Formation and Evolution of Beliefs: Famine Experience and Trust in Neighbors*

Da Gong† Zhian Hu‡ Chuanchuan Zhang§

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Abstract

This paper examines how the impact of traumatic experiences on contemporary trust could vary across different initial social capital levels within the context of the Confucian clan and the Great Chinese Famine. Our triple-differences analysis exploit county-level variation in famine intensity, variation in famine exposure based on birth cohorts, and geographic variation in the initial clan culture. We use soil suitability to instrument for famine intensity. We find that traumatic experiences strengthen trust among clan members in areas with high levels of initial social capital. Our findings are robust to model choice and pass placebo tests, and remain stable in a event study model.

Keywords: Social Capital, Trust, Clan, Great Chinese Famine

JEL Codes: D83, P16, Z13

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†University of California, Riverside, Department of Economics, E-mail: dgong005@ucr.edu

‡Central University of Finance and Economics, China, Department of Economics, E-mail: cufe_huzhian@163.com

§Zhejiang University, Department of Economics, China, E-mail: ccz.zhang@gmail.com

1 Introduction

Social capital is associated with economic development, institutions and trade.[1] Understanding the dynamics of social capital accumulation and dissipation can have important economic and political implications, but the literature has yielded mixed findings, with no consensus on the impact of negative shocks on social capital formation.[2] Although Tabellini (2008) and Guiso et al. (2008) conjecture that different initial conditions may lead to the evolution of social capital into equilibriums of mistrust or trust, they provide limited empirical evidence .

In this paper, we provide evidence to shed light on this puzzle by estimating how the impact of traumatic experiences on one aspect of social capital — contemporary trust — could vary across different initial social capital levels. We hypothesize that when individuals derive substantial benefits from the initial conditions of social capital within a community in the face of negative shocks, it strengthens trust among the community members.

To examine the hypothesis, we focus on a kinship-based historical institution in China – the Confucian clan, where social capital is deeply embedded, in the context of the Great Chinese Famine ["the Famine" henceforth] (1959-1961). We begin by utilizing trust data from the China Family Panel Survey (CFPS) to examine the impact of the Famine on contemporary trust. To achieve this, we exploit differential exposure to county-level famine intensity across cohorts before and after the Famine. Then, we employ historical data on social capital, specifically pre-famine clan strength, to implement a triple difference design. This allows us to compare the famine effects in counties with high clan strength to those in counties with low clan strength. Through this analysis, we identify the impact of initial conditions on the relationship between negative shock and contemporary trust.

We measure the clan strength of each county by using the density of pre-PRC[3] genealogies—books that record lineages' male members, clan rules and moral obligations for members since its

[1]Arrow (1972); Putnam et al. (1993); Tabellini (2010); Algan and Cahuc (2010); Ponzetto and Troiano (2018); Guiso et al. (2016); Knack (2002); Chen et al. (2021); Alesina and Giuliano (2015); Guiso et al. (2009)

[2]A strand of literature documents that negative shocks, such as slave trade (Nunn and Wantchekon, 2011), political repression (Xue, 2021) and wars (Conzo and Salustri, 2019) lead to a decrease in social capital. By contrast, another strand find that exposure to adverse events intensify the strength of social capitals (Buggle and Durante, 2021; Belloc et al., 2016; Bellows and Miguel, 2009).

[3]the People's Republic of China

inception. In China's rural society, the Confucian clan, a predominant lineage organization, served as a risk-sharing and resource-pooling institution for thousands of years, making it a fundamental form of social capital (Chen and Ma, 2021). Genealogy books serve to promote clan solidarity, facilitate intra-clan intertemporal exchange, and function as a fundamental aspect of clan activities while also serving as an indicator of clan cohesion. (Cao et al., 2022; Chen et al., 2021).

As a risk-sharing institution, the clan played a pivotal role throughout China's history during periods of weather shocks,[4] and notably, it also saved millions of lives during the Famine, known as deadliest famine ever recorded in human history. During Mao's Great Leap Forward era, a series of inflexible and progressive government procurement policies, along with systematic misallocation of food, led to the Great Chinese Famine from 1959 to 1961. It is estimated that as many as 30 million people died during this period, with 85 percent of Chinese counties affected. Despite the non-negotiable orders from the central government, as noted by Cao et al. (2022), local clans empowered peasants to organize and resist excessive grain procurement from higher-level authorities, and facilitate intra-clan lending. According to their findings, one standard deviation increase in the clan strength is associated with a reduction of 1.45 to 1.61 deaths per thousand people during the Famine years.

We measure the famine intensity at the county level using the excess mortality rate during the years of the Famine. The mortality data is manually collected from compilation of statistics, local government reports, and county gazetteers.[5] One concern is that the excess mortality rate may be correlated with clan strength, potentially biasing our estimation. To address this concern, we employ weather shocks during the Famine and soil suitability for grain production as instrumental variables (IV) for famine intensity. These IVs are unlikely to correlated with initial clan strength. While long-term climate variability has been found to causally determine social capital (Buggle and Durante, 2021; Giuliano and Nunn, 2021), the weather shock during the specific years 1959 to 1961 is not expected to be correlated with local clan strength. Furthermore, although a strand of literature finds that wetland rice farming has persistence influence on social norms and cooperative behavior (Talhelm and English, 2020; Talhelm et al., 2014a; Zhou et al., 2023), the procurement

[4]Chen et al. (2022) documents that a 10% increase in clan density reduces the freqency of severe drought induced cannibalism by 4.78%

[5]Please click this link to see details of China Gazetteer Project.

policy does not show a preference for rice over wheat or other grains and is therefore unlikely to be correlated with pre-famine clan culture.

We find that the Famine results in an average increase of 0.75 points in trust scores among the subgroup with high initial clan strength, which is a noteworthy point estimate, considering that the average trust score among neighbors is 6.5. In the context of the triple-differences specification, we find that the traumatic experience strengthens trust among those who received support from their clans, leading to an increase in trust scores ranging from 0.42 to 0.66 points. Our findings remain stable to individual level controls, different levels of fixed effects, alternative famine measurements and alternative clan measurements. Our results also remain robust to instrumental variable estimation. The event study estimates validate the parallel trends assumption for the difference-in-differences and triple-differences estimations.

To investigate whether the development of trust in neighbors is influenced by the framework proposed in our study, we perform a placebo test and replicate our main analysis by assessing the impacts on generalized trust and trust in parents. Our findings indicate that the impact of famine on generalized trust and trust in parents does not vary across initial clan conditions. This supports our hypothesis that clan culture likely played a pivotal role in safeguarding individuals during the famine and therefore reshaping their beliefs.

Our work contributes to several strands of literature. Firstly, it contributes to the growing body of research on trust formation and cultural persistence. Existing studies present mixed findings, demonstrating that historical negative shocks can either undermine or foster social capital and related behaviors. For instance, social capital may be undermined by slave trade (Nunn and Wantchekon, 2011), political repression (Xue, 2021), or wars (Conzo and Salustri, 2019). On the other side, cooperation and civil participation could also be induced by weather shocks (Buggle and Durante, 2021), earthquakes (Belloc et al., 2016) or civil wars (Bellows and Miguel, 2009). We contribute to this literature by understanding the role of initial conditions of social capital in steering trust towards different self-enforcing equilibrium. Additionally, our empirical findings complement the theoretical frameworks proposed by Tabellini (2008) and Guiso et al. (2008).

Secondly, our research contributes to the existing literature on cultural and institutional bifurcation (Greif and Tabellini, 2010, 2017; Alesina and Giuliano, 2015). Unique initial cultural conditions lead to the emergence of diverse social organizations, while their subsequent proliferation strengthens their distinct cultural traits (Greif and Tabellini, 2010). Our findings support this view by illustrating a self-enforcing cultural traits—kinship-based interactions reinforce trust towards kin under negative shocks. Specifically, we extend this argument by delving deeper into the impact of a particular historical shock—the Great Chinese Famine. This exploration aims to establish a clear causal link between culture and institution. More broadly, our paper provides insights into the reasons behind certain nations being trapped in a vicious cycle of extractive institutions, resulting in less development (Acemoglu and Robinson, 2020). Social capital rooted in "limited morality" may foster cooperation within family members but simultaneously hinder the development of inclusive institutions, thereby impeding economic growth (Alesina and Giuliano, 2015; Chen et al., 2021). The self-reinforcing characteristic of "limited morality" societies, such as kinship-based networks, elucidates the challenge these nations face in developing modern institutions without external shocks (Acemoglu et al., 2001).[6]

Thirdly, our work also relates to the literature on the the role of kinship-based networks as risk-sharing institutions, particularly in the contexts of China and Sub-Saharan Africa (Zhang, 2020; Dincecco and Wang, 2021; Zhang and Liu, 2010; Enke, 2019; Moscona et al., 2017, 2020; Moscona and Seck, 2021). Cao et al. (2022) reveals that clans play a crucial role in mitigating famine intensity through informal lending and collective resistance. We extend this argument by revealing that risk-sharing function within kinship-based network is strengthened through survival experiences.

The rest of the paper is organized as follows. Section 2 provides conceptual framework and background to guide the empirical analysis. Section 3 describe the data. Section 4 presents the empirical strategy and results. Section 5 presents the instrumental variables estimation. Section

[6] Literature on relationship between culture and institutions document that "generalized morality" is an important factor that enforce cooperation between unrelated individuals, thereby boosting economic growth (Putnam et al., 1993; Tabellini, 2010; Ponzetto and Troiano, 2018). However, if social capital is rooted in "limited morality", it may foster cooperation within clan members while impeding broader societal development (Alesina and Giuliano, 2015; Chen et al., 2021). The self-enforce cultural traits in "limited morality" could contribute to explaining the "the Great Divergence" and "Narrow Corridor" pattern (Pomeranz, 2000; Acemoglu and Robinson, 2020). Kinship-based networks, like clans, may mitigate shocks and contribute to the prosperity of agrarian-based economies. However, they can also pose obstacles to the development of modern institutions in these countries.

6 provides Robustness Checks. Section 7 concludes.

2 Conceptual Framework and Background

In this section, we provide a brief conceptual framework and a historical background to clan culture and the Great Chinese Famine.

2.1 Conceptual Framework

Social capital refers to the attitudes, beliefs, norms and values that support cooperation (Guiso et al., 2008). Mixed findings in the literature suggest that historical negative shocks have the potential to either destroy or cultivate trust and related behaviors. Nunn and Wantchekon (2011) finds that individuals from ethnic groups with significant exposure to the slave trade tend to demonstrate lower levels of trust in their relatives and neighbors. This phenomenon can be attributed to the historical practice of individuals being frequently sold into slavery by people in their own communities, including neighbors and even family members. Other negative shocks such as political repression (Xue, 2021), or wars (Conzo and Salustri, 2019) have been found to have persistent negative impacts on cooperation and trust. In contrast, Buggle and Durante (2021) finds that regions experienced more frequent climate-related risks exhibit enhanced cooperation among neighboring communities, facilitated by mutual insurance. Similarly, negative shocks such as earthquakes (Belloc et al., 2016) and civil wars (Bellows and Miguel, 2009) have been identified as reinforcing local social capital.

To reconcile the mixed findings in the literature, we propose a brief conceptual framework guided by Tabellini (2008) and Guiso et al. (2008). We propose that in the presence of a negative shock, if the net benefits of cooperation are sufficiently high, the society will naturally self-enforce towards an equilibrium of trust. In the context of the Famine, individuals residing in severely affected regions who survived through the support of their clan culture, would have their trust in clan members reinforced by this experience.

2.2 Clan as a Kinship-Based Network and Risk Sharing Institution

Clan is a kinship-based organization that includes patrilineal households with a shared lineage tracing back to a common male ancestor. Similar to the corporation, a voluntary organization between unrelated individuals, clan sustains cooperation among members and provides local public goods (Greif and Tabellini, 2017). However, the nature of cooperation within a clan is grounded in reciprocal moral obligations and communal moral values, regulated through the kinship network. In contrast, cooperation within a corporation is based on generalized moral obligations regardless kinship (Greif and Tabellini, 2017; Enke, 2019)

The most famous metaphor for clan is presented by by Fei (1992) " kinship - is similar to concentric circles formed when a stone is thrown into a lake...every family regards its own household as the center and draws a circle around it. This circle is the neighborhood, which is established to facilitate reciprocation in daily life...This pattern of organization in Chinese traditional society has the special quality of elasticity" (p63-64). This "egocentric" network shown by Fei, is defined as *differential mode of association* (chaxugeju). This kinship-based network lacks clear boundaries. [7] The trust within clan members largely depends on their biological distance. Shown by the upper panel in Figure A1, in a society with stronger clan culture, neighbors and relatives are positioned in a more central circle around the individual, reflecting a higher level of trust in them. In contrast, in a society with a weaker clan culture (lower panel), neighbors and relatives are situated in a circle closer to strangers, indicating lower levels of trust in them. One clarification is necessary: given our focus on rural residents in China, it's important to note that neighbors are often relatives. Therefore, in this paper, we do not distinguish between neighbors and family members.

Within the kinship-based network , clan members tend to promote codes of good conduct and supply communal goods (Alesina and Giuliano, 2015). Clan provides local militias during turbulence (Rowe, 2007). Additionally, clan plays a vital role by providing charity, informal lending, and mutual insurance, serving as institutions for resource pooling and risk-sharing (Chen et al., 2021). This, in turn, helps reduce survival risks during famines and wars, thereby boosting population growth (Chen and Ma, 2021).

[7] In contrast, individuals in a Western-style organization typically enroll or sign up for memberships.

A unique institutional feature of clan is the use of genealogy book, which detailedly record the family tree. These books serve as a vital link connecting all males, both past and present, within the kinship network. They play a crucial role in determining the membership of each household within the clan (Cao et al., 2022). Moreover, genealogies document the codification of clan rules, establishing and reinforcing reciprocal moral obligations among clan members (Chen et al., 2021). Along with ancestral hall, which serves as a physical space for ancestor worship and important events, genealogy serves as a pivotal tool to establish group identity among clan members. The compilation and upkeep of genealogies demand a substantial economic investment and a high level of cooperation within the clan. Therefore, we posit that the density of genealogies serves as a systematic proxy for the strength of clan culture.

2.3 Clan during the Famine

The unprecedented nationwide famine during the Great Leap Forward (GLF) movement resulted in 30 million deaths from 1959 to 1961. The inflexible excessive procurement by the upper-level government and the misallocation of food resources were considered as the main causes of the Famine (Meng et al., 2015). During the GLF, a compulsory grain procurement system was initiated, and private ownership of grain was prohibited. Each year, prior to the harvest, the procurement quota is determined, taking into account reported grain outputs from previous years, weather conditions, and historical grain suitability (Meng et al., 2015; Kasahara and Li, 2020). Counties with favorable weather conditions and a historical suitability for grain crops are associated with higher procurement quotas. As a result of career and promotion incentives, upper level Communist Party officials over-reported grain outputs, leaving insufficient food crops for local communities to sustain themselves. This, in turn, was one of the contributing factors to the occurrence of the Famine. As documented by Walder (2015), at the peak of the GLF, rural households were no longer permitted to store their own food.

Under pressure from upper-level officials, village leaders from regions with higher clan strength were more likely to resist excessive procurement or conceal grain from the upper-level government. Meanwhile, inter-clan borrowing served as a channel to save their clan members and alleviate the intensity of the Famine. As a result, Cao et al. (2022) finds that the increase in mortality rates during the Famine years is significantly smaller in counties with a higher level of clan strength. Particularly, a one standard deviation increase in clan strength is associated with a reduction of 1.71 to 2.26 deaths during the Famine.

3 Data

This section discuss our main data sources and key measurement strategies. Our empirical strategy make use of four main data sources: Trust outcomes from *China Family Panel Study* (CFPS) at individual level, famine intensity from county gazetteers, clan strength from historical collection, and historical weather shocks and soil suitability index. More details about the summary statistics can be found in table 1.

3.1 Individual Level Trust

We measure the main outcome of interest, trust in neighbors, using the second wave of the *China Family Panel Survey* (CFPS) survey (2012) and gather individual characteristics from the baseline survey (2010). CFPS is a nationally representative longitudinal survey launched in China in 2010, focusing on Chinese communities, families, and individuals. It is regarded as the counterpart to the PSID data in the United States. Shown in Table 1, after matching our data with famine intensity and clan strength, we retained 92 counties and 7514 individuals for our main analysis.

The main outcome of interest comes from the question:

To what extent do you trust your neighbors?

(where 0 means that you have complete distrust and 10 means that you have complete trust.)

Shown by Table 1, the average trust in neighbors is 6.5 out of 10 points. In contrast, trust in parents has an average score of 8.9, while trust in strangers averages only 2. This pattern aligns with common sense. Regarding generalized trust, a widely-used measure of social capital (e.g., in the World Values Survey and General Social Survey), half of the respondents in our sample agree that "most people can be trusted". For purpose of robustness, we also create dummy indicators to classify the continuous trust measures as above or below 6 points.

For our baseline estimation, we restrict the sample to individuals born between 1941 and 1970, who resided in rural areas and lived in the same counties since their birth. We also use urban counterparts as a falsification test.

3.2 County Level Famine Intensity

We calculate county-level famine intensity using data from county gazetteers, government reports, and population statistics compilations. Our main data source is from *China Gazetteer Project* [8], a large scale project to digitize local gazetteers at Harvard's Yenching Library. County gazetteers are local encyclopedia covering major events since 1949 to 1990s, including democratic information, economic development, political movements, agricultural production and so on [9].

In particular, We collect annual death counts per thousand people for each county and match them with CFPS sample counties. Then, we define the death rate in famine years as the average death rate during 1959 to 1961 and the death rate in normal years as the average death rate during 1954 to 1957 [10]. Finally, we use county-level excess mortality as a proxy for famine intensity, calculated as the ratio of the death rate during famine years to that during normal years, minus 1. Our measure of famine intensity can be interpreted as the percentage increase in deaths during famine years compared to normal years. This measure addresses concerns related to differential death rates caused by varying age profiles across counties. Figure A5 displays a fat-tailed distribution of famine intensity for CFPS sample counties. The sample mean is 0.89 and sample median is 0.43. In our baseline regression, we use a dummy indicator based on whether the excess mortality level

[8] https://chinagazetteer.wixsite.com/project

[9] A growing number of literature in Chinese study use this data source, see Chen et al. (2020), Chen and Lan (2017), Cao et al. (2022)...

[10] We exclude the years 1949 to 1953 from the normal years due to the ongoing regional civil war and land reform during this period. 1953 is considered the first year of large-scale economic construction. Additionally, we exclude the year 1958 from normal years because historical evidence indicates that the famine had already begun in some counties during that year.

is above or below the sample median.

It is reasonable to consider that the mortality data compiled in county gazetteers and government statistics may be under-reported. However, most of the data we utilize were compiled in the early years of the reform (1980s), when the local officials responsible for famine deaths were no longer in office, and people began to reevaluate the disasters during the Great Leap Forward and the Cultural Revolution. During our interview with one of the county gazetteer editors, he assured us that all the statistics included in the gazetteer are accurate, as they were required by higher-level officials [11]. As part of our robustness analysis, we additionally employ a cohort loss index, calculated based on relative cohort size, as an alternative proxy for famine intensity. (Meng et al., 2015).

3.3 County Level Clan Strength

As previously discussed in Section 2.2, the compilation and maintenance of a genealogy require dedication from clan members. The existence of these genealogy books serves as a proxy of clan strength and social capital. We use the density of genealogies as our main measure of clan strength, a similar measure employed by Cao et al. (2022); Chen et al. (2021); Greif and Tabellini (2010). Specifically, we collected geographic information of 30330 genealogy compiled before 1950, sourced from *The General Catalog of Chinese Genealogy*, recognized as the most comprehensive registry of Chinese clan genealogies to date.((Greif and Tabellini, 2017); (Dincecco and Wang, 2021)) [12]. Considering that clan members typically reside in close-knit, compact communities (Chen and Ma, 2021), our underlying assumption for measuring clan strength at the county level is that counties with higher genealogy density indicate a larger proportion of communities within that county being associated with clans.

We first take the logarithm of the per capita count of genealogies compiled before 1950 in a county, which is normalized by the population recorded in the 1953 census. Then, we generate a dummy variable that indicates whether the clan strength is above or below the sample mean

[11] Check our interview with Hu Erson, the editor of the Pingu Gazetteer. https://www.youtube.com/watch?v=_NUY39R31s8

[12] This data set is digitized by Wang (2020) and public available now.

[13]. Table 1 shows 26% of CFPS samples counties are categorized as as having high clan strength. Figure A3 displays a national geographic distribution of log genealogies per capita compiled before 1950. White regions represent counties where no genealogy books were compiled during the investigated time span. We observe that the distribution of genealogy books is concentrated in the southeastern regions of China, aligning with the historical narrative of clan distribution.

Several important caveats should be discussed. First, there might be survivorship bias, as some genealogy books may have been destroyed before the publication of the Catalog. However, this bias could potentially strengthen the proxy for clan strength, as genealogy books are more likely to survive in counties with strong clan adherence. Second, the land reforms in the 1950s weakened or eliminated many local landowning families. As a result, clan strength before 1950 could not predict the clan strength during the Famine (1959 to 1961). we will check how many clans survived the land reforms until late 1950s.

3.4 County Level Soil Suitability and Weather Shock

The data regarding the suitability of soil for different crops are sourced from the Food and Agriculture Organization (FAO)'s Global Agro-Ecological Zones (GAEZ) V4.0 database. This database offers detailed information on the potential yields of various crops under various technologies at a grid level of the 9.25km $\times$ 9.25km. To accurately capture the farming technologies used in China during the 1950s and 1960s, we adopt the methods provided by (Meng et al., 2015, 2010). We select the production function considering rain-fed irrigation, intermediate input levels, and no CO2 fertilization. This suitability measure serves as a time-invariant index, reflecting the suitability of regions for cultivating key procurement crops in China during the 1950s, including rice, sorghum, wheat, buckwheat, and barley. We calculate the soil suitability index at the county-level by averaging the values of the grids within each county's boundaries across all selected crops [14].

The historical weather data are sourced from the China Catchment Attributes and Meteorology

[13]the sample mean of log (normalized_genealogies) is 0.13, median is 0.

[14]In the V4.0 database, there are only options of high and low inputs. However, according to the document of V3.0, the intermediate input is just the average of high and low inputs.

dataset (CCAM), which offers daily temperature and precipitation records at the meteorological station level (Hao et al., 2021). First, we calculate the county-level daily weather variables using Inverse Distance Weighted (IDW) interpolation with data from the five nearest meteorological stations. Then, following the methods of Meng et al. (2015); Kasahara and Li (2020), we create variables for average temperature and precipitation during the Spring months (February, March, and April) and Summer months (May, June, and July) for each county-daily observation. Lastly, similar to our approach with excess mortality, we define weather shocks as the percentage deviation in temperature and precipitation during famine years compared to normal years. [15].

Since the weather and soil suitability data were collected for scientific research purposes, there is no evidence to suggest that the Mao-era government manipulated the data

4 Empirical Strategies and Results

In this section, we present two primary empirical strategies and results. Firstly, employing a difference-in-differences estimation, we demonstrate that exposure to the Famine resulted in a statistically insignificant, slightly negative, impact on trust in neighbors. Nonetheless, this traumatic experience increased trust among individuals residing in counties with high initial social capital. Secondly, through a triple-differences strategy, we offer additional evidence of the heterogeneous response to this traumatic experience across different initial conditions.

4.1 Difference in Differences Estimation

In the first part of the analysis, we study the impact of the Famine on the entire sample and as well as on subgroups categorized by their initial clan strength. We limit our CFPS sample to individuals born between 1941 and 1970, who resided in rural areas and lived in the same counties since their birth. In particular, we exploit variations in county-level famine intensity exposure

[15]please check Appendix X for detailed data cleaning process.

among cohorts before and after the Famine in a difference-in-differences (DiD) setting:

$$T_{ivct,s} = \beta_1 \times Mortality_{c,s} \times Cohort_{t,s} + \Gamma \mathbf{X}_{ivct,s} + \gamma_{v,s} + \gamma_{t,s} + \varepsilon_{ivct,s} \tag{1}$$

where the subscripts i denotes a individual, v denotes community, c denotes county, t denotes the year of cohort birth and s denotes the samples used for analysis, including the entire sample, the high clan strength group, and the low clan strength group. T_{ivct} is individual level of trust in neighbors. $Mortality_{c,s}$ is a dummy variable takes the value of 1 when county-level excess mortality during the Famine exceeds the sample median (0.43), as explained in Section 3.2. $Cohort_t$ is a dummy variable for whether that individual was born before the Famine (1961). $\mathbf{X}_{ivct,s}$ contains individual controls including gender, education and ethnicity. $\gamma_{v,s}$ are the community (village) level fixed effects, and capture time invariant characteristics across villages. $\gamma_{t,s}$ are cohorts fixed effects common to all individuals in $Cohort_{t,s}$. $\varepsilon_{ict,s}$ is idiosyncratic errors. Rousted standard errors clustered at county level.

According the conceptual framework, we examine whether β_1 is significantly positive in the DD specification for the high clan strength group. The low clan strength group serves as a placebo test. We should not expect to observe an effect on trust in their neighbors, as there was no strong initial social capital during the Famine.

4.2 Difference in Differences Results

The estimates from equation (1) are in Panel A of Table 2. As the Column 1 shows, the estimated coefficient is negative and statistically insignificant for entire sample. the estimated coefficient is negative and statistically insignificant for the entire sample. This finding aligns with the varied results from previous studies examining the impact of traumatic experiences on social capital. In Column 2, the results for individuals residing in counties with high initial clan strength are consistent with the conceptual framework. Specifically, the strong famine-exposed cohort experienced an increase in trust in their neighbors after surviving the Famine. The increase in the trust score by 0.75 is quite substantial, particularly when compared to the sample mean of trust scores in neighbors, which stands at 6.5 points. In Column 3, as demonstrated for individuals living in counties with low initial clan strength, the effect is relatively modest and statistically insignificant. This suggests that there was no significant update in their beliefs regarding social capital, since they did not benefit from this risk-sharing institution. The F-test between the estimators derived from these two subgroups yields an F-statistic of 8.878 with a p-value of 0.0037. This implies that the results exhibit statistically significant differences in initial clan strength.

To address the concern that our findings might be sensitive to the choice of the cutoff used to generate the mortality dummy, we also employ a continuous measure of excess mortality as treatment, as illustrated in Panel B of Table 2. Our findings concerning remain consistent. In particularly, a 10-percentage-point increase in famine intensity raises the trust score by 0.046 points for the high clan strength group. Additionally, we notice a negative, though smaller, effect on the low clan group.

4.3 Event Study— DiD

The parallel-trends assumption is crucial to our analysis. We plot event study graph versions of equation (1) as following:

$$T_{ivct,s} = \sum_{t=1}^{12} \beta_{1,t} \times Mortality_{c,s} \times Cohort_{t,s} + \Gamma \mathbf{X}_{ivct,s} + \gamma_{v,s} + \gamma_{t,s} + error_{ivct} \tag{2}$$

where $Cohort_{t,s}$ is an indicator function denoting whether the individual's birth year falls within a three-year birth cohort bin between 1941 and 1977, originating from either high or low clan strength counties [16]. The cohort born between 1962 and 1964 serves as the reference group. We expect that the coefficient $\beta_{1,t}$ will be statistically indistinguishable from zero for cohorts born after the Famine. However, for cohorts within high clan groups that have reached an age to have experienced the Famine, we anticipate β_1 to be positive. To allow for more post-famine periods, we also include individuals born between 1970 and 1977 in the CFPS in the data used for estimation.

[16] There are two underlying reasons behind this choice. Firstly, the Famine spanned three years, so it is logical to establish a single group for those who partially experienced the Famine (born between 1959 and 1961). Secondly, we group cohorts into three-year bins to increase the statistical power.

Figure 1 plots the event-study estimates for the famine effect by subgroups, with the x-axis plotting three-year birth cohort bin. In the upper panel, which represents the high clan strength sample, we can observe that the positive famine effect is not driven by post-trends, as there is no significant impact on the outcomes of individuals born after the Famine. The famine effects are notably strong for cohorts born between 1953 and 1961, who were aged 0 to 9 during the Famine. In the lower panel, which represents the low clan strength sample, we observe null effects across all cohorts. This observation aligns with the conceptual framework, indicating that individuals live in low initial social capital counties do not update their beliefs in clan network following the traumatic experience shock.

4.4 Triple Differences

To estimate how the Famine's impact on trust in neighbors varies with initial clan strength, we employ a triple differences strategy that exploits three sources of variation. Initially, we utilize the variation in famine intensity at the county level combined with the cohort variation in the DiD estimation discussed in Section 4.2. Additionally, we exploit the county-level variation in initial clan strength to estimate the differential famine effects across various initial conditions. These combined sources of variation in famine intensity, cohort, and initial clan strength results in the triple-differences strategy as following:

$$\begin{aligned} T_{ivct} = \beta_1 \times Mortality_{c,v} \times Cohort_t \times HighClan_{c,v} + \beta_2 \times Mortality_{c,v} \times Cohort_t \\ + \beta_3 \times Cohort_t \times HighClan_{c,v} + \Gamma \mathbf{X}_{ivct,s} + \gamma_{v,s} + \gamma_{t,s} + \varepsilon_{ivct,s} \end{aligned} \tag{3}$$

Where $HighClan_{c,v}$ is a dummy variable indicating whether the clan strength, as measured by the logarithmized historical genealogy books per capita, exceeds the national mean. Our coefficient of interest is β_1. We use entire sample for analysis and cluster robust standard error at the county level.

Panel A of table 3 reports the triple-differences estimates. Column (1) to (3) show that individuals exposed to the famine from counties with initially high clan strength exhibited increased trust in their clan members afterward in more famine affected counties. The traumatic experience enforce trust among those who received support from their clans, resulting in an increase in trust scores ranging from 0.42 to 0.66 points. These effects are noteworthy, given that the average trust score in neighbors stands at 6.47. The results remain stable after we control individual characteristics (Column (2)) and allow cohort trends to differ across provinces (Column (3)).

Panel B of table 3 reports the estimates with an alternative specification: Dummy variable $Mortality_{c,v}$ is replaced by a continuous variable representing excess mortality rates, and the same replacement applies to the secondary and triple interactions. We observe that the pattern of results remains stable.

4.5 Event Study— Triple Differences

Furthermore, we plot event study graph versions of the triple-differences specification, as outlined in Equation (4):

$$\begin{aligned} T_{ivct} = \sum_{t=1}^{12} \beta_{1,t} \times Mortality_c \times Cohort_t \times HighClan_c + \sum_{t=1}^{12} \beta_{2,t} \times Mortality_c \times Cohort_t \\ + \sum_{t=1}^{12} \beta_{3,t} \times Cohort_t \times HighClan_c + \Gamma \mathbf{X}_{ivct,s} + \gamma_v + \gamma_t + error_{ict} \end{aligned} \tag{4}$$

The cohort born between 1962 and 1964 serves as the reference group. We use entire sample for analysis and cluster robust standard error at the county level. We also include individuals born between 1971 to 1977 for more post-famine periods.

In figure 2, we observe that there is no significant post-trends among cohorts who born after the Famine. Among the cohorts that experienced the Famine, the positive effects on trust in neighbors persist for individuals residing in counties with higher clan strength.

5 Instrumental Variable Strategy

Although the parallel trends enables us to mitigate potential sources of bias in the estimates, a natural concern is the correlation between famine intensity and initial clan strength. As found by Cao et al. (2022), counties with higher clan density significantly reduce mortality during the Famine. It is likely that the famine intensity is correlated with interaction term between the clan strength and cohort dummy. Consequently, the ideal measurement of famine intensity should be exogenous to the initial clan strength. According to Meng et al. (2015), the inflexible procurement system is the main cause of the Famine. However, the only available data on procurement is the actual amount of procurement rather than target quotas set before the agricultural season (Kasahara and Li, 2020). Instead, we use soil suitability and weather shocks during the Famine years as instrumental variables for famine intensity.

5.1 Logic of Soil Suitability and Weather Shocks as Instruments

During the famine years, there is a significantly positive correlation between higher production and higher mortality, as noted by Meng et al. (2015); Kasahara and Li (2020). Counties with soil more suitable for grain crops and experiencing favorable weather conditions tend to receive higher procurement quotas, which, in turn, lead to more severe famine.

Additionally, soil suitability for crops and weather shocks during the famine years are unlikely to be correlated with initial clan strength. Although Talhelm et al. (2014b) find that a history of farming rice promotes cooperative behavior, whereas farming wheat makes cultures more independent, there is no evidence to suggest that the procurement system exhibited a preference for either rice or wheat. As a matter of fact, following Meng et al. (2015), the soil suitability index constructed by us including rice, sorghum, wheat, buckwheat, and barley, is exogenous to clan strength before the Famine. Moreover, while long-term weather patterns may be associated with local cooperative behavior Giuliano and Nunn (2021); Buggle and Durante (2021), it is unlikely that the weather shocks during the famine years are correlated with clan strength. Details on the construction of instrumental variables of soil suitability and weather shocks can be found in Section 3.4.

5.2 Instrumental Variable Results

Table 4, Column (1) and (2) show the results for the first stage regression of $Mortality_{c,v} \times Cohort_t$ on the instruments by clan strength. The F-statistics for excluded instruments are 9.66 for the high clan strength sample and 11.1 for the low clan strength sample, respectively. Column (3) and (4) present the results for the first stage regression of $Mortality_c \times Cohort_t \times HighClan_c$ on instruments with similar specification with baseline estimation, with F-statistics of 10.39 and 10.62.

When merging with the instruments, our sample counties decreased from 92 to 82, shown in Table 1. Therefore, we re-estimated the DiD specification with the balanced 82 counties and present the results in Columns (1) and (3) of Table 5. In Column (2), when considering the Instrumental Variable results, the traumatic effect on trust in neighbors for the high clan strength group remains positive and becomes even larger compared to the DiD estimation. In Column (4), the results remain consistent for the low clan strength group as well.

Column (2) of Table 6 provides the IV results in the triple difference specification, with individual controls, community fixed effects and province by cohort fixed effects, robust standard errors are cluster at county level. When comparing the OLS estimates in Table 5 to the IV estimates in Table 6, it is evident that the IV estimates are larger than the OLS estimates.

6 Robustness

6.1 Falsification Test

As we discussed above, egocentric network is the foundation for belief update from the soil (rural China) (Fei, 1992). Base on this theory, we should should not observe the impacts of the famine experience on trust in neighbor from urban sample. Similarly, we also should not observe any effects on the trust in parents or strangers — people at the right center or absolutely outside the *differential mode of association* (chaxugeju).

We report the regression results on different trusts, separately by rural sample and urban sample based on their *hukou* status. Table 7 column 5 shows the same result discussed in the last section, a positive and significant effect on the trust in neighbors for the rural sample. Comparing to column 3 and 5, we can find that either the trust in people located nearest or farthest to the concentric point (self), the effect is trivial and not significant. The logic behind this phenomena is straightforward, parents are the closest people and will always help their children out during the famine, the strangers are in the quit opposite. To further explore the impacts on social capital (Column 1), we use the binary variable *general trust* as a proxy [17], taking the value of 1 if the respondent believes that "Generally speaking, most people can be trusted." The result is still close to 0 and insignificant, consist with the trust in stranger case. Column 2, 4, 6 and 8 present none significant results using the urban sample, consist with our story that the trauma experience interacted with clan strength only affected the trust update for rural population. Furthermore, only the connection between the central point (self) and the middle circle (neighbors and relatives) are tightened by this mechanism, not the intra-nuclear family trust and social trust.

6.2 Trust Distance Between Circles

One possible concern to our measurement of trust is some unobserved factors might affect the reported score of trust. For example, respondent A might reports 9 points out of 10 for trust in parents and respondent B reports 8. But in reality, B could has more trust in his parents than A does. To address this concern, We take difference between three main trust variables and therefore to differentiate out the idiosyncratic benchmark error. Table 8 shows the regression results for outcomes of trust distance between parents and neighbors, between neighbors and strangers and between parents and strangers. Consist with the previous result, The only 1 % significant effect is on the trust between parents and neighbors (column 5), for the rural sample. Famine-experienced cohorts shows closer trust distance between their parents and neighbors, comparing to the reference group. But the post famine cohorts are not observed with any significant differences. The circle of neighbors get closer to the concentric point — the clan network got strengthen for the treated group. In contrast, The trust distance between neighbor and stranger becomes larger — people who are saved by their clan would be more alienate to the civil society.

[17] This variable is a standard proxy used by social capital literature such as (Putnam, 1995), (Campante and Yanagizawa-Drott, 2015) and (Ponzetto and Troiano, 2018)

7 Conclusions

This paper examines the evolution of trust among clan members, in the context of Great Chinese Famine (1959-1961), depending on the historical level of Chinese clan culture. We gather information on clan strength from genealogy books and compile data on famine intensity from county gazetteers. Our triple-differences analysis exploit county-level variation in famine intensity, county-level variation in clan strength and variation in famine exposure base on birth cohort.

Our analysis shows that the famine exposed cohort that live in a stronger clan county report higher level of trust in their clan members, relative to the people who didn't perceive a sever famine. The magnitudes of effects are non-trivial and consistent to a series of falsification tests, robustness checks and instrumental variable estimations. Our results additionally highlight that the famine effect on both generalized trust and trust in parents does not vary across different initial clan conditions. This lends support to our hypothesis, suggesting that clan culture played a crucial role in protecting individuals during the famine, consequently shaping their beliefs.

8

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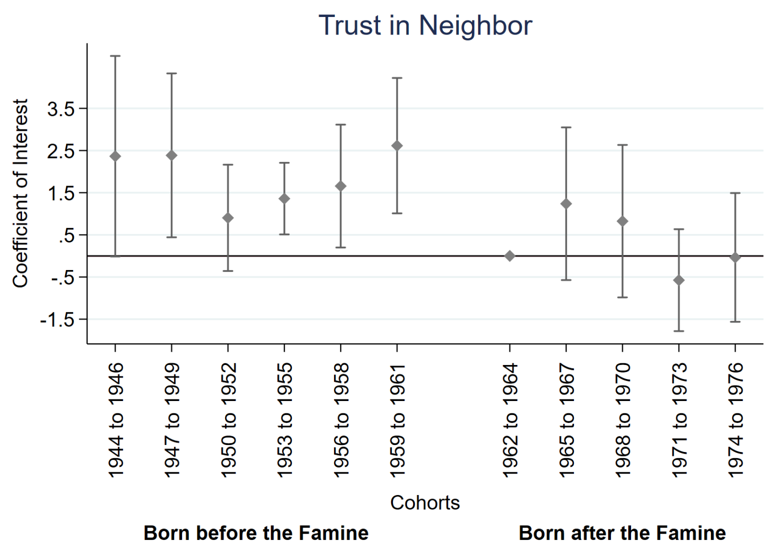
9 Figures and Tables

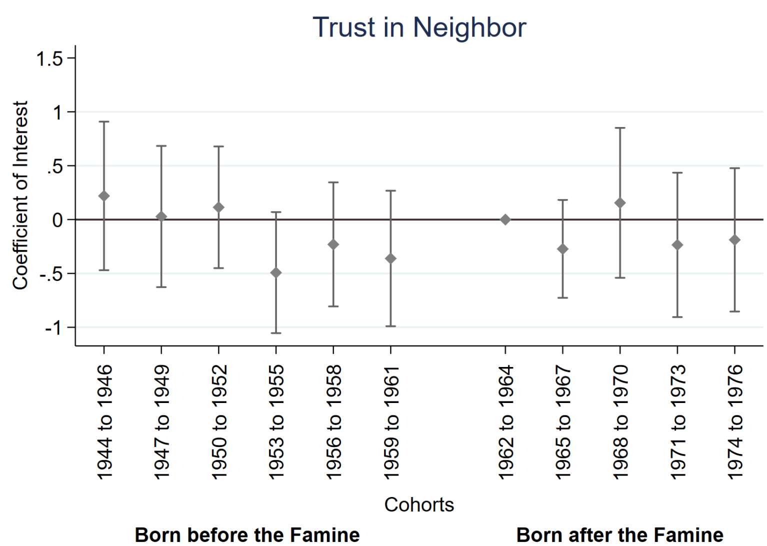
9.1 Figures

Figure 1: Event Study for the DiD specification by Clan Strength

(a) High Clan Strength

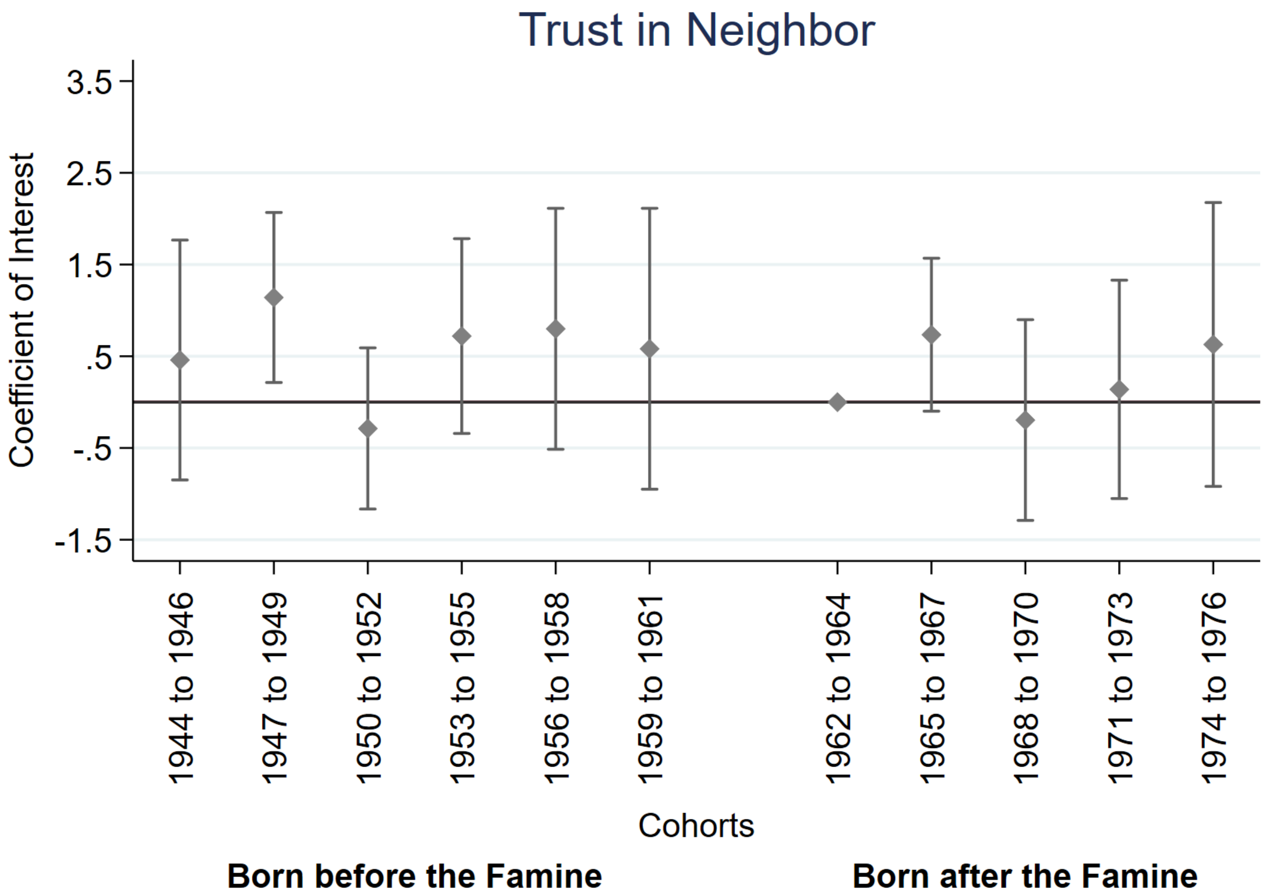


(b) Low Clan Strength



Note: .

Figure 2: Event Study for the triple-differences specification



9.2 Tables

Table 1: Statistic Summary

	Obs	Mean	Std.Dev	Min	Max
Individual D.V.					
Trust in Parents	7463	8.828	1.835	0.000	10.000
Trust in Neighbor	7514	6.474	2.236	0.000	10.000
Trust in Strangers	7465	2.063	2.107	0.000	10.000
Generalized Trust	7479	0.498	0.500	0.000	1.000
Individual Controls					
Gender	7514	0.534	0.499	0.000	1.000
Ethnic Minority	7504	0.130	0.336	0.000	1.000
Linguistic Minority	7342	0.040	0.197	0.000	1.000
Education Level	7514	2.018	1.014	1.000	6.000
County Level					
Excess Mortality ($\times$100%)	92	0.885	1.317	-0.402	6.125
Mortality (Dummy)	92	0.500	0.503	0.000	1.000
Clan Strength (Genealogy books per capita in log)	92	0.130	0.341	0.000	2.408
High Clan Strength (Dummy)	92	0.261	0.442	0.000	1.000
Spring Precipitation Shock ($\times$100%)	82	0.031	0.371	-0.744	1.221
Summer Precipitation Shock ($\times$100%)	82	-0.022	0.172	-0.294	0.678

Table 2: Difference in Differences by Clan Strength

	Trust in Neighbors		
	(1)	(2)	(3)
	Full Sample	High Clan Strenghth	Low Clan Strenghth
Panel A: Mortality (Dummy)			
$Mortality_c \times Cohort_t$	-0.0744	0.752^{***}	-0.0879
	(0.176)	(0.162)	(0.190)
F-Test (High v.s. Low)		F Statistic is: 8.878	P-value is: .0037
Adj R-squared	0.115	0.0797	0.127
Panel B: Mortality (Continuous)			
$Mortality_c \times Cohort_t$	-0.0924	0.462^{***}	-0.103^{*}
	(0.0582)	(0.0645)	(0.0567)
F-Test (High v.s. Low)		F Statistic is: 18.44	P-value is: 0
Adj R-squared	0.116	0.0797	0.127
Observations	7640	1751	5454
Mean of Outcome	6.446	6.512	6.372
Individual Controls	✓	✓	✓
Community FE	✓	✓	✓
Province-Cohort FE	✓	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 3: Triple-Differences Estimation

	(1) Trust in Neighbors	(2) Trust in Neighbors	(3) Trust in Neighbors
Panel A: Mortality (Dummy)			
$Mortality_c \times Cohort_t \times HighClan_c$	0.423*	0.454*	0.664**
	(0.247)	(0.248)	(0.273)
$Mortality_c \times Cohort_t$	-0.123	-0.167	-0.231
	(0.140)	(0.145)	(0.171)
$Cohort_t \times HighClan_c$	-0.188	-0.219	0.0513
	(0.159)	(0.158)	(0.170)
R-squared	0.102	0.103	0.116
Panel B: Mortality (continuous)			
$Mortality_c \times Cohort_t \times HighClan_c$	0.262**	0.272**	0.398***
	(0.131)	(0.131)	(0.0901)
$Mortality_c \times Cohort_t$	-0.0584	-0.0746	-0.106**
	(0.0528)	(0.0550)	(0.0454)
$Cohort_t \times HighClan_c$	-0.177	-0.205	0.0588
	(0.155)	(0.152)	(0.163)
Adj R-squared	0.103	0.103	0.117
Observations	7510	7327	7272
Mean of Outcome	6.474	6.474	6.474
Individual Controls	✗	✓	✓
Community FE	✓	✓	✓
Cohort FE	✓	✓	✗
Province-Cohort FE	✗	✗	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: IV First Stage

	DID by Clan Strenghth		Tripple Differences (Whole Sample)	
	(1)	(2)	(3)	(4)
	$Mortality_c \times Cohort_t$ (High Clan)	$Mortality_c \times Cohort_t$ (Low Clan)	$Mortality_c \times Cohort_t \times HighClan_c$	$Mortality_c \times Cohort_t \times HighClan_c$
$Suitability_c \times Cohort_t$	0.831**	-0.134	0.00191	-0.135
	(0.369)	(0.153)	(0.00162)	(0.154)
$Precip(Summer)_c \times Cohort_t$	-0.735*	0.471***	0.00264	0.474***
	(0.434)	(0.173)	(0.00213)	(0.173)
$Precip(Spring)_c \times Cohort_t$	1.153***	-0.0946	0.000490	-0.0949
	(0.218)	(0.118)	(0.00130)	(0.119)
$Temp(Summer)_c \times Cohort_t$	-12.36***	1.973	0.0258	2.000
	(4.131)	(2.721)	(0.0399)	(2.737)
$Temp(Spring)_c \times Cohort_t$	0.226	-0.00958***	0.0000374	-0.00948***
	(0.149)	(0.00160)	(0.0000417)	(0.00161)
$Suitability_c \times Cohort_t \times HighClan_c$			0.844**	0.954**
			(0.380)	(0.399)
$Precip(Summer)_c \times Cohort_t \times HighClan_c$			-0.872*	-1.249***
			(0.459)	(0.461)
$Precip(Spring)_c \times Cohort_t \times HighClan_c$			1.140***	1.246***
			(0.225)	(0.244)
$Temp(Summer)_c \times Cohort_t \times HighClan_c$			-13.03***	-14.66***
			(4.307)	(4.952)
$Temp(Spring)_c \times Cohort_t \times HighClan_c$			0.232	0.231
			(0.157)	(0.149)
$Cohort_t \times HighClan_c$			0.0891	-0.481***
			(0.103)	(0.119)
F-Statistic of excluded instruments	9.664	11.10	10.39	10.62
Observations	1301	5134	6435	6435
Individual Controls	✓	✓	✓	✓
Community FE	✓	✓	✓	✓
Province-Cohort FE	✓	✓	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: IV for DiD by Clan Strength

	High Clan Strenghth		Low Clan Strenghth	
	(1)	(2)	(3)	(4)
	OLS (Balanced Sample)	IV	OLS (Balanced Sample)	IV
$Mortality_c \times Cohort_t$	0.600***	0.836*	-0.113	-0.922
	(0.0405)	(0.443)	(0.249)	(0.757)
F-Statistic of excluded instruments		9.664		11.10
Adj R-Squared	0.0633	0.0934	0.127	0.0661
Observations	1215	1301	5074	5134
Mean of Outcome	6.492	6.512	6.317	6.372
Individual Controls	✓	✓	✓	✓
Community FE	✓	✓	✓	✓
Province-Cohort FE	✓	✓	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: IV for triple-differences

	Triple Differences	
	(1)	(2)
	OLS (Balanced Sample)	IV
$Mortality_c \times Cohort_t \times HighClan_c$	0.500*	1.589*
	(0.276)	(0.865)
$Mortality_c \times Cohort_t$	-0.104*	-0.712
	(0.0625)	(0.716)
$Cohort_t \times HighClan_c$	0.0478	-0.730
	(0.217)	(0.469)
F-Statistic of excluded instruments		10.39
Adj R-squared	0.123	0.105
Observations	6365	6435
Mean of Outcome	6.454	6.423
Individual Controls	✓	✓
Community FE	✓	✓
Province-Cohort FE	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Triple-Differences on different trust scores

	trust score between parents & stranger		trust score between neighbor & stranger		trust score between parents & neighbor	
	(1)	(2)	(3)	(4)	(5)	(6)
	Rural	Urban	Rural	Urban	Rural	Urban
mortality_prefamine_clan	-0.406	-0.401	0.00565	-0.0176	-0.413*	-0.384
	(0.386)	(0.959)	(0.332)	(0.663)	(0.232)	(0.826)
mortality_prefamine	-0.00316	-0.155	-0.0368	-0.228	0.0353	0.0726
	(0.167)	(0.591)	(0.151)	(0.392)	(0.140)	(0.540)
prefamine_clan	0.347	-0.553	0.175	-1.163**	0.173	0.610
	(0.312)	(0.634)	(0.287)	(0.528)	(0.123)	(0.373)
R-squared	0.140	0.122	0.121	0.120	0.0814	0.0753
Observations	8037	973	8043	973	8038	973
Mean of Outcome	6.820	6.955	4.451	4.487	2.368	2.468
Individual Controls	✓	✓	✓	✓	✓	✓
Community FE	✓	✓	✓	✓	✓	✓
Province-Cohort FE	✓	✓	✓	✓	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9: Effects on Intra-Clan Relationships

	(1) Visits Relatives	(2) Visits Friends	(3) Visits Relatives/Friends	(4) Neighbor Will Help	(5) Contact Frequency
mortality_prefamine_clan	0.0438	-0.0190	0.0766	0.0532	2.115***
	(0.122)	(0.138)	(0.165)	(0.0364)	(0.595)
mortality_prefamine	-0.0893	0.0207	-0.113	-0.0151	-0.983**
	(0.0608)	(0.0664)	(0.0724)	(0.0186)	(0.389)
prefamine_clan	-0.0273	0.151***	-0.197*	-0.0416**	-0.218
	(0.100)	(0.0517)	(0.115)	(0.0190)	(0.395)
R-squared	0.360	0.276	0.292	0.0653	0.166
Observations	8189	8176	8157	6656	7671
Mean of Outcome	1.684	0.914	0.770	0.924	8.192
Individual Controls	✓	✓	✓	✓	✓
Community FE	✓	✓	✓	✓	✓
Cohort FE	✓	✓	✓	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

10 Appendix

10.1 Identification Challenge with Graphic Demonstration

Trust Score		Cohort 1	Cohort 0
Clan	1	8	7
	0	5.5	5

(a) High Mortality Areas

Trust Score		Cohort 1	Cohort 0
Clan	1	7	6.5
	0	6	5.5

(b) Low Mortality Areas

Table : clan strength is orthogonal to contemporaneous political movement

If clan strength is orthogonal to contemporaneous political movement (e.g. Cultural Revolution), the DD estimate from high famine intensity areas is unbiased. Shown in the left table above, The effect from left table equals (8-7) - (5.5-5) = 0.5. The effect from right table equals (7-6.5) - (6 -5.5)=0. The total magnitude will be 0.5-0 =0.5

However, if high clan strength induces high revolutionary intensity (harm trust disproportionately) and impacts cohorts overlapping with our exposed cohorts, the DD estimates is biased. Shown in the table below, the estimate of samples from High mortality areas is 0.3, downward bias from the real effect. Nevertheless, If we adjust the estimate with samples from low mortality areas, Our DDD strategy will give us an unbiased estimate : {(7.6-6.8) - (5.5 -5)} - {(6.6-6.3) - (6-5.5)}=0.5.

Trust Score		Cohort 1	Cohort 0
Clan	1	7.6	6.8
	0	5.5	5

(a) High Mortality Areas

Trust Score		Cohort 1	Cohort 0
Clan	1	6.6	6.3
	0	6	5.5

(b) Low Mortality Areas

Table : clan strength is not orthogonal to contemporaneous political movement

The main challenge to our DDD strategy is cohort-varying county (or lower level) factors that simultaneously affect trust and famine - clan interaction. For example, {(7.6-6.8) - (5.5 -5)} - {(6.2-6.1) - (6-5.5)}= 0.7, which is biased.

10.2 Appendix Figures and Tables

Figure A1: Trust Circles

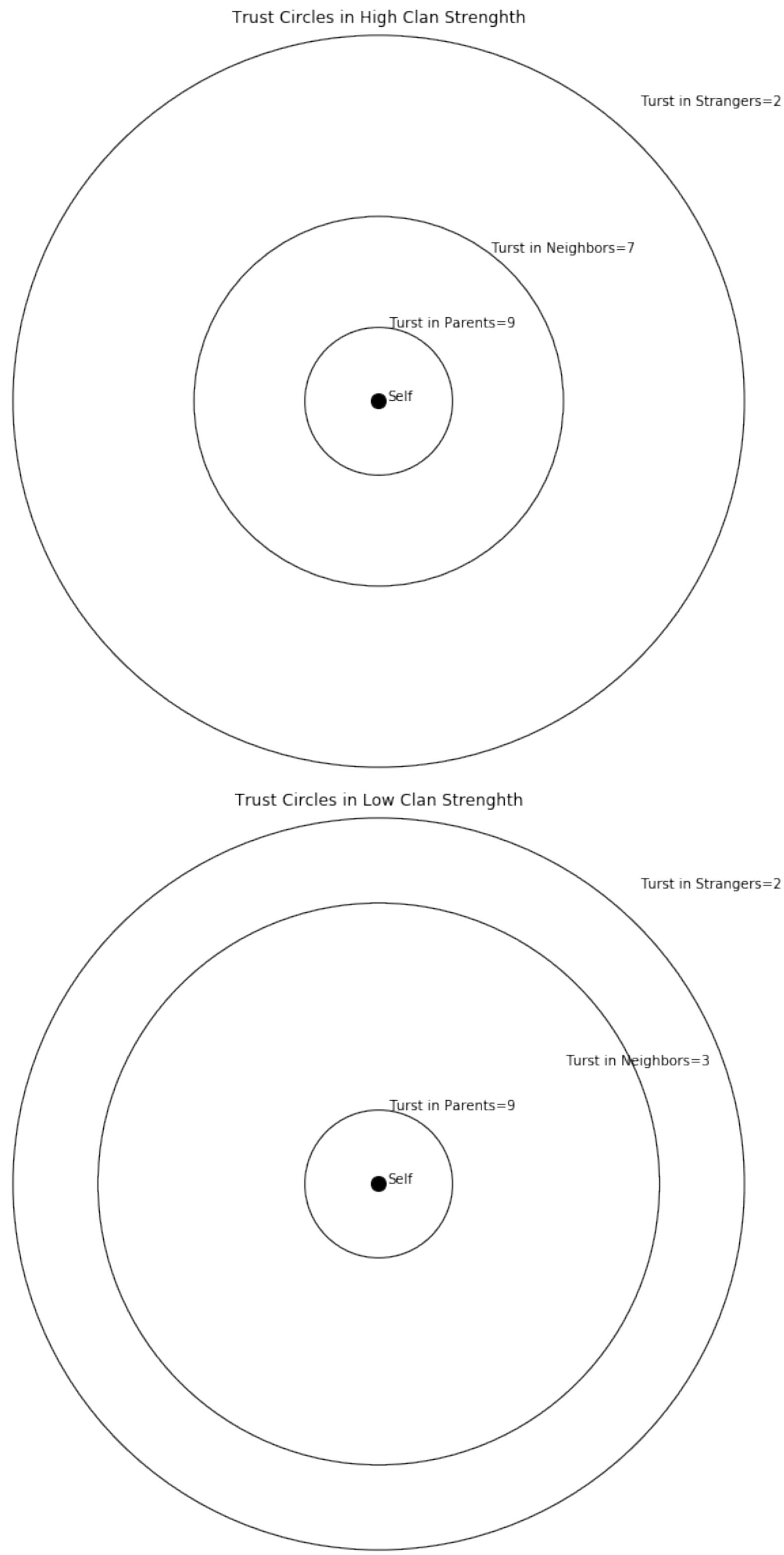


Figure A2: Genealogy Books

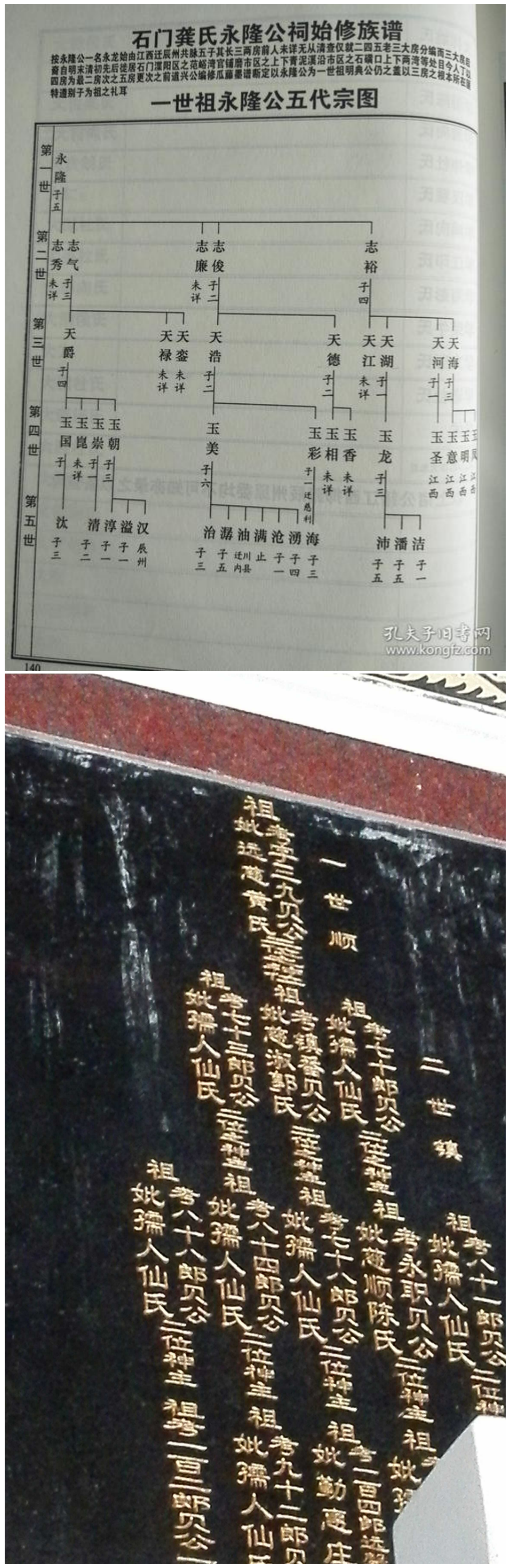
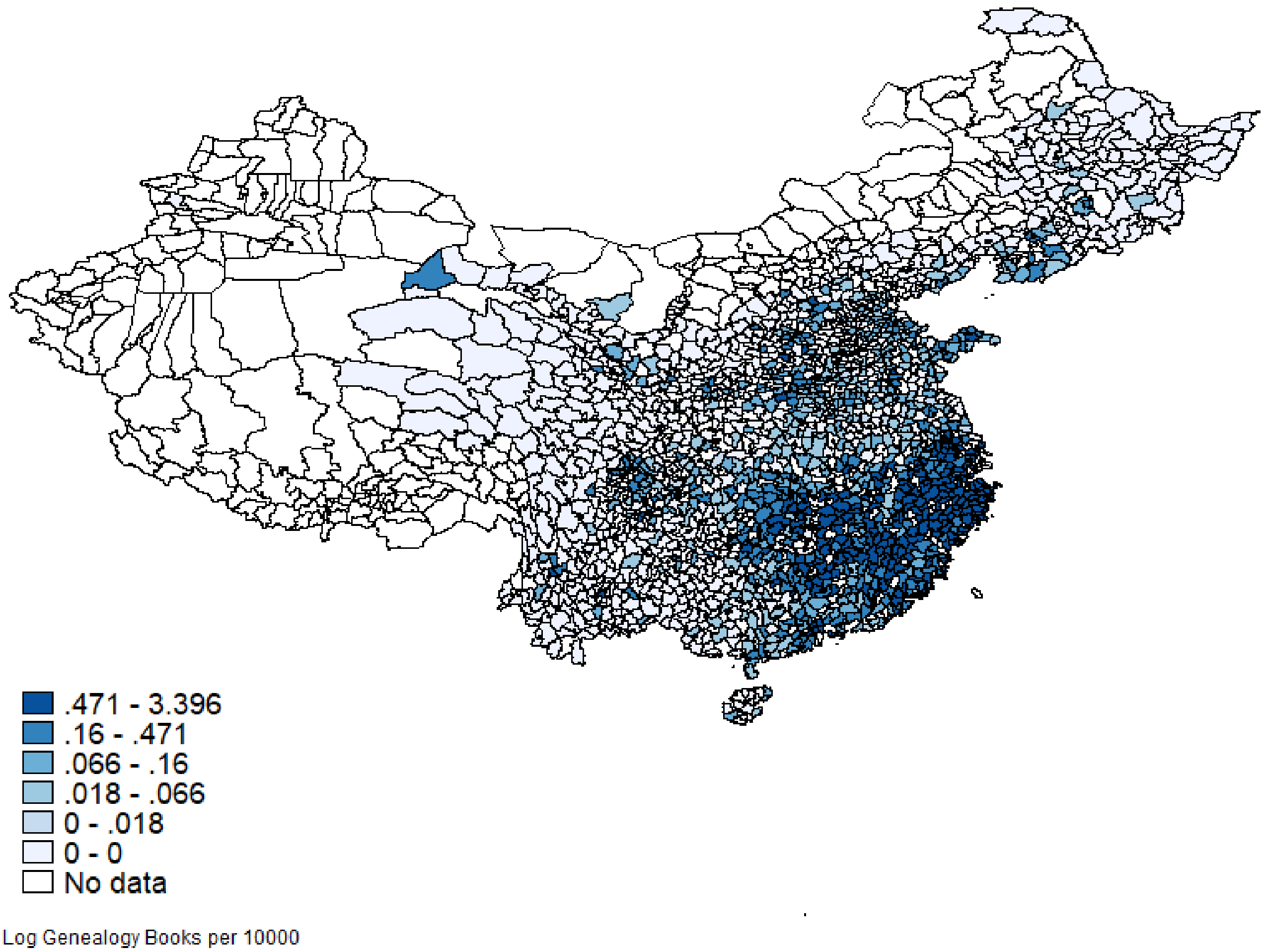
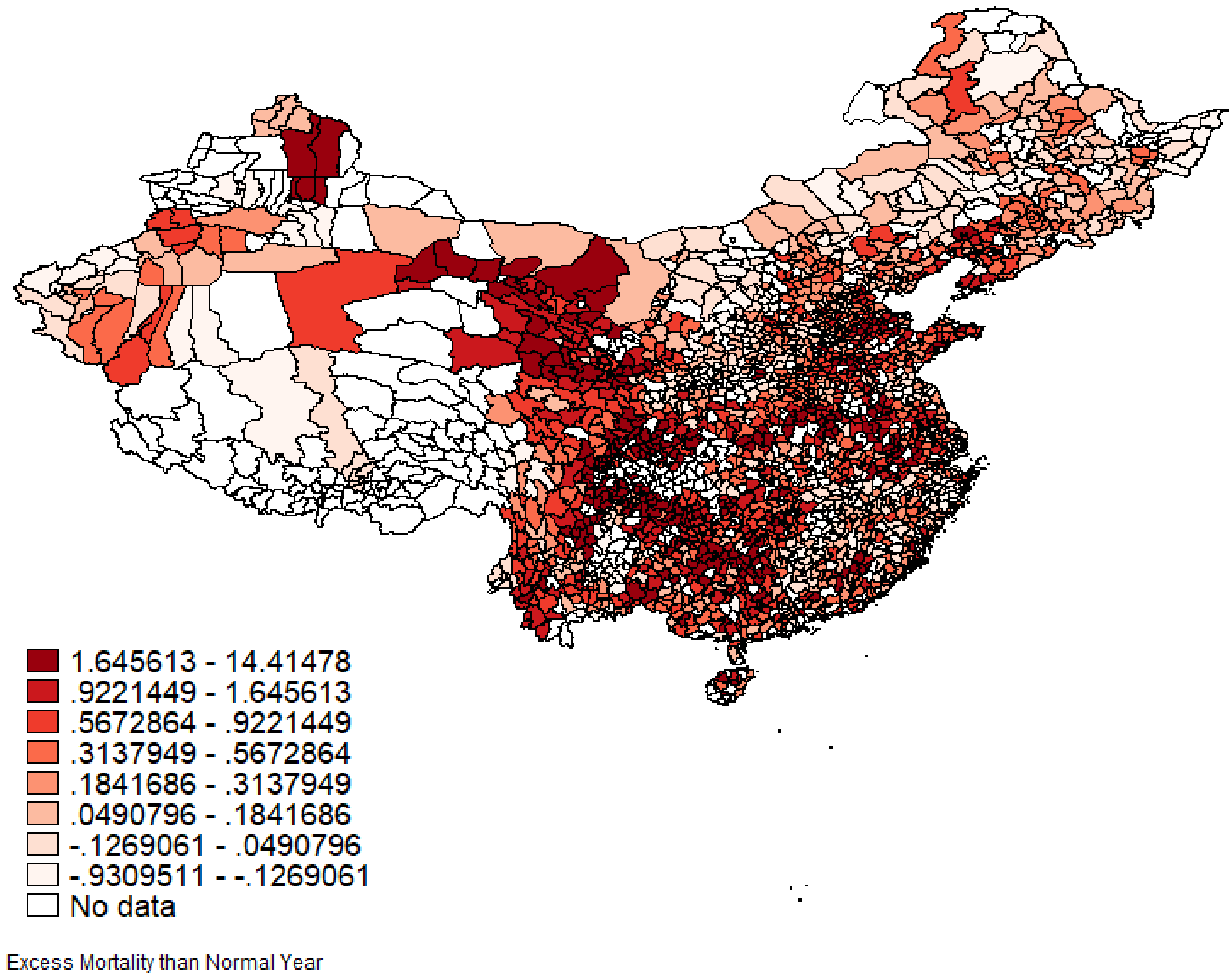


Figure A3: Distribution of Genealogy Books normalized by Population



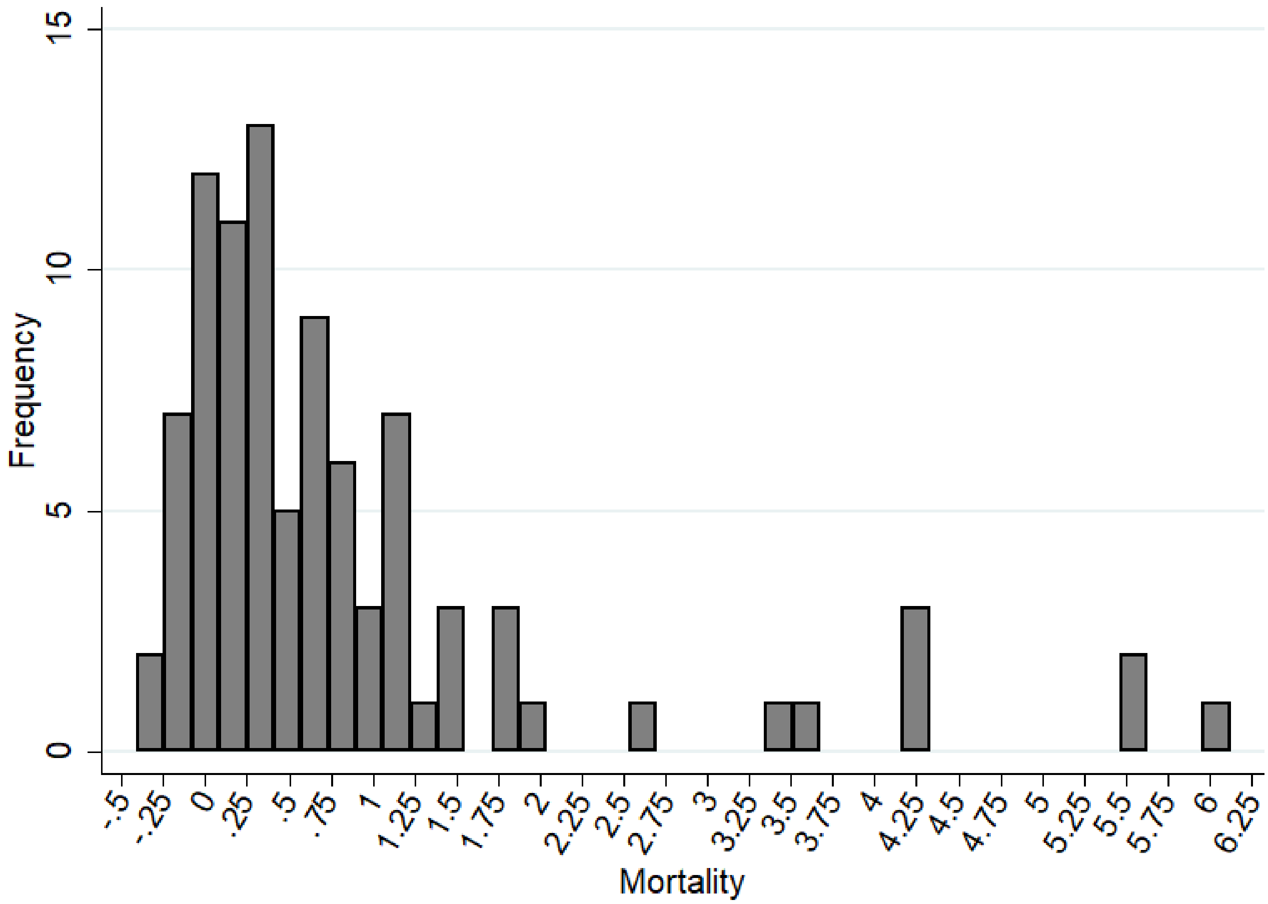
Note: The county-level clans are measured by the number of genealogy books before 1950 divided by population in 1953, in log form.

Figure A4: Distribution of County-Level Excess Mortality During the Great Chinese Famine



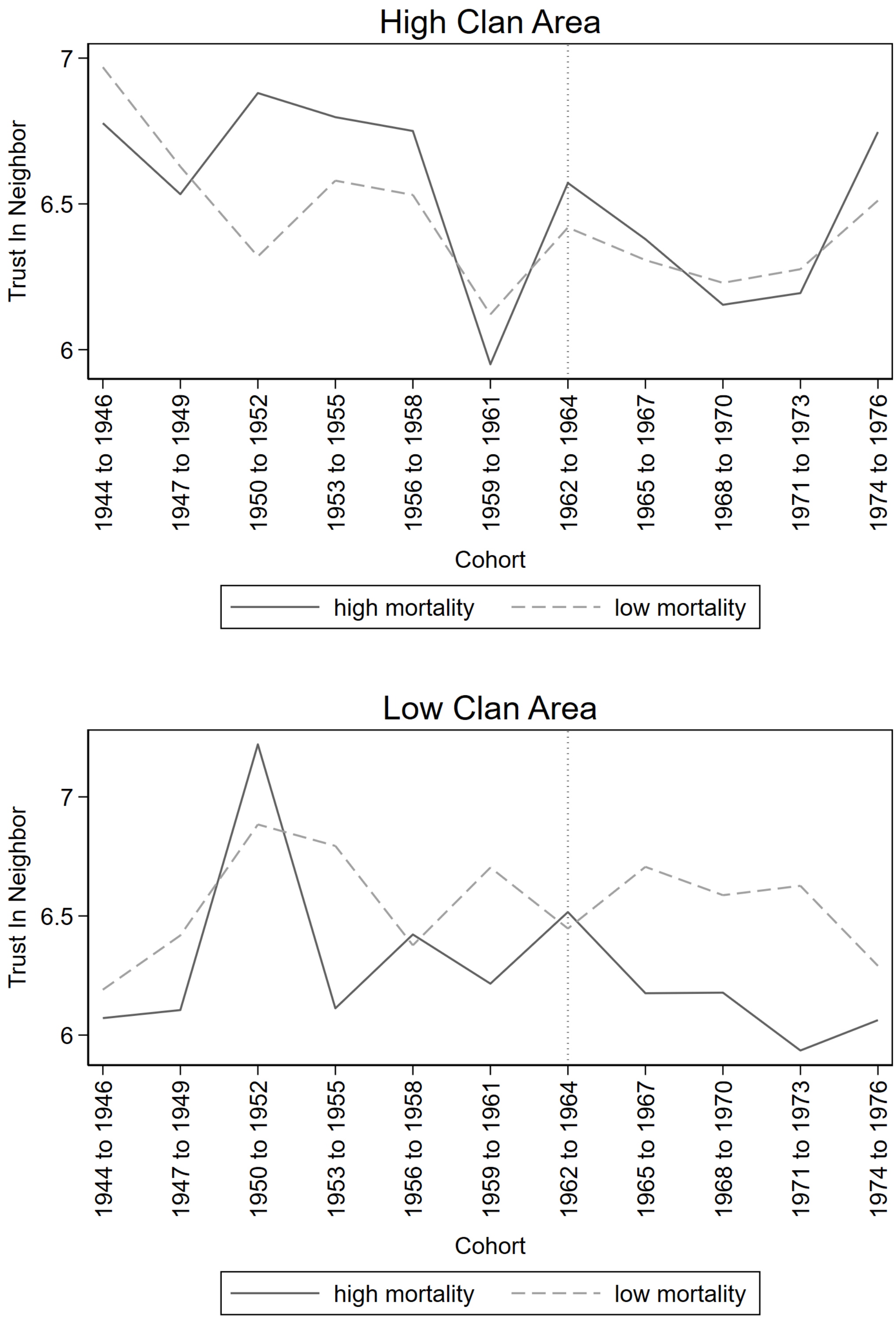
Note: .

Figure A5: In Sample (CFPS) Mortality Fat Tail



Note: National mean is 0.808, national median is 0.34, in sample mean is 0.89, in sample median is 0.43.

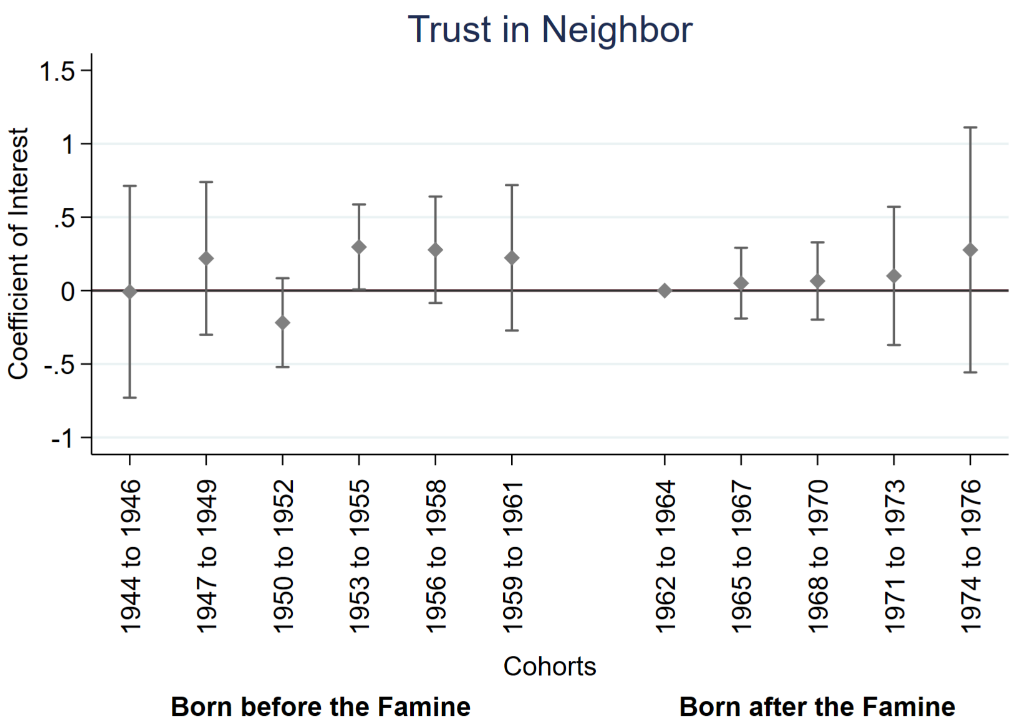
Figure A6: Raw Trust Score across Mortality Levels



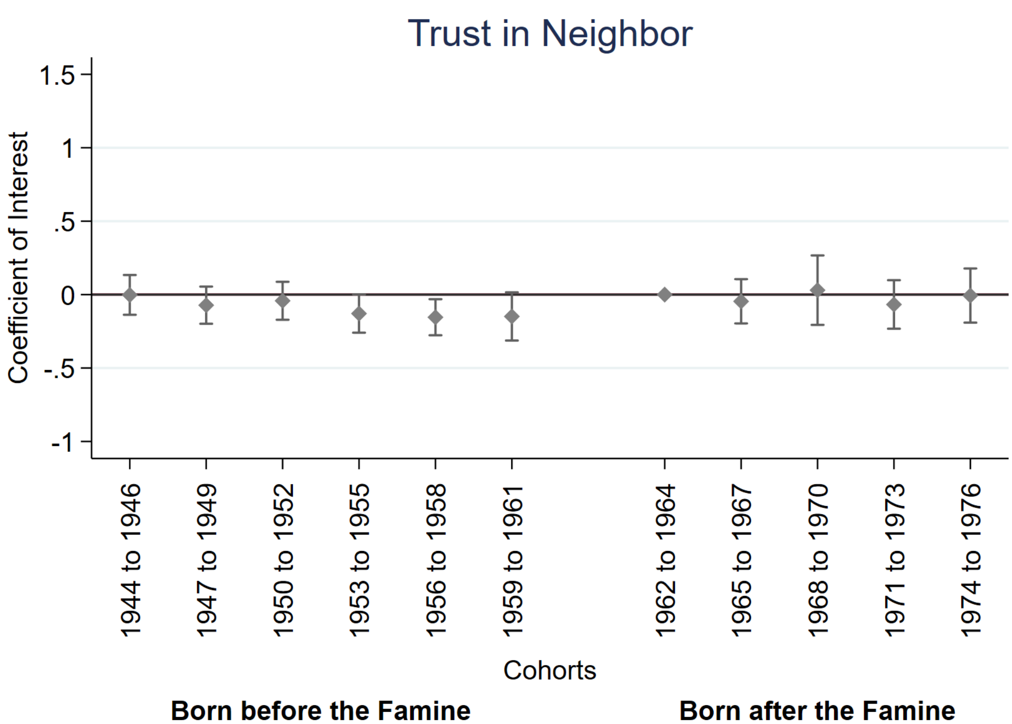
Note: The raw score of trust in neighbors by counties of high clan strength and low clan strength for birth cohorts 1941 to 1976, across different mortality levels. Results are based on rural respondents who stay in the origin places.

Figure A7: Dynamic DID Effects by mortality level (in Sample Mean)

(a) High Mortality



(b) Low Mortality



Note: .

Figure A8: Dynamic Effects of Mortality Dummy (in Sample Mean) on Contemporary Trust

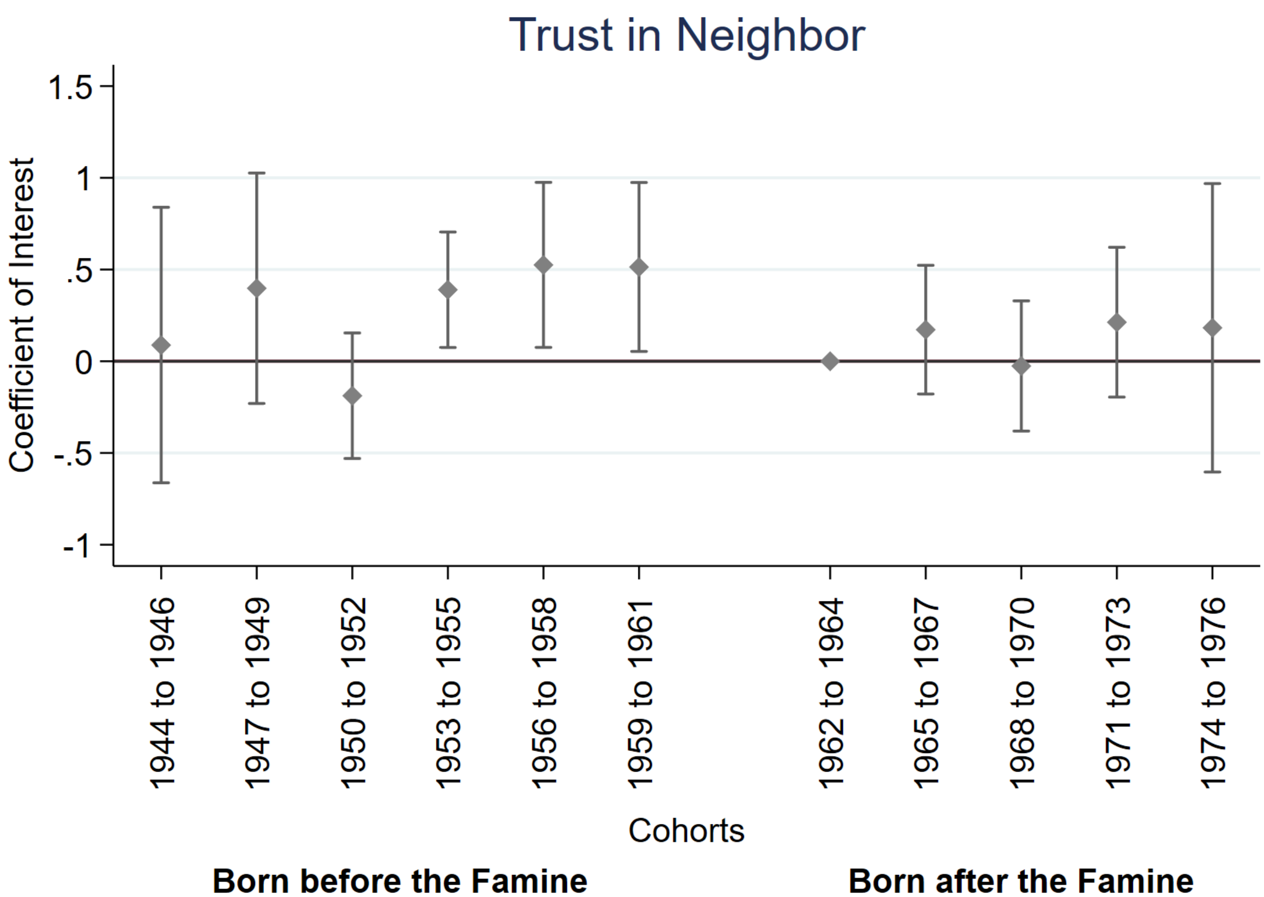


Table A3: Difference in Differences by Mortality Level (in Sample Mean)

	Trust in Parents		Trust in Neighbors		Trust in Stranger		Trust in Neighbors Dummy	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	High Mortality	Low Mortality	High Mortality	Low Mortality	High Mortality	Low Mortality	High Mortality	Low Mortality
prefamine_clan	0.317	-0.0724	1.284***	-0.0305	0.0191	-0.135	0.227*	-0.0246
	(0.380)	(0.166)	(0.441)	(0.168)	(0.342)	(0.296)	(0.120)	(0.0282)
R-squared	0.162	0.0910	0.105	0.0996	0.142	0.133	0.112	0.0963
Observations	2542	5408	2545	5412	2545	5411	2545	5412
Mean of Outcome	8.540	9.008	6.271	6.590	2.404	1.881	0.580	0.627
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓
Community FE	✓	✓	✓	✓	✓	✓	✓	✓
Province-Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A4: The Effects of Famine Experience and Clan Density by Residence (Mortality Dummy in Sample Mean)

	Trust General		Trust in Parents		Trust in Neighbors		Trust in Stranger	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
mortality_prefamine_clan	-0.0293	-0.0408	0.167	-1.985*	1.034***	2.409	0.539	-0.757
	(0.0704)	(0.402)	(0.316)	(1.017)	(0.310)	(1.465)	(0.344)	(0.910)
mortality_prefamine	-0.0178	-0.165	-0.311***	0.234	-0.604***	-1.644	-0.540***	0.222
	(0.0354)	(0.294)	(0.103)	(0.828)	(0.143)	(1.010)	(0.142)	(0.490)
prefamine_clan	0.0366	-0.0459	-0.151	1.223***	0.00718	-0.728	-0.181	0.181
	(0.0490)	(0.257)	(0.154)	(0.423)	(0.156)	(0.902)	(0.281)	(0.891)
R-squared	0.139	0.139	0.131	0.178	0.105	0.180	0.152	0.203
Observations	7992	984	7988	983	7993	984	7992	984
Mean of Outcome	0.488	0.559	8.867	9.273	6.475	6.428	2.024	2.077
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓
Community FE	✓	✓	✓	✓	✓	✓	✓	✓
Province-Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A5: Effects on Intra-Clan Relationships (Mortality Dummy in Sample Mean)

	(1) Visits Relatives	(2) Visits Friends	(3) Visits Relatives/Friends	(4) Neighbor Will Help	(5) Contact Frequency
mortality_prefamine_clan	0.144	-0.0518	0.209	0.0858	2.429***
	(0.0897)	(0.258)	(0.243)	(0.0689)	(0.629)
mortality_prefamine	-0.251***	-0.121*	-0.129	-0.0149	-1.208***
	(0.0452)	(0.0686)	(0.0806)	(0.0223)	(0.399)
prefamine_clan	-0.0722	0.137***	-0.224**	-0.0335**	0.160
	(0.0743)	(0.0495)	(0.0854)	(0.0151)	(0.367)
R-squared	0.363	0.277	0.292	0.0656	0.167
Observations	8189	8176	8157	6656	7671
Mean of Outcome	1.669	0.903	0.766	0.921	8.124
Individual Controls	✓	✓	✓	✓	✓
Community FE	✓	✓	✓	✓	✓
Cohort FE	✓	✓	✓	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A6: Household Genealogy Book in 2010 as Clan Measure

	Trust General		Trust in Parents		Trust in Neighbors		Trust in Stranger	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
mortality_prefamine_clan	0.0128	0.171	-0.100	1.739	0.443*	1.769	-0.0523	0.145
	(0.0568)	(0.275)	(0.268)	(1.389)	(0.256)	(1.064)	(0.262)	(1.204)
mortality_prefamine	-0.0208	0.0807	-0.308**	-1.233	-0.381**	0.847	-0.0801	-0.294
	(0.0372)	(0.210)	(0.141)	(0.999)	(0.184)	(0.738)	(0.202)	(0.879)
prefamine_clan	-0.0193	-0.00200	-0.105	-0.645	-0.277	-0.332	-0.0746	0.971
	(0.0324)	(0.135)	(0.163)	(0.858)	(0.198)	(0.714)	(0.156)	(0.774)
R-squared	0.139	0.207	0.130	0.235	0.101	0.169	0.148	0.219
Observations	8371	904	8368	904	8373	904	8372	904
Mean of Outcome	0.492	0.556	8.864	9.138	6.496	6.662	2.042	2.141
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓
Community FE	✓	✓	✓	✓	✓	✓	✓	✓
Province-Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A7: Trimmed Sample (super negative counties removed)

	(1)	(2)	(3)	(4)
	trust_neighbor	trust_neighbor	trust_neighbor	trust_neighbor_dummy
Panel A: Mortality_Dummy Mean (in Sample)				
mortality_prefamine_clan	0.674***	0.650**	0.968***	0.202**
	(0.249)	(0.249)	(0.318)	(0.0852)
mortality_prefamine	-0.235*	-0.229	-0.561***	-0.124***
	(0.133)	(0.139)	(0.148)	(0.0317)
prefamine_clan	-0.226*	-0.218*	0.0522	-0.0201
	(0.132)	(0.130)	(0.164)	(0.0302)
R-squared	0.0921	0.0945	0.104	0.101
Panel B: Mortality_Dummy Median (in Sample)				
mortality_prefamine_clan	0.384*	0.389*	0.465	0.0689
	(0.229)	(0.225)	(0.312)	(0.0746)
mortality_prefamine	-0.177	-0.181	-0.329*	-0.0639
	(0.127)	(0.129)	(0.169)	(0.0428)
prefamine_clan	-0.245	-0.245	0.116	0.00793
	(0.152)	(0.154)	(0.183)	(0.0448)
R-squared	0.0916	0.0941	0.103	0.100
Observations	7614	7609	7563	7563
Mean of Outcome	6.489	6.489	6.489	0.608
Individual Controls	✗	✓	✓	✓
Community FE	✓	✓	✓	✓
Cohort FE	✓	✓	✗	✗
Province-Cohort FE	✗	✗	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A8: Hukou as Rural Residence Measure

	Trust General		Trust in Parents		Trust in Neighbors		Trust in Stranger	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
mortality_prefamine_clan	0.0940	-0.515	-0.178	-0.623	0.671**	2.581	0.816*	1.696
	(0.0694)	(0.435)	(0.281)	(1.377)	(0.321)	(1.654)	(0.451)	(2.185)
mortality_prefamine	-0.0414	-0.0994	-0.224*	1.570***	-0.326*	-0.933	-0.320**	-0.163
	(0.0293)	(0.239)	(0.129)	(0.413)	(0.191)	(0.860)	(0.149)	(1.168)
prefamine_clan	-0.00879	0.0266	0.00875	-0.112	-0.0860	-0.700	-0.314	0.525
	(0.0507)	(0.246)	(0.166)	(0.469)	(0.185)	(1.412)	(0.352)	(1.341)
R-squared	0.135	0.106	0.128	0.135	0.0949	0.204	0.141	0.151
Observations	8639	655	8634	655	8640	655	8639	655
Mean of Outcome	0.491	0.597	8.906	9.153	6.525	6.585	2.030	2.155
Individual Controls	✓	✓	✓	✓	✓	✓	✓	✓
Community FE	✓	✓	✓	✓	✓	✓	✓	✓
Province-Cohort FE	✓	✓	✓	✓	✓	✓	✓	✓

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$