Responsive or Repressive? How Frontline Bureaucrats Enforce the One Child Policy in China

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Authoritarian regimes are, by definition, more likely than democracies to place restrictions on political behavior by curbing freedom of speech, freedom of the press, and freedom of assembly.[1] Yet, some autocracies go a good deal further in their efforts to control society. Among the most remarkable examples of authoritarian social control are state family planning policies that restrict choices about the most intimate and seemingly private parts of life: sex and reproduction. Autocratic leaders including Suharto in Indonesia, Indira Gandhi in India, Akbar Hashemi Rafsanjani in Iran, and Deng Xiaoping in China have introduced policies that have encouraged and coerced women into having fewer children. In the case of China, implementing the so-called One Child Policy was long one of the top priorities of the central government, and the policy had enormous consequences for Chinese society, likely reducing the population by tens of millions.[2] What explains the implementation of the One Child Policy in China? More generally, how do authoritarian regimes implement laws and policies that restrict individual behavior?

In this article, I argue that the success or failure of the One Child Policy in China hinged on the state's use of street-level bureaucrats to infiltrate society, and that frontline bureaucrats outside of the police, military, or party apparatus play a broad but largely unrecognized role as agents of political control in autocracies. I draw on a distinguished literature in the social sciences which points to the key role of "street-level bureaucrats" in implementing policies. Michael Lipsky's seminal work showed how welfare case officers, teachers, police officers, and other frontline agents of the state have a great deal of discretion in how policy is implemented in a democracy like the United States.[3]

Street-level bureaucrats are critical for policy implementation in autocracies as much as democracies, but we lack theories to explain when these agents succeed or fail at their core task of political control. This gap is important because autocracies throughout the world rely on grassroots organizations whose agents serve as the eyes and ears of the state. In Cuba, for example, the Communist Party created neighborhood-level organizations called Committees for the Defense of the Revolution that, according

to Fidel Castro, exist to help the Cuban state collect information on "what [people] do ... what they believe in, what people they meet, what activities they participate in."[4] Authoritarian regimes in Cambodia, Indonesia, Venezuela, Russia, Rwanda, Tanzania, and China have all created similar grassroots organizations whose leaders are accountable for monitoring their neighbors and informing on them. The resources that these regimes pour into these street-level organizations of infiltration suggest they are likely to be an important ingredient of authoritarian rule. A small number of groundbreaking studies have examined how these infiltrating organizations function and their vital role in state building,[5] but we lack theories to explain when these frontline agents strengthen authoritarian state capacity.

Since frontline bureaucrats operate at a grassroots level, a natural question is whether deeper state penetration weakens or strengthens the repressive capacity of authoritarian states. The existing literature suggests that increasing state penetration might in fact weaken implementation of unpopular central state priorities, like the One Child Policy in China. Lipsky's classic book *Street-Level Bureaucracy* suggests that frontline bureaucrats in charge of smaller units are more likely to be "responsive" to their clients "than authorities removed from the scene."[6] Likewise, an important literature on political unit size suggests that smaller political units bring bureaucrats and politicians closer to the people they serve and make them more responsive to their demands.[7] Most relevant to the present study, work by Daniel Koss finds that a higher density of Chinese Communist Party (CCP) cadres is associated with weaker enforcement of birth quotas since, he argues, party cadres "have an interest in being more tolerant when it comes to sanctioning surplus children."[8] These theories suggest that when bureaucracies deeply penetrate society, it makes frontline bureaucrats more responsive to their constituents.

In contrast to these theories, I find that deeper penetration by street-level bureaucrats helped the state infiltrate society and strengthened the implementation of the One Child Policy, which was relatively unpopular in rural China. Enforcement of family planning policies in China's villages relied on the leaders of "villager small groups," who monitored their neighbors, pressured women to get check-ups at state family planning stations, and, if necessary, induced them to undergo medical procedures like sterilization.[9] Drawing on a unique dataset, I show that a one standard deviation decrease in the size of the groups overseen by these frontline bureaucrats lowered over-quota-births by 2 to 7 percentage points, reducing them by a fifth or more. A decrease in the size of these groups also decreased bureaucrats' self-reported difficulty of enforcement and the amount of time bureaucrats spent enforcing the law. To strengthen claims that the relationship is causal, I instrument on exogenous shocks during the process of political reforms that remade these bureaucracies in the late 1970s and early 1980s. Evidence shows two mechanisms are likely at work: the embeddedness of local officials likely improves their ability to collect information, and the presence of more frontline bureaucrats also reduces transaction costs of enforcement.

This article contributes to the literatures on authoritarian politics, repression, and street-level bureaucracy. I suggest that frontline bureaucrats outside of the police,

military, or ruling party are key agents of repression and control in authoritarian regimes. Others have made groundbreaking contributions on the role of these frontline bureaucrats in China and elsewhere; however, this article is among the first to provide a causal theory and evidence to explain when they are effective and when they are not at implementing a restrictive policy. The article also extends the discussion of street-level bureaucrats into an authoritarian context. The results suggest that what might make bureaucrats responsive to society in a democratic context like the United States might instead give them control over society in an autocratic context like China.

When Do Frontline Bureaucrats Strengthen State Capacity?

Non-democratic regimes throughout the world create grassroots organizations that allow the state to infiltrate, monitor, and control their populations. One notable feature of these organizations is their small size and the way that they create networks of street-level bureaucrats layered on top of existing grassroots social networks.[10] When do these networks of street-level bureaucrats strengthen state control over society? The existing literature leaves us with an uncertain picture.

One body of work suggests that bureaucratic penetration may in fact weaken central state control and strengthen responsiveness to local society. One reason this might be the case is that when bureaucrats serve smaller communities, it increases their "embeddedness" in local society.[11] A recent review article highlights the growing number of works that find "that street-level bureaucrats who are embedded in the communities in which they serve produce better policy outcomes."[12] For example, work by Rikhil Bhavnani and Alexander Lee shows how bureaucrats in India who belong to local communities provide better public goods, so long as there are effective channels to hold them accountable.[13] In China, Andrew Mertha's work on enforcement of intellectual property rights laws has shown that greater penetration by bureaucracies to the level of townships and villages can sometimes lead to capture by local interests and non-enforcement of central government mandates.[14] Finally, Lily Tsai has shown that when village officials are embedded in local social groups, especially temple and lineage organizations, they provide more public services.[15]

Increased state penetration may also make street-level bureaucrats more responsive to local interests because it helps them gather information about citizen preferences and behavior. Lipsky's seminal work argues that when decisions are made in smaller units, such as police sub-precincts or neighborhoods, it improves learning and responsiveness.[16] Koss also makes an information-based argument, arguing that a higher density of CCP cadres in a township leads to weaker enforcement of the One Child Policy.[17]

Alternatively, it could be that increased state penetration increases central state control and weakens bureaucrats' responsiveness to local society. One way in which increased penetration could do so is by increasing the social embeddedness of frontline bureaucrats. As Benjamin Read shows in his finely drawn account of politics in urban China, embeddedness often cuts both ways, allowing residents to make demands on

officials but also making local society more "legible" for local officials.[18] Read writes about how neighborhood personnel could draw "on the kind of micro-level detail that only someone deeply embedded in the local milieu would possess" in order to enforce the law.[19] Similarly, while Tsai's work highlights the benefits to citizens of these group ties, she also shows that the presence of solidary groups like lineages benefit officials who want to implement policy, because the additional social esteem and prestige these groups can confer make it easier for officials to elicit compliance. Importantly, Tsai presents suggestive evidence from a qualitative case study in which embedded village cadres have an easier time enforcing birth quotas, although this insight about compliance is not explored in the empirical analysis.[20]

The idea that greater penetration increases social embeddedness (and therefore state control) has a long history in China studies and can be traced to Franz Schurmann's classic book *Ideology and Organization in Communist China.* Schurmann writes that the CCP sought to control rural China by penetrating "natural" villages (naturally occurring clusters of houses bound together through bottom-up social networks) instead of relying on "administrative" villages (groups of natural villages created top-down by the state).[21] Schurmann argues it was the CCP's ability to penetrate and embed itself in traditional social networks in these natural villages that initially made it such a powerful organizing force. I will return to Schurmann's hypothesis below in my discussion of mechanisms.

A second way in which state penetration might increase control is by reducing transaction costs for frontline agents. A frontline agent responsible for a small group might require less time to collect information on each of the group's members. This would improve monitoring and, ultimately, control.

This article aims to adjudicate between these competing expectations. Does greater state penetration lead to more responsiveness or more repression? Is the mechanism likely to be increased embeddedness or lowered costs of collecting information, or some combination of the two?

State Family Planning Policy in Rural China

China's family planning policies have had a profound impact on Chinese society over the past four decades. The policies have their roots in the 1970s and the "Later, Longer, Fewer" campaign, which encouraged families to delay having children and to have fewer of them.[22] Beginning in 1979, the state introduced mandatory birth quotas in a series of policies that were designed to reduce China's growing population, which many felt posed a threat to the country's long-term economic growth and stability.[23] Although the resulting policies are sometimes referred to as a single "One Child Policy" (一孩政策 or 独生子女政策), there has never been one single policy or a blanket limitation to one child. Instead, the policies have varied somewhat by province, and while the mandates generally restricted urban families to one child, many regions made exceptions for ethnic minorities and often allowed for a second child in rural areas,

particularly if the first child is female.[24] Typical penalties for families who did not comply with the law included monetary fines, job loss, and even seizure of property, while highly coercive measures such as forced abortions were rare.[25] The policies were reformed in 2015 to allow for additional children, and as of this writing, there is the possibility of a complete abolition of family planning restrictions in the near future.

There is widespread agreement that the One Child Policy led to slower population growth, but there is significant uncertainty about its precise impact because other factors, especially economic growth, influence fertility rates. Economic growth lowers fertility as families become less dependent on agriculture and agricultural labor, and there is agreement among demographers and sociologists that the economic boom of the reform era played an important role in pushing down China's fertility rate.[26] The widely cited statistic that the policy prevented 400 million births is almost surely an exaggeration; much of the overall decline in fertility in the post-Mao can be attributed to economic modernization.[27] Still, quantitative evidence suggests that the policy prevented at a minimum many tens of millions of births, perhaps as much as 200 million but likely less.[28]

While in much of urban China the One Child Policy is largely seen as legitimate, in rural China—the focus of this article—the policy has been deeply unpopular. In rural China, "most couples would like to have more children than permitted,"[29] and as Susan Greenhalgh notes, "countless village surveys made clear that any enthusiasm [for the policy] was urban only."[30] There is widespread agreement on this point among scholars.[31] The policy's unpopularity in the countryside should come as little surprise: rural residents rely on their children for farm labor and, to a greater degree than urbanites, rely on their children to support them during retirement.

Enforcement of state family planning policies involves officials at multiple levels of the party and state, but in this article I focus on the role of village and sub-village officials who are tasked with implementing the policy at the ground level.[32] Enforcement of family planning policies can have a profound impact on the career paths of village-level officials. For village officials, meeting birth quotas have long been a hard target, and failing to meet them can result in officials' losing their job or other bureaucratic penalties, such as a loss of income.[33]

At the administrative unit just below the village, the leaders of quasi-autonomous village wards have played a key role in implementing state family planning policy. These wards are a legacy of the system of collective agriculture, which divided villages up into "production teams" (生产小队) that collectively owned and cultivated land. The dismantling of the system of collective agriculture in the late 1970s and early 1980s led to reforms to the administrative structure of villages. The old production teams were in most villages renamed villager small groups (村民小组). To simplify matters, I refer to these sub-village jurisdictions as "wards." As I discuss below, the transition to collective agriculture also coincided with significant administrative reforms, creating an additional 1.2 million wards that were generally smaller than the production teams of the 1970s.[34]

Despite their nominal autonomy, ward leaders implement state family planning policies by popularizing its details and, perhaps most importantly, by helping the state

collect information on compliance with state policy. Read has shown how in urban China, sub-neighborhood leaders play a role in implementing family planning policy that is quite similar to that of villager small groups.[35] In rural China, the Chinese state has emphasized enforcement at the ward level.[36] Ward leaders have helped the state "monitor and enforce birth limits"[37] and have become "an indispensable workforce for the state's birth-planning policy."[38] Ward heads often "mobilize the women in their group to submit to quarterly check-ups at the township birth-planning station .... [and] persuade women who have given birth to a second child to undergo sterilization."[39] In some locations, ward heads must also attend regular meetings with village cadres and report on unauthorized pregnancies.[40] State regulations also encourage ward heads to appoint households as leaders for promoting birth control policies.[41]

While the role of ward leaders in implementing family planning policy has been noted by others, it has rarely been systematically explored, and there is little systematic evidence about variation in their effectiveness. When are these ward leaders effective at implementing state policy? When are they not?

Research Design

To strengthen my claim that bureaucratic penetration has a causal effect on policy enforcement, I take advantage of plausibly exogenous variation in the process of agricultural de-collectivization in the late 1970s and early 1980s caused by weather shocks. During this era, the administrative structure of villages changed substantially. From 1978 to 1983, in the lead up to the final dismantling of the commune system, the government dramatically reduced the size of production teams across China. The size of the average production team dropped from 167 people to 136 people, a 19 percentage point decrease.[42] These production teams would later become the village wards that exist today.

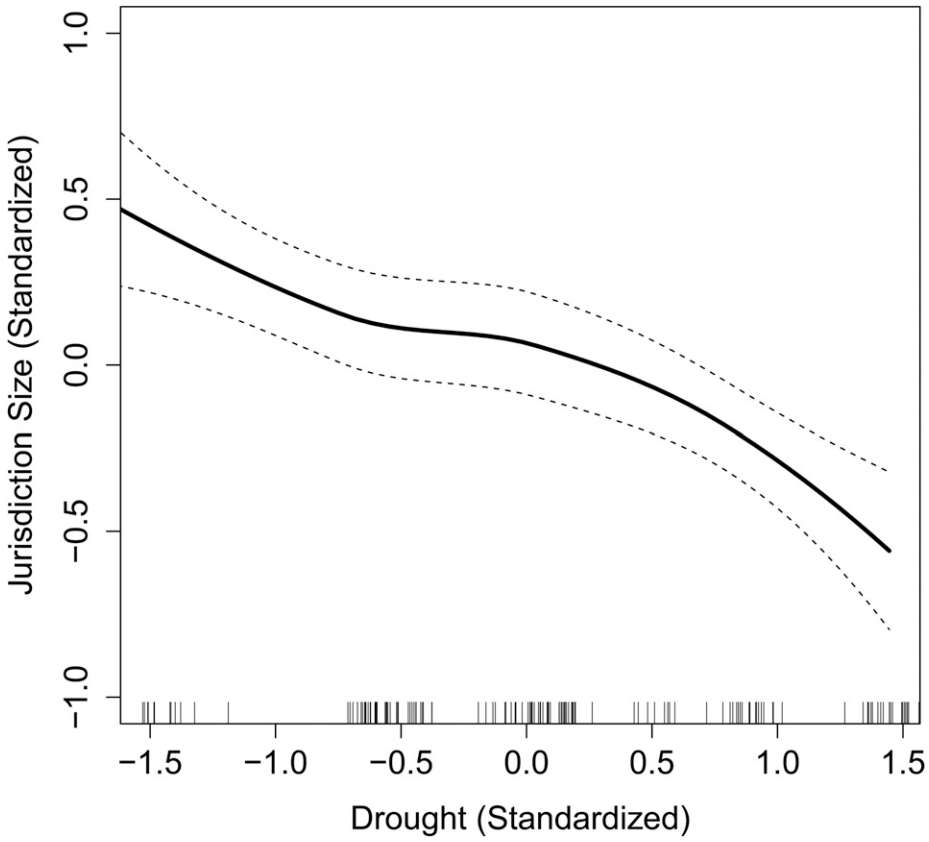
Weather shocks during this era influenced the degree to which local leaders reduced the size of production teams. Many have noted that weather shocks have shaped the course of rural reforms in China during the 1970s and 1980s.[43] In the case of sub-village reforms, weather shocks shaped decisions at the grassroots about how to best structure villages. In an era in which reforms were often led from the bottom up, local leaders had considerable discretion over how best to structure local political administration.[44]

The logic of the research design is straightforward. As Justin Yifii Lin argues in an influential article on this era in China, "the larger the size of membership in a team, the harder it is to monitor"[45] and lower the per capita output of that team. Droughts induced team leaders to move to smaller production teams in order to ease monitoring problems and increase output in a time of scarcity. To my knowledge others have not systematically explored the relationship between drought and the size of production teams, but the idea that scarcity induces local leaders to reduce the size of production teams is consistent with qualitative evidence from the era.[46] Ying Bai and James Kung have also demonstrated that areas that experienced severe drought during the early

reform era (1978 to 1984) decollectivized agriculture later, conditional on famine severity during the Great Leap Famine and public goods provision.[47] Consistent with this line of reasoning, Figure 1 shows that villages that experienced drought during the period of village reform were more likely to create smaller sub-village groups. While Bai and Kung show that the Great Leap Forward famine and public goods provision mediated the introduction of village-level land reforms, this pattern does not hold for the structure sub-village groups. The relationship between a standardized measure of drought severity and a standardized measure of the size of village wards is positive.[48] A one standard deviation increase in drought severity led to a substantial decrease in ward size.[49]

It is important to note that research designs of this sort have significant shortcomings. Estimation relies on an instrumental variables approach (described below) that assumes that the instrument (in this case, weather shocks) must affect the

Figure 1 Drought Severity in 1978–1983 and Production Team Size, loess regression



outcome only through the main explanatory variable (state penetration). This assumption, often referred to as the exclusion restriction, is difficult to satisfy and to test. I provide potential tests of the exclusion restriction to strengthen my claims, but the results should still be interpreted cautiously.

To analyze patterns of policy enforcement across China, I created a unique village-level dataset. Many of the measures draw on data from a survey conducted in 2005 by researchers from the Hong Kong University of Science and Technology and the Peoples' University of China, called the China General Social Survey. The survey stratified among three regions (east, central, and west) and randomly sampled seventy-five county-level units. Within each county, the researchers randomly sampled four townships, and, within each township, the researchers sampled two villages.

I combined the survey data with outside sources to create a unique dataset with a rich set of village characteristics. The main explanatory variable is the log number of households per village ward.[50] I include a measure of economic activity using nighttime luminosity data from 1992, which is a plausibly pre-treatment measure of wealth. I also created measures of the village's distance from major cities and terrain roughness. In the appendix, I present a detailed breakdown of how each variable was constructed.[51]

Importantly, the dataset combines a survey of village officials with a survey of individual households conducted in the same villages, which allows me to create measures from two separate different sources and to assess the severity of potential misreporting. Officials in particular have incentives to misreport data on number of out-of-quota children since they are penalized for such births. However, officials were instead asked questions about the difficulty of enforcing family planning policies and the percentage of the time they spend enforcing it, which are comparatively less sensitive questions. To quantify enforcement difficulty, I present evidence from a dummy variable that indicates whether or not officials indicated family planning was a difficult policy to implement. To quantify enforcement effort, I measure the percentage of time that officials spend enforcing family planning policy (which I log transform). To measure compliance, I measure the percentage of households that report having children in excess of birth quotas, restricted to children born during the years the One Child Policy was in effect. Since the survey was conducted by academic researchers, rather than officials or census enumerators, households evidently felt free to report the number of children they had, since many do report out-of-quota births. While we might be concerned about the quality of each of the measures on its own, I show that the patterns in the survey data are more consistent with truthful reporting than widespread falsification.

For estimation, I use an instrumental variables approach. The first stage equation models the effect of drought Z on village decentralization x_i. In some specifications I also control for village characteristics W_i, and include regional fixed effects δ_j. I estimate the relationship between the instrument and decentralization using the following first stage model:

$$x_i = DZ_i + DW_i + \delta_j + \varepsilon_e$$

The second stage is estimated using the following model:

$$Y_i = \alpha + \beta x_i + \gamma W_i + \delta_j + \varepsilon_e$$

where Y_i is the outcome of interest and β is the main coefficient that I interpret. The next section uses this framework to test my hypotheses. In the following section, I conduct robustness tests. In the appendix, I also present un-instrumented ordinary least squares results and reduced form results.

How Frontline Bureaucrats Strengthen One Child Policy Implementation

Does a higher density of frontline bureaucrats strengthen or weaken implementation of the One Child Policy? I examine two outcomes: cadre's self-reported enforcement and household compliance.

Table 1 presents results on difficulty of enforcement, using two-stage least squares regression. Here, the dependent variable is an indicator variable that takes a value of 1 if a village cadre reports that enforcing birth quotas is the most difficult aspect of their job and 0 otherwise. The table shows the relationship between ward size and reported ease of enforcement of family planning policies, instrumented on weather shocks.

The results strongly support the idea that villages with smaller wards are better able to enforce state family planning mandates. As discussed above, caution is warranted when interpreting these instrumental variables results. However, the results are consistent across a wide range of specifications and measurement strategies, and pass a number of tests, discussed below, that strengthen the idea that the critical assumptions of instrumental variables analysis may be met.

The first column prevents bivariate results without controls. This simple, transparent model relies only on the underlying research design, and it is arguably the most credible estimate. It shows that a one standard deviation increase in cell size is associated with a 30 percentage point increase in the likelihood that an official would report that enforcing the One Child Policy is difficult. The results are consistent with the idea that in smaller wards, enforcing family planning policy is considerably easier.

In column 2, I add covariates that account for exceptions to birth quotas. I first condition based on the percentage of ethnic minority residents in a village, since ethnic minorities are often exempt from birth quotas. I also introduce variables for province-level differences in quotas and the fines for exceeding birth quotas.[52] The results remain statistically significant and the magnitude of the estimated effect increases slightly.

Next, I add covariates for key geographic factors, including regional drought histories and terrain roughness. One potential concern is that regional weather patterns are persistent across time, so to address this I add a variable that averages the Palmer Drought Index for the village for the years 1949 to 1976. I also add a variable for terrain roughness, since in remote villages with mountainous terrain it may be especially difficult for higher levels of government to monitor local compliance and enforce the

Table 1 Relationship between Number of Households per Bureaucrat and Difficulty of Family Planning Policy Enforcement, Instrumented by Drought

	Two-Stage Least Squares			
	Family Planning Policies Difficult to Enforce			
	(1)	**(2)**	**(3)**	**(4)**
Number of Households Per Bureaucrat (Log Standardized)	0.302*** (0.101)	0.393*** (0.118)	0.426** (0.205)	0.426** (0.169)
Ethnic Minority Percentage		−0.204 (0.144)	−0.246 (0.192)	−0.252 (0.185)
Local Birth Quota		−0.458*** (0.139)	−0.446*** (0.153)	−0.351** (0.146)
Local Fine for Over Quota Births		−0.175** (0.080)	−0.043 (0.094)	−0.033 (0.085)
Terrain Roughness			0.0001 (0.0001)	0.0001 (0.0001)
Palmer Drought Index, 1949-1976			−0.027 (0.083)	−0.043 (0.081)
CCP Member Density				−0.192 (0.343)
Industrial Worker Percentage				−0.091 (0.299)
Distance to County Seat				0.004* (0.002)
Economic Activity (Luminosity Proxy)				−0.002 (0.004)
Constant	0.457*** (0.028)	1.407*** (0.265)	1.005*** (0.285)	0.786*** (0.263)
Region Fixed Effects	No	No	Yes	Yes
Observations	348	348	347	347
Weak Instrument F-Test	29.36	24.52	8.56	13.14

*p<0.1; **p<0.05; ***p<0.01.

law. I also include regional fixed effects.[53] Controlling for geographic region helps to account for the regional nature of weather shocks and ensures that comparisons are being made within regions with similar economic and social characteristics. The estimated effect remains statistically significant. The estimates remain substantively unchanged.

Finally, I add in additional covariates for economic and political factors. As discussed previously, demographers generally find that as incomes grow, fertility drops. To account for this, I condition on wealth using nighttime lights in 1992 as a plausibly pre-treatment measure. I also add in a covariate that controls for distance to the county seat because this is often correlated with wealth. I condition on the density of CCP membership in a village, since Koss argues this is an important determinant of policy

implementation. I also add in the percentage of people working in non-farm jobs to account, at least partially, for another possible mechanism of control: employment in local state-owned enterprise. Overall, the results support the theory that in villages with smaller wards, cadres find enforcing birth quotas to be easier.

Next, I turn to evidence from the household survey using the same set of specifications. The household data provide a direct measure of policy implementation. Since the data are gathered separately from the cadre survey, they also help to provide additional assurance about the validity of the cadre survey.

Table 2 presents results showing the relationship between bureaucratic penetration and the percentage of households exceeding the standard birth quota. The measure shows that a one standard deviation increase in ward size leads to a 7 to 13 percentage point increase in the number of families with over-quota births. The results remain consistent across specifications.

In the appendix, I present additional results, including non-instrumented regressions, the reduced form relationship between drought and enforcement of the One Child Policy, and regressions using an alternate operationalization of the main explanatory variable. Below, I include a number of additional robustness tests.

Mechanisms: Social Embeddedness and Transaction Costs

What drives the relationship between increased bureaucratic penetration and stronger policy implementation? Earlier, I highlighted two potential mechanisms: greater bureaucratic penetration might decrease transaction costs for frontline agents, and it might increase their social embeddedness in ways that help them collect information. I now test these two mechanisms and find evidence that both are likely to be at work.

First, there is evidence that greater penetration decreases the costs of enforcement for frontline officials. Figure 2 plots the number of households each ward leader serves against the time that village officials report spending on enforcement. (The survey respondent was in the case generally the village director or CCP branch secretary.) The plot shows that increasing the number of households each bureaucrat serves also increases the time the village director of CCP secretary spent enforcing the One Child Policy. Since these cadres have other duties, it appears that enforcing the One Child Policy can crowd out implementation of other duties. Regression tables are presented in the appendix (Table A6 and A7.)

Second, and perhaps more interesting, there is also evidence that social embeddedness strengthens state control, running against the dominant theoretical perspective that embeddedness strengthens accountability. Figure 3 plots a measure of embeddedness against compliance with the One Child Policy. The measure is inspired by Franz Schurmann's seminal work and his idea, discussed earlier, that greater penetration by the CCP into natural villages allowed the party to embed itself in preexisting local networks.[54] (Schurmann did not use the concept of "social embeddedness," which was only popularized decades later, but the general idea is

Table 2 Relationship between Number of Households per Bureaucrat and Percentage of Households over Birth Quota, Instrumented by Drought

	Two-Stage Least Squares			
	Households Over Birth Quota			
	(1)	(2)	(3)	(4)
Number of Households Per Bureaucrat (Log Standardized)	0.067***	0.074***	0.134**	0.120***
	(0.024)	(0.027)	(0.058)	(0.045)
Ethnic Minority Percentage		0.027	0.053	0.045
		(0.033)	(0.054)	(0.049)
Local Birth Quota		−0.050	−0.072*	−0.043**
		(0.032)	(0.043)	(0.039)
Local Fine for Over Quota Births		−0.027	0.001	0.012
		(0.019)	(0.027)	(0.022)
Terrain Roughness			0.0001*	0.00003
			(0.00004)	(0.00004)
Palmer Drought Index, 1949-1976			−0.043*	−0.045**
			(0.023)	(0.021)
CCP Member Density				−0.020
				(0.091)
Industrial Worker Percentage				0.066
				(0.079)
Distance to County Seat				0.001**
				(0.001)
Economic Activity (Luminosity Proxy)				0.001
				(0.001)
Constant	0.084***	0.197***	0.130	0.036
	(0.007)	(0.062)	(0.081)	(0.070)
Region Fixed Effects	No	No	Yes	Yes
Observations	348	348	347	347
Weak Instrument F-Test	29.36	24.52	8.56	13.14

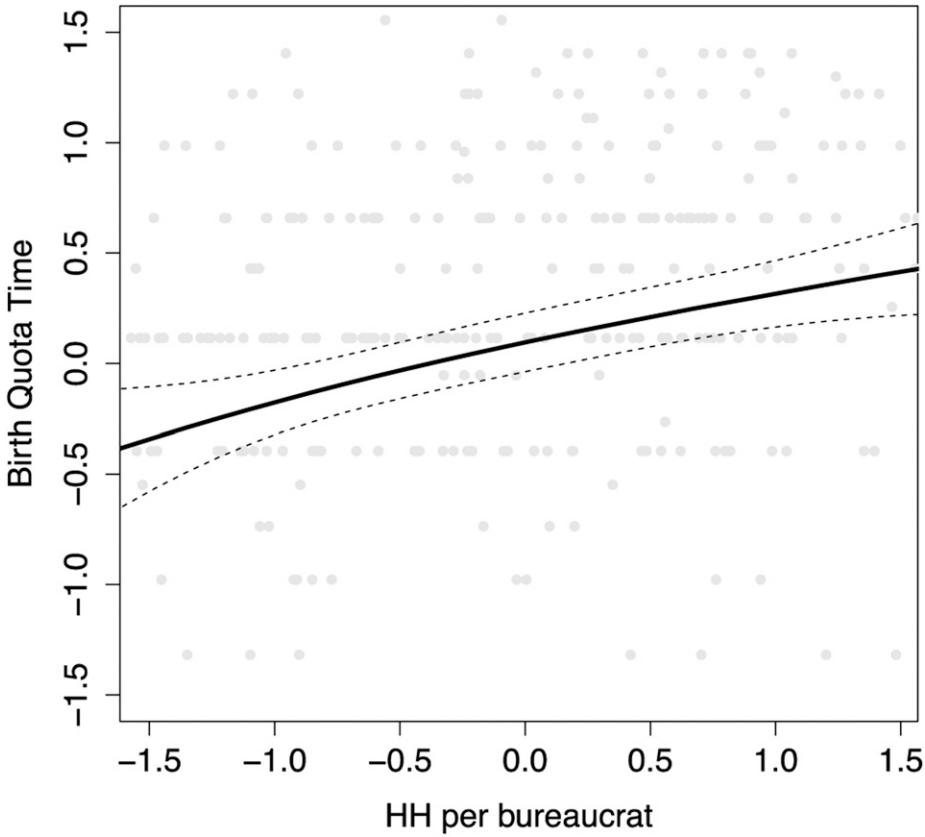
*p<0.1; **p<0.05; ***p<0.01.

similar.) The measure, drawing on Schurmann's insights, is simply the number of small groups per natural village. As the figure shows, as the number of small groups rises, the degree of non-compliance with the One Child Policy drops.

These results, while only suggestive, imply a limit to important theories that social embeddedness makes frontline bureaucrats more responsive and accountable. These ties do not only allow citizens to pressure officials and learn about corruption, they also allow officials to pressure citizens and learn about noncompliance with the state.

A weakness of these results is that they do not directly measure the degree to which officials belong to local social networks. Future work might more directly measure the concept. Innovative work by Jennifer Pan breaks new ground by asking citizens whether they know the name of local frontline bureaucrats.[55]

Figure 2 Evidence for the Transaction Costs Mechanism: Households per Bureaucrat and Time Spent Enforcing the One Child Policy

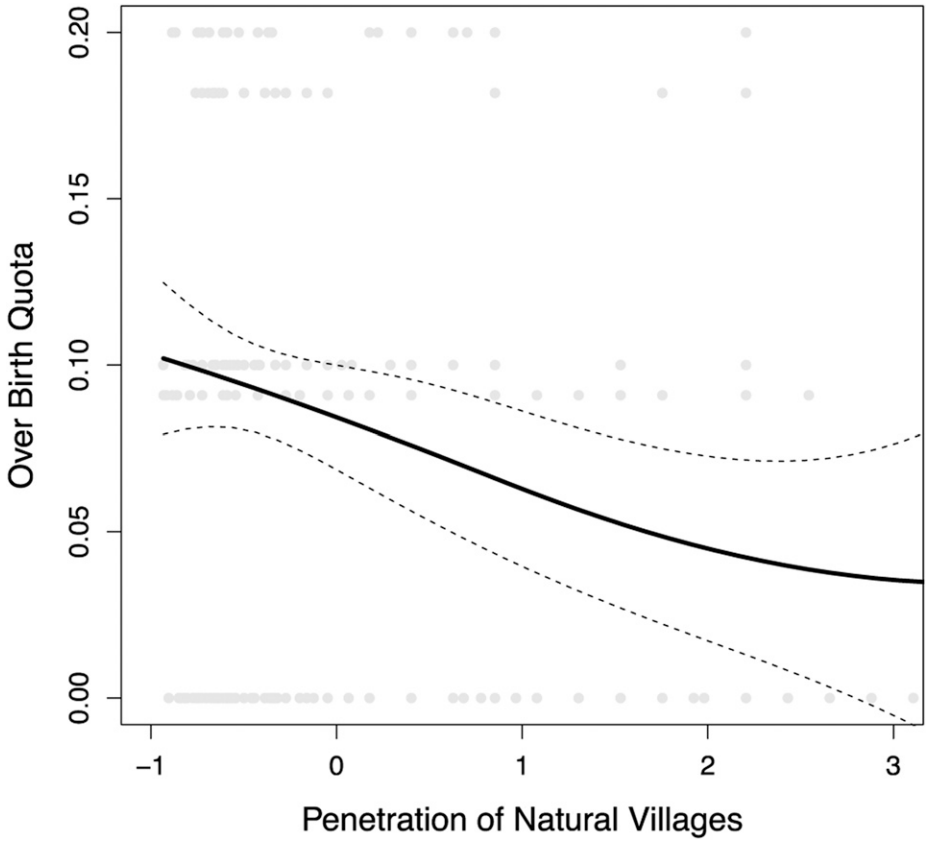


Robustness Tests

Altogether, the patterns shown by the results are consistent with the idea that increasing ward size—and consequently reducing the embeddedness of frontline officials—reduces compliance. In this section I address some potential concerns with the data and empirical strategy.

Data Quality Incentives for misreporting are an important problem on a politically sensitive topic such as China's family planning policies. However, three factors suggest that this is not a major problem for these data. First, the questions posed in the survey

Figure 3 Evidence for the Embeddedness: State Penetration of Natural Villages and Percent of Households over Birth Quota



were not sensitive, and were instead the sorts of questions that respondents are generally willing to answer in interviews.[56] Second, some of the observed patterns run counter to the incentives for misreporting. In areas where officials exert high levels of effort enforcing family planning policies, citizens have an incentive to exaggerate their compliance in order to avoid punishment. Yet the pattern I demonstrate here is the opposite: where officials report high levels of effort, citizens report low levels of compliance.[57] Third, several features of the data suggest that by and large respondents answered truthfully. In particular, official's evaluation of whether the policy has been difficult to enforce accords with the reported number of children in each household in a separate survey.

Is the Instrument Weak? The instrumented results pass several important tests for weak instruments. An F-test for weak instruments generally exceeds the normal threshold of 10,[58] indicating that the instrument is robust, although the third specification in each of the tables does not quite pass this test. Furthermore, results using alternative estimation techniques designed for weak instruments, including limited-information maximum likelihood (LIML)[59] and Fuller-K models,[60] return similar estimates that are all statistically significant at the same level as the main results presented here.

Are the Instrumented Estimates Worrisomely Large? One potential concern with instrumental variables is that the instrumented results are sometimes much larger than the OLS results, which may be the result of bias. The OLS results presented in the appendix show that in this case the instrumented results are not especially large. The instrumented results in this article are larger generally by a factor of three or four. This degree of inflation is smaller than some high-profile political science papers, in which the instrumented results are larger by a factor of ten, and is similar to other recent papers where instrumented results are larger than the OLS results by a factor of three or so.[61]

Forbearance Another concern, based on work by Alisha Holland, is that cadres in some villages may forgo enforcement to be more responsive to citizen demands, and may be seeking more individual exemptions from higher-level officials.[62] However, these exemptions are obtained on a case-by-case basis and require significant effort from village cadres. The low amount of time that cadres in villages with high numbers of over-quota births spend on family planning matters in these villages is not consistent with the idea that they are spending time obtaining exemptions, nor is the low number of households with three or more children. In addition to this, in Appendix Table A3, I present evidence that individuals in smaller wards are less likely to regard the state as fair and responsive. This is most consistent with the theory that in highly fragmented villages there is coercive monitoring that has negative effects on attitudes towards the state.

Placebo Tests With any instrumental variables test, an important assumption is that the instrument affects the outcomes of interest only through the main explanatory variable. One possibility is that drought in the early 1980s also caused differences in wealth, which might have caused changes in fertility patterns. Another is that the drought may have affected other village political institutions, especially the implementation of village elections. To address these concerns, I present the results from two placebo tests in Appendix Figures A1 and A2. These reveal no strong relationship between drought and present-day wealth or village electoral institutions. In addition, an assumption of the research design is that the instrument must not have a direct effect on the dependent variable. Appendix Figure A3 shows that the drought did not induce changes in fertility during the period of 1978 to 1983.

Conclusion

A trope in some novels and movies about life under autocracy is that when bureaucrats become familiar with the people they govern, it makes them more sympathetic and more willing to defy the state to protect them. In the movie *The Lives of Others,* for example, a Stasi agent conducts intense surveillance of a suspected dissident writer in East Germany, and the time he spends spying on the writer and learning about his life gradually turns him into a secret ally of the dissident. In the conclusion of the movie, he risks his career and freedom to help the dissident escape the clutches of the Stasi. Social science theories about social embeddedness provide some support for the implication of this portrait of bureaucratic politics. Being more deeply embedded in local society might induce bureaucrats to be more responsive to the people they serve.

In contrast, this article suggests that increased state penetration can strengthen the ability of authoritarian states to control society, in part because greater familiarity can make frontline bureaucrats more effective agents of the state. In the long run, however, this strategy likely may have its limits. In the appendix, I present results indicating that greater state penetration is correlated with lower levels of satisfaction with the government (see Table A3).

What are the scope conditions of these findings? The implementation of the One Child Policy is a symbol of state capacity in China, which is often held up as an especially important example of a high capacity authoritarian state.[63] The general pattern of using frontline bureaucrats to monitor and control behavior is used in other political arenas in China, and in other authoritarian regimes, especially for policies in which there is a mismatch between local preferences and state mandates. These might include family planning policy implementation in other states, such as India, Iran, or Indonesia. Recent scholarship has shown how the Chinese state uses street-level bureaucrats who are embedded in local social networks to expropriate land, repress protest, and monitor civil society groups.[64]

However, the findings are unlikely to travel to policy areas where there is a potential for local officials to capture rents if they refrain from implementing policies. Work by Mertha on intellectual property rights enforcement in China provides an important example, where penetration by the Administration for Industry and Commerce to local levels increases its power and authority, but also provides an opportunity for bureaucrats to seek rents and look the other way when they observe violations of the law in order to protect a source of government revenue.[65]

More work needs to be done to understand the role of gender in enforcement of the One Child Policy and, more generally, politics in China and other authoritarian regimes. Koss finds suggestive evidence that female cadres may undermine enforcement of the One Child Policy, a finding that requires further elaboration and exploration.[66]

The findings also suggest a need to continue to study street-level bureaucrats in authoritarian regimes. In China, recent work has shown how the CCP is highly responsive to citizen requests; however, it remains less clear when this responsiveness translates to changed policy enforcement, especially at the grassroots level, where

decisions are made with important implications for the everyday lives of citizens.[67] The teachers, case officers, lower-level bureaucrats, and ward leaders who interact with the citizens of authoritarian regimes every day play an important role in authoritarian monitoring and feedback, but one which recent studies have only begun to explore.

NOTES

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1. See, for example, Dahl's list of requirements for democracy. Robert Alan Dahl, *Polyarchy: Participation and Opposition* (New Haven: Yale University Press, 1973), 3.

2. There is a large literature on the One Child Policy. It includes important works that outline the policy's formulation and general process of enforcement. See, among many others, Susan Greenhalgh, *Just One Child: Science and Policy in Deng's China* (Berkeley: University of California Press, 2008); Susan Greenhalgh and Edwin A. Winckler, *Governing China's Population: From Leninist to Neoliberal Biopolitics* (Palo Alto: Stanford University Press, 2005), Therese Hesketh, T, Li Lu, and Zhu Wei Xing, "The Effect of China's One-Child Family Policy After 25 years," *The New England Journal of Medicine*, 353 (2005), 1171–76; Yanzhong Huang and Dali L. Yang, "Population Control and State Coercion in China," in Barry J. Naughton and Dali Yang, eds., *Holding China Together: Diversity and National Integration in the Post-Deng Era* (New York: Cambridge University Press, 2004), 193–225; Thomas Scharping, *Birth Control in China 1949–2000: Population Policy and Demographic Development* (New York: Routledge, 2013); Yaojiang Shi and John James Kennedy, "Delayed Registration and Identifying the 'Missing Girls' in China," *The China Quarterly*, 228 (December 2016), 1018–38; Tyrene White, *China's Longest Campaign: Birth Planning in the People's Republic, 1949–2005* (Ithaca: Cornell University Press, 2006). Existing work in political science generally discusses the penalties local cadres face if they do not implement the policy. See Bjorn Alpermann, "The Post-Election Administration of Chinese Villages," *The China Journal*, 46 (July 2001), 45–67; Mayling Bimey, "Decentralization and Veiled Corruption under China's 'Rule of Mandates'," *World Development,* 53 (January 2014), 55–67; Kevin J. O'Brien and Lianjiang Li, "Selective Policy Implementation in Rural China," *Comparative Politics,* 31 (January 1999), 167–86. One exception is work by Daniel Koss, which I discuss elsewhere. See Daniel Koss, *Where the Party Rules: The Rank and File of China's Communist State* (New York: Cambridge University Press, 2018).

3. Michael Lipsky, *Street-Level Bureaucracy: Dilemmas of the Individual in Public Service* (New York: Russell Sage Foundation, 1980).

4. Richard R Fagen, *The Transformation of Political Culture in Cuba* (Palo Alto: Stanford University Press, 1969), 69. Cited in Benjamin Read, *Roots of the State: Neighborhood Organization and Social Networks in Beijing and Taipei* (Palo Alto: Stanford University Press, 2012), 250.

5. See Koss; Read; Reo Matsuzaki*, Statebuilding by Imposition: Resistance and Control in Colonial Taiwan and the Philippines* (Ithaca: Cornell University Press, 2019); Jennifer Pan*, Hush Money: How China's Use of Welfare and Surveillance to Prevent Collective Action Backfires,* Unpublished book manuscript (2018).

6. Lipsky, 207.

7. Guy Grossman, Jan H. Pierskalla, and Emma Boswell Dean, "Government Fragmentation and Public Goods Provision," *The Journal of Politics,* 79 (July 2017), 823–40.

8. See Koss, 111.

9. In Chinese, village wards are generally referred to as villager small groups (村民小组) or, less often, by their Mao-era name, teams (小队). The role of these cell leaders in implementing the One Child Policy is discussed below in greater detail. Since the policy was introduced, official statistics show that over 120 million men and women have been sterilized. See Greenhalgh, 2005, 257.

10. These are not bureaucrats in the sense that they are necessarily formally part of the state hierarchy, but are frontline agents of the state.

11. Mark Granovetter, "Economic Action and Social Structure: The Problem of Embeddedness," *American Journal of Sociology,* 91 (November 1985), 481–510.

12. Thomas B. Pepinsky, Jan H. Pierskalla, and Audrey Sacks, "Bureaucracy and Service Delivery," *Annual Review of Political Science*, 20 (May 2017), 249–68.

13. Rikhil R. Bhavnani and Alexander Lee, "Local Embeddedness and Bureaucratic Performance: Evidence from India," *The Journal of Politics,* 80 (January 2018), 71–87.

14. Andrew Mertha, *The Politics of Piracy: Intellectual Property in Contemporary China* (Ithaca: Cornell University Press, 2005), 173–86.

15. See Lily L. Tsai, *Accountability without Democracy: Solidarity Groups and Public Goods Provision in Rural China* (New York: Cambridge University Press, 2007) See also recent work by Martha Wilfahrt, "Precolonial Legacies and Institutional Congruence in Public Goods Delivery: Evidence from Decentralized West Africa," *World Politics,* 70 (April 2018), 239–74, on the overlap between formal state institutions and informal local identities.

16. Lipsky, 207–208.

17. Koss argues that CCP officials are tasked with ensuring a balanced sex ratio and so have incentives to undermine enforcement of birth quotas (since enforcing birth quotas leads to selective abortion and skewed sex ratios). See Koss, 85–117.

18. Read; James C Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998).

19. Read, 108.

20. Tsai, 175.

21. Franz Schurmann, *Ideology and Organization in Communist China* (Berkeley: University of California Press, 1966), 411–27.

22. Martin King Whyte, Wang Feng, and Yong Cai, "Challenging Myths About China's One-Child Policy," *The China Journal*, 74 (2015), 144–59.

23. Greenhalgh; Hesketh, Lu, and Xing.

24. Therese Hesketh and Wei Xing Zhu, "The One Child Family Policy: The Good, the Bad, and the Ugly," *BMJ: British Medical Journal***,** 314 (June 1997), 1685.

25. Greenhalgh and Winckler; Hesketh and Zhu.

26. Cai Yong, "China's Below-Replacement Fertility: Government Policy or Socioeconomic Development?," *Population and Development Review*, 36 (September 2010), 419–40; Whyte, Feng, and Cai.

27. Jiajian Chen, Robert D. Retherford, Minja Kim Choe, Li Xiru, and Hu Ying, "Province-Level Variation in the Achievement of Below-Replacement Fertility in China," *Asian Population Studies,* 5 (November 2009), 309–28; Griffith Feeney and Wang Feng, "Parity Progression and Birth Intervals in China: The Influence of Policy in Hastening Fertility Decline," *Population and Development Review* (March 1993), 61–101; Hesketh, Lu, and Xing; Whyte, Feng, and Cai.

28. Chenetal.; McElroy and Yang.

29. Weiguo Zhang, "Implementation of State Family Planning Programmes in a Northern Chinese Village," *The China Quarterly,* 157 (March 1999), 202–30, 206.

30. Greenhalgh.

31. Hesketh, Lu, and Xing; Hesketh and Zhu; Yi Zeng and Therese Hesketh, "The Effects of China's Universal Two-Child Policy," *The Lancet,* 388 (October 2016), 1930–38.

32. Alpermann; Greenhalgh and Winckler.

33. See Bimey; Hesketh, Lu, and Xing; O'Brien and Li. Other work has shown how in China, promotion and cadre evaluation policies motivate lower-level officials to implement central state priorities. However, incentives for enforcement vary by the political status of bureaucrats. Maria Edin, "State Capacity And Local Agent Control in China: CCP Cadre Management from a Township Perspective," *The China Quarterly,* 173 (March 2003), 35–52; Susan H. Whiting, *Power and Wealth in Rural China: The Political Economy of Institutional Change* (New York: Cambridge University Press, 2006); Xin Sun, "Selective Enforcement of Land Regulations: Why Large-Scale Violators Succeed," *China Journal,* 74 (July 2015), 66–90.

34. In the early years of reform, the former production teams leaders retained some power through clientelist connections to the members of their team. Like villages, these wards are quasi-autonomous bodies and not an official part of the state hierarchy. Ward leaders have little power over resources, with the exception of having some marginal influence over the allocation of land within their ward. See Jean C. Oi, *State and Peasant in Contemporary China: The Political Economy of Village Government* (Berkeley: University of

California Press, 1991), 185–86. Sherry Tao Kong and Jonathan Unger, "Egalitarian Redistributions of Agricultural Land in China through Community Consensus: Findings from Two Surveys," *China Journal,* 69 (January 2013), 1–19; Jonathan Unger, "Continuity and Change in Rural China's Organization," in Ane Bislev and Stig Thpgersen, eds., *Organizing Rural China* (Lanham: Lexington Books, 2012), Chapter 2, 15–34.

35. Read, 185.

36. See Greenhalgh and Winckler, 195; Zhang, 205; Alpermann, 55; and White, 220.

37. See White, 220.

38. Alpermann, 55.

39. Ibid.

40. See Changtai County Family Planning Association, "Implementing the 'Four Guarantees' While Advancing Villager Autonomy and the Strong Establishment of the National Family Planning Policy Grassroots Autonomy Model County" *(Luoshi Sige Baozhang Tuijin Cunmin Zishi Zhashi Chuangjian Quanguo Jihua Shengyu Jiceng Qunzhong Zizhi Shifan Xian)*. http://npsjsx.np.gov.cn/cms/html/npsjhsyxh/2015-10-14/585701091.html, last accessed on September 14, 2018. County governments throughout Jiangxi and Zhejiang have also issued documents noting that the primary duties of small group leaders include "ensuring the smooth operation of important projects" including "family planning." "Strengthening Team Building Among Villager Small Group Leaders" *(Guanyu Jiaqiang Cunmin Xiaozu Zuzhang Duiqu Jianshe de Yijian)*. Author's Collection.

41. See also "Village Self-Government Family Planning Regulations" *(Jihua Shengyu Cunmin Zizhi Guifan)*. Available at http://www.china.com.cn/policy/txt/2008-10/12/content_16598517.htm, last accessed on September 18, 2016.

42. For data on this transformation, see *Statistical Yearbook of China, 1983* (*Zhongguo Tongji Nianjian*, 1983), 147 and for further discussion see William L. Parish, *Chinese Rural Development: The Great Transformation* (New York: ME Sharpe, 1985).

43. For example, important work by Dali Yang shows that areas of China that experienced disaster during the Great Leap Forward of 1958 to 1961 undertook decollectivization earlier than areas that did not. Yang suggests that experiencing the drought-induced disaster of the Great Leap pushed farmers towards conservativism (i.e., reform) rather than agrarian radicalism (i.e., collective agriculture). See Dali L. Yang, *Calamity and Reform in China: State, Rural Society, and Institutional Change since the Great Leap Famine* (Palo Alto: Stanford University Press, 1998), 134–38.

44. Daniel Kelliher, *Peasant Power in China: The Era of Rural Reform, 1979–1989* (New Haven: Yale University Press, 1992); Kate Xiao Zhou, *How the Farmers Changed China: Power of the People* (New York: Westview Press, Inc., 1996).

45. Justin Yifu Lin, "The Household Responsibility System in China's Agricultural Reform: A Theoretical and Empirical Study," *Economic Development and Cultural Change,* 36 (April 1988), S199–S224, S212.

46. Eduard B. Vermeer, "Income Differentials in Rural China," *The China Quarterly,* 89 (March 1982), 22.

47. See Ying Bai and James Kai-sing Kung, "The Shaping of an Institutional Choice: Weather Shocks, the Great Leap Famine, and Agricultural Decollectivization in China," *Explorations in Economic History,* 54 (October 2014), 1–26. Interestingly, the article shows that while the first production teams to abandon collective agriculture—in Xiaogang, Anhui—did so in part because of severe drought, this was very much an exception to the more general relationship between drought and reform. The authors argue "that household farming is not conducive to providing... indivisible public goods" like irrigation (Bai and Kung, 8), which are essential in times of scarcity. Rather than move towards household fanning, production teams in drought-stricken areas banded together to delay the move towards household agriculture so that they could make use of collective resources and thereby reduce the impact of the drought.

48. The data source is introduced below. I measure drought severity using historical data on the Palmer Drought Severity Index. With this index, values of -4 and below indicate severe droughts while values of 4 and above indicate unusually rainy weather. To aid interpretation, I reverse the index so that 4 is severe drought and -4 is unusual rain, and then standardize the variable. I measure the size of village wards as the log number of village wards divided by the log number of households in the village.

49. Table A2 in the Appendix (available at daniel-mattingly.com) presents regression evidence showing a strong first stage relationship between drought severity and administrative decentralization. Below I also present F-tests showing the instrument to be a very strong one.

50. The number of wards is normalized by the number of natural villages to account for the creation of administrative villages that combine several settlements. The measure is the number of households divided by the number of wards per natural village. In the appendix, I present results from alternate measures, including the number of wards per natural village. This alternate measure is a less direct measure of the theoretical

quantity of interest, but it guards against concerns that the main explanatory variable may be mechanically related to the dependent variables, since the number of households in a village is connected to fertility choices. However, increased fertility is not likely to increase the number of households in the time period studied, since few children born in the One Child Policy era will have come of age and created households independent from their parents by 2005.

51. Due to space constraints, the Appendix is not in the print version of this article. The appendix and replication materials are available at the author's website: daniel-mattingly.com.

52. Data from Avraham Ebenstein, "The 'Missing Girls' of China and the Unintended Consequences of the One Child Policy," *Journal of Human Resources,* 45 (January 2010), 87–115.

53. The results are robust to different definitions of regions or the addition of different regions. Since the addition of regional fixed effects generally inflates the estimates, I only include them in the final specification. Here, the results include fixed effects for three regions. The coastal provinces are Jiangsu, Liaoning, Fujian, Jiangsu, Zhejiang, Guangdong, and Shandong. The central provinces are Hunan, Hubei, Henan, Jiangxi, Anhui, and Sichuan. All others are in a residual category.

54. Schurmann.

55. Pan.

56. That is, while officials are unlikely to report truthfully the number of out-of-quota births in the village, they are often quite willing to complain about what parts of their job are difficult, including enforcement of family planning policy. Citizens as a practical matter cannot hide out- of-quota children from village cadres.

57. A remaining concern is that officials who do not enforce the policy are exaggerating their effort in areas with low levels of compliance. However, this suggests a pattern in which officials in both high- and low-compliance areas exert similar levels of effort and also suggests relatively low levels of enforcement overall. Both of these patterns are not consistent with the existing qualitative accounts that officials in many villages exert considerable effort trying to enforce birth quotas.

58. Douglas Staiger and James H. Stock, "Instrumental Variables Regression with Weak Instruments," *Econometrica,* 65 (May 1997), 557–86.

59. Ibid.

60. Wayne A. Fuller, "Some Properties of a Modification of the Limited Information Estimator," *Econometrica: Journal of the Econometric Society* (1977), 939–53.

61. See, for example, Kevin Croke, Guy Grossman, Horacio A. Larreguy, and John Marshall, "Deliberate Disengagement: How Education Can Decrease Political Participation in Electoral Authoritarian Regimes," *American Political Science Review,* 110 (2016), 579–600; Jan H. Pierskalla and Florian M. Hollenbach, "Technology and Collective Action: The Effect of Cell Phone Coverage on Political Violence in Africa," *American Political Science Review,* 107 (2013), 207–24.

62. Alisha C. Holland, "Forbearance," *American Political Science Review,* 110 (May 2016), 232–46; Alisha C. Holland, "The Distributive Politics of Enforcement," *American Journal of Political Science,* 59 (February 2015), 357–71.

63. Margaret Boittin, Greg Distelhorst, and Francis Fukuyama, "Reassessing the Quality of Government in China," Working paper (Stanford University Center on Democracy, Development, and the Rule of Law, 2016); Edin; Daniel C. Mattingly, "Colonial Legacies and State Institutions in China: Evidence From a Natural Experiment," *Comparative Political Studies,* 50 (March 2017), 434–63.

64. Yanhua Deng and Kevin J. O'Brien, "Relational Repression in China: Using Social Ties to Demobilize Protesters," *The China Quarterly,* 215 (September 2013), 533–52; Diana Fu, "Fragmented Control: Governing Contentious Labor Organizations in China," *Governance,* 30 (2017), 445–62; Daniel C. Mattingly, "Elite Capture: How Decentralization and Informal Institutions Weaken Property Rights in China," *World Politics,* 68 (July 2016), 383–412; Kevin J. O'Brien and Yanhua Deng, "The Reach of the State: Work Units, Family Ties and 'Harmonious Demolition'," *The China Journal,* 74 (July 2015), 1–17; Suzanne E Scoggins and Kevin J. O'Brien, "China's Unhappy Police," *Asian Survey,* 56 (April 2016), 225–42; Yuhua Wang, "Empowering the Police: How the Chinese Communist Party Manages its Coercive Leaders," *The China Quarterly,* 219 (September 2014), 625–48; Daniel Mattingly, *The Art of Political Control in China* (New York: Cambridge University Press, 2020).

65. Mertha, 184–86.

66. Ibid, 118.

67. Jidong Chen, Jennifer Pan, and Yiqing Xu, "Sources of Authoritarian Responsiveness: A Field Experiment in China," *American Journal of Political Science,* 60 (2016), 383–400; Greg Distelhorst and Yue Hou, "Constituency Service under Nondemocratic Rule: Evidence from China," *The Journal of Politics,* 79 (July 2017), 1024–40.