to land in China in 2010.

[28] The results are similar if I replace time fixed effects with village-by-year fixed effects (available upon request).

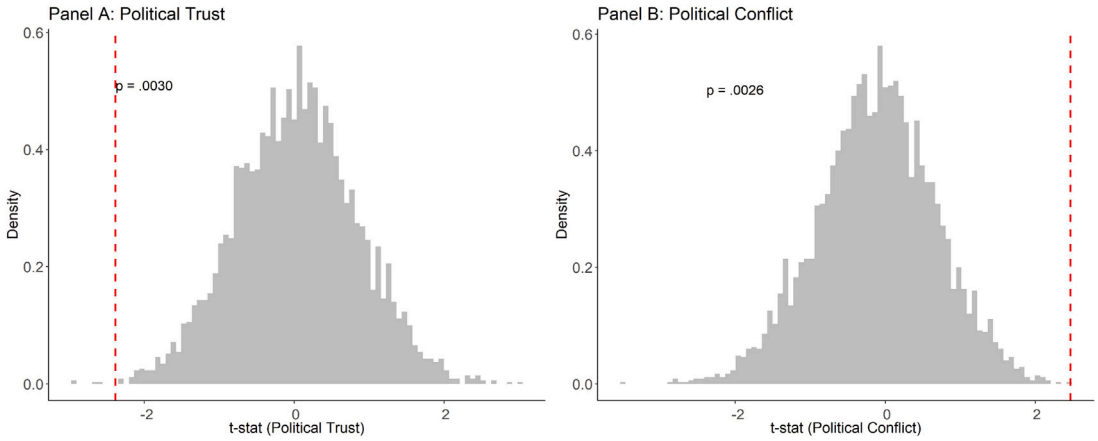

Fig. 4. Distribution of t-statistics. Notes: This figure plots the distribution of t-statistics from the 5,000 estimated pseudo-treatment effects on political outcomes using the baseline model by randomly assigning pseudo-exposure to land expropriation to control households. The red vertical lines mark the t-statistics from actual exposure to land expropriation. The reported *p*-value is the share of the pseudo-treatment t-statistics that is larger than the actual t-statistics, in absolute value.
Source: China Family Panel Studies.

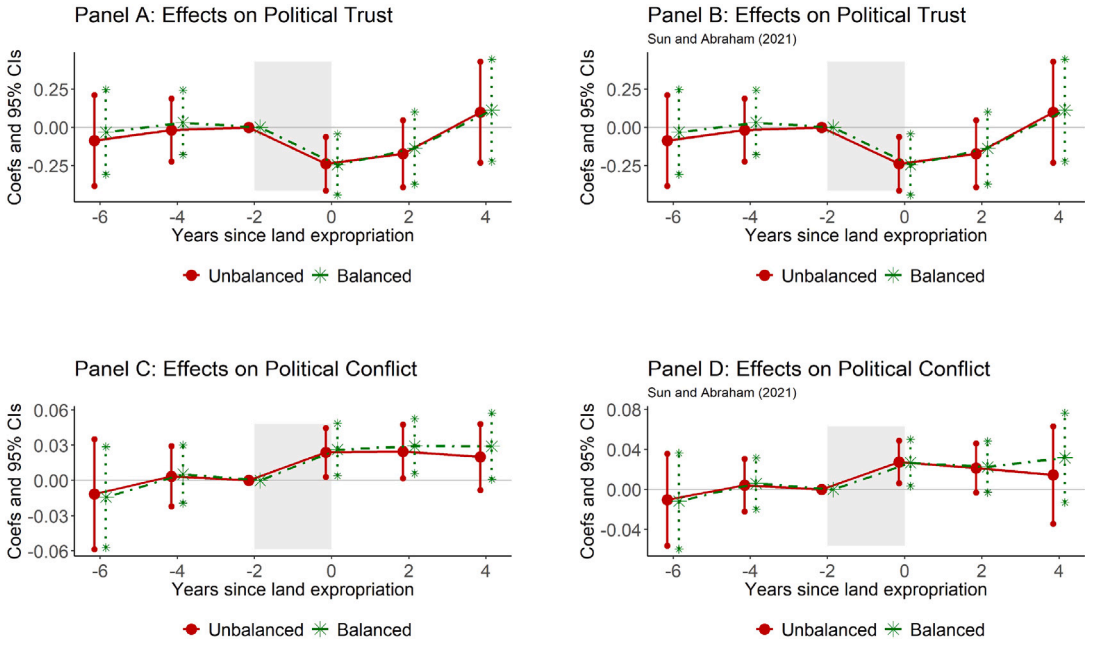

Fig. 5. Dynamic effects of land expropriation on political outcomes. Notes: Unit of observation is the individual-year. The sample is a four-year panel (2012, 2014, 2016, and 2018) for Panel A and a four-year panel (2010, 2012, 2014, and 2016) for Panel B. The sample excludes individuals who had their land expropriated before 2012 (2010) for Panel A (Panel B). The shaded region indicates the expropriation was happening during this time period. The CFPS survey is conducted in every two years, thus, the gap between two consecutive periods is two years (the horizontal axis).
Source: China Family Panel Studies.

conflict (Panel B). I also report the value of the actual t-statistics, corresponding to the treatment effect obtained from the baseline model using actual exposure to land expropriation. The reported p-values are the share of the pseudo-treatment t-statistics that are larger than the actual t-statistic in absolute value. One can see from the figure that randomly assigned exposures produce a small (and negligible) proportion of t-statistics in explaining political trust or political conflict.

5.2. Pre-trends, persistence, and spillovers

In this subsection, I report results of the event study specification and the tests for spillover effects. These two sets of results not only serve as internal validity checks, but also are important for understanding and interpreting the findings of this paper.

I estimate the dynamic effects using Eq. (2) and plot the estimated coefficients and the corresponding 95% confidence intervals in Fig. 5. The regression results are reported in Table A.5. Since the main sample is not a balanced panel, I report the results using both unbalanced and balanced panels to address the concern that the results could be biased by changes in sample composition. There are no effects of being in the treatment group on political trust in the years before individuals are exposed to land expropriation, but right after exposure, it drops sharply, and then appears to flatten out and eventually attenuate to zero four years later (Panels A and B). A similar pattern is found for political conflict, with the effects being persistent for a slightly longer period (Panels C and D). Note that the results are robust to using the method proposed by Sun and Abraham (2021).

These results yield two important insights. First, the results provide evidence that the pretreatment parallel trends assumption, which is a

Table 6
Spillover effects of land expropriation on political outcomes.
Source: China Family Panel Studies.

			Control sample	
	Trust (1)	Conflict (2)	Trust (3)	Conflict (4)
Land expropriation	−0.3485*	0.0016		
	(0.2008)	(0.0222)		
County expropriation (share)	0.4426	0.0862		
	(0.6415)	(0.0779)		
Ratio of treated villagers			−0.1996	0.0177
			(0.3229)	(0.0306)
Land expro./Ratio mean	0.0433	0.0456	0.1427	0.1219
Land expro./Ratio SD	0.1875	0.1928	0.1571	0.1484
Dep. var. mean	5.2788	0.0486	5.3130	0.0462
Dep. var. SD	2.6619	0.2151	2.6577	0.2099
# of villages	451	454	451	453
# of observations	70937	69748	61308	57624
Adj. R-squared	0.3211	0.1442	0.3170	0.1344
Individual fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes

Notes: Unit of observation is the individual-year. The sample is a four-year panel (2012, 2014, 2016, and 2018) for columns 1 and 3 and a four-year panel (2010, 2012, 2014, and 2016) for columns 2 and 4. Columns 3–4 only use the control sample. Movers and always-treated individuals are excluded in the regressions for all columns. Trust towards local government officials is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust) in a given year. Conflict with local government officials is a dummy that equals to 1 if the individual had conflicts with local government officials in the past year for the 2012, 2014, and 2016 waves, and equals to 1 if the individual has ever had conflicts with officials in history for the 2010 wave. Land expropriation is a dummy that is 1 if the individual is in a household whose land has ever been expropriated in a given year. Country expropriation is a percentage that equals to *leave-self-out* share of individuals who had their land expropriated in the county. Ratio of treated villager is the share of individuals subject to land expropriation in the village. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

critical underlying assumption for the difference-in-differences framework, holds for both outcomes. Before exposure to land expropriation, the difference in political trust as well as in political conflict between expropriated (treatment) and non-expropriated (control) individuals is not statistically significant from zero, which suggests that pre-trends do not differ between treatment and control groups. Second, the effects on both outcomes are not persistent over a long period of time. The lack of persistence could reflect declining salience of post events, especially if local leaders change over time. It could also in part be due to improved living conditions over time in villages with land expropriation due to better infrastructure conditions and more public goods provisions. Those subject to land expropriation could gradually become more supportive of the government after witnessing improvements of living conditions.

In my empirical context, spillovers from the expropriated to the non-expropriated are also worth exploring. On the one hand, if the potential outcomes of the control group of individuals whose land was not expropriated is affected by the expropriation of the land of their neighbors, the baseline estimates would be biased towards zero. On the other hand, the existence of spillovers also would suggest that the baseline estimates understate the treatment effects, that is to say, the total political costs are larger with spillovers. Again, as discussed above, I did not hold strong priors on the existence of or direction of spillovers.

Table 6 reports the results of spillover effects. In columns 1–2, I augment Eq. (1) with the share of individuals whose land was expropriation (excluding oneself) within counties, while I regress the outcomes on the ratio of treated villagers within villages using the control sample that excludes treated units in columns 3–4. In all columns, I control for individual and time fixed effects, the preferred set of fixed effects in the regression analyses throughout the paper. Overall, I do not find any statistically significant results, suggesting no spillover effects. Recall that my baseline estimates survive when using specifications including village-by-year or county-by-year fixed effects (see columns 2 and 4 of Table 4), in which I compare the individual-level outcomes across the treatment and control groups within the same village (or county) and the same year, suggesting that there is at least no sufficiently large spillovers across individuals within villages or counties. As noted earlier, this could reflect positive and negative spillovers canceling each other out.

5.3. Effects on additional outcomes

Up to now, I focus attention on outcomes related to local government officials. Can the adverse impacts extend to other political dimensions? How do those whose land is expropriated assess the government? In this subsection, I answer these questions by studying how individuals who are subject to land expropriation assess government service, performance, and quality. To do so, I examine four additional outcomes. The first is unfair treatment by local officials measured by whether an individual experiences being unfairly treated by local government officials in the past year. The second is unreasonable delay at local agencies, referring to when citizens come to local government agencies to ask for help but local officials will shirk responsibility and ask them to go to other agencies for help (known as "kicking balls" in China). It is a dummy variable that is 1 if an individual reports such experience in the past year and 0 otherwise. The third outcome is individuals' evaluation of the performance of the county government in the past year compared to the performance in earlier years, which is a categorical variable ranging from 1 to 5 (much worse, worse, the same, better, and much better). Last, I examine the effect of land expropriation on individuals' perceptions of the severity of nationwide corruption, a categorical variable ranging from 1 (extremely low) to 10 (extremely high).

I re-estimate Eq. (1) by placing these four outcomes on the left-hand side. Table 7 reports the estimated effects. Columns 1–4 show that individuals who are subject to land expropriation are more likely to report being unfairly treated by local officials as well as being unreasonably delayed at local agencies, with effects being both statistically significant and economically sizable. The effect on individuals' evaluation of the performance of the county government is not statistically different from zero (columns 5–6). The effects on individuals' perceptions of the severity of nationwide corruption also is remarkable (columns 7–8). I also check for parallel pre-trends using the event study specification and plot the results in Figs. A.4 and A.5, showing no evidence of the existence of differential pre-trends.[29] Taken together, the evidence

[29] See Table A.6 for the corresponding regression results.

Table 7
Effects of land expropriation on additional political outcomes.
Source: China Family Panel Studies.

	Unfair treatment by local officials		Unreasonable delay at local agencies		Evaluation of performance of county government		Perception of severity of nationwide corruption	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Land expropriation	0.0348***	0.0147	0.0361***	0.0207**	−0.0424	−0.0235	0.1852*	0.0906
	(0.0120)	(0.0096)	(0.0135)	(0.0104)	(0.0289)	(0.0221)	(0.1070)	(0.0793)
Land expro. mean	0.0733	0.0733	0.0737	0.0737	0.0902	0.0902	0.0683	0.0683
Land expro. SD	0.2606	0.2606	0.2613	0.2613	0.2865	0.2865	0.2523	0.2523
Dep. var. mean	0.1205	0.1205	0.1488	0.1488	3.4743	3.4743	6.3403	6.3403
Dep. var. SD	0.3255	0.3255	0.3559	0.3559	0.9258	0.9258	2.8883	2.8883
# of villages	1501	1501	1502	1502	2047	2047	2030	2030
# of observations	73445	73445	72920	72920	92598	92598	70693	70693
Adj. R-squared	0.2007	0.2399	0.2179	0.2660	0.2224	0.2831	0.2196	0.2671
Individual fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	No	Yes	No	Yes	No	Yes	No
Village FEs X time FEs	No	Yes	No	Yes	No	Yes	No	Yes

Notes: Unit of observation is the individual-year. The sample is a four-year panel (2010, 2012, 2014, and 2016) for columns 1–4, a five-year panel (2010, 2012, 2014, 2016, and 2018) for columns 5–6, and a four-year panel (2012, 2014, 2016, and 2018) for columns 7–8. Always-treated individuals are excluded in the regressions for all columns. Unfair treatment refers to individual's experience of being unfairly treated by local government officials, which is a dummy variable that is 1 if the individual had such experience in the past year and 0 otherwise. Unreasonable delay (stalling) refers to that when citizens come to local government agencies, government officials will shirk responsibility rather than helping them ("kicking balls"), which is a dummy variable that is 1 if the individual had such experience in the past year and 0 otherwise. Evaluation of performance refers to individual's evaluation of county government performance in the past year, which is ranged from 1 to 5 (much worse, worse, the same, better, much better). Perception of corruption refers to individual's perception of the severity of nationwide government corruption in China, which is ranged from 0 (extremely low) to 10 (extremely high). Land expropriation is a dummy that is 1 if the individual is lived in a household whose land has ever been expropriated in a given year. Robust standard errors in parentheses, clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

suggests that individuals whose land was expropriated negatively assess government service and quality.

5.4. Discussion on the political impacts

In this subsection, I discuss the economic significance of the estimated political impacts and the political implications of the lack of persistence and spillovers. For impacts on political trust, I find evidence of heterogeneous treatment effects (see detailed discussion in next section). Take the estimate presented in column 1 of Panel A of Table 9 as an example, the effect size amounts to around 0.28 standard deviations in badly governed villages, which is more than four-time larger than the baseline estimate (equivalent to 0.07 standard deviations). To benchmark these estimates, I now compare them with the impact of the Great Leap Forward (GLF), a life-changing historical trauma. Chen and Yang (2019a) use the 2010–2012 CFPS data (a subsample of mine) to study the effects of the GLF on political trust (the same outcome as mine). Their estimate of the adverse impact of having experienced the GLF is about 0.76 standard deviations for famine survivors in harder hit regions.[30] My baseline estimate and estimate for villages with bad governance are equivalent to about 9% and 28% of the estimate of the famine impact, respectively. This simple comparison suggests that the impacts of land expropriation on political trust are significant given that having one's land expropriated is much less of a life-changing event than experiencing the GLF, one of the worst famines in human history that led to excess deaths of at least 30 million people.

As for the impacts on political conflict, I do not find strong evidence of heterogeneous treatment effects. The sample average of the occurrence of political conflict is 5%, indicating that one in twenty individuals aged 15 or above in rural China has had conflicts with local officials. This high frequency makes it unlikely that most of the described conflicts are peasant protests, which could pose a fatal threat to promotion of local political leaders in which social order plays a veto role. The definition of political conflict is not clear in the CFPS, presumably ranging from having disputes with officials to organizing/participating in large-scale protests. Recall that the baseline estimate of the impact on political conflict is 2.5%, which means that land expropriation increases the likelihood of experiencing conflicts with local officials by about 50%. As noted by Scott (1985), affected farmers may use low-profile techniques to express resistance frequently ("everyday forms of peasant resistance"), rather than participating in well-organized large-scale protest activities that are dangerous, if not suicidal, for peasants.[31] This view is in part supported by the results that individuals who have their land expropriated negatively assess government service and quality. Multiplied many thousand-fold, these individual acts of resistance may reduce the effectiveness of policy implementation at the local level.

My empirical results show that the adverse political effects attenuate to zero after about four years and do not spill over to the neighbors not subject to land expropriation. The lack of persistence suggests that land expropriation has political costs only in the short run. The lack of spillovers implies that local governments may face fewer obstacles when eliciting compliance with the land expropriation projects from local residents, especially for projects that generate public benefits and thus could also gain support from those affected. Taken together, these results suggest that the adverse political impacts are not persistent and restrictive to affected individuals only. Put differently, to some extent, land expropriation in rural areas may not pose a fatal threat to the Chinese political regime.

6. Political and economic conditions

This section investigates the circumstances in which political costs emerge as well as the conditions under which the adverse political effects may be mitigated, focusing in particular on compensation fairness, governance quality, project benefits, and agricultural dependence.

[30] See column 1 of Panel A of Table 1 in Chen and Yang (2019a): $\frac{1.476+0.434}{2.506} \approx 0.76$, the largest estimate among all baseline estimates they provided in the table. Although they use a very restrictive sample, standard deviations of political trust in both my paper and theirs are around 2.5.

[31] Note that up to now I have not considered the reallocation programs, such as housing demolition, which could make affected individuals homeless and are more likely to trigger large-scale protests if they are not compensated fairly.

These conditions need not be mutually exclusive. Indeed, they might be interrelated. It is worth noting first that compensation is not so low that land expropriation creates large, negative economic shocks to affected households. But it is very low when compared to the market value of the land, which in turn may lead to political costs. Additionally and relatedly, how local governments manage and justify the projects, whether local households perceive public benefits from the programs, and to what extent the households rely on the agricultural land also may be important in determining the political effects.

6.1. Compensation fairness

The compensation received by households for land expropriation could play an important role in determining the political impacts. However, the CFPS does not collect detailed compensation information.[32] As I argued above, the difference between the market price and the price of expropriated land is so large that variation in actual compensation across households may not adequately reflect perceptions of fairness of the compensation if households compare their compensation with the market value of the land. Additionally, the actual compensation that households receive could depend on their interactions with local government officials. Thus, having conflicts with local officials (e.g., collective action taken by villagers) may increase the compensation amount if local officials do not want to slow down the expropriation process, or they are concerned about political risks caused by social unrest triggered by land expropriation.

I employ two indirect ways to study the role of compensation in determining the political impacts of land expropriation. First, I examine the economic impacts of land expropriation at the household level. Generally speaking, most rural households rely on their agricultural land to generate income and produce food. When land is seized and the compensation is low, it may create a negative economic shock to affected households, which may influence the political reaction. Hence, it is important to investigate the magnitude of these economic shocks. To this end, I investigate how land expropriation changes households' economic behavior and outcomes. I first examine the impacts on two outcomes that I expect to be directly affected by land expropriation: agricultural income and land assets. I then examine how land expropriation affects household members' propensity to migrate (at least one household member is migrated),[33] and whether it increases household wage income. Next, I investigate the impacts on total household income and food consumption. Last, I study the effects on household savings. Importantly, household savings are expected to increase (and perhaps persistently) if the compensation is large enough, given that the Chinese households generally have high saving rates and about 71% of households who had their land expropriated receive cash as compensation.

I re-estimate Eq. (2) by replacing the political outcomes with household-level economic outcomes, and I replace individual fixed effects with household fixed effects. In the regressions, the migration variable is a dummy equal to 1 if the household has at least one member who migrated in the past and 0 otherwise. All of the other household outcomes are continuous variables, all of which are normalized by family size and logged.

I plot the estimated effects on household-level outcomes using the event study specification in Fig. 6 and report the corresponding regression results in Table A.7.[34] From Panels A and B, one can see that land expropriation does create a persistent negative shocks to household agricultural income and land assets. This is not surprising as both variables are directly associated with the amount of land allocated to the household. In addition, households who have had their land expropriated are more likely to have at least one household member who migrated (Panel C),[35] and earn more wage income (Panel D). However, I find that there is almost no effect of land expropriation on household total income or food consumption (Panels E and F). Finally, I do not find strong evidence that household savings increase significantly (Panel G). Although land expropriation does enhance saving assets right after treatment, the effects are not persistent.

Overall, land expropriation does create negative shocks to agricultural income and land assets persistently, and the lack of significant increase in savings suggests that the lost land wealth is not being fully offset by compensation. However, total household income remains unchanged, likely due to the ability of households to cope with these shocks by migrating and earning more wage income. Migration of course could involve substantial disutility of living in cities and risks that are not captured by the total income and saving measures. Taken together, these results suggest that there are some lost economic well-being for households whose land was expropriated.

One may ask how we should reconcile the seemingly conflicting results that land expropriation does not have large negative economic impacts but does have adverse political consequences. As discussed above, I argue that it is the market value of the land that serves as a benchmark for households to assess the fairness of compensation. When the expropriated price of the land paid to households is much lower than the land price charged by the government in the primary market, it suggests that local governments extract rents from local farmers. Given that information on the market price of land is publicly available, households whose land was expropriated are aware of the market value of land.

Next, I compare land expropriation with housing demolition to study the perceived unfairness of compensation. These two policies are comparable in the sense that both are common types of eminent domain in China, in which the government takes properties (land and housing, respectively) away from local residents. Importantly, in the case of housing demolition, in addition to monetary compensation, most affected households are compensated with new houses (apartments) and/or another piece of homestead. Chen (2014) provides a legal analysis of China's bifurcated land system with urban land rights being better protected. This bifurcation was enlarged in 2011 (the beginning of the study period of this paper) when the Chinese central government passed new regulations that require local governments to take into account of market value of the property based on assessments of an independent third-party when determining the compensation for affected households.[36] Unfortunately, these regulations are only applicable to expropriation of urban land (i.e., housing demolition), but not to expropriation of rural agricultural land (see Chen (2014) for more detail). Given that the compensation package is much more generous, housing demolition often is viewed as a large positive wealth shock. For example, using the same data set, Sha and Zou (2022) find that households whose house was demolished tend to have more housing value and wealth, consume more, and work less. In such a context, there should be no adverse (or even positive) effects on political outcomes.

[32] The CFPS provides total compensation received by households, however, it does not provide expropriated acreage, so I cannot calculate the expropriated price of agricultural land. Using total compensation alone will be misleading.

[33] This variable is constructed based on whether one household receives remittance in a given year or not. The CFPS does provide information about whether one work in the non-agricultural sector, but does not contain detailed information on migration.

[34] The dynamic estimates obtained using the method proposed by Sun and Abraham (2021), which remain largely robust, are plotted in Fig. A.6.

[35] Using a two-year (2013 and 2015) panel constructed from the CHFS, Ma and Mu (2020) also found that land expropriation increases individual migration rate by 4.5–6.8 percentage points.

[36] See the *Regulations for Expropriation and Compensation for Houses on State-owned Land of 2011* for morel detail.

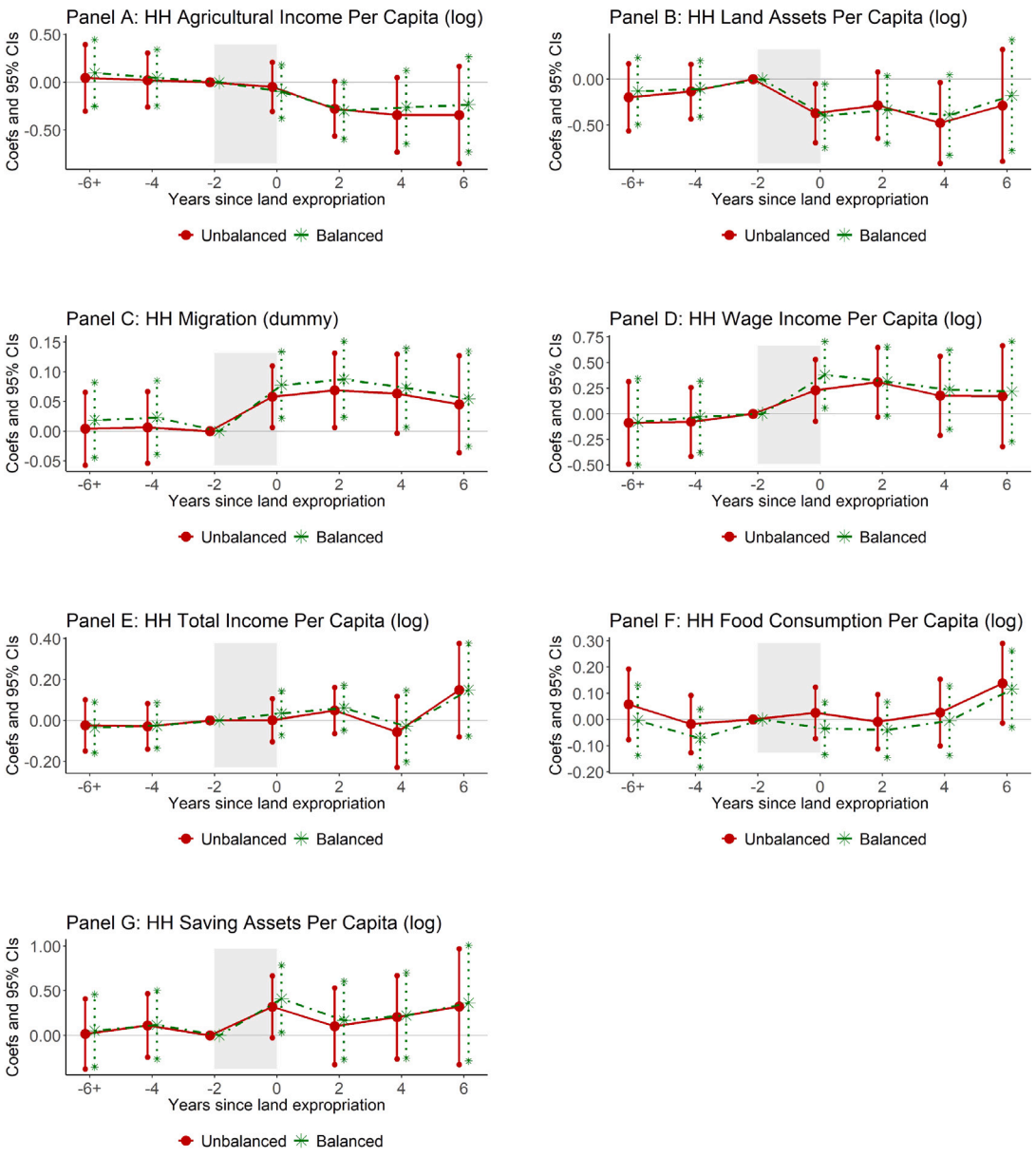

Fig. 6. Dynamic effects of land expropriation on household outcomes. Notes: Unit of observation is the household-year. The sample is a five-year household panel (2010, 2012, 2014, 2016, and 2018) and excludes households who had their land expropriated before 2010. The shaded region indicates the expropriation was happening during this time period. The CFPS survey is conducted in every two years, thus, the gap between two consecutive periods is two years (the horizontal axis).
Source: China Family Panel Studies.

To test this empirically, I replace the land expropriation dummy in Eq. (1) with an indicator of whether the individual is in a household whose housing has been demolished in a given year. Table 8 presents the estimated impacts: columns 1–2 report the results using the main sample used in this paper (i.e., the rural sample); columns 3–4 report the results only using the urban sample, which is most relevant (because urban areas experienced more housing demolition in China) and has a less heterogeneous control group; columns 5–6 report the results using the sample including both rural and urban areas. Consistent with the above conjuncture, most of the effects of housing demolition on political outcomes are statistically significantly different from zero; and the estimated coefficient is marginally statistically significant (column 6 of Panel A) when comparing political trust of individuals with and without land expropriation within the same village and the same year. Taken together, the evidence suggests that although land expropriation does not bring a large negative income shock to affected households, the perceived unfairness of below-market compensation may greatly contributes to generating adverse political impacts.

6.2. Governance quality

It is crucial how land expropriation is administered by local governments, which largely reflects the quality of governance at the local level. In China, local government officials generally are not accountable downward to citizens but rather respond to promotion incentives determined by upper-level government leaders. Consequently, the welfare of households often is of second-order importance for local political leaders who tend to be radical and aggressive in implementing new projects. One common practice of local governments is to make the expropriation procedure less transparent and deploy local police to

Table 8
Effects of housing demolition on political outcomes.
Source: China Family Panel Studies.

	Trust towards local government officials					
			Only urban		Include urban	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Effects on political trust						
Housing demolition	0.0613	0.1540	0.0035	0.3134	0.0800	0.1868*
	(0.1666)	(0.1230)	(0.2005)	(0.2109)	(0.1300)	(0.1059)
Housing demo. mean	0.0216	0.0216	0.1666	0.0381	0.0255	0.0255
Housing demo. SD	0.1454	0.1454	0.3726	0.1913	0.1576	0.1576
Dep. var. mean	5.2204	5.2204	4.6621	4.6745	5.0808	5.0808
Dep. var. SD	2.6643	2.6643	2.4904	2.4910	2.6344	2.6344
# of villages	2080	2080	1252	1193	3630	3630
# of observations	89743	89743	32760	28383	119782	119782
Adj. R-squared	0.3254	0.3413	0.3700	0.3910	0.3391	0.3558
	Conflict with local government officials					
			Only urban		Include urban	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel B: Effects on political conflict						
Housing demolition	0.0016	0.0035	0.0188	0.0097	0.0109	0.0075
	(0.0173)	(0.0124)	(0.0186)	(0.0203)	(0.0129)	(0.0105)
Housing demo. mean	0.0221	0.0221	0.0281	0.0281	0.0235	0.0235
Housing demo. SD	0.1469	0.1469	0.1652	0.1652	0.1516	0.1516
Dep. var. mean	0.0495	0.0495	0.0446	0.0446	0.0482	0.0482
Dep. var. SD	0.2169	0.2169	0.2064	0.2064	0.2141	0.2141
# of villages	1520	1520	934	934	2702	2702
# of observations	81523	81523	28044	28044	110478	110478
Adj. R-squared	0.1377	0.1732	0.1833	0.2126	0.1480	0.1807
Individual fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	No	Yes	No	Yes	No
Village FEs X time FEs	No	Yes	No	Yes	No	Yes

Notes: Unit of observation is the individual-year. The sample is a four-year panel (2012, 2014, 2016, and 2018) for Panel A, and a four-year panel (2010, 2012, 2014, and 2016) for Panel B. Columns 1–2 use the main sample; columns 3–4 use urban villages only; columns 5–6 add urban villages to the main sample. Always-treated individuals are excluded in the regressions for all columns. Trust towards local government officials is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust) in a given year. Conflict with local government officials is a dummy that equals to 1 if the individual had conflicts with local government officials in the past year for the 2012, 2014, and 2016 waves, and equals to 1 if the individual has ever had conflicts with officials in history for the 2010 wave. Land expropriation (housing demolition) is a dummy that is 1 if the individual is in a household whose land (housing) has ever been expropriated (demolished) in a given year. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

force citizens to comply with the expropriation demands.[37] Relatedly, access to information can increase the quality of public goods and service (e.g., Lewis-Faupel et al., 2016), and local monitoring also can hold public workers accountable (e.g., Björkman and Svensson, 2009). Additionally, corruption and other forms of misconduct could reduce the quality of public goods delivered by the government (e.g., Reinikka and Svensson, 2004; Olken, 2007). Indeed, corruption is not uncommon in the land market in China (Chen and Kung, 2019). The Wukan event vividly exemplifies how local officials are able to use public office for private gains.

To study the role of the quality of local governance in mitigating the adverse political impacts of land expropriation, I interact the treatment indicator with variables that capture the quality of governance across regions (villages and cities). The first variable is whether the village committee posts information about the land expropriation projects on the bulletin board, which makes governance more transparent and avoids the abuse of power. Data on this variable is only available in the 2014 wave of the CFPS.[38] Slightly more than 60% of villages report that they post information about land expropriation and other major events on bulletin boards (Fig. 7, Panel A). To be more precise, I only use observations in 2014 or afterwards and so drop all individuals who have their land expropriated before 2014. That is, I use the 2014 wave as baseline and examine whether the political impacts differ with respect to this baseline characteristic, restricting attention only to individuals who have been expropriated in 2014 or later.

Second, I measure the degree of government transparency at the city level using an index from Nie et al. (2019). This transparency index is a standardized score based on the degree of administrative information disclosure and the degree of fiscal information disclosure. Based on the mean level of the index, I create a dummy indicating high (above-mean) government transparency. Next, I turn to whether the adverse political impacts of land expropriation can be mitigated by less corrupt governments. My third variable is a corruption index, also provided

[37] See, for example, Lucy Hornby, "China Migration: Dying for Land", *Financial Times*, August 7, 2015. Available online: https://www.ft.com/content/33ae0866-3098-11e5-91ac-a5e17d9b4cff. Last access on August 17, 2020.

[38] Up to now, the CFPS conducted village-level surveys only in 2010 and 2014. In the 2010 village-level survey, the CFPS did not ask about whether information regarding land expropriation is available for villagers from the bulletin board.

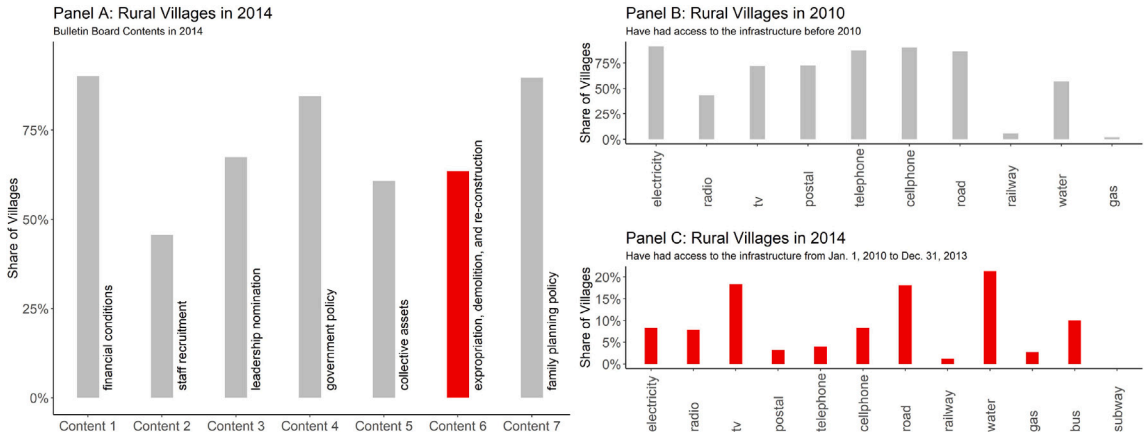

Fig. 7. Village committee bulletin contents and village infrastructure improvement. Notes: Panel A plots the share of villages that report the village committee posts the following contents on the bulletin board *when surveyed in 2014*: financial conditions, staff recruitment, nomination of village leaders, government policy, disposal of collective assets, major village events (land expropriation, housing demolition, and re-construction etc.), and implementation of family planning policy. Panel B plots the share of villages that have had access to the following infrastructure *before 2010*: electricity, cable radio, cable/satellite TV, postal service, telephone, cellphone signal/service, roads, railway, tap water, and pipeline gas. Panel C plots the share of villages that have had access to the following infrastructure *from January 1st, 2010 to December 31st, 2013*: electricity, cable radio, cable/satellite TV, postal service, telephone, cellphone signal/service, roads, railway, tap water, pipeline gas, public bus, and subway.
Source: China Family Panel Studies.

by Nie et al. (2019), which is a standardized score based on the fee for obtaining a food safety permit from a local government bureau and the total number of corruption-related news on Baidu (the largest Chinese search engine).[39] I also create a dummy indicating low (below-mean) government corruption. These two indices rank the degree of government transparency and corruption in Chinese cities (Beijing, Tianjin, Shanghai, Chongqing, and all prefectures) in 2018, which is the last year of my data. I will keep all observations for regression analysis and assume that the cross-sectional variation in each of these two indicators persists over time.

The main concern in this exercise is that individuals in regions with worse quality of governance may also experience shocks that are correlated with the timing of land expropriation and the time path of political outcomes, but this does not occur in regions with better governance. To control flexibly for community-specific shocks, I will allow the time fixed effects to be specific to each village.

Table 9 reports the estimated impacts obtained from regressions including the interaction terms.[40] In theory, one should expect that the coefficient on the interaction term is statistically significantly different from zero and its sign is opposite to the sign of the coefficient on the treatment dummy. Consistent with this conjuncture, I find that the adverse impacts on political trust can be mitigated when villages make information about expropriation publicly available (Panel A, columns 1 and 3), and when cities exhibit high government transparency (Panel B, columns 1 and 3) and low levels of government corruption (Panel C, columns 1 and 3). As for the effects on political conflict, I do not find evidence for a mitigating role of better local governance. Nevertheless, one can observe that the impacts on political conflict are only statistically significant and much larger in regions with better governance when I conduct a subgroup analysis and control for individual and time fixed effects (see Panel A of Table A.8).[41] Taken together, these results suggest that the adverse political impacts of land expropriation found by the baseline model are most likely to be driven by regions with worse governance quality. In line with the literature, these findings highlight the importance of sound local governance in implementing development projects in China (e.g., Park and Wang, 2010; He and Wang, 2017; Wong et al., 2017; Bardhan, 2020).

6.3. Project benefits

In theory, local residents could favor land expropriation projects if they support projects that create benefits for them.[42] In this case, the interests of local citizens and the government are aligned. As I have shown in Section 2, most of the expropriated agricultural land is used for public projects such as highway and railway construction, but at the same time, there is a nontrivial proportion of other (private) projects that are not necessarily beneficial for local households. The interests of local citizens and the government are more likely to be aligned when local governments carry out public programs that benefit local residents and improve their quality of life. In this circumstance, the political costs may be minimized. Relatedly, individuals who benefit from government programs are more likely to support the government (e.g., Manacorda et al., 2011; Huet-Vaughn, 2019). Thus, one should expect that the adverse political effects of land expropriation are more pronounced if the expropriated land is not used for public projects.

The CFPS data does not contain information on the usage of expropriated agricultural land, but it does provide information about whether or not the village has had access to particular types of infrastructure before 2010 or during 2010–2013. Fig. 7 depicts the share of villages that had access to various kinds of infrastructure before 2010 (Panel B) and during 2010–2013 (Panel C). One can see that although most villages already had access to basic infrastructure before 2010, there is a considerable proportion of villages that began to have access to basic infrastructure during 2010–2013 (more precisely, from 1 January 2010 to 31 December 2013). For example, among the sampled villages, about 18% (21%) of villages began to have access to roads (tap water) during this period.

[39] The former is indicative of how local governments issue business permits to firms: only charge a reasonable service fee or charge a much higher fee that suggests the existence of rent-seeking.

[40] I report the estimated impacts using different subsamples in Table A.8.

[41] Table A.9 reports the results of a regression interacting the treatment dummy with both high government transparency and low levels of government corruption, the findings are similar.

[42] Related to governance quality, at the local level, poorly governed villages may focus less on projects that provide public goods and may have more poorly designed projects which are less likely to be successful (e.g., Khwaja, 2009).

Table 9
Effects of land expropriation on political outcomes: Governance quality.
Source: China Family Panel Studies.

	Trust (1)	Conflict (2)	Trust (3)	Conflict (4)
Panel A: Bulletin information about expropriation in 2014				
Land expropriation	−0.7291***	0.0702	−0.6233***	0.0518*
	(0.2267)	(0.0539)	(0.1657)	(0.0300)
Land expro. X bulletin info. available	0.5794**	−0.0327	0.5270**	−0.0396
	(0.2835)	(0.0697)	(0.2041)	(0.0358)
Land expro. + land expro. X bulletin info. available	−0.1497	0.0374	−0.0962	0.0123
	(0.1723)	(0.0442)	(0.1192)	(0.0196)
# of villages	402	401	402	401
# of observations	50278	32597	50278	32597
Adj. R-squared	0.3368	0.1879	0.3541	0.2022
Panel B: Government transparency in 2018				
Land expropriation	−0.3680***	0.0313*	−0.3041***	0.0162
	(0.1292)	(0.0165)	(0.0902)	(0.0122)
Land expro. X high transparency	0.4023**	−0.0126	0.3162**	−0.0124
	(0.1779)	(0.0203)	(0.1446)	(0.0159)
Land expro. + land expro. X high transparency	0.0344	0.0187	0.0120	0.0039
	(0.1249)	(0.0120)	(0.1130)	(0.0103)
# of villages	1150	917	1150	917
# of observations	67007	64313	67007	64313
Adj. R-squared	0.3264	0.1507	0.3418	0.1850
Panel C: Government corruption in 2018				
Land expropriation	−0.3038**	0.0354**	−0.2833***	0.0074
	(0.1367)	(0.0141)	(0.1069)	(0.0109)
Land expro. X low corruption	0.2596	−0.0207	0.2562*	0.0040
	(0.1833)	(0.0197)	(0.1449)	(0.0157)
Land expro. + land expro. X low corruption	−0.0442	0.0146	−0.0271	0.0114
	(0.1251)	(0.0140)	(0.0978)	(0.0114)
# of villages	1150	917	1150	917
# of observations	67007	64313	67007	64313
Adj. R-squared	0.3263	0.1508	0.3418	0.1850
Individual fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	No	No
Village FEs X Time FEs	No	No	Yes	Yes

Notes: Unit of observation is the individual-year. In Panel A, the sample is a three-year panel (2014, 2016, and 2018) for columns 1 and 3, and a two-year panel (2014 and 2016) for columns 2 and 4. In Panels B and C, the sample is a four-year panel (2012, 2014, 2016, and 2018) for columns 1 and 3, and a four-year panel (2010, 2012, 2014, and 2016) for columns 2 and 4. Always-treated individuals are excluded in the regressions for Panels B and C. Trust towards local government officials is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust). Conflict with local government officials is a dummy that equals to 1 if the individual had conflicts with local government officials in the past year for the 2012, 2014, and 2016 waves, and equals to 1 if the individual has ever had conflicts with officials in history for the 2010 wave. Land expropriation is a dummy that is 1 if the individual is in a household whose land has ever been expropriated in a given year. "bulletin info. available" equals to 1 if the individual is in a village that reports the village committee posts information about land expropriation projects on the bulletin board in 2014, and 0 otherwise; "high transparency" equals to 1 if the individual is in a city whose transparency level is above the mean in 2018, and 0 otherwise; "low corruption" equals to 1 if the individual is in a city whose corruption level is below the mean in 2018, and 0 otherwise. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

I label the latter set of villages (i.e., the ones in Panel C of Fig. 7) as villages with infrastructure improvement during 2010–2013, and make use of them by assuming that land expropriation projects implemented in these villages during 2010–2013 generated public benefits.[43] Due to limited data, I restrict the sample to a two-year panel (2012 and 2014). I also drop individuals whose land was expropriated before 2010.[44] By doing so, I focus attention on villages that experienced infrastructure improvement during 2010–2013 and individuals who experienced land expropriation in the same period, and then examine whether or not individuals in villages with or without infrastructure improvement during 2010–2013 respond to land expropriation differently. Notice that villages without infrastructure improvement during 2010–2013 include those that already had access to basic infrastructure before 2010.

Table 10 presents the estimated impacts using an interaction term as for earlier tests.[45] Again, I expect the coefficient on the interaction term to be statistically significantly different from zero and the sign to be the opposite of the coefficient on the uninteracted treatment variable. Consistent with this hypothesis, I find that the effects on political trust is mitigated in villages with infrastructure improvement during 2010–2013, whether or not I control for village-year fixed time effects (columns 1 and 3). Although this is not significant for the effects on political conflict, it is worth noting that for political conflict the signs of the coefficients also are opposite as expected. Taken together,

[43] Villages with infrastructure improvement during 2010–2013 are the ones that have had access to at least one of the following infrastructure from January 1st, 2010 to December 31st, 2013: electricity, cable radio, cable/satellite TV, postal service, telephone, cellphone signal/service, roads, railway, tap water, pipeline gas, public bus, and subway.

[44] Recall that in the CFPS, the information on political trust is not available in the 2010 wave. While the information on political conflict is available in the 2010 wave, it is a dummy that is 1 if the individual has ever had conflicts with local officials in history, which might be related to expropriation events that happened before 2010. Thus, I drop the 2010 wave in the regressions in which political conflict is the outcome.

[45] The estimated impacts using different subsamples are reported in Table A.10.

Table 10
Effects of land expropriation on political outcomes: Project benefits.
Source: China Family Panel Studies.

	Trust (1)	Conflict (2)	Trust (3)	Conflict (4)
Land expropriation	−0.6262**	0.0058	−0.4313***	0.0061
	(0.2828)	(0.0220)	(0.1511)	(0.0155)
Land expro. X infrastructure improvement	0.7364*	−0.0067	0.4399*	−0.0110
	(0.3984)	(0.0412)	(0.2347)	(0.0251)
Land expro. + land expro. X infrastructure improvement	0.1102	−0.0010	0.0086	−0.0049
	(0.2823)	(0.0349)	(0.1797)	(0.0198)
# of villages	402	402	402	402
# of observations	38398	36372	38398	36372
Adj. R-squared	0.3444	0.1562	0.3661	0.1731
Individual fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	No	No
Village FEs X Time FEs	No	No	Yes	Yes

Notes: Unit of observation is the individual-year. The sample is a two-year panel (2012 and 2014) for columns 1–4. Trust towards local officials is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust) in a given year. Conflict with local officials is a dummy that equals to 1 if the individual had conflicts with local government officials in the past year. Land expropriation is a dummy that is 1 if the individual is in a household whose land has ever been expropriated in a given year. "infrastructure improvement" is a dummy variable, indicating that the individual is in a village that has had access to *at least* one of the following infrastructure from January 1st, 2010 to December 31st, 2013: electricity, cable radio, cable/satellite TV, postal service, telephone, cellphone signal/service, road, railway, tap water, pipeline gas, public bus, and subway. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

Table 11
Effects of land expropriation on political outcomes: Agricultural dependence.
Source: China Family Panel Studies.

	Trust (1)	Conflict (2)	Trust (3)	Conflict (4)
Land expropriation	−0.3429***	0.0389**	−0.2664**	0.0334***
	(0.1252)	(0.0157)	(0.1044)	(0.0118)
Land expro. X non-agricultural employment	0.1865	−0.0212	0.1238	−0.0316**
	(0.1886)	(0.0179)	(0.1684)	(0.0152)
Land expro. + land expro. X non-ag. employment	−0.1564	0.0176	−0.1427	0.0019
	(0.1552)	(0.0141)	(0.1411)	(0.0125)
# of villages	723	630	723	630
# of observations	46188	44732	46188	44732
Adj. R-squared	0.3270	0.1513	0.3480	0.1903
Individual fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	No	No
Village FEs X Time FEs	No	No	Yes	Yes

Notes: Unit of observation is the individual-year. The sample is a four-year panel (2012, 2014, 2016, and 2018) for columns 1 and 3, and a four-year panel (2010, 2012, 2014, and 2016) for columns 2 and 4. Always-treated individuals are excluded in the regressions for all columns. Trust towards local officials is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust) in a given year. Conflict with local officials is a dummy that equals to 1 if the individual had conflicts with local government officials in the past year. Land expropriation is a dummy that is 1 if the individual is in a household whose land has ever been expropriated in a given year. "non-agricultural employment" is a dummy variable, indicating that the individual is in a household that has *at least* one member working in the non-agricultural sector in the baseline year (2010). Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

the results suggest that land expropriation projects which generate development benefits for local residents can reduce or even offset the political costs of land expropriation.

6.4. Agricultural dependence

Since agricultural land in rural China is used mainly for generating food and income, to what extent the households depend on agriculture may also be important in determining the adverse political impacts. For example, if the households do not rely heavily on the agricultural sector before experiencing land expropriation, then having their land expropriated may not necessarily have adverse political effects. In contrast, a household with all adults working in agriculture may be sensitive to being exposed to land expropriation. In reality, China has been experiencing rapid structural transformation featuring a population flow from the agricultural to non-agricultural sectors and from rural to urban areas (e.g., Cai et al., 2008). Given the numerous non-agricultural employment opportunities during this process, agriculture becomes less important for the Chinese farmers to earn income. Thus, it is expected that the adverse political effects of land expropriation are more salient for the households with all members working in agriculture prior to having their land expropriated.

To examine the importance of the non-agricultural employment opportunities in determining the political effects of land expropriation, I interact the treatment indicator with a variable, indicating whether a household engages in the non-agricultural sector (either self-employed or hired by others). I use information in the baseline year (i.e., 2010) of the CFPS to construct the variable, which equals one if the household has at least one member working in the non-agricultural sector in 2010 and zero otherwise. Since I focus only on the information in 2010, households newly surveyed in the latter waves are dropped in the regressions. In the 2010 data, slightly more than 60% of rural households have all adult members working in agriculture; for the remaining households, at least one member engages in the non-agricultural sector (about 10% have all members working in the non-agricultural sector).

Table 11 presents the estimated effects obtained from regressions including the interaction term. Here, the coefficient on the interaction

term is expected to be statistically significantly different from zero and its sign is expected to be the opposite of the coefficient on the uninteracted treatment variable. Consistent with this conjuncture, I find that the adverse political impacts on political conflict can be reduced when households have members working in the non-agricultural sector (column 4). It is noteworthy that the signs of the coefficients in columns 1–3 also are opposite as expected. Furthermore, even though the effects on political trust are not statistically significant, we can see that the impacts on political trust are only statistically significantly different from zero and the magnitudes are much larger for households with all members working in agriculture in 2010 (see Table A.11).[46] Taken together, the results suggest that the political costs of land expropriation could be reduced when the households depend less (or even little) on the agricultural sector before having their land expropriated.

7. Conclusion

China has been employing land expropriation as a way to build infrastructure to develop the economy for several decades. On the one hand, it is clear that land expropriation is not always beneficial for affected households. Thus, it may occur at the expense of lost political support for the government. On the other hand, the government can provide public goods using the expropriated land or by spending the fiscal revenue generated from selling expropriated land on public goods. Therefore, whether land expropriation leads to political costs, and how detrimental are these costs, may depend on the specific context.

This study provides new insight on these questions in the context of China. By analyzing large-scale individual-level panel data from a nationally representative longitudinal survey in China, I find that land expropriation incurs political costs for the Chinese government due mainly to perceived unfairness of compensation. However, the adverse effects do not persist over many years and do not spill over to households whose land is not expropriated. Moreover, the adverse impacts appear to be driven by regions with worse governance quality and projects without public benefits. The results shed light on the state's trade-off between protecting property rights and pursuing development goals, and also suggest that citizens may be willing to sacrifice property rights security for potential development benefits. The empirical findings are not only of interest for better understanding China's development and politics, but they also have wider policy implications for developing countries: governments can generate development benefits and minimize the political costs by implementing better-designed land expropriation projects with sound governance that deliver benefits to local citizens.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

Appendix

See Figs. A.1–A.6 and Tables A.1–A.11.

[46] The estimated impacts using different subsamples are reported in Table A.11.

Table A.1
Usage of expropriated agricultural land.
Source: Ma and Mu (2020) (see their Table 1 and Footnote 28), who calculated the numbers from the 2013 and 2015 waves of the China Household Finance Survey (CHFS).

	During 2013–2015	Before 2013
	(1)	(2)
Highway and railway construction	48.15%	33%
Housing development	25.93%	33%
Community infrastructure building	24.07%	8%
Construction land used by enterprises	20.37%	–
Construction land used by governments	3.70%	–
Others	9.26%	–

Notes: The percentages do not add up to one as one household can report multiple usages. Because the CHFS data contain information on the usage of expropriated land is not publicly available to outside users, I directly cite the numbers from Ma and Mu (2020). Columns 1 and 2 are corresponding to their Table 1 and Footnote 28, respectively.

Table A.2
Effects of land expropriation on life satisfaction and depression.
Source: China Family Panel Studies.

	Life satisfaction	Depression
	(1)	(2)
Land expropriation	−0.0172	0.0264
	(0.0232)	(0.0251)
Land expro. mean	0.0890	0.0890
Land expro. SD	0.2848	0.2847
# of villages	2076	2129
# of observations	100541	107408
Adj. R-squared	0.2389	0.2750
Individual fixed effects	Yes	Yes
Time fixed effects	Yes	Yes

Note: Unit of observation is the individual-year. The sample is a five-year panel (2010, 2012, 2014, 2016, and 2018). Life satisfaction is a categorical variable. Depression is an index constructed from various questions asked in the CFPS survey. Both outcomes are standardized within each survey wave (thus, both have a mean of zero and a SD of one). Land expropriation is a dummy that is 1 if the individual is in a household whose land has ever been expropriated in a given year. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

Table A.3
Effect of land expropriation on attrition.
Source: China Family Panel Studies.

	Attrition
	(1)
Land expropriation	−0.0025
	(0.0112)
# of villages	1013
# of observations	28455
Adj. R-squared	0.6936
Wave fixed effects	Yes
Village fixed effects	Yes

Note: Unit of observation is the individual. The panel data is reduced to cross-sectional data. Attrition is a dummy indicating whether the individual attrits from the sample or not during the sample period (2010–2018). Land expropriation is a dummy that is 1 if the individual is in a household whose land has ever been expropriated in a given year. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

Table A.4
The time-invariant determinants of land expropriation.
Source: China Family Panel Studies.

	Land expropriation					
	Individual		Household		Village	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	0.3402***		0.3836***		1.0446***	
	(0.0315)		(0.0416)		(0.0341)	
Panel A: Individual-level Characteristics						
Male	−0.0023	−0.0022				
	(0.0025)	(0.0023)				
Han	−0.0761**	−0.0079				
	(0.0327)	(0.0179)				
CCP membership	−0.0234**	0.0009				
	(0.0105)	(0.0073)				
Panel B: Household-level Characteristics						
Family genealogy			−0.0045	−0.0069		
			(0.0173)	(0.0131)		
Distance to nearest high school (km)			−0.0422***	0.0093		
			(0.0107)	(0.0098)		
Distance to nearest medical clinic (km)			−0.0144	−0.0077		
			(0.0118)	(0.0107)		
Distance to nearest marketplace (min)			0.0004	−0.0127*		
			(0.0098)	(0.0075)		
Panel C: Village-level Characteristics						
Ancestral hall					0.0266	−0.0660
					(0.0354)	(0.0660)
Any clan with population share >=10%					−0.0435	0.0011
					(0.0427)	(0.0523)
# of clans with population share >=10%					0.0138	0.0055
					(0.0091)	(0.0088)
Minority area					−0.0144	−0.0011
					(0.0184)	(0.0168)
Natural resource area					−0.0008	−0.0103
					(0.0126)	(0.0115)
Distance to town center (km)					−0.0084	0.0072
					(0.0189)	(0.0217)
Distance to county center (km)					−0.0327***	−0.0295**
					(0.0112)	(0.0138)
# of villages/counties	454	454	418	418	141	141
# of observations	33204	33204	9206	9206	457	457
Adj. R-squared	0.0030	0.2485	0.0103	0.2254	0.0102	0.1288
Village fixed effects	No	Yes	No	Yes	No	No
County fixed effects	No	No	No	No	No	Yes

Notes: Unit of observation is the individual for columns 1–2, the household for columns 3–4, and the village for columns 5–6. Land expropriation is a dummy that is 1 if the individual/household/village has experienced land expropriation in the sample period. At the individual level, I check for gender dummy, *han* indicator, and Chinese Communist Party (CCP) membership dummy; at the household level, I check for family genealogy dummy, the distance between the household's geographical location to the nearest high school (kilometers), medical clinic (kilometers), and marketplace (minutes by walking); at the village level. I check for whether the village has a ancestral hall or a clan with population share >= 10%, the number of clans with population share >= 10%, whether it belongs to a minority area or a natural resource area, and its distance to town center (kilometers) or county center (kilometers). Robust standard errors in parentheses are clustered at the village/county level for columns 1–4/5–6. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

Table A.5
Dynamic effects of land expropriation on political outcomes.
Source: China Family Panel Studies.

	Trust towards local officials		Conflict with local officials	
	Unbalanced (1)	Balanced (2)	Unbalanced (3)	Balanced (4)
Panel A: Two-way fixed-effect				
6 years before	−0.0869	−0.0319	−0.0117	−0.0143
	(0.1520)	(0.1419)	(0.0239)	(0.0219)
4 years before	−0.0174	0.0319	0.0035	0.0053
	(0.1048)	(0.1074)	(0.0131)	(0.0126)
0	−0.2382***	−0.2442**	0.0238**	0.0262**
	(0.0896)	(0.1022)	(0.0106)	(0.0114)
2 years after	−0.1732	−0.1367	0.0247**	0.0292**
	(0.1114)	(0.1209)	(0.0117)	(0.0119)
4 years after	0.0989	0.1113	0.0199	0.0291**
	(0.1679)	(0.1698)	(0.0143)	(0.0144)
# of observations	78329	46400	73440	42827
Adj. R-squared	0.3239	0.3339	0.1403	0.1547
	Trust towards local officials		Conflict with local officials	
	Unbalanced (1)	Balanced (2)	Unbalanced (3)	Balanced (4)
Panel B: Sun and Abraham 2021				
6 years before	−0.1578	−0.0513	−0.0104	−0.0117
	(0.1639)	(0.1546)	(0.0235)	(0.0245)
4 years before	−0.0473	0.0093	0.0043	0.0059
	(0.1129)	(0.1141)	(0.0135)	(0.0131)
0	−0.2767***	−0.2802***	0.0276**	0.0267**
	(0.0925)	(0.1045)	(0.0109)	(0.0118)
2 years after	−0.2039*	−0.1674	0.0214*	0.0226*
	(0.1181)	(0.1319)	(0.0126)	(0.0130)
4 years after	0.0547	0.0869	0.0145	0.0317
	(0.1736)	(0.1924)	(0.0248)	(0.0228)
# of observations	78363	45828	73474	42425
Adj. R-squared	0.3240	0.3343	0.1406	0.1538
Individual fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes

Notes: Unit of observation is the individual-year. The sample is a four-year panel (2012, 2014, 2016, and 2018) for columns 1–2 and a four-year panel (2010, 2012, 2014, and 2016) for column 3–4. The sample excludes individuals who had their land expropriated before 2012 (2010) for columns 1–2 (columns 3–4). Trust towards local government officials is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust). Conflict with local government officials is a dummy that equals to 1 if the individual had conflicts with local government officials. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

Table A.6
Dynamic effects of land expropriation on additional political outcomes.
Source: China Family Panel Studies.

	Unfair treatment by local officials		Unreasonable delay at local agencies		Evaluation of performance of county government		Perception of severity of nationwide corruption	
	Unbalanced (1)	Balanced (2)	Unbalanced (3)	Balanced (4)	Unbalanced (5)	Balanced (6)	Unbalanced (7)	Balanced (8)
Panel A: Two-way fixed-effect								
8 years before					−0.0159	−0.0569		
					(0.0672)	(0.0679)		
6 years before	−0.0166	−0.0064	0.0067	0.0110	−0.0139	−0.0256	0.2043	0.2671
	(0.0153)	(0.0170)	(0.0179)	(0.0197)	(0.0451)	(0.0522)	(0.1959)	(0.2086)
4 years before	−0.0131	−0.0025	−0.0017	0.0022	−0.0392	−0.0600	0.2140	0.2699
	(0.0149)	(0.0147)	(0.0151)	(0.0167)	(0.0382)	(0.0403)	(0.1381)	(0.1642)
0	0.0352***	0.0325**	0.0422***	0.0410***	0.0260	0.0200	0.2612**	0.2108*
	(0.0136)	(0.0145)	(0.0139)	(0.0156)	(0.0313)	(0.0351)	(0.1146)	(0.1258)
2 years after	0.0154	0.0201	0.0296	0.0277	0.0391	0.0328	0.2634*	0.2142
	(0.0183)	(0.0180)	(0.0193)	(0.0219)	(0.0435)	(0.0422)	(0.1468)	(0.1795)
4 years after	0.0004	0.0017	0.0095	0.0090	0.0197	−0.0015	0.0261	−0.1115
	(0.0200)	(0.0210)	(0.0240)	(0.0261)	(0.0463)	(0.0485)	(0.2076)	(0.2324)
6 years after					−0.0240	−0.0208		
					(0.0636)	(0.0679)		
# of villages	1501	842	1502	842	2047	1119	2030	1094
# of observations	73422	40634	72897	40387	92562	52142	70658	39808
Adj. R-squared	0.5158	0.4513	0.5276	0.4602	0.4802	0.4139	0.5220	0.4484
	Unfair treatment by local officials		Unreasonable delay at local agencies		Evaluation of performance of county government		Perception of severity of nationwide corruption	
	Unbalanced (1)	Balanced (2)	Unbalanced (3)	Balanced (4)	Unbalanced (5)	Balanced (6)	Unbalanced (7)	Balanced (8)
Panel B: Sun and Abraham 2021								
8 years before					0.0157	−0.0433		
					(0.0741)	(0.0759)		
6 years before	−0.0475	−0.0436	−0.0239	−0.0200	0.0209	0.0012	0.0093	0.0158
	(0.0304)	(0.0318)	(0.0364)	(0.0365)	(0.0585)	(0.0650)	(0.0744)	(0.0758)
4 years before	−0.0097	0.0014	0.0067	0.0149	−0.0436	−0.0472	0.0589	0.0888
	(0.0207)	(0.0215)	(0.0200)	(0.0213)	(0.0463)	(0.0492)	(0.0550)	(0.0563)
0	0.0321**	0.0284*	0.0432***	0.0461***	0.0239	0.0349	0.0849**	0.0841*
	(0.0152)	(0.0170)	(0.0155)	(0.0161)	(0.0372)	(0.0437)	(0.0427)	(0.0441)
2 years after	0.0086	0.0163	0.0229	0.0257	0.0216	0.0211	0.1148*	0.1061
	(0.0198)	(0.0205)	(0.0238)	(0.0239)	(0.0558)	(0.0522)	(0.0641)	(0.0679)
4 years after	0.0032	0.0071	−0.0002	−0.0014	−0.0025	−0.0192	−0.0227	−0.0666
	(0.0364)	(0.0372)	(0.0385)	(0.0391)	(0.0681)	(0.0647)	(0.0911)	(0.0947)
6 years after					−0.1829	−0.1501		
					(0.1168)	(0.1160)		
# of observations	73460	42386	72937	42099	92622	46466	70715	41334
Adj. R-squared	0.2003	0.2140	0.2178	0.2203	0.2225	0.2282	0.2197	0.2203
Individual fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Unit of observation is the individual-year. The sample is a four-year panel (2010, 2012, 2014, and 2016) for columns 1–4, a five-year panel (2010, 2012, 2014, 2016, and 2018) for columns 5–6, and a four-year panel (2012, 2014, 2016, and 2018) for columns 7–8. Unfair treatment refers to an individual's experience of being unfairly treated by *local government officials*, which is a dummy variable that is 1 if the individual had such experience in the past year and 0 otherwise. Unreasonable delay (stalling) refers to that when citizens come to *local government agencies*, government officials will shirk responsibility rather than helping them ("kicking balls"), which is a dummy variable that is 1 if the individual had such experience in the past year and 0 otherwise. Evaluation of performance refers to an individual's evaluation of *county government performance* in the past year, which is ranged from 1 to 5 (much worse, worse, the same, better, much better). Perception of corruption refers to an individual's perception of the severity of *nationwide government corruption* in China, which is ranged from 0 (extremely low) to 10 (extremely high). Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

Table A.7
Dynamic effects of land expropriation on household outcomes.
Source: China Family Panel Studies.

	Agricultural inomce per capita (log)		Land assets per capita (log)		At least one member migrated (dummy)		Salary income per capita (log)		Total income per capita (log)		Food consumption per capita (log)		Saving assets per capita (log)	
	Unbalanced (1)	Balanced (2)	Unbalanced (3)	Balanced (4)	Unbalanced (5)	Balanced (6)	Unbalanced (7)	Balanced (8)	Unbalanced (9)	Balanced (10)	Unbalanced (11)	Balanced (12)	Unbalanced (13)	Balanced (14)
Panel A: Two-way fixed-effect														
6+ years before	0.0448	0.0953	−0.1961	−0.1300	0.0042	0.0186	−0.0881	−0.0795	−0.0235	−0.0352	0.0575	−0.0033	0.0182	0.0519
	(0.1772)	(0.1780)	(0.1853)	(0.1856)	(0.0314)	(0.0324)	(0.2050)	(0.2154)	(0.0636)	(0.0635)	(0.0687)	(0.0685)	(0.1996)	(0.2068)
4 years before	0.0218	0.0453	−0.1327	−0.1044	0.0064	0.0229	−0.0787	−0.0312	−0.0287	−0.0254	−0.0172	−0.0717	0.1106	0.1177
	(0.1443)	(0.1507)	(0.1510)	(0.1555)	(0.0308)	(0.0317)	(0.1712)	(0.1777)	(0.0568)	(0.0567)	(0.0559)	(0.0562)	(0.1808)	(0.1959)
0	−0.0482	−0.0991	−0.3688**	−0.3998**	0.0582**	0.0777***	0.2282	0.3794**	0.0014	0.0352	0.0252	−0.0346	0.3211*	0.4094**
	(0.1307)	(0.1427)	(0.1633)	(0.1776)	(0.0263)	(0.0286)	(0.1537)	(0.1655)	(0.0537)	(0.0551)	(0.0501)	(0.0510)	(0.1776)	(0.1929)
2 years after	−0.2778*	−0.2990**	−0.2819	−0.3306*	0.0690**	0.0874***	0.3081*	0.3150*	0.0482	0.0613	−0.0084	−0.0394	0.1037	0.1683
	(0.1450)	(0.1513)	(0.1839)	(0.1872)	(0.0319)	(0.0326)	(0.1725)	(0.1723)	(0.0573)	(0.0561)	(0.0528)	(0.0539)	(0.2187)	(0.2236)
4 years after	−0.3435*	−0.2625	−0.4747**	−0.3908*	0.0631*	0.0730**	0.1760	0.2342	−0.0555	−0.0282	0.0265	−0.0047	0.2042	0.2233
	(0.1990)	(0.1956)	(0.2247)	(0.2237)	(0.0340)	(0.0340)	(0.1966)	(0.1972)	(0.0879)	(0.0889)	(0.0649)	(0.0676)	(0.2377)	(0.2450)
6 years after	−0.3431	−0.2352	−0.2861	−0.1763	0.0454	0.0544	0.1723	0.2163	0.1480	0.1489	0.1380*	0.1156	0.3222	0.3610
	(0.2590)	(0.2549)	(0.3104)	(0.3087)	(0.0417)	(0.0409)	(0.2508)	(0.2501)	(0.1162)	(0.1155)	(0.0775)	(0.0746)	(0.3313)	(0.3303)
# of observations	38997	27939	42184	30567	31735	22693	42220	30578	40394	29626	40959	29753	42211	30560
Adj. R-squared	0.5679	0.5338	0.5284	0.4687	0.2812	0.2856	0.3993	0.3817	0.3648	0.2971	0.3368	0.2819	0.3619	0.3510
	Agricultural inomce per capita (log)		Land assets per capita (log)		At least one member migrated (dummy)		Salary income per capita (log)		Total income per capita (log)		Food consumption per capita (log)		Saving assets per capita (log)	
	Unbalanced (1)	Balanced (2)	Unbalanced (3)	Balanced (4)	Unbalanced (5)	Balanced (6)	Unbalanced (7)	Balanced (8)	Unbalanced (9)	Balanced (10)	Unbalanced (11)	Balanced (12)	Unbalanced (13)	Balanced (14)
Panel B: Sun and Abraham 2021														
6 years before	0.0766	0.0227	0.5089	0.4464	0.0031	0.0179	−0.3898	−0.2479	−0.0008	0.0323	−0.2043	−0.1955	0.1657	−0.0309
	(0.2563)	(0.2780)	(0.3176)	(0.3018)	(0.0781)	(0.0828)	(0.4191)	(0.4182)	(0.1382)	(0.1399)	(0.1551)	(0.1616)	(0.6327)	(0.6663)
4 years before	−0.1944	−0.2602	0.1350	0.0886	−0.0891	−0.1015	−0.4297	−0.5388*	−0.0443	−0.0599	−0.1452	−0.1592	0.1395	0.1459
	(0.2108)	(0.2252)	(0.3051)	(0.3055)	(0.0729)	(0.0702)	(0.3304)	(0.3265)	(0.1154)	(0.1199)	(0.1398)	(0.1342)	(0.3445)	(0.3472)
0	−0.3810	−0.6126**	−0.2890	−0.4285	−0.0656	−0.0641	−0.1612	−0.3485	0.1000	0.0502	0.1366	0.0873	0.1707	−0.0192
	(0.2802)	(0.3056)	(0.2753)	(0.2863)	(0.0495)	(0.0492)	(0.2653)	(0.2852)	(0.1031)	(0.1101)	(0.0962)	(0.1022)	(0.3063)	(0.3342)
2 years after	−0.2015	−0.3450	−0.6937**	−0.7885**	−0.0059	0.0002	−0.1179	−0.1499	−0.0235	−0.0676	0.1131	0.0676	0.1112	0.0455
	(0.3116)	(0.3310)	(0.3221)	(0.3244)	(0.0497)	(0.0510)	(0.3451)	(0.3507)	(0.1424)	(0.1538)	(0.1086)	(0.1208)	(0.3931)	(0.4393)
4 years after	−0.3932	−0.2679	−0.7593*	−0.7076*	0.1027	0.1229	0.6228	0.4263	0.2211	0.1654	0.2501*	0.1791	0.3868	0.3380
	(0.3605)	(0.3736)	(0.4005)	(0.4068)	(0.0774)	(0.0777)	(0.3906)	(0.3902)	(0.1359)	(0.1365)	(0.1497)	(0.1683)	(0.4367)	(0.4639)
6 years after	−0.6196	−0.6993	−1.0094*	−0.8567	0.0180	−0.0083	0.3473	0.1608	0.1925	0.2547	0.1482	0.0710	0.1934	0.3133
	(0.5363)	(0.5762)	(0.6010)	(0.6023)	(0.0709)	(0.0779)	(0.5253)	(0.5946)	(0.1855)	(0.1841)	(0.2196)	(0.2558)	(0.4991)	(0.5773)
# of observations	34879	27909	37880	30574	27671	22616	37901	30588	36499	29626	36739	29780	37897	30570
Adj. R-squared	0.5390	0.5321	0.4758	0.4617	0.2808	0.2822	0.3831	0.3801	0.2973	0.2919	0.2782	0.2778	0.3473	0.3464
Individual fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Unit of observation is the household-year. The sample is a five-year panel (2010, 2012, 2014, 2016, and 2018). The sample excludes households whose land has been expropriated before 2010. Following Sun and Abraham (2021), two periods are dropped in the regression in Panel B. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

Table A.8
Effects of land expropriation on political outcomes by governance quality.
Source: China Family Panel Studies.

	Trust towards officials		Conflict with officials		Trust towards officials		Conflict with officials		Trust towards officials		Conflict with officials	
	Bulletin info. available in 2014				*Government transparency in 2018*				*Government corruption in 2018*			
	No (1)	Yes (2)	No (3)	Yes (4)	Low (5)	High (6)	Low (7)	High (8)	High (9)	Low (10)	High (11)	Low (12)
Panel A: Individual and time fixed effects												
Land expropriation	−0.6685***	−0.1884	0.0675**	0.0393	−0.3634***	0.0210	0.0334**	0.0156	−0.2703*	−0.0744	0.0369***	0.0133
	(0.1638)	(0.1717)	(0.0327)	(0.0440)	(0.1288)	(0.1289)	(0.0164)	(0.0124)	(0.1405)	(0.1255)	(0.0143)	(0.0141)
Adj. R-squared	0.6637	0.6560	0.7206	0.6933	0.5755	0.6065	0.4762	0.5048	0.6009	0.5763	0.4828	0.4947
F-test: *Chi-sq.* [*p-value*]	2.8293[0.0926]		0.1635[0.6859]		4.4627[0.0346]		0.7497[0.3866]		1.0809[0.2985]		1.3955[0.2375]	
Panel B: Individual and village-by-year fixed effects												
Land expropriation	−0.6233***	−0.0962	0.0518*	0.0123	−0.3041***	0.0120	0.0162	0.0039	−0.2833***	−0.0265	0.0074	0.0114
	(0.1660)	(0.1192)	(0.0300)	(0.0196)	(0.0903)	(0.1131)	(0.0122)	(0.0103)	(0.1070)	(0.0979)	(0.0109)	(0.0114)
Adj. R-squared	0.6816	0.6747	0.7337	0.7086	0.6038	0.6337	0.5129	0.5494	0.6279	0.6050	0.5297	0.5294
F-test: *Chi-sq.* [*p-value*]	3.2781[0.0702]		0.4173[0.5183]		2.7397[0.0979]		0.3424[0.5584]		1.8000[0.1797]		0.0367[0.8480]	
Land expro. mean	0.0674	0.1087	0.0537	0.0860	0.0576	0.0724	0.0594	0.0838	0.0624	0.0656	0.0653	0.0751
Land expro. SD	0.2507	0.3113	0.2255	0.2804	0.2330	0.2591	0.2363	0.2771	0.2419	0.2476	0.2471	0.2636
Dep. var. mean	5.3671	5.3049	0.0400	0.0442	5.2109	5.2039	0.0473	0.0487	5.1757	5.2381	0.0473	0.0485
Dep. var. SD	2.7260	2.7081	0.1959	0.2056	2.6762	2.6554	0.2122	0.2153	2.7323	2.6036	0.2122	0.2149
# of villages	150	252	150	251	576	576	461	457	577	575	461	457
# of observations	19272	31006	12605	19992	37675	29332	35334	28979	32551	34456	30945	33368

Notes: Unit of observation is the individual-year. The sample is a three-year panel (2014, 2016, and 2018) for columns 1–2, a two-year panel (2014 and 2016) for columns 3–4, a four-year panel (2012, 2014, 2016, and 2018) for columns 5–6, 9–10, and 13–14, and a four-year panel (2010, 2012, 2014, and 2016) for columns 7–8, 11–12, and 15–16. Trust towards local government officials is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust). Conflict with local government officials is a dummy that equals to 1 if the individual had conflicts with local government officials in the past year for the 2012, 2014, and 2016 waves, and equals to 1 if the individual has ever had conflicts with officials in history for the 2010 wave. Land expropriation is a dummy that is 1 if the individual is in a household whose land has ever been expropriated in a given year. The sample is divided into subsamples based on: *(i)* whether the village reports that the village committee posts information about land expropriation projects on the bulletin board when surveyed in 2014; *(ii)* the degree of government transparency at the city level; and *(iii)* the degree of government corruption at the city level. The null of the *F*-test is there is no difference between the two coefficients estimated from using different subsamples. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

Table A.9
Effects of land expropriation on political outcomes: Governance quality.
Source: China Family Panel Studies.

	Trust (1)	Conflict (2)	Trust (3)	Conflict (4)
Land expropriation	−0.5059***	0.0430**	−0.4453***	0.0142
	(0.1623)	(0.0191)	(0.1179)	(0.0139)
Land expro. X high transparency	0.4073**	−0.0136	0.3227**	−0.0123
	(0.1759)	(0.0199)	(0.1427)	(0.0159)
Land expro. X low corruption	0.2672	−0.0214	0.2642*	0.0036
	(0.1761)	(0.0195)	(0.1424)	(0.0156)
Land expro. + expro. X high trans. + expro. X low corrupt.	0.1686	0.0081	0.1417	0.0056
	(0.1534)	(0.0156)	(0.1301)	(0.0129)
# of villages	1150	917	1150	917
# of observations	67007	64313	67007	64313
Adj. R-squared	0.3264	0.1508	0.3418	0.1850
Individual fixed effects	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	No	No
Village FEs X Time FEs	No	No	Yes	Yes

Notes: Unit of observation is the individual-year. The sample is a four-year panel (2012, 2014, 2016, and 2018) for columns 1 and 3, and a four-year panel (2010, 2012, 2014, and 2016) for columns 2 and 4. Trust towards local government officials is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust). Conflict with local government officials is a dummy that equals to 1 if the individual had conflicts with local government officials in the past year for the 2012, 2014, and 2016 waves, and equals to 1 if the individual has ever had conflicts with officials in history for the 2010 wave. Land expropriation is a dummy that is 1 if the individual is in a household whose land has ever been expropriated in a given year. ''high transparency'' equals to 1 if the individual is in a city whose transparency level is above the mean in 2018, and 0 otherwise; ''low corruption'' equals to 1 if the individual is in a city whose corruption level is below the mean in 2018, and 0 otherwise. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

Table A.10
Effects of land expropriation on political outcomes by project benefits.
Source: China Family Panel Studies.

	Trust towards local officials		Conflict with local officials	
	Village infrastructure improvement during 2010–2013			
	Yes (1)	No (2)	Yes (3)	No (4)
Panel A: Individual and time fixed effects				
Land expropriation	0.0316	−0.5373*	0.0021	0.0023
	(0.1687)	(0.2818)	(0.0209)	(0.0224)
Adj. R-squared	0.3259	0.3645	0.1459	0.1688
F-test: *Chi-sq.* [*p-value*]	2.0218[0.1551]		0.0000[0.9963]	
Panel B: Individual and village-by-year fixed effects				
Land expropriation	0.0086	−0.4313***	−0.0049	0.0061
	(0.1799)	(0.1513)	(0.0198)	(0.0155)
Adj. R-squared	0.3520	0.3806	0.1675	0.1800
F-test: *Chi-sq.* [*p-value*]	1.1526[0.2830]		0.0656[0.7979]	
Land expro. mean	0.1102	0.1025	0.1105	0.1027
Land expro. SD	0.3131	0.3033	0.3135	0.3036
Dep. var. mean	5.3028	5.1967	0.0413	0.0387
Dep. var. SD	2.5830	2.6210	0.1990	0.1929
# of villages	206	196	206	196
# of observations	19962	18436	18887	17485

Notes: Unit of observation is the individual-year. The sample is a two-year panel (2012 and 2014) for columns 1–4. Trust towards local officials is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust) in a given year. Conflict with local officials is a dummy that equals to 1 if the individual had conflicts with local government officials in the past year. Land expropriation is a dummy that is 1 if the individual is in a household whose land has ever been expropriated in a given year. The sample is divided into subgroups based on whether the village has had access to *at least* one of the following infrastructure from January 1st, 2010 to December 31st, 2013: electricity, cable radio, cable/satellite TV, postal service, telephone, cellphone signal/service, road, railway, tap water, pipeline gas, public bus, and subway. The null of the *F*-test is there is no difference between the two coefficients estimated from using different subsamples. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

Table A.11
Effects of land expropriation on political outcomes by agricultural dependence.
Source: China Family Panel Studies.

	Trust towards local officials		Conflict with local officials	
	Non-agricultural employment in 2010			
	No	Yes	No	Yes
	(1)	(2)	(3)	(4)
Panel A: Individual and time fixed effects				
Land expropriation	−0.3460***	−0.1517	0.0420***	0.0131
	(0.1284)	(0.1549)	(0.0163)	(0.0138)
Adj. R-squared	0.3016	0.3584	0.1335	0.1780
F-test: *Chi-sq.* [*p-value*]	1.0071[0.3156]		2.4161[0.1201]	
Panel B: Individual and village-by-year fixed effects				
Land expropriation	−0.3183***	−0.2137	0.0365***	−0.0094
	(0.1111)	(0.1513)	(0.0130)	(0.0126)
Adj. R-squared	0.3269	0.3814	0.1873	0.2098
F-test: *Chi-sq.* [*p-value*]	1.0071[0.3156]		4.0997[0.0429]	
Land expro. mean	0.0659	0.0754	0.0739	0.0895
Land expro. SD	0.2482	0.2641	0.2616	0.2855
Dep. var. mean	5.4764	5.1271	0.0505	0.0451
Dep. var. SD	2.6438	2.5994	0.2190	0.2076
# of villages	519	551	465	511
# of observations	27751	18437	26163	18569

Notes: Unit of observation is the individual-year. The sample is a four-year panel (2012, 2014, 2016, and 2018) for columns 1–2, and a four-year panel (2010, 2012, 2014, and 2016) for columns 3–4. Trust towards local officials is a categorical variable ranged from 0 (extremely low trust) to 10 (extremely high trust) in a given year. Conflict with local officials is a dummy that equals to 1 if the individual had conflicts with local government officials in the past year. Land expropriation is a dummy that is 1 if the individual is in a household whose land has ever been expropriated in a given year. The sample is divided into subgroups based on whether the household has at least one member working in the non-agricultural sector in the baseline year 2010. The null of the *F*-test is there is no difference between the two coefficients estimated from using different subsamples. Robust standard errors in parentheses are clustered at the village (of current residence) level. ***: significant at 1%; **: significant at 5%; *: significant at 10%.

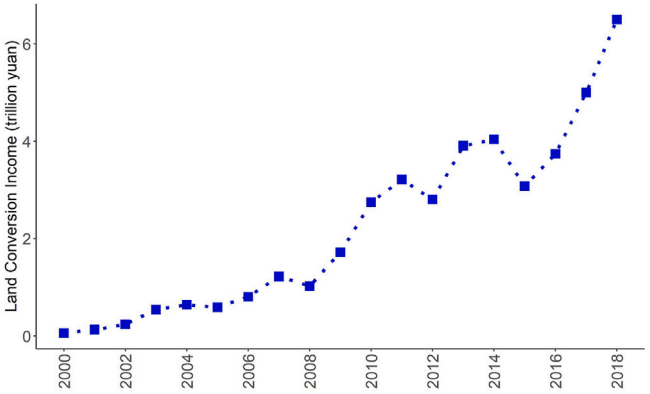

Fig. A.1. Annual land conversion income at the national level. Note: The black squares plot annual land conversion income; the monetary unit is one *trillion yuan*. *Source:* Ministry of Finance of China.

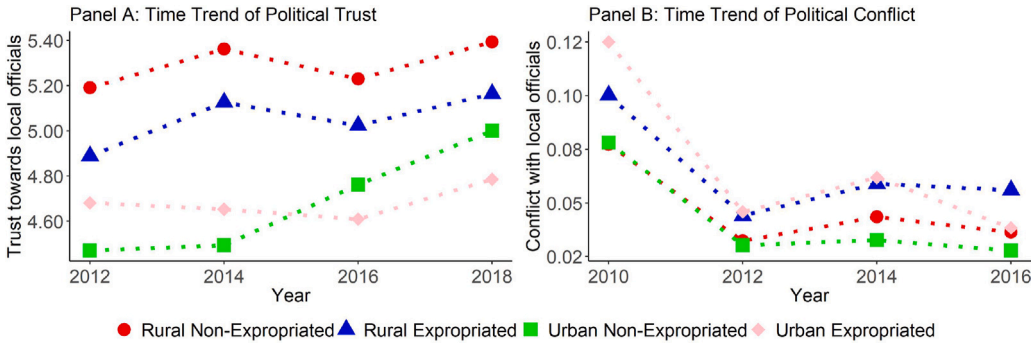

Fig. A.2. The time trend of political outcomes by group. Notes: The figure plots the time evolution of political outcomes (mean of all the individual-year observations) by group. In Panels A and B, red line is the time trend of the outcome for rural non-expropriated group, blue line for rural expropriated group, green line for urban non-expropriated group, and pink line for urban expropriated group. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)
Source: China Family Panel Studies.

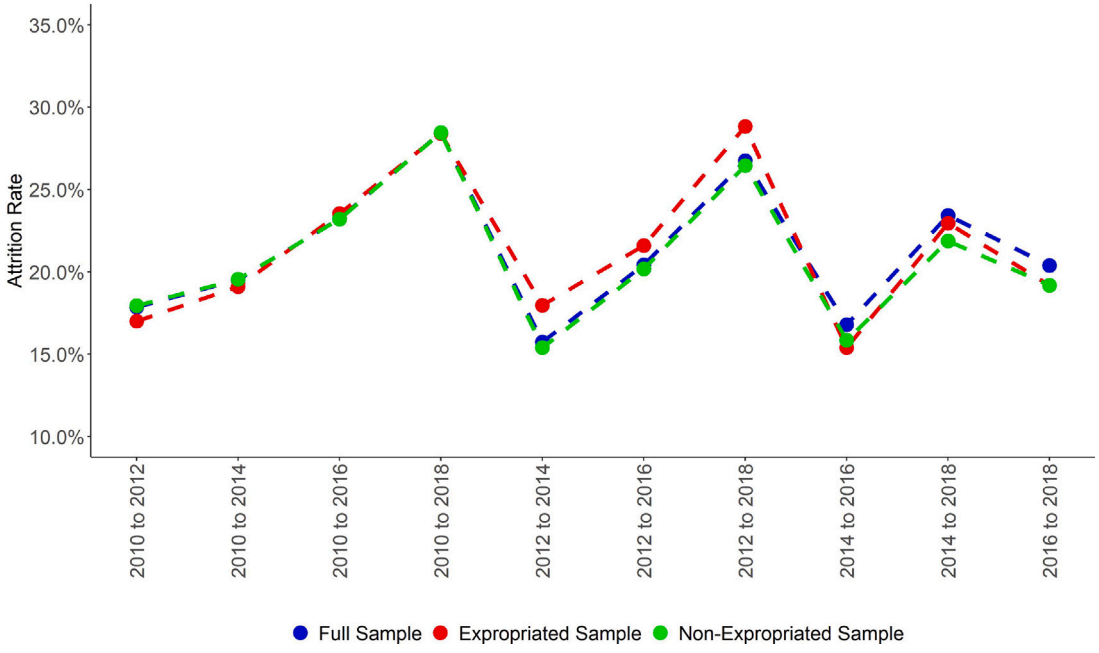

Fig. A.3. CFPS sample attrition rate. Notes: Blue circles indicate the attrition rate between every two consecutive years for the constructed sample, red triangles for the expropriated sample, green rectangles for the non-expropriated sample.
Source: China Family Panel Studies.

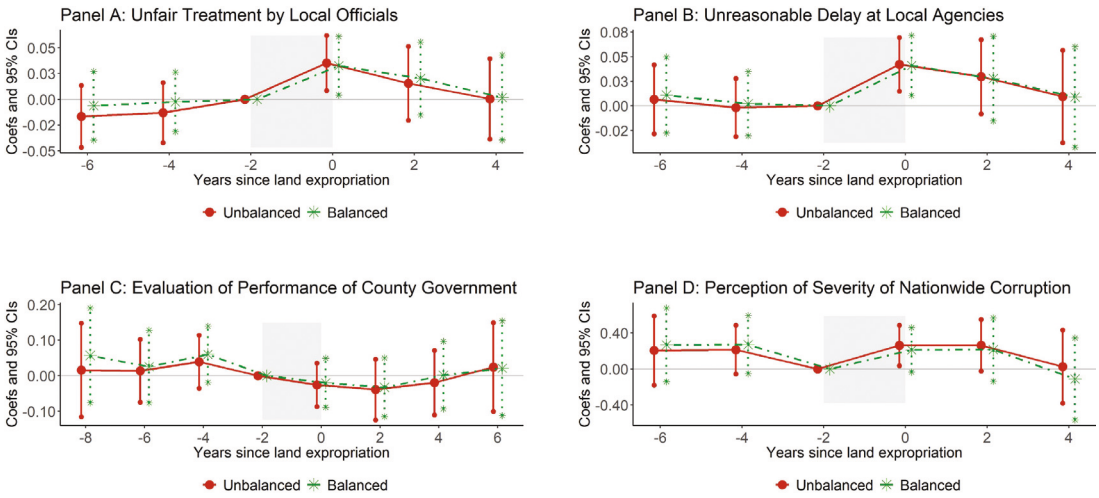

Fig. A.4. Dynamic effects of land expropriation on additional political outcomes. Notes: Unit of observation is the individual-year. The sample is a four-year panel (2010, 2012, 2014, and 2016) for Panels A and B, a five-year panel (2010, 2012, 2014, 2016, and 2018) for Panel C, and a four-year panel (2012, 2014, 2016, and 2018) for Panel D. The sample excludes always-expropriated individuals. The shaded region indicates the expropriation was happening during this time period. The CFPS survey is conducted in every two years, thus, the gap between two consecutive periods is two years (the horizontal axis).
Source: China Family Panel Studies.

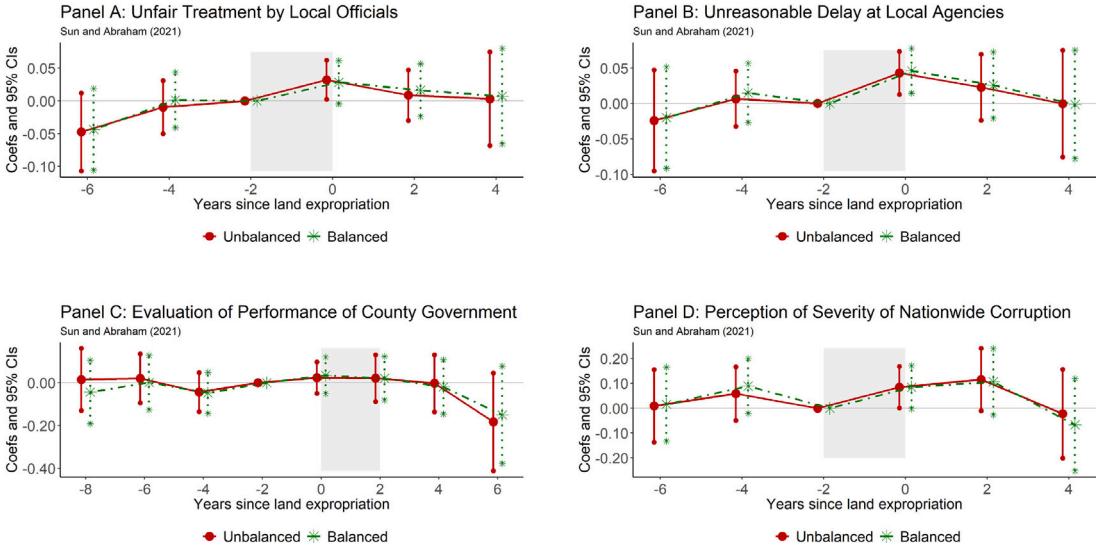

Fig. A.5. Dynamic effects of land expropriation on additional political outcomes. Notes: Unit of observation is the individual-year. The sample is a four-year panel (2010, 2012, 2014, and 2016) for Panels A and B, a five-year panel (2010, 2012, 2014, 2016, and 2018) for Panel C, and a four-year panel (2012, 2014, 2016, and 2018) for Panel D. The sample excludes always-expropriated individuals. The shaded region indicates the expropriation was happening during this time period. The CFPS survey is conducted in every two years, thus, the gap between two consecutive periods is two years (the horizontal axis).
Source: China Family Panel Studies.

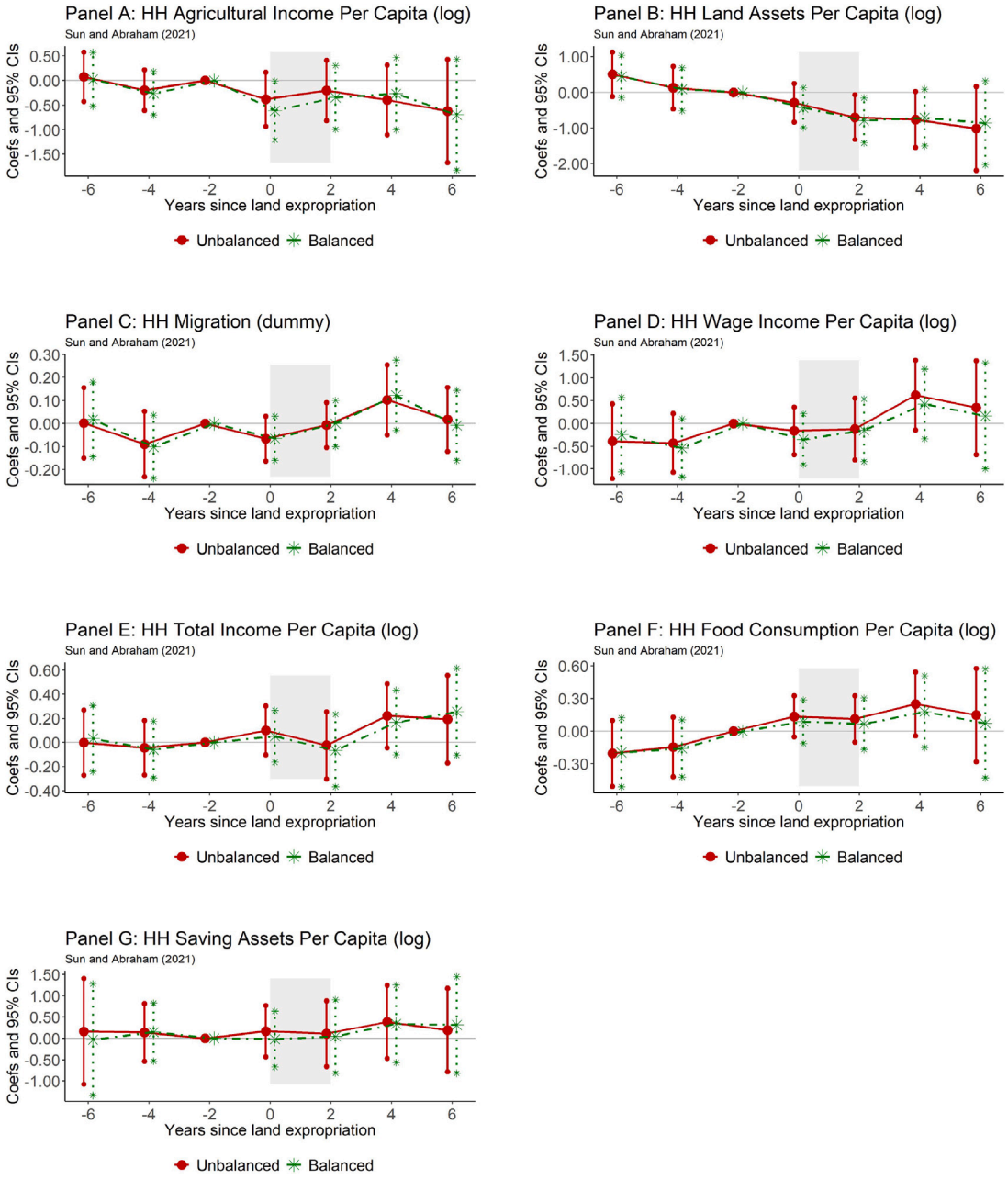

Fig. A.6. Dynamic effects of land expropriation on household outcomes. Notes: Unit of observation is the household-year. The sample is a five-year household panel (2010, 2012, 2014, 2016, and 2018) and excludes households who had their land expropriated before 2010. The shaded region indicates the expropriation was happening during this time period. The CFPS survey is conducted in every two years, thus, the gap between two consecutive periods is two years (the horizontal axis).
Source: China Family Panel Studies.

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