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Long-term Impacts of Early Adversity on Subjective Well-being: Evidence from the Chinese Great Famine

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Abstract

Employing a difference-in-differences method across birth cohorts and regions with nationally representative data, this study examines the impact of the 1959–1961 Chinese Great Famine on survivors' subjective well-being (SWB) fifty years later. Early-life exposure significantly reduces emotional and eudaimonic SWB, especially among females; evaluative SWB remains unaffected. Mechanism analysis highlights health status and social integration as primary channels, with socioeconomic status playing a limited role. This study is the first to systematically analyze the famine's SWB effects, revealing variability across well-being dimensions. Our findings underscore early-life circumstances' pivotal role in SWB and the enduring consequences of adversity and public disasters.

JEL Classification: I31, J10, N35

Key words: Famine; Public disasters; Early-life circumstance; Subjective well-being; Difference-in-differences; China

1. Introduction

Scholars have underscored the significance of early life experiences, particularly those occurring before the age of 5, including the prenatal conditions known as "fetal origins" (e.g., Barker, 1990; Almond & Currie, 2011a; Currie & Vogl, 2013) and early childhood environments (Almond & Currie, 2011b; Currie & Vogl, 2013; Heckman et al., 2013; Almond et al., 2018; García et al., 2020). However, this literature typically centers on outcomes related to health, cognitive capabilities, and socioeconomic status (e.g., education and income), but it surprisingly rarely examines the impact on overall measures of individual welfare (Bertoni, 2015).[1] Subjective well-being (SWB), as an aggregated measure of individual welfare (Frey & Stutzer, 2002; Layard, 2005; Deaton, 2008; Helliwell et al., 2021), has been increasingly attracting attention from economists and psychologists (Easterlin, 2001; Di Tella & MacCulloch, 2006; Kahneman & Deaton, 2010; Benjamin et al., 2014, 2023; Killingsworth et al., 2023; Ye et al., 2023).

Expanding on the emerging research into the "origins of happiness" that examines the impact of early life circumstances on SWB across the lifespan (Bertoni, 2015; Clark et al., 2018), this study contributes to the field by investigating the long-term consequences of exposure to the 1959–1961 Chinese Great Famine (hereinafter referred to as the Great Famine) before age 5 on survivors' SWB. Famine, a prevalent and impactful public disaster, leads to malnutrition, famine-related diseases, and mortality. In the 20th century, over 70 million individuals have perished from

[1] Frijters et al. (2014) and Layard et al. (2014) examine life-cycle models of SWB and investigate how childhood conditions impact later-life SWB.

exposure to famines (Meng et al., 2015). Among them, the Great Famine is the severest in human history and killed approximately 16.5 to 45 million individuals in just over three years (Coale, 1981; Dikotter, 2010).[2]

The Great Famine is particularly suitable for testing the effect of famine, public disasters, and early adversity for the following reasons. First, the Great Famine is the severest one in the world so far, and the variations in famine severity across provinces and cohort exposures have also enabled the exploration of its impact. Second, the residence registration (*hukou*) system in China, particularly in the 1950s and 1960s, categorizes citizens into urban (non-agricultural) and rural (agricultural) residents of a particular location and has a strong restriction on population migration.[3] This strict restriction of across-province migration during the famine period limited the potential self-selection through migration, thereby facilitating the causal analysis of its impact.

The effect of famine on SWB remains theoretically uncertain. On the one hand, literature suggests that famine's impact on socioeconomic status, cognitive capabilities, and health could diminish SWB in later life, adversely affecting individuals' overall welfare. On the other hand, the "habituation" effect suggests that the influence of significant life events may diminish with time (Levinson, 2013). Similarly, experiencing early adversities, such as episodes of hunger, could

[2] Research also identifies social capital, such as kinship-based clans, as an effective factor in mitigating the impact of disasters on individuals during famine (Cao et al., 2022).

[3] Details on the residence registration (*hukou*) system in China are described in Chen and Zhou (2007) and Meng and Qian (2009).

reduce individuals' aspirations and standards for evaluating their lives (Bertoni, 2015). This adjustment in expectations may, in turn, enhance SWB by realigning assessment criteria (Easterlin, 2001; Stutzer, 2004). Moreover, experiencing famine may heighten risk tolerance and entrepreneurship (Yi et al., 2022), which could foster career advancement and material prosperity, thereby potentially enhancing SWB. Finally, later welfare outcomes also depend on subsequent parental investments, interventions, and behavioral responses, which can either exacerbate or mitigate the effects of early adversity (Cunha & Heckman, 2007; Almond & Currie, 2011b; Kesternich et al., 2015; Yi et al., 2015; Ye & Yi, 2017; Almond et al., 2018). Accordingly, the total effect of famine on later-life SWB is unclear. In the present study, we attempt to answer this question empirically.

Furthermore, the impact of famine on SWB may vary across different dimensions of SWB. We examine all three distinct yet related types of SWB measures: evaluative/cognitive SWB, emotional/experiential/hedonic/affective SWB, and eudaimonic SWB (OECD, 2013; Steptoe et al., 2015; Graham et al., 2018). Among these, evaluative SWB assesses one's overall life assessment, emotional SWB centers on feelings like sadness, anger, stress, pain, and joy, and eudaimonic SWB highlights the pursuit of excellence, purpose, and life meaning. Research indicates that common factors such as age, gender, income, education, religiosity, social support, and need fulfillment can differently influence these SWB dimensions (e.g., Diener et al., 2010, 2011; Howell & Howell, 2008; Kahneman & Deaton, 2010; Stone et al., 2010; Tay et al., 2011; Monnot et al., 2014; Siedlecki et al., 2014; Nikolaev, 2018; Blanchflower & Bryson, 2023). There is also emerging evidence suggesting that circumstances in early life can have varied effects on

different types of SWB (e.g., Kendig et al., 2016). Therefore, this study seeks to systematically explore the impacts of famine across all types of SWB.

The present study employs the difference-in-differences (DID) method with the variations in birth cohorts and regional excess death rates, using a nationally representative survey data, the China Family Panel Studies, which covers 25 provinces or municipalities. Results show that exposure to the Great Famine in the prenatal and early-childhood period has a significantly negative effect on emotional and eudaimonic SWB, but not on evaluative SWB, of the survivors after half a century. Heterogeneity analysis shows that the adverse effects predominantly affect females. Our mechanism analysis suggests that health status and social integration are two important channels through which the Great Famine affects SWB, whereas socioeconomic status only plays a limited role.

This paper distinguishes itself from previous studies and makes significant contributions. First, and most importantly, to the best of our knowledge, it is the first to quantify the long-term effects of famine on overall welfare, as proxied by all three types of SWB. In contrast, previous studies have predominantly concentrated on investigating the impact of famine on health (St. Clair et al., 2005; Chen & Zhou, 2007; Meng & Qian, 2009; Lumey et al., 2011; Huang et al., 2013; Li et al., 2018; Cui et al., 2020; Wang et al., 2023), socioeconomic status (Chen & Zhou, 2007; Meng & Qian, 2009; Almond et al., 2010; Yi et al., 2022), and cognitive abilities (Kim et al., 2017; Cui et al., 2020).[4] However, research on the effects of famine on SWB is limited. This study enhances

[4] Our study differs from Wang et al. (2023) and Cui et al. (2020) in several key ways. First,

our understanding of how early-life circumstances impact individual well-being and provides evidence from a non-WEIRD society with the world's largest population. Second, this paper provides a comprehensive addition to prior studies by examining multiple types of SWB and undertaking analyses of underlying mechanisms. Our findings underscore the significant impact of early life experiences on human development and the enduring repercussions of public calamities like famine. They have policy implications for victims of famines and child malnutrition

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regarding mental health, Wang et al. (2023) and Cui et al. (2020) focus solely on depression (measured by the CESD-10 depression score), whereas this paper covers a broader spectrum of subjective well-being, including evaluative well-being (overall life assessment), emotional well-being (feelings of various emotions), and eudaimonic well-being (sense of purpose and life meaning). Second, this paper analyzes the mechanisms behind the effects on SWB, emphasizing the roles of physical health and social integration—particularly the social integration channel, which has not been explored in this literature. Third, while the other two studies are based on the China Health and Retirement Longitudinal Study (CHARLS), this paper uses data from the China Family Panel Studies (CFPS), a nationally representative dataset with extensive SWB measures. Lastly, we leverage variations in famine intensity across provinces and in famine exposure across cohorts, controlling for birth province and cohort fixed effects. In contrast, Wang et al. (2023) compared rural and urban populations rather than different cohorts, and Cui et al. (2020) examined the effects of early-life food deprivation based on self-reported episodes, rather than direct famine exposure. As food deprivation may be influenced by unobserved family and individual factors, their simple OLS approach is less robust than our difference-in-differences approach for causal inference.

that still exist in numerous places in the world, particularly in African countries.[5] In 2022, 149 million children under five years old were estimated to be stunted because of malnutrition.[6] Our study may also shed light on the long-term consequences of early life exposure to similar public disasters.

The remainder of this paper is organized as follows. Section 2 describes the data and empirical strategy. Sections 3 and 4 report the main results and robustness checks. Section 5 concludes.

2. Data and Empirical Strategy

2.1. Data

Our main data comes from the 2010 wave of the China Family Panel Studies (CFPS), a nationally representative sample of Chinese families conducted by the Institute of Social Science Survey, Peking University, P. R. China.[7] The survey covered 25 provinces or municipalities, including wide-ranging domains of communities, families, and individuals, particularly rich measures of SWB. We utilize the 2010 wave of data in the present study. The year 2010, about 50 years after

[5] Northoff, E. (2006, January 6). Millions of people are on the brink of starvation in the Horn of Africa. http://www.fao.org/newsroom/en/news/2006/1000206/index.html, last accessed on December 16, 2015.

[6] Source: https://www.who.int/news-room/fact-sheets/detail/malnutrition, accessed on January 17, 2025.

[7] Tibet, Qinghai, Xinjiang, Ningxia, Inner Mongolia, and Hainan are excluded from the sample to reduce costs, but together they make up only 5% of the population (Xie et al., 2012, p.14).

the Great Famine, is an ideal time to examine its long-term impact because later surveys suffer more from attrition and selection bias due to the potential deaths of some respondents. The 2010 wave covered 14,960 households with 57,115 individuals aged 10 or older.[8]

The Great Famine is well acknowledged to be primarily a rural phenomenon because the urban residents had access to certain food quotas throughout the entire period. Thus, previous studies primarily focus on rural areas (Chen & Zhou, 2007; Meng & Qian, 2009; Kim et al., 2017). We follow the literature and restrict the sample to individuals born in rural areas.

2.2. Cohort Selection

For the treatment group, we focus on birth cohorts between 1954 and 1962 that were exposed to famine during the prenatal and early childhood periods before the age of 5. Excluding individuals born before 1954, who were older than age 5 during the famine and are not the focus of our study, mitigates selective mortality bias, as they are over 56 years old in the 2010 survey year, and also allows us to avoid other major events before the famine, such as the founding of the People's Republic of China in 1949. The control group is those born between 1963 and 1964. Chen and Zhou (2007) and Huang et al. (2013) utilize similar cohorts in their analyses to investigate the Great Famine's impact on survivors' health and labor market outcomes.

Notably, we exclude cohorts born post-1965 from our analysis to mitigate potential biases arising from the Cultural Revolution, which began in 1966 and could affect individuals born during

[8] See Xie et al. (2012) for details of the sample design.

that era. In Section 2.7, we demonstrate that the "cohort trend" appears parallel from the 1964 to the 1963 cohort, supporting the validity of our Difference-in-Differences (DID) specification.

2.3. Famine Severity

Our study focuses on the variations in exposure to famine across regions and cohorts to construct a DID strategy. The validity of this method lies on the assumption that the region of birth must be highly correlated with the region of growing up and of residence during the famine. As we mentioned in the Introduction, this assumption largely holds because of the special *hukou* system in China, which was strictly implemented from the 1950s to the 1970s. In fact, even during the three-year famine, strong restrictions on migration remained. On the one hand, the local governments did not want the central government to know that famine existed in their jurisdiction; on the other hand, rural residents were organized into thousands of people's communes that were strictly managed, and migration was prohibited. However, anecdotes and historical reports show that some peasants who encountered severe famine still managed to escape from their hometowns and moved to other counties or municipalities for foods to sustain their lives (see, e.g., Yang, 2012). Thus, to mitigate the possible estimation bias due to migration, we focus on provincial-level differences in famine severity because across-province migration was relatively rare, as we will show later in Section 4.3. Furthermore, the grain procurement policy and political incentives at the provincial level played an important role in determining the famine severity (Kung & Chen, 2011; Meng et al., 2015), which makes the provincial level analysis more likely to capture the key variation.

Following Lin and Yang (2000) and Chen and Zhou (2007), we use the excess death rate in 1960, the severest year of the famine, to indicate the famine severity in each province. The data on death rates during the famine period 1959–1961 are adopted from Lin and Yang (2000).[9] Figure 1 illustrates the considerable variation in the death rate across regions in 1960, which spans from 6.8 per thousand in Shanghai to 68.6 per thousand in Anhui. The excess death rate is calculated by subtracting the average death rate in 1956–1958 from those in 1959, 1960, and 1961 (Table A1). The excess death rate in 1960 varies from 0.57 per thousand (Shanghai) to 56.70 per thousand (Anhui).

[Figure 1 about here]

2.4. Subjective Well-being

Recent literature distinguishes three types of SWB, namely, evaluative SWB, emotional SWB, and eudemonic SWB (OECD, 2013; Steptoe et al., 2015; Graham et al., 2018). All these categories of SWB are considered in our analysis.

First, Evaluative SWB. It reflects an overall assessment of the entire life. The CFPS survey has two questions on this category of well-being. The happiness variable originates from the question: "How happy do you feel in general?" and the answers vary from unhappiest (1) to happiest (5) in

[9] The original data source is the Chinese National Bureau of Statistics, which reports the provincial-level death rate in various volumes of the Chinese Statistical Yearbook. The most complete data in China are at the provincial level.

five scales.[10] The variable of life satisfaction originates from the question: "How satisfied are you with your life in general?" with answers varying from very unsatisfied (1) to very satisfied (5). The average values of happiness and life satisfaction are 3.741 and 3.468, respectively. Thus, higher values signify improved evaluative SWB. To derive a comprehensive evaluative SWB index, we first standardize each evaluative SWB item to have a mean of zero and a standard deviation of one, then sum these standardized values and standardize the sum once more.

Second, Emotional SWB. It elicits feelings of sadness, anger, stress, pain, joy, etc. The CFPS also has a rich and systematic set of questions in this category. Respondents were directly interviewed about the frequency of experiencing the following negative affects during the last month: (1) "I felt depressed, and nothing can cheer me up," (2) "I felt nervous," (3) "I felt restless and hard to calm down," and (4) "I felt that everything I did was an effort." Each of these items has five scales, from almost every day to never. We code them such that higher values represent better emotional SWB, meaning a lower frequency of negative emotions. To compute a comprehensive emotional SWB index, we standardize each emotional SWB item to have a mean of zero and a standard

[10] The term "happiness" is mostly defined in two ways: 1) "the current experience of the feeling of an emotion (affect) such as pleasure or joy"; and 2) "appraisal of life satisfaction, such as of quality of life" (Veenhoven, 2012; Wikipedia). The Chinese term of happiness is "幸福"(*xingfu*) in this study and is asked in the context of the overall evaluation of quality of life in the questionnaire. Thus, it is closer to the second definition. Therefore, we include it in the category of evaluative SWB rather than emotional SWB.

deviation of one, aggregate these standardized values, and then standardize the aggregate once again.

Third, Eudaimonic SWB. It refers to living a life of virtue in pursuit of human excellence, the sense of purpose, and the meaning of life for the respondents. Two measures can be constructed from the questions "What is the frequency of feeling 'My life was hopeless'?" and "What is the frequency of feeling 'My life was meaningless'?", with five-scale answers varying from almost every day to never. We code them so that higher values signify improved eudaimonic SWB, which corresponds to a lower frequency of feelings of hopelessness or meaninglessness. To formulate a comprehensive eudaimonic SWB index, we standardize each eudaimonic SWB item to have a mean of zero and a standard deviation of one, sum these standardized values, and standardize the total once more.

2.5. Summary Statistics

Our final sample consists of 5,438 observations from the birth cohorts of 1954–1964. The frequency of birth cohorts in the sample is illustrated in Figure 2 and Table A2. We can see that the number of observations declined dramatically since the 1958 cohort, particularly from 1960 to 1961, which is the worst period in the three-year famine. Then, from 1961 to 1962, a strong rebound occurred because famine had ended in most provinces. These patterns exactly mirror the birth and death rates in China during the same period (Lin & Yang, 2000) and are also similar to the patterns found by Chen and Zhou (2007). We further check the pattern using the 1% random sample of China's 1990 population census, as shown in Figure 2, and the two match well.

Therefore, our final sample represents the overall population of these cohorts.

[Figure 2 about here]

Table 1 provides summary statistics of key variables. Respondents are 50.80 years old on average, and 50.1% of them are male. Roughly 95% of them are married, and the mean years of schooling is 5.64. Appendix Table A3 presents the summary statistics for the treatment and control cohort groups separately. Age and gender are pre-determined, while ethnic minority status and parents' education are largely pre-determined; other individual and parental characteristics may be influenced by famine. The age difference between the treatment cohorts (1954–1962) and control cohorts (1963–1964) is mechanical. There is no statistically significant difference in gender ratio or ethnic minority status between the two groups. A significant gap exists in parents' education between the cohorts, although this data is missing for a large proportion of respondents. Overall, the treatment and control cohorts are comparable in terms of pre-determined characteristics, with the exception of age and parents' education. The age effect can be controlled by including cohort fixed effects, and in one specification, we also control for parents' education, as discussed later in Section 3.

[Table 1 about here]

2.6. Empirical Strategy

As discussed in Section 2.3, we use the variations across birth cohorts and regions in the exposure to famine to identify the long-term effects of famine on SWB, as illustrated in the following

baseline equation.

$$H_{ijk} = \alpha + \gamma edr_j \times birth_i + \eta_j + \beta_k + D'_{ijk}\lambda + \varepsilon_{ijk} \quad (1)$$

where H_{ijk} is SWB measures in 2010 for individual *i* born in province *j* in cohort *k*; edr_j, our measure of famine severity, is the excess death rate in province *j* in 1960, the worst year of the famine; $birth_i$ is a dummy that equals one if individual *i* was born in the years between 1954 and 1962 and thus exposed to famine, per the crucial human development process before age 5 (Almond & Currie, 2011b; Campbell et al., 2014); η_j is the birth province fixed effects, which absorbs the effect of edr_j; and β_k is the birth cohort fixed effects and absorbs the effect of age. D'_{ijk} is the exogenous control variable of gender;[11] α is the intercept, and ε_{ijk} is the error term.

The coefficient on the interaction term between the excess death rate and birth cohort dummy variable γ estimates the causal effect of the Great Famine on SWB. We cluster standard errors at the provincial level to account for the potential correlation within the same province.

2.7. Placebo Test

To identify the average causal response in a continuous DID setting with varying treatment

[11] We are unable to include birth weight as a control variable due to a significant portion of respondents not providing this information. Moreover, considering ethnicity (Han vs. ethnic minority) as a control variable could be problematic, as some respondents may change their ethnicity claim to potentially benefit from educational preferential treatments typically favoring minorities. Consequently, ethnicity is not controlled for in our primary analysis. However, including it yields nearly identical results (refer to Appendix Table A5-1).

intensities (“dose”) across units, we need a strong parallel trends assumption: “the path of outcomes for lower-dose units must reflect how higher-dose units' outcomes would have changed had they instead experienced the lower dose.” (Callaway et al., 2024). In our setting of cohorts DID with continuous treatment intensity (i.e., famine severity proxied by excess death rate in 1960) across provinces, this assumption implies that individuals in provinces with different famine severities should exhibit similar cohort trends in SWB, had they experienced the same level of famine severity. Although this assumption cannot be directly tested, we conduct a falsification test by comparing the cohort trends in SWB across individuals in provinces with different famine severities using cohorts that were not exposed to famine. Following the approach of Chen and Zhou (2007), we use the cohorts of 1963 and 1964 who were born after the Great Famine for verification. We expect that the Great Famine would not have significant effects on them. In this placebo test, we use the 1964 birth cohort as the reference group. The results in Appendix Table A4-1 indicate that we do not find a significant SWB effect for the birth cohort of 1963 who was not exposed to the Great Famine, indicating the validity of our DID estimator. In Appendix Table A4-2, we conduct similar placebo tests using parents’ characteristics (education, survival, and Communist Party membership) as dependent variables. The null results further validate the robustness of our DID estimator.

Inspired by Callaway et al. (2024) (See Section 4 of their paper), in Appendix A14 we also employ a non-parametric approach to preliminarily explore the potential nonlinearity of the famine’s impact.

3. Results

This section reports the results on SWB and the potential channels based on the cohort DID identification strategy of equation (1).

3.1. Baseline Results

In this subsection, we explore the effects of famine on the three types of SWB, namely, evaluative, emotional, and eudemonic SWB. We treat the 1954–1962 cohorts as a whole group because they were all exposed to the famine (in utero or at early childhood). The 1963–1964 birth cohorts are the control group, who were born after the famine. Table 2 reports the regression results. For brevity, we primarily report the coefficients on the interaction term between excess death rate and birth cohorts, which measures the estimated effects of the famine on SWB. All regressions control basic demographics, including gender, birth province fixed effects, and birth cohort fixed effects. This baseline regression provides the total causal effect of the Great Famine.

Results indicate diverse effects on three SWB types. The impact on evaluative SWB is small and statistically insignificant. In contrast, the Great Famine lowers emotional and eudaimonic SWB with more precise estimations: given the EDR's standard deviation of approximately 12.94 per thousand, a one-standard-deviation increase in EDR for the 1954–1962 cohorts translates, on average, into a decrease of 0.06 standard deviations in these two types of SWB, a nontrivial impact.[12]

[12] Put it differently, for individuals born in provinces with an average EDR of 13.699 per thousand in 1960, famine exposure (applicable to those born from 1954 to 1962 in our sample) results in a

[Table 2 about here]

We further apply the wild bootstrap method to address the concern of a small number of clusters that there are only twenty-four provinces in our final data (Cameron et al., 2008). Although the wild bootstrap p-values reported in square brackets become somewhat larger, the qualitative results hold: the impacts on emotional and eudaimonic SWB are both negative and statistically significant at the 5% level.

To address the concern that selective fertility could bias our estimates., we rely on parents' pre-determined characteristics. Although CFPS data contain limited information on parents, we do have data on parents' education, which is largely pre-determined and partly reflects parental endowment. In Table A5-2, we assess whether famine exposure is linked to parents' education by substituting the outcome variable with parents' education. The results show that famine exposure is positively and significantly associated with father's education, while the association with mother's education is also positive but very small and statistically insignificant. This may suggest selective mortality or fertility in the treatment cohorts for fathers but not mothers and does not support the selective fertility hypothesis for the control cohorts. At the very least, any selective fertility in the control cohorts does not exceed the extent of selective mortality or fertility observed in the treatment cohorts. Thus, the treatment cohorts in the data might actually be better endowed, potentially leading to an underestimation of famine's negative impact on SWB. In Table A5-3, we

decrease of 0.07 standard deviations in emotional and eudaimonic SWB measures compared to non-exposed cohorts.

control for parents' education to address this concern. The results remain very similar to our main specification in Table 2: famine has significantly negative effects on emotional and eudaimonic SWB, while the impact on evaluative SWB is smaller and statistically insignificant. However, the estimated negative impact on eudaimonic SWB is indeed slightly larger (0.006) than that in Table 2 (0.005).

We also report the impacts of famine on each specific SWB item in Appendix Tables A6-1 and A6-2. Table A6-1 uses non-standardized measure of each item, whereas Table A6-2 standardizes each item (i.e., with the mean of zero and standard deviation of one). The results are qualitatively similar to Table 2: famine has small and insignificant impacts on both evaluative SWB items (i.e., happiness and life satisfaction), while exposure to famine significantly increases the frequencies of most negative emotions (specifically nervousness, restlessness, and difficulty feeling) among the emotional SWB items, and likewise increases the probability of experiencing feelings of hopelessness and meaninglessness in eudaimonic SWB items.

3.2. Pecuniary Value of Famine's Impact on SWB

To evaluate the monetary equivalent of the famine's impact on emotional and eudaimonic SWB, we undertake additional analysis. This involves incorporating both famine exposure and personal annual income (calculated from total personal income across all sources in the previous year) as regressors. We then compare their coefficients to benchmark the effect of famine exposure. The specification is:

$$H_{ijk} = \alpha + \gamma edr_j \times birth_i + \kappa lnY_{ijk} + \eta_j + \beta_k + D'_{ijk}\lambda + \varepsilon_{ijk}, \quad (2)$$

where Y_{ijk} is the personal annual income. It is important to recognize that personal annual income may be endogenous to famine exposure and other variables, making this analysis suggestive and warranting cautious interpretation. Therefore, we include it in the regressions presented in Appendix Table A7, but not in the main analysis.[13] The coefficient on the interaction term does not change and the coefficient on log personal annual income is 0.020 and 0.016 for emotional and eudaimonic SWB, respectively. By totally differentiation of equation (2) and holding emotional or eudaimonic SWB constant, we calculate the difference in the average marginal rate of substitution between EDR and personal annual income when the exposure status changes from 0 to 1, $\frac{\partial Y}{\partial EDR}|_{birth_i=1} - \frac{\partial Y}{\partial EDR}|_{birth_i=0} = -Y \times \frac{\gamma}{\kappa}$. Plugging in –0.005 for γ, 0.020 or 0.016 for κ, and 8180.06 (in Chinese *yuan*) for average personal annual income in the sample used for regressions, we get 2045.02 or 2556.27 *yuan*.[14] Thus, when exposed to the Great Famine, one-unit (i.e., 0.1 percentage points) increase in EDR reduces an average person's emotional or eudaimonic SWB by an amount worth 2045.02 or 2556.27 *yuan* (about 25% or 31 % of the average personal annual income), a substantial pecuniary value.

[13] An alternative approach is to use gross domestic product (GDP) per capita or average personal income in the respondents' county of residence at the time of the survey. These measures are relatively more exogenous and can act as predictors or proxies for personal income. Nonetheless, they might also serve as reference points against which respondents compare their own income when assessing their SWB.

[14] The average 2010 exchange rate is 1 USD = 6.7695 CNY. Thus, 2045.02 (or 2556.27) *yuan* corresponds to 302 (or 378) USD.

3.3. Gender Heterogeneity

The impact of early-life famine experiences may vary between men and women, influenced by multiple factors such as family resource allocation (with a notable son preference in China) and differences in brain and bodily development across genders. The existing literature presents mixed results that vary with the outcomes and contexts examined. For instance, some studies indicate that women exposed to the Great Famine exhibit higher body mass index (Ravelli et al., 1999) and report lower self-perceived general health (Fan & Qian, 2015), effects not observed in men. Research on the famine's influence on socioeconomic factors reveals that both women and men are more likely to face illiteracy, unemployment, and disability, though these impacts are more pronounced in men (Almond et al., 2010). Furthermore, the Great Famine appears to have stimulated entrepreneurship primarily among men (Yi et al., 2022), likely reflecting traditional gender roles in household labor division.

Taking into account these factors, we investigate the gender-specific effects of the Great Famine on SWB, with findings presented in Table 3. Our analysis reveals that the adverse effects of the famine on emotional and eudaimonic SWB for females exceed those observed in the aggregate results shown in Table 2, while the impacts on males are minimal and not statistically significant.

[Table 3 about here]

In Appendix Table A8, we present results for each specific SWB item and highlight gender disparities, which follow similar patterns to those in Table 3.

3.4. Cohort-specific Effects

To disentangle the specific cohort effects of famine, we analyze the 1954 to 1962 cohorts separately, with the 1963 to 1964 cohorts as the control group. Table A9 presents the results. We find that famine significantly reduces emotional well-being for the 1954, 1955, and 1962 cohorts, and eudaimonic well-being for the 1955 and 1962 cohorts, with larger magnitudes than the average effects in Table 2. The 1955 cohort experiences the most significant adverse effects. Effects on other cohorts are generally negative but statistically insignificant.

Memory development may help explain the impact on the 1954 and 1955 cohorts, as they were four to seven years old during the famine, an age when memory formation occurs and adverse events may have had a lasting effect.[15] For the 1962 cohort, the significant negative impacts align with the "fetal origins" hypothesis.

However, we caution against overinterpreting these cohort-specific estimates. The considerably reduced sample sizes for individual cohorts, as detailed in Table A2, result in a significant loss of statistical power compared to our primary analysis, which aggregates the exposed cohorts.

[15] Efficient recall of adversity may also be an important channel for the effect on subjective well-being. Brain structures such as the limbic system are not yet fully developed during infancy (Jenny & Nelson, 2007), so people suffer from so-called “childhood amnesia.” Psychologists do not have a consensus on the offset age of childhood amnesia, varying from 2 to 10 in general, whereas most empirical studies have shown that children can remember events from the age of 3–4 (Fivush & Schwarzmueller, 1998; Clevelend & Reese, 2008). On average, most adults reportedly recall their first memories formed at around age 3.5 (Rhawn, 2003).

3.5. Mechanisms

Next, we explore the potential mechanisms underlying the Great Famine's impact on SWB, notably on emotional and eudaimonic SWB, which are significantly reduced. Various literatures show that both early adversity and SWB are related to a rich set of factors, which can be systematically categorized into three fields: health status, socioeconomic status (SES), and social integration. Below, we assess the impact of the Great Famine on these three dimensions.

[Table 4 about here]

3.5.1. Health

We first examine the role of health. Previous studies confirmed the detrimental effects of exposure to famine or hunger in childhood on health status (Chen & Zhou, 2007; Meng & Qian, 2009; Lumey et al., 2011; Cui et al., 2020). Meanwhile, health status can impact SWB (Easterlin, 2003; Blanchflower & Oswald, 2008; Diener et al., 2018). Four health status variables are considered here. The first is attained height, a widely used measure of health in the literature (e.g., Chen & Zhou, 2007; Meng & Qian, 2009). We further supplement it with a related medical measure, i.e., hospitalization, taking a value of one if the respondent answered "yes" to the question "Were you hospitalized last year?" and zero otherwise. Among our sample, 8% were hospitalized last year. The third dimension is physical ability, quantified by the number of physical activities out of four, that the respondent can execute, with scores ranging from zero to four. The final dimension, P-ADL difficulty, assesses the challenge of independently performing basic daily tasks (i.e., Personal Activities of Daily Living) essential for self-care. It is coded as one if the respondent is unable to

independently complete at least one of the seven tasks, and zero otherwise. Panel A of Table 4 illustrates that the Great Famine significantly reduces the average height of survivors and heightens the probability of hospitalization and experiencing difficulties with personal activities of daily living (P-ADL); it also lowers physical ability, though this decrease is not statistically significant. A one-standard-deviation increase in the excess death rate for the cohorts from 1954 to 1962, on average, leads to a decrease of 0.32 cm (or 0.04 standard deviations) in attained height, along with a 1.9 percentage point increase (or approximately 0.07 standard deviations) in the likelihood of hospitalization, and a 1.4 percentage point increase (or about 0.06 standard deviations) in the likelihood of experiencing P-ADL difficulties.

3.5.2. Socioeconomic status

We next examine the socioeconomic status (SES) mechanisms (e.g., human capital, labor market outcomes, and marital status) previously identified as adversely affected by famine (Chen & Zhou, 2007; Meng & Qian, 2009). Higher SES has been linked to increased SWB in the literature (Pinquart & Sörensen, 2000; Frijters et al., 2004; Oreopoulos, 2007; Howell & Howell, 2008; Ye et al., 2023). We utilize a comprehensive set of indicators to represent socioeconomic status (SES), encompassing years of schooling, marital status (married, cohabitating, divorced, and widowed), employment status, and total personal income from all sources in the last year. As detailed in Panel B of Table 4, the Great Famine's effects on education and income are negative but not statistically significant: a one-standard-deviation increase in the excess death rate for the 1954–1962 cohorts leads to a decrease of 0.31 years (or 0.07 standard deviations) in schooling and a 2.6 percent (or

0.06 standard deviations) reduction in income. The impacts on marital and employment status are negligible and not statistically significant. Thus, while there is qualitative evidence of famine's effects on SES, it remains relatively weak.

3.5.3. Social Integration

Lastly, we exploit the mechanism of social integration. Seeman (1996) defines social integration as "the extent to which they have social ties or social connections." There exists strong evidence that social integration leads to better SWB (Pinquart & Sörensen, 2000; Rohrer et al., 2018). The physiologic foundation is that social integration increases oxytocin, a mammalian neurohypophysial hormone that can generate pleasant feelings. Meanwhile, individuals who are exposed to childhood adversities are less likely to have good social integration (Sheikh, 2018; McLafferty et al., 2019).[16] Thus, social integration can be a mediator from early-life adversity to

[16] Early adversity can not only weaken the family but also lead to the loss of other crucial sources of social support, thereby reducing the actual and perceived support available to the individual throughout their life (Turner & Butler, 2003; Vranceanu et al., 2007). Additionally, the psychological effects of trauma experience can lead to interpersonal difficulties, making victims less likely to engage with others and hindering the development and maintenance of social networks within the family, among friends, and in the community. This, in turn, harms both the quality and quantity of social relationships (Turner & Butler, 2003; King et al., 2006). This may be especially relevant for females, such as female veterans, who are more likely to suffer from post-traumatic stress disorder (PTSD) (Lehavot et al., 2018), which can negatively affect their

SWB. Three related measures are considered, covering both quantity and quality of social integration. The first one is the variable of "Get along well with others." It originates from "How much do you think you can get along well with other people?" and ranges from very bad (1) to very good (5). The second one is the variable of "Popularity in terms of relations with others." It originates from "How do you think about your popularity in terms of relations with other people?" and ranges from very bad (1) to very good (5). The third one is "Number of friends visiting during Spring Festival" and originates from "How many friends visited your home during this Spring Festival?"

Panel C in Table 4 presents the results of the effects of the Great Famine on social integration. All the estimates are negative. The Great Famine decreases the extent of popularity in terms of relations with others and the number of friends visiting during The Spring Festival. Specifically, for the cohorts from 1954 to 1962, a one-standard-deviation increase in the excess death rate, on average, results in a decrease of 0.025 (or approximately 0.03 standard deviations) in the popularity scale and 0.41 (or about 0.06 standard deviations) fewer friend visits during the Spring Festival.

3.5.4. Decomposition analysis

In Appendix Table A10-1, we show that in our context better health status, socioeconomic status, and social integration are generally positively associated with SWB, further supporting that they are potential mechanisms through which the Great Famine exerts its impacts on SWB,

relationships with others.

particularly emotional and Eudaimonic SWB. In Table A10-2, we present similar decomposition results for each specific SWB item.

In Appendix Figure A2, we follow the methodology employed in Heckman et al. (2013) and Gelbach (2016) to quantify the contribution of each of these three channels to the total treatment effect on emotional and eudaimonic SWB, which suggests that health status has the largest impact, followed by social integration, while the contribution of socioeconomic status is comparatively limited.[17]

In Appendix Table A10-3, we conduct the mechanism analysis separately for males and females. The results generally show that the adverse effects of famine on general health and social integration are more pronounced for females, particularly in areas such as hospitalization, physical ability, and social popularity. Decomposition analysis in Appendix Tables A10-4 and A10-5 further confirms that the indirect effects of famine on emotional and eudaimonic SWB through health status and social integration are larger for females, which may partly explain the gender difference in the famine's impact.

Parents' health and socioeconomic outcomes may have been affected by the famine and could also serve as mediators. In Appendix Table A10-6, we find no impacts on whether parents are alive or CCP members, with these factors explaining almost none of the overall effects. However, we do observe that famine led to a prolonged period during which respondents did not live with their

[17] Such decomposition analyses are based on certain assumptions including conditional independence of mediators (Huber et al., 2016).

fathers, both before the age of 3 and between the ages of 4 and 12. Table A10-7 reports the decomposition analysis, which includes these channels (excluding parental survival status, which are largely missing and unaffected by famine). The analysis finds that the duration of separation from fathers between the ages of 4 and 12 is significantly associated with emotional SWB, explaining approximately 2.4% of the total effect of famine. The comparison between Tables A10-7 and A10-1 shows that including parental characteristics in the decomposition analysis does not alter the explanatory power of the respondent's health status, socioeconomic status, and social integration.

4. Robustness Checks and Discussions

4.1. Alternative Measure of Famine Severity

In our main analysis, we follow Lin and Yang (2000) and Chen and Zhou (2007) and employ the excess death rate in 1960 as the measure of famine severity in each province. Cui et al. (2020) confirmed the validity of the highest excess death rate, which happened almost ubiquitously in the year of 1960, as the proxy for famine severity using the retrospective data of hunger from the life history survey of the China Health and Retirement Longitudinal Study. They found a strong positive correlation between regional famine severity and self-reported hunger. Although we do not have the retrospective individual data of famine in our dataset, this finding does validate our measure of famine severity.

Furthermore, we employ the average excess death rate during 1959–1961 as an alternative proxy for famine severity in our robustness check. The results are detailed in Appendix Table A11.

They exhibit high similarity to our primary findings in Table 2, with the effects being slightly more pronounced.

4.2. Alternative Control Groups

In our primary analysis, the 1963–1964 cohorts serve as the control group. We further conduct robustness checks using only the 1963 cohort as controls. The outcomes, detailed in Appendix Table A12-1, are qualitatively consistent.

While alternative results using the 1963–1965 cohorts as the control group in Appendix Table A12-2 also hold the similar qualitative pattern, it should be treated with caution because the placebo test presented in Table A12-3 reveals a nonparallel "cohort trend" from the 1965 cohort to the 1963 and 1964 cohorts, invalidating the assumption of parallel "cohort trends" in this specification.

4.3. Selective Migration?

We also rely on the hypothesis that the strict restriction of migration during the famine period limited the potential self-selection through migration. To confirm such a hypothesis, we take two strategies. First, we compare the frequencies of provinces where an individual lived at 0 and 3 years old to detect potential migration. As shown in Figure A1, little difference exists in the distributions of the provinces in which the respondent was born and lived at 3 years old. Merely 0.48% of respondents relocated to a different province within the age range of 0 to 3 years old. In Appendix Table A13, we also run regressions by matching famine severity with alternative

classifications of provinces where the respondent lived at 3 years old (rather than where the respondent was born). The regression results are as remarkably similar as can be expected.

4.4. Selective Mortality?

For survivors, the observed famine effect combines two key impacts: adverse effects and selection effects (Meng & Qian, 2009; Gørgens et al., 2012). Individuals with poorer health endowments likely perished during or soon after the famine or in the following decades, which skews our famine-exposed sample toward those with better health endowments. For example, taller children were more likely to survive the famine (Gørgens et al., 2012). This selective mortality presents a persistent identification challenge in studying long-term outcomes of early-life exposure. Additionally, famines have a greater negative impact on individuals with poorer health, as Chen and Zhou (2007) find that the effects of famine are more pronounced for shorter individuals. Health status is positively associated with SWB (Easterlin, 2003; Blanchflower & Oswald, 2008; Diener et al., 2018); in particular, health traits that predict survival in famine, such as height, correlate positively with SWB (Deaton & Arora, 2009; Sohn, 2016). Consequently, our findings may underestimate the negative impacts of famine on SWB, likely representing lower bounds of the true effects. We defer a comprehensive examination of the selection issue to future research.[18]

[18] While Yi et al. (2022) addressed selection bias in their study, their analytical context diverges from ours. Their baseline model may overestimate the effects due to survival selection, whereas our estimates likely represent a conservative lower bound, given unaddressed selection issues.

4.5. Cultural Revolution as Confounding Factor?

The Cultural Revolution (1966–1976) was a historical political movement launched by Mao Zedong, the then-leader of the CCP. Its goal was to remove the bourgeois elements in the Party and the country. Five Black Categories (landlords, rich peasants, counter-revolutionaries, bad elements, and rightists), capitalist-roaders in the Party (cadres), and reactionary academics (teachers and other intellectuals) were the main targets (Song, 2011). Hundreds of millions of people suffered from cruel and inhuman treatments, and several millions of lives were crushed during this period (Song, 2011).

Given that our treatment group (those born during 1954–1962) and the control group (those born during 1963–1964) both experienced the Cultural Revolution from 1966 to 1976, our estimate is unbiased as long as the experience in Cultural Revolution does not correlate with the interaction term of birth cohort and excess death rate. In other words, as long as those born before the famine were similarly affected by the Cultural Revolution as those born after the famine, or those born in high-excess-death-rate provinces were similarly affected by the Cultural Revolution as those born

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Gørgens et al. (2012) also considered selection bias in evaluating the famine's effect on stunting among survivors, under the assumption that there's no direct intergenerational impact on children's height. However, considering the influence of parents' health on parenting practices and, by extension, on children's development and well-being (e.g., Smith, 2004; Baranov et al., 2020), this assumption appears less valid for SWB. Consequently, the framework of Gørgens et al. (2012) may not be fully applicable to our analysis concerning SWB.

in low-excess-death-rate ones, the experience of Cultural Revolution does not bias our estimate.

A further look into the Cultural Revolution experience validates our assumption. During the Cultural Revolution, people were categorized into different classes, across which the probability of being persecuted varies.[19] We create a dummy that equals one if his/her family origin during the Cultural Revolution is within the targets stated above, and zero otherwise. We then replicate the similar analyses by replacing the dependent variables of SWB with such a dummy.[20] We find no significant difference between the cohorts exposed to the famine and those born after the famine for both the urban and rural samples. The results are shown in Appendix Table A15.

[19] The question "What was your family origin during the Cultural Revolution" was asked in the questionnaire. The answers include landlord, sub landlord, petty lessor, bankrupt landlord, wealthy farmer, affluent middle-class farmer, reactionary middle-class farmer, half-landlord wealthy farmer, middle-class farmer, poor farmer, poor people, farmhand, worker, manual worker, senior officer, office clerk, capitalist, commercial capitalist or businessman, handicraftsman, freelance, peddler, and others.

[20] If we have data about each individual's experience in the Cultural Revolution, then we can replicate similar analysis replacing the explanatory variables with the exact experience in the Cultural Revolution and then determine whether the interaction terms of birth cohorts (1954–1962) and excess death rate has a significant effect on the experience in the Cultural Revolution. Unfortunately, the CFPS-2010 data do not offer such a separate variable of experience in the Cultural Revolution.

4.6. "Send-down" Movement as Confounding Factor?

The "send-down" movement was also initialized by Mao Zedong to send urban youth to rural areas from December 1968 to the late 1970s. They were suddenly sent to the countryside and experienced a dramatic decline in their standard of living because of a lack of basic modern infrastructure, such as running water and electricity. Gong et al. (2020) found that the movement led to significantly worsened mental health in those experiencing it. The 1954–1964 cohorts were in their childhood to twenties during this period and may have thus suffered from it. If those born before the famine and after the famine were differently affected by the movement, then our results may be biased. However, this movement applied only to urban students, so it should not be a major confounding factor for our results. Even within the urban sample, when we replicate the similar analysis replacing the explanatory variables of SWB with the experience in the "send-down" movement, we find no significant difference between the cohorts exposed to the famine and those born after the famine. The results are shown in Appendix Table A16.

5. Conclusion

In this study, we examine the long-term effects of the adverse shock of the 1959–1961 Chinese Great Famine on SWB of the survivors by using data from the 2010 wave of the China Family Panel Studies, a nationally representative survey in China. We find that exposure to the Great Famine in the prenatal or early-childhood period led to lower levels of emotional and eudaimonic SWB, but not evaluative SWB. Our supplementary analysis indicates that health status and social integration are key mechanisms through which famine exerts its effects, while the role of

socioeconomic status appears to be marginal. Additionally, we observe that the famine's negative impact on SWB predominantly affects females, with males experiencing lesser effects. The placebo test using cohorts unaffected by the famine validates our identification strategy. Furthermore, we not only acknowledge and discuss various primary potential biases in our estimates, including selective migration, selective mortality, the Cultural Revolution, and the "send-down" movement, but also address most of them, demonstrating their minimal impact, although some remain partially unresolved.

These empirical findings enhance our comprehension of the critical role that early-life adversity plays in shaping later-life SWB, as well as the channels through which it influences outcomes. Our study also emphasizes the long-term negative consequences of enormous public disasters.

Lastly, our findings indicate that early-life circumstances may exert varying effects on different aspects of SWB, underscoring the significance of comprehensively assessing all facets of SWB when analyzing the impact of a specific factor or event.

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Data availability

The data utilized in this paper are publicly accessible via application from the survey website: https://www.isss.pku.edu.cn/cfps/.

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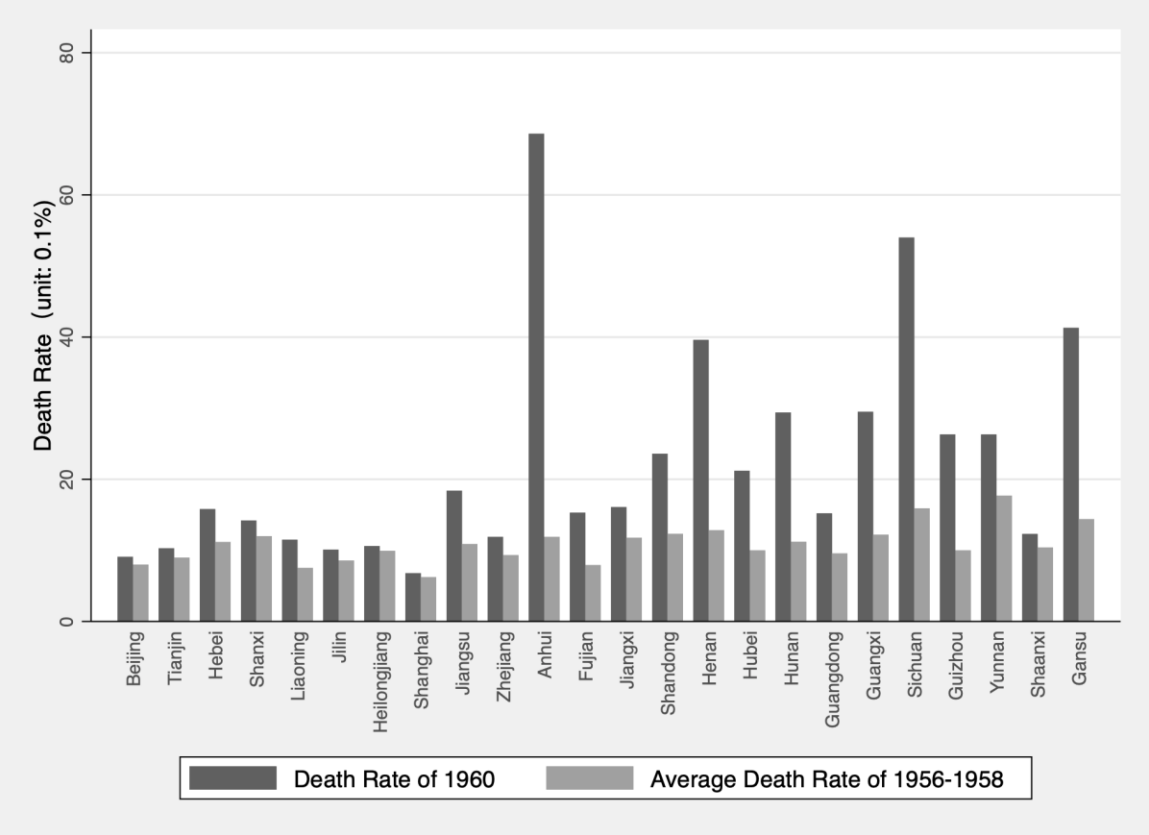
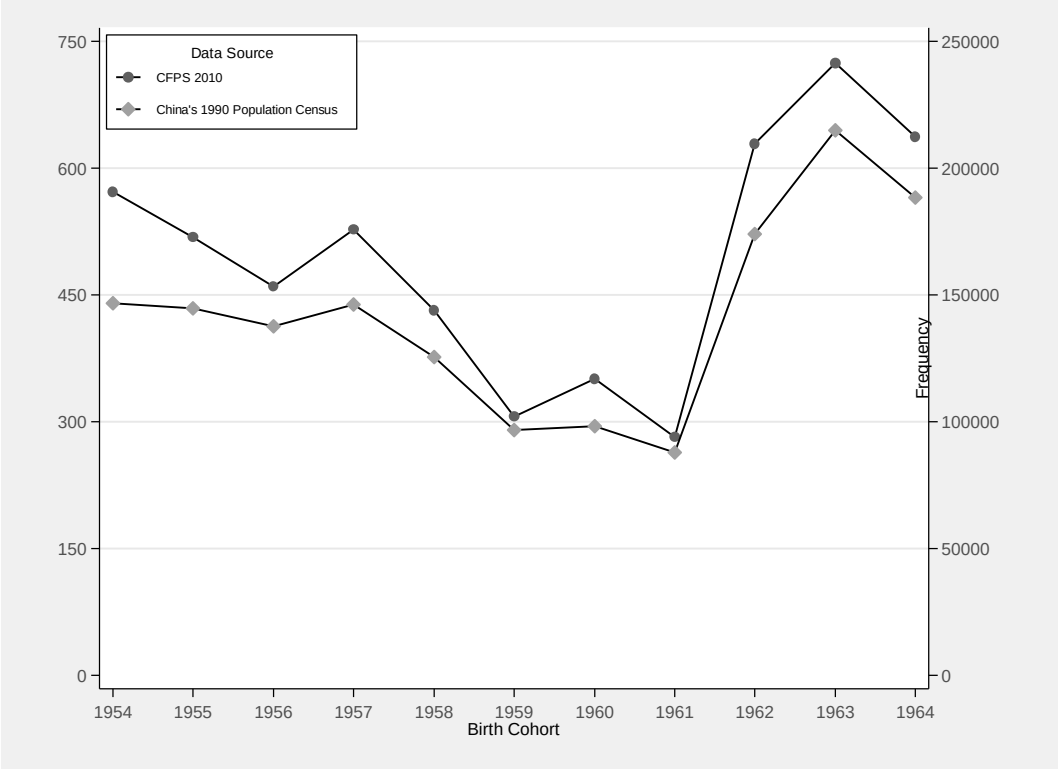
Figure 1: Death rate in the sampled provinces



Source: Death rates are from Lin and Yang (2000).

Figure 2: Frequency of various birth cohorts in the sample



*N*ote: The LHS y-axis is for CFPS 2010, and RHS y-axis is for China's 1990 population census.

Table 1: Summary statistics of key variables (*N*=5,438)

Variables	Mean	S.D.	Min.	Max.
Evaluative SWB:				
Happiness	3.741	1.039	1	5
Life Satisfaction	3.468	1.032	1	5
Standardized Evaluative SWB	0.016	0.991	-2.821	1.535
Emotional SWB				
Not Depressed	4.272	0.965	1	5
Not Nervous	4.440	0.868	1	5
Not Restless	4.447	0.875	1	5
Not Difficult	4.362	0.953	1	5
Standardized Emotional SWB	-0.034	1.011	-4.669	0.810
Eudaimonic SWB				
Not Hopeless	4.646	0.783	1	5
Not Meaningless	4.643	0.778	1	5
Standardized Eudaimonic SWB	-0.004	0.997	-5.157	0.499
Demographics:				
Age	50.800	3.423	46	56
Age^2	2592.403	348.650	2116	3136
Male	0.501	0.5	0	1
Famine Severity:				
Edr1960 (unit 0.1%)	13.699	12.938	0.567	56.7
Edr1959–1961 (unit 0.1%)	6.767	6.450	0.867	27.567
Health:				
Height (cm)	163.27	7.701	120	197
Hospitalization	0.080	0.271	0	1
Physical ability	3.846	0.507	0	4
P-ADL difficulty	0.067	0.250	0	1
Socioeconomic Status:				
Married	0.946	0.226	0	1
Cohabitation	0.002	0.045	0	1
Divorced	0.011	0.104	0	1
Widowed	0.033	0.178	0	1
Years of schooling	5.643	4.723	0	19
Employed	0.617	0.486	0	1
Income (in logarithm)	6.192	4.109	0	13.592
Social Integration:				
Get along well with others	4.033	0.872	1	5
Popularity in terms of relations with others	3.99	0.864	1	5
Number of friends visiting during Spring Festival	3.623	7.066	0	100

Note: The Chinese term of happiness in this study is "幸福"(*xingfu*) and is asked in the context of the overall evaluation of quality of life. Thus, we classify it as evaluative SWB. Physical ability is measured using four criteria: "Whether hands can reach the neck root," "Whether hands can reach the back of the waist," "Ability to stand up from a chair immediately after sitting," and "Ability to pick up a book from the floor." Each criterion is assigned a value of 1 for "yes" and 0 for "no," with the total score derived by summing these values. P-ADL difficulty measures the challenge of independently performing basic daily tasks (i.e., Personal Activities of Daily Living) essential for self-care. It is coded as one if the respondent is unable to independently complete at least one of the seven tasks, and zero otherwise.

Table 2: Effects of the Great Famine on subjective well-being

	Evaluative SWB	Emotional SWB	Eudaimonic SWB
	(1)	(2)	(3)
EDR×birth1954–1962	-0.002	-0.005**	-0.005***
	(0.0024)	(0.002)	(0.002)
	[0.480]	[0.047]	[0.015]
Demographics	YES	YES	YES
Birth province FE	YES	YES	YES
Cohort FE	YES	YES	YES
Observations	5,438	5,438	5,438

Note: Standard errors clustered at the provincial level are reported in parentheses. Cohorts 1963–1964 serve as control groups. The outcome variables are standardized scores of each type of SWB, in which higher values represent better SWB. Demographics include gender; age and age squared are perfectly colinear with cohort fixed effects and thus dropped in the regressions. Wild bootstrap p values are reported in square brackets. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 3: Heterogeneous effects of the Great Famine on SWB: Females versus males

	Evaluative SWB	Emotional SWB	Eudaimonic SWB
	(1)	(2)	(3)
Panel [A]: Female			
EDR×birth1954–1962 (γ1)	-0.003	-0.008*	-0.009**
	(0.002)	(0.004)	(0.004)
Panel [B]: Male			
EDR×birth1954–1962(γ2)	-0.001	-0.001	-0.001
	(0.003)	(0.003)	(0.003)
γ1–γ2	-0.001	-0.006	-0.008
P-value (H0: γ1=γ2)	0.315	0.005	0.000
Birth province FE	YES	YES	YES
Cohort FE	YES	YES	YES
Observations for Panel [A]	2,711	2,711	2,711
Observations for Panel [B]	2,727	2,727	2,727

Note: Standard errors clustered at the provincial level are reported in parentheses. Cohorts 1963–1964 serve as control groups. The outcome variables are standardized scores of each type of SWB, in which higher values represent better SWB. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

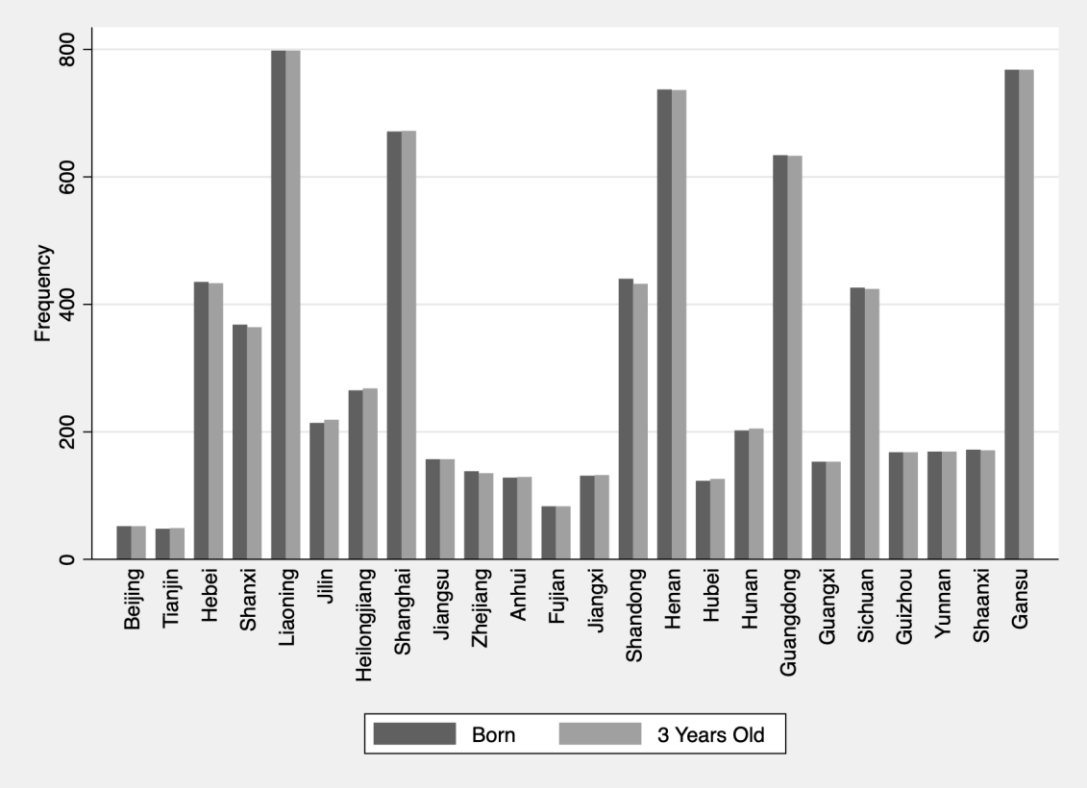
Table 4: Effects of the Great Famine on channels

Dependent Variable	Independent Variable: EDR×birth1954–1962
Panel [A]: Health Status	
Height	-0.025**
	(0.012)
Hospitalization	0.002***
	(0.000)
Physical ability	-0.001
	(0.001)
P-ADL difficulty	0.001**
	(0.000)
Panel [B]: Socioeconomic Status	
Years of Schooling	-0.024
	(0.016)
Married	0.000
	(0.000)
Cohabitation	0.000
	(0.000)
Divorced	-0.000
	(0.000)
Widowed	0.000
	(0.000)
Employed	0.001
	(0.001)
Income	-0.002
	(0.007)
Panel [C]: Social Integration	
Get along well with others	-0.001
	(0.001)
Popularity in terms of relations with others	-0.002
	(0.001)
Number of friends visiting during Spring Festival	-0.032**
	(0.012)
Demographics	YES
Birth province FE	YES
Cohort FE	YES
Observations	5,438

Note: Here we report the effect of the Great Famine on each of the channel variables. Each estimate is the result of a separate regression. Standard errors clustered at the provincial level are reported in parentheses. Demographics include gender; age and age squared are perfectly colinear with cohort fixed effects and thus dropped in the regressions. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

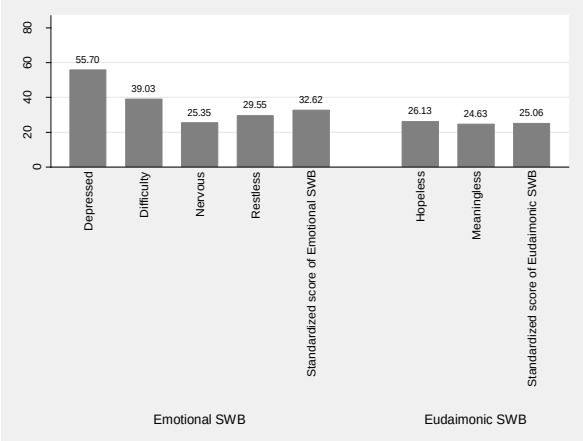
Online Appendix

Figure A1: Frequency of sample for province at birth and 3 years old

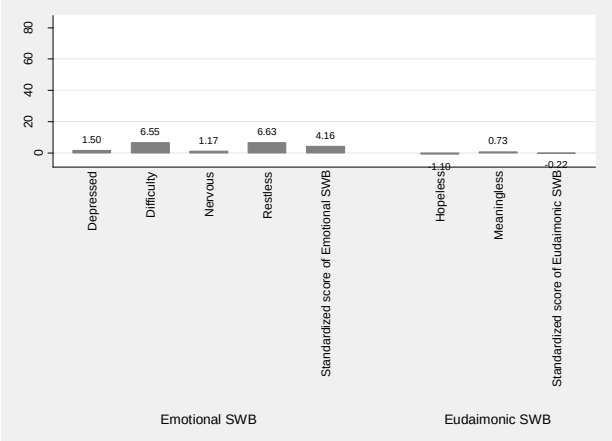


Source: CFPS 2010.

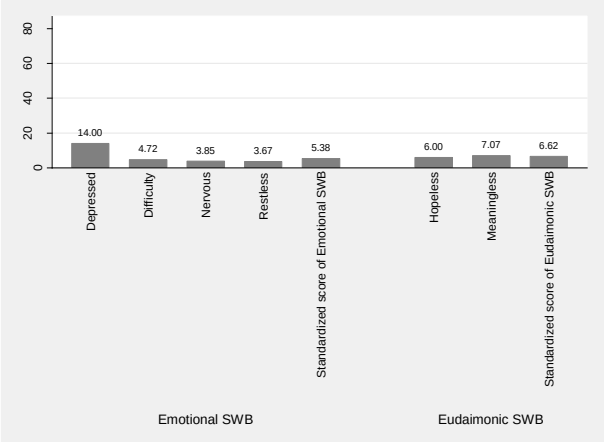
Figure A2. Decomposition of the Famine effects on Emotional and Eudaimoic SWB by channels



(a) Health status



(b) Socioeconomic status



(c) Social integration

Note: These figures depict the decomposition of the channels to total treatment effects. The methodology for conducting this mediation analysis follows Heckman et al. (2013) and Gelbach (2016), under the assumption of conditional independence of mediators (Huber et al., 2016). See Table 4 and Appendix Table A10-1 for the intermediate results for such decomposition.

Table A1: Death rates and excess death rate in the sampled provinces (unit, 0.1%)

Provinces	Death Rate							Excess Death Rate		
	1956	1957	1958	1959	1960	1961	1956–1958 Average	1959	1960	1961
Beijing	7.7	8.2	8.1	9.7	9.1	10.8	8.00	1.70	1.10	2.80
Tianjin	8.8	9.4	8.7	9.9	10.3	9.9	8.97	0.93	1.33	0.93
Hebei	11.3	11.3	10.9	12.3	15.8	13.6	11.17	1.13	4.63	2.43
Shanxi	11.6	12.7	11.7	12.8	14.2	12.2	12.00	0.80	2.20	0.20
Liaoning	6.6	9.4	6.6	11.8	11.5	17.5	7.53	4.27	3.97	9.97
Jilin	7.5	9.1	9.1	13.4	10.1	12.0	8.57	4.83	1.53	3.43
Heilongjiang	10.1	10.5	9.2	12.8	10.6	11.1	9.93	2.87	0.67	1.17
Shanghai	6.8	6.0	5.9	6.9	6.8	7.7	6.23	0.67	0.57	1.47
Jiangsu	13.0	10.3	9.4	14.6	18.4	13.4	10.90	3.70	7.50	2.50
Zhejiang	9.5	9.3	9.2	10.8	11.9	9.8	9.33	1.47	2.57	0.47
Anhui	14.3	9.1	12.3	16.7	68.6	8.1	11.90	4.80	56.70	-3.80
Fujian	8.4	7.9	7.5	7.9	15.3	11.9	7.93	-0.03	7.37	3.97
Jiangxi	12.5	11.5	11.3	13.0	16.1	11.5	11.77	1.23	4.33	-0.27
Shandong	12.1	12.1	12.8	18.2	23.6	18.4	12.33	5.87	11.27	6.07
Henan	14.0	11.8	12.7	14.1	39.6	10.2	12.83	1.27	26.77	-2.63
Hubei	10.8	9.6	9.6	14.5	21.2	9.1	10.00	4.50	11.20	-0.90
Hunan	11.5	10.4	11.7	13.0	29.4	17.5	11.20	1.80	18.20	6.30
Guangdong	11.1	8.4	9.2	11.1	15.2	10.8	9.57	1.53	5.63	1.23
Guangxi	12.5	12.4	11.7	17.5	29.5	19.5	12.20	5.30	17.30	7.30
Sichuan	10.4	12.1	25.2	47.0	54.0	29.4	15.90	31.10	38.10	13.50
Guizhou	7.5	8.8	13.7	18.0	26.3	11.8	10.00	8.00	16.30	1.80
Yunnan	15.2	16.3	21.6	18.0	26.3	11.8	17.70	0.30	8.60	-5.90
Shaanxi	9.9	10.3	11.0	12.7	12.3	8.8	10.40	2.30	1.90	-1.60
Gansu	10.8	11.3	21.1	17.4	41.3	11.5	14.40	3.00	26.90	-2.90

Source: Death rates are from Lin and Yang (2000). Excess death rates are calculated as the difference between death rates in the famine year and the average of death rates in 1956–1958.

Table A2: Frequency of various birth cohorts in our final sample

Birth cohorts	Frequency	Percent (%)
1954	572	10.52
1955	518	9.53
1956	460	8.46
1957	527	9.69
1958	432	7.94
1959	306	5.63
1960	351	6.45
1961	282	5.19
1962	629	11.57
1963	724	13.31
1964	637	11.71
Total	5,438	100.00

Source: CFPS 2010.

Table A3: Summary statistics for treatment and control cohorts

Variables	Treatment cohorts (1954–1962)		Control cohorts (1963–1964)		Diff (SE)	Clustered SE
	Mean	SD	Mean	SD		
Evaluative SWB						
Happiness	3.740	1.034	3.744	1.054	-0.004 (0.033)	(0.026)
Life Satisfaction	3.481	1.037	3.432	1.017	0.049 (0.032)	(0.031)
Standardized Evaluative SWB	0.022	0.990	-0.002	0.994	0.024 (0.031)	(0.028)
Emotional SWB						
Not Depressed	4.268	0.966	4.286	0.963	-0.018 (0.030)	(0.026)
Not Nervous	4.434	0.874	4.458	0.848	-0.024 (0.027)	(0.029)
Not Restless	4.438	0.879	4.475	0.861	-0.038 (0.027)	(0.028)
Not Difficult	4.354	0.961	4.385	0.926	-0.031 (0.030)	(0.024)
Standardized Emotional SWB	-0.044	1.019	-0.005	0.984	-0.038 (0.032)	(0.032)
Eudaimonic SWB						
Not Hopeless	4.639	0.793	4.666	0.754	-0.027 (0.025)	(0.023)
Not Meaningless	4.638	0.776	4.655	0.785	-0.017 (0.024)	(0.022)
Standardized Eudaimonic SWB	-0.012	0.998	0.020	0.994	-0.031 (0.031)	(0.029)
Demographics						
Age	52.225	2.726	46.532	0.499	5.693 (0.074)***	(0.067)
Age^2	2734.922	283.282	2165.472	46.422	569.450 (7.714)***	(6.894)
Male	0.506	0.500	0.488	0.500	0.018 (0.016)	(0.014)
Minority	0.92	0.272	0.926	0.261	-0.007 (0.008)	(0.008)
Health:						
Height (cm)	163.172	7.722	163.564	7.631	-0.393 (0.241)	(0.236)
Hospitalization	0.083	0.277	0.070	0.255	0.014 (0.009)	(0.009)
Physical ability	3.831	0.531	3.891	0.424	-0.059 (0.016)***	(0.014)
P-ADL difficulty	0.070	0.256	0.057	0.231	0.014 (0.008)*	(0.007)
Socioeconomic Status						
Married	0.942	0.234	0.959	0.199	-0.017 (0.007)**	(0.006)
Cohabitation	0.001	0.038	0.004	0.061	-0.002 (0.001)	(0.002)
Divorced	0.011	0.104	0.010	0.101	0.001 (0.003)	(0.003)
Widowed	0.038	0.191	0.018	0.134	0.019 (0.006)***	(0.004)
Years of schooling	5.400	4.809	6.370	4.378	-0.970 (0.147)***	(0.172)
Employed	0.598	0.490	0.671	0.470	-0.072 (0.015)***	(0.019)
Income (in logarithm)	6.047	4.119	6.626	4.050	-0.579 (0.128)***	(0.126)
Social Integration						
Get along well with others	4.035	0.864	4.029	0.895	0.006 (0.027)	(0.024)

Popularity in terms of relations with others	4.004	0.863	3.950	0.865	0.054 (0.027)*	(0.024)
Number of friends visiting during Spring Festival	3.596	7.182	3.704	6.707	-0.108 (0.221)	(0.239)
Parent Characteristics						
Father's education	2.393	3.655	3.118	4.060	-0.725 (0.131)***	(0.164)
Mother's education	0.645	2.106	1.334	2.889	-0.688 (0.078)***	(0.113)
Duration separated from father by age 3	3.489	18.974	3.082	17.13	0.408 (0.589)	(0.510)
Duration separated from mother by age 3	1.092	10.824	0.498	5.373	0.595 (0.308)*	(0.327)
Duration separated from father between ages 4–12	16.133	69.402	13.002	60.400	3.131 (2.122)	(1.779)
Duration separated from mother between ages 4–12	9.610	55.473	6.289	43.627	3.321 (1.662)**	(1.588)
Whether father is alive	0.251	0.434	0.398	0.49	-0.147 (0.015)***	(0.018)
Whether mother is alive	0.442	0.497	0.593	0.491	-0.151 (0.016)***	(0.015)
Father's CCP membership	0.126	0.332	0.139	0.346	-0.013 (0.010)	(0.011)
Mother's CCP membership	0.018	0.133	0.017	0.129	0.001 (0.004)	(0.003)

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A4-1: Placebo test of the DID method: using post-famine 1963–1964 birth cohorts

	Evaluative SWB (1–3)			Emotional SWB (4–8)					Eudaimonic SWB (9–11)		
	Happiness	Life Satisfaction	Standardized score	Not Depressed	Not Nervous	Not Restless	Not Difficult	Standardized score	Not Hopeless	Not Meaningless	Standardized score
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
EDR×birth1963	-0.005	-0.005	-0.005	-0.003	0.000	-0.000	-0.003	-0.002	0.003	-0.001	0.001
	(0.004)	(0.003)	(0.003)	(0.004)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Demographics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Birth province FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,361	1,361	1,361	1,361	1,361	1,361	1,361	1,361	1,361	1,361	1,361

Note: Standard errors clustered at the provincial level are reported in parentheses. We use the 1964 birth cohort as the reference group for this placebo test. Demographics include gender. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table A4-2: Placebo test of the DID method with parents' characteristics: using post-famine 1963–1964 birth cohorts

	Father's education	Mother's education	Whether father is alive	Whether mother is alive	Whether father is CCP	Whether mother is CCP
	(1)	(2)	(3)	(4)	(5)	(6)
EDR×birth1963	-0.004	-0.009	0.001	-0.001	-0.000	-0.000
	(0.011)	(0.011)	(0.002)	(0.002)	(0.001)	(0.000)
Demographics	YES	YES	YES	YES	YES	YES
Birth province FE	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES
Observations	1103	1193	1271	1227	1361	1361

Note: Standard errors clustered at the provincial level are reported in parentheses. We use the 1964 birth cohort as the reference group for this placebo test. Demographics include gender. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table A5-1: Effects of the Great Famine on SWB (further controlling ethnicity)

	Evaluative SWB	Emotional SWB	Eudaimonic SWB
	(1)	(2)	(3)
EDR×birth1954–1962	-0.002	-0.005**	-0.005***
	(0.002)	(0.002)	(0.002)
Male	-0.026	0.223***	0.148***
	(0.025)	(0.025)	(0.024)
Minority	-0.093	-0.059	-0.081
	(0.085)	(0.087)	(0.083)
Birth province FE	YES	YES	YES
Cohort FE	YES	YES	YES
Observations	5,432	5,432	5,432

Note: Standard errors clustered at the provincial level are reported in parentheses. Cohorts 1963–1964 serve as control groups. The outcome variables are standardized scores of each type of SWB, in which higher values represent better SWB. Age and age squared are perfectly colinear with cohort fixed effects and thus dropped in the regressions. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A5-2: Association between exposure to the Great Famine and parents' education

	Fathers' education	Mothers' education
	(1)	(2)
EDR×birth1954–1962	0.023*	0.003
	(0.011)	(0.007)
Demographics	YES	YES
Birth province FE	YES	YES
Cohort FE	YES	YES
Observations	4,329	4,702

Note: Standard errors clustered at the provincial level are reported in parentheses. Cohorts 1963–1964 serve as control groups. Parents' education is measured by years of schooling. Demographics include gender; age and age squared are perfectly colinear with cohort fixed effects and thus dropped in the regressions. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A5-3: Effects of the Great Famine on SWB (further controlling parents' education)

	Evaluative SWB	Emotional SWB	Eudaimonic SWB
	(1)	(2)	(3)
EDR×birth1954–1962	-0.002	-0.005**	-0.006**
	(0.002)	(0.002)	(0.002)
Male	-0.025	0.230***	0.164***
	(0.029)	(0.032)	(0.029)
Father's education	0.004	0.012***	0.001
	(0.003)	(0.003)	(0.005)
Mother's education	0.005	0.002	0.010
	(0.007)	(0.010)	(0.008)
Birth province FE	YES	YES	YES
Cohort FE	YES	YES	YES
Observations	4,190	4,190	4,190

Note: Standard errors clustered at the provincial level are reported in parentheses. Cohorts 1963–1964 serve as control groups. The outcome variables are standardized scores of each type of SWB, in which higher values represent better SWB. Age and age squared are perfectly colinear with cohort fixed effects and thus dropped in the regressions. Parents' education information is missing for some respondents, leading to a smaller observation than the main analysis (Table 2). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A6-1: Effects of the Great Famine on SWB items (each item is non-standardized)

	Evaluative SWB (1–2)		Emotional SWB (3–6)				Eudaimonic SWB (7–8)	
	Happiness	Life Satisfaction	Not Depressed	Not Nervous	Not Restless	Not Difficult	Not Hopeless	Not Meaningless
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
EDR×birth1954–1962	-0.001	-0.003	-0.002	-0.004*	-0.004**	-0.004***	-0.003**	-0.004***
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
	[0.765]	[0.349]	[0.183]	[0.092]	[0.063]	[0.032]	[0.079]	[0.007]
Demographics	YES	YES	YES	YES	YES	YES	YES	YES
Birth province FE	YES	YES	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	5,438	5,438	5,438	5,438	5,438	5,438	5,438	5,438

Note: Standard errors clustered at the provincial level are reported in parentheses. Cohorts 1963–1964 serve as control groups. Demographics include gender. Wild bootstrap p values are reported in square brackets. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table A6-2: Effects of the Great Famine on SWB items (each item is standardized)

	Evaluative SWB (1–2)		Emotional SWB (3–6)				Eudaimonic SWB (7–8)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Happiness	Life Satisfaction	Not Depressed	Not Nervous	Not Restless	Not Difficult	Not Hopeless	Not Meaningless
EDR×birth1954–1962	-0.001	-0.002	-0.002	-0.004*	-0.005**	-0.004***	-0.004**	-0.005***
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)
	[0.765]	[0.349]	[0.183]	[0.092]	[0.063]	[0.032]	[0.079]	[0.007]
Demographics	YES	YES	YES	YES	YES	YES	YES	YES
Birth province FE	YES	YES	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	5,438	5,438	5,438	5,438	5,438	5,438	5,438	5,438

Note: Standard errors clustered at the provincial level are reported in parentheses. Cohorts 1963–1964 serve as control groups. Demographics include gender. Wild bootstrap p values are reported in square brackets. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table A7: Effects of the Great Famine on subjective well-being: Assessing the pecuniary value

	Evaluative SWB	Emotional SWB	Eudaimonic SWB
	(1)	(2)	(3)
EDR×birth1954–1962	-0.002	-0.005**	-0.005***
	(0.002)	(0.002)	(0.002)
Income	0.013***	0.020***	0.016***
	(0.004)	(0.005)	(0.003)
Demographics	YES	YES	YES
Birth province FE	YES	YES	YES
Cohort FE	YES	YES	YES
Observations	5,438	5,438	5,438

Note: Standard errors clustered at the provincial level are reported in parentheses. Cohorts 1963–1964 serve as control groups. The outcome variables are standardized scores of each type of SWB, in which higher values represent better SWB. Demographics include gender; age and age squared are perfectly colinear with cohort fixed effects and thus dropped in the regressions. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A8: Heterogeneous effects of the Great Famine on SWB items: Females versus males

	Evaluative SWB (1–2)		Emotional SWB (3–6)				Eudaimonic SWB (7–8)	
	Happiness	Life Satisfaction	Not Depressed	Not Nervous	Not Restless	Not Difficult	Not Hopeless	Not Meaningless
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel [A]: Female								
EDR×birth1954–1962 (γ1)	-0.001	-0.003	-0.005	-0.005	-0.007**	-0.005*	-0.005	-0.007***
	(0.003)	(0.002)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)
Panel [B]: Male								
EDR×birth1954–1962(γ2)	-0.000	-0.002	0.001	-0.002	-0.001	-0.002	-0.001	0.000
	(0.004)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
γ1–γ2	-0.001	-0.001	-0.006	-0.003	-0.006	-0.004	-0.004	-0.007
P-value (H0: γ1=γ2)	0.347	0.304	0.008	0.129	0.003	0.035	0.014	0.001
Birth province FE	YES	YES	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations for Panel [A]	2,711	2,711	2,711	2,711	2,711	2,711	2,711	2,711
Observations for Panel [B]	2,727	2,727	2,727	2,727	2,727	2,727	2,727	2,727

Note: Standard errors clustered at the provincial level are reported in parentheses. The birth cohorts of 1963–1964 serve as the baseline group in both panels. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A9: Specific Cohort Effects of the Great Famine on SWB

	Evaluative SWB	Emotional SWB	Eudaimonic SWB
	(1)	(2)	(3)
EDR×birth1954	-0.007	-0.008**	-0.004
	(0.006)	(0.004)	(0.003)
EDR×birth1955	0.001	-0.013**	-0.013***
	(0.005)	(0.005)	(0.004)
EDR×birth1956	-0.002	-0.003	0.002
	(0.004)	(0.004)	(0.003)
EDR×birth1957	-0.001	-0.003	-0.006
	(0.002)	(0.004)	(0.003)
EDR×birth1958	0.004	0.001	0.001
	(0.003)	(0.004)	(0.003)
EDR×birth1959	-0.002	0.003	-0.000
	(0.005)	(0.004)	(0.003)
EDR×birth1960	-0.005	-0.001	-0.006
	(0.005)	(0.003)	(0.004)
EDR×birth1961	0.003	-0.000	-0.006
	(0.005)	(0.003)	(0.004)
EDR×birth1962	-0.003	-0.007**	-0.009***
	(0.003)	(0.003)	(0.002)
Demographics	YES	YES	YES
Birth province FE	YES	YES	YES
Cohort FE	YES	YES	YES
Observations	5,438	5,438	5,438

Note: Standard errors clustered at the provincial level are reported in parentheses. Cohorts 1963–1964 serve as control groups. The outcome variables are standardized scores of each type of SWB, in which higher values represent better SWB. Demographics include gender; age and age squared are perfectly colinear with cohort fixed effects and thus dropped in the regressions. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A10-1: Detailed results of decomposition analysis: Effects of the channels on SWB

	Evaluative SWB (1)	Effect Explained	Emotional SWB (2)	Effect Explained	Eudaimonic SWB (3)	Effect Explained
EDR×birth1954–1962	-0.001		-0.003		-0.003*	
	(0.002)		(0.002)		(0.002)	
Physical health		**-0.00045**		**-0.00165**		**-0.00125**
Height	0.000	-0.00000	0.006***	-0.00015	0.002	-0.00005
	(0.003)		(0.002)		(0.002)	
Hospitalization	-0.124***	-0.00025	-0.360***	-0.0007	-0.280***	-0.0006
	(0.043)		(0.069)		(0.063)	
Physical ability	0.146***	-0.00015	0.300***	-0.0003	0.243***	-0.0002
	(0.021)		(0.042)		(0.033)	
P-ADL difficulty	-0.049	-0.00005	-0.461***	-0.0005	-0.400***	-0.0004
	(0.056)		(0.072)		(0.078)	
Socioeconomic Status		**0.00028**		**-0.00014**		**0.00001**
Married	0.512***	0.00006	0.235	0.00003	0.657***	0.00008
	(0.163)		(0.207)		(0.200)	
Cohabitation	0.838**	0.00019	0.173	0.00004	0.372	0.00009
	(0.372)		(0.287)		(0.305)	
Divorced	-0.086	0.00003	0.005	-0.00000	0.553**	-0.00022
	(0.225)		(0.188)		(0.215)	
Widowed	0.076	0.00001	-0.061	-0.00001	0.314	0.00005
	(0.197)		(0.175)		(0.214)	
Years of schooling	0.003	-0.00007	0.011***	-0.00026	0.004	-0.00010
	(0.003)		(0.003)		(0.004)	
Employed	0.070*	0.00007	0.068*	0.00007	0.111**	0.00011
	(0.035)		(0.035)		(0.040)	
Income	0.003	-0.00001	0.006	-0.00001	0.002	-0.00000
	(0.004)		(0.004)		(0.003)	
Social Integration		**-0.00108**		**-0.00026**		**-0.00033**
Get along well with others	0.301***	-0.00030	0.071***	-0.00007	0.133***	-0.00013
	(0.018)		(0.019)		(0.023)	
Popularity in terms of relations with others	0.240***	-0.00048	0.067***	-0.00013	0.019	-0.00004
	(0.021)		(0.017)		(0.019)	
Number of friends visiting during Spring Festival	0.009***	-0.00030	0.002	-0.00006	0.005*	-0.00016
	(0.002)		(0.002)		(0.003)	
Demographics	YES		YES		YES	
Birth province FE	YES		YES		YES	

Cohort FE	YES	YES	YES
Observations	5,438	5,438	5,438

Note: Standard errors clustered at the provincial level are reported in parentheses. Demographics include gender. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Effects explained are the indirect effects of famine through various examined channels on SWB.

Table A10-2: Detailed results of decomposition analysis: Effects of the channels on SWB items

	Evaluative SWB (1–2)		Emotional SWB (3–6)				Eudaimonic SWB (7–8)	
	Happiness	Life Satisfaction	Not Depressed	Not Nervous	Not Restless	Not Difficult	Not Hopeless	Not Meaningless
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
EDR×birth1954–1962	0.000	-0.002	-0.001	-0.003	-0.003	-0.002	-0.002	-0.002*
	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
Height	0.001	-0.001	0.002	0.006***	0.005***	0.006**	-0.000	0.003*
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Hospitalization	-0.120**	-0.106**	-0.280***	-0.222***	-0.281***	-0.283***	-0.174***	-0.220***
	(0.050)	(0.048)	(0.065)	(0.062)	(0.064)	(0.054)	(0.048)	(0.051)
Physical ability	0.151***	0.116***	0.231***	0.144***	0.233***	0.284***	0.157***	0.186***
	(0.021)	(0.027)	(0.041)	(0.037)	(0.035)	(0.031)	(0.025)	(0.025)
P-ADL difficulty	-0.036	-0.054	-0.273***	-0.276***	-0.262***	-0.561***	-0.279***	-0.284***
	(0.061)	(0.060)	(0.061)	(0.071)	(0.057)	(0.069)	(0.062)	(0.059)
Married	0.505***	0.427**	0.141	0.113	0.069	0.386	0.451***	0.476**
	(0.163)	(0.157)	(0.207)	(0.147)	(0.139)	(0.228)	(0.134)	(0.170)
Cohabitation	0.689**	0.837*	0.133	0.278	-0.044	0.144	0.187	0.336
	(0.329)	(0.408)	(0.242)	(0.220)	(0.179)	(0.361)	(0.191)	(0.254)
Divorced	-0.049	-0.107	0.012	-0.001	-0.162	0.180	0.339**	0.440**
	(0.236)	(0.203)	(0.196)	(0.153)	(0.146)	(0.260)	(0.140)	(0.188)
Widowed	-0.005	0.143	-0.092	-0.081	-0.076	0.075	0.203	0.240
	(0.228)	(0.161)	(0.159)	(0.137)	(0.153)	(0.230)	(0.167)	(0.168)
Years of schooling	0.003	0.003	0.003	0.003	0.013***	0.013***	0.002	0.004
	(0.003)	(0.003)	(0.004)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)
Employed	0.025	0.102**	0.050	0.029	0.053*	0.070	0.087***	0.069**
	(0.031)	(0.046)	(0.038)	(0.027)	(0.029)	(0.047)	(0.028)	(0.031)
Income	0.005	0.000	0.004	0.002	0.003	0.010**	0.003	0.001
	(0.005)	(0.004)	(0.005)	(0.003)	(0.002)	(0.004)	(0.002)	(0.002)

Get along well with others	0.286***	0.262***	0.056***	0.064***	0.031**	0.061***	0.088***	0.099***
	(0.022)	(0.019)	(0.017)	(0.018)	(0.014)	(0.019)	(0.020)	(0.016)
Popularity in terms of relations with others	0.277***	0.160***	0.080***	0.045**	0.026*	0.048***	0.014	0.012
	(0.019)	(0.024)	(0.019)	(0.018)	(0.015)	(0.016)	(0.017)	(0.015)
Number of friends visiting during Spring Festival	0.007***	0.010***	0.002	0.000	0.002*	0.001	0.002	0.005***
	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.003)	(0.002)	(0.002)
Demographics	YES	YES	YES	YES	YES	YES	YES	YES
Birth province FE	YES	YES	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	5,438	5,438	5,438	5,438	5,438	5,438	5,438	5,438

Note: Standard errors clustered at the provincial level are reported in parentheses. Demographics include gender. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A10-3: Effects of the Great Famine on channels by gender

Dependent Variable	Independent Variable: EDR×birth1954–1962	
	Male	Female
Panel [A]: Health Status		
Height	-0.036*	-0.012
	(0.020)	(0.024)
Hospitalization	-0.000	0.003***
	(0.001)	(0.001)
Physical ability	0.001	-0.004**
	(0.001)	(0.001)
P-ADL difficulty	0.001**	0.001
	(0.000)	(0.001)
Panel [B]: Socioeconomic Status		
Years of Schooling	-0.023	-0.025
	(0.017)	(0.018)
Married	0.001	-0.000
	(0.001)	(0.000)
Cohabitation	0.000	0.000
	(0.000)	(0.000)
Divorced	-0.000	-0.000
	(0.000)	(0.000)
Widowed	-0.000	0.000
	(0.000)	(0.000)
Employed	-0.001	0.002
	(0.002)	(0.002)
Income	-0.009	0.007
	(0.009)	(0.013)
Panel [C]: Social Integration		
Get along well with others	-0.002	-0.000
	(0.002)	(0.003)
Popularity in terms of relations with others	0.002	-0.005***
	(0.003)	(0.002)
Number of friends visiting during Spring Festival	-0.030**	-0.034*
	(0.013)	(0.018)
Birth province FE	YES	YES
Cohort FE	YES	YES
Observations	2,727	2,711

Note: Here we report the effect of the Great Famine on each of the channel variables. Each estimate is the result of a separate regression. Standard errors clustered at the provincial level are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A10-4: Detailed results of decomposition analysis: Effects of the channels on SWB for males

	Evaluative SWB (1)	Effect Explained	Emotional SWB (2)	Effect Explained	Eudaimonic SWB (3)	Effect Explained
EDR×birth1954–1962	-0.001	-0.001	-0.001	-0.001	-0.000	-0.000
	(0.003)		(0.003)		(0.003)	
Physical health		**0.00022**		**-0.00019**		**-0.00015**
Height	-0.003	0.00011	0.008***	-0.000288	0.003	-0.00011
	(0.003)		(0.001)		(0.002)	
Hospitalization	-0.101	0.00003	-0.403***	0.00010	-0.295***	0.00007
	(0.063)		(0.094)		(0.094)	
Physical ability	0.122**	0.00012	0.330***	0.00033	0.274***	0.00027
	(0.045)		(0.046)		(0.052)	
P-ADL difficulty	-0.041	-0.00004	-0.334**	-0.00033	-0.375***	-0.00038
	(0.075)		(0.135)		(0.108)	
Socioeconomic Status		**0.00000**		**-0.00044**		**-0.00039**
Married	0.528***	0.00030	0.249	0.00014	0.667***	0.00037
	(0.152)		(0.236)		(0.227)	
Cohabitation	0.912***	0.00020	-0.074	-0.00002	0.033	0.00001
	(0.302)		(0.298)		(0.291)	
Divorced	-0.002	0.00000	0.145	-0.00007	0.700***	-0.00032
	(0.229)		(0.244)		(0.225)	
Widowed	0.184	-0.00003	0.116	-0.00002	0.298	-0.00005
	(0.254)		(0.226)		(0.305)	
Years of schooling	0.009**	-0.00021	0.012**	-0.00028	0.007	-0.00016
	(0.004)		(0.005)		(0.004)	
Employed	0.115**	-0.00012	0.097**	-0.00010	0.158***	-0.00016
	(0.049)		(0.045)		(0.053)	
Income	0.015***	-0.00014	0.010*	-0.00009	0.009	-0.00008
	(0.005)		(0.005)		(0.006)	
Social Integration		**-0.00037**		**0.00009**		**-0.00026**
Get along well with others	0.306***	-0.00061	0.075**	-0.00015	0.144***	-0.00029
	(0.024)		(0.032)		(0.035)	
Popularity in terms of relations with others	0.224***	0.00045	0.076***	0.00015	0.013	0.00003
	(0.024)		(0.022)		(0.030)	
Number of friends visiting during Spring Festival	0.007*	-0.00021	-0.003	0.00009	-0.000	-0.00000
	(0.003)		(0.003)		(0.003)	
Birth province FE	YES		YES		YES	

Cohort FE	YES	YES	YES
Observations	2,727	2,727	2,727

Note: Standard errors clustered at the provincial level are reported in parentheses. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Effects explained are the indirect effects of famine through various listed channels and its "direct" effects (including indirect effects through other factors) on SWB.

Table A10-5: Detailed results of decomposition analysis: Effects of the channels on SWB for females

	Evaluative SWB (1)	Effect Explained	Emotional SWB (2)	Effect Explained	Eudaimonic SWB (3)	Effect Explained
EDR×birth1954–1962	0.000	0.000	-0.004	-0.004	-0.006	-0.006
	(0.002)		(0.004)		(0.004)	
Physical health		**-0.00116**		**-0.0027**		**-0.00210**
Height	0.003	-0.00004	0.005	-0.00006	0.001	-0.000012
	(0.004)		(0.004)		(0.004)	
Hospitalization	-0.138**	-0.00041	-0.316***	-0.00095	-0.250***	-0.00075
	(0.061)		(0.081)		(0.088)	
Physical ability	0.163***	-0.00065	0.278***	-0.00111	0.223***	-0.000892
	(0.034)		(0.053)		(0.045)	
P-ADL difficulty	-0.058	-0.00006	-0.582***	-0.00058	-0.443***	-0.000443
	(0.078)		(0.114)		(0.119)	
Socioeconomic Status		**0.00002**		**-0.00019**		**-0.00006**
Married	-0.398	0.00013	-0.377***	0.00012	-0.480***	0.00015
	(0.638)		(0.053)		(0.155)	
Cohabitation	-0.065	-0.00002	-0.167	-0.00004	-0.463*	-0.00012
	(0.943)		(0.320)		(0.258)	
Divorced	-1.092*	0.00035	-0.751***	0.00024	-0.771***	0.00025
	(0.633)		(0.175)		(0.162)	
Widowed	-0.870	-0.00038	-0.755***	-0.00033	-0.817***	-0.00036
	(0.634)		(0.123)		(0.187)	
Years of schooling	-0.003	0.00008	0.012**	-0.00030	0.004	-0.0001
	(0.004)		(0.005)		(0.006)	
Employed	0.025	0.00005	0.039	0.00008	0.063	0.00013
	(0.041)		(0.040)		(0.040)	
Income	-0.004	-0.00003	0.005	0.00004	-0.001	-0.00001
	(0.007)		(0.005)		(0.005)	
Social Integration		**-0.00183**		**-0.00058**		**-0.00054**
Get along well with others	0.292***	-0.00013	0.063*	-0.00003	0.117***	-0.00005
	(0.025)		(0.035)		(0.038)	
Popularity in terms of relations with others	0.258***	-0.00129	0.062*	-0.00031	0.029	-0.00015
	(0.029)		(0.034)		(0.028)	
Number of friends visiting during Spring Festival	0.012***	-0.00041	0.007**	-0.00024	0.010***	-0.00034
	(0.002)		(0.003)		(0.003)	
Birth province FE	YES		YES		YES	

Cohort FE	YES	YES	YES
Observations	2,727	2,727	2,727

Note: Standard errors clustered at the provincial level are reported in parentheses. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$. Effects explained are the indirect effects of famine through various listed channels and its "direct" effects (including indirect effects through other factors) on SWB.

Table A10-6: Effects of the Great Famine on Parent Characteristics

Dependent Variable	Independent Variable: EDR×birth1954–1962	Observation
Duration separated from father by age 3	0.058*	5,238
	(0.030)	
Duration separated from mother by age 3	0.033	5,238
	(0.032)	
Duration separated from father between ages 4–12	0.226**	5,238
	(0.095)	
Duration separated from mother between ages 4–12	0.211	5,238
	(0.152)	
Father's CCP membership	-0.000	5,238
	(0.001)	
Father's CCP membership	0.000	5,238
	(0.000)	
Whether father is alive	0.000	4,954
	(0.001)	
Whether mother is alive	-0.001	4,779
	(0.001)	
Demographics	YES	
Birth province FE	YES	
Cohort FE	YES	

Note: Here we report the effect of the Great Famine on each of the channel variables. Each estimate is the result of a separate regression. Standard errors clustered at the provincial level are reported in parentheses. Demographics include gender; age and age squared are perfectly colinear with cohort fixed effects and thus dropped in the regressions. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A10-7: Detailed results of decomposition analysis: Effects of the channels on SWB (including parental characteristics)

	Evaluative SWB	Emotional SWB	Eudaimonic SWB
	(1)	(2)	(3)
EDR×birth1954–1962	-0.001	-0.003	-0.004*
	(0.002)	(0.002)	(0.002)
Height	0.000	0.007**	0.003
	(0.003)	(0.002)	(0.002)
Hospitalization	-0.127***	-0.364***	-0.285***
	(0.042)	(0.068)	(0.065)
Physical ability	0.142***	0.308***	0.250***
	(0.021)	(0.042)	(0.035)
P-ADL difficulty	-0.051	-0.460***	-0.400***
	(0.055)	(0.075)	(0.082)
Married	0.506***	0.245	0.675***
	(0.166)	(0.214)	(0.204)
Cohabitation	0.794**	0.126	0.393
	(0.353)	(0.304)	(0.335)
Divorced	-0.075	-0.003	0.566**
	(0.236)	(0.201)	(0.220)
Widowed	0.096	-0.059	0.324
	(0.203)	(0.183)	(0.220)
Years of schooling	0.003	0.011***	0.004
	(0.003)	(0.004)	(0.004)
Employed	0.067*	0.060*	0.106**
	(0.035)	(0.034)	(0.039)
Income	0.003	0.006	0.003
	(0.004)	(0.004)	(0.003)
Get along well with others	0.302***	0.076***	0.135***
	(0.019)	(0.019)	(0.024)
Popularity in terms of relations with others	0.238***	0.069***	0.019
	(0.019)	(0.016)	(0.020)
Number of friends visiting during Spring Festival	0.009***	0.002	0.005*
	(0.002)	(0.002)	(0.003)
Duration separated from father by age 3	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)
Duration separated from mother by age 3	0.000	-0.002	0.002
	(0.003)	(0.002)	(0.001)
Duration separated from father between age 4–12	-0.000	-0.001**	-0.000
	(0.000)	(0.000)	(0.000)

Duration separated from mother between age 4–12	0.000	0.001	0.000
	(0.000)	(0.000)	(0.000)
Father CCP	0.011	0.003	-0.024
	(0.028)	(0.032)	(0.025)
Mother CCP	0.073	0.095	0.034
	(0.073)	(0.089)	(0.078)
Demographics	YES	YES	YES
Birth province FE	YES	YES	YES
Cohort FE	YES	YES	YES
Observations	5,238	5,238	5,238

Note: Standard errors clustered at the provincial level are reported in parentheses. Demographics include gender. $^{*}p < 0.1$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Table A11: Effects of the Great Famine on SWB: 1959–1961 average excess death rate as measure of famine severity

	Evaluative SWB (1–3)			Emotional SWB (4–8)					Eudaimonic SWB (9–11)		
	Happiness	Life Satisfaction	Standardized score	Not Depressed	Not Nervous	Not Restless	Not Difficult	Standardized score	Not Hopeless	Not Meaningless	Standardized score
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
EDR×birth1954–1962	-0.002	-0.001	-0.002	-0.003	-0.007**	-0.008***	-0.005**	-0.008**	-0.006***	-0.005**	-0.007***
	(0.004)	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
Demographics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Birth province FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	5,438	5,438	5,438	5,438	5,438	5,438	5,438	5,438	5,438	5,438	5,438

Note: Standard errors clustered at the provincial level are reported in parentheses. Cohorts 1963–1964 serve as control groups. Demographics include gender. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table A12-1: Effects of the Great Famine on SWB: Only use Cohort 1963 as control group

	Evaluative SWB (1–3)			Emotional SWB (4–8)					Eudaimonic SWB (9–11)		
	Happiness	Life Satisfaction	Standardized score	Not Depressed	Not Nervous	Not Restless	Not Difficult	Standardized score	Not Hopeless	Not Meaningless	Standardized score
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
EDR×birth1954–1962	0.001	0.000	0.001	-0.003	-0.003	-0.004*	-0.005***	-0.005**	-0.002	-0.004**	-0.004**
	(0.003)	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)
Demographics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Birth province FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	4,801	4,801	4,801	4,801	4,801	4,801	4,801	4,801	4,801	4,801	4,801

Note: Standard errors clustered at the provincial level are reported in parentheses. Cohort 1963 serves as control groups. Demographics include gender. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A12-2: Effects of the Great Famine on SWB: Use Cohorts 1963–1965 as control group

	Evaluative SWB (1–3)			Emotional SWB (4–8)					Eudaimonic SWB (9–11)		
	Happiness	Life Satisfaction	Standardized score	Not Depressed	Not Nervous	Not Restless	Not Difficult	Standardized score	Not Hopeless	Not Meaningless	Standardized score
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
EDR×birth1954–1962	-0.003	-0.003	-0.003	-0.001	-0.003*	-0.004**	-0.002**	-0.004**	-0.002	-0.002*	-0.003*
	(0.003)	(0.002)	(0.003)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)
Demographics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Birth province FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	6,065	6,065	6,065	6,065	6,065	6,065	6,065	6,065	6,065	6,065	6,065

Note: Standard errors clustered at the provincial level are reported in parentheses. Cohorts 1963–1965 serve as control groups. Demographics include gender. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A12-3: Placebo test of the DID specification in Table A12-2

	Evaluative SWB (1–3)			Emotional SWB (4–8)					Eudaimonic SWB (9–11)		
	Happiness	Life Satisfaction	Standardized score	Not Depressed	Not Nervous	Not Restless	Not Difficult	Standardized score	Not Hopeless	Not Meaningless	Standardized score
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
EDR×birth1963–1964	-0.006	-0.002	-0.004	0.002	0.003	0.001	0.004*	0.003	0.004	0.005*	0.006*
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.004)
Demographics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Birth province FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,988	1,988	1,988	1,988	1,988	1,988	1,988	1,988	1,988	1,988	1,988

Note: This placebo test examines the validity of the parallel "cohort trend" assumption of the DID specification in Table A12-2. Standard errors clustered at the provincial level are reported in parentheses. We use the 1965 birth cohort as the reference group for this placebo test. Demographics include gender. * p < 0.1, ** p < 0.05, *** p < 0.01.

Table A13: Effects of the Famine on SWB: sensitivity analysis using residential province at 3 years old to match EDR

	Evaluative SWB (1–3)			Emotional SWB (4–8)					Eudaimonic SWB (9–11)		
	Happiness	Life Satisfaction	Standardized score	Not Depressed	Not Nervous	Not Restless	Not Difficult	Standardized score	Not Hopeless	Not Meaningless	Standardized score
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
EDR×birth1954–1962	-0.001	-0.002	-0.002	-0.002	-0.004**	-0.004**	-0.004***	-0.005**	-0.003**	-0.003***	-0.005**
	(0.002)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
Demographics	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Province FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	5,436	5,436	5,436	5,436	5,436	5,436	5,436	5,436	5,436	5,436	5,436

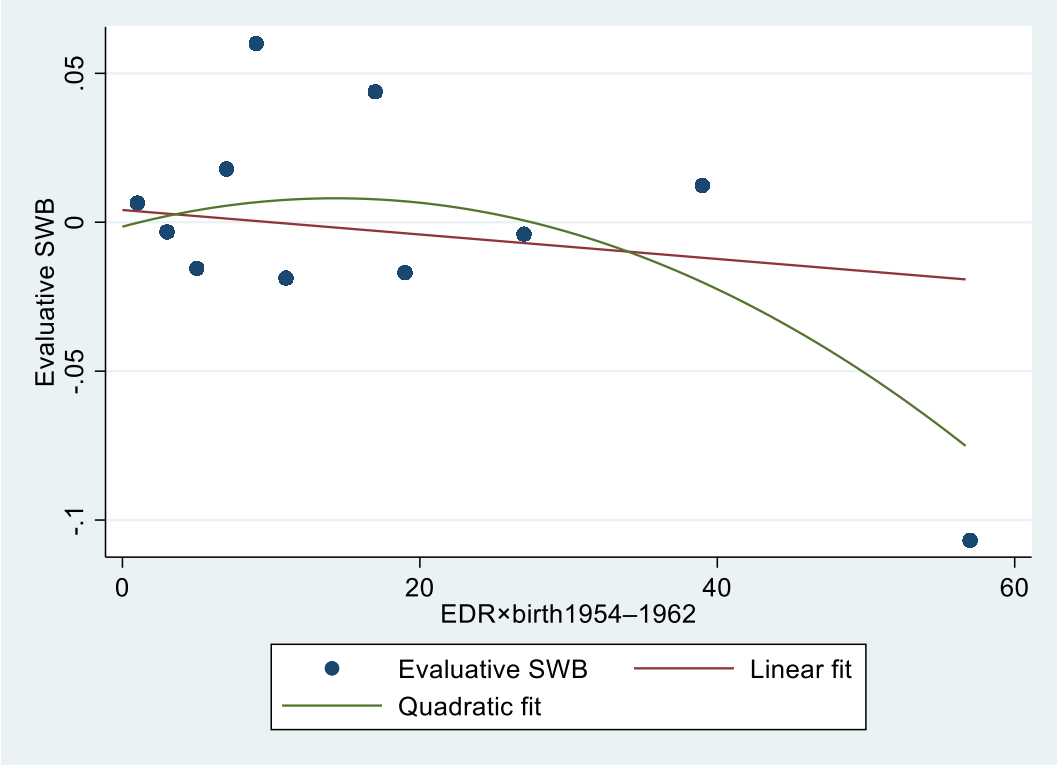
Note: Standard errors clustered at the provincial level are reported in parentheses. The province used in this table is the residential province at 3 years old. The birth cohorts of 1963–1964 serve as the baseline group. Demographics include gender. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

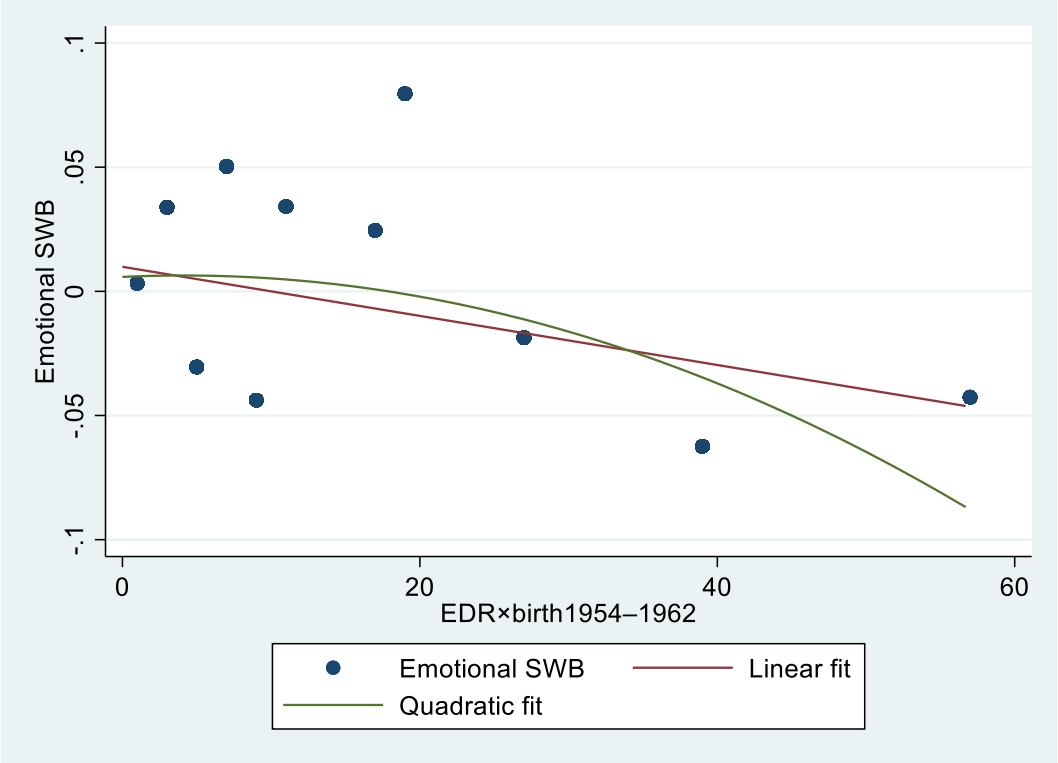
A14. Potential nonlinearity of the famine's impacts

Callaway et al. (2024) recommend non-parametric approaches to estimate treatment effects in continuous DID settings (See Section 4 of their paper). The treatment intensity for the 1954-1962 cohorts in our study is provincial-level excess death rate in 1960 (EDR), which has more than 20 unique values in our data. It is not a discrete integer, nor absolutely continuous. In addition, the difference between our setting and Callaway et al. (2024) and other recent advanced DID methods is that we use cohort DID with a single cross-section, rather than panel data and repeated cross-section over time. Although such different features constrain the direct applicability of Callaway et al. (2024), we can preliminarily show the potential nonlinear impacts using bins of treatment intensity.

After eliminating the contributions of control variables (birth province fixed effects, cohort fixed effects and gender as our main specification in Table 2), we aim to show in a graph the relationship between remaining unexplained part of SWB and EDR×birth1954–1962. To make the pattern clear, we construct SWB means of each bin width of 2 (per thousand) in EDR×birth1954–1962 and then draw the two-way scatter plots in Figure A14-1. The graphs show a weak association of famine on evaluative SWB and relatively larger effects on emotional and eudaimonic SWB, consistent with our main results in Table 2. It also shows potential nonlinearity of the relationship between EDR×birth1954–1962 and SWB. Thus, the main results in Table 2 assume a linear relationship and ignore the potential nonlinearity. Additionally, when we use a wider bin width of 4 (per thousand) in EDR×birth1954–1962 to increase the sample in each bin and reduce noises, the relationship is closer to linearity, as shown in Figure A14-2. This suggests our main linear specification in Table 2 better applies to a coarser classification of treatment intensity, compared to a finer classification.

Figure A14-1. Potential nonlinearity of famine's impacts on SWB (EDR bin=2)





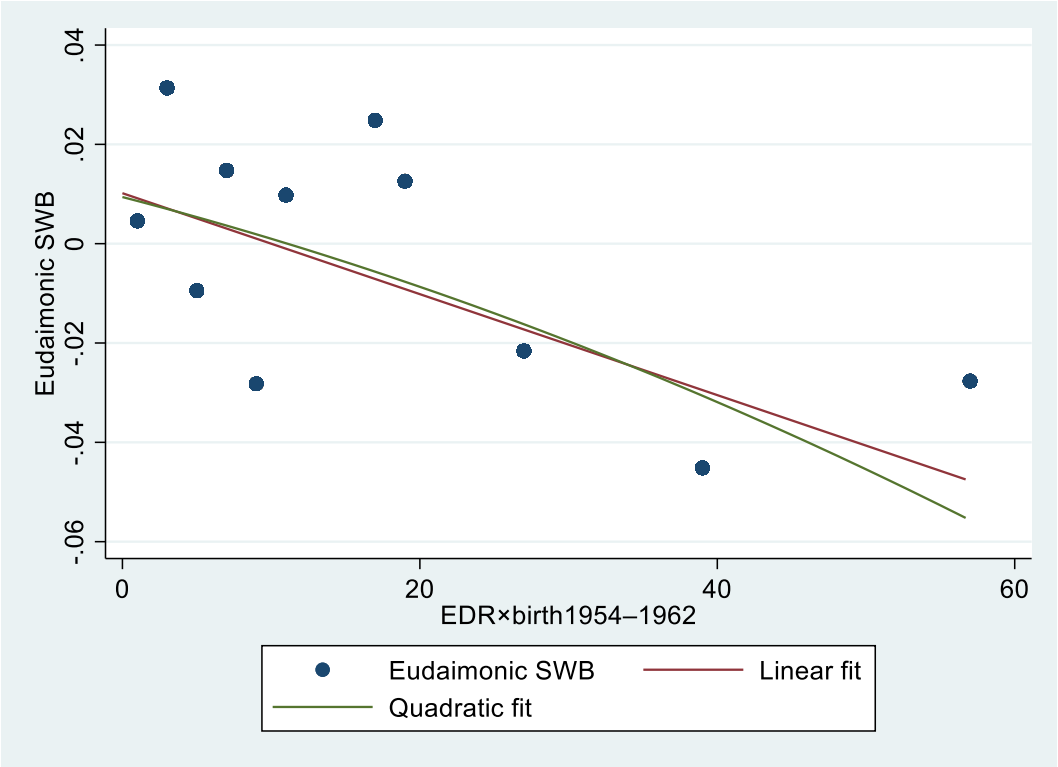
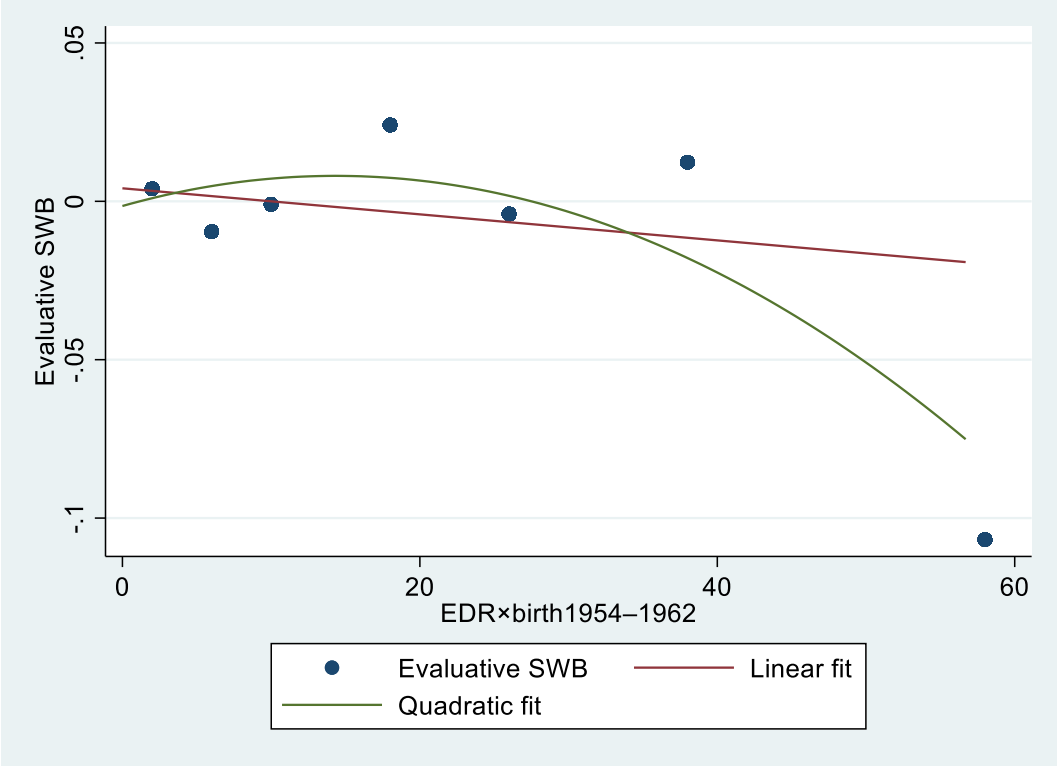
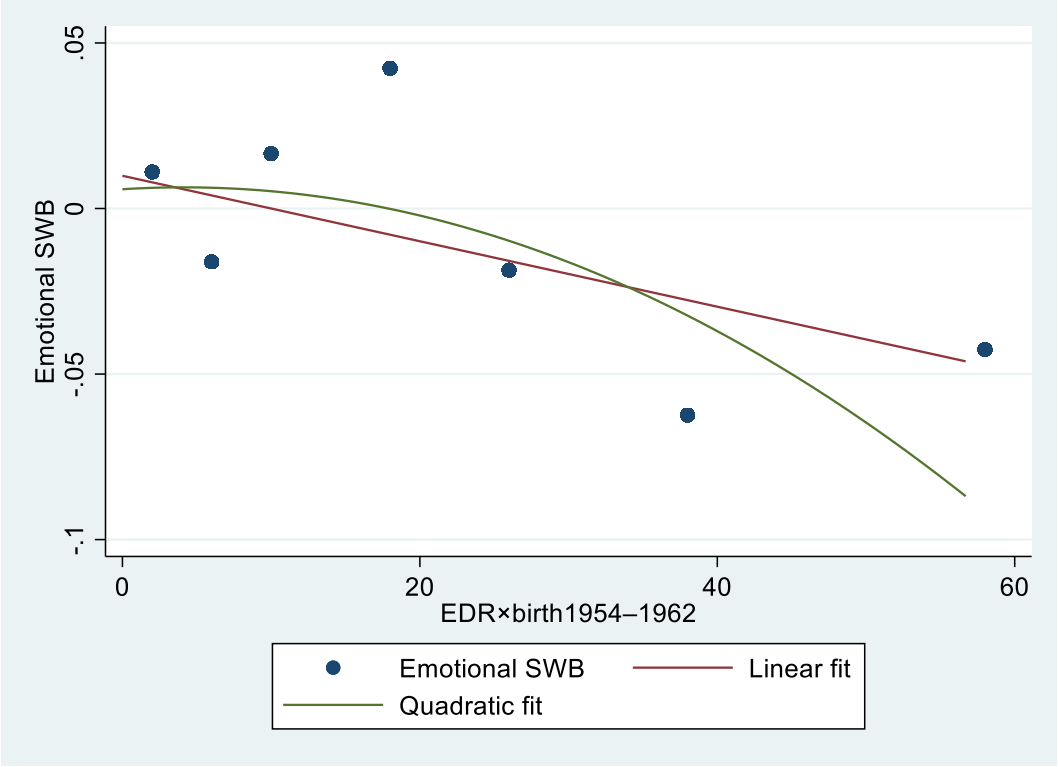


Figure A14-1. Potential nonlinearity of famine's impacts on SWB (EDR bin=4)




Emotional SWB
.05
0
-.05
-.1
0
20
40
60
EDR×birth1954–1962
Emotional SWB
Linear fit
Quadratic fit

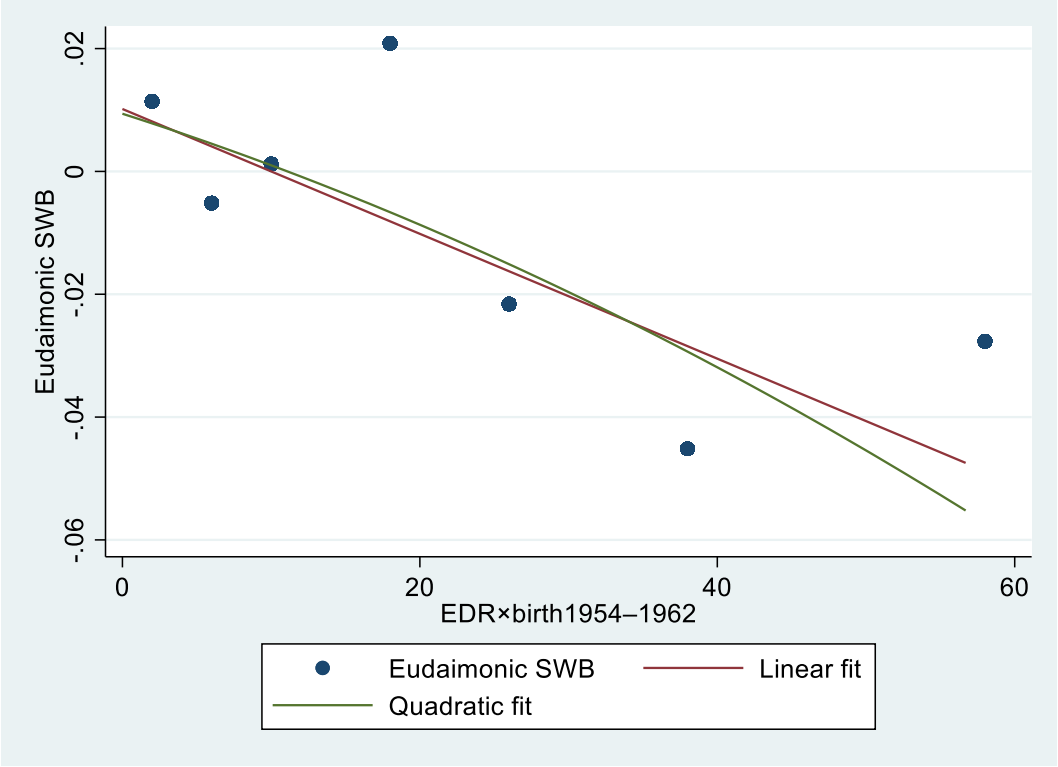

Eudaimonic SWB
.02
0
-.02
-.04
-.06
0
20
40
60
EDR×birth1954–1962
Eudaimonic SWB
Linear fit
Quadratic fit

Table A15: Effects of the Great Famine on Cultural Revolution experience

	Dependent variable: Cultural Revolution Experience			
	Rural Sample		Urban Sample	
	(1)	(2)	(3)	(4)
EDR×birth1954–1962	-0.000	-0.000	-0.004	-0.004
	(0.001)	(0.001)	(0.003)	(0.003)
Demographics	NO	YES	NO	YES
Birth province FE	YES	YES	YES	YES
Cohort FE	YES	YES	YES	YES
Observations	5,405	5,405	1,314	1,314

Note: Cultural Revolution experience is a dummy that equals 1 if the family origin of the respondent is the targeted one during the Cultural Revolution. A total of 288 observations are categorized as the targeted classes in the urban sample, and the number is 1,232 in the rural sample; 45 observations (12 in the urban sample and 33 in the rural sample) are reported as unknown and coded as missing. Standard errors clustered at the provincial level are reported in parentheses. The birth cohorts of 1963–1964 serve as the baseline group. Demographics include gender. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A16: Effects of the Great Famine on "Send-down" experience

	Dependent variable: "send-down" experience	
	(1)	(2)
EDR×birth1954–1962	-0.002	-0.002
	(0.003)	(0.003)
Demographics	NO	YES
Birth province FE	YES	YES
Cohort FE	YES	YES
Observations	1,326	1,326

Note: "Send-down" experience equals 1 if the respondent experienced the "send-down" movement. A total of 321 observations reported such experience. Standard errors clustered at the provincial level are reported in parentheses. The birth cohorts of 1963–1964 serve as the baseline group in all panels. Demographics include gender. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

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