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The Long-term Consequences of Ordeals: Evidence from the Chinese Sent-down Movement

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Abstract: The Chinese sent-down movement between the mid 1950s to the late 1970s is a suffering period for Chinese sent-down youths. Using the treatment effect model and the ordered probit model, we examine the impact of sent-down experience on sent-down youths' income and happiness based on the sample of CGSS2003 and CGSS2006. By doing so, we can explore the long-term consequences of one's suffering experience. The overall sample regression results show that sent-down experience increase 42% of individuals' income, while reducing 13% of individuals' happiness. Sub-sample analysis results are robust to the conclusion that the sent-down experience makes a positive impact on income and a negative impact on happiness. This study provides objective evidence for the historical evaluation of sent-down movement, a new interpretation for the Easterlin paradox from the view of personality latitude, new empirical evidence for supporting the new human capital theory, and useful inspiration for the the current grass-roots employment policy for university graduates in China.

Keywords: Sent-down movement, Ordeals, Sent-down youth, Income, Happiness

1. Introduction

The Chinese sent-down movement is an important history. From 1962 to the end of 1970s, more than 17 million urban youths were sent to the countryside [1]. The sent-down movement put in so much of youth in exchange for unknown and suffering. Many families were forced to break up. But it also makes the sent-down youth suffer hard exercise and outstand in all areas of society. The sent-down movement has changed the life path of a young generation and has affected the lives of hundreds of millions of urban residents.

Since the eighties of last century, a large number of novels and memoirs have described the sent-down youths'

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sent-down experience and its consequences[1]. Some sent-down youths think that it is due to the sent-down movement that they miss educational opportunities and have a painful memory. But some other sent-down youths believe that hard lives in the countryside have honed their willpower and environmental adaptability which lay the foundation for the future life path. The controversy of the sent-down movement has existed for a long time.

The academic study on the long-term impact of the sent-down movement is mainly from history and sociology subject and mostly concentrates on the macro economic and social consequences [2-5]. There are only a few quantitative studies on the long-term effects of the movement from the micro perspective [6-11].

Zhou and Hou (1999)、Xie et al. (2008) and Yang and Li (2011) investigate the impact of sent-down experience on youths' income, but their conclusions are different [6-8]. After comparing the income difference between the sent-down youth and non-sent-down youth in 1978, 1987 and 1993, Zhou and Hou (1999) find that the sent-down youth's income does not significantly affected by the sent-down experience [6]. Xie et al. (2008) analyzed data from the Survey of Family Life in Urban China in 1999 and find the sent-down experience has no effect on youths' income [7]. Yang and Li (2011) find that sent-down youths' average income is higher than non sent-down youths' average income by analyzing data from Chinese Household Income Project Survey in 1995 and 2002 [8]. In addition, the existing literature also investigates the impact of sent-down experience on education level [6,7,9], occupation choice [6,7], age of first marriage [6], age of first childbearing [6,10] and the level of trust [11].

Adolescence is an important stage of life. The experience during this period will have an important impact on one's future development. Rustication is a suffering experience. How is the long-term impact of this experience? This paper employs the treatment effect model and the ordered probit model to investigate the impact of sent-down experience on sent-down youths' income and happiness by using CGSS2003 and CGSS2006 data. The research results show that the sent-down experience can significantly increase the individual's income, but also significantly reduce the individual's happiness. Our research has the following contributions to the existing literature.

Firstly, this study can provide new useful inspiration for China's grass-roots employment policy for college graduates. In 1999, China began to implement a large-scale college enrollment expansion plan. In 2003, the first graduates after the college expansion began to enter the labor market. Since then, college graduates' employment situation has become grim year by year. The Chinese government attaches great importance to the problem of college graduates employment and issues a large number of relevant policies. The grassroots-oriented employment policy for college graduates is an important part of those policies. Although the current grassroots-oriented employment policy is not the same as the former sent-down movement, but there are some similarities between the two. From the view of policy motivation, the purpose is to solve the problem of excessive urban youth employment; from an individual perspective, both are the beginning of one's initial employment in a difficult environment. The initial employment choice has an important impact on the lifelong career development [12,13]. But as far as we know, there is no research about the impact of the grass-roots work experience on the lifelong career development of Chinese college graduates. Our study provides an indirect reference to this issue and can correctly evaluate Chinese grassroots-oriented employment policy for college graduates.

Secondly, this study can provide new empirical evidence to support the new human capital theory. Most sent-down youths are middle school graduates. The average age when they went to the countryside is 18 years old[2]. Far away from the family in cities and engaging in agricultural production in remote rural is a challenge for most sent-down youths. The sent-down experience can exercise the adaptability to surroundings and strong personality. Traditional human capital theory regards innate ability as a priori given and only concerns about the human capital of education, health and migration. In recent years, it is found that non cognitive skills, such as personality traits, have an important influence on one's labor market performance. That has led to the formation of new human capital theory [14-17]. As the measurement of personality traits and other non-cognitive skills is difficult, relevant research progress is limited. We can indirectly spy personality traits' impact on the labor market by studying the effect of sent-down experience on individual's income, which will add new empirical evidences for the new human capital theory.

Thirdly, this study can provide a new explanation for the Easterlin paradox. Easterlin (1974, 1995) proposed the famous Easterlin paradox, namely, usually within a country, the average happiness level of the rich is higher

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1 The famous novels about sent-down youths in the eighties of last century were: "Wasted Years", "There Is A Storm Tonight", "Bloody Evening"; Ninety's famous memoirs about sent-down youths were "Great Northern Wilderness Recorded", "No Regrets Youth", "We were Young", "Chinese Sent-down Youth's Dream"; the famous memoirs about sent-down youths since the new century were "Chinese Sent-Down Youth Oral History", "The Cry from Gobi Depths," "We Want to Go Home", "Silent Community".

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2 Calculated based on CGSS2003 and CGSS2006.

than the poor, but if the cross-country comparison, the rich country and the poor country's happiness level is almost the same [18,19]. The Easterlin paradox shows that the relationship between income and happiness is different in the individual and group level. The existing literature usually explains the Easterlin paradox from the relative income theory and the ignored variable theory. The former thinks that personal happiness is associated with their relative income in society. The latter considers that factors such as environment, inequality and other non-economic factors can influence happiness. The Easterlin paradox phenomenon will appear when economic factors and non-economic factors show a negative correlation [20,21]. The conclusion of this paper can be seen as a special Easterlin paradox that a youth with high income has a low sense of happiness. The hard sent-down experience exercised youths' strong personality, but also left a life of suffering memories. This personality characteristic is the cause of sent-down youths' high income and low sense of happiness. Our research provides a new explanation for the Easterlin paradox: the characteristics of personality.

The remainder of this paper is organized as follows. Section 2 provides a brief introduction to the background of the sent-down movement. Section 3 describes the model and data. Section 4 presents the estimation results. Section 5 is the conclusion and enlightenment.

2. Background

After the founding of new China, the government tried hard to popularize education which had achieved remarkable success in just a few years. From 1949 to the end of 1952, the number of primary school students increased from 23.49 million to 51.1 million; preschool children enrollment rate reached 49.2%; secondary school enrollment increased from 1.04 million to 2.49 million, an increase of 140%, of which junior high school increased by 168%, high school increased by 26%. Due to the lack of planning, the expansion of different levels of education is not consistent, resulting in a serious imbalance in the proportion of graduates. As a result, the government reduced the number of students enrolled in junior high schools and primary schools in 1953. Therefore, the number of graduates which were unable to pursue further education suddenly soared to 2.134 million in 1953, and it then increased year by year³. Although the urban industries had been developed rapidly in the early years of the new nation, but the new graduates' employment was still difficult. In 1953, the government began to implement the first five year plan-priority development strategy of heavy industries. In 1954, the state launched a large-scale transformation of the city handicraft industry and the capitalist industry, which made the rapid decline of urban private economy and exacerbated the urban youth employment pressure. Under this pressure, the government began to promote the high school and junior high school graduates who were unable to further study to go to the countryside to engage in agricultural production[1].

In 1955, Chairman Mao issued a call that "rural is a vast world, there can be a great achievement" and the Chinese government began to advocate the primary and secondary school graduates to go to the countryside for agricultural production. Since then, the sent-down movement officially began. In 1968, Chairman Mao issued an instruction: "It is necessary for the educated youth to go to the countryside and experience the poor peasant's life". Since then, the sent-down movement began to enter the second stage. In 1978, the State Council held a national conference about the sent-down youth. The meeting decided to gradually narrow the scope of the sent-down movement and didn't advocate the graduates to sent-down in cities with resettlement conditions. After more than one year, the situation had undergone tremendous changes and "the return to the city wind" sped up the settlement of the problem[1]. The sent-down movement began in 1955 and ended in 1978. It experienced two stages. In the first stage of 1955-1967, the sent-down youths were primary sent to the farms (including the Corps and the cadre school). It is a normal measure with the purpose of solving the city youths' employment. In the second stage of 1968-1980, the sent-down youths were primary sent to the rural production team. It is an abnormal political movement with the purpose of training successors[22].

The sent-down youths were mainly junior and senior middle school graduates. They left their parents at a very young age and were forced to engage in hard agricultural production with both mental and physical suffering. The sent-down youth worked very hard together with the farmers. They not only worked for long hours, labor-intensive, but also were paid differently for the same work compared with the peasants. They were often short of money and needed the help of parents in the city. The sent-down youth's life was also very hard. They needed to be self-sufficient. The housing was in short supply. Many sent-down youths rent peasants' houses to live. Some needed to move several times a year. Some sent-down youths even lived in the barn, the ancestral hall, temple and warehouse etc. In addition to hard labor and embarrassing life, the sent-down youths were also facing persecution problems. During the Cultural Revolution, the legal was abused and the sent-down youth's personal safety was not guaranteed[1].

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3 Data is from the "China Education Yearbook : 1949-1981".

3. Model and Data

3.1 Model

3.1.1 Treatment Effect Model

We study the impact of the sent-down experience on one's income based on the extended Mincer wage equation. The dependent variable is the individual's income and the core explanatory variable is the sent-down experience. The OLS regression will face the problem of endogeneity because the sent-down experience is not random, but is affected by the family background and so on. Therefore, we apply the treatment effect model proposed by Maddala (1983) to overcome the endogenous problem [23]. The treatment effect regression model is:

$$y_i = \beta X_i' + \lambda D_i + \varepsilon_i \qquad (1)$$

In Equation (1), D_i is a dummy variable of the sent-down experience. X_i are control variables including education years, work experience, gender, political identity, regional, urban scale, industry type, employment unit type and so on.

The selection equation is:

$$D_i^* = \gamma W_i' + u_i, \quad D_i = \begin{cases} 1, if \ D_i^* > 0 \\ 0, else \end{cases} \qquad (2)$$

In Equation (2), W_i are factors determining whether to be sent down, including the father's education level variable and the gender dummy variable[4].

ε in (1) and u in (2) obey the bivariate normal distribution and their mean value are zero. The covariance matrix is $\begin{bmatrix} \sigma^2 & \rho\sigma \\ \rho\sigma & 1 \end{bmatrix}$, ρ is the correlation coefficient of ε and u. σ^2 is the variance of ε. The variance of u was standardized to 1.

The expected income difference between the sent-down experience and no sent-down experience is:

$$E(y_i \mid D_i = 1) - E(y_i \mid D_i = 0) = \lambda + \rho\sigma \frac{\phi(\gamma W_i')}{\Phi(\gamma W_i')[1 - \Phi(\gamma W_i')]} \qquad (3)$$

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4 In the sent-down movement, besides some very few people were encouraged by the revolutionary ideal to the countryside, the vast majority people were selected to the countryside. In that era, the concept of bloodline was prevalent. Revolutionary soldiers, revolutionary cadres, workers, poor peasants, lower-middle peasant families were known as the red five families; landlords, rich peasants, counterrevolutionaries, bad elements, rightists families were known as the black five families. A common identifiable feature of the black five families was that their fathers were generally more educated. Their children were generally subject to discrimination in entering a higher school, recruitment, joining the army and other areas. They were the most easily and motivated people to be sent down. The policy of that time allowed the multiple-child family to leave a child in the city. Taking into account the sent-down may be forever, parents were inclined to let their daughter to be sent down. Therefore, we use gender and father's education as explanatory variables for the choice equation in (2).

ϕ, Φ respectively represent the density function and cumulative distribution function of the standard normal distribution. As known from (3), the estimated result of the treatment effect model is more than that of the OLS with $\rho\sigma \frac{\phi(\gamma W_i')}{\Phi(\gamma W_i')[1 - \Phi(\gamma W_i')]}$. If $\rho = 0$, there is no endogeneity, and OLS can be used to estimate. If $\rho \neq 0$, there is endogeneity, and we must use the treatment effect model to estimate. The treatment effect model can be estimated by Heckman's two step method and the maximum likelihood estimation method. The advantage of the two step method is easy to calculate. The disadvantage is that the estimation error in the first step is brought into the second step, resulting in efficiency loss. Therefore, we use the maximum likelihood estimation method to estimate all the parameters of the model simultaneously.

3.1.2 Orderd Probit Model

The explained variable is happiness when we study the impact of sent-down experience on the youth's happiness. The CGSS's measure on happiness is "very unhappy", "unhappy", "general", "happy" and "very happy". The five options are assigned "1", "2", "3", "4" and "5" respectively. The happiness of the five options is from low to high with a natural order. In this case, the OLS method does not apply. We need to use the order probit model to deal with. The ordered probit model is one of the limited dependent variable models, which is a method to study the variation law of the unobservable latent variables by using the observed ordinal data to establish the model. In this paper, the explanatory variable of happiness can be regarded as a latent variable, and its latent variable structure is as follows:

$$h_i^* = \beta X_i' + \lambda D_i + \varepsilon_i \qquad (4)$$

In Equation (4), D_i is a dummy variable representing the sent-down experience. X_i is a set of controlled variables, including education years, age, gender, marriage, Party members, the log of annual income, housing, regional, urban size, etc. ε_i is a random error term. h_i^* is an unobservable latent variable of happiness. It can only be inferred from the relationship between h_i^* and h_i which is observable. The relationship is:

$$h_i = \begin{cases} 1, very \ unhappy, if \ h_i^* \leq r_1 \\ 2, unhappy, if \ r_1 < h_i^* \leq r_2 \\ 3, so \ so, if \ r_2 < h_i^* \leq r_3 \\ 4, happy, if \ r_3 < h_i^* \leq r_4 \\ 5, very \ happy, if \ r_4 < h_i^* \leq r_5 \end{cases} \qquad (5)$$

h_i is an observable discrete variable of the happiness with a rang of $\{1,2,3,4,5\}$. $r_1 < r_2 < r_3 < r_4 < r_5$ is a new set of parameters to be estimated. It divides h_i^* into five continuous intervals. We assume $\varepsilon_i \sim N(0,1)$, then

$$\begin{cases} P(h_i = 1 \mid X_i) = P(h_i^* \leq r_1) = P(\varepsilon_i \leq r_1 - \beta X_i' \mid X_i) = \Phi(r_1 - \beta X_i') \\ P(h_i = 2 \mid X_i) = P(h_i^* \leq r_2) = P(\varepsilon_i \leq r_2 - \beta X_i' \mid X_i) = \Phi(r_2 - \beta X_i') \\ \cdots\cdots \\ P(h_i = 5 \mid X_i) = P(h_i^* \leq r_5) = P(\varepsilon_i \leq r_5 - \beta X_i' \mid X_i) = \Phi(r_5 - \beta X_i') \end{cases} \quad (6)$$

The log likelihood function of the sample is:

$$LnL = \sum_{I=1}^{n} \sum_{j=1}^{J} h_{ij} Ln[\Phi(r_j - \beta X_i') - \Phi(r_{j-1} - \beta X_i')] \quad (7)$$

By maximizing the log likelihood function (7), we can estimate the parameter β in the order probit model. That is the effect of the sent-down experience on the sent-down youths' happiness.

3.2 Data

The data of our research are derived from the China General Social Survey (CGSS) conducted in 2003 and 2006 by the China Center for Data and Research of Renmin University of China. We only keep non-agricultural employment sample with positive wage and a birth year between 1936 to 1966[5]. We remove a small amount of sample points which have no clear answer on sent-down experience and some abnormal sample points. We get a sample with 5633 units after merging the 2003 and 2006 data. The sent-down youth sample size is 844 and non sent-down youth sample size is 4789. In the combined data sample, the original income data of 2006 is adjusted by the consume price index to the actual income for the base period of 2002[6]. The variables are illustrated as shown in Table 1.

Table 1. Variable Description

Variables	Variable Description
Sent-down experience	dummy variable; 1 for sent-down, 0 for non sent-down
Income	the logarithm of an individual's annual income
Happiness	discrete variable, the value of "1", "2", "3", "4", "5", respectively corresponding to "very unhappy", "not happy", "general", "happy", "very happy"
Years of education	by the education degree conversion; primary school or private school for 6 years; junior middle school for 9 years; senior middle school, technical school, specialized secondary school for 12 years; polytechnic college for 15 years; undergraduate for 16 years; graduate for 19 years
Work experience	the survey year minus the first job year
Sex	dummy variable; 1 for female, 0 for male
Political status	dummy variable; 1 for the Chinese Communist Party member, 0 for others
Housing	dummy variable; 1 for housing, 0 for non-housing
Region	China is divided into four regions: east, middle, west and northeast; set the west as the baseline group and three dummy variables for the east, middle and northeast respectively [①]
Urban size	the cities are divided into three types: large cities, medium-sized cities and small cities; large cities include municipalities and provincial capitals, the medium-sized cities refer to the urban districts of each prefecture-level city; we set the small city as the benchmark group and set two dummy variables respectively for the large city and the medium city
Industry type	dummy variable; 1 for the secondary industry, 0 for the tertiary industry
Unit type	dummy variable; 1 for public sector, 0 for enterprises
Father's education years	by the father's education degree conversion; primary school or private school for 6 years; junior middle school for 9 years; senior middle school, technical school, specialized secondary school for 12 years; polytechnic college for 15 years; undergraduate for 16 years; graduate for 19 years

5 In 1955, Mao Zedong issued a "rural is a vast world, where there is much to do" call. In 1978, the national sent-down youth conference decided to gradually narrow the scope of the sent-down movement and didn't advocate the graduates to sent-down in cities with resettlement conditions. Based on this, we set the period of the sent-down movement for 1955-1978. At that time, the primary school system was 5-6 years and the secondary school system was 4-6 years. If the primary school enrollment age was 7 years, the oldest person who had been sent down in 1955 should be born in 1936; the youngest person who had been sent down in 1978 should be born in 1966.
6 The annual income in the CGSS data for 2003 and 2006 are respectively the individual's annual income in 2002 and 2005.

① The eastern provinces (municipalities) include Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan; the middle provinces include Shanxi, Anhui, Jiangxi, Henan, Hubei and Hunan; the western provinces (autonomous regions and municipalities) include Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang; the northeastern provinces include Liaoning, Jilin and Heilongjiang.

Table 2 is descriptive statistics for all variables. From table 2, we can see that the annual income of the sent-down youth group is higher than the non sent-down youth group, but the happiness is opposite. These preliminary descriptive statistical results give us the following questions: Why is the income of the sent-down youth group higher? Has the sent-down experience affected the sent-down youth's income? Why does the sent-down youth group have lower sense of happiness? Has the sent-down experience affected the sent-down youth's happiness?

There are many factors which can affect income and happiness. The sent-down youth group and non sent-down youth group are different in these factors. From table 2, we can see that the sent-down youth group is obviously higher than the non sent-down youth group in the five variables of education degree, female proportion, non-party member ratio, big city proportion and father's education years. Therefore, to answer these questions, we must adopt a more rigorous econometric model to separate the impact of the sent-down experience.

Table 2. Descriptive Statistics of Variables

	Non Sent-Down Youth	Sent-Down Youth	Total
The logarithm of annual income	8.945	9.020	8.956
	(0.872)	(0.836)	(0.867)
Happiness	3.334	3.280	3.326
	(0.773)	(0.757)	(0.771)
Years of education	9.787	10.570	9.907
	(3.209)	(2.744)	(3.155)
Work experience	31.305	30.870	31.240
	(10.317)	(6.331)	(9.823)
Father's education years	4.726	6.197	4.951
	(4.348)	(4.507)	(4.404)
Marriage (%): married	90.4	90.8	90.5
unmarried	9.6	9.2	9.5
Sex (%): female	47.8	54.4	48.8
male	52.2	45.6	51.2
Political status (%): Party member	21.2	19.6	20.9
non-Party member	78.8	80.4	79.1
Housing (%): yes	80.5	82.2	80.7
no	19.5	17.8	19.3
Region (%): east	44.6	48.3	45.1
middle	22.8	19.4	22.3
northeast	10.5	13.0	10.9
west	22.1	19.3	21.7
City (%): large city	39.0	51.5	40.9
medium-sized city	24.7	25.9	24.9
Small city	36.3	22.6	34.2
Industry (%): secondary industry	48.4	51.4	48.9
tertiary industry	51.6	48.6	51.1
Unit type (%): public sector	21.6	21.1	21.5
non-public sector	78.4	78.9	78.5

Note: Standard deviations are presented in parentheses.

4. Results

4.1 The Sent-Down Experience's Impact on Income

4.1.1 The Results of Overall Sample Regression

Due to the presence of sample selection bias, we use the treatment effect model to study the sent-down experience's impact on one's income. Table 3 lists the results of overall sample regression. The upper part of Table 3 is the main equation regression results while the selection equation regression results are listed in the lower part. The correlation coefficient of the two equations' random error terms is less than zero and very significant. It indicates that there is indeed a serious problem of endogenous selection bias in the variable of sent-down experience. The OLS estimation will underestimate the effect of the sent-down experience. Therefore, it is necessary to use the treatment effect model to estimate. The regression results of the selection equation show that female and father's education years have a significant positive impact on the probability of being sent down. This further confirms our model, indicating that there is "blood relationships" concept in the sent-down movement. The children whose father's education is higher will have a greater probability of being sent down. The parents with more children tend to let the daughter go to the countryside and keep the son in the city.

From the regression results of the main equation, we can see that the sent-down experience has a very significant impact on income. The coefficient is 42% which is larger than other factors. Our research results support Yang and Li (2011) [8], but not Zhou and Hou (1999) [6] and Xie et al. (2008) [7]. The reason why sent-down experience has a positive impact on income is that the hardship experience has honed young people's will and adaptability to the environment, forming strong and resilient personality characteristics. Research in recent years has shown that non-cognitive skills, such as personality traits, have an important influence on one's labor market performance [15,16].

Among control variables, the education years' effect is significant, but the return rate is only 5.9%; the work experience's effect is not significant. The role of human capital is limited[6]. The gender and political status have significant effects. If other things being equal, women's

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6 This result is related to the sample in our analysis. The people in our sample were born between 1936 and 1966. The age of this group is relatively concentrated. Their work experience is not very different. After the reform and opening up, the rapid change of Chinese society makes the experience of specific work is limited. Educational disruption during the Cultural Revolution makes their education level is generally low. Their average years of schooling are less than 10.

income are 25.7% lower than men; the Party member's income are 15.9% higher than non-Party members. That is a sign of discrimination in Chinese labor market. The variables of region, city size, industry type and unit type have a significant effect. The people in the eastern region, large cities, tertiary industry and public sector have higher income. That is the performance of segmentation in Chinese labor market.

4.1.2 The Results of Sub-Sample Regression

In order to test the heterogeneity and robustness of the sent-down experience's impact on income, we perform regression by sub-sample at different latitudes. It can be seen from Table 4 that, except for the sub-samples of the northeast and western regions, the sent-down experience has a significant positive effect on income in all the other sub-samples, while ρ is less than zero and statistically significant. That indicates that the sent-down experience's positive impact on income is very robust. From the comparison of the coefficients, we can see that the sent-

down experience has a greater impact on the income of women, party members, eastern region, medium-sized city, tertiary industry and non-public sector workers.

4.2 The Sent-Down Experience's Impact on Happiness

4.2.1 The Results of Overall Sample Regression

Table 5 lists the regression results of sent-down experience's impact on happiness based on the ordered probit model. We can see that the sent-down experience has a significant negative impact on one's happiness. Keep other things equal, the happiness of sent-down youths is lower 13% than non-sent-down youths.

Education years and age have a significant positive impact on happiness, but the effects are small. Similar to previous income effects, this may be due to the concentration of age groups and low level of education in the sample. Women, married and Party members' happiness are higher. Marriage has a very large impact on happiness; income and housing's impact are also great. It

Table 3. The Sent-Down Experience's Impact on Income (Overall Sample Regression Results)

Dependent variable: the logarithm of annual income	Coefficient	Robust standard error
Sent-down experience	0.422***	(0.070)
Years of education	0.059***	(0.004)
Work experience	0.002	(0.006)
The square of work experience	0.000	(0.000)
Female	-0.257***	(0.023)
Party member	0.159***	(0.024)
Eastern region	0.293***	(0.030)
Middle region	-0.033	(0.034)
Northeast region	-0.314***	(0.040)
Large city	0.221***	(0.028)
Medium-sized city	0.121***	(0.030)
Secondary industry	-0.119***	(0.024)
Public sector	0.267***	(0.027)
Constant term	8.126***	(0.108)
Dependent variable in selection equation: sent-down experience		
Female	0.173***	(0.046)
Father's education years	0.040***	(0.005)
Constant term	-1.285***	(0.042)
ρ	-0.326***	(0.047)
Sample size	4426	

Note: *, **, ***, respectively indicate 10%, 5%, 1% significant level.

Table 4. The Sent-Down Experience's Impact on Income (Sub-Sample Regression Results)

	Dependent variable: the logarithm of annual income							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Male	Female	Non-Party members	Party members	Eastern region	Middle region	Northeast region	Western region
Sent-down experience	0.305***	0.455***	0.425***	0.461***	0.675***	0.387***	0.282	0.168
	(0.109)	(0.082)	(0.085)	(0.122)	(0.106)	(0.144)	(0.225)	(0.177)
Other independent variables	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
Constant term	8.359***	7.665***	8.145***	8.132***	8.575***	8.241***	7.837***	7.806***
	(0.167)	(0.141)	(0.121)	(0.236)	(0.169)	(0.206)	(0.281)	(0.233)
ρ	-0.268***	-0.333***	-0.327***	-0.362***	-0.508***	-0.336***	-0.225	-0.103
	(0.07)	(0.057)	(0.054)	(0.105)	(0.069)	(0.092)	(0.157)	(0.116)
Sample size	2322	2104	3421	1005	2020	987	512	907
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
	Large city	Medium-sized city	Small city	Tertiary industry	Secondary industry	Non-public sector	Public sector	
Sent-down experience	0.388***	0.469***	0.444***	0.491***	0.357***	0.439***	0.343***	
	(0.144)	(0.121)	(0.119)	(0.107)	(0.087)	(0.087)	(0.102)	
Other independent variables	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	
Constant term	8.276***	8.308***	8.279***	8.050***	8.059***	8.199***	8.063***	
	(0.177)	(0.192)	(0.191)	(0.136)	(0.178)	(0.122)	(0.221)	
ρ	-0.365***	-0.323***	-0.278***	-0.398***	-0.263***	-0.327***	-0.312***	
	(0.114)	(0.081)	(0.062)	(0.069)	(0.059)	(0.057)	(0.080)	
Sample size	1935	1116	1375	2223	2203	3468	958	

Note: Standard errors are presented in parentheses. *, **, ***, respectively indicate 10%, 5%, 1% significant level.

Table 5. The Sent-Down Experience's Impact on Happiness (Overall Sample Regression Results)

Dependent variable: happiness	Coefficient	Robust standard error
Sent-down experience	-0.126***	(0.042)
Years of education	0.015***	(0.006)
Age	0.011***	(0.002)
Female	0.290***	(0.032)
Marriage	0.517***	(0.054)
Party-member	0.181***	(0.039)
The logarithm of annual income	0.344***	(0.021)
Housing	0.279***	(0.040)
Eastern region	-0.093**	(0.042)
Middle region	-0.072	(0.048)
Northeast region	-0.082	(0.060)
Large city	-0.187***	(0.039)
Medium-sized city	-0.092**	(0.041)
Sample size	5348	

Note: *, **, ***, respectively indicate 10%, 5%, 1% significant level.

shows that the family and economic base are important sources of happiness. The eastern region's happiness is significantly lower, but there is no significant difference among other regions. The city is larger; the sense of happiness is lower.

4.2.2 The Results of Sub-Sample Regression

In order to test the heterogeneity and robustness of the sent-down experience's impact on happiness, we perform regression by sub-sample at different latitudes. It can be seen from Table 6 that, except for some sub-samples with no significant influence, the sent-down experience has a significant negative impact on happiness in other sub-samples. It indicates that the sent-down experience's negative impact on happiness is very robust. From the comparison of the coefficients, we can see that the sent-down experience has a greater negative impact on the happiness of men, married, non-party members, eastern region, large and medium-sized city workers.

Table 6. The Sent-Down Experience's Impact on Happiness (Sub-Sample Regression Results)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Male	Female	Unmarried	Married	Non-Party member	Party member	Non-housing	Housing
Sent-down experience	-0.152***	-0.098*	-0.065	-0.131***	-0.143***	-0.058	-0.080	-0.137***
	(0.059)	(0.059)	(0.117)	(0.044)	(0.047)	(0.089)	(0.105)	(0.045)
Other independent variable	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled
Sample size	2778	2570	488	4860	4200	1148	1034	4314
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
	Eastern region	Middle region	Northeast region	Western region	Large city	Medium-sized city	Small city	
Sent-down experience	-0.171***	-0.142	0.074	-0.147	-0.129**	-0.134*	-0.116	
	(0.062)	(0.095)	(0.101)	(0.096)	(0.060)	(0.081)	(0.089)	
Other independent variable	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	Controlled	
Sample size	2424	1188	600	1136	2231	1331	1786	

Note: Standard errors are presented in parentheses. *, **, ***, respectively indicate 10%, 5%, 1% significant level.

5. Conclusions and Implications

The Chinese sent-down movement between mid 1950s to the late 1970s is a suffering period for Chinese sent-down youths. This paper employs the treatment effect model and the ordered probit model to investigate the sent-down experience's impact on sent-down youths' income and happiness by using CGSS2003 and CGSS2006 data. By doing so, we can explore the long-term consequences of one's suffering experience. The overall sample regression results show that sent-down experience increase 42% of individuals' income, while reducing 13% of individuals' happiness. Sub-sample analysis results show that the positive impact of sent-down experience on income and the negative impact of sent-down experience on happiness are very robust. The sent-down experience has a greater contribution to the income of women, Party members, eastern region, medium-sized city, tertiary industry and non-public sector workers while it has a greater negative impact on the happiness of men, married, non-party members, eastern region, large and medium-sized city workers. The conclusions of our research have the following three important implications.

First, it is necessary to rationally rethink the history of the sent-down movement and take a correct view of the current grass-roots employment policy for university graduates. Although the sent-down movement made a large number of young people lose their educational opportunities at school and brought great pain to the individual, family and society, but this movement is a product under specific historical condition in China. It can not be evaluated separately from the specific policy background of disorderly education expansion, industrialization strategy of heavy industry priority

development and the Cultural Revolution in the early years of new China. In that specific era and historical background, even if the sent-down youth didn't be sent down and stayed in the city, they would be unemployed and become idle. Although the sent-down experience was very hard, it had exercised the young people's will and environmental adaptability. That can form strong and tough personality traits and obtain high returns in the future labor market. The current grass-roots oriented employment policy for college graduates is valuable in this sense, but we must pay attention to two points. Firstly, we must comply with college graduates' personal will and let them compare the revenue with opportunity costs to make the choice of whether go to the grass-roots unit. Secondly, we must break the institutional barriers for mobility. It is necessary to allow college graduates to go down to the grassroots, but also to make them can flow out from the grassroots.

Second, personality characteristics have an important impact on the performance of the labor market. The sent-down youths were mostly middle school graduates in adolescence. They came from the city to the remote and unfamiliar rural areas, engaged in heavy manual labor, coupled with life embarrassment. These hardships in adolescence would have an important impact on the formation of their personality characteristics. The new human capital theory in recent years has noticed that non-cognitive skills such as the personality traits formed in the acquired environment have an important influence on the performance of the labor market. However, due to the measurement problem of personality, the empirical evidence of new human capital theory is not sufficient. The results of this study show that the personality traits formed in the acquired environment have an important influence on the performance of the labor market, which is the indirect empirical evidence for the new human capital theory.

Third, the personality trait is a new explanation for the Easterlin paradox. The existing literature generally explains the Easterlin paradox from the relative income theory and the neglected variable theory. The former holds that one's happiness is positively related to his/her relative income in the society. The latter thinks that besides the economic factors, there are some non-economic factors such as environment and inequality that affect happiness. When the economic factor and the non-economic factor are negatively correlated, the Easterlin paradox appears. An important conclusion of this paper is that the sent-down youth's income is higher, but has a lower sense of happiness. That can be regarded as a special Easterlin paradox. The hardships of the sent-down experience

cultivate the sent-down youth a strong psychological quality, but also left a bitter life memory. This personality is the cause of sent-down youths' high income but low happiness sense. The interpretation of Easterlin's paradox from personality can be regarded as a new ignorant variable in the neglected variable theory. Its influence on income and happiness still needs further study.

Funding

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