Send Urban Youth to Rural Areas: A Tale of Education, Employment and Social Values

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Abstract

I use a quasi-random urban dweller allocation in rural areas during Mao’s Mass Rustication Movement to identify human capital externalities in education, employment, and social values. First, residents in rural areas acquired an additional 0.1-0.2 years of education by a 1% increase in the density of sent-down youth measured by the number of sent-down youth in 1969 over the population size in 1982. Second, as economic outcomes, people educated during the rustication period suffered from less non-agricultural employment in 1990. Conversely, in 2000, they enjoyed increased hiring in all non-agricultural occupations and lower unemployment. The Rustication Movement also changed the composition of future migrants: High-density counties attracted more young migrants from 1985 to 1990, both within provinces and from other provinces. Third, sent-down youth changed the social values of those they met in rural areas who reported higher levels of trust, enhanced subjective well-being, altered trust from traditional Chinese medicine to Western medicine, and shifted job attitudes from objective cognitive assessments to affective job satisfaction. To explore the mechanism, I build two unique Chinese county-level datasets and document that sent-down youth joined teaching staffs and educated rural students, particularly in secondary schools.

Keywords: Human Capital Externality, Sent-down Youth, Rural Educational Development, Employment Spillover, Social Values, Trust, Subjective Well-being, Job Attitudes.


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Educated Youth should go to the rural areas and be re-educated by peasants. It is necessary!

--------Zedong Mao, December 22, 1968

1. Introduction

Nearly 16.5 million urban youths—about 10 percent of the entire urban population of China—were forcibly sent to Chinese rural areas from 1968 to 1980, a period known as Mao’s Mass Rustication Movement (MacFarquhar and Schoenhals 2009). The rustication relocation is the largest urban-to-rural migration known in human history. I study the event of putting a more-educated urban youth population in Chinese rural areas and estimate the effect of the relocation on the education, labor outcomes, and social values of youth in the rural areas.

Using archival data from 61 rural counties of Heilongjiang Province, I construct the density of “sent-down” urban youth, as they were called. I define the sent-down youth density as the ratio of the number of sent-down youth in 1969 to the population size of the rural county in the 1982 Chinese Census. Two birth cohort exposure dummies are constructed based on two watershed events—the onset of the Mass Sent-down movement in 1968, and the “Returning Cities” rehabilitation in 1980. The variables indicate whether rural youths were or were not exposed during their school years to the sent-down urban youth. I then estimate human capital externalities with a difference-in-difference approach by interacting the sent-down youth density with the two exposure dummies.

I find that rural youths received more education if their county was exposed to a higher density of sent-down youth. Compared with low-density counties, the six highest-density counties experienced an extra 0.8 year of educational improvement in cohorts with exposure to sent-down youth during their schooling. I then estimate a difference-in-difference specification to show that a one percent increase in sent-down youth density translates to an increase of 0.1 year of education in the 1990 Census. Using the same identification strategy, I find that the density of sent-down youths reduces the primary school dropout rate but increases the high school dropout rate.

Then, I estimate the labor market outcomes of urban youth exposure with the difference-in-difference approach. In 1990, exposure to sent-down youth led to lower non-agricultural
employment. One possible explanation is significant drop in educational quality caused by political campaign during the Mao's Mass Rustication Movement. People educated during the rustication era suffered from higher unemployment and lower non-agricultural employment conditional on holding educational attainment constant.

Conversely, in 2000, exposure to sent-down youth increased non-agricultural employment and reduced unemployment, even after controlling for the individual education level. The exposure to urban youth benefits employment more after a decade of rapid urbanization and technology progress. Furthermore, I also find significant heterogeneity across occupations. The positive human capital externality mainly was concentrated in productive jobs (e.g., factory workers, service workers, and specialists), but very modestly in bureaucratic jobs (e.g., government officials and administrative staff).

Sent-down youth also changed the composition of future migration flow. Among population who migrated from 1985 to 1990, high-density counties attracted more young migrants who were exposed to sent-down youth in their schooling, both from other counties of Heilongjiang and from other provinces.

Sent-down urban youth also altered the social values and beliefs. People who were exposed to more sent-down youth during their school years, expressed stronger social trust, stronger scientific thinking evidenced by more trust in Western medicine than traditional Chinese medicine, and higher well-being. Measures of well-being include height, subjective health evaluation, self-reported happiness, happiness relative to peers, and feelings about the fairness of life.

Sent-down youth also shifted the job attitudes from objective cognitive assessments to affective job satisfaction. People ascribed more importance to the spiritual amenities in jobs (e.g., opportunity to fully use my talents, satisfy my interests, gain more respect, and comfort myself), but put less stress on the practical purposes of jobs (e.g., ability to make a living and build connections). Also, urban youth undermined the rural dwellers’ willingness to expend effort under unfavorable conditions: People with high exposure to urban youth were more likely to shirk work when their health conditions were poor, when the task was undesirable, and when the task did not pay off until a long period of time.
Inspired by historical narratives, I hypothesize that urban youth worked as rural teachers during the rustication period. To test for this mechanism, I collect a new county-level unbalanced panel of sent-down youth, students, teachers, and schools from Chinese county gazetteers — the county-level historical archives. On the extensive margin, I compare growth rates of educational variables from the pre-rustication decade 1958-1967 to the rustication decade 1968-1977. Counties with high sent-down youth densities experienced faster expansion in numbers of students, teachers, and schools; and slower growth in student-teacher ratios. This indicates that the increase in teacher size exceeded the increase in student size. On the intensive margin, I select counties without missing values in the rustication period 1968-1978 and use the cumulative sent-down youth density to forecast the per-capita number of teachers, students, and schools with panel regressions. Higher cumulative sent-down youth density predicts more teachers, but not more students or schools. On both margins, the coefficients for teachers in secondary schools are twice as large as the coefficients for teachers in primary schools.

This paper contributes to the literature in the following dimensions. First, this paper broadly relates to literature on human capital externality. The following table summarizes the literature by human capital flow direction: high to high, low to high, and high to low. The “high to high” literature, commonly referred as agglomeration economy, investigates benefits from people gathering together in cities and industrial clusters. A large body of “low to high” literature studies the outcomes of relocating disadvantageous individuals into high human capital areas (e.g., Moving to Opportunity (MTO) and resettling refugees). However, the “high to low” literature, evaluating impacts of migrants with high human capital in low human capital areas, is still quite limited.

Though lack of empirical investigation, many policy practices aim to instill human capital in low-income areas by sending well-educated population (e.g., Teach for America, the Barefoot College in India, and the University Student Village Official Program in China). Some historical events also share this feature (e.g., missionaries in Africa, Nunn et al. 2014). Thus, it is extremely policy relevant to understand the value of well-educated migrants in under-developed areas. This paper quantitatively estimates the urban impacts on educational improvement, short-run versus long-run employment outcomes, and shifts in social values.
Second, this paper contributes to the literature on historical origins of trust. Nunn and Wantchekon (2011) and Lowes et al. (2017) document that the slave trade in Africa and well-developed institution in the Kuba Kingdom both undermined interpersonal trust; Lowes and Montero (2018) show that the colonial medical campaign of 1921-1956 by the French government reduced peoples’ trust in medicine. However, there is a lack of empirical evidence showing any plausible intervention that boosts trust. This paper adds to this strand of literature by suggesting that an injection of human capital increases trust among people and trust in modern Western medicine.

Third, this paper provides suggestive evidence that an exogenous migration shock causes the changes in local cultures. Several theoretical and empirical studies explain cultural persistence and its economic outcomes (Bisin and Verdier 2000, Bisin and Verdier 2001, Guiso, Sapienza, and Zingales 2006, Tabellini 2008, Tabellini 2010, Montgomery 2010, Bisin and Verdier 2010, Alesina and Giuliano 2015). Giuliano and Nunn (2017) shift the attention to investigate the origins of cultural changes and argue the unstable environment undermines importance of maintaining tradition. This paper proposes migration as another important factor — the urban-to-rural migration can shift the job attitudes and willingness to exert effort in the receiving area.
Additionally, this paper supplements the understanding of Mao’s Mass Rustication Movement and its critical impact on development in rural China. Most economic research evaluates the disadvantageous impacts on sent-down youth (Meng and Gregory 2007, Zhang, Liu and Yung 2007, Li, Rosenzweig, and Zhang 2010). This paper focuses on rural residents—the converse side of the issue—and explores the outcomes in educational attainment\(^2\), employment, and social values. The quantitative results also complement the narratives documented by historians and political scientists (Burnstein 1977, Liu 2004, Ding and Liu 2009, MacFarquhar and Schoenhals 2009, Walder 2009, Bonnin and Horko 2013, Shi and Tang 2014, Honig and Zhao 2015, Jin and Jin 2015, Walder 2015, Zhang 2015).

The remainder of the paper is organized as follows. Section 2 introduces the background of the Cultural Revolution and Mao’s Mass Rustication Movement. Section 3 describes the data and empirical identification strategies. Section 4 documents the improvement in education. Section 5 studies the short-run and long-run employment outcomes and deconstructs effects by occupational category. Section 6 explores the impact of sent-down youth on trust, scientific thinking, subjective well-being, and job attitudes. Section 7 shows suggestive evidence that sent-down youth educated rural students as teachers. Section 8 concludes.

2. Background

**Cultural Revolution**

The Cultural Revolution, ten years of turmoil from 1966 to 1976, is the critical political background for the rustication movement (Walder 2009, Walder 2015). The Cultural Revolution started in Beijing and spread rampantly throughout the entire country. During the Cultural Revolution, economic, educational, and political institutions suffered severe setbacks and lapsed into disorder (Bai and Wu 2017). Most schools and universities closed for years, and students participated in "Red Guard" organizations to fight against class enemies, including some teachers and professors. The educational system malfunctioned in the cities. As revolution mania became uncontrollable, the government found it very difficult to persuade people to return schools or go back to work. Although no employment data is available, it is widely acknowledged that most

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\(^2\) Chen et al. (2018) document the positive impact on rural education.
graduates could not find any job opening in cities (Liu and Zhuang 2009). The rocketing unemployment and uncontrollable Red Guard violence in urban China breeds Mao’s rustication campaign to alleviate these two issues.

**Mao’s Mass Rustication Movement**

Mao’s Mass Rustication Movement\(^3\) officially started on December 22, 1968.\(^4\) *The People's Daily*, an authorized media outlet of the Chinese Communist Party, headlined Mao’s Chairman Command and printed the famous quote, “*Educated Youth should go to the rural areas and be re-educated by peasants. It is necessary!*” The peak year of the rustication movement was 1969. Approximately 2.6 million urban youths, including most graduates in years 1966, 1967, and 1968,\(^5\) were sent down to rural areas. The sent-down movement terminated in October 1978, and the government allowed urban youth to return home in early 1979. By the end of 1980, most of the sent-down population had returned to urban areas.

MacFarquhar and Schoenhals (2009) estimate that 16,470,000 urban youths were dispatched between 1968 and 1979, which accounts for almost ten percent of the entire urban population. The size of rustication migration is stunning. Recall that 12.5 million African slaves were shipped to the New World during the entire history of the Trans-Atlantic Slave Trade between 1525 and 1866. Mao’s Rustication Movement achieved even thirty percent more people displaced within only one decade while the slave trade lasted more than three centuries.

There were three main motivations for the Chinese government to initiate the rustication campaign. First, Mao discharged the uncontrollable "Red Guards" to rural areas to calm social unrest in the cities. Second, high unemployment posed threats to the command economy institution. Third, the government pursued communism ideology and aims to eliminate the "three

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\(^3\) Also named, “Down to the Countryside Movement,” “Up to the Mountains and Down to the Villages Campaign,” and “Sent-down Youth Movement.”

\(^4\) Before 1968, some urban youth voluntarily participated—rather than being sent down—in the rural labor force and helped with agricultural work. But the migration numbers were quite negligible. The history of urban-to-rural migration dates back to 1955.

\(^5\) Students who graduated in these three years are referred to as the Three Oldest Classes (老三届, “Lao San Jie”). Due to the Cultural Revolution, the Three Oldest Classes did not have opportunities to continue their education or secure jobs. They remained mostly unemployed until Mao’s Mass Rustication Movement sent them to rural areas in 1969.
major inequalities": inequality between urban and rural areas, inequality between agricultural and non-agricultural workers, and inequality between blue-collar and white-collar workers. Sending educated urban residents to the rural areas served as a policy tool to reduce inequality.

Mao’s government organized the rustication in a top-down manner: the central government commanded provincial governments to devise annual rustication plans for each county and provincial governments dispatched urban youth to meet the pre-determined plan. Urban youth were not able to select preferred destinations; instead, they were directly assigned to particular counties. Each county received a tiny settlement fee associated with each sent-down youth to compensate for their living costs in rural areas. No historical narrative documents that the settlement fee was allocated to any other purpose. The settlement fee was also too little to generate any substantial impact on rural counties.

3. Data and Research Design

Data

First: Heilongjiang Archival Data. Heilongjiang, a province on the northern border of China, was one of the paramount destinations for sent-down urban youth. I obtain administrative records about the urban youth settlement in 1969 in 61 of 63 rural counties from Heilongjiang Archive. This paper uses the sent-down youth density — the number of sent-down youth in 1969 divided by the population size in the 1982 Census — as the primary source of variation. In Figure 1, I plot the county-level sent-down youth density in the 1982 Census county map.

[Figure 1 here]

Figure 2 reports the correlation between sent-down youth density and other county features. The sent-down youth density is $38\%$ ($t=3.18$) positively correlated with the log

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6 Some migrants voluntarily moved to rural areas because they firmly believed they could make more of a contribution to China in this way. Furthermore, urban residents could find safety from the violence and murder (Walder 2009) occurring in urban areas by moving to rural areas. On the contrary, other migrants were reluctant to participate in the massive migration for reasons such as worse living conditions in rural areas, separation from their families, disruption to their education, communication barriers with local peasants, and tedious agricultural work.

7 The measurement is consistent across time because county/city boundaries did not change from 1968 to 1980.

8 The $t$-statistics are taken from the coefficients by regressing county features on the sent-down youth density with 61 observations (61 rural counties).
geographical distance, 17% \((t=1.31)\) positively correlated with the pre-rustication\(^9\) educational attainment, -50% \((t=-4.41)\) negatively correlated with the county population in 1982, and 44% \((t=3.72)\) positively correlated with the percentage of people working in non-agricultural employment in 1990.

[Figure 2 here]

Second: Chinese Gazetteer Data. I collect county-level unbalanced panel data about the numbers of students, teachers, and schools from the education sections in Chinese County Gazetteers.\(^{10}\) Appendix Table 1 reports the checklist for the gazetteer data collection of the 61 rural counties in my sample. Figure 3 reports the average number of students and teachers in primary and secondary schools using the sample of 17 or 18 counties offering complete data from 1958 to 1980. The numbers of teachers in both primary and secondary schools accelerated since 1968, and the number of enrolled students soared correspondingly. Figure 3 visualizes the rapid educational expansion during Mao’s Mass Rustication Movement.

[Figure 3 here]

Some gazetteers document the number of received sent-down youth by year. I compile another county unbalanced panel data of sent-down youth. This data does not necessarily match the statistics found in the Heilongjiang Archive since the county statistical system is completely separate from the provincial statistical system. In Chinese gazetteers, 15 rural counties recorded the number of sent-down youth arriving in 1969. The numbers from county gazetteers are 95% correlated with the numbers from the Heilongjiang Archive. The correlation remains at 73% after normalization with the 1982 population size.

Third: Census of Population Survey (CPS) and China Labor Dynamic Survey (CLDS). The 1990 Census 1% sample, 2000 Census 0.1% sample,\(^{11}\) and 2005 Population Survey 1% sample\(^{12}\) provide demographic information, education level, employment status, and

\(^{9}\) The educational attainment, years of education, is calculated from the pre-rustication birth cohorts 1943 -1950.

\(^{10}\) Chinese county-level historical statistical archives cover the period between 1949 and 1986.

\(^{11}\) In the 2000 Census, I select the sample by birthplace rather than survey county. The data sample includes those residents born and remaining in the county and those residents born in the county who then migrated.

\(^{12}\) The 2005 Population Survey randomly selects 1% of the population in China to participate in the survey. My micro sample includes 2,585,481 observations accounting for 0.2% of the Chinese population.
occupational choices. The years of education is imputed from the education level\textsuperscript{13}. I mainly focus on non-agricultural employment, unemployment, and occupational choices as labor market outcomes. No credible information about income is available in CPS data. Using the Census map, I also compute the geographical distance from the 61 rural counties to the nearest city as an important control variable. Figure 4 shows the average years of education, primary school enrollment rate, middle school enrollment rate, and high school enrollment rate by birth cohort. Panels C and D show that middle and high school enrollments rose sharply for the cohorts born after 1952, peaked for the 1962 birth cohort, and declined after the 1962 birth cohort. The average years of education in Panel A confirms the pattern. These stylized facts are consistent with the findings in the gazetteer panel data.

[Figure 4 here]

CLDS provides survey questions about interpersonal trust, medical beliefs, self-reported well-being, job attitudes, and willingness to expend effort. I use CLDS data to examine the impact of sent-down youth on culture and social values. The sample selection criteria are people born between 1942 and 1982, and birthplace is in Heilongjiang Province. CLDS only provides four-digit prefecture identifiers rather than six-digit county, thus we conduct our analysis at prefecture level with CLDS data. In total, the sample consists of 339 individuals from 12 prefectures in Heilongjiang province.

\textit{Research Design}

The empirical analysis consists of four parts: education, employment, social values, and channel tests. I first document the impact on educational attainment with both aggregate data and disaggregate individual data. With the county-level panel data, I compare years of education in the six highest-density counties with the 20 lowest-density counties in the raw data and estimate the causal impact using the synthetic control approach. The analysis requires no parametric assumption and the data speaks for itself. Then, I impose a linear structure to analyze the individual-level sample from CPS by estimating the baseline specification (1):

\textsuperscript{13} I assume six years in a primary school, three years in a middle school, three years in a high school, and four years to earn a college degree.
\[ y_{i,j,t} = \beta Density_j \times Expo_t + \alpha_j + \delta_t + \epsilon_{i,j,t} \] (1)

\[ y_{i,j,t} \] represents educational outcomes including years of education, school enrollment, and dropout rate. \( Density_j \) is the sent-down youth density defined as a ratio of the sent-down youth number in 1969 divided by the population size in 1982. \( Expo_t \) is the dummy for exposure to sent-down youth during schooling. I define two cleavage birth years, 1956 and 1962, for the first watershed event—the onset of the massive sent-down movement in 1968. Since most rural residents only received primary school education, people born before 1956—12 years old in 1968—were unlikely to interact with sent-down youth during their school years. People born after 1962—6 years old in 1968—inevitably were exposed to sent-down youth in primary school. As a benchmark, \( Expo_t \) equals one if born after 1956 (including 1956) and \( Expo_t \) equals zero if born before 1956. Alternately, the online Appendix reports parallel results with \( Expo_t \) equals one if born after 1962 (including 1962) and \( Expo_t \) equals zero if born before 1956. The results are not sensitive to the definition of \( Expo_t \); \( \alpha_j \) and \( \delta_t \) are the county and birth cohort fixed effects.

To address the concern of the endogenous sent-down youth assignment, I construct two control variables: the log geographical distance to the nearest city and the average years of education of the pre-rustication birth cohorts 1943-1950. For further robustness check, specification (2) includes county-specific linear trends:

\[ y_{i,j,t} = \beta Density_j \times Expo_t + \gamma Controls_j \times Expo_t + \text{Linear Trend}_j + \alpha_j + \delta_t + \epsilon_{i,j,t} \] (2)

Two main concerns still trouble the analysis. The definition of the exposure dummy relies on the assumption of birth cohort exposure. Thus, there are p-hacking and false discovery risks by twisting the assumption. Another concern is that the pre-trend may contaminate the estimates. To address these two concerns, I generalize the specification (1) to the specification (3) to allow for birth-cohort-specific \( \beta_t \), plot \( \beta_t \) as a function of the birth year, and examine how the function behaves before and after the cleavage birth cohort.

\[ y_{i,j,t} = \sum_t \beta_t Dummy_{i,j,t} \times Density_j + \alpha_j + \gamma_t + \epsilon_{i,j,t} \] (3)

Then, I implement a falsification test using the second watershed event—sent-down youth rehabilitation in 1980. The identification assumption is that counties with higher sent-down youth density should have experienced more backlash when urban youth left rural areas. I substitute \( Expo_t \) with a post-rustication dummy \( Post_t \) in specifications (1) and (2). \( Post_t \) equals
People born after 1975—6 years old in 1981—were unlikely to interact with sent-down youth during their school years.

\[ y_{i,j,t} = \beta \text{Density}_j \times \text{Post}_t + \gamma \text{Controls}_j \times \text{Post}_t + \text{Linear Trend}_j + \alpha_j + \delta_t + \epsilon_{i,j,t} \quad (4) \]

The second part analyzes the employment outcomes and occupation choices. During the Cultural Revolution, the educational quality sharply declined in rampantly expanding rural schools. I document the educational quality decrease with a naïve regression to compare employment outcomes conditional on the same education level.

\[ \text{Employment}_{i,j,t} = \beta_{\text{eduExp}} \text{Exp}_t + \text{Exp}_i + \text{ExpSq}_i + \alpha_j + \epsilon_{i,j,t} \quad (5) \]

Then, I evaluate the employment response to sent-down youth exposure using specifications (1), (2), and (3) with employment variables as the dependent variables. To further separate out the effect driven by educational expansion, specification (6) includes a set of education-level dummies as controls. I estimate the same specification with the 1990 Census and 2000 Census, and show the short-run and long-run employment effects of exposure to sent-down youth.

\[ \text{Employment}_{i,j,t} = \beta \text{Density}_j \times \text{Exp}_t + \gamma \text{Controls}_j \times \text{Exp}_t + \xi \text{Edu Dummies}_{i,j,t} + \alpha_j + \delta_t + \epsilon_{i,j,t} \quad (6) \]

Sent-down youth also alters future migration pattern. Counties with higher sent-down youth density also attracted more young post-rustication migrants during 1985-1990.¹⁴

\[ \text{Migration}_{i,j,t} = \beta \text{Density}_j \times \text{Exp}_t + \gamma \text{Controls}_j \times \text{Exp}_t + \alpha_j + \delta_t + \epsilon_{i,j,t} \quad (7) \]

In the third part, I estimate the influence of exposure to urban youth on trust, scientific thinking, and values about work. The 2012 CLDS elicits opinions regarding trust, medical beliefs in Western medicine and traditional Chinese medicine, and various components of job attitudes. Since the CLDS only provides four-digit prefecture codes,¹⁵ I aggregate sent-down youth density

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¹⁴ Sent-down youth moved back to cities in 1980. The rehabilitation does not overlap with the migration from 1985-1990.

¹⁵ CLDS does provide six-digit county codes, however they are encoded and do not match with the any official Guobiao county code. Thus, I cannot identify birthplace at the county level.
at the prefecture level and estimate specification (8). Controls\(_j\) represents the average years of education of the pre-rustication birth cohorts 1943-1950.\(^{16}\)

\[
y_{i,j,t} = \beta_{\text{Expo/Post}} \text{Density}_j \times (\text{Expo}_t/\text{Post}_t) + \gamma \text{Controls}_j \times (\text{Expo}_t/\text{Post}_t) + \alpha_j + \delta_t + \epsilon_{i,j,t} \tag{8}
\]

Consistent with the previous analysis, I estimate \(\beta_{\text{Expo}}\) with the exposure dummy \(\text{Expo}_t\) and \(\beta_{\text{Post}}\) with the post-rustication dummy \(\text{Post}_t\) respectively, and then compare these two coefficients. If urban youth spread some values different from local values, I expect that \(\beta_{\text{Expo}}\) and \(\beta_{\text{Post}}\) should have opposite signs.

In the last part, I suggest that urban youth influenced rural areas as rural teachers with two empirical approaches: the “Pre-Post” comparison (extensive margin) and the panel regression (intensive margin). As the “Pre-Post” comparison, I compute the growth rate of the average educational outcomes from the pre-rustication period, 1958-1967, to the average outcomes in the rustication period, 1968-1977.\(^{17}\)

\[
growth_j = \frac{\bar{y}_{1968-1977} - \bar{y}_{1958-1967}}{\bar{y}_{1958-1967}}
\]

The educational outcomes include the number of primary/secondary school teachers, number of primary/secondary school students, number of primary/secondary schools, and student-teacher ratio in primary/secondary schools. Then, I run uni-variate regressions of \(\growth_j\) on the sent-down youth density.

\[
growth_j = \beta \text{Density}_j + \gamma + \epsilon_j \tag{9}
\]

Furthermore, I the time variation in the sent-down youth panel data. The data sample only consists counties with more than five observations available during the rustication period, 1968-1978. Specification (10) forecasts educational outcomes with the lagged cumulative sent-down youth density.\(^{18}\) \(\% y_{j,t}\) is the per-capita number of teachers, students, and schools (normalized with the 1982 population size). \(\alpha_j\) is the county fixed effect, and \(\delta_t\) is the year fixed effect.

\[\text{Specification (10)}
\]

\[\text{forecasts educational outcomes with the lagged cumulative sent-down youth density.}\]

\[\更大行align*]

\[\% y_{j,t}\]

\[\text{is the per-capita number of teachers, students, and schools (normalized with the 1982 population size).}\]

\[\alpha_j\]

\[\text{is the county fixed effect, and}\]

\[\delta_t\]

\[\text{is the year fixed effect.}\]

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\(^{16}\) Due to the geographical aggregation, I drop the distance to nearest city in control variables. The average years of education is calculated with the sample from the Census 2000.

\(^{17}\) The average outcomes are calculated from all available gazetteer observations.

\(^{18}\) The cumulative sent-down youth density is the total number of sent-youth arriving before year \(t\) divided by the total population in 1982.
\[ \% y_{j,t} = \beta \text{Cumulative Density}_{j,t-1} + \alpha_j + \delta_t + \varepsilon_{j,t} \quad (10) \]

In addition to all statistical analysis described above, I extensively studied the historical narratives to validate the empirical findings. My first source was the education sections of Chinese County Gazetteers, the official history archives of China. The second source was memoirs and novels written by sent-down youth. Many memoirs discussed sent-down youths’ experiences as rural teachers and their interactions with rural students. The historical narratives corroborate my findings in the data.

4. Education

Model-Free Approach

The empirical investigation starts with a model-free comparison using aggregate statistics.\(^{19}\) Figure 5 Panel A plots the average years of education by birth cohort for the six counties with the highest sent-down youth densities and the 20 counties with the lowest densities. The average sent-down youth density is 0.16% in the 20 low-density counties and 6.29% in the six high-density counties. Although the rustication movement occurred in every county, I treat the 20 low-density counties as the quasi-control group since the maximal sent-down youth density is only 0.27%, much smaller than 6.29%.

The high-density counties have slightly higher average educational attainment than the low-density counties in the pre-rustication cohorts, and the education gap significantly widens after birth cohort 1956, persists, and slightly shrinks after birth cohort 1964. The average difference in years of education is 0.34 for cohorts 1943-1955, 1.23 for cohorts 1956-1962, and 1.28 for cohorts 1963-1970.\(^{20}\) Figure 5 shows that counties with high sent-down youth densities experienced a much larger boost in educational attainment. Note that the data sample does not include sent-down youth since over 97% of them had moved back to cities by 1980 and the

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\(^{19}\) Given the unique historical background, I am concerned that the data may be inaccurate (e.g., county statistics do not match with provincial records). Thus, I start with a very conservative approach by ranking counties and comparing the high versus the low values.

\(^{20}\) In Appendix Figure X, I restrict my data sample to residents with agricultural registration (Hukou). It confirms the same pattern with Figure 5, but the education gap is much smaller. The average difference in years of education is 0.23 for cohorts 1943-1955, 0.98 for cohorts 1956-1962, and 1.00 for cohorts 1963-1970.
Census data was collected in 1990. This finding also rules out the possibility of the "catch-up" effect because the government did not intend to send urban youth to low-education counties.

[Figure 5 here]

However, the high-density counties might not be comparable with the low-density counties in other dimensions. To address this concern, I apply the synthetic control method (Abadie, Diamond, and Hainmueller 2010, Abadie, Diamond, and Hainmueller 2015) to construct counterfactuals and compare “apples” with the counterfactual “apples.” I match the six highest-density counties with the 30 lowest-density counties using seven variables: log geographical distance to the nearest city; percentage of the population at work; percentage of the population who are married; gender ratio; and years of education for birth cohorts 1943, 1948, and 1953. The pre-trend matching period is 1943-1953 and the treatment year is 1956. Figure 6 shows the average years of education in the six high-density counties and the six synthetic control counties. In birth cohorts 1943-1955, the synthetic control counties match the pre-trend of high-density counties fairly well. In birth cohorts 1956-1962, the educational attainment in the six highest-density counties starts to exceed the synthetic control counties. After birth cohort 1962, the education gap further expands, and persists to birth cohort 1970. Figure 6 confirms the stylized fact in the raw data.

[Figure 6 here]

To be precise, the gap between the solid line (high-density counties) and the dashed line (synthetic control counties) is the “high minus low” effect, rather than the treatment effect since all the low-density counties are treated by sent-down youth, although the dose is small. Thus, the education gap in Figure 6 is the lower bound of the real treatment effect. To better understand its magnitude and economic significance, Duflo (2001) estimates the education improvement from 0.12 to 0.19 years per new school built per 1000 children in the Indonesian Government School Construction Program. Then, the effect of sent-down youth in the six highest-density counties translates into 5 to 9 new schools constructed per 1000 children.21

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21 It is worth mentioning that people in rural China in 1982 received, on average, 6.91 years of education, which is much lower than the 8.02 years of education received in Indonesia. This fact undermines the validity of the calculation; however, it demonstrates the large size of the effect.
Then I assess the statistical significance of the estimated effect. Online Appendix A proposes a theoretical framework for the generalized permutation test that extend the permutation test (Abadie, Diamond, and Hainmueller 2010) to the setting with the multiple treatment units (Xu 2017) and access the joint statistical significance. The fundamental intuition is to evaluate the likelihood that the treated units are randomly selected from the full sample. The null hypothesis is that the treated units are randomly selected.

The generalized permutation tests follow four steps. First, I choose a control unit pool to construct a synthetic unit for each county. In my context, I pick the 30 low-density counties out of 61 counties as the control unit pool. Second, I calculate the estimated effect as the treated unit minus the synthetic control unit using the standard synthetic approach and compute the average estimated effect in the treated units. Third, I randomly select units from the entire sample, calculate the average estimated effect, and bootstrap. The last step is to compare the average estimated effect of the treated units with the bootstrap distribution from random sampling. The “p-value” is the probability that a random draw has an estimated effect larger than that of the treated units. When the number of treated units is large enough, the normal distribution is a good proxy for the bootstrap distribution. Thus, a simpler rule of thumb (mean divided by standard deviation) can substitute for the non-parametric bootstrap method. See the Online Appendix A for more mathematical details.

Since there are only six treated counties in this context, I evaluate the significance with the bootstrap of 10,000 draws and plot the “p-value” by birth cohort. In Figure 7, the blue dots represent the birth cohorts that are statistically significant at the 10% level, while the red dots represent the insignificant cohorts. The results show that all cohorts born after 1962 gain statistically significant higher educational attainment in the six highest-density counties.

**Urban Youth Arrival in 1968**

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22 For a unit in the control unit pool, I use other units in the pool to construct the synthetic control unit.
This section identifies the urban youth impact on education with the first watershed event: Sent-down youth arrived in rural areas in the late 1968 and early 1969. I estimate a difference-in-difference specification using the variation of sent-down youth density, $Density_j$, the ratio of sent-down youth numbers in 1969 divided by the county population size reported in the 1982 Census. The exposure dummy is zero for cohorts born before 1956 and one for cohorts born after 1956 (including 1956). As shown in the Appendix, the alternative exposure dummy definition (zero for pre-1956 cohorts and one for post-1962 cohorts) yields results with the same sign but a larger magnitude. Controls, includes the log geographical distance to the nearest city and the average years of education of the pre-rustication birth cohorts 1943-1950. Table 1 reports the baseline specification (1) and the specification (2) with Census 1990 and Census 2000 data.

$$y_{i,j,t} = \beta Density_j \times Expo_t + \gamma Controls_j \times Expo_t + Linear Trend_j + \alpha_j + \delta_t + \varepsilon_{i,j,t}$$

Table 1 Panel A shows that residents received more years of education if they were exposed to higher sent-down youth densities in school years. Adding controls and linear trends does not alter the point estimates and statistical significance much in the 1990 sample. In the 2000 sample, controlling for the linear trends strengthens the finding—the coefficient of interest jumps from 5.081 ($t=2.37$) to 12.96 ($t=4.85$). All six coefficients are statistically significant at the 10% level. These findings imply that a positive impact on educational attainment is robust to the choices of specification and data sample.

Then, I deconstruct the years of education into primary school enrollment, conditional\textsuperscript{23} middle school enrollment, and conditional high school enrollment. As shown in Table 1 Panel B, the impact on primary school enrollment is sensitive to the specification. The coefficients $\beta$ are both negative in the baseline specification (1), insignificant in the 1990, but significant in the 2000 sample. After including controls and linear trends, the coefficient moves to positive and statistically significant in the 1990 sample, but moves to zero in the 2000 sample. Panel C yields the most robust results. All specifications indicate that a higher sent-down youth density improves conditional middle school enrollment. In Panel D with Census 1990 data, sent-down youth yields sizable and significant positive effects on conditional high school enrollment in the baseline specification. The coefficient slightly decreases after adding controls and drops into the

\textsuperscript{23} \textquotedblleft Conditional\textquotedblright means that conditional on enrollment in previous level of education. Conditional middle school enrollment refers to middle school enrollment conditional on primary school enrollment.
negative range after adding county-specific linear trends. In Panel D with Census 2000 data, the effect is positive but with limited statistical significance.

I also examine the impact of sent-down youth on dropout rates in the 1990 Census with the same difference-in-difference specification. Table 2 Panel A reports the results with the benchmark definition of exposure dummy (Before and After 1956), and Panel B reports the results with the alternative definition (Before 1956 and After 1962). Panel A is baseline and Panel B excludes birth cohorts between 1950 and 1956 as the robustness check.

Sent-down youth reduce the overall dropout rate, but heterogeneity plays an important role. Sent-down youth substantially lessened the primary school dropout rate. I detect no significant impact on the middle school dropout rate and find suggestive evidence that sent-down youth led to higher high school dropout rates during the high school enrollment spike (Figure 4 Panel D). The coefficients in Panel B are only slightly higher but still very similar to the coefficients reported in Panel A. Thus, the similarity between Panel A and Panel B implies that the results are not sensitive to the definition of the exposure dummy.

Then, I estimate the specification (3) to study the dynamics. Figure 8 plots the cohort-specific $\beta_t$ as a function of birth year. The two vertical dashed lines denote the cleavage birth cohorts 1956 and 1962. For the cohorts born before 1956, the $\beta_t$'s conform to a dotted upward sloping line in the vicinity of zero. For cohorts born after 1956, $\beta_t$ jumps to 26 in the birth cohort of 1958 and mostly stays above 20. Figure 8 rules out the concern that the pre-trend and outliers drive the identified effect. Notably, $\beta_t$ spikes in birth cohort 1964 and gradually declines afterward. This pattern is consistent with the shrinking education gap in the post-1964 cohorts, as shown in Figure 6. According to the visualization, a 1% more sent-down youth density translates into extra 0.2 years of education for cohorts born after 1957. Recall that the average sent-down youth density in the top six counties is 6.29%. The baseline estimation predicts roughly 1.25 years of educational improvement in the cohorts who were exposed to sent-down youth. The magnitude is also comparable with the education gap documented in Figure 5.

Selection of sent-down youth quality is still a caveat for the identification. The high sent-down youth density counties may have different urban youth compositions than the low-density
counties. The heterogeneity in sent-down youth in different counties can potentially bias the estimates (Abramitzky, Boustan, and Eriksson 2012). From historical narratives, the sent-down youth assignment mainly was targeted to meet the numbers assigned by the provincial governments. I find no historical evidence for the correlation between the number of sent-down youth and the heterogeneity of sent-down youth. However, I am not able to address this issue directly due to no available data about the characteristics of sent-down youth.

Rehabilitation in 1980

This section documents the education reduction after the second watershed event: Sent-down youth were rehabilitated to cities in 1980. The logic is simple: Counties with higher inflows of urban youth experienced more substantial outflows at the end of the movement. Thus, a county with a high sent-down youth density should suffer from more setbacks in education after sent-down youth left the county. The termination of rustication is fuzzier than the start of the rustication campaign. The “returning cities” was first officially allowed in 1979. However, some sent-down youths could return to cities before 1979 through multiple channels, such as disease, employment in urban factories, family reasons, etc.

I compare cohorts who received education after sent-down youth returned to cities with the more senior cohorts. The post-rustication dummy \( Post_t \) equals one if born after 1975 (including 1975) and \( Post_t \) equals zero if born before 1975. The model is estimated with the data of birth cohorts 1962-1982 in the 2000 Census, including eight post-rustication cohorts and 13 rustication cohorts.

\[
y_{i,j,t} = \beta \text{Density}_j \times Post_t + \gamma \text{Controls}_j \times Post_t + \text{Linear Trend}_j + \alpha_j + \delta_t + \varepsilon_{i,j,t}
\]

Table 3 Panel A, Panel C, and Panel D show that residents in counties with high sent-down youth densities experienced lower years of education, conditional middle school enrollment, and conditional high school enrollment. An interesting pattern is that coefficient \( \beta \) decreases after controlling county-specific linear trends: from -2.09 to -7.34 in Panel A, from -0.34 to -0.57 in Panel C, and from -0.03 to -0.70 in Panel D. This implies the downward deviation from the linear trend is larger than the drop in level. These findings are consistent with
the hypothesis that urban youth arrival drove up educational development and “returning to cities” deteriorated educational attainment. As shown in Panel B, the effect of the departure of sent-down youth on primary school enrollment is insignificant. The coefficients are also quite small in magnitude (e.g., in columns (3) and (6), coefficient $\beta$ is only 0.19 in Panel B, but -0.57 in Panel C and -0.70 in Panel D). Thus, the main educational reduction shown in Panel A derives from the decrease in the secondary school enrollment.

**Persistency**

Another natural question concerns the persistency: Did Mao’s Massive Rustication Movement lead to a persistent divergence in educational attainment between counties with high and low sent-down youth densities or just a temporary divergence with a convergence as the end of the rustication? The conclusion is the following: The effect on education remains robust and statistically significant until the birth cohort in 1970. However, the effect gradually diminishes for birth cohorts after 1970, and almost disappears until the cohort born in 1980. The result delivers an important policy implication that temporary human capital injection in underdeveloped areas may not be sufficient to improve educational attainment in the long run.

$$Edu2005_{j,t-2\rightarrow t+2} = \alpha_t Edu1990_j + \beta_t Density_j + \gamma + \varepsilon_{jt}$$

I run a sequence of county-level forecasting regressions by predicting future average years of education with the sent-down youth density and average years of education of the pre-rustication cohorts. The pre-rustication education, $Edu1990_j$, is the average years of education of birth cohorts 1946 to 1956 in county $j$ using 1990 Census. The dependent variable $Edu2005_{j,t-2\rightarrow t+2}$ is computed with the 2005 1% Population Survey. To accommodate for the small sample size of the 2005 Survey, I proxy the educational attainment of birth cohort $t$ in county $j$, $Edu2005_{j,t-2\rightarrow t+2}$, using all observations of five consecutive birth cohorts from $t-2$ to $t+2$ in county $j$. Each regression pins down $\beta_t$ for each birth cohort from 1944 to 1985. Each $\beta_t$ captures the predictive power of sent-down youth density in the educational attainment of birth cohort $t$.

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24 I only include people whose age was above 18. Thus, 1985 is the last cohort in the study because $Edu2005$ intakes educational attainment of the birth cohort 1987 whose ages were 18 in 2005.
Figure 9 plots the $\beta_t$ as a function of the birth year $t$. All coefficients conform to a hump-shaped curve. The coefficients initially fluctuate around zero, jump up to the positive range (significant at the 90% confidence level) in the birth year 1962, persist until the birth year 1973, and then gradually decline over time. The predictability completely fades away after birth cohort 1982. The externality of sent-down youth in education continues in the birth cohorts of the 1970s but disappears in birth cohorts of 1980s.

The main takeaway is that sent-down youth did not generate a permanent educational advantage in the long run. There are many policy practices that try to bring human capital to low-income areas (e.g., Teach for America in the US and The University Student Village Official Program in China\textsuperscript{25}). My findings cast some doubts on these practices that the high human capital injection may only generate temporary improvement but fail to create persistent educational improvement.

5. Labor Market

Analyzing the urban youth impact on employment is more complex than assessing educational attainment. In addition to individual ability, employment also depends on the abilities of others in the same labor market and labor-market demand. Time-varying market demand may lead to different employment outcomes. For example: In a technology-advanced economy, people have more occupational choices (e.g., to work at a factory) that may not be feasible in an agricultural economy. In the context, I study the employment outcomes in both 1990 and 2000, referred as short-run and long-run effect, and find interesting dynamics.

Educational Quality

I commence with documenting weaker employment competence if being educated during the rustication period. Almost all education sections of county gazetteers in Heilongjiang Province

\textsuperscript{25} This program encourages well-educated university graduates to take non-governmental village official positions in rural areas. The program is entirely volunteer-based.
document the severe drop in educational quality caused by the Cultural Revolution.\textsuperscript{26} Voluminous classes in political indoctrination and agricultural practices replaced many basic courses (e.g., math and Chinese). The Hailin County Gazetteer directly quotes: “In the Culture Revolution years, secondary education quality was very low due to the unscientific rapid expansion in secondary education. The secondary school expansion also imposed an extra economic burden on rural peasants.” This subsection confirms the educational quality decrease evident by poorer employment.

Table 4 presents OLS estimates of the specification (5) to compare pre-rustication and rustication cohorts in non-agricultural employment (Panel A) and unemployment (Panel B) in 1990, conditional on the same education attainment. I add the post-graduation years, $Exp_{i,j,t}$, and the squared post-graduation years, $Exp_{i,j,t}^2$, in the specification to control for the variation in employment driven by work experience.

\[
Employment_{i,j,t} = \beta_{edu} Exp_{i,j,t} + Exp_{i,j,t} + Exp_{i,j,t}^2 + \alpha_j + \epsilon_{i,j,t}
\]

The model is estimated within three subgroups by education level: people enrolled in primary school, middle school, and high school; but without further education. In Table 4, the left three columns report estimates with an OLS model and the right three columns report estimates with a (county) fixed-effect Logit model. Panel A shows that acquiring middle school and high school education during the rustication period lowers the probability of non-agricultural employment by 4% and 4.5% respectively, and Panel B shows the rustication-period primary school and middle school education increase the unemployment probability in 1990 by 7.4% and 4.2% respectively. The magnitude of coefficients is sufficiently large for us to conclude that educational quality substantially regressed and led to poorer employment records in 1990.

\textit{Urban Youth Arrival in 1968}

\textsuperscript{26} Almost every gazetteer in Heilongjiang mentions the sharp decline in education quality. The Fangzheng County Gazetteer states: “In the early stage of the Cultural Revolution (1966-1968), students were immensely affected by the ‘Gang of Four,’ ‘No School, Go Revolution,’ ‘Rebellion Justified, Revolution Legitimated.’ The student did not go to school, but rebelled, criticized, and struggled with teachers and school heads as the ‘Capitalist enemies.’ In 1968, students went back to school. Propaganda teams and peasant representatives occupied schools and replaced basic curricula with the ‘Great Struggle’ activities. After returning to schools, students not only learned from teachers, but also from factory workers, peasants, and soldiers. Education only contained limited basic courses. Education quality tremendously declined, and actual abilities of graduates were lower than before.”
This subsection studies the sent-down youth impact on employment outcomes in 1990 and 2000. For each employment outcome, I estimate the three specifications: the baseline specification (1), the specification with controls, and the specification (6) with education dummies. The main motivation of the specification (6) is to tease out the effect of the educational expansion identified in Section 4. To explore heterogeneity, I also limit the data sample to residents with rural Hukou in Census 1990 and Census 2000 and report the results in the Appendix Table X.\(^{27}\)

Table 5 columns (1) and (4) report the baseline specification (1) with the non-agricultural employment dummy in Panel A and the unemployment dummy in Panel B as the dependent variables. Columns (2) and (5) add the pre-rustication educational and geographical distance controls to the specification. Panel A shows that the aggregate effect in non-agricultural employment tends to be negative in 1990. A 1\% increase in sent-down youth density reduced non-agricultural employment by 0.34\% to 0.59\% in the full sample, and 0.49\% to 0.69\% in the rural sample. Figure 9 plots the \(\beta_t\) estimated from the specification (3) with non-agricultural employment as the dependent variable using the 1990 Census sample. The \(\beta_t\) for birth cohorts 1945-1955 form a flat line, ruling out the pre-trend concern. \(\beta_t\) remains steady in the 1956-1962 birth cohorts, and then a strong declining trend appears in cohorts born after 1962. Appendix Figure 1 replicates the same practice with the rural sample, and the pattern is identical. The cohort-specific \(\beta_t\) plot confirms the negative effect in Table 5 Panel A. Conversely, a decade later, the direction of the impact on employment flipped the sign. A 1\% increase in sent-down youth density encouraged non-agricultural employment by 0.84\% to 1.15\% in the full sample, and 0.65\% to 0.79\% in the rural sample.

Panel B shows that sent-down youth have no significant impact on unemployment in Census 1990. A decade later, the unemployment rate reduces by 0.69\% -0.78\% if the sent-down youth density increases by 1\%. Unemployment reduction mainly concentrated in the population with the non-agricultural Hukou registration in 2000.

Table 5 columns (3) and (6) report the estimates of the specification (6) including education-level dummies. From 1990 to 2000, the coefficients jump from -1.36 (t=-1.89) to 0.47

\(^{27}\)A caveat worth noting is that some people with a rural registration of ‘Hukou’ in 1990 may have transferred to the non-agricultural type of registration in the decade of rapid urbanization. In the 1990 Census sample, 77\% of the population held the rural Hukou registration, and this number declined to 70\% in 2000 Census sample.
(t=2.08) in Panel A, and drop from 0.01 (t=0.02) to -0.678 (t=-2.70) in Panel B. It implies that higher exposure to sent-down youth in school years generates more employment benefits—more non-agricultural employment and less unemployment—in 2000 than in 1990 after controlling for education-level dummies. In the short term, exposure to sent-down youth reduced non-agricultural employment in 1990. However, exposure to sent-down youth started to create a positive premium in non-agricultural employment when the Chinese economy was more industrialized and urbanized in 2000.

In Table 6, I split non-agricultural employment into five occupational categories: factory workers, service workers, specialists, government officials, and administrative staff. Focusing on columns (1), (2), (4) and (5), the non-agricultural reduction in the 1990 sample is mainly driven by employment of factory workers, service workers, and government officials. In the baseline specification (1), 1% more sent-down youth density corresponds to 1.12% (t=2.50) fewer factory workers, 0.97% (t=2.48) fewer service workers, and 2.65% (t=2.58) fewer government officials. In the 2000 Census, sent-down youth boost employment in all five non-agricultural occupation categories: 1% significance for factory workers, service workers, and specialists; and 5% significance for administrative staff.28

Column (6) yields another interesting finding by comparing across occupations. After controlling for educational expansion, a 1% sent-down density translates into increases of 0.74% (t=2.33) in factory workers, 0.68% (t=3.06) in service workers, 0.48% (t=3.57) in specialists, 0.09% (t=1.02) in government officials, and 0.07% (t=0.56) in administrative staff. In 2000, sent-down youth exposure was critical for productive occupations (factory workers, service workers, and specialists), but less important for bureaucratic occupations (government officials and administrative staff) in both coefficient magnitude and statistical significance.

The dynamic effect implies that human capital can generate different impacts on employment in the short and long horizons. In 2000, the urban youth exposure empowered rural people to benefit more from economic development, particularly more likely to fill productive positions in the society. However, back in 1990, the benefits of urban knowledge did not exist

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28 In the 2000 Census rural sample, the coefficients are much smaller and less statistically significant. The most plausible explanation is that rural residents with non-agricultural jobs moved to urban areas and earned the urban Hukou registration. Thus, I obtain a weaker effect if I limit the sample to the rural sample of the 2000 Census.
yet. Thus, the evaluation of educational intervention in the short run may potentially understate the total economic benefit.

**Rehabilitation in 1980**

Table 7 displays the population educated after the rehabilitation in 1980 using Census 2000. Table 7 corresponds to the right three columns in Tables 5 and 6. Panels A-G report regression results with dependent variables as the non-agricultural employment, unemployment, factory workers, service workers, specialists, government officials, and administrative staff. Panel A and Panel B show that birth cohorts after 1975 in high-density counties were less likely to gain non-agricultural employment and more likely to be unemployed. The unemployment increase is statistically significant: 1% more sent-down youth density corresponds to 0.96% \((t=2.62)\) more unemployment in the baseline specification, and the number increases to 1.18% \((t=4.38)\) after adding controls and educational-level dummies.

Panels C-G report the breakdown into the five occupation categories. Only coefficients for the specialist group are negative with statistical significance. Coefficients for factory workers and service workers are also negative but with limited statistical power. Recall that people with urban exposure significantly did well in these three productive jobs as shown in the previous subsection. The negative coefficients in Panels C-E confirm that urban youth rehabilitation reduced the employment advantages in these three occupation categories. In Panels F and G, I find no significant effect in the bureaucratic jobs. This finding echoes the insignificant results in Table 6 Panel D and Panel E.

**Migration Flow Composition**

This subsection documents how sent-down youth affected future migration flow after the rustication campaign. In the period 1985-1990, counties with higher sent-down youth density tended to attract more young and educated migrants—both within provinces and from other provinces—who had previous exposure to sent-down youth. This fact implies that urban youth
also empowers the county to attract more young people from other places. Table 8 reports the coefficients of interest in the specification (7) estimated with both OLS and Logit models.

\[
Migration_{i,j,t} = \beta \text{Density}_j \times \text{Expo}_t + \gamma \text{Controls}_j \times \text{Expo}_t + \alpha_j + \delta_t + \epsilon_{i,j,t}
\]

The dependent variable, \(Migration_{i,j,t}\), indicates all types of migrants who moved to county \(j\) during 1985-1990 in Panel A, migrants from other provinces in Panel B, and migrants from other Heilongjiang counties in Panel C. In the OLS linear probability model, all coefficients are significant at the 5% level. A 1% increase in sent-down youth density corresponds to approximately 2% more young migrants than senior migrants in total. In that 2% of young migrants, 30% of them moved to this county from another province, and 70% of them were from other Heilongjiang counties. The estimates with the county fixed-effect Logit model confirm the positive effect on migration inflow; however, the statistical power is limited.

The data is not sufficient to identify why sent-down youth affected migration choices, but I conjecture two plausible channels: First, the sent-down youth brought opportunities and values\(^{29}\) that were more attractive to young and educated workers. Another possibility is that sent-down youth revealed more information about their sent-down counties and built more network with other areas (Kinnan, Wang and Wang 2018).

6. **Trust, Well-being, and Job Attitudes**

Sent-down youth could have also brought urban mindsets to the rural areas and even alter cultures there. Interaction with urban youth might have nurtured new cultural attitudes among rural people that persist in the long run. This section evaluates the impact of urban youth exposure in school years on social values: trust, well-being, and job attitudes. The China Labor Dynamics Survey 2012 (CLDS) provides various relevant survey questions. Consistent with sample selection criteria in previous sections, I estimate \(\beta_{Expo}\) with birth cohorts 1942-1972 (184 respondents) and \(\beta_{Post}\) with birth cohorts 1962-1982 (161 respondents) in the specification (8). Since CLDS only provides the four-digit prefecture identifier, I aggregate the sent-down youth

\(^{29}\) Sent-down youth participated in almost all aspects of the rural society (e.g., as teachers, barefoot doctors, agricultural workers on collective farms, infrastructure construction workers, and even as “entrepreneurs” in the state-owned enterprises).
density at the prefecture level. The primary focus of this section is the comparison between \( \beta_{\text{Expo}} \) and \( \beta_{\text{Post}} \).

\[
y_{ij,t} = \beta_{\text{Expo/Post}} \times \text{Density}_{j} \times (\text{Expo}_{t}/\text{Post}_{t}) + \gamma \text{Controls}_j \times (\text{Expo}_{t}/\text{Post}_{t}) + \alpha_j + \delta_t + \epsilon_{i,j,t}
\]

A potential concern is that increased education and/or employment may completely drive these changes in social values. To address this concern, I include two individual-level outcomes as controls: total annual income and total years of education in Appendix Table X-X. The coefficient \( \beta_{\text{Expo}} \) and \( \beta_{\text{Post}} \) remain of similar magnitude and statistical significance. Income and education do not explain the shifts in values.

**Trust**

Nunn and Wantchekon (2011), Lowes et al. (2017), and Lowes and Montero (2018) suggest that important historical events may alter social trust in the long run. Table 9 Panel A reports the results of urban youth impact on the interpersonal trust. Three questions in the CLDS capture three dimensions of interpersonal trusts: general trust towards the general public (scaled from one to four), trust towards neighbors who are familiar to the respondent (scaled from one to five), and trust towards an interviewer who meets the respondent for the first time (scaled from one to four). \( \beta_{\text{Expo}} \) is 2.38 \((t=2.80)\), 22.24 \((t=24.40)\), and 0.50 \((t=0.29)\) correspondingly. Thus, the arrival of sent-down youth drives up social trust, particularly through in-group trust (trust among familiar people). \( \beta_{\text{Post}} \) is -5.96 \((t=-3.05)\), -11.01 \((t=-2.36)\), and -6.84 \((t=-5.03)\) correspondingly. The rehabilitation of sent-down youth weakens all three types of trust.

Well-educated migrants may spread knowledge and build more trust in modern technology\(^{30}\). Specifically, I study medical beliefs: trust in traditional Chinese herbal therapy and trust in modern Western medicine. The medicine of the West, which was foreign to rural Chinese people, represents new technology developed with scientific research. Chinese herbal therapies feature mixes of a wide variety of herbs and strengthen the entire immune system, rather than fighting against specific diseases. Thus, it is very difficult to prove that the herbal therapy is

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\(^{30}\) Hornung (2014) shows that skilled Huguenot migrants spread technology in Prussia and improved the productivity of textile manufactories. The cultural change may serve as a channel to explain the technology adoption.
effective; it is difficult to falsify as well. Most traditional Chinese herbal treatments are based on medical practices, rather than scientific experiments. In China, these herbal therapies still enjoy widespread popularity. Especially in under-developed rural areas, peasants continue to hold many superstitions about traditional herbal therapies and missed the opportunity to cure diseases.\(^{31}\)

Table 9 Panel B shows that exposure to sent-down youth discredits the traditional Chinese therapies in both specifications: \(\beta_{\text{Expo}}\) is -9.89 \((t=-2.81)\) and \(\beta_{\text{Post}}\) is 15.07 \((t=3.13)\). People who were more exposed to urban youth gained more confidence in Western medicine: \(\beta_{\text{Expo}}\) is 12.10 \((t=12.35)\) but no evidence shows trust in Western medicine declined in post-rustication cohorts. These findings indicate that sent-down youth spread scientific thinking and weakened existing medical beliefs by shifting people’s trust from traditional Chinese herbal therapy to modern Western medicine.

**Well-being**

I use height as a comprehensive well-being measure that reflects nutrition, health, and environments. Table 9 Panel C shows that exposure to sent-down youth has a positive impact on people’s height. Even more interesting, \(\beta_{\text{Expo}}\) and \(\beta_{\text{Post}}\) are quite comparable in magnitude: 134.07 \((t=3.81)\) versus -103.48 \((t=-2.51)\). Thus, I conclude that the rustication cohorts are taller than the birth cohorts educated both before and after Mao’s Massive Rustication.

Does sent-down youth improve the subjective feeling about the world? To answer this question, I study four measures of subjective well-being: self-reported health condition, level of happiness rating, level of happiness relative to peers, and subjective feeling of fairness. The sent-down youth arrival (\(\beta_{\text{Expo}}\)) induced higher subjective health evaluation significant at the 1% level, absolute and relative happiness significant at the 1% level, and sense of fairness significant at the 10% level. The rehabilitation of urban youth generated a modest decline in subjective well-being. All four coefficients, \(\beta_{\text{Post}}\), are negative, but the statistical power is quite limited.

\(^{31}\) Some rural peasants refused to take anti-biotic but insisted in herbal therapies and ended up with unnecessary deaths.
Exposure to urban youth during school years developed more harmonic mindsets: they reported feeling healthier, happier about their lives, and that the world fairly compensated their efforts.

**Job Attitudes**

Job attitudes can potentially affect job choices and employment outcomes. The CLDS elicits six questions about the importance of the job features of an ideal job, and three questions about the willingness to expend effort for work under disadvantageous conditions. I use these nine questions to measure job attitudes. Overall job attitudes can be broadly conceptualized in two categories: objective cognitive assessments and affective job satisfaction. Economists typically focus on objective cognitive assessments, such as pay, opportunities, and other benefits. However, equivalently important, affective job satisfaction reflects one’s global feelings about a job but rarely studied by economists.

Among the six questions about job feature importance, I classify “make a living” and “build connections” as objective cognitive assessments since these two features may directly bring materialistic benefits. The other four features — “comfort myself,” “gain more respect,” “satisfy personal interests,” and “exploit talents” — constitute affective job satisfaction. In Table 10 Panel A, I find the arrival of sent-down youth reduced people’s incentives to chase “make a living” ($\beta_{Expo} = -7.06, t=-2.20; \beta_{Post} = -2.73, t=-0.93$) and “build connections” ($\beta_{Expo} = -11.32, t=-2.19; \beta_{Post} = 1.26, t=0.41$). Among the affective job satisfaction category, exposure to urban youth increased people’s motives to “satisfy personal interests” ($\beta_{Expo} = 5.26, t=7.74; \beta_{Post} = -5.19, t=-0.76$) and “exploit talents” ($\beta_{Expo} = 11.25, t=3.87; \beta_{Post} = -16.30, t=-2.18$), but had no significant impact on the importance of “comfort myself” and “gain more respect.” These results indicate that sent-down youth broadly shifted job attitudes from objective cognitive assessments to affective job satisfaction. People value intrinsic values of jobs more and paid less attention to the financial benefits.

In Table 10 Panel B, I evaluate the willingness to pay effort under disadvantageous circumstances and find suggestive evidence that urban exposure may potentially reduce effort levels. People were less willing to pay effort amid poor health conditions ($\beta_{Expo} = -4.69, t=-5.10$).
if they were born after the sent-down youth arrivals, found more effort spent on tasks to be undesirable \( (\beta_{Post} = 6.09, t = 1.91) \), and found unpleasant to spend more effort for tasks only paid off after a long period \( (\beta_{Post} = 8.54, t = 3.78) \) in the post-rustication cohorts. This finding is consistent with the shift toward the affective job satisfaction—people were less willing to sacrifice personal amenities for work.

7. Channels

This section documents the teacher supply channel—sent-down youth became rural teachers and provided more accessible education—is likely to explain the identified effects.\(^{32}\) I present two suggestive evidence with two newly collected datasets: an unbalanced panel of county-level education variables and an unbalanced panel of sent-down youth documented in Chinese county-level gazetteers.\(^{33}\) I test the supply channel on both the extensive margin (before and after the rustication) and the intensive margin (during rustication years).

**Extensive Margin Test**

Does more sent-down youth induce faster educational expansion? I collect eight educational outcomes: the number of primary/secondary teachers, number of primary/secondary students, number of primary/secondary schools, and the student-teacher ratio in primary/secondary schools. \( \text{Growth}_j \) represents growth rate from the average outcomes in the pre-rustication period 1958-1967 to the average outcomes in the rustication period 1968-1977 for each county \( j \). Then, I use the specification (9), a sequence of univariate regressions, to show the correlation between the density of sent-down youth \( (\text{Density}_j) \) and educational expansion \( (\text{Growth}_j) \)

\[
\text{Growth}_j = \beta \text{Density}_j + \gamma + \varepsilon_j
\]

\(^{32}\) The Zhaoyuan County Gazetteer documents, “in 1968, each commune started to organize its secondary school.”

\(^{33}\) The Anda County Gazetteer documents, “Since 1970, rural commune secondary schools pervasively set up the high school.”

\(^{33}\) I do not use the county sent-down youth panel as the primary variation because the data is sparse. Thus, the measurement is either inconsistent across counties or county coverage is too limited.
Table 11 reports the estimation of the “extensive margin” specification (9). Since data completeness varies across counties, I compute \( \text{growth}_j \) based on two samples of counties: 1) counties with no less than 5 observations in Panel A; and 2) counties with no less than 10 observations in Panel B. Panel A and Panel B yield similar qualitative results and statistical significance although the sample size in Panel B is smaller than the sample size in Panel A. The sent-down youth density positively correlates with the “Pre-Post” growth in numbers of teachers, students, and schools; it negatively correlates with the student-teacher ratio. This finding indicates that higher sent-down youth density correlates faster education expansion overall, both in the amount of teachers and students. Lower growth in the student-teacher ratio implies that teacher size expansion, normalized with the growth of student size, is larger in the high-density counties. This evidence implies that sent-down youth equipped counties with a relatively sufficient supply of teachers in the “Pre-Post” sense.

**Intensive Margin Test**

Does more sent-down youth in the county predict more teachers within the rustication years? I use panel regression to forecast education variables with the lagged cumulative sent-down youth density. I compile an unbalanced panel of numbers of sent-down youth from *Chinese Gazetteer Sent-down Youth Historical Archival Collection* published in 2014 by two Chinese historians, Guangyao Jin and Dalu Jin.\(^{34}\) This panel data supplements the snapshot of sent-down youth density and introduces the time variation; therefore, I can test the intensive margin during the rustication period. The sample contains counties with more than 5 observations out of the 11 rustication years 1968-1978. The cumulative sent-down youth density is the total number of sent-down youth who arrived before year \( t \) divided by the population size in 1982.

\[
\text{Cumulative Density}_{j,t} = \sum_{k=1968}^{k=t} \frac{\# \text{ urban youth}_k}{\text{population 1982}}
\]

The dependent variables, \( \% y_{j,t} \), are the per-capita number of primary teachers, secondary teachers, primary students, secondary students, primary schools, and secondary

\(^{34}\) They gather material related to sent-down youth from Chinese county gazetteers. Jin and Jin (2015) explain their archival work and discuss some insights on sent-down youth.
schools. $\alpha_j$ is the county fixed effect, and $\delta_t$ is the year fixed effect. Table 12 reports the estimates of the specification (10).

$$\%\, y_{j,t} = \beta \text{Cumulative Density}_{j,t-1} + \alpha_j + \delta_t + \varepsilon_{j,t}$$

Panel A reports equal-weighted OLS estimates of $\beta$. One plausible concern is that some counties have a different amount of missing values in the gazetteer data. Thus, equal-weight regressions assign more weights on counties with more complete data. To address this concern, I re-weight the data by “$\frac{11 \# obs.}{\# obs.}$” so that each county gains the same weight in Panel B. Panel A and Panel B report similar results. The higher cumulative sent-down youth density significantly predicts more primary teachers by 0.10 ($t=1.75$) in Panel A and 0.09 ($t=1.74$) in Panel B; also, more secondary teachers by 0.22 ($t=4.39$) in Panel A and 0.25 ($t=4.57$) in Panel B. The coefficients are quite sizable: a 1% increase in cumulative sent-down youth density leads to a 0.09-0.1% increase in primary teacher per-capita and a 0.22-0.25% increase in secondary teacher per-capita. One in ten sent-down youths taught in primary schools and 2.2 in ten sent-down youths taught in secondary schools. Please note that the sample size is tiny: 9 counties in the primary teacher regression and 8 counties in the secondary teacher regression. Thus, the numbers might not be applicable to the entire Heilongjiang Province nor to China as a whole. However, the coefficients are sufficiently large to illustrate the critical role of sent-down youth teachers in Chinese rural educational development. A higher cumulative density of sent-down youth also forecasts increased numbers of schools, but the statistical power is weak. No evidence shows that increased numbers of sent-down youth directly predicts more students in the one lag.

Historical narratives confirm the supply channel I emphasize in this section. As opposed to being “Re-educated by Peasants,” sent-down youth volunteered to educate peasants. Chairman Zedong Mao initiated the rustication by proposing, “Educated youths should be re-educated by rural peasants” in the People's Daily in December 1968. One half-century later, the Xinhua Daily Telegraph and People.cn, two authoritative party-owned media outlets, posted the commentary, “Sent-down youth teachers and the unexpected luck for rural kids” in November, 2015.35 The article quotes Shuxin Liu, president of the Sent-down Youth Museum located in Heihe City, Heilongjiang Province, “From 1968 to 1979, sent-down youth teachers taught around 10 million

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rural students in the whole country.” Memoirs and interviews also provide anecdotal evidence for sent-down youth teachers. Two chapters in Shi and Tang (2014) are reflections by two sent-down youth teachers. Zhang (2015) also mentions that sent-down youth filled vacant teacher positions. Evidence also comes from many novels describing the rural experiences of sent-down youth. For example, the novel, A Golden Sun in Beijing, written by Rui Li, is a tragic story about a sent-down youth teacher, Zhongyin Zhang, who attempted to spread knowledge in rural villages but was put in jail during the Cultural Revolution.

8. Conclusion

This paper investigates the largest urban-to-rural migration in history and document it impacts on rural education, employment, and social values. Mao’s Massive Rustication Movement caused a substantial increase in educational attainment of rural Chinese. An increase of 1% in the sent-down youth density incurred 0.1-0.2 additional years of education on average. Using two unique China gazetteer datasets, I reveal the channel that sent-down youth educated rural students as teachers in rural counties. The teacher expansion was particularly large in secondary schools.

Sent-down youth initially reduced non-agricultural employment in 1990, but increased non-agricultural employment and led to lower unemployment rate in 2000. The dynamic indicates that the benefit of being educated by sent-down youth was much more substantial in 2000 when the economy was more urbanized and industrialized. The employment benefit is stronger among factory workers, service workers, and specialists; but tiny among government officials and administrative staff. It indicates the human capital instilled by sent-down youth was particularly useful in searching for productive jobs, but not bureaucratic employment. Moreover, sent-down youth empowered counties to attract more young and educated laborers.

This paper additionally provides a new direction for contemplating the role of human capital shocks in cultural transitions. Exposure to sent-down youth during their school years may have shaped rural children’s attitudes toward their lives, other people, newly introduced

36 “Sent-down Youth Literature” is an important strand of Chinese literature. This type of novel describes the special rural experiences of sent-down urban youth during the Cultural Revolution. This literature reflects people’s political and social backgrounds from the individual viewpoint.
technology, and their jobs. The results suggest that sent-down youth spread more positive subjective evaluations of individual’s welfare, built more trust (both in-group and out-group), and shifted confidence from traditional herbal Chinese therapy to modern Western medicine. These results imply that sent-down youth also generated positive non-cognitive benefits in the areas where they were stationed. Moreover, this paper also documents a systematic shift in job attitudes evidenced by the rural population placing more value on affective job satisfaction and less value on objective cognitive assessments in their job choices. People also reported less willingness to expend effort under unfavorable conditions in the workplace. These empirical findings suggest that the massive external migration generated profound changes in the country’s culture and social values today.
REFERENCES


Shi, Xiaoyu and Xi Tang, 2014, *Sent-down Memory: To our Immortal Youth* [In Chinese]. The Straits Literature and Art Press


Fig 1: Sent-down youth density distribution in the Heilongjiang County Map. The sent-down youth density is defined as the number of sent-down youth in 1969 over the total county population in 1982.
Panel A: Distance to the Nearest City

Panel B: Average Years of Education

Panel C: Population in 1982

Panel D: Non-agricultural Employment

Fig 2: Sent-down youth density and County Characteristics. log(Distance to Nearest City) is the log distance to the center of the nearest city. Years of education and Percentage of non-agricultural employment are computed from the birth cohort 1943 – 1950 as a proxy for pre-rustication education and non-agricultural job participation using the 1990 Census 1% micro sample. The population size is from the 1982 Census.
Fig 3. Chinese Educational Expansion 1958-1980. The samples only include Heilongjiang counties that provide complete data from 1958 to 1980. Panel A plots the average number of primary school teachers in 18 counties. Panel B plots the average number of secondary school teachers in 17 counties. Panel C plots the average number of primary school students in 18 counties. Panel D plots the average number of secondary school students in 18 counties.
Panel A: Average Years of Education

Panel B: Primary School Enrollment

Panel C: Middle School Enrollment

Panel D: High School Enrollment

Fig 4. Educational outcomes by birth cohort 1942-1972. Panel A plots the average years of education by birth cohort. Panel B plots the average primary school enrollment rate. Panel C plots the average conditional middle school enrollment rate (defined as the probability of middle school entry conditional on primary school enrollment). Panel D plots average conditional middle school enrollment rate (defined as the probability of high school entry conditional on middle school enrollment).
Fig 5: Average years of education in six counties with highest and 20 counties with lowest sent-down youth density. The solid line is the average of the six counties with the highest sent-down youth density, and the dashed line is the average of the 20 counties with the lowest sent-down density. Arrows flag birth cohorts if the difference in education is larger than 0.8 years. The left dashed vertical line denotes birth cohort 1956 and the right one denotes birth cohort 1962.
Fig 6: The solid line is the average years of education in the six highest-density counties. The dashed line is average years of education in the six counterfactual counties constructed with the synthetic control approach in the 30 low-density counties. The left dashed vertical line denotes the birth cohort 1956 and the right dashed vertical line denotes birth cohort 1962.
Fig 7: Non-parametric Generalized Permutation Test. This figure reports the simulated probability of the event that the average estimated effect in the six highest-density counties is lower than the average estimated effect in six randomly chosen counties. The probability is calculated from 10,000 simulations. The left dashed vertical line denotes the birth cohort 1956 and the right dashed vertical lines denote the birth cohort 1962.
Fig 8: This figure plots the cohort-specific coefficients $\beta_t$ in the specification (3) with years of education as the dependent variable for birth cohorts 1945-1972. The dotted straight lines fit pre-1956 and post-1956 birth cohorts respectively. The dashed lines plot the 90% confidence interval. Standard errors used for confidence intervals are clustered at the county level. Two vertical lines denote the birth cohort 1956 and birth cohort 1962 accordingly.

$$Eduyr_{i,j,t} = \sum_t \beta_t Dummy_{i,j,t} \ast Density_j + \alpha_j + \gamma_t + \epsilon_{i,j,t}$$
Fig 9: This figure plots coefficients $\beta_t$ of the county-level forecast regressions as a function of birth year $t$. $Edu2005_{j,t-2 \to t+2}$ is the average years of education of birth cohorts $t-2$ to $t+2$ (as the proxy for birth cohort $t$) in county $j$ from Census 2005. $Edu1990_j$ is the average years of education of birth cohorts 1946 to 1956 in county $j$ from Census 1990. $density_j$ is the number of sent-down youth in 1969 over the total county population in 1982.

Each dot represents $\beta_t$ estimated from each forecast regression. The dotted line shows the dynamics by connecting all coefficients. The dashed lines plot the 90% confidence interval for $\beta_t$.

$$Edu2005_{j,t-2 \to t+2} = \alpha_t Edu1990_j + \beta_t Density_j + \gamma + \epsilon_{jt}$$
Fig 10: This figure plots the cohort-specific coefficients $\beta_t$ with non-agricultural employment as the dependent variable for birth cohorts 1945-1972. The dotted straight lines are fitted lines in pre-1956 and post-1956 birth cohorts. The dashed lines plot the 90% confidence interval for $\beta_t$. Standard errors used for confidence intervals are clustered at the county level. Two vertical lines denote the birth cohort 1956 and birth cohort 1962 accordingly.

$$Industry_{i,j,t} = \sum_t \beta_t Dummy_{i,j,t} * Density_j + \alpha_j + \gamma_t + \varepsilon_{i,j,t}$$
### Table 1: Educational Expansion during Sent-down Movement

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Census 1990</th>
<th>Census 2000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td><strong>Panel A:</strong> $Ed_t \times Density_j \times Expo_t$</td>
<td>11.64**</td>
<td>14.63***</td>
</tr>
<tr>
<td></td>
<td>(5.427)</td>
<td>(4.436)</td>
</tr>
<tr>
<td>Obs.</td>
<td>126,313</td>
<td>126,313</td>
</tr>
</tbody>
</table>

| **Panel B:** $Ed_t \times Density_j \times Expo_t$ | -0.455      | 0.428**     | 0.722**     | -0.275**    | -0.179      | -0.0968     |
|                    | (0.334)     | (0.198)     | (0.312)     | (0.131)     | (0.130)     | (0.182)     |
| Obs.               | 126,313     | 126,313     | 126,313     | 10,385      | 10,385      | 10,385      |

| **Panel C:** $Ed_t \times Density_j \times Expo_t$ | 2.215**     | 2.137**     | 1.422       | 0.903***    | 0.956***    | 1.717***    |
|                    | (0.966)     | (0.961)     | (1.007)     | (0.139)     | (0.183)     | (0.277)     |
| Obs.               | 114,770     | 114,770     | 114,770     | 9,805       | 9,805       | 9,805       |

| **Panel D:** $Ed_t \times Density_j \times Expo_t$ | 1.886***    | 1.326*      | -1.117      | 0.473*      | 0.596*      | 0.907*      |
|                    | (0.664)     | (0.771)     | (0.763)     | (0.252)     | (0.304)     | (0.496)     |
| Obs.               | 64,969      | 64,969      | 64,969      | 6,146       | 6,146       | 6,146       |

**Age and County Dummies**
- Yes
- Yes
- Yes
- Yes
- Yes
- Yes

**Controls**
- No
- Yes
- Yes
- No
- Yes
- Yes

**Linear Trend**
- No
- No
- Yes
- No
- No
- Yes

Notes: The left three columns report estimates with the 0.1% Census 1990 sample and the right three columns report estimates with the 1% Census 2000 sample. The data samples include only birth cohorts from 1942 to 1972 with rural registration. Controls include the log geographical distance to the nearest city and the average years of education of the pre-rustication birth cohorts 1943-1950. Columns (1) and (4) report the baseline results, Columns (2) and (5) add the control variables, and Columns (3) and (6) include the county-specific linear trends. Expo_t is the exposure dummy: 1 if born after 1956 (including 1956); 0 if born before 1956. Density_j is the number of sent-down youth in 1969 over the total county population in 1982. Edu_{i,t} is years of education in Panel A, primary school enrollment in Panel B, conditional middle school enrollment in Panel C, and conditional high school enrollment in Panel D. All specifications include age and county dummies. Robust standard errors are clustered at the county level and reported in parentheses.

$$Edu_{i,t} = \beta Density_j \times Expo_t + \gamma Controls_j \times Expo_t + Linear Trend_j + \alpha_j + \delta_t + \epsilon_{i,t}$$
Table 2: Dropout Rate during Sent-down Movement

<table>
<thead>
<tr>
<th></th>
<th>Dependent Variable</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total Dropouts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Density_j × Expo_t</td>
<td></td>
<td>-0.695</td>
<td>-0.617</td>
<td>-1.308**</td>
<td>-1.389**</td>
<td>-0.402</td>
<td>-0.048</td>
<td>1.633*</td>
<td>1.692</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.435)</td>
<td>(0.469)</td>
<td>(0.626)</td>
<td>(0.655)</td>
<td>(0.395)</td>
<td>(0.410)</td>
<td>(0.843)</td>
<td>(1.101)</td>
</tr>
<tr>
<td>Obs.</td>
<td></td>
<td>86,390</td>
<td>86,390</td>
<td>86,390</td>
<td>86,390</td>
<td>42,053</td>
<td>42,053</td>
<td>7,929</td>
<td>7,929</td>
</tr>
</tbody>
</table>

|                  | Total Dropouts     |     |     |     |     |     |     |     |     |
| Density_j × Expo_t |                   | -0.833* | -0.782 | -1.535** | -1.633** | -0.447 | -0.057 | 1.478* | 1.655 |
|                  |                    | (0.445) | (0.483) | (0.720) | (0.748) | (0.415) | (0.438) | (0.878) | (1.195) |
| Obs.             |                   | 70,330 | 70,330 | 70,330 | 70,330 | 33,772 | 33,772 | 5,436 | 5,436 |

| Age and County Dummies | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Controls × Post       | No  | Yes | No  | Yes | No  | Yes | No  | Yes | Yes |

Level of Significance: * p<0.1 **p<0.05 ***p<0.01

Notes: $y_{i,j,t}$ is total dropouts in Columns (1) and (2), dropouts in primary school conditional on primary education enrollment in Columns (3) and (4), dropouts in middle school conditional on middle school enrollment in Columns (5) and (6), dropouts in high school conditional on high school enrollment in Columns (7) and (8). Panel A adopts the definition that $Expo_t = 1$ if born after 1956 (including 1956) and Panel B adopts the definition that $Expo_t = 1$ if born after 1962 (including 1962). All specifications include age and county dummies. Robust standard errors are clustered at the county level and reported in parentheses.

$$y_{i,j,t} = \beta Density_j \times Expo_t + \gamma Controls_j \times Expo_t + \alpha_j + \delta_t + \epsilon_{i,j,t}$$
Table 3: Educational Reduction in Post-Rustication

<table>
<thead>
<tr>
<th></th>
<th>Dependent Variable</th>
<th>Panel A: Years of Education</th>
<th>Panel B: Primary School Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Density_j × Post_t</td>
<td>-3.098*</td>
<td>-2.089</td>
<td>-7.335***</td>
</tr>
<tr>
<td></td>
<td>(1.607)</td>
<td>(1.682)</td>
<td>(2.566)</td>
</tr>
<tr>
<td>Obs.</td>
<td>8,614</td>
<td>8,614</td>
<td>8,614</td>
</tr>
<tr>
<td>Density_j × Post_t</td>
<td>0.0001</td>
<td>0.0216</td>
<td>0.190</td>
</tr>
<tr>
<td></td>
<td>(0.0711)</td>
<td>(0.0771)</td>
<td>(0.185)</td>
</tr>
<tr>
<td>Obs.</td>
<td>8,614</td>
<td>8,614</td>
<td>8,614</td>
</tr>
</tbody>
</table>

|                      | (4)                | (5)                         | (6)                              |
| Age and County Dummies | Yes               | Yes                         | Yes                              |
| Controls_j × Expo_t   | No                 | No                          | No                               |
| Linear Trend_j        | No                 | No                          | Yes                              |
| Obs.                 | 8,483              | 8,483                       | 8,483                            |

|                      | Panel C: Middle School Enrollment | Panel D: Middle School Enrollment |
| Density_j × Post_t   | 0.111                         | 0.0317                       |
|                      | (0.527)                      | (0.520)                     |
| Obs.                 | 6,322                        | 6,322                       |

Level of Significance: * p<0.1 **p<0.05 ***p<0.01

Notes: The data sample is the birth cohorts from 1962 to 1982 in Census 2000. Controls_j include the log geographical distance to the nearest city and the average years of education of the pre-rustication birth cohorts 1943-1950. Post_t is the exposure dummy: 1 if born after 1975 (including 1975); 0 if born before 1975. Intensity_j is the number of sent-down youth in 1969 over the total county population in 1982. Columns (1) and (4) report the baseline results, Columns (2) and (5) add the control variables and Columns (3) and (6) include the county-specific linear trends. All specifications include age and county dummies. Standard errors are clustered at the county level and reported in parentheses.

\[ Edu_{i,j,t} = \beta \text{Density}_j \times Post_t + \gamma \text{Controls}_j \times Post_t + \text{Linear Trend}_j + \alpha_j + \delta_t + \epsilon_{i,j,t} \]
Table 4: Educational Quality during Cultural Revolution

<table>
<thead>
<tr>
<th></th>
<th>Panel A: Non-Agricultural Employment</th>
<th></th>
<th>Panel B: Unemployment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OLS</td>
<td>FE Logit</td>
<td>OLS</td>
</tr>
<tr>
<td>Expo_t (</td>
<td>) Primary</td>
<td>0.007 (0.008)</td>
<td>0.053 (0.080)</td>
</tr>
<tr>
<td>Expo_t (</td>
<td>) Middle</td>
<td>-0.049(*) (0.013)</td>
<td>-0.043 (0.050)</td>
</tr>
<tr>
<td>Expo_t (</td>
<td>) High</td>
<td>-0.021 (0.019)</td>
<td>-0.266(**) (0.081)</td>
</tr>
<tr>
<td>Obs.</td>
<td>36,924 39,502 13,203</td>
<td>36,924 39,502 13,203</td>
<td>47,512 46,719 14,641</td>
</tr>
</tbody>
</table>

Level of Significance: * p<0.1 **p<0.05 ***p<0.01

Notes: \(Y_{i,t}\) is the non-agricultural employment dummy in Panel A and unemployment dummy (defined as not working and not in school) in Panel B. The data samples include only birth cohorts from 1942 to 1972. I split the data sample into three groups by education enrollment level: primary school enrollment, middle school enrollment, and high school enrollment. \(\beta_{edu}\) is the coefficient estimated for each education level. Appendix Table 2 re-estimates the model with primary, middle, and high school degree holders. \(Expo_t\) is the exposure dummy: 1 if born after 1956; 0 if born before 1956. \(Expsq_{i,t}\) is the imputed post-education years, \(Expsq_{i,t}\) is the squared \(Expsq_{i,t}\). All specifications include county fixed effects. The left three columns report estimates with the OLS model and the right three columns report estimates with the fixed effect Logit model. Robust standard errors are clustered at the county level and reported in parentheses.

\[
y_{i,t} = \beta_{edu}Expo_t + Expsq_{i,t} + \alpha_j + \epsilon_{i,t}
\]
Table 5: Dynamic Externality of Sent-down Youth Exposure

<table>
<thead>
<tr>
<th></th>
<th>Dependent Variable</th>
<th>Panel A: Non-agricultural Employment</th>
<th>Panel B: Unemployment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Census 1990</td>
<td>Census 2000</td>
</tr>
<tr>
<td>Density_j × Expo_t</td>
<td></td>
<td>-0.592* (0.317)</td>
<td>0.835*** (0.136)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-0.338 (0.427)</td>
<td>1.154*** (0.228)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-1.356* (0.717)</td>
<td>0.466** (0.224)</td>
</tr>
<tr>
<td>Obs.</td>
<td></td>
<td>99,356</td>
<td>8,447</td>
</tr>
</tbody>
</table>

Age and County Dummies: Yes, Yes, Yes, Yes
Controls_j × Expo_t: No, Yes, Yes, No
Education Dummies: No, No, Yes, Yes

Level of Significance: * p<0.1 ** p<0.05 *** p<0.01

Notes: The data samples include birth cohorts from 1942 to 1972 in Censuses 1990 and 2000. All specifications include age and county dummies. Columns (1) and (4) report the baseline results. Columns (2) and (5) add the control variable interaction terms Controls_j × Expo_t. Controls_j include the log geographical distance to the nearest city and the average years of education of the pre-rustication birth cohorts 1943-1950. Columns (3) and (6) control for individual education-level dummies. The dependent variable is a dummy for non-agricultural employment in Panel A, and unemployment in Panel B. Robust standard errors are clustered at the county level and reported in parentheses.

\[ Employment_{i,j,t} = \beta \text{Density}_j \times Expo_t + \gamma Controls_j \times Expo_t + \xi \text{Education Dummies}_{i,j,t} + \alpha_j + \delta_t + \varepsilon_{i,j,t} \]
Table 6: Sent-down Youth Exposure and Occupation Choice

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Panel A: Factory Workers</th>
<th>Panel B: Service Workers</th>
<th>Panel C: Specialists</th>
<th>Panel D: Government Officials</th>
<th>Panel E: Administrative Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td></td>
<td>-1.117**</td>
<td>-0.979**</td>
<td>-1.759***</td>
<td>1.077***</td>
<td>1.027***</td>
</tr>
<tr>
<td></td>
<td>(0.447)</td>
<td>(0.479)</td>
<td>(0.525)</td>
<td>(0.292)</td>
<td>(0.373)</td>
</tr>
<tr>
<td>Observations</td>
<td>83,192</td>
<td>83,192</td>
<td>83,192</td>
<td>6,716</td>
<td>6,716</td>
</tr>
<tr>
<td></td>
<td>-0.973**</td>
<td>-0.886**</td>
<td>-1.552***</td>
<td>1.006***</td>
<td>1.190***</td>
</tr>
<tr>
<td></td>
<td>(0.393)</td>
<td>(0.370)</td>
<td>(0.343)</td>
<td>(0.144)</td>
<td>(0.223)</td>
</tr>
<tr>
<td>Observations</td>
<td>76,133</td>
<td>76,133</td>
<td>76,133</td>
<td>6,526</td>
<td>6,526</td>
</tr>
<tr>
<td></td>
<td>-0.109</td>
<td>0.130</td>
<td>-0.790**</td>
<td>1.438***</td>
<td>1.510***</td>
</tr>
<tr>
<td></td>
<td>(0.285)</td>
<td>(0.257)</td>
<td>(0.309)</td>
<td>(0.126)</td>
<td>(0.167)</td>
</tr>
<tr>
<td>Observations</td>
<td>75,946</td>
<td>75,946</td>
<td>75,946</td>
<td>6,298</td>
<td>6,298</td>
</tr>
<tr>
<td></td>
<td>-2.651**</td>
<td>-2.058**</td>
<td>-2.221***</td>
<td>0.146</td>
<td>0.220</td>
</tr>
<tr>
<td></td>
<td>(1.026)</td>
<td>(0.787)</td>
<td>(0.673)</td>
<td>(0.153)</td>
<td>(0.175)</td>
</tr>
<tr>
<td>Observations</td>
<td>71,623</td>
<td>71,623</td>
<td>71,623</td>
<td>6,026</td>
<td>6,026</td>
</tr>
<tr>
<td></td>
<td>-0.104</td>
<td>0.045</td>
<td>-0.291</td>
<td>0.571**</td>
<td>0.472**</td>
</tr>
<tr>
<td></td>
<td>(0.208)</td>
<td>(0.231)</td>
<td>(0.259)</td>
<td>(0.218)</td>
<td>(0.221)</td>
</tr>
<tr>
<td>Observations</td>
<td>71,482</td>
<td>71,482</td>
<td>71,482</td>
<td>6,093</td>
<td>6,093</td>
</tr>
</tbody>
</table>

Age and County Dummies: Yes
Controls$_j \times$ Expo$_t$: No
Education Dummies: No

Level of Significance: * p<0.1 **p<0.05 ***p<0.01

Notes: The data samples include birth cohorts from 1942 to 1972 in Censuses 1990 and 2000. All specifications include age and county dummies. Columns (1) and (4) report the baseline results. Columns (2) and (5) add the control variable interaction terms Controls$_j \times$ Expo$_t$. Controls$_j$ includes the log geographical distance to the
nearest city and the average years of education of the pre-rustication birth cohorts 1943-1950. Columns (3) and (6) control for individual education-level dummies. The dependent variable is dummy for factory workers in Panel A, service workers in Panel B, specialists in Panel C, government officials in Panel D, and administrative staff in Panel E. In each panel, the left block uses the full sample of Census 1990 and the right block uses the full sample of Census 2000. Robust standard errors are clustered at the county level and reported in parentheses.

\[ \text{Occupation}_{i,j,t} = \beta \text{Density}_j \times \text{Expo}_t + \gamma \text{Controls}_j \times \text{Expo}_t + \xi \text{Education Dummies}_{i,j,t} + \alpha_j + \delta_t + \epsilon_{i,j,t} \]
Table 7: Employment in Post-Rustication

<table>
<thead>
<tr>
<th></th>
<th>Dependent Variable</th>
<th>Panel A: Non-agricultural Employment</th>
<th>Panel B: Unemployment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>$Density_j \times Post_t$</td>
<td></td>
<td>-1.011</td>
<td>-0.981</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.837)</td>
<td>(0.826)</td>
</tr>
<tr>
<td>Obs.</td>
<td></td>
<td>6,909</td>
<td>6,909</td>
</tr>
<tr>
<td></td>
<td>Panel C: Factory Workers</td>
<td></td>
<td>Panel D: Service Workers</td>
</tr>
<tr>
<td>$Density_j \times Post_t$</td>
<td></td>
<td>-0.501</td>
<td>-0.567</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.654)</td>
<td>(0.655)</td>
</tr>
<tr>
<td>Obs.</td>
<td></td>
<td>5,685</td>
<td>5,685</td>
</tr>
<tr>
<td></td>
<td>Panel E: Specialists</td>
<td></td>
<td>Panel F: Government Officials</td>
</tr>
<tr>
<td>$Density_j \times Post_t$</td>
<td></td>
<td>-2.002***</td>
<td>-2.050***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.327)</td>
<td>(0.347)</td>
</tr>
<tr>
<td>Obs.</td>
<td></td>
<td>5,233</td>
<td>5,233</td>
</tr>
<tr>
<td></td>
<td>Panel G: Administrative Staff</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$Density_j \times Post_t$</td>
<td></td>
<td>-0.269</td>
<td>-0.244</td>
</tr>
<tr>
<td>Obs.</td>
<td></td>
<td>5,087</td>
<td>5,087</td>
</tr>
</tbody>
</table>

**Age and County Dummies**
Yes Yes Yes Yes Yes Yes Yes

**Controls**
No Yes Yes No Yes Yes Yes

**Education Dummies**
No No Yes No Yes Yes Yes

Notes: The data samples include birth cohorts from 1962 to 1982 in Census 2000. $Post_t$ is the post-rustication dummy: one if born after 1975 (including 1975); zero if born before 1975. The dependent variable $Employment_{i,j,t}$ is a dummy for non-agricultural employment in Panel A, unemployment in Panel B, factory workers in Panel C, service workers in Panel D, specialists in Panel E, government officials in Panel F, and administrative staff in Panel G. Robust standard errors are clustered at the county level and reported in parentheses.

$$Employment_{i,j,t} = \beta Density_j \times Post_t + \gamma Controls_j \times Post_t + \xi Education Dummies_{i,j,t} + \alpha_j + \delta_t + \varepsilon_{i,j,t}$$
Table 8: Future Migration Inflow

<table>
<thead>
<tr>
<th>Panel A: All Migration</th>
<th>Dependent Variable</th>
<th>OLS</th>
<th>FE Logit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Density_j \times Expo_t$</td>
<td>2.268**</td>
<td>1.790**</td>
<td>10.280</td>
</tr>
<tr>
<td></td>
<td>(0.857)</td>
<td>(0.764)</td>
<td>(7.247)</td>
</tr>
<tr>
<td>Obs.</td>
<td>130,179</td>
<td>130,179</td>
<td>128,659</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel B: Migration from Other Provinces</th>
<th>OLS</th>
<th>FE Logit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Density_j \times Expo_t$</td>
<td>0.878**</td>
<td>0.671**</td>
</tr>
<tr>
<td></td>
<td>(0.381)</td>
<td>(0.329)</td>
</tr>
<tr>
<td>Obs.</td>
<td>127,379</td>
<td>127,379</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Panel C: Migration from Other Heilongjiang Counties</th>
<th>OLS</th>
<th>FE Logit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$Density_j \times Expo_t$</td>
<td>1.821**</td>
<td>1.501**</td>
</tr>
<tr>
<td></td>
<td>(0.703)</td>
<td>(0.650)</td>
</tr>
<tr>
<td>Obs.</td>
<td>129,113</td>
<td>129,113</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age and County Dummies</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Controls_j $\times Expo_t$</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Level of Significance: * p<0.1 **p<0.05 ***p<0.01

Notes: Migration_{i,j,t} is a dummy for migrants who arrived in county \( j \) between 1985 and 1990. The dependent variable indicates all migrants born outside county \( j \) in Panel A, migrants from other provinces in Panel B, and migrants from other Heilongjiang counties in Panel C. Controls includes the log geographical distance to the nearest city, GDP, employment percentage, and agricultural population percentage in 1982. Expo_t is the exposure dummy: 1 if born after 1956; 0 if born before 1956. All specifications include age and county dummies. The left two columns report OLS results and the right two columns report results estimated with a fixed-effect Logit model. Robust standard errors are clustered at the county level and reported in parentheses.

\[ Migration_{i,j,t} = \beta Density_j \times Expo_t + \gamma Controls_j \times Expo_t + \alpha_j + \delta_t + \epsilon_{i,j,t} \]
Table 9: Trust, Scientific Thinking, and Well-being

<table>
<thead>
<tr>
<th>Density(_j \times \text{Expo}_t)</th>
<th>Panel A: Trusts</th>
<th>Panel B: Medical Beliefs</th>
<th>Panel C: Well-being Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Public</td>
<td>Neighbors</td>
<td>Survey Interviewers</td>
</tr>
<tr>
<td></td>
<td>(1-4: Distrust-Trust)</td>
<td>(1-5: Low Trust-High Trust)</td>
<td>(1-4: Distrust-Trust)</td>
</tr>
<tr>
<td>(\text{Expo}_t)</td>
<td>2.38**</td>
<td>22.24***</td>
<td>0.50</td>
</tr>
<tr>
<td></td>
<td>(0.84)</td>
<td>(0.91)</td>
<td>(1.76)</td>
</tr>
<tr>
<td>(\text{Post}_t)</td>
<td>-5.96**</td>
<td>-11.01**</td>
<td>-6.84***</td>
</tr>
<tr>
<td></td>
<td>(1.96)</td>
<td>(4.67)</td>
<td>(1.36)</td>
</tr>
<tr>
<td>Obs.</td>
<td>184</td>
<td>161</td>
<td>184</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Density(_j \times \text{Expo}_t)</th>
<th>Panel A: Trusts</th>
<th>Panel B: Medical Beliefs</th>
<th>Panel C: Well-being Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>General Public</td>
<td>Neighbors</td>
<td>Survey Interviewers</td>
</tr>
<tr>
<td></td>
<td>(1-4: Distrust-Trust)</td>
<td>(1-5: Low Trust-High Trust)</td>
<td>(1-4: Distrust-Trust)</td>
</tr>
<tr>
<td>(\text{Expo}_t)</td>
<td>134.07***</td>
<td>13.79***</td>
<td>21.00***</td>
</tr>
<tr>
<td></td>
<td>(34.88)</td>
<td>(1.72)</td>
<td>(0.82)</td>
</tr>
<tr>
<td>(\text{Post}_t)</td>
<td>-103.48**</td>
<td>-4.79</td>
<td>-3.30</td>
</tr>
<tr>
<td></td>
<td>(41.15)</td>
<td>(3.89)</td>
<td>(8.21)</td>
</tr>
<tr>
<td>Obs.</td>
<td>184</td>
<td>161</td>
<td>184</td>
</tr>
</tbody>
</table>

Level of Significance: * p<0.1 **p<0.05 ***p<0.01

Notes: Controls\(_j\) only includes the average years of education of the pre-rustication birth cohorts 1943-1950 in Census 2000. \text{Expo}_t is the exposure dummy: one if born after 1956; zero if born before 1956. The data samples include birth cohorts from 1962 to 1982. \text{Post}_t is the post-rustication dummy: one if born after 1975 (including 1975); zero if born before 1975. The data samples include birth cohorts from 1942 to 1972. Panel A reports social trust, Panel B reports medical beliefs, and Panel C reports well-being measures. \(\beta_{\text{Expo}}\) is the coefficient on the left and \(\beta_{\text{Post}}\) is the coefficient on the right in each column. All specifications include age and prefecture dummies. Robust standard errors are clustered at the prefecture level and reported in parentheses.

\[ y_{i,j,t} = \beta_{\text{Expo}}/\text{Post} \times \text{Density}_{j} \times (\text{Expo}_t/\text{Post}_t) + \gamma \times \text{Controls}_{j} \times (\text{Expo}_t/\text{Post}_t) + \alpha_j + \delta_t + \epsilon_{i,j,t} \]
### Table 10: Job Attitudes

#### Panel A: Importance of Job Features

<table>
<thead>
<tr>
<th></th>
<th>Make a living</th>
<th>Build connections</th>
<th>Comfort myself</th>
<th>Gain more respect</th>
<th>Satisfy my interests</th>
<th>Exploit my talents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density $\times \text{Expo}_t$</td>
<td>-7.06*</td>
<td>-11.32*</td>
<td>2.90</td>
<td>1.385</td>
<td>5.26***</td>
<td>11.25***</td>
</tr>
<tr>
<td></td>
<td>(3.21)</td>
<td>(5.17)</td>
<td>(1.85)</td>
<td>(4.153)</td>
<td>(0.68)</td>
<td>(2.91)</td>
</tr>
<tr>
<td>Density $\times \text{Post}_t$</td>
<td>-2.73</td>
<td>1.26</td>
<td>-0.12</td>
<td>-2.54</td>
<td>-5.19</td>
<td>-16.30*</td>
</tr>
<tr>
<td></td>
<td>(2.93)</td>
<td>(3.08)</td>
<td>(3.95)</td>
<td>(3.59)</td>
<td>(6.82)</td>
<td>(7.48)</td>
</tr>
<tr>
<td>Obs.</td>
<td>171</td>
<td>151</td>
<td>168</td>
<td>150</td>
<td>170</td>
<td>151</td>
</tr>
</tbody>
</table>

#### Panel B: Willingness to Pay Effort

<table>
<thead>
<tr>
<th></th>
<th>In Poor Health Conditions</th>
<th>Undesirable Tasks</th>
<th>Tasks only pay off after a long period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density $\times \text{Expo}_t$</td>
<td>-4.69***</td>
<td>-2.97</td>
<td>0.71</td>
</tr>
<tr>
<td></td>
<td>(0.92)</td>
<td>(5.16)</td>
<td>(1.29)</td>
</tr>
<tr>
<td>Density $\times \text{Post}_t$</td>
<td>-0.51</td>
<td>6.09*</td>
<td>8.54***</td>
</tr>
<tr>
<td></td>
<td>(1.84)</td>
<td>(3.19)</td>
<td>(2.26)</td>
</tr>
<tr>
<td>Obs.</td>
<td>184</td>
<td>160</td>
<td>160</td>
</tr>
</tbody>
</table>

Level of Significance: * p<0.1  **p<0.05  ***p<0.01

**Notes:** Controls$_j$ only includes the average years of education of the pre-rustication birth cohorts 1943-1950 in Census 2000. Expo$_t$ is the exposure dummy: 1 if born after 1956; 0 if born before 1956. The data samples include birth cohorts from 1962 to 1982. Post$_t$ is the post-rustication dummy: 1 if born after 1975 (excluding 1975); 0 if born before 1975. The data samples include birth cohorts from 1942 to 1972. Panel A reports interpersonal trust, Panel B reports medical beliefs, and Panel C reports well-being measures. $\beta_{\text{Expo}}$ is the coefficient on the left and $\beta_{\text{Post}}$ is the coefficient on the right in each column. All specifications include age and prefecture dummies. Robust standard errors are clustered at the prefecture level and reported in parentheses.

\[
y_{i,j,t} = \beta_{\text{Expo}_t/\text{Post}_t} \times (\text{Density}_j \times (\text{Expo}_t/\text{Post}_t)) + \gamma \times \text{Controls}_j \times (\text{Expo}_t/\text{Post}_t) + \alpha_j + \delta_t + \epsilon_{i,j,t}
\]
Table 11: Pre-Post Education Expansion

<table>
<thead>
<tr>
<th></th>
<th>Panel A: $Obs \geq 5$</th>
<th>Panel B: $Obs \geq 10$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>t-stat</td>
</tr>
<tr>
<td># Secondary Teachers</td>
<td>70.044** (31.440)</td>
<td>[2.23]</td>
</tr>
<tr>
<td># Secondary Schools</td>
<td>33.300 (20.052)</td>
<td>[1.66]</td>
</tr>
<tr>
<td>Student-Teacher Ratio in Secondary Schools</td>
<td>-4.987*** (1.070)</td>
<td>[-4.66]</td>
</tr>
<tr>
<td># Primary Teachers</td>
<td>10.543** (4.096)</td>
<td>[2.57]</td>
</tr>
<tr>
<td># Primary School</td>
<td>6.092* (3.127)</td>
<td>[1.96]</td>
</tr>
<tr>
<td># Primary Students</td>
<td>5.118* (2.723)</td>
<td>[1.88]</td>
</tr>
<tr>
<td>Student-Teacher Ratio in Primary Schools</td>
<td>-1.404*** (0.373)</td>
<td>[-3.76]</td>
</tr>
</tbody>
</table>

Level of Significance: * $p<0.1$ **$p<0.05$ ***$p<0.01$

Notes: Panel A includes counties with more than five observations and Panel B includes counties with more than ten observations in period 1958-1980. $Growth_j$ is defined as the growth rate from the average outcomes in the pre-rustication period 1958-1967 to the average outcomes in the rustication period 1968-1977. The average outcomes are calculated from all available data.

\[
Growth_j = \frac{\bar{y}_{1968-1977} - \bar{y}_{1958-1967}}{\bar{y}_{1958-1967}}
\]

$y$ represents eight variables: number of primary/secondary teachers, number of primary/secondary students, number of primary/secondary schools, and student-teacher ratio in primary/secondary schools. This table reports the coefficients of univariate regressions of $growth_j$ on sent-down youth density. Columns (1) and (4) report the coefficients $\beta$ and robust standard errors in the parentheses. Columns (2) and (5) report the $t$-statistics in brackets. Columns (3) and (6) report the number of counties in each regression. The coefficients in boldface are significant at the 1% level.

\[
Growth_j = \beta Cumulative Density_j + \gamma + \epsilon_j
\]
### Table 12: Time-varying Sent-down Density and Educational Expansion

<table>
<thead>
<tr>
<th>Cumulative Numbers Sent-down Youth</th>
<th>% Primary Teachers</th>
<th>% Secondary Teachers</th>
<th>% Primary Students</th>
<th>% Secondary Students</th>
<th>% Primary Schools</th>
<th>% Secondary Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel A: Equal-Weighted Regression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative Numbers Sent-down Youth</td>
<td>0.100*</td>
<td>0.224***</td>
<td>0.034</td>
<td>-0.074</td>
<td>0.002</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(0.0572)</td>
<td>(0.051)</td>
<td>(0.225)</td>
<td>(0.104)</td>
<td>(0.002)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Panel B: County- Weighted Regression</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cumulative Numbers Sent-down Youth</td>
<td>0.099*</td>
<td>0.247***</td>
<td>0.048</td>
<td>-0.096</td>
<td>0.002</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.057)</td>
<td>(0.054)</td>
<td>(0.202)</td>
<td>(0.115)</td>
<td>(0.002)</td>
<td>(0.001)</td>
</tr>
</tbody>
</table>

Obs. | 89 | 70 | 124 | 100 | 124 | 90

Level of Significance: * p<0.1 ** p<0.05 *** p<0.01

Notes: The table reports the panel regressions forecasting gazetteer education variables with the lagged cumulative sent-down youth density. The $Cumulative\ Density_{jt}$ is defined as the total number of sent-down youth until year $t$ (including year $t$) divided by the 1982 population. $%\ t_{jt}$ is the per-capita number of teachers, students, and schools (normalized with the 1982 population). $\alpha_{j}$ is the county fixed effect, and $\delta_{t}$ is the year fixed effect. The data sample includes counties with more than 5 observations available over the sent-down youth movement episode 1968-1978. Panel A reports equal-weighted regression results. Panel B reports “$\frac{11}{\# obs}$” –weighted regression results. Standard errors are reported in parentheses.

$$%\ t_{jt} = \beta \ Cumulative\ Density_{jt-1} + \alpha_{j} + \delta_{t} + \epsilon_{jt}$$