How Does a Traumatic Experience During Youth Affect Life Later?
The Long-term Impact of the Send-down Program During the Chinese Cultural Revolution

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Abstract

Under the send-down policy (1968-1978) during the Chinese Cultural Revolution, more than 16 million adolescents in urban areas were forced to move to rural areas to carry out hard manual labor. During this time, education in general was interrupted. However many were able to upgrade their education after the revolution. This paper suggests that the sent-down males were significantly more likely to have had education upgrading after the Cultural Revolution. Using the variation from the supply side of the education system as an instrumental variable strategy, this paper shows that conditional on education upgrading, the sent-down males earn 35% higher income than the non-sent-down males who also received education upgrading. Conditional on education upgrading, the sent-down males are also more likely to have computers at home. Both sent-down and non-sent-down males, however, are equally likely to own other major home appliances such as color TVs, air conditioners, or video cameras. These findings are shown to be robust to a variety of controls for family background. The send-down experience has had no significant impact on females.

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1   Introduction

The adolescent and teenage years are important stages in people's lives. During these years, lifelong habits and personality traits are easily shaped or changed by the outside environment. A good environment fosters positive thinking, motivating individuals to perform to the best of their abilities and to generate for themselves high returns (Borghans et al. 2008; Cunha and Heckman 2007). A good environment can thus affect the possibility of an individual enjoying a positive life outcome. But what if, conversely, people should undergo bad experiences when they are young? Elder (1974) found that children of working and middle class families who experienced the Great Depression had good economic outcomes after they became adults. These children of the Great Depression, who did well in their adult years, left many puzzles behind (Elder 1998).

During the 1960s and 1970s, under Mao Zedong's government legislation, China experienced the famous Cultural Revolution. The government forced more than 16 million adolescents in urban areas to move to rural areas to carry out hard manual labor. This event is known as the "send-down" movement. The sent-down youth were forced to engage in hard manual labor in the fields for as long as 12 hours a day, 7 days a week (Zhou and Hou 1999).

Although the send-downs were allowed to return to urban areas after the Cultural Revolution, they were marked by their extremely hard experience−an experience those urban youth who had not been sent down did not share. This paper studies the long-term impact of such a traumatic experience on the adult lives of these youth.

This paper utilizes a newly released and publically available data set, the China General Social Survey (CGSS) 2003, which reports the whole education history of individuals. Using this data set, this paper finds that the return to urban areas was not the end of the sent-down youth story. After their return, a very important step resulted in the sent-down youth outperforming the non-sent-down youth. This key step was education upgrading.

During the Cultural Revolution, education in general was interrupted. Many high schools and universities stopped recruiting new students for several years during this time. Having had their education interrupted during the Cultural Revolution, many individuals (both send-downs and non-send-downs) upgraded their education after the revolution. This paper finds that after the Cultural Revolution, sent-down males were more likely to have education upgrading than were non-sent-down males. This paper further investigates the long-term impact of the send-down experience on income. Using the variation from the supply side of the education system as an instrumental variable strategy, I show that, conditional on education upgrading, the sent-down males earn 35% higher income than do the non-sent-

down males who also received education upgrading. However, for those who did not receive education upgrading, the send-down experience negatively affects their income.

The years of forced hardship during their youth could have helped these youth develop an endurance or greater resistance to future difficulties. Many documents suggest that the harsh send-down experience could have motivated them to study and work harder later in their lives. For example, China's current president Xi Jinping was also sent down and received education upgrading after his return to the urban area. Xi Jinping describes the send-down experience as having motivated him to have the courage to face difficulties later in his life (Xi 2003).

Furthermore, the education-upgraded sent-down males may have acquired skills during the send-down that helped them adjust to change in their environment. After the Cultural Revolution, China had a series of economic reforms. The social economic environment changed dramatically, with computers being one of the new high technologies favored by the rapid economic growth. Both OLS and IV estimation results suggest that conditional on education upgrading, the sent-down males are more likely to have computers at home than are the non-sent-down males. However, both sent-down males and non-sent-down males are equally likely to own other major home appliances such as color TVs, air conditioners, or video cameras. The several years of forced reallocation into a different environment during youth may have served to teach sent-down males the learning skills necessary in adapting to change, which could be an important reason explaining why the education upgraded sent-down males are doing well.

The massive send-down movement resulted in 10.5% of China's total nonfarming population in 1979 being sent down(Pan 2002), with almost every urban family having at least one child sent down (Bernstein 1977). Every year, local governments had a quota of send-downs to fill (Pan 2002; Bernstein 1977; Singer 1971). The quota varied largely by year. Local government determined the send-down selection process based on the quota and the number of age eligible youths (junior or senior high school graduates in their graduation year). If the quota was high, all age eligible youths would be sent down. If the quota was low, the local government would allow families who had already sent away a proportion of their children to keep their current age eligible child.[1]

It has been well documented that parental social status or political capital did not prevent youth in certain privileged classes from being sent down, as Mao was enforcing social equality in China (Bernstein 1977; Singer 1971; Unger 1980; Zhou and Hou 1999; Xie et al. 2008). Some previous literature, however, also suggested that the send-down program may have

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[1]China had a huge baby boom after the war; the average number of children per family during the 1960s and 1970s was four (Zhou 2013; Banerjee et al. 2010).

discriminated against a group of children whose parents had college level education.[2] By using the CGSS data that provided detailed information of parents' characteristics, this paper suggests that children whose fathers had more than 12 years of education were more likely to be sent down. In order to avoid the potential selection bias, this paper only focuses on children whose parents had less than or equal to 12 years of education. (Note the results are robust if I restrict samples to those individuals whose parents had only equal or less than 9 years of education.) In addition, this paper controls a detailed set of the family background variables in all estimations, though the estimation results of key variables are almost the same with or without controlling family backgrounds.

In the robustness check, the author suggests that the findings in this paper are robust and statistically significant even if I (1)control for family connections, (2) drop all the send-down samples of those able to return to urban areas before the end of the Cultural Revolution, (3) eliminate individuals whose parents had capitalist tendencies, and (4) focus on individuals with different family backgrounds through their parents' (a) education, (b) occupation, (c) communist party membership status, and (d) work places. The robust and significant results suggest that the findings in this paper are unlikely to be altered by the youth's family backgrounds.

This paper contributes to a large variety of literatures such as research on send-down, military service, household in conflict environment, education, and adolescent development. In the sent-down literature, papers have focused on the outcome of the send-down event from different perspectives. By using the fact that parents were forced to choose one of their twins to send down, Li et al. (2010) identify the roles of altruism, favoritism, and guilt in parents' behavior towards their children. Among sociologists, Zhou and Hou (1999) along with Chen and Cheng (1999) suggest that the traumatic send-down experience had a positive effect on the future income of those sent down. Authors Chen, Cheng, and Zhou were all sent-down youth themselves. However, Xie et al. (2008) suggest that the send-down experience did not affect their income. This paper focuses on education attainment after the send-down movement and suggests that education upgrading was a key step that led to a large heterogeneous outcome in the send-down effects.

Because of the nature of the hardship of the send-down experience, the send-down experience is potentially a good comparison with the effect of military service on an individual. Literature suggests that military experience *combined* with financial support has a positive effect on educational attainment for returning veterans (Bound and Turner 2002; Lemieux and Card 2001). On the other hand, there is mixed evidence in different countries regarding the effect of military experience per se on income (Card and Cardoso 2011; Earnings and

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[2]Mao thought that high education was a main source of social inequality (Pan 2002).

Records 1990; Joshua et al. 2011; Albrecht et al. 1999; Imbens and an der Klaauw 1995). This paper provides evidence that a forced hard experience per se may have a positive effect on education attainment without such financial support as the "G.I. bill" in the US, for example. Furthermore, the hard experience could have a positive effect on earnings depending on whether people upgrade their education after the hardship. Future research may potentially investigate the education-upgrading-dependent heterogeneous effect of military service in other countries.

The paper is constructed as follows. After providing background information and documentation about the send-down policy in the following section, I investigate the send-down selection process in section 3. Sections 4, 5, and 6 present the estimation results of the send-down effect on education upgrading, income, and computer ownership respectively. Section 7 provides robustness check and the final section concludes the paper.

2 Background

2.1 The Send-down Policy

The send-down movement is also known as the "rustication movement;" in Chinese, it is called "Shang Shan Xia Xiang," meaning "going up to the mountains and down to the villages." The send-down movement began in 1960 and ended around 1978. The send-down program can be divided into two stages: 1960-1967 and 1968-1978 − before and during the Cultural Revolution, respectively.

In the first stage, the targets of the send-down program were workers, employees, and jobless city dwellers as well as elementary and junior high school graduates. People were mostly persuaded rather than forced to go to rural areas. Voluntary send-down numbers dropped when urban people heard more about the realities of rural life; they were troubled by the hardship of manual labor and the inability to support themselves.

The second stage was initiated by Mao's speech in 1968: "It is necessary for educated young people to go to the countryside to be reeducated by the poor and lower middle class peasants. Cadres and other city people should be persuaded to send their sons and daughters who have finished junior or senior high school, college, or university to the countryside"(Pan 2002). Beyond this point, the send-down movement came to be regarded as a political command and mostly forced rather than voluntary. For economic administrators and cadres students and their parents, if one refused to go, one could be accused of opposing the great strategy of Chairman Mao (Zhang 2000; Pan 2002).[3]

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[3]Pan (2002) documented that Mao was basically antiurban, anti-intellectual and prorural and that this

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The background of the send-down policy was the baby boom. After the establishment of the People's Republic of China in 1949, China experienced a huge baby boom induced by family planning policies, with each family having an average of four children. This baby boom led to increasing employment pressure in the urban areas when those children grew up (Banerjee et al. 2010; Zhou 2013). Additionally, the shortage in food supplies was also one of the main reasons that the government consider increasing labor supplies to rural and frontier areas.

The targets of the second stage of the send-down policy were mostly junior and senior high school students in their graduation year. The number of the sent-down youth varied greatly from year to year. Every year, local governments had a quota of send-downs to fill (Pan 2002; Bernstein 1977; Singer 1971). The send-down policy was intensively executed throughout the country at the beginning of the second stage of the send-down. The number of the sent-down youth then decreased between 1970 and 1972 and reached another peak in 1974 and 1975 (Pan 2002; Xie et al. 2008). Figure 1 reports the number of send-down in the China General Social Survey 2003 data (See Data Appendix for details).

Local government determined the send-down selection process based on the quota and the number of age eligible youths (junior or senior high school graduates). If the quota was high, all age eligible youths would be sent down. If the quota was low, the local government would allow families who had already sent away some proportion of their children to keep their current age eligible child.

For most, the send-down request was unanticipated as the send-down quotas varied greatly from year to year. The send-down movement ended in 1978 when the new leadership of Communist Party took control of government and most of the sent-down youth were allowed to return to urban areas by that time (Zhou and Hou 1999).[4]

In 1985, the government introduced a policy to compensate the sent-down youth, counting their work experience in rural areas as work experience in their current job. The money would be added to their salaries for the rest of their careers. Salary increase due to work experience is minimal, however. In 2003 for example, government occupations paid only 1 RMB (0.15 US dollar) per year of work experience.[5] Five years of the send-down experience only counted for 5 RMB, which is less than 1% of the average income. In calculating salaries, many companies do not consider further years of experience beyond 10 years. Thus the send-down compensation policy is unlikely to noticeably affect people's income and employment.

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was at the root of his support of the send-down movement.

[4]Only about 5% of the sent-down youth remained in rural areas mostly because of their marriage in rural areas.

[5]The work experience salary in government occupations ended in 2005 according to the policy "Guo Jia Gong Wu Yuan Fa."

2.2 The Education Interruption during the Chinese Cultural Revolution

The second stage of the send-down program took place mainly during the famous Chinese Cultural Revolution (1966-1976). During the first two years of the Cultural Revolution, many schools and universities stopped recruiting new students. Although primary schools and junior high schools were reopened after 1968, many senior high schools and universities stopped recruiting new students until 1971-1972. After 1972, those who had missed the opportunity to go to senior high school were not allowed to go to senior high school (Meng and Gregory 2002). University students were recruited on a small scale and the selection criteria were based on political performance and family background. Entrance examinations were not available for all levels of school. Admission was based on recommendations. The number of students recruited every year was based on the education policies of that year (Meng and Gregory 2002).

2.3 Send-down Experience, Documentations

Send-down was an extremely hard experience for those affected adolescents. As reported by many papers (Zhou and Hou 1999; Bernstein 1977; Li et al. 2010), most of the sent-down youth were forced to carry out hard manual labor in the fields for as long as 12 hours a day and 7 days a week. On average, they were forced to stay in rural areas for about five or six years. The dislike of the send-down policy was widely documented after the Cultural Revolution. However, the forced years of hard experience could have helped the urban youth develop a kind of endurance of or greater resistance to future hardships. In rural areas and without parental help, these youth needed to get used to an entirely different environment. The process of overcoming difficulty and surviving in a harsh environment at a young age proved to be an important life experience for them. A great number of documents report that the sent-down youth developed a tough working spirit through the traumatic experience.

Wang (2006), for example, reports:

"Through the send-down experience in the rural area, we learned the spirit of hard work from peasants. We learned that life is tough. The hard experience made us stronger and trained us to have the ability to encounter difficulties...."

Similarly, Xi Jinping, current president of China, stated in one of his articles that the harsh send-down experience helped him build a strong spirit to bear hard work (Xi (2003)).

"The Send-down experience had a huge impact on me. The experience humbled me and made me constantly strive to become stronger. Most importantly, after the harsh experience,

I had the courage to face any difficulty in life...."

3   Identification Strategy for Send-down

3.1   Treatment and Control Group

As described in section II, the send-down movement can be mainly divided into two stages, before the Cultural Revolution and during the Cultural Revolution. Figure 1 presents the number of people sent in each year in the CGSS data. There is a huge jump in the number of people who were sent to rural areas in 1968, the year Mao made his famous speech about the send-down policy. In the second stage, the send-down movement was compulsory and was part of a political goal to reeducate young people; therefore, this period is more suitable to be considered as an exogenous given treatment. In the rest of the paper, I focus only on the second stage of the send-down effect.

The target of the second stage of the send-down program are mostly urban junior and senior high school graduates in their graduation year. The youngest who could potentially be sent down were those who had graduated in 1978 from junior high in urban areas; the oldest who could be sent down were those who had graduated in 1968 from senior high in urban areas.[6] Figure 2 presents by year of birth the proportion of those who were sent to rural areas among the eligible candidates as discussed above. People who were sent down in the second stage were mostly born between 1947 and 1963. Since people born in 1947 reached 56 years of age in 2003, the official retirement age for all females and also for some males in state-owned firms in China, they were dropped from the data. I define people born in urban areas between 1948 and 1963 as the sent-down cohort.

In order to identify the effect of the send-down experience on youth later in their lives, the treatment group is high school graduates (both junior and senior) who were sent to the rural areas during the second stage of the send-down policy. The control group is high school graduates (both junior and senior) who stayed in urban areas but also belong to the sent-down cohort in that they were born between 1948 and 1963.

Less than 1% of the individuals in the sample were able to return to school after entering the labor force during the Cultural Revolution. As returning to school during the Cultural Revolution is not a common event, I drop this sample for potential endogeneity.

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[6]The calculation also takes into account the massive education interruption between 1966 and 1968.

3.2 The Selection of Send-down and Family Background

The send-down movement during the second stage was forced and unavoidable. The number of children sent down was equivalent to 10.5% of China's total nonfarming population in 1979 (Pan 2002). It has been well documented that parental social status or political capital did not prevent youth in certain privileged classes from being sent down (Bernstein 1977; Singer 1971; Unger 1980; Zhou and Hou 1999; Xie et al. 2008). As Chairman Mao Zedong held, the Cultural Revolution indeed seemed to create social equality for the Chinese people. The children of many communist party leaders and government officials were also sent down. The daughter of Deng Xiaoping (China's Chairman in the 1980s) and the nephew of Zhou Enlai (China's first Prime Minister who served between 1949 and 1976) were amongst them.

Almost every family had at least one child sent down among the affected generation (Bernstein 1977). The send-down selection was *not* based on the children's personal traits; however, previous literature suggests that the send-down program discriminated against a group of children whose parents had college level education or capitalist tendencies, were working for a private organization, or owned a private business (Bernstein 1977; Pan 2002; Zhou and Hou 1999).[7]

In the rest of this section, I investigate how parental characteristics could have affected the send-down selection process. The CGSS 2003 provided us with a very detailed set of information about both parents when the respondents were 18 years old, which is very close to the time the respondents would have been selected to be sent down. The information includes both parents' (1) years of education, (2) communist party membership status, (3) leadership status—whether they were chief officers of a branch of government or leaders in the Communist Party, and (4) capitalist tendencies—whether they worked in a private sector or owned a business.

Table 1 presents descriptive statistics of the family backgrounds of those sent down and those not sent down. Table 2 further provides regression results of the impact of family backgrounds on the send-down probability. I divided parents' education into three groups, (1) equal to or less than junior high school, (2) senior high school and (3) college level or above. Paternal education is the only statistically significant family background element on the send-down probability. In particular, children whose fathers had college education or higher were more likely to be sent down (column 2 of Table 2). Note that among parents with senior high school education, the proportions of send-down and non-send-down are equally distributed.

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[7] During the Cultural Revolution, university education was seriously criticized, as Mao believe that high level education is a source of inequality.

In order to avoid the potential correlation between parents' education and personal unobserved characteristics, in all the regressions of the remaining paper I only focus on the samples of those whose parents (both father and mother) had 12 or less years of education. Note that the results are robust for individuals whose parents had nine years or less of education (see section 7). In addition, I also control all the family background variables presented here, though the estimation results are almost the same with or without controlling family backgrounds.

In summary, I restrict samples to individuals who (1) were born between 1948 and 1963, (2) were junior high school or senior high school graduates between 1968 and 1978, (3) were sent down after 1967 if they were sent down, (4) did not have parents with more than 12 years of education, and (5) were not able to return to school before 1978 after entering the labor force. Note that in the rest of the paper only the restricted sample will be used to conduct the analysis. Further sample restriction would be conducted in the robustness checks.

Except for the first two years of the second stage of the send-down movement, the local government usually required at most only one child to be sent down from each family each year. Therefore, parents who had twins had to choose one of the twins to be sent down (Li et al. 2010). However, the probability of having twins was very low, less than 1%; therefore, it was unlikely that the estimates would be affected by the number of twins. For families without twins, it was unlikely that the local government would have allowed parents much freedom in planing and choosing which child to send, given that the local government had a quota of send-down to fill each year and that the quota varied greatly from year to year due to policy changes.

4   The Send-down Effect on Education Upgrading

During the Cultural Revolution, many people experienced an interruption in their education. Before 1972, many senior high schools and universities stopped recruiting students (Meng and Gregory 2002). After 1972, most senior high schools started to recruit students again; however, universities only recruited a very small number of students based on political performance and family background.[8]

After the Cultural Revolution, the education system went back to normal. The university entrance examination was restored in 1977. There was a large demand for education upgrading among people who had experienced the Cultural Revolution. Based on this demand, China gradually increased the number of institutions offering degree programs to people in

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[8]Those were people who were born before 1954 and who had experienced two years of education interruption between 1966 and 1968.

the labor force. Some programs such as adult education offered courses at night or on weekends to accommodate students' schedules. The degree programs included senior high school degrees and 3- and 4-year university bachelor degrees.[9] Many sent-down youth used these options and went back to school to receive higher education after they returned to the urban areas.

In the restricted sample of the CGSS data, 24.1% of the sent-down male group received education upgrading compared to 19.6% of the non-sent-down male group. For females, the difference between the two groups is smaller, consisting of 15.9% in the sent-down group and 14.4% in the non-sent-down group. Conditional on education upgrading, on average the send-downs started to upgrade education in 1984, which is one year earlier than the non-send-downs.

I use a probit model to test whether the send-down experience statistically raised the probability of receiving education upgrading. The results are presented in Table 3. *Send-down* is a dummy variable which equals to one if an individual has been sent down, zero otherwise. *Education Upgrade* is a dummy variable which equals to one if an individual received education upgrading after the Cultural Revolution and zero otherwise. *Education Before* 1978 is the number of years of education the individual received before 1978. For the send-down group, this number consists of the number of years of education received before send-down.[10] *Age* represents the difficulty of returning to school due to biological reasons. The education systems went back to normal in 1978. The older an individual was in 1978, the more difficult it was for this individual to return to school.

Columns 1 to 6 only use male samples. In the first column, none of the family background variables are controlled. The send-down increased the probability of receiving education upgrading by 10%. From column 2 to column 6, more and more family background variables are controlled. The coefficient of send-down is fairly constant and close or equal to 10%, which suggests that the selection of send-down is unlikely to be correlated with the family backgrounds in the restricted sample; otherwise, we would observe large changes in the magnitude of the coefficient of the send down.

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[9]Adult education initially started in China in the 1950s at a very small scale due to low demand. During the Cultural Revolution, adult education, both general and technical, was regarded as heresy and virtually came to a complete halt. After the Cultural Revolution, especially after 1980, it was restored and quickly came to be offered by large-scale institutions (Duke 1987). The length of the degree program offered in the adult education system was mostly equal to the normal degree program.

[10]Before the government allowed most of the sent-down youth to return to urban areas in 1978, sent-down youth could return to urban areas if they were accepted at a college, at least near the end of the Cultural Revolution. However, this was only on a small scale and college admission was mostly based on restrictive political criteria. In the data, only 13 send-down observations received the right to further education after they returned to urban areas before 1978. In order to control the sent-down youth that used going to college as an excuse to return to urban areas, I dropped these 13 observations.

The several years of hard manual labor could have cultivated among those sent down a strong motivation to avoid manual labor later in their lives, encouraging their pursuit of higher levels of education upon their return to urban areas. They knew that higher levels of education could substantially help them steer clear of hard manual labor.

In female samples (column 7), the coefficient is much smaller and with a large standard error. The insignificance of the send-down coefficient in the female samples can be explained as follows: when they returned to urban areas, most sent-down females had already reached 23 years of age, a typical age for females in China to get married. Most of the females, therefore, spent more time looking to get married and raise children than they did looking to further their education. But after they were married and had children, it became more difficult for them to go back to school than it was for males.

5   The Send-down Effect on Income

The long-term impact of the send-down on income could be ambiguous. It could be positive because the hard traumatic experience could have motivated those sent down to work harder later in their lives. On the other hand, an average five years loss of urban working experience or network connection could potentially have a negative impact.

Table 4 reports the average income of the send-down group and the non-send-down group by gender. By only reading the numbers in the first panel of the Table 4, one might think that the send-down experience had no impact on income in either gender. However, if we further divide income according to whether the individuals received education upgrading, it turns out there is a large difference between the send-down and the non-send-down. For males who received education upgrading, the average income of the send-down group is 1587 RMB, which is more than 20% higher than the income of the non-send-down group. For those who did not receive education upgrading, the sent-down males have an income of 165 RMB lower than that of the non-sent-down males.

The pattern of income difference in the female samples is similar to that in the male samples. However, the difference in income is not as large as it is in the male samples.

In order to test the income difference described above, I use the following equation:

$$Income_i = \alpha_0 Senddown_i + \alpha_1 Senddown \times EduUpgrade_i + \alpha_2 EduUpgrade_i + X_i\gamma + \epsilon_i \quad (1)$$

$Income_i$ is the log monthly income of the individual i. $EduUpgrade_i$ is an education upgrading indicator dummy which equals to one if one received education upgrading and zero otherwise. X_i includes experience, total years of education, employment status, number

of years of Communist Party membership, family background, and province dummies. ϵ_i is a random component.

In equation 1, α_0 is the treatment effect of the send-down experience for all the individuals in the send-down group. α_1 tests the additional send-down treatment effect for those who received education upgrading after the Cultural Revolution. Because the education upgrading dummy is controlled, α_1 compares the income of the send-down group who received education upgrading to the income of those in the non-send-down group who also received education upgrading. Having said this, α_1 could still be endogenous, because $EduUpgrade_i$ is endogenous, as is its interaction term with send-down. The solution to this endogeneity is provided in the next subsection.

The OLS estimation results of equation 1 is reported in Table 5. Columns 1 to 10 only focus on the male samples. Column 1 only includes the variables Send-down, Education Upgrading, and their interaction term without any additional controls. Column 2 is the baseline specification without the family backgrounds. Columns 3 to 7 add more and more family-background variables. Column 8 uses experience, which excludes the send-down years. The work during send-down consisted mostly of agricultural labor, which could hardly contribute to urban work when those sent down returned to urban areas. Thus, excluding the work experience during the send-down from the total work experience would be an appropriate measure. Column 9 adds a set of one-digit occupation dummies.

Column 10 adds a government related work place indicator and its interaction term with send-down. After the Cultural Revolution, if the government provided any informal compensation to people who were sent down, those sent-down who worked in a government-related work place would be more likely to have a higher income. The insignificance of the send-down-government interaction term suggests that it is unlikely that the government had used some informal way to compensate the sent-down people.

Throughout columns 1-10, the coefficient of the interaction of send-down and education upgrading is significant and stays at around 0.20. The magnitude is also larger than the magnitude of the negative coefficient of the send-down. This suggests that conditional on education upgrading, the send-down experience could have a strong positive effect on the income of males. The coefficient of send-down is negative with slightly large standard errors, which implies that send-down tends to have a negative impact if one did not receive education upgrading. In column 8, where I exclude the years of send-down from the total working experience, the negative coefficient of send-down becomes smaller and insignificant. This suggests that the negative effect of send-down could be driven by the loss of urban area working experiences. Similar to the estimation results in Table 3, send-down does not have a significant effect on females (column 11).

5.1 Identification Strategy

The OLS estimators reported in Table 5 could be biased because education upgrading is an individual choice based on unobserved personal characteristics such as ability. In order to correct this endogeneity, I use the variation from the supply side of the education system during the Cultural Revolution to instrument the education upgrading choice.

People upgraded their education after the Cultural revolution because they did not have opportunities to attend their desired education degree program during the Cultural Revolution, even if they had more than sufficient academic achievement or ability.

The supply of senior high schools and universities during the Cultural Revolution was largely determined by government policies. It is natural to think that students who graduate in a year when there is less competition (i.e., when more admission is available for a small number of candidates) would have a better possibility to enter those schools while those who graduate in a year when there is high competition (i.e., when only a small number of seats is available for a large number of candidates) would find it harder to move on to an upper degree school and would therefore be more likely to have education upgrading after the Cultural Revolution.

The number of teachers recruited locally was determined by education policies during the revolution. I use the local teacher ratio of university to senior high school to measure the competitiveness of entering university; I use the local teacher ratio of senior high school to junior high school to measure the competitiveness of entering high school.

The teacher ratios are matched with the individuals' end-of-schooling year, the level of schooling they could potentially attend (either university or high school), and the province they lived. For example, the instrument for XiaoMing who graduated from a senior high school in Shanghai in 1972 is the university-senior high school teacher ratio in Shanghai in 1972, while the instrument of HaiLiang who graduated from a junior high school in Beijing in 1969 is the senior high-junior high school teacher ratio in Beijing in 1969. In the rest of the paper I call this instrument "teacher ratio."

The main reason the number of teachers in lower-degree schools is used to normalize the number of teachers in upper-degree schools is that only the normalized teacher number reflects the competitiveness of going to upper-degree schools. For example, between 1971 and 1977, the government placed more emphasis on developing senior high schools; therefore, although the number of university teachers also started to increase after 1970, it was no easier for senior high graduates to go to university because there were too many candidates.

Figure 3 and Figure 5 show that the availability of the education system is well captured by the teacher ratios. In Figure 3, the ratio of senior high-junior high school teachers is strongly correlated with the enrolled students ratio of senior high-junior high school.

Similarly, Figure 5, which reports the ratios in university-senior high school level, also shows a very strong correlation between teachers and enrolled students. The strong comovement of the teacher ratios and the enrolled student ratios also rule out the potential concern that change in the number of teachers could be merely a result of change in the quality of education.

Figure 4 and Figure 6 suggest that the teacher ratio during the Cultural Revolution is strongly negatively correlated with the education upgrading choice after the revolution. In Figure 4, each point of the dash line represents the proportion of junior high school students (who completed their final degree in a given year during the Cultural Revolution) had education upgrading after the Cultural Revolution. Similarly, in Figure 6, each point of the dash line represents the proportion of senior high school students (who completed their final degree in a given year during the Cultural Revolution) had education upgrading after the Cultural revolution. The strong negative correlation further confirms that a substantial number of people upgraded their education after the Cultural Revolution because they did not have the opportunity to study at higher levels during the revolution as education possibilities being at a shortage then.

The identification strategy relies on the number of teachers being exogenous. The number of teachers in senior high schools and universities was dictated by government policies during the Cultural Revolution rather than by demand. At the beginning of the Cultural Revolution, the government shut down a large number of senior high schools and universities, causing a large decline in the number of teachers. After 1971, Chairman Mao changed his direction on education policies and gradually reopened senior high schools and universities. Close to the middle of the 1970s, he placed more emphasis on the development of senior high schools (Meng and Gregory 2002; Zhang et al. 2007).

Note that province dummies are included in the regressions. This rules out the impact of provincial level fixed features on estimates. The identified variation comes from the within province, cross time differences in teacher ratios.

As shown in section 4, the age of individuals is also an important factor affecting these individuals' decisions to upgrade their education. When the education system went back to normal in 1978, the older the individual was, the more difficult it was for this individual to go back to school. As one becomes older, "the lost opportunity" effect could be diminishing. Therefore, the interaction of teacher ratio and age is also used as an instrument for education upgrading.

The endogenous variables in equation 1 are education upgrading and its interaction term with send-down. The instruments of these two variables are teacher ratio, the interaction of teacher ratio and age, and the interaction of teacher ratio and send-down. The instruments

help us identify a local average treatment effect in the sense that they identify the effect of people who go to education upgrading because of the relatively low supply of education resources during the Cultural Revolution.

5.2   IV Estimation Results

Table 6 reports the IV estimation results. In column 1, the coefficient of the $Teahcer\,Ratio$ is negative and its interaction term with age is positive, which suggest that individuals who graduated in a low teacher-ratio year during the Cultural Revolution were more likely to receive education upgrading after the Cultural Revolution, with the effect diminishing if one was older. The F Statistics on all excluded instruments is 10.42.

I further divide samples by non-send-down and send-down (columns 2 and 3) instead of reporting the regression results of the interaction term of send-down and education up-grading. By doing this, we have a better understanding of how the teacher ratio ("the lost opportunity effect") affects each group. If the harsh manual labor experience had motivated the sent-down males, we would expect the sent-down males who had not achieved the desired level of education during the Cultural Revolution (merely due to lack of opportunity), more likely to have had education upgrading after the Cultural Revolution because they would have cherished the opportunity to further their education. The estimation results support this suggestion. The size of the coefficient of teacher ratios of the send-down group is much larger than that of the non-send-down group. In caution, however, when interpreting the results, we may have to keep in mind that the sample size of the send-down group is quite small and the estimates have a relatively large standard errors.

Estimation results from column 4 to column 7 correspond with the OLS estimation results from column 7 to column 10 in Table 5. All of the IV estimates confirm the OLS results. Conditional on education upgrading, sent-down males earn significantly more income than those who also received education upgrading but had not been sent down.

The size of the IV estimates is larger than that of the OLS estimates. The estimation results in column 3 tells us that when holding everything else constant, an education-upgraded sent-down males will earn 35% higher income compared to one who also received education upgrading but had no send-down experience (subtract 0.18 from 0.53 in column 4). Since the average education upgrading is three years long, the 35% higher income is equivalent to the send-down group having an 11% higher return per one year of education upgrading than the non-send-down group.

The instruments identify a local average treatment effect. The compilers are those who were not able to receive education upgrading because of lack of opportunity. The compilers

would probably have been qualified to go to upper-level school had there been no cultural revolution. They had been denied the opportunity to achieve the desired level of education because of the change in government policy. In addition, by going to rural areas to carry out hard manual labor, they were badly set back. This setback was more traumatic for them than for those, for example, who would have been disqualified for high education regardless of the education policies and were sent down as well. This traumatic experience could have motivated those qualified for upper-level education and made them want to study and work harder once they regained the opportunities to do so.

During the hard experience, some were able to overcome the difficulties and become more motivated and hard working. Others, however, suffered a negative effect from this difficult experience in their adolescence. After the endogeneity of education upgrading has been corrected, the coefficient of send-down becomes significantly negative with a large size. The large negative effect of send-down could be partially due to the loss of work experience or connections in urban areas (in column 6 of Table 6 where the years of send-down are not counted as the total work experience, the size of the coefficient of send-down becomes smaller). However, it could also be that the inner values or noncognitive skills of those sent down had been "destroyed in their adolescent years during the send down experience.

6   The Send-Down Effect on Computer Ownership

After the Cultural Revolution, China had a series of economic reforms. The social economic environment changed dramatically. As an example, computers are one of the new technologies favored by rapid economic and technological growth.

Knowing how to use a computer could have potentially benefited individuals during the period of social economic and technological growth. However, to learn how to use a computer may have been a challenge for both the send-down and the non-send-down groups. Computers made their presence in China in the early 1990s and came to prevail only after 2000. It takes time and effort to learn to use a computer even for the young, let alone for those 40 or 50 years old. Owning a computer could serve as an indicator of an individual's ability to quickly adapt to technological change.

The CGSS data asks respondents the number of the various home appliances they own: computers, color TV, air conditioners, and video cameras. Unlike computers, home appliances such as color TV, air conditioners or video cameras require little or no learning skills and bring almost no benefit in an individual's earnings or employment opportunities. As the send-down experience should have no effect on ownership of these nonskill related appliances, I estimate this effect as falsification tests in my investigation of the send-down effect

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on computer ownership.

Panel A of Table 7 presents the average number of computers at home by gender, send-down experience, and education-upgrading status. In the education-upgraded male samples, the average number of computers is more than 25% higher in the sent-down groups than it is in the non-sent-down groups. There is a similar tendency in the female sample; however, the difference is much smaller. In panel B, both OLS and IV estimation results suggest that conditional on education upgrading the sent-down males have more computers at home compared to the non-sent-down males. However, there are no major differences in ownership of other major household appliances.

The education-upgraded sent-down males may have learned abilities to adjust to change in their environment during the send-down. The several years of forced reallocation into a different environment during youth may have helped those sent-down males gain the necessary learning skills in adapting to change and made them able to benefit from the social economic change in their lives later on.

7 Robustness Check

Early in the 1970s, the government began allowing some sent-down youth to return to urban areas if they could find a job or were accepted at a school in an urban area. Li et al. (2010), Zhou and Hou (1999) suggest that well-connected families were able to get their children back to urban areas earlier.

In order to avoid the potential endogeneity problem resulting from early return events, I first controlled for a family connection indicator. The indicator comes from the survey question "How many of your relatives or friends helped get you your job?" The estimation results are presented in panel A of Table 8. Second, I further dropped all the sent-down people who were able to return to urban areas before the end of the Cultural Revolution. This accounts for 29% of the total male send-down population in the data. These results are presented in panel B of Table 8. Note that I have already dropped those who were able to return to school during the Cultural Revolution in all the regressions presented so far (this accounts for 1% of the sample). The results suggest that the family connection or the early return events are unlikely to affect the estimated send-down effects. The coefficients of the send-down and its interaction term are all statistically significant and the sizes are quite close to the ones previously estimated.

I further tested the send-down effect among individuals with different family backgrounds. Specifically, I focused on the following family backgrounds: (1) parents who did not work in a private firm and did not own a private business (i.e., did not have capitalist tendencies); (2)

parents who were not communist party members; (3) parents with only junior high school education or lower; (4) father who worked in nongovernment sectors; and (5) father who was in an unskilled white collar occupation or blue collar occupation. In (4) and (5) I do not restrict by mother's work place or occupation because relatively few individuals had a working mother when they were 18 years old.

Samples from (2) to (5) are individuals with "disadvantaged" family backgrounds. Children from these family backgrounds potentially have less political power, less government-related connections, or less motivation for higher education. From the estimation results in the previous sections, we had several significant positive effects from the send-down: the sent-down males are more likely to have education upgrading, conditional on education upgrading they are more likely to earn high income and have computers at home. I therefore focused on these individuals with "disadvantaged" family backgrounds, investigating whether the positive effects of the send-down are driven by differences in family backgrounds.

The results are reported in the remaining panels in Table 8. All the coefficients in Table 8 have the correct sign, and all of them are not statistically different from the regression results in the previous sections. Overall, the results reported in Table 8 suggest that the send-down effects are robust against various types of family backgrounds.

8   Conclusion

The forced send-down movement affected more than 16 million youth in China from 1968 to 1978. This rare event provided us with the opportunity of a "natural experiment" to study how a hard manual- labor experience at a young age could affect one later in life.

The estimation results in this paper show that the traumatic send-down experience motivated a significant number of youth to upgrade their education. This was a crucial action in regards to the future economic outcomes of the send-down group. The sent-down males who received education upgrading earn a much higher income than the non-sent-down males who also received education upgrading. The IV estimation results suggest that the send-down experience raised the send-down group's income by as much as 35%. For those who did not receive education upgrading, however, the send-down experience has a negative effect.

This paper also found that the education-upgraded male group is more likely to own a computer compared with its non-sent-down counterpart. This could suggest that the sent-down males may have gained skills of adapting to change in their social environment, which could be an important reason explaining why the education-upgraded sent-down males are doing well.

This paper suggests that the send-down does not have a significant impact on females.

After their return to urban areas, most of the sent-down females had reached their mid-twenties, an age when females usually turn to marriage and raising children. This could be a potential reason why the send-down effect is not significant for them.

Data Appendix

The data used in this paper is from the China General Social Survey (CGSS) 2003. The CGSS 2003 data is also part of the East Asian General Social Survey. The data was collected jointly by the Hong Kong University of Science and Technology Survey Research Center and the Sociology Department of People's University of China. CGSS 2003 was an individual level survey and was conducted in city areas. It covered 24 provinces and 4 municipalities. Only three autonomous provinces were not included in the survey: Tibet, Qinghai, and Ninxia.[11] The survey was conducted based on a probabilistic sample and stratified design.

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[11]Qianghai is a province next to Tibet. Ninxia is another minority province located in inland China. The 2003 survey was conducted in October and November.

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Figure 1: Number of Youth Sent to Rural Areas by Year
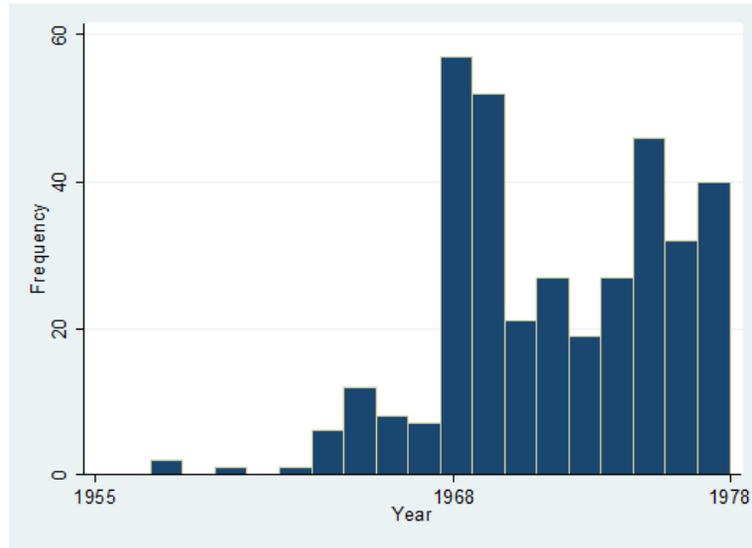
Data Source: China General Social Survey 2003

Figure 2: Send-down Proportion by Year of Birth
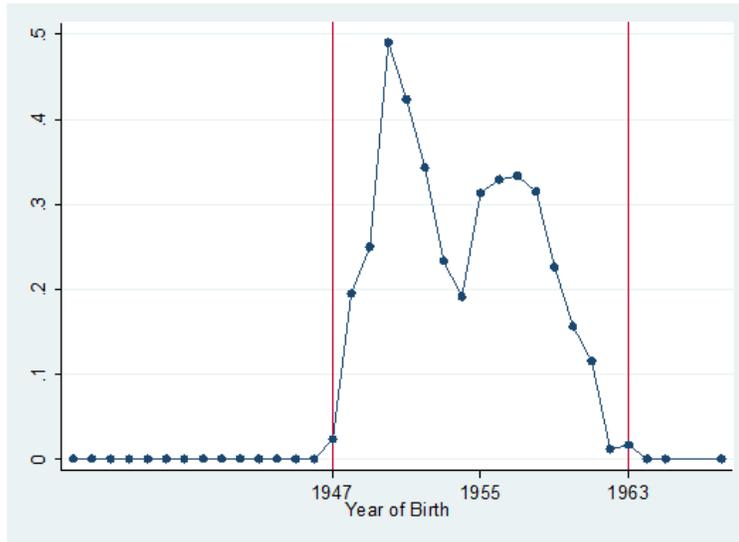
Note: The proportion is among junior high school and senior high school graduates in urban areas.

Figure 3: IV for Junior High School Graduates − Comovement between Teacher Ratios and Enrolled Student Ratios
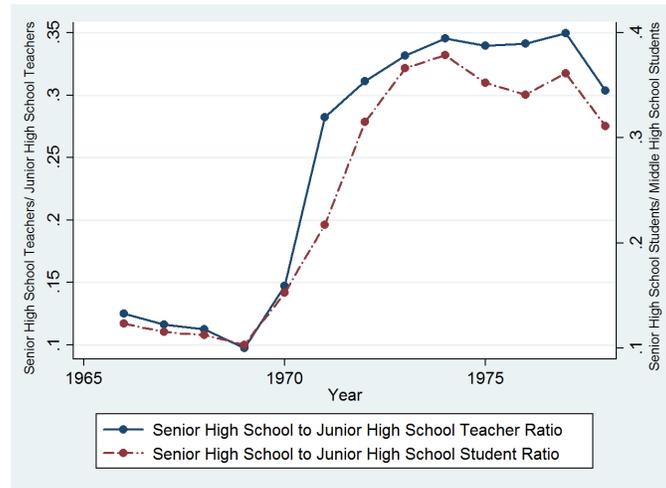
Data sources: China Education Statistical Yearbook

Figure 4: IV for Junior High School Graduates − Negative Correlation between Teacher Ratios and Education Upgrading Choice
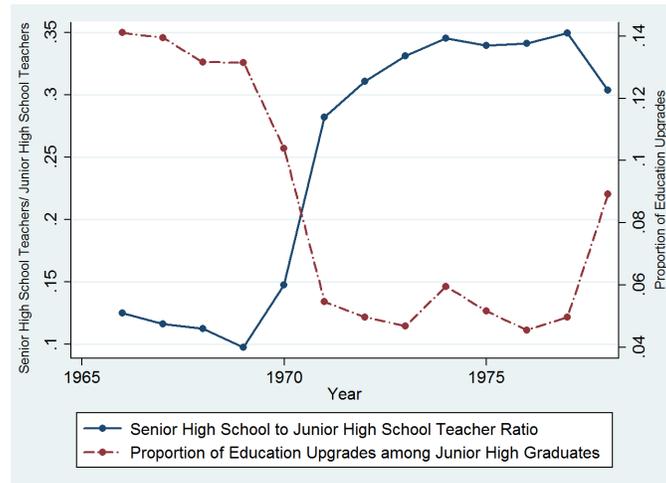
Note: The dash line reports the proportion of students who received education upgrading conditional on individual's graduation with a final degree in a given year during the Cultural Revolution. The dash line is smoothed by a three-year moving average (the averages for each year were combined with those for the years immediately above and below).

Figure 5: IV for Senior High School Graduates − Comovement between Teacher Ratios and Enrolled Student Ratios
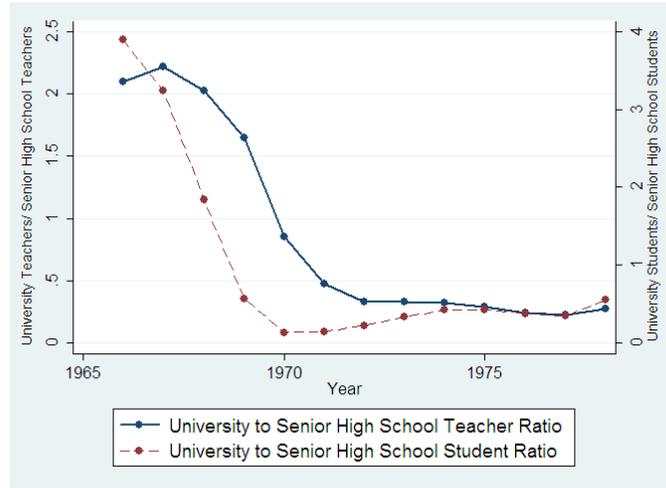
Figure 6: IV for Senior High School Graduates − Negative Correlation between Teacher Ratios and Education Upgrading Choice
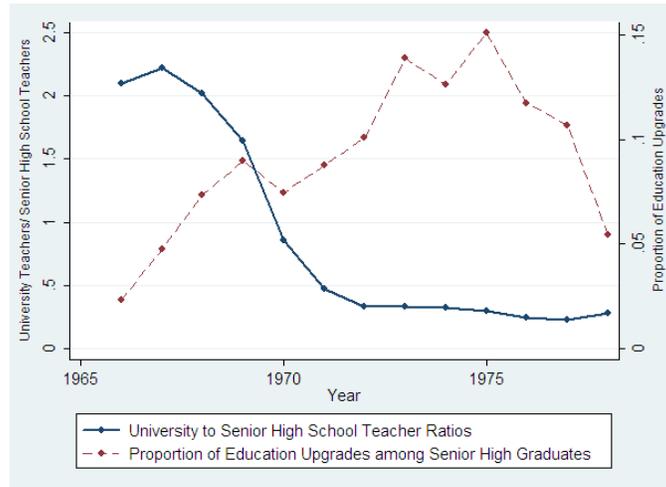
Note: The dash line reports the proportion of students who received education upgrading conditional on individual's graduation with a final degree in a given year during the Cultural Revolution. The dash line is smoothed by a three-year moving average (the averages for each year were combined with those for the years immediately above and below).

Table 1: Descriptive Statistics, by Send-down Experience

Variable	Send-down Mean (1)	Send-down Standard Deviation (2)	Non-send-down Mean (3)	Non-send-down Standard Deviation (4)
Family Backgrounds at Age 18				
Father:				
Years of Education	6.22	4.66	5.09	4.45
Proportion of Junior High School or below	0.84	0.37	0.88	0.326
Proportion of Senior High School	0.08	0.27	0.08	0.26
Proportion of College or above	0.08	0.28	0.05	0.21
Proportion of Leader	0.05	0.21	0.03	0.17
Proportion with Communist Party Membership	0.31	0.46	0.28	0.45
Proportion with Capitalism Traits	0.02	0.13	0.02	0.15
Mother:				
Years of Education	3.37	4.29	2.84	4.05
Proportion of Junior High School or below	0.92	0.27	0.94	0.23
Proportion of Senior High School	0.05	0.23	0.04	0.18
Proportion of College or above	0.02	0.15	0.02	0.14
Proportion of Leader	0.01	0.08	0.00	0.06
Proportion with Communist party membership	0.07	0.26	0.06	0.23
Proportion with Capitalism Traits	0.01	0.11	0.01	0.08
Send-down Duration	5.33	3.41		
Age	48.46	3.46	46.64	4.27
Female	0.55	0.50	0.46	0.50
Proportion Junior High School Graduates	0.66	0.47	0.65	0.48
Obs.	333		970	

Note: I restrict samples to individuals who (1) were born between 1948 and 1963, (2) were junior high school or senior high school graduates between 1968 and 1978, (3) were sent down after 1967 if they were sent down, (4) were not able to return to school before 1978 after entering the labor force.

Table 2: Probit Estimation of Send-down

| | Dependent Variable: Send-down | |
	(1)	(2)
Family Backgrounds at Age 18		
Father:		
Years of Education	0.01***	
	(0.003)	
Senior High School		0.01
		(0.05)
College or above		0.16*
		(0.10)
Leader	0.04	0.07
	(0.06)	(0.07)
Communist Party Membership	0.02	0.02
	(0.03)	(0.04)
Capitalism Traits	-.08	-.06
	(0.10)	(0.11)
Mother:		
Years of Education	0.002	
	(0.003)	
Senior High School		0.09
		(0.07)
College or above		-.09
		(0.07)
Leader	-.03	-.03
	(0.14)	(0.14)
Communist Party Membership	0.01	0.03
	(0.07)	(0.07)
Capitalism Traits	0.10	0.08
	(0.20)	(0.19)
Obs.	1203	1203

Note: Marginal effects are reported. All regressions control for age, gender, education degree during the Cultural Revolution and province dummies. I restrict samples to individuals who (1) were born between 1948 and 1963, (2) were junior high school or senior high school graduates between 1968 and 1978, (3) were sent down after 1967 if they were sent down, (4) were not able to return to school before 1978 after entering the labor force. Province dummies are included. Standard errors in parentheses are clustered at the province level. *** statistically significant at 1% , ** statistically significant at 5%, * statistically significant at 10%.

Table 3: Probit Estimation: the Impact of Send-down Experience on Education Upgrading

| | Dependent Variable: Education Upgrade | | | | | | |
| | Male (1)-(6) | | | | | | Female |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Send-down	0.10***	0.09***	0.09***	0.09***	0.09***	0.10***	0.02
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.05)
Years of Education Before 1978	-.01*	-.02**	-.02**	-.02**	-.02**	-.02**	-.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age	-.01***	-.01***	-.01***	-.01***	-.01***	-.01***	-.06
	(0.004)	(0.01)	(0.01)	(0.01)	(0.01)	(0.004)	(0.06)
Parents Education		Y	Y	Y	Y	Y	Y
Parents Education Squared			Y	Y	Y	Y	Y
Parents Communist Party				Y	Y	Y	Y
Parents Leaders					Y	Y	Y
Parents Capitalism						Y	Y
Obs.	618	618	618	618	618	618	562

Note: Marginal effects are reported. All regressions control for years of communist party member and province dummies. Only the restricted samples are used. Province dummies are included. Standard errors in parentheses are clustered at the province level. *** statistically significant at 1% , ** statistically significant at 5%, * statistically significant at 10%.

Table 4: Descriptive Statistics of Monthly Income by Gender and Education Upgrading

| | Send-down | | Non-send-down | |
| | Mean | Standard Deviation | Mean | Standard Deviation |
	(1)	(2)	(3)	(4)
Male	1011	762	1023	1043
Female	757	593	792	624
Male				
Education Upgraded	1587	1034	1244	711
Not Education Upgraded	795	485	960	1113
Female				
Education Upgraded	1181	830	1067	531
Not Education Upgraded	659	476	733	627

Note: Only the restricted samples are used. Unit: RMB.

Table 5: The Impact of Send-down Experience on Income (OLS)

| | Dependent Variable: Income | | | | | | | | | | Female |
| | Male(1)-(10) | | | | | | | | | | |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Send-down × EduUpgrade	0.20* (0.1)	0.20* (0.10)	0.20* (0.11)	0.20** (0.10)	0.19** (0.09)	0.19** (0.09)	0.19** (0.09)	0.19** (0.09)	0.20** (0.09)	0.19** (0.09)	-.09 (0.11)
Send-down	-.02 (0.06)	-.07 (0.06)	-.10* (0.06)	-.10* (0.06)	-.10* (0.06)	-.10* (0.05)	-.09* (0.06)	-.05 (0.05)	-.09* (0.06)	-.10* (0.09)	-.02
Send-down × Government									0.07 (0.21)		
Edu Upgrade	0.42*** (0.07)	0.07 (0.08)	0.07 (0.08)	0.07 (0.08)	0.07 (0.08)	0.07 (0.08)	0.06 (0.08)	0.06 (0.08)	0.05 (0.09)	0.07 (0.08)	0.13 (0.10)
Years of Education		0.06*** (0.01)	0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.01)	0.05*** (0.02)	0.05*** (0.01)	0.08*** (0.02)
Experience		0.02*** (0.01)	0.02*** (0.01)	0.02*** (0.01)	0.02*** (0.01)	0.01*** (0.01)	0.01*** (0.01)		0.02*** (0.01)	0.01*** (0.01)	0.02*** (0.01)
Parents Education			Y	Y	Y	Y	Y	Y	Y	Y	Y
Parents Education Squared				Y	Y	Y	Y	Y	Y	Y	Y
Parents Communist Party				Y	Y	Y	Y	Y	Y	Y	Y
Parents Leaders					Y	Y	Y	Y	Y	Y	Y
Parents Capitalism						Y	Y	Y	Y	Y	Y
Experience w/o SD Years								Y			
Occupation Dummies									Y		
Government										Y	
Obs.	583	583	583	583	583	583	583	583	571	583	505

Note: All regressions control for years of communist party member, employment status and province dummies. Column 7 uses experience, which excludes send-down years. Column 8 adds a set of one digit occupation dummies. Government is a dummy variable which equals to one if an individual works in government related work place or state-owned firms. Only the restricted samples are used. Province dummies are included. Standard errors in parentheses are clustered at the province level. *** statistically significant at 1% , ** statistically significant at 5%, * statistically significant at 10%.

Table 6: The Impact of Send-down Experience on Males' Income (IV)

| | 1st Stage EduUpgrade | | | 2nd Stage Income All | | | |
| | All | Non-Send-down | Send-down | | | | |
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Teacher Ratio	-.02**	-.02***	-1.57**				
	(0.009)	(0.009)	(0.62)				
Teacher Ratio × Age	0.0004**	0.0004**	0.03**				
	(0.0002)	(0.0002)	(0.01)				
Send-down × Teacher Ratio	0.01						
	(0.03)						
Send-down × EduUpgrade				0.53**	0.36**	0.52**	0.45**
				(0.22)	(0.17)	(0.25)	(0.19)
Send-down	0.03			-.18*	-.04	-.13	-.11
	(0.11)			(0.10)	(0.09)	(0.08)	(0.1)
Send-down × Government							-.21
							(0.22)
Experience w/o SD Years					Y		
Occupation Dummies						Y	
Government							Y
All Family Backgrounds	Y	Y	Y	Y	Y	Y	Y
Obs.	542	423	119	542	542	532	542

Note: All regressions control for education upgrading dummies, experience, age, years of communist party member, and employment status. Only male sample are used. Column 4 uses experience, which excludes send-down years. Column 5 adds a set of one digit occupation dummies. Government is a dummy variable which equals to one if an individual works in government related work place or state-owned firms. Only the restricted samples are used. Province dummies are included. Standard errors in parentheses are clustered at the province level. *** statistically significant at 1% , ** statistically significant at 5%, * statistically significant at 10%.

Table 7: The Impact of Send-down on Having Computers

	Panel A: Descriptive Statistics of Computers at Home			
	Male		Female	
	Send-down	Non-send-down	Send-down	Non-send-down
All	0.33	0.28	0.35	0.32
	(0.51)	(0.46)	(0.50)	(0.48)
Education Upgraded	0.65	0.41	0.54	0.45
	(0.60)	(0.53)	(0.58)	(0.50)
Not Education Upgraded	0.22	0.25	0.32	0.30
	(0.44)	(0.44)	(0.48)	(0.48)
	Panel B: Regression Results of Home Appliances							
	Computers		Color TVs		Air Conditioners		Video Cameras	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Send-down × EduUpgrade	0.254*	0.803***	0.037	0.148	-.088	0.499	0.03	-.107
	(0.143)	(0.283)	(0.215)	(0.875)	(0.224)	(0.532)	(0.037)	(0.081)
Send-down	-.018	-.134*	0.058	0.141	0.069	-.044	0.006	0.041
	(0.033)	(0.075)	(0.048)	(0.183)	(0.078)	(0.125)	(0.018)	(0.03)
Edu Upgrade	0.073	-.290	0.077	-1.380	0.193	-.444	-.025	0.005
	(0.048)	(0.915)	(0.111)	(1.748)	(0.142)	(1.207)	(0.017)	(0.09)
Obs.	618	580	618	580	618	580	618	580

Note: Standard deviations are presented in parentheses of panel A. All regressions control for individual income, household income, number of children, age of the youngest child, presence of female children, one digit occupation dummies, years of education, experience, years of communist party member, employment status, family backgrounds. Only the restricted samples are used. Province dummies are included. Standard errors in parentheses are clustered at the province level in panel B. *** statistically significant at 1% , ** statistically significant at 5%, * statistically significant at 10%.

Table 8: Robustness Check

| | Education Upgrade | Dependent Variables | |
| | | Income (IV) | Computers (IV) |
	(1)	(2)	(3)
Panel A. Family Connection Controlled			
Send-down × EduUpgrade		0.51*	0.80***
		(0.27)	(0.30)
Send-down	0.01***	-.18*	-.13*
	(0.04)	(0.09)	(0.08)
Obs.	617	541	580
Panel B. Early Return Dropped			
Send-down × EduUpgrade		0.48**	1.08*
		(0.21)	(0.65)
Send-down	0.11**	-.18**	-.18
	(0.05)	(0.07)	(0.13)
Obs.	577	507	540
Panel C. Parents Working in Private Firms Dropped			
Send-down × EduUpgrade		0.49*	0.68***
		(0.26)	(0.25)
Send-down	0.10**	-.16*	-.09
	(0.04)	(0.09)	(0.08)
Obs.	600	527	565
Panel D. Parents Non-communist Party Member			
Send-down × EduUpgrade		0.96*	1.27
		(0.52)	(1.12)
Send-down	0.09*	-.28***	-.24
	(0.05)	(0.09)	(0.18)
Obs.	417	401	432
Panel E. Parents with Junior High Education or Below			
Send-down × EduUpgrade		0.69***	0.94***
		(0.16)	(0.25)
Send-down	0.08**	-.16**	-.14*
	(0.04)	(0.08)	(0.07)
Obs.	550	498	535
Panel F. Father in Non-government Sector Only			
Send-down × EduUpgrade		0.41**	0.83***
		(0.21)	(0.31)
Send-down	0.09**	-.13*	-.13*
	(0.04)	(0.08)	(0.07)
Obs.	590	508	561
Panel G. Father Non-skilled White or Blue Color Occupation			
Send-down × EduUpgrade		0.83*	1.26*
		(0.50)	(0.67)
Send-down	0.09*	-.26**	-.17
	(0.05)	(0.11)	(0.11)
Obs.	487	436	419

Note: Only male samples are used. All regressions control for experience, age, years of communist party member, employment status, family backgrounds and province dummies. In addition, column 1 controls for years of education during the Cultural Revolution; column 2 and 3 controls for years of education; in addition, column 3 controls for personal income, household income, number of children, age of the youngest child, presence of female children, one digit occupation dummies, experience. Column 1 reports the marginal effect of the probit model. Only the restricted samples are used. Province dummies are included. Standard errors in parentheses are clustered at the province level. *** statistically significant at 1% , ** statistically significant at 5%, * statistically significant at 10%.