Historical Traumas and the Roots of Political Distrust: Political Inference from the Great Chinese Famine

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December 20, 2015

Abstract

What shapes citizens' trust in the government, and what makes it persist over time? We study the causal effect of the Great Chinese Famine (1958-1961) on the survivors' political distrust. Using a novel nationally representative survey, we employ a difference-in-differences framework to compare citizens who were exposed to the Famine versus those who were not, across regions with differential levels of drought during the Famine. The Famine survivors inferred the government's liability from personal hunger experiences, and they were more likely to blame the government for their starvation in regions with usual rainfall during the Famine. As a result, these citizens exhibit significantly less trust in the local government. The dampened political trust persists even half a century after the Famine, and it has been transmitted to the subsequent generation. We provide suggestive evidence on the mechanisms that foster such persistence.

Keywords: Political Trust, Political Attitudes, China, Authoritarian Regime, Persistence JEL Classification: D83, P26, Z13

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Which is more important for an orderly state: food, weapons, or a government that one can trust?

By three methods we may learn wisdom: First, by reflection, which is noblest; second, by imitation, which is easiest; and third, by experience, which is the bitterest.

Confucius, 551 - 480 BC

1 Introduction

Political trust is the foundation of political support and regime legitimacy. It constitutes a critical component of "civic capital," and provides leaders with greater leeway to govern effectively. Lack of political trust is often associated with a variety of political attitudes and behaviors among citizens that impede the smooth operation of the state, ranging from dampened support to proposed policies that citizens are otherwise enthusiastic about,¹ to lower compliance with existing tax policies, to suppressed keenness to participate in pension programs that require credible commitment from the government, and even to higher tendency to protest against the incumbent government.² Despite its importance, we know very little about where political trust comes from, and how political trust persists over time.

At its core, political trust manifests itself in citizens' beliefs that the government will not deliberately do them harm (e.g. Newton (2007)). In this paper, we argue that citizens update their beliefs about the trustworthiness of the government based on their experiences of events plausibly within the government's control. Disasters are particularly important instances from which citizens update their beliefs, not only due to their magnitudes but also because they provide citizens with opportunities to learn about the government's types. However, disasters are also noisy signals: terrible disasters *might* be attributed to untrustworthy government, or to factors beyond the government's control. Do citizens excuse the government officials for catastrophic outcomes when plausible alternative explanations are available? If no such alternative explanations are available, does the subsequent mistrust persist over time?

We answer these questions in the context of the Great Chinese Famine (1958-1961, "the Famine" henceforward), in which a *nature-driven* alternative explanation to the humanitarian disaster quasi-

¹Sapienza and Zingales (2013) show that an average US citizen would not support gasoline tax-and-rebate scheme simply because he does not trust the government to actually rebate the money. Kuziemko et al. (2015) use experimental evidence to show that political trust plays a critical role in shaping Americans' support for redistribution policies.

²For example, greater distrust in the government is associated with an increase in the likelihood of attending a protest or demonstration, or refusing to pay taxes or fees (based on calculations using the Asian Barometer Survey); political distrust among rural Chinese residents is associated with significantly lower likelihood of enrolling in the *New Rural Pension Scheme* (NPRS) introduced in 2009 (based on authors' own calculation).

randomly appeared for some citizens, but not others. The Famine was arguably one of the most traumatic peacetime tragedies of the 20th century, resulting in approximately 30 million deaths. The two main *potential* determinants of the severity of the Famine experienced by citizens were: (i) the weather conditions that affected agricultural production; and (ii) the government's response to decreases in agricultural production, in particular the procurement decisions. While scholars are still debating the precise causes of the Famine, few disagree that the procurement system, rather than weather shocks, was primarily responsible for the prevalent starvation (see, among others, Meng, Qian and Yared (2015); Section 2 provides additional quantitative evidence). Nonetheless, for a typical survivor of the Famine who had access to data on neither the total agricultural production nor procurement decisions, correctly inferring that indeed the government was to be blamed for the severity of the Famine would have been challenging. In particular, those lived in areas where the Famine was severe and observed exceptional high levels of drought in the regions could naturally (and mistakenly) have attributed the Famine to weather shocks rather than the government's poor decision-making. In contrast, for those who lived in areas not so much affected by drought but nevertheless have experienced severe shortage of food, they should have been more likely to make the inference that the government was possibly responsibly for the Famine.

Building on this intuition, we consider the wedge between local weather conditions and local Famine severity levels as indicative of the quality of the signal on government trustworthiness that the Famine episode provided. Specifically, we apply a difference-in-differences framework to examine the patterns in which survivors made inferences on the government from their personal experiences during the Famine, and these inferences persistently shape political trust of survivors themselves and that of the subsequent generation. Using a nationally representative survey, we elicited individuals' memory of the Famine experiences retrospectively in 2010. We measured political trust and other attitudes of interest in 2012, more than 50 years after the actual Famine.³ We then compare individuals who were exposed to sustained hunger during the Famine versus those who were not, across regions with various degrees of exceptional drought during the Famine period. The local drought conditions constituted a critical part of the context in which citizens experienced and interpreted the Famine. In particular, drought conditions amplified the noise associated with starvation experiences as a signal for the government's trustworthiness. In essence, we exploit the variations in both the exposure to the Famine, and the context of exposure due to weather shocks: personal experiences of hunger (exposure) combined with exceptional drought (context) led to survivors' divergent interpretations of the Famine (i.e. political inferences).

The difference-in-differences strategy enables us to plausibly identify the causal effect of his-

³Both the central and local government were implicated in the Famine. The central and local government negotiated the regional procurement targets. The local government officials, largely driven by their promotion incentives, overly comply with the targets in manners that were unreasonably demanding from the farmers' perspectives (e.g. Kung and Chen (2011)). We explicitly measure trust in the local government, and we discuss its relationship with the trust in central government in Section 3.3.

torical experiences on political trust (we discuss our identification strategy and the threats to identification in greater details in Section 4). More importantly, the interaction between individuals' exposure to the Famine and the context of exposure informs us about the process of citizens' political inference. In particular, it allows us to examine the manner in which citizens drew non-naive conclusions about the trustworthiness of the government from their personal experiences, as they recognized that parts of the starvation experiences may be due to exogenous factors beyond the government's control.

We find that upon having experienced hunger, citizens from regions where they witnessed lower levels of exceptional drought during the Famine became less trusting of contemporary local government officials. The intensified political distrust was less prominent among those who experienced hunger in regions with higher levels of exceptional drought during the Famine, suggesting that they were more likely to attribute the Famine to natural disaster rather than systematic government failures.⁴ However, the varying degrees to which citizens blamed the Famine on nature versus the government did not eliminate the overall adverse impact of hunger experiences themselves: personal hunger experiences dampened political trust even if the survivors tended to ascribe their sufferings to natural disaster. Perhaps more strikingly, not only does the Famine impact on political trust persist within the survivors for more than five decades, it has also been transmitted to the subsequent generation who did not go through the Famine themselves.⁵ Parents who suffered during the Famine have transmitted their political distrust to their children at a stronger degree, comparing to those parents who did not experience starvation. In addition, even the pattern of political inference has been carried over to the next generation: children of those who experienced starvation in regions with low exceptional drought during the Famine exhibit significantly higher political distrust.

The Famine experience impacted political trust *persistently*. We next investigate the mechanisms underlying each component of the results that we just describe. (*I*) *Famine experience*: we find that the personal Famine experiences provided survivors with an important source of information, because such experiences mattered especially when there was a lack of access to media (either due to external constraints or endogenous choices). However, while lessons from the experiences of own family members and other members of the community mattered, experiencing starvation in person dominated the effect, which suggests that an emotional component (for example, grudges) was at play as well. (*II*) *political trust*: we find that the Famine's impact was specific to the political domain, not driven by shifts in general trust in society. More importantly, we show that the dampened political trust has turned into stable political ideology.⁶ First, the

⁴This effect could be driven by a combination of informational and emotional mechanisms: citizens in low drought regions processed additional information; at the same time they may also come to realization that the government deliberately lied about the true causes of the Famine. We discuss government propaganda in the aftermath of the Famine in Section 2.3.

⁵Vertical transmission of beliefs, attitudes and ideology has received considerable attention in economic theories, for example Bisin and Verdier (2001).

⁶Political scientists often describe such stable political trust as citizens' "diffuse support" of the regime, which refers

Famine's impact on contemporary political trust cannot be overturned by evaluations of the current government's performances. Second, the Famine affected political attitudes in a wide range of domains not directly related to the Famine. *(III) persistently*: we show suggestive evidence that several channels contributed to the persistence of the Famine impact. First, the Famine experiences served as a catalyst that drew together people with similar political trust in the marriage market. Such assortative mating formed homogeneous households that reinforced each member's own political trust. Second, the Famine experiences and the resulting political distrust led survivors to stay away from working for the government, and to avoid marrying spouses employed by the government. They hence forewent important opportunities to update their beliefs on the government's trustworthiness after the Famine.

These findings contribute to a growing empirical literature on the experience-based formation of beliefs, attitudes and preferences. Nunn and Wantchekon (2011) identifies a persistent impact of the African slave trade on social trust; Alesina and Fuchs-Schündeln (2007) demonstrates that citizens' preference for redistribution was shaped by the political regime they grew up in; Giuliano and Spilimbergo (2014) identifies that the experiences of economic recession during formative years (16-25 years old) left individuals more favorable towards state redistribution; Di Tella, Galiant and Schargrodsky (2007) shows that property rights allocation outcomes influenced a wide set of market-related beliefs; Malmendier and Nagel (2013) uses rich belief data in finance to show that individuals form inflation expectations based on personal experiences in the past. More recently, Fuchs-Schündeln and Schündeln (2015) shows that cohorts who spent more time under democracy exhibit stronger support for the regime. Nunn (2012) provides a fascinating survey on how cultural and political beliefs are shaped by history. Using the unique context of the Great Chinese Famine, we demonstrate that a massive shock in citizens' information about the government induced by traumatic experiences can fundamentally and persistently change their political trust and attitudes. We further contribute to the literature by suggesting potential mechanisms of such persistence in the political trust.

Our findings also add to the recent empirical literature on retrospective voting. Voters choices are governed by a coherent logic in many cases (Healy and Malhotra (2013)).⁷ For example, Healy and Malhotra (2010) shows that when evaluating the government's performance responding to a natural disaster, citizens are sophisticated enough to distinguish aspects that were beyond the government's control (e.g. tornado-caused death) and those that were directly commanded by the government (e.g. disaster relief policies). Our finding confirms this general pattern, since the

to the public's attitude towards regime-level political objects regardless of performance (Hetherington (1998)).

⁷In other instances, voters are found to make consistent and predictable errors, though the effect sizes are often small. For example, Healy and Malhotra (2009) and Huber, Hill and Lenz (2012) use field and experimental evidence to show that citizens exhibited systematic biases. They tended to overweight more "noticeable" government actions and more recent performances during elections. Our result showing the Famine's persistent adverse effect on political trust provides contrasting evidence in this regard: citizens could be salient towards major events that occurred in the distant past, and recent positive signals of the government may not be sufficient to substantially alter perceptions formed in the past.

resulted political distrust indicate that survivors attributed the Famine to the government failures versus natural disasters differently, depending on the local contexts.⁸ More broadly, our paper provides one of the first empirical evidence that through retrospective "voting" in the form of expressed political distrust, citizens in authoritarian regimes may also be able to achieve certain degree of government accountability.

Our findings on the formation and persistence of political distrust also contribute to the large literature on trust. Economists have recognized trust as a critical component of social capital, directly affecting the economic outcomes at the micro level (Arrow (1972)), as well as institutional performances at the macro level (Putnam, Leonardi and Nanetti (1994)). Political trust, in particular, is vital to our understanding of political institutions and their operations, and has been widely considered as a key factor that governs political interactions and activities (see, among others, Easton (1965), Muller, Jukam and Seligson (1982), Nye, Zelikow and King (1997), and Warren (1999)). Recently, a small economic literature turns to the subject of political trust and its consequences on public policy implementation (Sapienza and Zingales (2013) and Kuziemko et al. (2015)). We add to this literature by providing evidence on the source of political trust, how it is formed, and how it persists over time.

Lastly, our finding that personal experiences during the Famine persistently affected political trust also contributes to the literature in both behavioral economics and psychology on the impact of traumatic events. Much of the existing literature focuses on the domain of risk preference, time preference, and investment decisions. For example, Malmendier and Nagel (2011) on macroeconomic turmoils; Callen et al. (2014) and Voors et al. (2012) on violence conflicts; Lerner et al. (2003) on terrorist attacks; Callen (2011) and Cameron and Shah (2013) on natural disasters. By focusing on the Great Chinese Famine, we extend this literature by investigating how traumatic events impact beliefs and attitudes in the political domain.

The rest of the paper proceeds as follows: Section 2 briefly describes the historical background, institutional setup, and important features of the Great Chinese Famine. Section 3 describes various data sources used in this study, where we also introduce our measurement of the Famine experience and outcome variables. Section 4 introduces our empirical model, discussing the identification assumptions and potential threats to identification. Section 5 presents main results, including a discussion of the scale of the Famine's impact, as well as evidence on the intergenerational transmission of the Famine impact. Section 6 investigates the mechanisms underlying each component of the main results (namely, the Famine experience impacted political trust, persistently). Section 7 presents evidence against alternative hypotheses and a variety of robustness exercises that support causal interpretation of our findings. Finally, Section 8 concludes.

⁸Note that in the context of the Famine, citizens were making political inferences from a disaster with seemingly ambiguous causes, and the inferences focus on who was truly responsible for the Famine. The other natural disaster related studies that we mention here typically focus on "true" natural disasters where there was no ambiguity in their causes – citizens were instead making political inferences from the government's responses in the aftermath of the disasters.

2 The Great Chinese Famine

2.1 "The worst famine in human history"

The Great Chinese Famine, occurred from 1958 to 1961, is widely considered as "the worst famine in human history."⁹ Although historians and demographic scholars have yet to reach a definitive conclusion on the actual number of deaths, few doubt the Famine's unprecedented intensity, as measured by excessive deaths and the plummet in fertility.¹⁰ Approximately 30 million people (5% of China's total population in 1957) perished unnaturally.¹¹ Fertility (including both unborn babies and infant mortality) dropped by an estimated size of another 30 million.¹² Despite its immense scale, the Famine took place within an incredibly short period of time – the majority of the deaths were concentrated in 1959 and 1960. The short duration amplified the severity of the Famine and the traumatic experiences among the survivors.

2.2 Mao's Great Leap Forward

It has been widely established among scholars that the Great Chinese Famine was a direct consequence of Mao's Great Leap Forward, an economic and social campaign led by the Chinese Communist Party from 1958 to 1961 (see, among others, Kung and Chen (2011) and Meng, Qian and Yared (2015)).¹³ The Great Leap Forward was initiated by Mao Zedong, aiming to rapidly transform the country from an agrarian economy into a communist society through swift industrialization and collectivization. In particular, the campaign introduced a mandatory process of agricultural collectivization that prohibited any private farming practices. Agricultural products were procured and then redistributed by the government with a set quota. The Great Leap Forward also introduced *People's Communes*, which exercised management and control of all rural resources such as labor, land, and food.¹⁴ The distorted incentive structure in agricultural production, agricultural labor diversion to industrial projects, and the grain procurement system during the Great Leap Forward are considered as some of the main contributors to the Famine.

⁹Historians officially define the Great Famine to be three years, 1959-1961, when mortality rates were the highest. Famine became widespread when local storage of the 1959 harvest ran out during the early part of 1960 (Becker (1996); Thaxton (2008)). For the purpose of this study, we include 1958 as an early starting year of the Famine, since hunger experience was prevalent as early as 1958.

¹⁰Typically, demographers define excessive deaths as the difference between actual death rates and what would have occurred based on the linear trend calculated using intervals both prior and after the Famine period.

¹¹This figure is based on the average estimates of Ashton et al. (1984), Banister (1984), Cao (2005), Coale (1981), Jin (1993), and Peng (1987), among others. More recently, Dikötter (2010) uses classified archival documents to reach the estimation that there were at least 45 million premature deaths during the Famine.

¹²This figure is based on authors' calculation using the *cohort loss* metrics. Please see Appendix A.1 for details on the construction of the *cohort loss* measurement.

¹³Hence the Famine is also often referred to as "the Great Leap Famine of China." However, scholars have yet to reach an agreement on what were the exact mechanisms through which the Great Leap Forward caused the Famine.

¹⁴Some have argued that mortality rates were exacerbated by food wastage in communal kitchens (Chang and Wen (1997)).

2.3 Key features of the Famine

We now highlight a number of key features of the Famine. In Appendix B, we describe additional characteristics relevant to this study, such as its concentration in the rural sector and the strict migration control in place during and after the Famine.

Excessive variation in Famine severity across regions One of the most striking features of the Famine is its sharp variation in severity across regions. For example, the death rates in 1960 of two adjacent provinces differed by more than sixfold: Anhui province suffered from a death rate of 1.84% in 1960, while the adjacent Jiangsu province incurred 0.29% population loss.¹⁵ Figure 1 demonstrates the high cross-county variation in Famine severity, measured by *cohort loss*, where darker shades indicate higher degree of Famine severity in the corresponding counties (Appendix A.1 provides details on the construction of the *cohort loss* measurement).¹⁶

This sharp and excessive variation of the Famine severity across regions is often cited as a primary evidence that the Famine was not caused by nature. For example, Kung and Lin (2003) show that the varying severity closely traced the rate of state-procured grain intended to fuel industrialization. Kung and Chen (2011) argue that political incentives and cadre radicalism were key factors contributing to high Famine severity in certain regions. Meng, Qian and Yared (2015) provide evidence demonstrating that such regional variation was generated by an inflexible and progressive government procurement policy.

Media censorship and propaganda In order to preserve political support in the aftermath of the Famine, the Chinese Communist Party promptly engaged in media censorship and propaganda. The government limited reports of the Famine and minimized the mortality numbers in public media. Discussions on topics related to the Famine have been strictly censored throughout the public media and schooling in China even until today.¹⁷ Hence, personal experiences of the Famine mattered specifically because they informed the very existence and the sheer scale of the Famine.¹⁸ Coupled with media censorship, the high variance of actual Famine severity across regions created variations in such information, which we exploit in this paper.

¹⁵These figures are estimated based on Cao (2005). The contrast in Famine severity between Anhui and Jiangsu has been noted by several scholars. For example, Chen (2011) documents this difference. He attributes it to the polarized needs of irrigation across these two provinces due to geographic and climate reasons. Different scales of these irrigation projects undertaken during the Great Leap Forward then led to differential degrees of agricultural labor diversion.

¹⁶While the figure focuses on cross-county variation in Famine severity, such high variation occurred at almost all administrative levels: across provinces, across counties within a particular province, across villages within a particular county, and ultimately, across individuals within a particular village.

¹⁷Many have documented the lack of knowledge on the existence of the Great Chinese Famine among Chinese citizens as a result of strict media censorship. For example, Frank Dikotter depicts this phenomenon in a 2013 piece on *Foreign Policy*: "The Disappeared" (http://www.foreignpolicy.com/articles/2013/01/02/the_disappeared).

¹⁸Unlike many other important events, the censorship of the Famine allows us to empirically distinguish *personal experiences* from history at large. Almost inevitably, important historical events become public knowledge through media and education, and personal experiences *per se* may not be of first order importance in the formation of beliefs and attitudes.

In practice, censorship and propaganda were often intertwined. Until the early 1980s, the Chinese government's official stance was that the Famine was primarily a result of severe natural disasters of drought compounded by minor planning errors. Accordingly, the term "three years of natural disasters" was coined in order to officially refer to the Famine period. In Appendix C, we provide a translated excerpt of an official propaganda poem, published on state media in 1960 during the peak of the Famine. This poem, along with many others, constitutes the government's substantial propaganda efforts to emphasize the dominant role played by natural disasters.¹⁹ While the Famine could (in theory) be attributed to a spectrum of natural and political causes, citizens may be persuaded by the propaganda and more likely to blame the Famine on natural disasters, unless they had private and contradicting information.

Agricultural productivity shocks due to drought The propaganda that blames heavy drought for the Famine was not created entirely groundlessly – moderate drought that affected agricultural production *did* took place during the Famine period. Nevertheless, drought alone was not able to account for the full scale and the regional variation of the Famine severity that we observe. The cross-county variation in the Famine severity was only *weakly* correlated with the occurrence of heavy drought during the Famine period (see, among others, Li and Yang (2005), and Meng, Qian and Yared (2015)). This offers direct evidence that factors beyond the drought played an important role in the Famine. However, the complex coexistence of drought and government policy failures indicates that when the Famine survivors sought explanations of their sufferings, it was not immediately obvious how to weight between nature versus government-related factors.

In Table A.1, Panel A, we present additional evidence from our own calculation. We show that the agricultural productivity shocks associated with heavy drought cannot explain the Famine severity across provinces, measured using a variety of methods. We will discuss this in greater details in Section 4.2.

3 Data & measurement

Our difference-in-differences empirical strategy compares the political trust of individuals who were exposed to sustained hunger experiences during the Famine versus those who were not, across regions with various degrees of exceptional drought during the Famine period. While we employ data from a variety of sources for this paper, many of the key variables are measured by the *China Family Panel Study* (CFPS). We briefly describes the CFPS and the sample that we use in Section 3.1. In Section 3.2, we introduce our key measurement of hunger experiences during the Famine, and we also present evidence validating this measure. Next, we describe the main

¹⁹Since the late 1980s, the government has gradually acknowledged – although not explicitly in public media – the role of policy mistakes in causing the Famine, suggesting that the disaster was 30% due to natural causes and 70% by government mismanagement (Yang (2008)).

outcome variable (political trust) as well as its interpretation in Section 3.3. Lastly, in Section 3.4, we describe the measurement of exceptional drought that affected agricultural production during the Famine. In Appendix A, we describe additional data sources and variables that we use in this paper.

3.1 China Family Panel Study (CFPS)

Our empirical analysis hinges on measurement of survivors' starvation experiences during the Famine and their subsequent political trust and attitudes. We use the CFPS baseline wave conducted in 2010 (hereafter CFPS-2010) for this measurement.²⁰ We use the 2nd wave of CPFS in 2012 (hereafter CFPS-2012) to measure various outcomes of interest, such as political trust, attitudes, and related behaviors.

Overview of CFPS CFPS is a large-scale, almost nationally representative panel survey project conducted by the Institute of Social Science Survey at Peking University.²¹ Through a multistage probability sampling procedure, CFPS completes interviews with a total of 14,798 sampled house-holds and all individuals living in these households, amounting to 36,000 completed adult observations. The 25 provinces of China covered by CFPS represent about 95% of the Chinese population in mainland China, with only Inner Mongolia, Xinjiang, Tibet, Hainan, Ningxia, and Qinghai excluded from the overall sample.

Baseline sample restrictions For our baseline estimation, we limit our sample to individuals who completed both CFPS-2010 and CFPS-2012 survey. We further limit our sample based on two criteria: *(i)* individuals resided in the rural sector at the time of CFPS-2010; and *(ii)* individuals born before 1963. These individuals constitute the sub-population susceptible to the Famine.

Criterion (*i*) is based on the fact that the Famine impact was concentrated in the rural area. Due to strict migration restrictions between the rural and urban sectors, 95% of the individuals living in the rural area in 2010 have been living in the same counties since their birth.²² We provide a detailed discussion on the Famine's concentration in the rural sector in Appendix B.1, and on the strict migration control during and after the Famine in Appendix B.2. Criterion (*ii*) guarantees that the individuals of interest were born before the end of the Famine, allowing us to focus on those people who were subject to *direct* and *personal* hunger experiences during the Famine. We present summary statistics describing the observable characteristics of this subsample of CFPS subjects in Table 1, columns 1 and 2.

²⁰We use a non-public version of CFPS-2010, which allows us to access many politically sensitive variables including the historical trauma memory and various regional identifiers.

²¹Detailed information about the CFPS project can be found at www.isss.edu.cn/cfps.

²²Hence, our CFPS rural sample excludes those individuals who left the rural area to work in urban sectors (so-called *migrant workers*). However, for the older cohorts that we primarily focus on in this study, the ratio of migrant worker is low.

3.2 Starvation experience during the Famine

Measurement In CFPS-2010, we asked the following question:

Have you experienced starvation for more than one week? If so, when did it start, when did it end, and where did it happen?

For individuals who reported starvation experiences between 1958 and 1963, we treat them as having experienced hunger during the Famine. Two important aspects of this hunger experience measurement are worth emphasizing. First, the question itself did not explicitly mention the Great Chinese Famine; in fact, the question only asked about generic hunger experiences, and subjects would not be primed to think about when did the hunger experiences occur until they have indicated "yes." Second, questions that measure the respondents' political trust and attitudes were only asked in CFPS-2012, two years after the hunger experience elicitation. Hence, we are less concerned that the hunger elicitation itself would prime the respondents so that they reported political trust and attitudes differently.

Validation We use novel measurement of survivors' personal memory on hunger experiences during the Famine, which allows us to exploit rich levels of variations in the Famine exposure. To the best of our knowledge, this is the first paper that constructs measurement of the Famine exposure based on personal memory of starvation experiences.²³ We next summarize evidence that demonstrates the validity of this hunger memory measurement.²⁴ Detailed discussions are presented in Appendix D.

First, on average, a 5 percentage point increase in *cohort loss* (introduced in Appendix A.1) in a particular county is associated with an 18.4 percentage point increase in the likelihood of reporting individual Famine experience, which explains nearly the entire variation of individual Famine experiences across counties within a particular province. Second, individuals often have extraordinarily long lasting memory of traumatic experiences from the past. Both oral history and anthropology evidence demonstrates that survivors from the Famine are no exception. Third, conditional on having reported hunger experience, approximately 97% of the respondents indicated that their hunger experiences took place within the timeframe of the Great Chinese Famine. This high concentration of reported hunger years confirms that unlike many other famines in human history, starvation was indeed a highly salient event to those who suffered from the Famine (see Appendix B.3 for a discussion that starvation was the main cause of death, which is a unique feature of the Great Chinese Famine). Finally, the upward cohort trend in the likelihood of reporting hunger experiences during the Famine (see Figure 2) confirms the biological and cognitive

²³Previous studies typically use county level variation in cohort loss (caused by drop in fertility and increase in infant mortality) to proxy for the Famine exposure.

²⁴Our validation can only be conducted at the aggregate level, as there is no feasible way to individually verify each report of the hunger incidences.

limitation of memory when children are very young.

3.3 Political (dis)trust

Measurement The primary outcome of interest is citizens' trust in local government officials. This question was asked in CFPS-2012, translated as follows:

Please rate to what degree do you trust local government officials? (0 = extremely low trust; 10 = extremely high trust)

Note: for ease of interpretation, we recode the trust outcome so that 0 indicates extremely high trust and 10 extremely low trust.

Trust in the local vs. central government Both the central and local government were implicated in the Famine. While the central and local government negotiated the exact regional procurement targets, the central government was certainly most directly responsible for setting the quota and failed to make proper adjustment according to actual production fluctuations (Meng, Qian and Yared (2015)). The severity of the Famine was considerably exacerbated due to the local government officials' excessive compliance with the procurement targets, largely driven by their promotion incentives (Kung and Chen (2011)). The local officials often exaggerated in their reports on local production, employed coercion to extract crops from the farmers, and refused to re-bargain with higher level officials regarding the unreasonable procurement targets during the Famine. From the perspectives of the local residents, the local government's behaviors may be considered as more tangibly outrageous.

Due to the political sensitivity of eliciting trust in the central government in mainland China, we are only able to explicitly measure citizens' trust in the local government. However, we expect that citizens' inferences from the Famine would affect their trust in both the central and local government. In fact, evidence from a separate survey conducted among elite college students in China demonstrates that there is a high correlation between reported trust in central and local government (Cantoni et al. (2014)).²⁵ Hence, one can *cautiously* extrapolate citizens' trust in the central government from their reported trust in the local government.

Interpreting self-reported political distrust As discussed previously, if citizens realized that the government was responsible for harming its citizens, this could fundamentally and persistently alter their trust in the government. The hunger experience (or lack thereof) provided valuable information to citizens about whether government was guilty of causing the excessive mortality and starvation during the Famine. Nevertheless, given the authoritarian regime in China, one worries

 $^{^{25}}$ Correlation between trust in central government and trust in provincial government = 0.72; correlation between trust in central government and local government = 0.45. Number of observations = 1,766. See Cantoni et al. (2014) for more detailed sample descriptions.

that the self-reported distrust in the local government expressed during a face-to-face survey contains significant reporting biases – respondents may be afraid of revealing distrust truthfully. We take several approaches to address this concern and to aid the interpretation of self-reported political distrust. We summarize the evidence below, and we provide more detailed discussions in Appendix E.

First, the self-reported distrust in the local government carries high interval validity. Political distrust is indeed high among individuals whom we expect to hold unfavorable attitudes towards the government. For example, if respondents have encountered negative interactions with the local government during the year prior to the CFPS survey (e.g. being treated unfairly by the government, having conflict with government), such experiences are strongly associated with high level of reported political distrust.²⁶ Second, the self-reported political distrust does not exhibit an abnormally compressed distribution, unusual lumping at certain "politically correct" answers, or other patterns of self- censorship (see Table A.2). Third, one may worry that self-reported political distrust may be systematically biased downwards because of the following reasons: (i) face-toface interview; and (ii) particular context of China (e.g. high political sensitivity). However, the self-reported political distrust measured by the CFPS again does not exhibit self-censorship patterns when we compare it with similar measurement via anonymous online surveys in China, and face-to-face surveys conducted in other developing countries (see Table A.3). Fourth, recent studies have argued that the authoritarian regime in China is actually much more tolerant towards citizens' criticisms against the *local* government cadres than those against the *central* officials (see, among others, Lorentzen (2013) and King, Pan and Roberts (2013)). Hence, the Chinese citizens may in reality face much lower pressure to self-censor distrust in the local government than previously speculated.

3.4 Exceptional drought that affected agricultural production

In order to measure exceptional drought level during the Famine, we make use of two contemporary official archives from the People's Republic of China. First, we use the *Comprehensive Statistical Data and Materials on 50 Years of New China (1999)* compiled by the Department of National Economic Statistics at China's National Bureau of Statistics, to obtain annual data on total agricultural sown area for each province. Second, we use *Report of the Damage Caused by Disaster in China (1996)* compiled by China's National Bureau of Statistics, Department of Domestic Affairs, to obtain information on total areas affected by drought for each province for a given year.²⁷

For each province, we calculate the annual ratio of heavy drought-affected area to the total agricultural sown area. This ratio captures the relative scale of annual drought severity in each

²⁶On average, having experienced one of such negative encounters moves the reported distrust by 1 unit (out of a scale of 10), and the t-statistics of the correlations well exceed 10 for most of the negative experiences recorded.

²⁷Overall, we have non-missing values for 26 of the 31 provinces in China. The 5 missing provinces are: (*i*) directcontrolled municipalities with limited agricultural production (Beijing, Tianjin and Shanghai); (*ii*) Tibet; (*iii*) province that was not officially established until late 1980s (Hainan).

province. We use the maximum ratio during the peak of the Famine period (1960-1961) to indicate the drought affecting agricultural production *during* the Famine.²⁸ We calculate the mean of the ratios from 1950 to 1959 to indicate the level of drought affecting agricultural production *prior* to the Famine.

We next divide drought level *during* Famine by the drought level *prior* to the Famine. This is intended to capture the fact that merely a high level of drought affecting agricultural production *during* the Famine was not informative to the citizens, unless such shocks were exceptionally severe compared to those occurred during non-Famine years. For ease of interpretation, we normalize this ratio by first substracting the national minimum value, and then dividing by its standard deviation. We denote this normalized ratio as the index of drought level during the Famine.²⁹ All values of this index are positive, and the magnitude measures the distance away from the national minimum in the unit of one standard deviation.

Figure 3 plots the drought index for the 26 provinces that we have data across China, where darker shades indicate higher level of exceptional drought during the Famine period. One can see from Figure 1 and Figure 3 that the distribution of exceptional drought during the Famine does not correspond to the Famine severity that we observe across regions. We conduct formal analyses on the association between drought level and various measurements of the Famine severity in Section 4.2.2. Appendix A.2 provides additional details on the data sources and construction process of the drought index, where we also briefly discuss relevant constraints regarding data availability and data reliability.

4 Empirical strategy

4.1 Empirical model

Combining data from various sources introduced in Section 3, we estimate a generalized differencein-differences model, which controls for birth cohort and province of residence fixed effects, to examine the effects of hunger experiences during the Famine. Our baseline specification is the following:

$$y_{icp} = \sum_{c} \alpha_{c} + \sum_{p} \delta_{p} + \beta Famine_{*} + \gamma Drought_{p} + \delta Famine_{*} \times Drought_{p} + \epsilon_{icp}$$
(1)

where y_{icp} is the political distrust measured in the CFPS (*i* indexes individual, *c* the birth cohort, and *p* the province of residence); α_c and δ_p are full sets of birth cohort and province of *current* residence fixed effects; *Drought*_p is the index of exceptional drought affecting agricultural production

²⁸Our results are robust to alternative measurement of drought during the Famine: for example, *average* drought level occurred from 1958 to 1961.

²⁹In Section 7.2, we show results from alternative specifications using different measurement of drought level, including the index constructed only using the drought level *during* the Famine (rather than the ratio over drought level *prior* to the Famine).

during the Famine period.³⁰ In our main specification, we allow idiosyncratic differences, ϵ_{icp} , to be correlated across individuals within a corresponding province unit (the level at which drought index varies).³¹

*Famine*_{*} refers to six different measurements of the Famine exposure, constructed based on different data sources, aggregated at various levels, and capturing assorted levels of variation. These measurements are:

	Famine _*	Data source	Level of variation
1	County avg. Famine experience	Famine memory	County
2	County cohort loss during Famine	Census demographics	County
3	Village avg. Famine experience	Famine memory	Village
4	County leave-self-out avg. Famine experience	Famine memory	Individual
5	Village leave-self-out avg. Famine experience	Famine memory	Individual
6	Personal Famine experience	Famine memory	Individual

Each of these six *Famine*_{*} measurements bears pros and cons, and captures different aspects of survivors' exposure to the Famine. Therefore, we present results from baseline estimations using *all* six measurements to convey a consistent and robust depiction of the Famine impact. Since the sixth measurement (namely, *personal Famine experience*) requires the strongest identification assumption, we focus our attention on this particular measurement when we discuss the identification assumption and threats to identification in Section 4.2.

 β is the coefficient that captures the main effect of hunger experiences during the Great Chinese Famine. Note that β may also capture the systematic selection of the Famine exposure. δ is the main coefficient of interest, capturing the differential effect of the Famine experiences across regions with various levels of exceptional drought. In other words, δ indicates to what extent did survivors attempt to distinguish the government's responsibility in the Famine from factors beyond its control. By conditioning on province of residence fixed effects, our baseline empirical specification absorbs differences in actual qualities, policies and performances across the provincial governments. By conditioning on birth cohort fixed effects, our specification also absorbs all variations across age groups that might induce different trust in the government in spite of same policy outcomes.³²

³⁰We assign the drought index to the Famine survivors based on the province of residence at age 3, which is the residence location measured closest to the Famine period. Since migration is strictly limited, all of the baseline results are robust to assigning drought index using residence location at birth or at the time of survey.

³¹In addition to this baseline specification, we will estimate additional specifications that: (*i*) use alternative clustering choices; (*ii*) include county level fixed effects; and (*iii*) include various individual-level and county-level controls. These results are shown in Section 7.1 and 7.2, and our inferences remain very similar.

³²For example, older cohorts might distrust local Communist government more because they spent longer years

4.2 Identification assumption and threats to identification

Individuals' exposure to the Famine within a region was definitely not random, since many predetermined characteristics would make certain individuals relatively more vulnerable to experiencing hunger during the Famine. However, conditional on having experienced hunger, whether the Famine victims were exposed to the Famine in a high-drought region or low-drought region can be credibly exogenous. More precisely, our difference-in-differences framework (that uses *personal hunger experiences* as a measure of the Famine exposure) relies on the identification assumption that the following two are *not* jointly determined: *(i) ex-ante* characteristics that make individuals vulnerable to the Famine; and *(ii)* contemporaneous drought affecting agricultural production during the Famine. Our identification assumption essentially states that individuals' non-random exposure to the Famine was *not* differentially non-random across regions that were hit by the drought differently during the Famine.

We next discuss threats to identification and present evidence supporting our identification assumption. Section 4.2.1 focuses on threats concerning factors that are correlated with *Famine*_{*} (in particular, survivor's personal Famine experience); Section 4.2.2 focuses on threats concerning factors that are correlated with $Drought_p$; and Section 4.2.3 focuses on threats concerning factors that are correlated with *Famine*_{*} × $Drought_p$.

4.2.1 Individuals' exposure to the Famine

Many determinants of the Famine exposure cannot drive our results Our difference-in-differences framework allows us to rule out a range of determinants of individuals' Famine exposure as confounding factors. First, *region-invariant* individual characteristics such as political connections that determined the likelihood of the Famine exposure cannot drive our results. Second, *time-invariant* regional or cohort factors that determined the likelihood of the Famine exposure *and* are orthogonal to the contemporaneous shock in drought during the Famine cannot drive our results.³³ Third, *time-variant* regional or cohort factors that determined the likelihood of the Famine exposure across individuals cannot drive our estimated effects, as long as these factors are independent from the contemporaneous drought levels during the Famine.³⁴ Note that as we move away from the sixth *Famine*_{*} measure (survivor's personal Famine experience) to the ones that are more aggregated, many of the concerns with individuals' endogeneous Famine exposure can be assuaged.

under the Nationalist government, etc.

³³In Section 4.2.2, we will discuss factors that might be correlated with the exceptional drought level during the Famine.

³⁴In particular, this is a weaker identification assumption than the one requiring the determinants of the Famine exposure to be uncorrelated with *time-invariant* regional characteristics. For instance, political connectedness prior to the Famine may be one of the main factors that determined hunger experiences during the Famine. Our identification strategy allows for such political connectedness to change across time, as long as it is unaffected by the contemporaneous drought level.

Balance of characteristics between the Famine and non-Famine affected individuals Despite the fact that our identification strategy does not rely on the exogeniety of the Famine exposure, we check the conditional balance of observable characteristics between the Famine and non-Famine affected individuals to alleviate some concerns over selection mechanisms of the Famine exposure.

In Table 1, columns 5 and 6, we present the raw differences in means of characteristics between citizens who did not experience hunger during the Famine and those who did (the means are shown in column 3 and 4, respectively), and the p-values testing for the statistical significance. The *unconditional* imbalance observed here is to be expected, since it could arise from different distribution of hunger experiences both across birth cohorts and across provinces.³⁵

In Table 1, columns 7 and 8, we show differences between citizens who did not experience hunger during the Famine and those who did, *conditional* on birth cohort and province of residence fixed effects, and the p-values testing for the statistical significance. Along many observable dimensions (for example, gender, parental characteristics, political connections, proxy for economic and social connections) that were pre-determined before the Famine period, the Famine-affected individuals are identical with those who did not experience hunger, once we account for average characteristics of the birth cohorts and the provinces of current residence.³⁶ We provide a detailed discussion on the balance of these observable characteristics in Appendix F.

We want to emphasize that the list of characteristics we test here is by no means comprehensive. Factors not captured here may determine individuals' Famine exposure. Accordingly, one should be cautious at interpreting the main effect (β) of *Famine*_{*} on political distrust that we estimate in the baseline specification.

4.2.2 Divergence across provinces induced by the drought

Drought did not lead to severer Famine One may worry that if heavier drought caused severer Famine which made vulnerable people more likely to experience hunger, *and* if vulnerable people had higher than average trust of the government than those who were not vulnerable, then such positive selection bias threats the identification.³⁷

Previous studies (see, among others, Li and Yang (2005), and Meng, Qian and Yared (2015)) demonstrate the weak correlation between drought level and the observed Famine severity. In particular, the link between weather condition (hence local food production) and the actual amount

³⁵For example, as discussed previously, individuals who reported hunger experiences were on average older (e.g. memory capacity is limited before age 10). They were also more likely to reside in regions where the Famine damage was severer.

³⁶In addition, we conduct more conservative versions of this balance check, conditional on the *county* or *village* of residence fixed effects, instead of the baseline *province* of residence fixed effects. Our balance on observable characteristics between the Famine affected and non-Famine affected samples remain unchanged. These results are available upon request.

³⁷One can consider the vulnerable people as those individuals who did not have the full insurance against the Famine. Correspondingly, people may possess certain characteristics (for example, political connection) such that they could always avoid hunger even if the Famine was extremely severe. This is likely because more than 30% of the individuals successfully avoided starvation even in counties that encountered the severest Famine.

of food available was largely eliminated due to procurement and reallocation of food across regions.³⁸ In Table A.1, Panel A, we present results from using drought that affected agricultural production (measured during various timeframes in column 1-3, and the index of exceptional drought during the Famine in column 4) to predict: *(i)* average hunger experiences during the Famine (measured by the CFPS); and *(ii)* cohort loss during the Famine (constructed through census data). Confirming the previous studies, we find that the impact of drought on the Famine severity is close to zero and not statistically significant. In other words, while drought may induce selection bias by turning vulnerable people to experience hunger who otherwise wouldn't, the scope of such selection seems to be fairly limited.

Drought did not lead to broader divergences across provinces More broadly, one may be concerned that drought around the time of the Famine may lead to persistent divergence across regions over time, and our estimated effects on $Drought_p$ merely captures these regional differences. In addition, if individuals with different experiences during the Famine also had distinctive experiences throughout the post-Famine decades, then the estimated effect on $Famine_* \times Drought_p$ would instead measure this prolonged divergence after the Famine.

By including a full set of province of residence fixed effects in our baseline specification, fixed regional differences that affected *all* residents cannot drive our estimated effects.³⁹ We next examine the relationship between drought (measured during various timeframes) and a range of key socioeconomic characteristics: (*i*) population natural growth, (*ii*) gross regional product (both total and that of agricultural sector in particular), (*iii*) employment rate, and (*iv*) local fiscal revenues (both total and that from taxation in particular). In Table A.1, Panel B, we presents results regarding the characteristics in 1960 (the peak of the Famine); and in Panel C, we focus on socioeconomic characteristics in 2012 (the year of the CFPS survey). In addition, in Panel D, we investigate whether drought affects the overall growth of these characteristics between 1960 and 2012; and in Panel E, we zoom in to the growth during the post-reform era (1980-2012), conditional on their initial levels in 1960. One can see that there exists *no* coherent relationship between drought and the levels or the growth of regional socioeconomic characteristics, and in vast majority of the cases the associations are statistically insignificant.

4.2.3 Distinct selection mechanisms of the Famine exposure depending on the drought

Determinants of the Famine exposure *may* **differ according to drought** Even though severer drought during the Famine was not associated with a higher proportion of people suffering from hunger on aggregate, different levels of drought and the resulting negative shocks in agricultural

³⁸A perfect procurement and food allocation system would smooth idiosyncratic productivity shocks across regions. However, China's institutional capacity to implement planned economy during the late 1950s was still limited.

³⁹We also estimate additional specifications that include a full sets of *county* of residence fixed effects. County ranks the third lowest along the hierarchical order of China's administrative divisions, just above township and administrative village. These results are shown in Section 7.1.

production could induce distinct types of people to become vulnerable to hunger experiences. While the overall causes of the Famine were very much political, regions encountered shortage of food supply for different reasons. The Famine took place in regions that was hit by severer drought because quotas in the food reallocation system failed to adjust, and not enough food was replenished after the procurement (see, among others, Meng, Qian and Yared (2015)). Regions that avoided heavy drought yet still suffered from the Famine because food produced locally was taken away through the strictly-enforced procurement policies. One could imagine that the types of people who lacked access to food may systematically different in these two scenarios.

Balance of characteristics at the Famine×**drought level** In order to assuage the concerns described above, we check whether individuals who experienced hunger in high drought regions during the Famine have identical observable characteristics as those in the low drought regions.⁴⁰ In Table 2, column 1 and 2, we show the mean characteristics of individuals who experienced hunger, first for those resided in high drought regions during the Famine, then for those in the low drought regions. Column 3 reports the p-value for a t-test of differences in mean characteristics, conditional on birth cohort fixed effects. Symmetrically, column 4 and 5 show the mean characteristics of individuals who avoided the hunger experience, first for those resided in high drought regions. Column 6 reports the corresponding p-value for the t-test of conditional differences in mean characteristics.

One can see that across the same observable characteristics that we examined previously, those who experienced hunger in high drought regions during the Famine do *not* exhibit systematic differences with those in low drought regions. In other words, we do not find evidence that due to various degrees of drought, systematically different types of people in the corresponding regions became vulnerable to the Famine exposure.

5 Results

5.1 Baseline estimation: political inference and political distrust

We now present estimation results from the baseline difference-in-differences specification (discussed in Section 4.1). In Table 3, we examine the impact of the Famine experiences on citizens' contemporary distrust in local government officials, conditional on province of residence and birth cohort fixed effects. Each column corresponds to one of the six Famine experience measures (*Famine*_{*}) that we introduced previously, and positive estimation coefficients indicate an increase in citizens' political distrust.

⁴⁰We define a region to be "high drought" if its drought level during the Famine was above the median level among all regions. Alternative cutoffs for the definition of high drought and low drought regions do not change the balance across the Famine and non-Famine affected individuals in these regions.

Across the results from all six *Famine*_{*} measures, several consistent patterns emerge. First, having experienced hunger during the Famine – whether it is measured by the regional Famine severity (hence the degree of Famine exposure) (column 1-3), or the average experiences of other residents in the region (column 4-5), or personal direct experiences (column 6) – was associated with an increase in political distrust in the local government officials. As we have discussed previously, one should interpret this main effect of the Famine experience with caution, since it may also be driven by the differences in unobservable characteristics between individuals affected by the Famine and those who were not.

Second, the negative coefficient estimates on $Famine_* \times Drought_p$ suggest that when a citizen experienced hunger in a region where he witnessed very little exceptional drought during the Famine, he was significantly more likely to hold the government (instead of nature) liable for the Famine. As a result, the Famine experience and the associated political inference led to an additional increase in political distrust. Conversely, having experienced hunger in a region that was hit by an exceptionally high level of drought during the Famine made the citizen more likely to attribute the Famine to the (observed) natural disaster. Accordingly, he become distrusting towards the local government officials at a milder degree.

Third, throughout the six $Famine_*$ measures, the magnitudes of the coefficient estimates on $Famine_*$ remain at three times of those on $Famine_* \times Drought_p$. To visually demonstrate this relative magnitude, Figure 4 plots the marginal effect of exceptional drought during the Famine on the political distrust among those who experienced hunger, where $Famine_*$ is measured by the personal Famine experiences. One can see that the net effect of the Famine experiences and the exceptional drought on citizens' political distrust remains positive, as long as they experienced hunger in regions where the exceptional drought levels were less than 3 standard deviations away from the national minimum. In other words, in spite of the fact that higher levels of exceptional drought led citizens to consider nature as a more important contributor to the Famine, in majority of the regions the overall adverse impact of the Famine on political trust was not overturned by this political inference between the government and nature.⁴¹

Lastly, we want to emphasize that by including province of current residence fixed effects in all of the specifications, the effects that we present here indicate that citizens held different degrees of political distrust in the aftermath of the Famine, even though they were subject under the same local government and have undergone same local policy outcomes over their life time.⁴²

⁴¹Another way to interpret this pattern is that as long as the exceptional drought during the Famine was not extreme, citizens who experienced hunger attributed non-negative weights to the government when they evaluated the cause of the Famine, and hence they became less trusting of the government.

⁴²In Section 7.1 and 7.2, we discuss various concerns related to this interpretation. For example, we present evidence from alternative specifications that include county of residence fixed effects, or province×cohort fixed effects.

5.2 Scale of the Famine impact

While we have shown that political inference from the Famine experiences led to a statistically significant impact on political trust (and in Section 7.1, we show that the impact is also statistically robust), is the Famine impact substantively important?

To each individual: the Famine impact is substantial In Table 4, Panel A, we quantify the scale of the Famine impact on political distrust in two ways. First, if an individual experienced hunger in a region with the *lowest* level of exceptional drought (in sample), his political distrust would increase by an additional 0.642 unit, comparing to the counterfactual scenario where the exceptional drought level was the *highest*. Second, if two individuals experienced hunger in regions that were 2 standard deviations apart in terms of their exceptional drought levels, then their political distrust would distrust would differ by 0.380 unit after the Famine.⁴³

Next, we benchmark the Famine against three other important factors that may affect political trust. We calculate the correlation between these factors and citizen's political distrust, conditional on province of residence and birth cohort fixed effects.⁴⁴ (*I*) Individuals with more education tend to place less trust in the government. Among the rural Chinese population that we focus on, having completed senior high school (or above) is associated with an increase in political distrust by 0.065 unit, which is approximately 1/10 to 1/5 of the Famine impact.⁴⁵ (*II*) Citizens who are not members of the Chinese Communist Party are associated with additional 0.208 unit of political distrust. In other words, the Famine led to a decline in political trust that cannot be counterbalanced by the repeated interactions between Party members and the government. These comparisons are listed in Panel B. (*III*) Negative experiences with the government can significantly intensify citizens' political distrust. In Panel C, we exhibit three categories of such negative events, their corresponding impacts on political distrust, as well as the average years during which these events took place. The scale of the Famine impact remains comparable with those of much more recent events.⁴⁶

To China as a whole: immense amount of citizens share the Famine memory today As Thaxton (2008) illustrates, "Rural China's survivors of the Famine hold obstinate memories of pain and loss inflicted on them by agents of the Communist Party and that they use these memories to question the legitimacy of the post-Mao political order." We extrapolate from the CFPS sample that approximately *97 million* individuals alive in China today can recall personal memory of hunger during

⁴³Both calculations explicitly capture the size of political inference from the Famine (in terms of its impact on political distrust), dropping the main effect of the Famine experience itself.

⁴⁴All the results presented here are based on calculations using the same sample from the CFPS that we use for the baseline estimation.

⁴⁵Among the cohorts of interest (those born before the Famine), only 9.86% have completed senior high school (10th to 12th grade) or above. Hence, these people can be considered as elites in terms of their educational attainment.

⁴⁶If we assume a moderate attrition rate of the Famine impact over time, then the implied initial impact is much larger than what is estimated here.

the Great Chinese Famine. The aggregation of the Famine impact on political distrust at such an immense magnitude entails undercurrents of political momentum, which may trigger systematic collective actions.⁴⁷ This may impose challenges to the authority of the Chinese Communist Party, who traces its legacy back to the same ruling party during the Famine. This potentially explains the heavy censorship on the Famine that the Communist Party has been insisted on throughout the past decades.

5.3 Intergenerational transmission of the Famine impact

Previous sections show that the Famine led to a significant and large increase in political distrust among the individuals who experienced hunger themselves. In particular, the contemporary measurement of political distrust indicates that the Famine impact has persisted *within* these individuals for more than five decades. Are these effects confined to the generation who is directly susceptible to the Famine experiences, or are they persistent *across* generations?

To evaluate the intergenerational transmission of the Famine impact, we focus on the rural population born after 1963 and whose parents were born before the Famine ended. Overall, we observe over 1,500 child-parents pairs, where we elicited children's and parents' political distrust independently.⁴⁸ These individuals are not directly susceptible to experiencing the Famine themselves, but their parents potentially went through the trauma of the Famine.

We first examine whether the Famine impact was passed down to the subsequent generation by estimating the intergenerational elasticity of political distrust:

$$y_{icp} = \sum_{c} \alpha_{c} + \sum_{p} \delta_{p} + \beta y_{icp}^{P} + \gamma y_{icp}^{P} \cdot Famine_{i}^{P} + \zeta Famine_{i}^{P} + \epsilon_{icp}$$
(2)

where for individual *i* in birth cohort *c* and province of residence *p*, y_{icp} denotes his own political distrust; y_{icp}^p denotes the political distrust of his parent, $P \in \{F, M\}$ indicating *father* and *mother*, respectively; *Famine*_{*i*}^{*p*} ($P \in \{F, M\}$) indicates whether individual *icp*'s parent experienced hunger during the Famine; and α_c and δ_p are full sets of birth cohort and province of residence fixed effects. We allow idiosyncratic differences, ϵ_{icp} , to be correlated across individuals who reside in the same province. β measures the overall intergenerational elasticity of political distrust – the amount of changes in the children's political distrust when parents report one additional unit of distrust; γ captures the incremental elasticity if parents experienced the Famine.

We estimate β and γ for fathers and mothers separately, and the coefficient estimates are presented in Table 5, column 1 and 2, respectively. The positive coefficients on *political distrust*^{*P*}_{*icp*}(β) indicates that children's political distrust are elastic with respect to that of both parents, sug-

⁴⁷Bai and Kung (2014) identify that weather shocks during the early 1980s provoked the lasting impact of the Famine, and affected villages' collective decisions regarding agricultural decollectivization.

⁴⁸An implicit criteria for the individuals to be included in the sample is that their parents need to be surveyed by the CFPS-2010. In particular, this excludes individuals whose parents are passed away, either during the Famine or afterwards.

gesting fairly strong intergenerational transmission of political distrust in general. The coefficient estimate on fathers' *political distrust*^{*p*}_{*icp*} × *Famine experience*^{*p*}_{*i*}(γ) is also positive. Hence, when fathers experienced hunger during the Famine, we observe an amplified degree of transmission of their political distrust to the subsequent generation. While mothers on average exhibit stronger transmission of political distrust to their children than fathers, there is no evidence that the transmission is intensified by the mothers' Famine experiences.⁴⁹

We next investigate whether parents' political inference based on exceptional drought during the Famine was transmitted the children. We re-estimate our baseline model where we replace the children's political distrust as the outcome of interest:

$$y_{icp} = \sum_{c} \alpha_{c} + \sum_{p} \delta_{p} + \beta Famine_{i}^{P} + \gamma Drought_{p}^{P} + \delta Famine_{i}^{P} \times Drought_{p}^{P} + \epsilon_{icp}$$
(3)

where the notations are analogous to those in equation (1), except that $Famine_i^p$ ($P \in \{F, M\}$) indicates whether individual *icp*'s parent experienced hunger during the Famine, and $Drought_p^p$ ($P \in \{F, M\}$) denotes the exceptional drought level that the parent observed during the Famine. Again, we include full sets of birth cohort and province of residence fixed effects, and we allow idiosyncratic differences, ϵ_{icp} , to be correlated across individuals who reside in the same province.

The coefficient estimates, again for fathers and mothers separately, are shown in column 3 and 4, respectively. The positive coefficient on fathers' *Famine experiences*^{*P*}_{*i*} and negative coefficient on *Famine experience*^{*P*}_{*i*} × *drought level*^{*P*}_{*i*} indicate that not only was the general impact of the Famine passed down to the subsequent generation, so did the pattern of political inferences during the Famine. If the fathers experienced hunger in regions where they saw little drought, they were more likely to attribute the Famine to the fault of the government. As a result, *both* the fathers and their children became additionally distrusting toward the government. Consistent with the gender difference that we observe in intergenerational elasticity, the transmission of political inference from the Famine is not evident among the mothers.

6 Mechanisms

We have shown that the Famine experience impacted political trust persistently. We now investigate the mechanisms underlying each component of the results that we just describe. Section 6.1 discuses what made the Famine experience particularly important to the survivors; Section 6.2 focuses on political trust, and the broad shifts in political attitudes and ideology that it reflects; and Section 6.3 examines the channels through which the effect persists.

⁴⁹Among the individuals who are susceptible to experience hunger themselves, gender is not a significant source of heterogeneity in the effect of the Famine on political trust. Table A.5 shows results from estimating the baseline specification separately by gender. Thus, the gender heterogeneity in intergenerational transmission that we see here cannot be driven by gender differences in the Famine's direct impact.

6.1 The Famine experience

Lack of information access played a key role Our interpretation of political inference implies that hunger experiences carried important information about the Famine and the government's involvement in it. We can test this claim by looking at whether the Famine impact is crowded out when alternative information access was available or actively sought after by the citizens.

We re-estimate our baseline specification separately on subsamples split according to criteria that determine information access: (*i*) whether the village of residence had access to electricity prior to the economic reform in 1978, which serves as a proxy for the degree of external constraints on information due to lack of infrastructure;⁵⁰ (*ii*) whether the individual consumed news on social issues in 2010, which captures the willingness to consume relevant information conditional on having access to the source;⁵¹ and (*iii*) whether the individual had access to cell phone services in 2010, which measures access to modern communication technology that may offer different information available on the traditional news outlets (newspaper, radio, and TV).⁵²

Results are presented in Table 6, and one can see that the Famine impact prevailed almost exclusively among individuals who lacked access to information due to external constraints, or chose not to consume social and political information despite of its availability. Access to alternative sources of information (either exogeneously or endogeneously) crowds out the information function of the Famine experience, which may be due to two reasons. First, the survivors no longer needed to rely on experiences alone to learn about the Famine, its causes and consequences. Second, the survivors did not have to make political inferences entirely based on the drought conditions observed locally – hence less likely to believe in government propaganda and (wrongly) ascribe the Famine to natural disasters.⁵³

Experiences of other people mattered, but personal experiences were irreplaceable The personal hunger experiences during the Famine are *not* the only source of information. Learning from other people's hunger experiences are supplementary. As the results from our baseline estimations show (in Table 3, column 4 and 5), average starvation experiences of the neighbors significantly affected citizens' trust in the government, augmenting the effects due to personal hunger experiences along the same direction. In particular, survivors were affected by the hunger experiences of their spouses, which provided an important "data point" to raise their awareness and understanding of the Famine.

⁵⁰This is reported at the village level, the lowest administrative unit in China. However, we do not have this measure for all the villages in our sample.

⁵¹TV is the single most important media outlet that supplies information to contemporary rural Chinese residents. 97.11% of our sample reported owning at least one TV at home in 2010.

⁵²We choose cell phone as a division criterion because among various media and information technology, cell phone access provides the most meaningful degree of variation across the sub-population of interest. Almost all individuals had access to TV by 2010, and almost nobody had access to internet at home.

⁵³In Appendix G, we briefly discuss the role and implications of the Famine-related propaganda, in light of the results that we show in this paper.

Nevertheless, other people's hunger experiences could not substitute for going through the starvation in person. The coefficient estimates on personal hunger experiences during the Famine (shown in Table 3, column 6) remain largely unchanged, even if we control for the county leave-self-out average hunger experiences (or its counterpart at the village level). This suggests that in addition to information about the government, personal Famine experiences potentially also: *(i)* provided information about how ones' own households were treated by the state during crisis (particularly in comparison with how other households were treated), and *(ii)* provoked emotions (such as long-lasting grudges) that could not be easily attained by observing the hunger experiences of others.⁵⁴

6.2 Political trust

Shifts in trust occurred only in political domain While the Famine experiences and the accompanying political inferences had a significant impact on citizens' political distrust, distrust in other fellow citizens was left unaltered. In Table 7, column 3, we present results from estimating our baseline specification using *distrust towards stranger* as the outcome of interest. To the extent that political distrust is typically highly correlated with the general distrust in the society, the sharp contrast between the Famine's impact on political and general distrust reinforces our argument that the Famine experiences offered a remarkable opportunity for survivors to update their beliefs on the trustworthiness of their government – and *only* of the government. In other words, what we capture in our baseline specifications is *not* a manifestation of a broad new social equilibrium pertaining trust that had formed after the Famine. Rather, this is a phenomenon unique to the realm of the relationship between citizens and the government.

Dampened political distrust could not be overturned by competent government Measures of political trust typically contains elements of both *specific* and *diffuse* support of the regime – the former refers to satisfaction with government outputs and the performance of political authorities, while the latter refers to citizens' attitude toward regime-level political objects regardless of performance (Hetherington (1998)). Indeed, citizens' negative evaluation of the local government's performance during the previous year is highly correlated with their reported political distrust (*t-statistics* = 12.93).⁵⁵ However, the Famine impact on political distrust is not merely driven by citizens' performance evaluation of the current government (namely, *specific* support). In Table 7, column 2, one can see that neither the magnitude nor the inference of our baseline estimation on the Famine impact is altered when we control for citizens' performance evaluation. The Famine

⁵⁴In addition, it may be cognitively costly to make political inferences by separating the useful signals (the government's responsibility) from mere noise (natural disasters). When citizens experienced the Famine himself, he may be more likely to understand that the Famine is a very severe event, and hence more willing to bear the cognitive costs of the political inferences.

 $^{^{55}}$ Citizen's evaluation of the local government's performance during the past year is reported on a 1-5 scale, where 1 = achieved a lot during the past year; 5 = performed worse than before.

experiences diminished survivors' political trust, even if they consider the current local government fairly satisfying. This is primary evidence that the Famine shifted *diffuse* support (at the local level). Without the leeway provided by diffuse support, the local governments may be hard pressed to achieve efficacy, and hence stuck at the low trust equilibrium (Easton (1965)).

The Famine impact turned into stable political ideology In addition to political trust, the Famine experiences shifted a broad range of political attitudes that are not directly related to the Famine. In particular, we use the following module administrated in the CFPS-2012 to measure citizens' attitudes toward a range of key socioeconomic issues in contemporary China:⁵⁶

For the following questions, answer based on 0-10 scale. 0 = "not severe at all"; 10 = "extremely severe"

- 1 In your opinion, how severe an issue is *government corruption* to China today?
- 2 In your opinion, how severe an issue is *environmental pollution* to China today?
- 3 In your opinion, how severe an issue is *wealth inequality* to China today?
- 4 In your opinion, how severe an issue is *unemployment* to China today?
- 5 In your opinion, how severe an issue is *medical care* to China today?
- 6 In your opinion, how severe an issue is *housing and real estate* to China today?
- 7 In your opinion, how severe an issue is *social welfare* to China today?

We estimate our baseline specification (using personal hunger experiences for the *Famine*_{*} measure) on these political attitudes as outcomes of interest, and we present the coefficient estimates in Table 8, column 1-7, one at a time. The same pattern emerges as the one pertaining political distrust. Overall, having experienced the Famine was associated with citizens considering these socioeconomic issues as more pressing. When citizens experienced hunger in regions where they saw little evidence of exceptional drought, they became more likely to blame government failures for the Famine. Consequently, this political inference left them more unfavorable towards government's policies and performances today. This holds true across attitudes toward all seven of the socioeconomic issues. In column 8, we summarize the outcomes from these seven dimensions by constructing a z-score index (weighted by the inverse covariance of the standardizes outcomes, following Anderson (2008)); and in column 9, by constructing the first principal component. Again, we see shifts in the overall political attitudes.

Why would the Famine experiences and the accompanying political inference affect a spectrum of political attitudes not directly related to the Famine? The Famine may have left its survivors increasingly unsatisfied with the government's policies today, and they expressed such unsatisfaction by judging socioeconomic conditions as far from ideal. In addition, the Famine survivors may be less tolerant of policy inadequacies, fearing that they would foreshadow the

⁵⁶These questions ask respondents to assess their opinion on *entire* China, hence addressing the issue of endogenous geographic sorting due to individual's policy preferences.

recurrence of the historical catastrophe. The evidence presented here complements the result on political distrust: together, they suggest that a broad and rather stable political ideology (characterized by skepticism towards the incumbent government) has been formed in the aftermath of the Famine.

6.3 Persistently

We next document the patterns of assortative mating and the resulted homogeneous households in the aftermath of the Famine, which we hope to shed light on the channel through which the Famine impact persists.⁵⁷ Individuals' Famine experiences may serve as a catalyst that draws together people with similar political trust.⁵⁸ They in turn form homogeneous micro-environment where intra-household learning on political trust is strong and self-enhancing.

In order to examine the effect of the Famine experiences on survivors' subsequent marriage decisions, we focus on two key outcomes: (*i*) whether one's spouse had experienced the Famine; and (*ii*) whether the couple was employed by government related entities, which were consisted of government and its agencies, army, state owned enterprises, collective firms and organizations, and village administrative bodies.⁵⁹ The former measures *direct* assortative mating based on shared Famine experiences, which complement each person's own memory of the trauma. The latter captures an *indirect* sorting mechanism through career types, which may influence citizens' frequency to interact with the government and its agent, and affect their' opportunities for updating beliefs on the government's trustworthiness.⁶⁰

To identify these inter-spousal effects, we restrict the sample according to the following criteria: *(i)* conditional on being married, current marriage was initial marriage (which amounts to 96.49% of the couples); *(ii)* current marriage took place after the Great Chinese Famine (so that marriage decisions were made after the Famine exposure); and *(iii)* both spouses were surveyed in the CFPS-2010.⁶¹ For employment-related outcomes, we further require both spouses to be currently employed since we do not observe the employer information for retirees.⁶²

⁵⁷We acknowledge that there may be other channels of persistence beyond the ones that we explore here.

⁵⁸It is unclear whether the Famine experience was a salient or non-salient screening mechanism on the marriage market – sorting based on Famine experiences can be either explicit or implicit. Nevertheless, several anecdotal evidences suggest that shared starvation experiences during the Famine form a unique bond between husband and wife.

⁵⁹China's marriage law specifies that legal "marriageable age" to be 22 years old for males and 20 years old for females. Hence, most marriages took place after the couples already made their initial employment decisions. Our results remain very similar if we restrict the sample to individuals who married after 20 years old.

⁶⁰One can also consider this as a revealed preference consequence of the Famine in both the career and marriage market due to the increased political distrust among the Famine victims – if one does not trust local government officials, it is also less likely for him/her to work for the government and to marry a government-related employee, *ceteris paribus*.

⁶¹To maintain a balanced sample, we restrict sample to individuals who have non-missing value in all the control variables that we use for this exercise (parents' literacy status and ancestry's political label) even in the specification that we do not include control variables. Results remain almost unchanged when we include these individuals with missing control variables – the results are available upon request.

⁶²The average age among the restricted sample is 61.6. Thus, we are essentially identify the effects out of a younger

Sorting by the Famine experience We first estimate the likelihood of marrying someone with the Famine experience when an individual went through starvation during the Famine personally. To account for the fact that high Famine severity may mechanically generate high match rates of Famine-affected couples (since a Famine victim was more likely to reside in places that were hit by the Famine more severely), we control for the effects driven by the Famine severity, and examine whether the Famine victims were *differentially* more likely to marry others who shared their experiences with respect to this mechanical matching rate. In order to capture the relevant sub-population of citizens' marriage pool, we construct the *village-cohort Famine severity* index as the following: for each individual, we assign her with an index of the proportion of individuals with Famine experiences in her corresponding village of residence, and within the 5 consecutive cohorts window around her year of birth.⁶³

In Table 9, Panel A, column 1-2 (first for males, then for females), we present the coefficient estimates on the main effects of the Famine experiences and the Famine severity pertaining the marriage pool, and their interactions, conditional on birth cohort and county of residence fixed effects.⁶⁴ The positive coefficients on *Famine experience* indicate that individuals became significantly more likely to marry spouses who shared their Famine experiences, if they went through starvation during the Famine in person. In addition, while the *village-cohort Famine severity* is associated with a higher likelihood of marrying Famine victims (due to change in density within the marriage pool), the male Famine victims were *additionally* more likely to marry other Famine victims even after accounting for differences in the density of people who experienced the Famine.

One may be concerned that what we capture here is primarily driven by people using their Famine experiences as a marriage market signal for parental characteristics and family background. To address this concern, in Panel B, column 1-2, we present the coefficient estimates from an alternative specification where we control for parental literacy status as well as the political label assigned to the household (which indicates the asset level owned by the ancestors). The results remain nearly unchanged, suggesting that rather than merely serving as a proxy for other considerations in the marriage market, the Famine experiences bear significance in themselves.

Sorting by career types We next proceed to examine whether the Famine experience affected one's decision to work for the government, and marrying spouses who were employed by government-related entities. In Table 9, Panel A, column 3-4 (first for males, then for females), we present the coefficient estimates using individuals' *own* employment as outcome of interest, and in column 5-6, using the *spouses*' employment as the outcome. Across all specifications, we control for the

subsample from the restricted sample.

⁶³Our results are robust to alternative definitions of the location-cohort-specific Famine severity index, such as the one based on proportion of individuals with Famine experience within a corresponding gender group in the village of residence.

⁶⁴Nearly all of the married couples among the sample of interest (those directly susceptible to the Famine) were born in the same county of residence.

individuals' own birth cohort and county of residence fixed effects, which allow us to absorb the average regional and cohort differences in job availability in the public sector. One can see that having experienced the Famine made individuals significantly less likely to work for the government themselves, and to marry employees of government-related entities. The coefficient estimates remain unaltered when we control for parental and household characteristics (shown in Panel B), indicating that the career choices and assortative mating by career types are not merely reflecting sorting along non-career dimensions.

The effects that we identify above are almost exclusively driven by females. We conjecture that the high degree of male biases in public sector employment may contribute to the gender difference that we observe here. First, majority of the local government officials and agents were males during the Famine. Hence, at the marriage market, females were more likely to associate prospective males employed by government-related entities with the male government officials who inflicted political distrust during the Famine period. Second, two opposing forces are at play with respect to ones' *own* employment choices. On one hand, political distrust may push individuals away from the government-related jobs precisely due to distrust; on the other hand, political distrust may motivated individuals to "get into the regime" in order to receive political protection and insurance through their own employment were limited due to the low availability of public sector jobs to females.

7 Discussion

In this section, we first present a variety of robustness checks; then, we present a series of results that help us rule out alternative hypotheses that may explain the findings; finally, we discuss the external validity of our results.

7.1 Robustness checks

We now explore the robustness of our results that the Famine experiences impacted political distrust. Rather than present robustness checks for each of the six Famine exposure measurements on all outcomes that we examined previously, we demonstrate the robustness of our findings by presenting the specifications only for the last *Famine*_{*} measurement (personal Famine experiences), and for our primary outcome of interest – political distrust.

Alternative fixed effects We first investigate whether our baseline results hold when we include alternative sets of fixed effects. In Table 10, Panel A, column 1, we reproduce coefficient estimates using our baseline specification introduced in Section 4.1, where we include a full set of birth cohort and province of residence fixed effects. In Panel A, column 2, we instead include a full set of birth cohort and county of residence fixed effects, which absorb differences such as government

quality, reputation, and policies at the county level. In Panel A, column 3, we include a full set of province of residence *times* cohort fixed effects, allowing the local government's quality and policies to differ across the local residence of various ages. The estimated effects, in particular the patterns of political inference based on the Famine experiences and exceptional drought, remain qualitatively unchanged in these more conservative specifications.

Different clustering We next explore to what extent is our baseline statistical inference affected by our choice of clustering. In Table 10, Panel A, we re-estimate our baseline specifications, where we allow error terms to be correlated across individuals residing in the same province. We do so for all three choices of the fixed effects that we examined previously. Due to the smaller number of clusters in this case (25), we also implement the wild bootstrap procedure (Cameron, Gelbach and Miller (2008)) and present the corresponding p-values. In Panel B, we allow error terms to be correlated within each county of residence cells. In Panel C, we cluster the standard errors at the birth cohort level, allowing error terms to be correlated across individuals within the same birth cohorts across provinces. Finally, in Panel D, we re-estimate our baseline specifications, now implementing the two-way clustering by province of residence and by birth cohort. One can see that our statistical inferences on the Famine impact are not greatly affected by these alternative choices on clustering.

Pseudo-treatment as falsification test Finally, we demonstrate the statistical power of the inferences using our baseline specification by conducting falsification test, where we assign pseudotreatment. We compare effect of the Famine experiences and the accompanying political inferences on citizens' political distrust, against the distribution of pseudo-treatment effects that we estimate with our baseline specification when we *randomly* and *simultaneously* assign the Famine experiences to individuals, and the exceptional drought levels to provinces.

More precisely, we randomly assign positive Famine experiences to a consistent 24.5% of the individuals who are susceptible to the Famine, which is the empirical likelihood of the Famine exposure estimated from the CFPS. In addition, for each province, we assign its pseudo drought level by drawing a random number *without* replacement from the set of true values of exceptional drought levels during the Famine. We randomly assign 5,000 sets of pseudo-treatment draws in this manner.

In Figure 5, we plot the distribution of t-statistics from the 5,000 estimated pseudo-treatment effects on political distrust, first for the Famine experiences main effect, then for the interaction between the Famine experiences and the exceptional drought level. We mark within the pseudo-treatment effect distribution the location of the t-statistic of the corresponding treatment effect using the *actual* Famine experience and exceptional drought level in the region during the Famine. We also report the share of the pseudo-treatment t-statistics that is larger than the actual t-statistics,

in absolute value.⁶⁵ As evident from the figure, the inferences based on pseudo-treatment are similar to the standard regressions: under the null of no effect of the Famine experiences and the accompanying political inference, random variations would very rarely produce t-statistics (explaining political distrust) as large as the ones that we find resulting from the actual Famine experiences and exceptional drought levels.

7.2 Ruling out alternative hypotheses

Selection into survival Throughout our study, we focus only on the Famine survivors, since we do not observe the political attitudes of those who perished. An important concern of our results is that selection into survival potentially introduces substantial biases. Previous studies identify that survival probability differs systematically across several biological dimensions,⁶⁶ which induce attenuation biases when estimating the Famine's impact on health outcomes (among others, see Meng and Qian (2009)). In addition, selection into survival may operate in non-biological channels that are directly related to our study. Individuals with different levels of political trust prior to the Famine may have different likelihood of survival after the Famine, in which case the direction of the bias is ambiguous.

We address the concerns regarding survival selection by estimating our baseline specifications after dropping individuals at the lowest quantiles of the distributions along a range of dimensions, where the selection into survival was most prevalent.⁶⁷ These dimensions are: *(i)* direct outcome of political distrust that we primarily focus on in this study; *(ii)* individual's height; and *(iii)* local availability of alternative food sources.⁶⁸

The estimate results after we have corrected for survival selection are presented in Table 11, where we replicate our baseline estimation in column 1, and column 2-4 correspond to the three selection dimensions that we outline above. One can see that our baseline results are unlikely to be driven by survival selection biases, since correcting for these biases do not quantitatively change the results and their statistical inferences. In fact, when we use height and local availability of alternative food sources to correct for survival selection, the coefficient estimates on both *Famine experience* and *Famine experience* × *exceptional drought* enlarge, suggesting that the survival selection actually causes *attenuation* biases in the baseline estimates. We provide a more detailed discussion on the correction procedure and the results in Appendix H.

⁶⁵One can consider this measure as analogous to a p-value in this placebo exercise.

⁶⁶For example, Gorgens, Meng and Vaithianathan (2012) argues individuals with high stature were more likely to survive the Famine.

⁶⁷If individuals in this range of the distribution were more likely to perish conditional on having experienced the Famine, then we observed disproportionally more individuals who did not experience Famine in this region of the distribution. Similar methods have been employed by other studies to correct for survival selection (for example, Meng and Qian (2009)).

⁶⁸This is measured by the county-level suitability to grow edible wild vegetation under in low input level and rainfed conditions. We describe the data sources and how we construct the index in details in Appendix A.3.

Confounding factors of health, education, and labor market outcomes Another important concern is that the identified Famine impact on political distrust merely reflects differences in health conditions, educational attainment, or labor market outcomes between the individuals who experienced the Famine and those who did not. We present evidence that health, education, and income are unlikely to confound our results.

First, previous studies identify that the Famine's adverse effects on survivors' health conditions, biological traits, educational attainment, and labor market outcomes were almost exclusively concentrated among fetus in-utero, infants, or individuals in their early childhood at the time of the Famine (see, among others, Chen and Zhou (2007), and Meng and Qian (2009)).⁶⁹ In contrast, our proposed mechanism of political inference was most prevalent among adolescents and adults at the time of the Famine, because it required cognitive capacity to be able to remember personal hunger experiences and to process political information. Thus, the Famine's adverse effects in the domains of health, education, and income were less likely to confound the political outcomes for the subgroup of the population that we focus on in this study. More rigorously, we re-estimate our baseline specification by restricting our sample to individuals older than 5 years old by the end of the Famine, in order to eliminate the group that was most susceptible to adverse effects on other dimensions. In Table 12, column 1, we replicate the estimation from our baseline specification. In column 2, we show that our results are robust to this additional restriction.

Second, to further rule out the confounding factors due to the Famine's adverse effects along other dimensions, we re-estimate our baseline specification by adding a range of individual controls: biological traits of weight and height, non-biological characteristics of high school education attainment and total personal annual net income. In Table 12, we present coefficient estimates in specifications that only include biological controls (column 3), and non-biological controls (column 4), respectively. Finally, we include both biological and non-biological controls simultaneously and present the results in column 5. These coefficient estimates are not quantitatively significantly different from our baseline estimation, indicating that Famine's adverse impacts on biological traits, education, and income were unlikely to be the main driving force of our results.

Persistent differences in the local government One may be concerned that the Famine impact on political distrust persist for five decades *not* because the individuals hold onto their distrust initially formed during the Famine, but rather due to the fact that systematic differences in the local governance (manifested during the Famine) have endured for decades. The Famine severity may be a key indicator that predicts how the local government perform afterwards: if the local government officials were willing to sacrifice residents' well-being in order to ruthlessly adhere

⁶⁹Using individual level Famine exposure measurement, our CFPS sample confirms this trend – Famine's impact on health, biological traits, and educational attainment existed for individuals younger than 5 years old during the Famine, and the effects diminished for older cohorts. This could arise due to a range of reasons: for example, while the adverse effect of malnutrition during infancy was long lasting, effects of food deprivation during adulthood could be transitory and easy to make up.

to the procurement policies (Kung and Chen (2011)), particularly in the regions that were lucky enough to avoid the drought, these government officials and their successors may be more likely to impose further policies that impair local residents' political trust.⁷⁰

To address this concern, we focus our attention on the younger cohorts residing in rural area who are not *directly* susceptible to experiencing the Famine themselves, and we examine whether the local Famine severity and its interaction with the exceptional drought during the Famine affect their political trust. We assign these individuals with a measure of average Famine severity that is village×gender specific,⁷¹ as well as the corresponding level of exceptional drought occurred in that region during the Famine. In Table 13, column 1, we replicate our baseline specifications using our baseline sample of rural cohorts born before 1962.⁷² We then re-estimate the baseline specifications, first on the sample born between 1962 and 1978 (prior to the reform era, shown in column 2); and then for the sample born after 1978 (post-reform era, shown in column 3). Coefficient estimates on younger cohort samples shrink considerably comparing to those on the benchmark sample, and the signs of the estimates switch for the post-1978 cohorts. This indicates that to the extent that systematic differences in the local government quality (captured by the Famine severity and its interaction with the exceptional drought) may matter, individuals affected by the same local government but did *not* go through the Famine episode in person fail to exhibit the patterns of political distrust induced by the Famine that we observe among the older cohorts.⁷³

In addition, one may worry that the local government policies persistently discriminated against individuals who had hunger experiences during the Famine. Although policies are unlikely to be designed and/or implemented by tagging specifically on the Famine experiences, policies targeted at certain sub-population with socioeconomic characteristics correlated with the Famine experiences may indirectly induce policy discrimination against the Famine victims. To address this concern, we estimate alternative specifications that include various measures of county-level policies that target particular sub-populations (for example, welfare spendings on low socioeconomic class; cultural spendings on medium to high socioeconomic class). Controlling for these county-level policy spendings has little impact on the estimated effects of the Famine on political

⁷⁰By including a full set of province of current residence fixed effect in our baseline specifications, we take into account of the average differences in local governance that are applied to all local residence. In Section 7.1, we discuss the robustness of our results to specifications with alternative fixed effects choices.

⁷¹This *Famine severity measure* is constructed as the proportion of individuals who reported hunger experiences during the Famine among those who were directly susceptible, within a given village of residence *and* gender cell. We standardize the raw proportions to form the final measurement, in order to make coefficient interpretation easier. The results presented here are robust to alternative methods to construct the severity measure.

⁷²Note that the coefficient estimates in column 1 differ slightly from those shown in Table 3 due to the difference in the *Famine severity measures* that are used.

⁷³This does *not* imply that the Famine impact cannot be transmitted to the younger generation who are not susceptible to the Famine themselves. In fact, Section 5.3 shows that impact due to the Famine experiences and the accompanying political inferences are vertically transmitted to the subsequent generation, particularly among the fathers who experienced starvation. The seemingly contrasting results presented here suggest that social learning (from neighbors' experiences during the Famine) is less relevant for the younger cohort, likely because social learning occurs primarily among people around the same age.

distrust.74

Inferences based on any observed drought A final question is that exceptional drought *during* the Famine may not be *de facto* special to citizens' political inference. Instead, the Famine victims may respond to drought observed in *any* period and update their beliefs about the government's trustworthiness accordingly, which implies a pathway that shapes political trust largely unrelated to the political inferences from the Famine episode itself.

We thus explicitly examine the impact of local drought levels observed in various timeframes to address this concern. We re-estimate our baseline specifications, using average drought level occurred in the decade prior to the Famine (results are presented in Table 14, column 1), drought level during the peak of the Famine (column 2), average drought level occurred after the Famine (column 3), and finally, the index on exceptional drought level during the Famine as used in our original baseline specification (column 4). One can see that the observed drought *during* the Famine was indeed particularly important to citizens' political inference regarding the Famine, resulting in large impact on their political distrust. The coefficient estimates switch signs in the specification that uses drought level *prior* to the Famine, which support our interpretation of political inference – if citizens saw relatively high levels of drought *prior* to the Famine (holding fixed the drought level *during* the Famine), they were more likely to hold the government responsible for the tragedy.

7.3 External validity

As with any study that relies on quasi-experimental variation, our estimated effects are "local" to our particular context. We believe this context is of special interest, as we study the political consequences induced by arguably one of the most tragic political failures in the 20th century. In particular, investigating the formation process of political trust and political attitudes for citizens in China merits important implications for how we should expect the regime to evolve in the coming decades. These findings may also be relevant to our understanding of other authoritarian regimes, where many similar instances of man-made famines have taken place (for example, the Soviet famine from 1932 to 1933, and the North Korean famine from 1994 to 1998).

One definitely should exercise caution when generalizing from our results to the effects of political inference during traumatic events in other contexts. In particular, we conjecture that the degree of persistence of these effects may be context-dependent. Lack of political turnovers in the authoritarian regime contributes to the persistence of political distrust and unfavorable attitudes.⁷⁵ There is no regular and institutionalized channel to aggregate citizens' political dis-

⁷⁴We do not present the results of these specifications for the interest of space. Results are available upon request.

⁷⁵However, it is also important to note that the Chinese Communist Party at the time of the survey (2012) was radically different from the one during the Famine period. The Party itself went through considerable internal transformations and led the unprecedented economic growth since 1978. In this regards, the political distrust arose during the Famine were so persistent that they were not washed away by China's economic reform after the Mao era.

trust that would ultimately affect government policies and incumbent turnovers. This makes the Famine impact more likely to perpetuate, and estimates in this study would be an *upper* bound of the effects if they were to occur in a more democratic regime. Nevertheless, there are also reasons to believe our estimates may actually be *lower* bound of the effect. First, authoritarian regimes typically possess higher capacity to manipulate citizens' political trust and attitudes in desirable directions (via media and education), which may mitigate the initial impacts of the trauma over time. Second, political distrust may be more salient among citizens in democratic regimes, since political rights such as free press and free demonstrations allow citizens to express their political distrust, to learn about other fellow citizens' distrust, and to even take political actions based on political distrust. High salience would hence generate a high degree of persistence.⁷⁶

8 Conclusion

Citizens make important inferences on the quality and performance of the government, especially during critical junctures in citizen-government interactions. These inferences (re)shape citizens' trust in the government. As these attitudes stabilize and endure through time, they become sustained political beliefs and ideology. One of such critical junctures is the Great Chinese Famine: between 1958 and 1961, approximately 30 million citizens perished due to systematic misallocation of food resulted from the Great Leap Forward campaign. Using a new dataset on a representative sample of Chinese population, we find that five decades past the trauma, citizens who were exposed to the Famine still hold significantly higher level of political distrust. Our findings provide empirical evidence on how citizens form beliefs and attitudes about the government by extracting informative components from their personal experiences. In particular, when citizens experienced hunger in regions hit by little exceptional drought, they were much more likely to attribute the Famine to government failures rather than natural disaster, hence exhibiting even stronger political distrust.

Moreover, we demonstrate that political distrust induced by the Famine has evolved into stable political ideology: across *time* – not only does the Famine impact on political distrust persist among the victims themselves, the impact is also transmitted to the subsequent generation; and across *domain* – the Famine impact extends to political attitudes not directly related to the event itself. The victims view a range of socioeconomic issues in China today as relatively more severe, suggesting a broad shift in their policy preferences and expectations on the government. This persistent and prevalent political distrust sanctions the government's poor performances, which may facilitate government accountability even in authoritarian regimes.

Our suggestive evidence on the behavioral consequences of political distrust (for example,

⁷⁶For example, psychologically salient sentiments from the past are more likely to be recalled when one makes present decisions. Mullainathan (2002) provides a theoretical model of bounded rationally that features selective recollection based on salience.

decisions in the labor market and marriage market) indicates that citizens' political beliefs and attitudes should be analyzed dynamically. Divergent political beliefs and attitudes lead citizens to engage in distinctive types of interactions with the government. These heterogeneous experiences then feedback and further reshape their political beliefs and attitudes. This dynamic process of political beliefs and attitudes formation deserves further study.

Traumas caused by political failures persistently shape citizens' political inferences and dampen political trust, to the extent that specifically-aimed propaganda efforts led by an often effective authoritarian state cannot completely undo the impact. Our findings suggest that the capacity constraints of state propaganda may arise from conflicts among various information sources: *(i)* official propaganda claims; *(ii)* citizens' personal experiences in reality; and *(iii)* citizens' interpretation of their experiences (which depends on their prior beliefs and the context of their experiences). The interaction across these factors complicates the political economy of the state's ability to influence citizens' political beliefs and attitudes. While Cantoni et al. (2014) find that the state can effectively indoctrinate students with its desired political ideology and attitudes via schooling, the achieved ideological outcomes through schooling may face pushbacks or even backlashes. In particular, indoctrinated students will inevitably accumulate personal experiences through future interactions with the state, which may potentially contradict what they are taught at school. The relationship between citizen's personal experiences with the state, the manner in which citizen interprets these experiences, the state's explicit effort to (re)shape political beliefs and attitudes, and the state's capacity to do so, would be a fascinating area of future research.
References

- Alesina, Alberto, and Nicola Fuchs-Schündeln. 2007. "Good-Bye Lenin (or Not?): the Effect of Communism on People's Preferences." American Economic Review, 97(4): 1507–1528.
- Anderson, Michael L. 2008. "Multiple Inference and Gender Differences in the Effects of Early Intervention: A Reevaluation of the Abecedarian, Perry Preschool, and Early Training Projects." *Journal of the American Statistical Association*, 103(484): 1481–1495.
- Arrow, Kenneth J. 1972. "Gifts and Exchanges." Philosophy & Public Affairs, 1(4): 343–362.
- Ashton, Basil, Kenneth Hill, Alan Piazza, and Robin Zeitz. 1984. "Famine in China, 1958-61." Population and Development review, 10(4): 613.
- **Bai, Ying, and James Kai-Sing Kung.** 2014. "The Shaping of an Institutional Choice: Weather Shocks, the Great Leap Famine, and Agricultural Decollectivization in China." *Working Paper*, 1–55.
- **Banister, Judith.** 1984. "An Analysis of Recent Data on the Population of China." *Population and Development review*, 10(2): 241.
- Becker, Jasper. 1996. Hungry Ghosts. Mao's Secret Famine, New York: Free Press.
- **Bisin, Alberto, and Thierry Verdier.** 2001. "The Economics of Cultural Transmission and the Dynamics of Preferences." *Journal of Economic Theory*, 97(2): 298–319.
- **Callen, Michael.** 2011. "Catastrophes and Time Preference: Evidence From the Indian Ocean Earthquake." *Working Paper*, 1–56.
- **Callen, Michael, Mohammad Isaqzadeh, James D Long, and Charles Sprenger.** 2014. "Violence and Risk Preference: Experimental Evidence from Afghanistan." *American Economic Review*, 104(1): 123–148.
- Cameron, A Colin, Jonah B Gelbach, and Douglas L Miller. 2008. "Bootstrap-Based Improvements for Inference with Clustered Errors." *The Review of Economics and Statistics*, 90(3): 414–427.
- Cameron, Lisa, and Manisha Shah. 2013. "Risk-Taking Behavior in the Wake of Natural Disasters." 1–43.
- Cantoni, Davide, Yuyu Chen, David Y. Yang, Noam Yuchtman, and Jane Zhang. 2014. "Curriculum and Ideology." NBER Working Paper, 1–71.
- Cao, Shuji. 2005. "The Deaths of China's Population and Its Root Cause during 1959-1961." Population Science of China, , (1).
- Chang, Gene Hsin, and Guanzhong James Wen. 1997. "Communal Dining and the Chinese Famine of 1958–1961." *Economic Development and Cultural Change*, 46(1): 1–34.
- **Chen, Yixin.** 2011. "Under the Same Maoist Sky: Accounting for Death Rate Discrepancies in Anhui and Jiangxi." In *Eating Bitterness.*, ed. Kimberley Ens Manning and Felix Wemheuer. New Perspectives on China's Great Leap Forward and

- Chen, Yuyu, and Li-An Zhou. 2007. "The Long-Term Health and Economic Consequences of the 1959–1961 Famine in China." *Journal of Health Economics*, 26(4): 659–681.
- **Coale, Ansley J.** 1981. "Population Trends, Population Policy, and Population Studies in China." *Population and Development review*, 7(1): 85.
- **Dikötter, Frank.** 2010. *Mao's Great Famine. The History of China's Most Devastating Catastrophe, 1958-* 1962, New York: Walker Publishing Company.
- **Di Tella, Rafael, Sebastian Galiant, and Ernesto Schargrodsky.** 2007. "The Formation of Beliefs: Evidence From the Allocation of Land Titles to Squatters." *The Quarterly Journal of Economics*, 122(1): 209–241.
- Easton, David. 1965. A Systems Analysis of Political Life. New York: John Wiley.
- Fairbank, John King. 1987. Great Chinese Revolution 1800-1985. Harper Collins.
- Fuchs-Schündeln, Nicola, and Matthias Schündeln. 2015. "On the Endogeneity of Political Preferences: Evidence From Individual Experience with Democracy." *Science*, 347(6226).
- Garnaut, Anthony. 2014. "The Geography of the Great Leap Famine." *Modern China*, 40(3): 315–348.
- Giuliano, Paola, and Antonio Spilimbergo. 2014. "Growing Up in a Recession." The Review of Economic Studies, 81(2): 787–817.
- **Gorgens, Tue, Xin Meng, and Rhema Vaithianathan.** 2012. "Stunting and selection effects of famine: A case study of the Great Chinese Famine." *Journal of Development Economics*, 97(1): 99–111.
- Healy, Andrew, and Neil Malhotra. 2009. "Myopic Voters and Natural Disaster Policy." The American Political Science Review, 103(03): 387.
- Healy, Andrew, and Neil Malhotra. 2010. "Random Events, Economic Losses, and Retrospective Voting: Implications for Democratic Competence." *Quarterly Journal of Political Science*, 5: 193– 208.
- Healy, Andrew, and Neil Malhotra. 2013. "Retrospective Voting Reconsidered." Annual Review of Political Science, 16(1): 285–306.
- Hetherington, Marc J. 1998. "The Political Relevance of Political Trust." *The American Political Science Review*, 92(4): 791–808.
- Huber, Gregory A, Seth J Hill, and Gabriel S Lenz. 2012. "Sources of Bias in Retrospective Decision Making: Experimental Evidence on Voters' Limitations in Controlling Incumbents." The American Political Science Review, 106(04): 720–741.
- King, Gary, Jennifer Pan, and Margaret E Roberts. 2013. "How Censorship in China Allows Government Criticism but Silences Collective Expression." *The American Political Science Review*, 107(02): 326–343.

- Kung, James Kai-Sing, and Justin Yifu Lin. 2003. "The Causes of China's Great Leap Famine, 1959–1961." Economic Development and Cultural Change, 52(1): 51–73.
- Kung, James Kai-Sing, and Shuo Chen. 2011. "The Tragedy of the Nomenklatura: Career Incentives and Political Radicalism during China's Great Leap Famine." *The American Political Science Review*, 105(01): 27–45.
- Kuziemko, Ilyana, Michael I Norton, Emmanuel Saez, and Stefanie Stantcheva. 2015. "How Elastic Are Preferences for Redistribution? Evidence from Randomized Survey Experiments." *American Economic Review*, 105(4): 1478–1508.
- Lardy, Nicholas R. 1987. "Ch.8 The Chinese Economy Under Stress, 1958-1965." In *The Cambridge History of China Volume 14: The Peoples Republic, Part A: The Emergence of Revolutionary China.*, ed. Roderick MacFarquhar and John K Fairbank. Cambridge:Cambridge University Press.
- Lerner, Jennifer S, Roxana M Gonzalez, Deborah A Small, and Baruch Fischhoff. 2003. "Effects of Fear and Anger on Perceived Risks of Terrorism: A National Field Experiment." *Psychological Science*, 14(2).
- Lin, Justin Yifu, and Dennis Tao Yang. 2000. "Food Availability, Entitlements and the Chinese Famine of 1959-61." *The Economic Journal*, 110(460): 136–158.
- Li, Wei, and Dennis Tao Yang. 2005. "The Great Leap Forward: Anatomy of a Central Planning Disaster." *Journal of Political Economy*, 113(4): 840–877.
- Lorentzen, Peter. 2013. "China's Strategic Censorship." American Journal of Political Science, 58(2): 402–414.
- Malmendier, Ulrike, and Stefan Nagel. 2011. "Depression Babies: Do Macroeconomic Experiences Affect Risk Taking?" *The Quarterly Journal of Economics*, 126(1): 373–416.
- Malmendier, Ulrike, and Stefan Nagel. 2013. "Learning from Inflation Experiences." Working Paper, 1–54.
- Meng, Xin, and Nancy Qian. 2009. "The Long Term Consequences of Famine on Survivors: Evidence From a Unique Natural Experiment Using China's Great Famine." *Working Paper*.
- Meng, Xin, Nancy Qian, and Pierre Yared. 2015. "The Institutional Causes of China's Great Famine, 1959-1961." *The Review of Economic Studies*, 82(4): 1–71.
- Mullainathan, Sendhil. 2002. "A Memory-Based Model of Bounded Rationality." The Quarterly Journal of Economics, 117(3): 735–774.
- Muller, Edward N, Thomas O Jukam, and Mitchell A Seligson. 1982. "Diffuse Political Support and Antisystem Political Behavior: A Comparative Analysis." *American Journal of Political Science*, 26(2): 240.
- **Newton, Kenneth.** 2007. "Social and Political Trust." In *The Oxford Handbook of Political Behavior.*, ed. Russell J Dalton and Hans-Dieter Klingemann. Oxford University Press.
- Nunn, Nathan. 2012. "Culture and the Historical Process." *Economic History of Developing Regions*, 27(S1): S108–S126.

- Nunn, Nathan, and Leonard Wantchekon. 2011. "The Slave Trade and the Origins of Mistrust in Africa." *American Economic Review*, 101(7): 3221–3252.
- **Nye, Joseph S, Philip Zelikow, and David C King.** 1997. *Why People Don't Trust Government.* Harvard University Press.
- Putnam, Robert D, Robert Leonardi, and Raffaella Y Nanetti. 1994. Making Democracy Work. Civic Traditions in Modern Italy, Princeton University Press.
- Sapienza, Paola, and Luigi Zingales. 2013. "Economic Experts versus Average Americans." American Economic Review: Papers & Proceedings, 103(3): 636–642.
- Squire, Larry S. 1987. *Memory and Brain*. Oxford University Press.
- **Thaxton, Ralph.** 2008. *Catastrophe and Contention in Rural China. Mao's Great Leap Forward Famine and the Origins of Righteous Resistance in Da Fo Village*, Cambridge University Press.
- Voors, Maarten J, Eleonora E M Nillesen, Philip Verwimp, Erwin H Bulte, Robert Lensink, and Daan P Van Soest. 2012. "Violent Conflict and Behavior: A Field Experiment in Burundi." *American Economic Review*, 102(2): 941–964.
- Warren, Mark E. 1999. Democracy and Trust. Cambridge: Cambridge University Press.
- Yang, Jisheng. 2008. Tombstone. An Account of Chinese Famine From 1958–1962, Hong Kong:Cosmos Books.

Figures and Tables



Figure 1: Spatial distribution of cohort loss index for cohorts born during the Great Chinese Famine (1958-1961). Higher index (darker shades) indicates larger loss in cohort dize during the Famine. Details on the construction of cohort loss index are described in Appendix A.1.



Figure 2: Proportion of individuals who reported hunger experiences during the Famine among those were susceptible to the Famine, plotted by age at 1962 (the end of the Famine).



Figure 3: Spatial distribution of exceptional drought (standardized index) affecting agricultural production during the Great Chinese Famine. Higher drought index (darker shades) indicates greater level of exceptional drought. Details on the construction of drought index are described in Appendix A.2.



Figure 4: Marginal effect of personal hunger experiences during the Famine, plotted by the exceptional drought level affecting agricultural production in the regions where the Famine victims resided at the time of the Famine.



Figure 5: Pseudo-treatment vs. actual Famine experiences: the distribution of t-statistics resulting from 5,000 random assignments of the Famine experiences to individuals and exceptional drought levels to provinces, as well as the t-statistics from actual Famine experiences and actual drought levels during the Famine (red line). Famine experience is defined by *personal Famine experience* indicator. "p-values" report the share of the pseudo-treatment t-statistics that is larger than the actual t-statistics, in absolute value.

		All	Non-Famine	Famine	Uncor	nditional	Cond	ditional
	Mean	Std.Dev.	Mean	Mean	Diff.	p-value	Diff.	p-value
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Personal charact	teristics							
Age	62.2	8.5	61.3	65.3	4.0	0.000	-	-
Male	0.502	0.500	0.499	0.510	0.010	0.387	0.002	0.823
Han	0.919	0.272	0.923	0.907	-0.016	0.014	0.010	0.511
# of siblings	3.582	1.997	3.578	3.594	0.016	0.049	0.200	0.003
Migration at age 3	0.005	0.070	0.005	0.004	-0.002	0.264	-0.001	0.677
Height	162.3	8.2	162.3	162.0	-0.3	0.109	-0.2	0.345
Weight	116.9	21.4	117.4	115.5	-1.9	0.000	0.0	0.951
BMI	22.20	3.39	22.27	21.98	-0.29	0.001	0.02	0.876
Panel B: Parental characte	eristics							
Father illiterate	0.737	0.440	0.723	0.781	0.058	0.000	0.023	0.186
Father CCP member	0.105	0.306	0.110	0.088	-0.022	0.004	-0.001	0.945
Mother illiterate	0.942	0.234	0.933	0.971	0.038	0.000	0.014	0.071
Mother CCP member	0.013	0.113	0.014	0.010	-0.004	0.205	-0.002	0.344
Parent poli. label	0.058	0.234	0.055	0.070	0.016	0.006	0.004	0.583
Panel C: Socioeconomic n	etwork pi	roxies						
Distance to hospital	1.696	4.425	1.647	1.849	0.202	0.061	0.035	0.751
Distance to school	14.42	17.75	14.58	13.93	-0.65	0.139	-1.08	0.236
Distance to downtown	33.57	66.99	32.93	35.53	2.60	0.112	-0.87	0.641
Panel D: Village character	ristics							
Village geo. area	38.45	347.9	40.11	32.94	-7.17	0.428	-7.17	0.595
Village household #	862.2	1043	873.0	828.1	-44.9	0.080	-38.4	0.554
Village labor parti.	0.484	0.229	0.483	0.487	0.004	0.647	-0.009	0.384
Village agri. prod.	713.4	1473	723.0	683.0	-40.0	0.365	52.8	0.483
Village non-agri. prod.	595.0	1813	619.5	518.4	-101.2	0.063	17.1	0.788
Village avg. income	3421	2261	3510	3144	-367	0.000	103	0.416
Natural disaster zone	0.292	0.455	0.275	0.343	0.068	0.000	0.043	0.217
Natural resource zone	0.089	0.284	0.097	0.064	-0.032	0.000	-0.014	0.386
Panel E: Famine experient	се							
Famine experience	0.245	0.430	0	1	_	_	_	_

Table 1: Summary statistics & balance checks of Famine experience

Columns 5 and 6 report raw (unconditional) differences in means across individuals who experienced the Famine and those who did not, and the p-value for a t-test of differences in means. Columns 7 and 8 report differences conditional on birth cohort and province of residence fixed effects, and standard errors clustered at province level. "Migration at 3yo" indicates whether individuals migrated to different cities than birth-places at age 3. "Father Illiterate" "Father CCP Member" "Mother Illiterate" and "Mother CCP Member" are dummy variables indicating corresponding parental characteristics when the individual was 14 years old. For these variables, we restrict sample to those who are at least 14 years old at the beginning of the Famine, to make these parental characteristics pre-determined with respect to the Famine. "Parent Pol. Label" indicates whether individuals belong to families labeled as landlord or rich peasants during the Land Reform in 1950s. Number of observations: 9,226 (2,256 experienced Famine; 6,970 did not).

		Famine		Ν	Jon-Famine	
	High drought	Low drought	p-value	High drought	Low drought	p-value
Variable	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Personal charact	eristics					
Age	65.3	65.1	-	61.3	61.2	-
Male	0.512	0.504	0.477	0.502	0.493	0.623
Han	0.965	0.745	0.190	0.954	0.838	0.138
# of siblings	3.569	3.665	0.672	3.495	3.804	0.040
Migration at Age 3	0.003	0.005	0.307	0.003	0.013	0.121
Height	162.5	160.6	0.277	162.5	162.0	0.663
Weight	116.7	112.3	0.326	117.7	116.5	0.739
BMI	22.09	21.67	0.398	22.31	22.18	0.776
Panel B: Parental characte	eristics					
Father Illiterate	0.772	0.807	0.355	0.730	0.704	0.390
Father CCP Member	0.095	0.067	0.064	0.111	0.109	0.871
Mother Illiterate	0.969	0.975	0.522	0.941	0.910	0.197
Mother CCP Member	0.011	0.007	0.302	0.015	0.010	0.167
Parent Poli. Label	0.069	0.073	0.758	0.052	0.062	0.146
Panel C: Socioeconomic na	etwork proxies					
Distance to Hospital	1.723	2.208	0.496	1.579	1.832	0.645
Distance to School	12.84	17.02	0.110	14.17	15.71	0.517
Distance to Downtown	34.28	39.03	0.660	33.08	32.54	0.927

Table 2: Balance checks of Famine experience by drought-level

Columns 1 and 2 report means for *high drought* and *low drought* regions, respectively, conditional on having experienced the Famine. Columns 4 and 5 report means for high drought and low drought regions, respectively, conditional on having no experience of the Famine. High drought regions are provinces with above median level of abnormal drought during the Famine, with respect to drought level prior to the Famine; low drought regions are provinces below the median. Famine experience is defined by *personal Famine experience* indicator. Columns 3 and 6 report p-values for t-tests of differences in means across *high drought* and *low drought* regions, conditional on birth cohort fixed effects; standard errors are clustered at province level. "Migration at 3yo" indicates whether individuals migrated to different cities than birthplaces at age 3. "Father Illiterate" "Father CCP Member" "Mother Illiterate" and "Mother CCP Member" are dummy variables indicating corresponding parental characteristics when the individual was 14 years old. For these variables, we restrict sample to those who are at least 14 years old at the beginning of the Famine, to make these parental characteristics predetermined with respect to the Famine. "Parent Pol. Label" indicates whether individuals belong to families labeled as landlord or rich peasants during the Land Reform in 1950s. Number of observations: 9,226 (1,663 with Famine experiences in high drought regions; 5,095 with no Famine experiences in low drought regions).

Dependent variable:		Dist	rust toward	s local goverr	iment	
Famine experience measures:	County avg.	County	Village avg.	County	Village	Personal
	Famine	Famine	Famine	leave-self-out avg.	leave-self-out avg.	Famine
	experience	cohort loss	experience	Famine experience	Famine experience	experience
	(1)	(2)	(3)	(4)	(5)	(6)
"Famine experience measure"	2.279***	0.186	1.459***	2.218***	1.336***	0.629***
	[0.575]	[0.126]	[0.361]	[0.579]	[0.338]	[0.128]
"Famine experience measure"	-0.889***	-0.085*	-0.531***	-0.879***	-0.496***	-0.190***
× drought level	[0.198]	[0.043]	[0.127]	[0.198]	[0.120]	[0.047]
p-value	(0.000)	(0.060)	(0.000)	(0.000)	(0.000)	(0.000)
Level of variation:	County	County	Village	Individual	Individual	Individual
Observations	8903	8903	8903	8902	8885	8903
Moon Famine ovn	0.243	0 171	0 243	0.243	0 243	0 243
Std.Dev. Famine exp.	0.243	1.035	0.243	0.243	0.243	0.429
Mean DV	4.649	4.649	4.649	4.649	4.649	4.649
Std.Dev. DV	2.506	2.506	2.506	2.506	2.506	2.506

Table 3: Political inference from the Famine experiences

*: Significant at 10%; **: 5%; ***: 1%. All regressions include the main effects on *drought level*, and a full set of province of current residence and birth cohort fixed effects (not reported). Robust standard errors in brackets, clustered at the province level. Number of clusters: 25. Corresponding p-values are reported for the coefficient estimates on *"Famine experience measure"* × *drought level*.

Experiences & factors	Effect size on political distrust	Avg. year of occurrence
Panel A: Political inference from the Famine experiences		
Famine (<i>maximum political inference</i>) Famine (<i>political inference with 2 s.d. drought difference</i>)	0.642 0.380	1960 1960
Panel B: Important factors		
Senior high school education or above Not a member of CCP	0.065 0.208	-
Panel C: Negative experiences with the government		
Negative encounters with local government Forced relocation from original residence Under-compensated govt. land acquisition	0.650 - 0.850 0.343 0.396	2010 1997 2003

Table 4: Scale of the Famine impact on political distrust

Famine experience is defined by *personal Famine experience* indicator. Results from Panel B and C are based on calculations using the same CFPS sample as the baseline specifications (and Panel A). Negative encounters with local government include the experience of unfair policies, conflict with local government, unfair fees collected by local government, etc.

Dependent variable:	Distru	ust towards	local goverr	ment
	Intergenerational elasticity Father Mother		Transn of infe	nission rences
			Father	Mother
	(1)	(2)	(3)	(4)
Political distrust ^P _{icp}	0.147*** [0.040]	0.207*** [0.026]		
Political distrust $_{icp}^{P} \times$ Famine experience $_{i}^{P}$	0.088* [0.050]	-0.017 [0.074]		
Famine experience $_{i}^{P}$			0.693*** [0.246]	-0.529 [0.540]
Famine experience $_{i}^{P} \times \text{drought level }_{i}^{P}$			-0.203** [0.075]	0.137 [0.195]
Observations Mean DV Std.Dev. DV	1418 5.304 2.453	1492 5.257 2.445	1518 5.238 2.463	1644 5.204 2.459

Table 5: Integenerational transmission of Famine impact

*: Significant at 10%; **: 5%; ***: 1%. Results based on the CFPS sample born after 1963 and whose parents were born before the Famine ended. *P* indicates the corresponding parents (father or mother) matched with children. Famine experience is defined by *personal Famine experience* indicator. All regressions include a full set of province of current residence and birth cohort fixed effects (not reported). Regressions in column 1 and 2 include the main effects on *Famine experience*^{*p*} (not reported); regressions in column 3 and 4 include the main effects on *drought level*^{*p*}_{*i*} (not reported). Robust standard errors in brackets, clustered at the province level. Number of clusters: 25.

Dependent variable:		Distru	st towards lo	cal govern	ment	
	Electricity	coverage	Consume	news on	Acces	s to
	prior to	o 1978	social i	ssues	cell pł	none
	No	Yes	No	Yes	No	Yes
	(1)	(2)	(3)	(4)	(5)	(6)
Famine experience	0.930***	0.191	0.745***	0.324	0.830***	0.489*
	[0.246]	[0.480]	[0.167]	[0.234]	[0.109]	[0.253]
Famine experience ×	-0.252***	-0.072	-0.241***	-0.077	-0.265***	-0.120
drought level	[0.089]	[0.134]	[0.056]	[0.078]	[0.051]	[0.087]
p-value	(0.010)	(0.599)	(0.000)	(0.337)	(0.000)	(0.182)
Observations	5031	2906	6113	2790	4971	3932
Mean DV	4.658	4.564	4.639	4.672	4.535	4.792
Std.Dev. DV	2.505	2.517	2.547	2.418	2.526	2.474

Table 6: Heterogeneous effects	s by	information access and	consumption
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*: Significant at 10%; **: 5%; ***: 1%. Famine experience is defined by *personal Famine experience* indicator. All regressions include the main effects on *drought level*, and a full set of province of current residence and birth cohort fixed effects (not reported). Robust standard errors in brackets, clustered at the province level. Number of clusters: 25. Corresponding p-values are reported for the coefficient estimates on *Famine experience* × *drought level*.

Dependent variables:	Distrust	towards	Distrust	Distrust towards		
	local gov	vernment	stranger	stranger (<i>placebo</i>)		
	(1)	(2)	(3)	(4)		
Performance evaluation		0.400*** [0.051]		0.032 [0.024]		
Famine experience	0.629***	0.625***	0.150	0.237		
	[0.128]	[0.146]	[0.296]	[0.283]		
Famine experience ×	-0.190***	-0.197***	-0.049	-0.066		
drought level	[0.047]	[0.050]	[0.086]	[0.082]		
p-value	(0.000)	(0.001)	(0.574)	(0.430)		
Observations	8903	8037	8885	8015		
Mean DV	4.649	4.649	7.898	7.898		
Std.Dev. DV	2.506	2.506	2.186	2.186		

Table 7: Political trust, general trust, and performance evaluation

*: Significant at 10%; **: 5%; ***: 1%. Famine experience is defined by *personal Famine experience* indicator. All regressions include the main effects on *drought level*, and a full set of province of current residence and birth cohort fixed effects (not reported). Robust standard errors in brackets, clustered at the province level. Number of clusters: 25. Corresponding p-values are reported for the coefficient estimates on *Famine experience* × *drought level*.

		Individual policy attitudes							
Dependent variable:	Severity:	Severity:	Severity:	Severity:	Severity:	Severity	Severity	Anderson	1st principal
	corruption	pollution	inequality	unemployment	medical care	housing	social welfare	z-score	component
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Famine experience	0.993*	1.092***	0.599**	0.828*	0.915**	0.900*	0.991**	0.424**	0.789**
	[0.496]	[0.387]	[0.223]	[0.422]	[0.399]	[0.456]	[0.375]	[0.197]	[0.363]
Famine experience \times drought level	-0.296*	-0.320**	-0.131	-0.213*	-0.246*	-0.267*	-0.334***	-0.117*	-0.219*
	[0.150]	[0.119]	[0.077]	[0.123]	[0.128]	[0.138]	[0.114]	[0.058]	[0.108]
p-value	(0.061)	(0.013)	(0.103)	(0.095)	(0.067)	(0.065)	(0.007)	(0.057)	(0.053)
Observations	8126	8470	8524	8307	8597	8513	8416	7678	7678
Mean DV	5.471	4.989	6.306	5.299	5.077	4.826	4.739	0	0
Std.Dev. DV	3.125	2.751	2.746	2.684	2.847	2.846	2.787	1	1.843

Table 8: Impact of Famine experience on broad policy attitudes

*: Significant at 10%; **: 5%; ***: 1%. Anderson z-score index is weighted by the inverse covariance of the standardized outcomes, computed following Anderson (2008). Famine experience is defined by *personal Famine experience* indicator. All regressions include the main effects on *drought level*, and a full set of province of current residence and birth cohort fixed effects (not reported). Robust standard errors in brackets, clustered at the province level. Number of clusters: 25. Corresponding p-values are reported for the coefficient estimates on *Famine experience* × *drought level*.

Dependent variable:	Famine e of sp	xperience oouse	<i>Self</i> is er govt-rel	nployed by ated entity	<i>Spouse</i> is e govt-rel	employed by ated entity
Self gender:	Male	Female	Male	Female	Male	Female
	(1)	(2)	(3)	(4)	(5)	(9)
Panel A: Baseline						
Famine experience	0.209*** [0.037]	0.317*** [0.047]	0.003 [0.023]	-0.027** [0.013]	-0.018 [0.012]	-0.041** [0.019]
Village-cohort Famine severity	0.140^{***} [0.014]	0.203*** [0.012]				
Famine experience × Village-cohort Famine severity	0.054** [0.022]	-0.044 [0.029]				
Panel B: Controlling for parental ck	uaracteristics					
Famine experience	0.209*** [0.037]	0.317^{***} [0.047]	0.005 [0.023]	-0.026** [0.013]	-0.017 [0.012]	-0.040** [0.019]
Village-cohort Famine severity	0.141^{**} [0.014]	0.203*** [0.012]				
Famine experience × Village-cohort Famine severity	0.054** [0.022]	-0.044 [0.029]				
Observations	2858	2748	2138	1411	1383	1497
Mean DV Ctd Dev DV	0.217	0.259 0.438	0.125 0.331	0.049 0.216	0.054 0.225	0.126
*: Significant at 10%; **: 5%; ***:	1%. Famin	e experience	e is defined	by personal I	amine experi-	ence indicator.
Panel B controls for parental chara	cteristics: fat	her's educat individuals	ion attainm belong to	ent, mother's families that	education at	tainment, and
rich peasants during the Land Rel	form in 1950	s). Results f	from Panel	A and B are l	based on the	CFPS sample
who have non-missing values on	these parents	al characteri	stics. Resu	ts from Panel	A are robus	t to including
those individuals with missing var proportion of individuals who exp	daples. Villagerienced the	e-conort Fam Famine wit	<i>line severity</i> hin a corres	index is const ponding villa	ructea as the ge of residen	e standardized ice <i>and</i> among
cohorts who are born no more than and birth cohort fixed effects (not 1 Nimber of clusters: 25	ı 5 years apar reported). Rc	t. All regres bust standa	sions incluc rd errors in	le a full set of o brackets, clus	county of cur tered at the p	rent residence province level.
INUTIDET OF CLUSIETS: 20.						

Table 9: Famine experiences and subsequent assortative mating

Dependent variable:	E	Distrust toward	ls
	lc	local governme	nt
Fixed effects:	Province + cohort	County + cohort	$\begin{array}{l} \text{Province} \\ \times \text{ cohort} \end{array}$
	(1)	(2)	(3)
Panel A: Province level clust	ering		
Famine experience	0.629***	0.397**	0.783***
	[0.128]	[0.148]	[0.182]
Famine experience ×	-0.190***	-0.083*	-0.237***
drought level	[0.047]	[0.044]	[0.063]
Regular p-value	(0.000)	(0.074)	(0.001)
Wild bootstrapped p-value	(0.004)	(0.094)	(0.007)
Panel B: County level cluster	ring		
Famine experience	0.629***	0.397*	0.783***
	[0.208]	[0.219]	[0.210]
Famine experience ×	-0.190***	-0.083	-0.237***
drought level	[0.064]	[0.068]	[0.066]
Panel C: Cohort level cluster	ing		
Famine experience	0.629***	0.397*	0.783***
	[0.220]	[0.216]	[0.255]
Famine experience ×	-0.190***	-0.083	-0.237***
drought level	[0.067]	[0.064]	[0.076]
Panel D: Province & cohort t	wo-way cluster	ring	
Famine experience	0.629***	0.397**	0.783***
	[0.188]	[0.176]	[0.196]
Famine experience ×	-0.190***	-0.083	-0.237***
drought level	[0.061]	[0.057]	[0.069]
Observations	8903	8903	8903
Mean DV	4.649	4.649	4.649
Std.Dev. DV	2.506	2.506	2.506

Table 10: Alternative specifications – fixed effects & clusterings

*: Significant at 10%; **: 5%; ***: 1%. Famine experience is defined by *personal Famine experience* indicator. All regressions include the main effects on *drought level* (not reported). Each column include a particular set of fixed effects (not reported), as described in the table headings. Robust standard errors in brackets. Panel A clusters standard errors at province level (number of clusters: 25); regular p-values for the coefficient estimates on *Famine experience* × *drought level* are reported; corresponding p-values calculated using wild bootstrap procedure (Cameron, Gelbach and Miller (2008)) are also reported. Panel B clusters standard errors at county level (number of clusters: 159). Panel C clusters standard errors at cohort level (number of clusters: 44). Panel D implements two-way clustering of standard errors at province and cohort level (number 5 of clusters: 25×44).

Dependent variables:	Distrust towards local government				
	Baseline (full sample)	Selection based on political distrust	Selection based on physical height	Selection based on alt. food sources	
	(1)	(2)	(3)	(4)	
Famine experience	0.629*** [0.128]	0.386*** [0.127]	0.638*** [0.172]	0.638*** [0.145]	
Famine experience × drought level <i>n-value</i>	-0.190*** [0.047] (0.000)	-0.110** [0.045] (0.021)	-0.200*** [0.050] (0.001)	-0.192*** [0.052] (0.001)	
Observations	8903	7668	7181	8710	
Mean DV Std.Dev. DV	4.649 2.506	5.296 2.054	4.678 2.494	4.650 2.506	

Table 11: Correction for survival selection

*: Significant at 10%; **: 5%; ***: 1%. Famine experience is defined by *personal Famine experience* indicator. Column 1 uses the full sample of Famine susceptible individuals as in baseline specification. Column 2 drops individuals at the bottom 10th percentile of the distribution of political distrust from each province. Column 3 drops individuals at the bottom 10th percentile of the distribution of height. Column 4 drops individuals who lived in counties with pasture grass suitability index more than 1.5 times of a standard deviation lower than corresponding provincial average level. All regressions include the main effects on *drought level*, and a full set of province of current residence and birth cohort fixed effects (not reported). Robust standard errors in brackets, clustered at the province level. Number of clusters: 25. Corresponding p-values are reported for the coefficient estimates on *Famine experience* × *drought level*.

1	8				
	Baseline	Drop survivors younger than 5 at Famine	Individual biological controls	Individual non-biological controls	Biological & non-biological controls
	(1)	(2)	(3)	(4)	(5)
Famine experience	0.629*** [0.128]	0.611*** [0.148]	0.604*** [0.155]	0.608*** [0.126]	0.567*** [0.153]
Famine experience × drought level	-0.190*** [0.047]	-0.182*** [0.051]	-0.179*** [0.053]	-0.189*** [0.048]	-0.170*** [0.052]
p-value	(0.000)	(0.001)	(0.002)	(0.001)	(0.003)
Observations Mean DV Std.Dev. DV	8903 4.649 2.506	7207 4.592 2.488	8436 4.649 2.506	8341 4.649 2.506	7928 4.649 2.506

Table 12: Rule out confounding effects of health, education, and income

Distrust towards local government

Dependent variables:

*: Significant at 10%; **: 5%; ***: 1%. Famine experience is defined by *personal Famine experience* indicator. Column 1 replicates results from baseline specification. Column 2 drops individuals younger than 5 years old at the end of the Famine. Column 3-5 uses the baseline sample. Column 3 includes individual biological controls (height and weight). Column 4 includes individual non-biological controls (indicator of high school completion and net personal income measured in CFPS-2010). Column 5 includes both individual biological and non-biological controls. All regressions include the main effects on *drought level*, and a full set of province of current residence and birth cohort fixed effects (not reported). Robust standard errors in brackets, clustered at the province level. Number of clusters: 25. Corresponding p-values are reported for the coefficient estimates on *Famine experience* × *drought level*.

Dependent Variables:	Distrust towards local government					
	Cohorts born before 1962	Cohorts born <i>btw</i> 1962 <i>and</i> 1978	Cohorts born after 1978			
	(1)	(2)	(3)			
Famine severity measure	1.284*** [0.333]	0.739 [0.509]	-0.328 [0.752]			
Famine severity measure $ imes$ drought level	-0.454*** [0.122]	-0.289* [0.144]	0.095 [0.229]			
p-value	(0.001)	(0.056)	(0.682)			
Observations	8903	7410	3722			
Mean DV Std.Dev. DV	4.649 2.506	5.178 2.467	5.375 2.396			

Table 13: Placebo test – persistent differences in local government qualities

*: Significant at 10%; **: 5%; ***: 1%. Results are based on CFPS sample; each column applies corresponding cohort restrictions as described in the table heading. All regressions include the main effects on *drought level*, and a full set of province of current residence and birth cohort fixed effects (not reported). Robust standard errors in brackets, clustered at the province level. Number of clusters: 25. Corresponding p-values are reported for the coefficient estimates on *Famine experience* × *drought level*.

Dependent variable:	Distrust towards local government			
Drought level measures:	Drought prior to the Famine	Drought during the Famine	Drought after the Famine	Exceptional drought during the Famine
	(1)	(2)	(3)	(4)
Famine experience	-0.146 [0.484]	0.419*** [0.120]	0.132 [0.150]	0.629*** [0.128]
Famine experience	1.651	-0.961**	-0.371	-0.190***
\times "drought level measure"	[3.536]	[0.380]	[0.769]	[0.047]
p-value	(0.645)	(0.018)	(0.634)	(0.000)
Observations	8903	9555	8960	8903
Mean DV	4.649	4.649	4.649	4.649
Std.Dev. DV	2.506	2.506	2.506	2.506

Table 14: Political inference from various drought events

*: Significant at 10%; **: 5%; ***: 1%. Famine experience is defined by *personal Famine experience* indicator. All regressions include the main effects on "*drought level measure*", and a full set of province of current residence and birth cohort fixed effects (not reported). Robust standard errors in brackets, clustered at the province level. Number of clusters: 25. Corresponding p-values are reported for the coefficient estimates on *Famine experience* × "*drought level measure*".

ONLINE APPENDICES, NOT FOR PUBLICATION

Appendix A Additional data sources and variables

A.1 Cohort loss

Various measurements of the Famine severity In order to obtain an objective measurement on Famine severity for each county, we estimate the relative size of "cohort loss" for cohorts born during the Great Chinese Famine (1958, 1959, 1960, and 1961) using 2000 Census. Similar method has been employed by previous studies on the Famine, such as Meng, Qian and Yared (2015) and Garnaut (2014).

Conceptually, the overall impact of the Famine is comprised of three elements: (*i*) direct death toll (rise in mortality); (*ii*) unborn population (drop in fertility) and infant mortality; (*iii*) survivors who suffered during the Famine. We choose to focus on component (*ii*) for an objective measurement of Famine severity across regions, for the following reasons. First, estimations based on death toll (component (*i*)) reports are extremely vulnerable to data manipulation by the Chinese government. Many records revealing excessive deaths were ordered by the Chinese Communist Party to be destroyed or revised during and after the Famine. Retrospective estimation using contemporary Census data, which is sufficient for component (*ii*), is a much more reliable strategy. Second, while our main measurement of hunger experience captures (*iii*), component (*iii*) inherently relies on retrospective recollection, and there is no corresponding measurement that is absolutely objective. Third, the scale of unborn population and infant mortality directly reflects changes in food consumption patterns such as maternal nutrition and endogenous fertility decisions. These are arguably more sensitive to changes in food availability and the degrees of Famine severity.

Construction of the cohort loss index We now outline our *cohort loss* estimation procedure: (*I*) At county level, we use 1952-1954 and 1963-1965 cohort sizes to estimate non-Famine-period county-specific population linear time trend. We exclude the years immediately before and after the Great Chinese Famine period from constructing this non-Famine counterfactural cohort size trend, because the Famine was preceded by two years of below-average fertility, and followed by a short period of above-trend fertility likely due to post-Famine catching up.¹ (*II*) We use the estimated trend to project "counter-factual" cohort sizes for Famine-affected cohorts (1958-1961). (*III*) We construct the measurement of *cohort loss* for 1958 to 1961 cohorts as 1 minus the ratio between actual and projected cohort sizes.

¹The famine is conventionally seen as having commenced in 1958 or 1959, but fertility levels in several provinces that were the focus of state grain collection efforts fell steadily from mid-1955 (e.g. Sichuan, Anhui, and Henan).

Interpretations The *cohort loss* index indicates the scale of lost cohort in percentage terms: for example, a national average of 0.23 suggests that due to drop in fertility and rise in infant mortality, Famine-affected cohorts are on average 23% smaller in size than what they would have been if following the previous population trend. Figure 1 shows the distribution of cohort loss sizes across the nation, where darker shades indicate a higher degree of cohort loss in the corresponding counties. This map confirms the previous discussion that the Great Chinese Famine exhibits high level of regional variation in severity.

A.2 Exceptional drought that affected agricultural production (detailed)

Data sources In order to measure exceptional drought level during the Famine, we make use of two contemporary official archives from the People's Republic of China. First, we use the *Comprehensive Statistical Data and Materials on 50 Years of New China (1999)* compiled by the Department of National Economic Statistics at China's National Bureau of Statistics, to obtain annual data on total agricultural sown area for each province. Second, we use *Report of the Damage Caused by Disaster in China (1996)* compiled by China's National Bureau of Statistics, Department of Domestic Affairs, to obtain information on total areas affected by drought for each province for a given year. Overall, we have non-missing values for 26 of the 31 provinces in China. The 5 missing provinces are: *(i)* direct-controlled municipalities with limited agricultural production (Beijing, Tianjin and Shanghai); *(ii)* Tibet; *(iii)* province that was not officially established until late 1980s (Hainan).²

As a reporting convention, the heavy drought-affected area (*shouzai mianji*) is defined as the total agricultural plotting area in a region where drought causes more than 10% reduction in crop yields compared to normal years.³ Compared to using raw precipitation data to measure drought, the key advantage of this drought measurement is to explicitly capture the drought that affected agricultural production, which is more relevant when citizens assessed to what degree natural disaster of drought had led to a drop in agricultural production (thus subsequent food shortage) during the Famine.

Construction of drought index For each province, we calculate the annual ratio of heavy droughtaffected area to the total agricultural sown area. This ratio captures the relative scale of annual drought severity in each province. We use the maximum ratio during the Famine period (1960-1961) as the drought affecting agricultural production *during* the Famine. We calculate the mean of the ratios from 1950 to 1959 as the level of drought affecting agricultural production *prior* to the

²Data from Chongqing was not independently reported since administratively it was part of Sichuan during the time of the Famine. We assign the municipality of Chongqing with values from Sichuan. The total agricultural sown area was missing for Sichuan and Hubei for a few years between 1950 and 1965. We conduct linear interpolations to fill in the missing values. The baseline results of the paper are robust to dropping the samples from Sichuan and Hubei altogether.

³China's National Bureau of Statistics, Department of Domestic Affairs does not report drought's effect on production at continuous scales.

Famine.

We next divide drought level *during* Famine by the drought level *prior* to the Famine. This is intended to capture the fact that a high level of drought affecting agricultural production *during* the Famine was not informative to the citizens, unless such shocks were exceptionally high compared to those occurred during non-Famine years. For ease of interpretation, we normalize this ratio by first substracting its national minimum value, and then dividing by its standard deviation. We denote this normalized ratio as the index of drought level during the Famine.⁴ All values of this index are positive, and the magnitude measures the distance away from the national minimum in the unit of one standard deviation. Figure 3 plots the drought index for the 26 provinces that we have data across China, where darker shades indicate higher level of exceptional drought during the Famine period.

Data availability constraints We rely on the total agricultural sown area and heavy droughtaffected area to construct the drought level index because alternative historical data documenting the adverse effect of natural disaster on agricultural production is extremely limited in China, especially during the periods from 1949 to 1976. Moreover, we are constrained by the fact that no disaggregated data is reported below province level prior to 2000.

Data reliability constraints Data during the Mao-era were considered unreliable, since they were subject to systematic mis-reporting by the Maoist government. Data such as agricultural production and mortality rates during the Famine period could be particularly problematic, because the central government had strong incentive to forge these data in order to cover up the severity and political roots of the Famine.

We take several approaches to address the concerns regarding data reliability. First, we do not use the direct reportings on mortality rates and actual agricultural production during the Famine for any of our analysis. These data were exceptionally vulnerable to systematic mis-reporting, and even retrospective corrections by the post-Mao Statistics Bureau could be problematic. Instead, we use total agricultural sown area and natural disaster reportings from separate sources. These are considered to be less sensitive information as they do not directly reveal the scope of the Famine severity. Second, we use contemporary statistical compilations from the post-Mao government for both total agricultural sown area data (retrospectively published in 1999) and natural disaster reportings (retrospectively published in 1996). These two data sources have been carefully corrected retrospectively by China's National Bureau of Statistics, in particular to address systematic mis-reportings from the Mao-era.⁵

⁴In Section 7.2, we show results from alternative specifications using different measurement of drought level, including the index constructed only using the drought level *during* the Famine (rather than the ratio over drought level *prior* to the Famine).

⁵Meng, Qian and Yared (2015) compare these post-Mao data compilations to historical data sources, and confirm that the retrospective compilations revised many statistics reported during the Mao-era.

A.3 Alternative food sources: county-level buffer capacity against the Famine

In order to measure buffer capacity of alternative food sources in each county, we use *Global Agro-Ecological Zones* (*GAEZ*) data constructed by the Food and Agriculture Organization of the United Nations. GAEZ's crop and plantation suitability index is constructed via a two-stage procedure: (*i*) collect the characteristics of 154 different crops in order to determine environmental conditions for cultivation for each crop type; (*ii*) collect data on the conditions on physical environment for each of the 2.2 million grid cells across the globe. These conditions include: (*a*) 9 variables from global climatic database; (*b*) land and soil characteristics; (*c*) slope of soils by USGS.⁶

For the purpose of this study, we use the suitability index of *pasture grass* (edible wild vegetation) in low input level and rain-fed condition, with baseline measurement from 1961-1990. For each county, I obtain its corresponding index through geo-location. This is chosen for two reasons. First, these conditions mimic the relevant suitability environment during the Great Chinese Famine, when irrigation capacity and additional input availability were extremely limited. Second, suitability of pasture grass under such condition has little correlation with the suitability of agricultural crops under high input level and irrigation-fed conditions. Considerable endogeniety concerns would arise if we attempt to explain contemporary political distrust with any suitability measurement that is correlated with modern agricultural production, output capacity, and potential economic growth conditions.

⁶More detailed information about GAEZ can be found at www.fao.org/nr/gaez/en/.

Appendix B Additional features of the Great Chinese Famine

We now describe a number of additional features of the Great Chinese Famine that are relevant to our study.

B.1 Concentrated impact in rural areas

The Famine's impact was almost exclusively concentrated in rural areas. Approximately 95% of all Famine-related deaths occurred among rural *hukou* status holders. This arose partly because the Chinese Communist Party provided large amounts of food to urban areas during the Great Leap Forward in order to support rapid industrialization (Lin and Yang (2000)). Millions of Chinese became new employees of the state sector due to the heavy industrial investment.⁷ These new urban workers placed substantial pressure on China's food-rationing system, which led to a rapidly increasing and unsustainable demand on rural food production and procurement (Lardy (1987)). In addition, the urban population (under the dictates of Maoism) had protected legal rights for certain amounts of grain consumption, whereas the rural peasantry were given no such rights; instead, they were subject to non-negotiable production quotas and forced to survive on residuals from the procurement. With the internal suppression of news, many city residents were unaware of the mass deaths that were occurring in the countryside, and this was essential in order to prevent organized opposition in the cities (Becker (1996)). For these reasons, we focus our attention on the rural population in our empirical analysis.⁸

B.2 Strict migration control

Migration (and hence endogenous sorting) based on famine severity can be a serious concern to the identification of persistent effect of famines.⁹ Here, we demonstrate that this particular concern was less severe in the case of the Great Chinese Famine. Migration was strictly prohibited at two levels: (*i*) migration from rural to urban areas; (*ii*) migration within rural sectors.

During the Famine, living in an urban versus a rural area could mean the difference between life and death (Becker (1996)). As discussed previously, the Famine's impact lay primarily within the rural sector, while urban areas were largely immune from the excessive mortality. Despite the high incentive for hungry peasants to temporarily migrate to cities as refugees of the Famine, such

⁷In 1958, 21 million people were added to non-agricultural state payrolls, and total state employment reached a peak of 50.44 million in 1960, more than doubling the 1957 level; the urban population swelled by 31.24 million people (Lardy (1987)).

⁸Urban dwellers, in spite of the fact that many of them did not experience the Famine, did not serve as an ideal "comparison group" for the Famine-affected individuals in the rural areas. The urban population had drastically different experiences during the Famine compared to rural dwellers. In addition, they encountered different development trajectories and circumstances due to the rural-urban divide throughout China's development path. Finally, the urban population was impacted by the Cultural Revolution from 1966 to 1976, while rural households largely remained unaffected.

⁹Meng and Qian (2009) provides a detailed discussion on this concern.

migration was primarily prohibited due to the Household Registration System (namely, the *hukou* system). In 1958, the Chinese government officially promulgated the *hukou* system to control the movement of people between urban and rural areas. Internal passports were introduced, forbidding travel without appropriate authorization.¹⁰ Rural residents could not leverage the high cross-county variation in Famine severity to smooth the Famine consequences. Village local leaders employed security controls to prevent villagers from leaving, or hungry outsiders from entering (Thaxton (2008)). In fact, many of the starving peasants tried to flee to the cities to beg for food, but tight security at entry points and regular inspections of residential documents on the streets led to deportation and subsequent death for many.¹¹

B.3 Starvation as the main cause of death

Previous work has observed that the actual experience of starvation was at the center of excessive mortality during the Great Chinese Famine, unlike most other famines (see, among others, Fairbank (1987), Becker (1996), Dikötter (2010), and Meng, Qian and Yared (2015)). In particular, Meng, Qian and Yared (2015) note that rural China suffered from relatively low levels of infectious diseases even at the peak of the Famine's damage, primarily due to migration controls within rural sector, the prevalent adoption of DDT prior to the Famine, as well as the public health campaigns undertaken by the government immediately after the Communist Revolution. As Dikötter (2010) emphasizes, "People really did die of starvation – in contrast to many other famines where disease loomed large on the horizon of death." From the perspective of Famine survivors, this implied that hunger would be a common experience (or, syndrome) for those who were actually affected by the Famine. In other words, survivors of other famines may be able to avoid starvation experiences all together, as long as they survived the infectious diseases. Given the fact individuals are particularly sensitive to the physical and emotional pain associated with hunger experience, the Famine potentially affected its survivors beyond the biological domain, which is the main focus of our study.¹²

¹⁰Individuals were broadly categorized as either "rural" or "urban" status based on location of residence. A worker seeking to move from the countryside to urban areas to take up non-agricultural work would have to apply for permission through the relevant bureaucracies. The number of workers allowed to make such moves was tightly controlled. Migrant workers were required up to six bureaucratic "passes" in order to work in provinces other than their own.

¹¹Anecdotal accounts indicate that a small number of rural residents succeeded in getting into the urban sector during the Famine, mainly due to help received from their relatives residing in the cities.

¹²For example, Squire (1987) notes that long-term memory of certain past traumas and pains may be systematically intensified over time.

Appendix C Propaganda poem during the Great Chinese Famine

Below is a translated excerpt of a propaganda poem published in *People's Daily* editorial special column on Nov.15th, 1960. This poem, along with many others, demonstrates Chinese Communist Party's official stance that the Great Chinese Famine was caused by severe natural disaster, rather than policy failures and systematic misallocation of food.

Even the dearest person cannot match our lovely Party! Chairman Mao is our intimate friend, caring for us when we in need! ...

Even for the past one hundred years, it is rare to find a disastrous year like this. Drought: the road is so dry that dust covers up our ankles; Flood: the road is so flooded that boat can run through!

•••

We are going to fight through this difficulty and kill the enemies! Let us open the south gate of the heaven, and rush into the heaven's palace, Ask the gods to bow their heads, so that they will obey our demands...

•••

All people under the heaven are one family, and our Chairman Mao is so forward-looking ... The members of our Communes, their ambitions are as high as the sky! So we will definitely declare victory over this disastrous year! The gods are intentionally creating troubles for us, and they set so many road blocks in front of us! But we are not afraid! Because we have the Party, we have Chairman Mao!

Appendix D Validation of the Famine memory measurement

We use novel measurement of survivors' personal memory on hunger experiences during the Famine, which allows us to exploit rich levels of variations in Famine exposure. Here, we present evidence that indicates the validity of the Famine memory measurement.

D.1 Aggregated memory coincides with objective measurement of Famine severity

Another way to test the reliability of our Famine experience measurement is to check whether its cross-county distribution resembles that of alternative (and more conventional) regional Famine severity measurement. Therefore, we estimate the following Logit model: we predict individual Famine experience using the county level *cohort loss* index introduced in Appendix A.1, controlling for a full set of birth cohort and province fixed effects. The marginal effect (evaluated at the means) indicates that a 5 percentage point increase in *cohort loss* in a particular county is associated with an 18.4 percentage point increase in the likelihood of reporting individual Famine experience. The scale of this marginal effect explains almost the entire variation of individual Famine experiences across counties within a particular province.

D.2 Memory of the Famine is persistent

Individuals can have extraordinarily long lasting memory of traumatic experiences from the past. Evidence from oral history and anthropology confirms that despite the fact that half a century has passed since the actual event, many survivors still hold vivid memory of the Famine period today (for example, who and how many people perished in the village, who stole food and broke the rule in order to obtain additional crops, etc).¹³ For instance, one particular Famine survivor said in a home interview in January 2014:

Even when I eat meals today, I would not allow any left-over food in my bowls. I always finish up all the food, and I would never waste any food. Young people would say we are too frugal. But I do so because I always think back on the feelings of starvation and desperation during the Famine – those feelings I will never be able to forget.

D.3 High concentration in reported hunger years

As mentioned previously, our question about hunger experience did not explicitly mention the Great Chinese Famine. Respondents were required to report the exact years they experienced starvation if they reported that they have experienced starvation previously. Conditional on having reported hunger experience, approximately 97% of the respondents indicated that their hunger

¹³Caochangdi Work Station (located in Beijing, China) and its "Private Memory Project" contribute significantly to the systematic collection of oral history records on the Famine survivors. More details on Caochangdi can be found at http://blog.sina.com.cn/u/2181292250, last accessed on November 14th, 2014.

experiences took place in 1958, 1959, 1960 or 1961, exactly coinciding with the timeframe of the Great Chinese Famine. Unlike many other famines in human history, starvation was the main cause of death during the Great Chinese Famine (see Appendix B.3 for detailed discussions). The high concentration of reported hunger years that we see here confirms that starvation during the Famine was indeed a highly salient event to those who suffered from it. The precise association between reported hunger years and the actual years of the Famine also demonstrates the reliability of our measurement of Famine experience.

D.4 Cohort trend in memory confirms biological constraints

Although memory of the Famine is overall persistent, the stickiness of core memory entries is not biologically developed until children have reached beyond a certain age. Hence, we *do* expect strong birth cohort trends in the self-reported hunger experience during the Famine. In particular, younger cohorts at the time of the Famine should exhibit lower chance of remembering the Famine and its details, even if they were actually starving. This upward cohort trend is confirmed in Figure 2. The graph plots birth cohort against the proportion of individuals in our sample who reported having experienced starvation during the Famine. The proportion reporting hunger experiences during the Famine steadily increases as we move from younger to older cohorts at the time of the Famine, and it eventually stabilizes at around 30% as we move beyond birth cohort of 1952 (namely, age 10 at the end of the Famine in 1962). This pattern confirms our *a-priori* expectation of biological and cognitive limitations of memory during very young ages, demonstrating that our hunger measurement does not merely capture noise. We take into account of these cross-cohort differences in hunger experiences by including a full set of birth cohort fixed effects in all our specifications.

Appendix E Interpretation of the self-reported political distrust

Given the authoritarian regime in China, one worries that the self-reported political distrust towards local government in a face-to-face survey contains significant reporting biases – respondents fail to report distrust truthfully due to fear of the regime. We take several approaches to address this concern and to aid our interpretation of self-reported political trust.

E.1 Internal validity

We first show that the self-reported distrust in the local government carries high internal validity. If respondents have encountered negative interactions with the local government during the year before the CFPS survey took place (for example, being treated unfairly by the government, having conflict with government, etc.), such experiences are strongly associated with high level of reported political distrust.¹⁴ On average, having experienced one of such negative encounters moves the reported distrust by 1 unit (out of a scale of 10), and the t-statistics of the correlations well exceed 10 for most of the negative experiences recorded. In addition, major life disturbances that involve the government (for example, forced relocation away from original residence, and under-compensated government land acquisitions, etc.) are on average associated with 0.4 unit of increase in reported political distrust.¹⁵ This indicates that self-reported political distrust measured in CFPS exhibits meaningful variation – political distrust is high among individuals whom we expect to hold unfavorable attitudes towards the government.

E.2 Benchmarking political distrust within CFPS survey

Next, we present suggestive evidence that respondents in our CFPS survey did not exhibit substantial self-censorship when they answered questions regarding distrust in the local government. In the CFPS survey, along with the question on trust in the local government, we also asked respondents to report their trust in their parent, neighbors, Americans, strangers, and doctors. All of these were measured on a 0-10 scale, with 0 indicating extreme trust, and 10 indicating extreme distrust.

Table A.2 presents the mean, variance, and mode of each of these self-reported trust measurement for three subsamples of the respondents. Panel A shows the entire adult population in CFPS sample (nearly nationally representative, both rural and urban above 18 years old). Panel B restrict

¹⁴Survey respondents self-reported negative experiences with the local government (based on the categories that we provided) after the elicitation of trust and political attitudes. One needs to be aware of the potential biases related to this self-reported measurement of experience. For instance, those who did not trust the government in the first place may be more likely to recall and report negative experiences with the government.

¹⁵Reporting of these events are less vulnerable to the subjective reporting biases due to prior political distrust. The smaller magnitudes of these events are likely due to the fact that they typically occurred 10 to 15 years prior to the survey.

the sample to rural population only. Panel C restrict the sample to Famine susceptible individuals, the same subsample that we use for the baseline specifications in this paper.

As can be seen from the table, similar to other types of self-reported distrust (for example, towards strangers, Americans, etc.), political distrust does not exhibits an abnormally compressed distribution, unusual lumping at certain "politically correct" answers, or other patterns of selfcensorship. Across these subsamples, there exists a wide range in how people report their trust towards various agents and entities. In particular, respondents reported local government officials as the third least trustworthy, just after strangers and Americans. The tendency to avoid revealing distrust in the local government officials does not seem to be a major concern here. In particular, reported distrust in the local government has the highest level of variation among all trust measurements. There is no lumping in density at extremely high trust levels. Although there is a mass accumulated at the center value of scale 5 (about 25% of population), a considerable number reported political trust at either tails.

E.3 Comparing with political distrust in other surveys

One may still worry that self-reported political distrust may be systematically biased downwards because of the following reasons: (*i*) face-to-face interview; and (*ii*) political sensitivity due to China's authoritarian regime. We address these concerns by comparing the self-reported political distrust elicited by the CFPS with similar political distrust measured by two additional surveys. We again show that the political distrust measured in CFPS does not exhibit self-censorship patterns, when we compare it with similar measurement via anonymous online surveys in China, and face-to-face survey in other developing countries.

First, we compare the self-reported political distrust in the CFPS with a similar survey on trust among elite college students in Peking University that we conducted in 2013.¹⁶ We used an online survey to ask students' level of trust in a range of political entities. The original questions were on a 1-5 scale. Hence, we convert the CFPS questions to a 1-5 scale in order to make the results comparable across surveys. From now on, we report trust measurement using the following scale: 1 indicates extreme trust, and 5 indicates extreme distrust.

The reported distrust level towards various government bodies among Peking University students were higher than the rural adult subsample in CFPS that we focus on here. In the CFPS, rural residents directly susceptible to the Famine reported an average distrust level of 3.57 towards the local government. Students from Peking University, in contrast, report distrust levels of on average 2.02 towards central government, 2.38 towards provincial government, and 2.83 towards local government. Although we cannot differentiate to what degree are these differences driven by face-to-face interview or elite college education, the comparison shows that the CFPS sample does not seem to systematically report low levels of distrust towards the local government.

¹⁶This survey was designed for a separate project. Please see Cantoni et al. (2014) for more details on the survey and the related results.

Second, we compare the self-reported political distrust among Chinese citizens against the political distrust reported by comparable demographic groups from other developing countries, measured by the *Life In Transition Survey* (LITS). LITS employs the same face-to-face interview method as CFPS. The countries covered by LITS are comparable to China in the sense that they are all developing countries, many formerly communist regimes, that underwent significant so-cial, economic and political transitions in the recent decades.¹⁷ Table A.3 compares the reported distrust in the local government in CFPS with similar distrust measurements in LITS, where we restrict the same birth cohorts that we primarily focus on in this study. Again, all the distrust measurements are converted to a uniform 1-5 scale, where 5 indicates extreme distrust. The political distrust measured in the CFPS has comparable mean and variance with that of the LITS.

E.4 Unfavorable attitudes toward central vs. local governments

Recent studies have argued that the authoritarian regime in China exhibits a much higher tolerance towards citizen's criticisms against the *local* government cadres than *central* officials (see, among others, Lorentzen (2013), King, Pan and Roberts (2013)). As long as Chinese citizens demonstrate a clear distinction in their unfavorable attitudes toward the central versus local government, they may actually face much lower pressure to self-censor high level of distrust in the local government officials than previously speculated. This is perhaps the reason why we were not allowed to directly ask respondents to rate their trust towards central government in the CFPS survey, and that we need to rely on policy preferences concerning entire China as an indirect measurement of respondents' attitudes towards the central government.

¹⁷The following countries are surveyed by LITS: Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Former Yugoslav Republic of Macedonia (FYROM), Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Moldova, Mongolia, Poland, Romania, Russia, Serbia and Montenegro, Slovak Republic, Slovenia, Tajikistan, Turkey, Turkmenistan, Ukraine and Uzbekistan.

Appendix F Balance of characteristics between Famine and Non-Famine affected individuals

In Table 1, columns 7 and 8, we show differences between citizens who did not experience hunger during the Famine and those who did, *conditional* on birth cohort and province of residence fixed effects, and the p-values testing for the statistical significance of these *conditional* differences. Again, we want to emphasize that the list of characteristics we test here is by no means comprehensive. Factors not captured here may determine individuals having different experiences during the Famine.

F.1 Gender and household composition

Strong son-preference in Chinese traditional norms (particularly in rural areas) may induce parents to disproportionally allocate additional food to sons than to daughters in the crisis of food shortage, in order to preserve the male descendants' health and well-being. We show that gender did not drive the variation in Famine experience within a province and within a birth cohort. Nonetheless, since food allowance from the village communes was typically calculated at the household level, households with bigger sizes faced stronger pressure of food shortage. This shows up as one of the *only* observable differences between Famine and non-Famine affected individuals – those who experienced the Famine came from households with more children (measured by number of siblings).

F.2 Family background

We do not directly observe the income and assets of an adult individual's parents.¹⁸ However, for each individual, we know the literacy status of both parents, which we use as a proxy for family background during the time of the Famine.¹⁹ No significant differences in both parents' literacy status were observed. In addition, for each individual we know the "political label" of his parents or (more likely) grandparents. These "political labels" were assigned during the Communist Revolution in 1945-1950, based on household land holdings prior to the Revolution. The label mainly consisted of categories such as landlord, rich peasants, middle peasants, poor peasants, deprived peasants, etc. Once they were assigned, the labels apply to all members of the family and its descendants, and it typically cannot be revoked or revised. We show that there was no significant difference across the Famine and non-Famine individuals in terms of the political labels assigned

¹⁸Unless the parents are surveyed by the CFPS-2010 or 2012 waves. However, given that we are focusing on individuals who are born before the end of the Famine (1963), it is very rare for these individuals' parents to be still alive and hence included in the CFPS survey.

¹⁹Literacy status is a more relevant proxy for educational attainment than actual years of schooling completed, given the extremely low access to formal and modern education in rural China prior to 1949 (our sample of interest is rural Chinese population born before 1962).
to their parents or grandparents.

F.3 Political connections

In terms of political connections, we use three proxies: father's membership in the Chinese Communist Party (CCP), mother's membership, and the CCP membership of the individual of interest if he joined the Party prior to the Famine. The CCP membership demonstrates social connections and political eliteness: only less than 10% of the entire population are Party members. If political connection allowed individuals to have easier access to additional food during food shortage, one would suspect that CCP members were more likely to be immune from hunger experiences during the Famine. However, we show that individuals whose parents were CCP members or became Party members themselves prior to the Famine were no less likely to avoid the Famine experience within the province (or even within the county and village).²⁰

F.4 Proxy for economic and social connections

Lastly, we use various proxies to measure individuals' social and economic connectedness locally. One may suspect that if individuals were more connected socially and economically with the rest of the village, he was also more likely to gain access to additional food during the Famine. We use individual's residence distance and/or travel time to the nearest high school, medical facility, and village business center to proxy for such connectedness. We show that no significant differences were found across the Famine and non-Famine individuals along these dimensions either.

F.5 Unusual balance in contrast with other Maoist traumas

In contrast with other traumatic events during the Maoist era, the Great Chinese Famine was particularly unique in its conditional balance on observable characteristics across the impacted and non-impacted groups. In Table A.4, we report p-values testing for the statistical significance of *conditional* differences for 4 additional traumatic experiences: (*i*) forced migration during Downto-Countryside movement; (*ii*) cadre school participation; (*iii*) persecution of any sort, and (*iv*) being recruited into military service during the Maoist period. Column 1 replicates the p-values from Table 1, showing the Famine benchmarks. These conditional differences account for average characteristics of province of residence, birth cohort, as well as the dichotomy between rural and urban. These experiences were reported in the same manner as the hunger experience in the CFPS-2010. In order to focus our attention on individuals susceptible to personally experiencing the Maoist traumas listed above, we restrict the sample to individuals born before 1978 (the year

²⁰We acknowledge that with self-reported Famine experience as our only individual-level measure, we cannot distinguish between the baseline true experiences of the CCP member households during the Famine, *and* conditional on having experienced it, their likelihood of reporting such experiences. The above balance check analysis makes the implicit assumption that conditional on having experienced hunger during the Famine, there is no difference in the likelihood of reporting between individuals from CCP and non-CCP households.

when economic and political reform started, and two years after the death of Mao, commonly considered as the end of Mao-era).

As can be seen, for each of these Maoist traumatic events, individuals who encountered such experiences differed from those who didn't along a number of key dimensions of their observable characteristics. Several factors likely contributed to the contrast between the Great Chinese Famine and these Maoist traumatic events. First, the Famine impacted the entirety of China, covering a much larger scale than many of these other events. Second, unlike other traumas and campaigns during the Maoist era, the intensity of the Famine left little leverage for individuals to actively escape its impact. Third, beyond the rural-urban polarity, the Famine was not targeted toward particular demographic and socioeconomic groups at the policy level, while this was certainly not the case for these other traumatic events.

Appendix G Implications of the Famine-related propaganda

Our findings also provide some suggestive evidence on the capacity and constraints at which political propaganda was able to manipulate citizens' beliefs. Note that the discussion here regarding propaganda is far from conclusive, mainly because in the context of the Great Chinese Famine, we do not observe a counter-factual world where the Communist Party chose not to engage in the Famine-related propaganda campaigns.

As discussed previously, the Communist Party of China actively engaged in propaganda efforts to divert citizens' attention from blaming the government for their sufferings during the Great Leap Forward. In particular, the propaganda aimed to convince citizens that the Famine rooted in causes related to natural disaster, rather than political mistakes and policy failures. Our results suggest that this propaganda seemed to work well for citizens who actually did experience noticeably negative agricultural productivity shocks caused by droughts. Their inference and subsequent attitudes were more likely to coincide with the propaganda messages, attributing the Famine cause to natural disasters. Nevertheless, the Famine propaganda may induced backlashes on those citizens who experienced the Famine yet failed to observe drought affecting local agricultural production. To them, their private knowledge contradicted the (false) propaganda claims. As a result, this may further aggravated their political distrust and unfavorable attitudes towards the government, beyond the level caused by the Famine experience alone.

In retrospect, it is not immediately obvious whether the Famine related propaganda regarding its root causes was an optimal strategy undertaken by the Communist Party.²¹ There were clear tradeoffs: on one hand, propaganda may enhance the political trust among citizens who observed natural disaster, and establish the trust among those who were ambivalent about the weight of responsibility between government and nature. On the other hand, propaganda may lead to backlashes among citizens who did not observe abnormal level of nature disaster during the years of the Famine. Whether the "benefit" of propaganda outweighs its "cost" and "damage" (from the perspective of the Communist Party of China) depends on the distribution of natural disaster across regions as well as the corresponding regional population density.

²¹This is by no means an attempt of making normative statement of state propaganda in general. To do so, one would need to take into account of the value of freedom of speech, citizens' rights to be informed of truth, etc – these are beyond of the scope of the current paper.

Appendix H Correction for survival selection

We address the survival selection by employing a similar method introduced in Meng and Qian (2009). We re-estimate our difference-in-differences model after dropping individuals at the lowest quantiles of the distribution of a range of variables, through which selection into survival may be operating: *(i)* direct outcome of political distrust that we primarily focus on in this study; *(ii)* individual's height; and *(iii)* local availability of alternative food sources. Across these dimensions, selection into survival was most prevalent in the lowest quantiles – if individuals in this range of the distribution were more likely to perish conditional on having experienced the Famine, then we observed disproportionally more individuals who did not experience Famine in this region of the distribution.

The estimate results after we have corrected for survival selection are presented in Table 11, where we replicate our baseline estimation in column 1, and column 2-4 correspond to the three selection dimensions that we outline above.

H.1 Selection based on political distrust

First, we focus on selection into survival directly through political distrust. Those who were more distrusting towards the government may be disproportionally more likely to survive. Contrast with those who blindly trusted the government provision of food, more distrusting individuals may invest in private food storage. This created a selection mechanism that exhibited the pattern that we have identified. Specifically, among individuals who avoided the Famine experience altogether, they did not face Famine mortality and selection into survival. Nonetheless, among those who experienced hunger, selection into survival became a problem: the more trusting individuals among them perished during the Famine, while the more distrusting ones survived.

Since selection into survival was particularly prevalent in the lowest quantiles of political distrust (namely, the most trusting individuals), we re-estimate our baseline specification after dropping the bottom 10% percentile of political distrust within each province.²² The results are presented in Table 11, column 2. The estimations stay relatively unchanged comparing to the baseline estimation using the full sample, which is shown in column 1. Note that when we drop the lowest quantiles of the distribution of political distrust variable, we simultaneously alter the distribution of treatment variable of the Famine experience. However, the historical drought levels were measured at the province level, which remain unchanged after the survival selection correction. In other words, while the correction method affects the composition of the Famine and non-Famine affected individuals within a given province, the second difference that compares cross-individual differences across regions is not affected.

It is also worth noting that the selection into survival based on political distrust may operate in

²²Note that given the political distrust variable is measured on 0-10 scale, dropping the lowest 10th percentile is effectively dropping the individuals who report lowest level of distrust towards the local government.

the opposite direction as well. If the Famine survivors were politically more connected, then they would trust government more. In other words, conditioning on having experienced the Famine, we may observe disproportionally more individuals with high level of trust towards the government among survivors. Such selection into survival attenuated our results. Correspondingly, we might consider our estimation as a lower bound of the Famine impact.

H.2 Selection based on height

While informative, dropping the lowest quantiles of the direct outcome of political distrust can be problematic, because one needs to assume that there is no heterogeneity in effect sizes along the spectrum of prior political distrust. This assumption is difficult to test since we do not observe pre-Famine political distrust. This problem can be partially mitigated by using alternative variables such as biological traits to correct for survival selection, so long as the biological trait of height is not perfectly collinear with the individual's political distrust and attitudes. As demonstrated by Meng and Qian (2009), higher stature was an important (and direct) factor that increased survival likelihood. Thus, we re-estimate the difference-in-differences model after dropping observations at the bottom 10th percentile of the distribution of height.²³ The estimation results are shown in Table 11, column 3. Comparing to our baseline estimation using full sample (column 1), coefficient estimates enlarge for both the main effect of the Famine experiences and the interaction between the Famine experiences and exceptional drought level, suggesting that survival selection may actually cause *attenuation* biases.

H.3 Selection based on alternative food sources

Lastly, we use county level availability of alternative food sources to address the survival selection biases. Anthropologists recorded the widespread practice of villagers eating wild vegetation during the Famine to combat food shortage (e.g. Thaxton (2008)). Thus, counties with high suitability to grow edible wild vegetation provided natural alternative food sources as an additional buffer against food shortage. As a result, selection into survival based on political trust and political connections became less severe in those regions: the access to wild vegetation allowed even the politically less connected individuals or those who failed to invest in private food storage to eventually survive the Famine.

Following this logic, we first construct our measurement of the local availability of alternative food sources (edible wild vegetation), which we introduce in Appendix A.3. We then re-estimate our baseline specification after dropping the counties where wild pasture grass suitability index lies more than 1.5 times the size of a standard deviation below corresponding *provincial* mean level. Similar conclusion holds if we use alternative cutoffs, such as 2 times the size of a standard

²³Similar conclusion holds if we use alternative cutoffs, such as bottom 20th percentile.

deviation.²⁴ In other words, we drop the counties altogether where survival selection on political connection and distrust was the most prevailing. As shown in Table 11, column 4, the estimates are similar as compared to our baseline estimation using the full sample. This correction for survival selection is also more preferred methodologically, because we drop observations at the county-level, which preserves both the distribution of individual level variation in the Famine exposure within the remaining counties, and the exceptional drought during the Famine that we observe at the provincial level. Hence, both levels of variation in our baseline difference-in-differences specification remain intact.

²⁴Using *provincial* mean level as a threshold (rather than that of the *entire* country) alleviates the problem that certain provinces would have more dropped counties than others.

	Drought	Drought	Drought	Exceptional
	prior to	during	after	drought during
	the Famine	the Famine	the Famine	the Famine
Variable	(1)	(2)	(3)	(4)
Panel A: Famine severity				
Hunger experience during Famine	-0.427	0.001	-0.065	0.004
	[0.611]	[0.138]	[0.295]	[0.020]
Cohort loss during Famine	0.144	0.202	0.018	-0.391
	[0.607]	[0.165]	[0.335]	[0.021]
Panel B: Provincial characteristics at 196	0			
Population natural growth rate	-97.96	-43.88	44.64	-2.927
	[104.4]	[28.33]	[59.70]	[3.750]
Gross regional product (total)	36.01	39.92	66.20	0.941
	[162.8]	[44.84]	[91.53]	[5.817]
Gross regional product (agriculture)	-21.48	17.11*	-19.31	1.797
	[37.09]	[9.826]	[20.83]	[1.281]
Gross regional product per capita	0.242	-0.233	0.350	-0.022
	[0.606]	[0.163]	[0.338]	[0.021]
Employment rate	-0.378	-0.049	-0.285*	0.011
	[0.268]	[0.090]	[0.151]	[0.010]
Local fiscal revenue (total)	0.965	1.424	2.521	0.057
	[5.255]	[1.475]	[2.939]	[0.191]
Local fiscal revenue (tax)	-0.932**	-0.078	-0.381	0.008
	[0.373]	[0.124]	[0.190]	[0.017]
Panel C: Provincial characteristics at 201	2			
Population natural growth rate	-20.89	-1.038	-13.15	0.714
	[12.76]	[3.766]	[7.148]	[0.458]
Gross regional product (total)	-87379	20372	-30795	2941.1
	[74127]	[20932]	[42877]	[2656.2]
Gross regional product (agriculture)	-3749.1	3011.5**	-1794.7	341.29*
	[5527.3]	[1430.2]	[3148.2]	[186.22]
Gross regional product per capita	-52.57	-12.99	1.648	-1.338
	[69.05]	[19.37]	[39.71]	[2.481]
Employment rate	0.243	0.049	-0.148	-0.020
	[0.495]	[0.134]	[0.364]	[0.018]
Local fiscal revenue (total)	-1050	82.51	-337.2	21.28
	[737.9]	[214.7]	[431.4]	[27.13]
Local fiscal revenue (tax)	-993.5	257.4	-279.3	42.18
	[774.4]	[217.8]	[415.6]	[27.25]

Table A.1: Estimated impacts of drought

Continued on next page

	Drought	Drought	Drought	Exceptional
	prior to	during	after	drought during
	the Famine	the Famine	the Famine	the Famine
Variable	(1)	(2)	(3)	(4)
Panel D: Growth from 1960 to 2012				
Population natural growth rate	-22.13	-5.995	-2.612	-0.373
	[16.86]	[4.728]	[9.991]	[0.619]
Gross regional product (total)	-1758	24.68	-788.5	27.35
	[814.2]	[249.8]	[479.7]	[31.38]
Gross regional product (agriculture)	-206.8	11.35	-47.99	5.821
	[197.1]	[56.40]	[114.1]	[7.102]
Gross regional product per capita	-451.7	121.7	-214.1	12.79
	[425.2]	[119.2]	[243.3]	[15.32]
Employment rate	0.776	0.734	1.703	-0.032
	[2.330]	[0.647]	[1.954]	[0.085]
Local fiscal revenue (total)	-743.1**	-126.7	-322.6*	-1.925
	[304.3]	[94.42]	[182.3]	[12.45]
Local fiscal revenue (tax)	2.504	0.042	0.498	-0.034
	[2.072]	[0.622]	[1.037]	[0.085]
Panel E: Growth from 1980 to 2012, cond	itional on 1960 l	evel		
Population natural growth rate	-2.024**	0.191	-0.600	0.086***
	[0.884]	[0.281]	[0.540]	[0.030]
Gross regional product (total)	-350.6	-31.18	-109.5	3.063
	[219.9]	[65.69]	[131.2]	[8.265]
Gross regional product (agriculture)	-41.37	4.461	30.23	2.739
	[55.82]	[16.68]	[31.81]	[2.004]
Gross regional product per capita	-89.00	-19.72	-3.378	-1.907
	[143.7]	[41.98]	[83.94]	[5.268]
Employment rate	1.288	0.381	0.327	-0.019
	[0.916]	[0.312]	[1.019]	[0.038]
Local fiscal revenue (total)	-385.7	-96.01	-29.01	4.754
	[339.8]	[100.1]	[201.9]	[12.69]
Local fiscal revenue (tax)	-1.877	0.372	0.370	0.075
	[1.996]	[0.507]	[0.941]	[0.068]

All results are based on data from provincial statistics database from *China Data Center* at the University of Michigan. Number of observations (for all columns and all panels): 25.

Distrust towards:	Local govt.	Parents	Neighbors	Americans	Strangers	Doctors
Panel A: All adults						
Mean Std. Dev. Mode	5.09 2.49 5.00	0.95 1.73 0.00	3.64 2.42 5.00	7.54 2.49 10.00	7.87 2.13 10.00	3.40 2.28 5.00
Panel B: Rural adul	ts					
Mean Std. Dev. Mode	4.98 2.49 5.00	1.01 1.77 0.00	3.62 2.25 5.00	7.61 2.46 10.00	7.89 2.13 10.00	3.32 2.28 5.00
Panel C: Famine sus	sceptibl	e indivi	duals			
Mean Std. Dev. Mode	4.65 2.51 5.00	1.24 1.94 0.00	3.58 2.28 5.00	7.75 2.43 10.00	7.90 2.19 10.00	3.33 2.31 5.00

Table A.2: Self-reported distrusts measured by CFPS

For all self-reported distrust measures, respondents report a rating from 0 to 10, where 0 indicates extreme trust, and 10 extreme distrust. Panel A uses the sample of all adults older than 18 years old in CFPS (total number of observations: 24,797). Panel B uses all adults older than 18 years old who lived in rural sector at age 3 (total number of observations: 21,309). Panel C uses adults living in rural sector at age 3, and born before 1962 (total number of observations: 9,226).

Distrust towards:	Avg. reported distrust			
Panel A: China Family Panel Study (CFPS)				
Local government	3.57			
Panel B: Life in Transition Survey (L	ITS)			
Presidency/monarchy	2.90			
Government/cabinet of ministers	3.34			
Regional government	3.15			
Local government	3.06			
The parliament	3.43			

Table A.3: Political distrust measured in various surveys

For all distrust measures, we convert the original measures to a rating scale from 1 to 5, where 1 indicates extreme trust, and 5 extreme distrust. The original survey questions in CFPS questions are based on 0-10 scale. The original survey questions in LITS are based on 1-5 scale, with 1 indicating extreme distrust, and 5 extreme trust. For CFPS, we restrict the sample to Famine susceptible individuals (rural residence at age 3 and born before 1962). For LITS, we restrict the sample to cohorts born before 1962.

		Down-to-			2.611.
	FAMINE	countryside	Cadre school	Persecution	Military
Variable	(1)	(2)	(3)	(4)	(5)
Panel A: Personal characte	eristics				
Male	0.823	0.393	0.002	0.000	0.000
Han	0.511	0.495	0.021	0.170	0.199
# of siblings	0.003	0.000	0.041	0.142	0.000
Migration at Age 3	0.677	0.035	0.001	0.554	0.166
Height	0.345	0.487	0.004	0.000	0.000
Weight	0.951	0.034	0.011	0.000	0.000
BMI	0.876	0.018	0.156	0.176	0.000
Panel B: Parental characte	ristics				
Father Illiterate	0.186	0.070	0.118	0.892	0.013
Father CCP Member	0.945	0.770	0.682	0.325	0.004
Mother Illiterate	0.071	0.044	0.108	0.760	0.014
Mother CCP Member	0.344	0.670	0.691	0.272	0.000
Parent Poli. Label	0.583	0.310	0.580	0.000	0.000
Panel C: Socioeconomic ne	etwork proxies				
Distance to Hospital	0.751	0.552	0.383	0.817	0.820
Distance to School	0.236	0.008	0.140	0.108	0.000
Distance to Downtown	0.641	0.600	0.002	0.034	0.103

Table A.4: Balance checks of other Maoist traumas

Columns 1-5 report the p-values for t-tests of differences in means across group with corresponding experiences and without, conditional on birth cohort and province of residence fixed effects; standard error are clustered at the province level (number of clusters: 25). "Migration at 3yo" indicates whether individuals migrated to different cities than birthplaces at age 3. "Father Illiterate" "Father CCP Member" "Mother Illiterate" and "Mother CCP Member" are dummy variables indicating corresponding parental characteristics when the individual was 14 years old. For these variables, we restrict sample to those who are at least 14 years old at the beginning of the Famine, to make these parental characteristics pre-determined with respect to the Famine. "Parent Pol. Label" indicates whether individuals belong to families labeled as landlord or rich peasants during the Land Reform in 1950s. For column 1, number of observations: 9,226. For columns 2-5, number of observations: 23,400.

Dependent variable:	Distrust towards local government		
	Male	Female	
	(1)	(2)	
Famine experience	0.600*** [0.179]	0.700*** [0.250]	
Famine experience × drought level	-0.157*** [0.055]	-0.238** [0.090]	
p-value	(0.001)	(0.014)	
Observations	4488	4415	
Mean DV	4.653	4.646	
Std.Dev. DV	2.471	2.542	

Table A.5: Heterogeneous effects by gender

*: Significant at 10%; **: 5%; ***: 1%. All regressions include the main effects on *drought level*, and a full set of province of current residence and birth cohort fixed effects (not reported). Robust standard errors in brackets, clustered at the province level. Number of clusters: 25. Corresponding p-values are reported for the coefficient estimates on *Famine experience* × *drought level*.