論文

Family Backgrounds, Rates of Returns to Education and Income Gap

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Abstract

Family backgrounds not only have impact on the personal income directly, but also influence it indirectly through the educational achievement and return to education. The direct effect is obvious that wealthy parents are able to provide more business relationships and initial investments for their kids. With respect to the indirect effect, many researchers have proved the positive correlation between individual earning and the education level he achieved. Well-educated parents are more likely to help their children get higher education, which contributes to their incomes after they graduate. According to different proxy variables and influencing mechanisms of the family background, it is divided into family educational background and social background. Based on the individual-level data from Chinese General Social Survey (CGSS) in 2013, this article analyzes and compares the direct effects and indirect effects of family social background and educational background on personal incomes respectively in advanced Mincer earning equation with corresponding proxy variables and their interaction terms. The estimated results verify that the impact of family social backgrounds exceeds the impact of family educational backgrounds. The direct effects of family social background and education background on personal incomes are statistically significant, while the indirect effect of social background is not as significant as the one of education background. The direct effects are larger than the indirect effects. This intergenerational transmitting may expand the income gap from one generation to the next.

Keywords: Family Backgrounds; Rates of Returns to Education; Income Gap

I. Introduction

As economic reforms deepen in China, individual earnings and living standards rise significantly along with the rapid economic development. Simultaneously, the income gap has been gradually expanded, which is not only a social problem that needed to be solved by the government urgently, but also an important academic issues. Education is regarded as an important tool to promote the mobility of different social strata, to improve individual earnings equality, also a major reason influencing personal revenues (Bai, 2004)[1].

Especially in China, since early 1990s, the change in return to education is the vital source of rising earning inequality (Xu, 2010)[2]. Nevertheless, the growing influence of family backgrounds on educational attainment (Li, 2003)[3] makes the earning inequality deteriorated further, which goes against social equity and economic efficiency.

The family background not only affects the personal income directly, but also influences the education level achieved by an individual. Many researchers have verified that the returns to education increase with the level of education.

Thereby the individual revenue is affected indirectly through the educational attainment and the return to education. Given the different proxy variables and influencing mechanisms of family background on personal earnings, this article divides it into family educational background and social background, and identifies their influences respectively.

The family educational background mainly effects the kid's spiritual intelligence and level of education[2]. It exerts positive impacts on children's character and mental health through congenital heredity and instruction, supervising children to develop good study and living habits. The parents with high education level are able to give children more educational guidance, select a better class and school for their children in the basic education stage. In the higher education stage, well-educated parents also have the capability to choose proper university and major for their sons and daughters.

When it comes to family social backgrounds, the parents with steady jobs and high earnings can afford their children to complete their studies, especially when they want to study abroad, which generates possible indirect effect. After the children attend universities, they have enough money to cover their learning and social activities without worries. Because the family is the main source of social capital for a graduate, when individuals apply for jobs or promotions, the parents with high social economic status are able to provide more employment information and work opportunities, which shows the direct effect. The urban residence registration status, father's political and education status can help their children enter industries with high earnings, but this only happens in defective employment institution (Chen, Liu and Sato, 2009)[4].

Different from previous studies, this article investigates direct and indirect effects of family backgrounds on individual earning gaps, compares the influences of family educational backgrounds and social backgrounds on individual earnings. The data from the China General Social Survey (CGSS) in 2013 enables me to incorporate corresponding variables and their interaction terms into the advanced Mincer earnings function, to identify the influences of family backgrounds on individual earnings and the rates of return to education. The indirect effects will be estimated through the interaction terms. Although the major influencing mechanisms of family educational background and social background are different, the possible direct effect of family educational background and possible indirect effect of family social background can't be ignored, which will also be estimated in the equation and be contrasted.

The remainder of this paper is organized as follows. Section 2 briefly reviews the existing literatures focused on family backgrounds and income gaps. Section 3 introduces the model and describes the data and sample characteristics. Section 4 presents the empirical results. The final section gives the summary and conclusion.

II. Literature Review

This section reviews relevant researches about the influences of family backgrounds on individual earnings and educational attainments. Recent years, more and more researchers pay attention to the effects of family backgrounds on personal incomes. In the light of the different proxy variables of family backgrounds they used, the researches on family backgrounds can be divided into the studies on family educational

backgrounds and the ones on family social backgrounds.

In the existing studies about family educational backgrounds, Yue (2004) [5] presented that the years of fathers' schooling had positive impacts on graduates' starting salaries. Yao, Huang and Dai (2006) [6] identified the significant positive correlation between parental education level (especially fathers') and children's education in universities. Kirchsteiger and Sebald (2010) [7] used an OLG-model with endogenous human capital formation to show the intergenerational chain of education. The children with parents who have higher-education showed higher spiritual intelligence in comparison to the ones with parents who only get elementary and secondary education. (Mohammadyari, 2012 [8], Cianci et al., 2013 [9]). The data from three rounds of the National Sample Survey in India suggested that the parental education was a determinant in children's higher education (Basanta and Sen, 2014) [10].

With respect to previous studies about family social backgrounds, Du and John Giles (2006) [11] found the negative impact of shocks to parental employment on the children's college enrollment decisions. Based on the data from the 1979 and 1997 National Longitudinal Survey of Youth, Belley and Lochner (2007) [12] and Bailey and Dynarski (2011) [13] both noticed the growing gaps between children from high-earning and low-earning families in college enrollment and graduation. Cheng and Zhang (2009) [14] examined the influence of parental revenues on the heterogeneous return to college education in the Roy model with CHIP data of 2002. Huang et al. (2010) [15] focused on the role of parental earnings and assets on children's

higher education in the structural equation models with the data from Panel Study of Income Dynamics. Coelli (2011) [16] who used the sample from Canada, and Pan and Ost (2014) [17] who used American data, both proved that parental job loss had a negative impact on children's higher education enrollments.

This paper distinguishes the influencing mechanism of family backgrounds on individual earning gap carefully, compares the direct and indirect effects of family educational background and social background on individual earnings, and uses interaction terms to estimate the indirect effects which are neglected previously.

III. The model and Data

1. The model

This article identifies the direct and indirect effects of family backgrounds on individual earnings in the research framework of returns to education. The conventional research method is Mincer earnings function proposed by Jacob Mincer (1974) [18] to identify the average rate of returns to individual education, which is called Mincer rate of return to education. According to Mincer's human capital theory, the knowledge learned in school and the experience got in work are two essential determinants to individual earnings. Nevertheless, it's very hard to accurate measure the knowledge and experience. Therefore, the corresponding proxy variables are quite necessary, customarily, the educational attainment and age regarded as the proxy variables of knowledge and experience. What is noteworthy is that the experience profile is expressed by the age of the individual and by its

squared value. Since the correlation between age and experience is not simple linear relation. Workers' experience and ability keep improving in their youth and middle age, but bog down, even decline, when they get old. We need to introduce the squared term of age into the function to represent the non-linear relation between ages and earnings. Moreover, the coefficient of *Age* is expected to be positive and the one of the squared value is expected to be negative. As the revenues may increase because of more experience, at a decreasing rate. In other words, the marginal returns of experience are diminishing.

In brief, the estimated model of Mincer's human capital earnings function takes the following form:

$$lnY_i = \alpha + \beta_1 S_i + \beta_2 X_i + \beta_3 X_i^2 + \varepsilon_i \, , \, i=1, 2, \ldots, n$$

$$\text{Eq. (1)}$$

where *i* stands for every individual. The variable Y_i represents *i*'s individual earning, and lnY_i stands for the natural log of the individual earning. The independent variable S_i stands for the years of schooling of *i*. The variable X_i represents *i*'s age. The variable ε_i is random disturbance term (stochastic error term). The coefficient β_1 is the rates of returns to education when the education cost is ignored, which is the increased percentage of individual earnings for every additional year of schooling. The coefficients β_2 and β_3 represent rates of returns to ability and experience obtained from work and practice.

The independent variable S_i (the years of schooling) in equation (1) is a continuous variable, so the corresponding coefficient β_1 is average rate of the return to schooling. However, given the realistic situation in China, there is clear phase

character of education system in China, such as primary school, middle school and high school. So the model should be modified to adapt to the actual situation. The education level is classified into seven levels (no formal education, primary school, middle school, high school, technical school, college, university and over) [3], which are represented by dummy variables. To identify the rates of returns to different education levels obtained by individuals, the equation should be changed to

$$lnY_i = \alpha + \beta_{11}S_{i1} + \beta_{12}S_{i2} + \beta_{13}S_{i3} + \beta_{14}S_{i4} + \beta_{15}S_{i5} + \beta_{16}S_{i6} + \beta_2 X_i + \beta_3 X_i^2 + \varepsilon_i \qquad \text{Eq. (2)}$$

where S_{i1} to S_{i6} are dummy variables, which stands for the highest education levels achieved by individuals. The dummy variables S_{i1}, S_{i2}, S_{i3}, S_{i4}, S_{i5}, S_{i6} stand for the education levels of primary school, middle school, high school, technical school, college, university and over respectively. In this equation, the no formal education category is considered as reference group, which is excluded in the estimation to avoid collinearity problems. The dummy variable S_{i1} (primary school) takes the value 1 when the highest education level achieved by the individual *i* is primary school, and 0 other wise. The dummy variable S_{i2} (middle school) takes the value 1 when the highest education level achieved by the individual *i* is middle school, and 0 other wise. The rest (S_{i3}, S_{i4}, S_{i5}, S_{i6}) can be deduced by analogy. The corresponding coefficient β_{11} to β_{16} are the rates of returns to corresponding education level. They are internal rates of return to each education level, rather than the usual returns to education defined by Mincer earnings functions, since the education variable is the level of

education obtained by the individual, not the years of schooling.

Introducing some relevant control variables into this advanced Mincer Human Capital Earnings, we can get equation (3):

$$lnY_i=\alpha+\sum\beta_{1n}S_{in}+\beta_2X_i+\beta_3X_i^2+\gamma_iC_i+\varepsilon_i,$$

n=1…6 　　　　Eq. (3)

where C_i and γ_i represent controlled extraneous variables and their corresponding coefficients respectively. The control variables include the variables of personal characteristics and the ones of family backgrounds.

2. Data

The data used in empirical research of this paper is from the China General Social Survey (CGSS) in 2013. CGSS includes the individual-level data from 11438 respondents, revealing relevant personal data of each individual, such as the age, gender, income and so on. On the basis of the labor market status quo in China, the minimum age allowed to work is 16 years old, and the retired age is usually 65 years old. So the sample of this study just includes the respondents from 16 years old to 65 years old in China General Social Survey. Some respondents in the survey are not in the labor market because of some personal reasons[4], whose incomes are 0. Therefore, this study only involves the respondents whose earnings are positive. Given temporary unemployment and seasonal revenues fluctuations[5], this article choose individuals' total incomes in last year to represent individual earning, which is Y_i in the estimated equation. The explained variable is the natural log of annual incomes.

The rest of the independent variables, represented in Eq. (3) by C, contain a set of dummy variables indicating the variables identified personal characteristics, and variables represent family backgrounds.

The control variables to represent personal characteristics include two dummy variables of gender (*Female*) [6] and household registration status (*Rural*)[7]. The residence registration status, which is called "Hukou" in Chinese, is strictly classified in China. People with different residence registration status own different social welfare, involving education, medical treatment and so on. These resources for urban residents are much better than those for rural residents. So the coefficient associated to *Rural* is expected to be negative.

The family educational background is conveyed by highest education level achieved by the individual's mother (*Medu*) and father (*Fedu*), which is classified into seven education levels, keeping consistent with the classification of individual education levels. The variable of mother's education level (*Medu*) takes the value 0 when the individual's mother has no formal education, takes the value 1 when the highest educational achievement of the mother is primary school, takes the value 2 when it's middle school, takes the value 3 when it's high school, takes the value 4 when it's technical school, takes the value 5 when it's college, takes the value 6 when it's university and over. The value assignment of *Fedu* is along with the same way of *Medu*.

The family social background includes two dummy variables of *Fwork* and *Mwork*, which indicate the parents' working statuses when the individual was 14 years old[8]. *Mwork* takes the value 0 if the individual's mother was self-employed when he was 14 years old, takes

Table 1. Descriptive statistics analysis for the sample

		Mean annual earnings[a]	Std. Dev. of annual earnings	Mean education level[b]	Std. Dev. of education level	N	(%)[c]
Age	16-25	27440	39981	3.513	1.605	439	(7.76%)
	26-35	38465	40102	3.425	1.815	1105	(19.54%)
	36-45	33634	51716	2.548	1.667	1554	(27.48%)
	46-55	23080	30914	2.118	1.393	1302	(23.03%)
	56-65	16195	18465	1.641	1.346	1254	(22.18%)
Gender	Female	21211	29910	2.307	1.757	2552	(45.14%)
	Male	33219	44686	2.648	1.640	3102	(54.86%)
Residence registration	Rural	19679	28890	1.753	1.204	3392	(59.99%)
	Non-rural	39975	48356	3.605	1.736	2262	(40.01%)
Total		27799	39177	2.494	1.703	5654	(100%)

Notes:

[a] Expressed in yuan.

[b] The education level of individual (*Edu*) is a measure of highest education level achieved by the individual, following the same way of *Fedu* and *Medu*. The education level (*Edu*) takes the value 0 when the individual has no formal education, takes the value 1 when his highest educational achievement is primary school, takes the value 2 when it's middle school, takes the value 3 when it's high school, takes the value 4 when it's technical school, takes the value 5 when it's college, takes the value 6 when it's university and over. Average education level is the mean value of the individual's education level.

[c] "N" is the sample size in respective category. "%" indicates the proportion of the population in the respective group. The following is same.

the value 1 if his mother had a steady job (including working in social organization, enterprise, public institution, government offices and military). The value assignment of *Fwork* follows the same way as *Mwork*.

The descriptive statistics analysis for the sample is shown in Table 1. I abandon the sample with vacant value of explanatory variables and explained variables. The valid sample contains 5654 observations. The average age of the respondents is 43.83 (of which, max is 65, min is 17). The mean incomes by age provide the proof for the non-linear relationship hypothesis between age and income in Mincer earnings function. So it's necessary to incorporate the squared term of age into the function. The workers' abilities and experience keep improving when they are middle-age (around 35 years old to 45 years old), revenues increasing accordingly. However, as they get older and hard to accept new knowledge and skill, their working abilities are stagnant, even decline, leading to noticeable decrease on their wages. When it comes to the standard deviation of earnings, the income differences among middle-age respondents are highest, up to 51716. Since the wages can fully reflect working ability,

the earnings of workers with excellent ability are significant higher than the ones with mediocre ability. As they get older, the requirements of workers' ability decreased, the working intensity reduced, and their income gaps keep shrinking. In addition to the influence of reduced working ability, low education level achieved is also a

incomes (19679.158 yuan) and average education level of rural respondents are significant lower than the ones of the respondents from non-rural area, especially the mean earnings, only a half of theirs (39975.164 yuan). This illustrates that the residence registration status has remarkable effect on

Table 2. Incomes of respondents by the levels of educational attainments

Education level	Mean annual incomes	Std. Dev. of annual incomes	N	(%)
No formal education	8713.29	8954.39	471	(8.33%)
Primary school	14712.62	16283.05	1211	(21.42%)
Middle school	23321.81	30330.23	1881	(33.27%)
High school	32299.85	47470.13	745	(13.18%)
Technical school	34489.75	40226.25	332	(5.87%)
College	44955.94	41158.35	518	(9.16%)
University and over	65695.76	66498.04	496	(8.77%)

significant determinant of earnings. Given the limited educational conditions in China from 1950s to 1970s, elderly people's education level is usually lower than the youth's, which in turn has a negative impact on their service ability and then their earnings.

With respect to other personal characteristics, male respondents account for 54.86%. The average education level achieved by male respondents is slightly higher than the one by female respondents, whereas, the former's mean annual earning (33219 yuan) exceeds the latter's (21211 yuan) significantly, almost 1.6 times of the latter, which certifies that the gender discrimination problem in labor market still exists. Gender is a major determinant of individual revenues, which should be controlled in the estimating equation. As to another personal characteristic, the residence registration status of the sample, the respondents from rural area account for 59.99%. Both average annual

education level and personal earning. The children in rural area has limited education opportunities and narrow social networks, which leads to low revenues.

Table 2 summarizes the incomes of respondents by the individuals' education levels. The average annual earning of the individuals in no formal education category is only 8713 yuan, while the average annual earning of the individuals graduated from university and over reaches 65696 yuan. Higher education level achieved, higher mean revenues got, with larger effects in the higher grades. The income gap between no formal education category and primary school is 5999 yuan, while the one between college and university category is up to 20740 yuan. The education levels achieved by most individuals in the sample are primary school (21%), middle school (33%) and high school (13%). Only few people acquire higher education. 8.77% of the respondents achieve

university and over. According to the standard deviations of annual revenues, the standard deviation becomes larger as the level of educational attainment gets higher. Therefore, the earning difference among individuals is low when the education level obtained by respondents is low. As level of educational attainment increases, the earning difference among respondents gets widen gradually.

IV. Empirical findings

1. The basic model

Based on individual-level data from CGSS in 2013, this paper is able to identify the rate of returns to every education level. In accordance with the highest education level achieved by the individual. the education level is classified into seven levels (no formal education, primary school, middle school, high school, technical school, college, university and over), taking no formal education category as the reference group. Thereby, the rate of return to certain education lever estimated in this study is a relative value to the no formal education category, not the absolute value of the rate of return. Based on equation (3), I incorporate some personal characteristics into the model as controlled extraneous variables. The dummy variables of personal characteristics include gender and residence registration status.

The first column of Table 3 presents the estimation of the basic earnings function. We can observe that all the coefficients are significant at the 1% level and have the expected signs. The coefficient of the squared age value is negative as theoretical prediction, verifying decreasing marginal returns. The estimated earning function is convex and the returns to education increase with the level of education. The coefficients of personal characteristics show that both gender (*Female*) and residence registration status (*Rural*) have significant effects on the rate of return to education. Other things being equal, the revenues of respondents from rural area are lower than the ones from non-rural area. Male respondents' revenues are higher than female respondents' when they have the same education level and age, which is the status quo acknowledged widely. With respect to the education dummy variables, the coefficient of certain education level shows the income difference between the corresponding education level and no formal education group, all statistically significant. As we can see, the coefficient of return to education increases with the education level, comes up with wider income difference. The coefficients of six education levels provide the evidence that the subjects who got higher educational levels have higher earnings.

2. The direct and indirect effects of family educational background on individual earnings

Individual educational attainments and annual earnings grouped by parental education levels are listed in Table 4. Most parental education level is "no formal education" (38.54% for fathers and 55.70% for mothers). The fathers' education levels are usually higher than mothers'. As mothers' education levels increase, children's average education levels corresponding rise gradually. Fathers' educational achievements also have a positive effect on children's educational attainment, however, not as much as mothers' influence. In comparison to father, highly educated mothers are capable to generate more positive impacts on children's studies. With respect to individual

Table 3. The estimation of advanced Mincer function involving family educational background

Variables	Reg.1	Reg.2	Reg.3	Reg.4	Reg.5
Age	0.080***	0.082***	0.085***	0.082***	0.083***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Age²	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	-0.417***	-0.419***	-0.418***	-0.418***	-0.418***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
Rural	-0.521***	-0.502***	-0.494***	-0.510***	-0.509***
	(0.030)	(0.030)	(0.030)	(0.030)	(0.030)
Primary school	0.215***	0.207***	0.212***	0.214***	0.216***
	(0.049)	(0.049)	(0.049)	(0.049)	(0.049)
Middle school	0.587***	0.569***	0.576***	0.579***	0.586***
	(0.049)	(0.049)	(0.049)	(0.049)	(0.049)
High school	0.787***	0.754***	0.761***	0.764***	0.775***
	(0.057)	(0.057)	(0.057)	(0.057)	(0.057)
Technical school	0.909***	0.875***	0.876***	0.872***	0.885***
	(0.070)	(0.070)	(0.070)	(0.071)	(0.070)
College	1.064***	1.010***	1.010***	0.995***	1.014***
	(0.065)	(0.066)	(0.066)	(0.069)	(0.068)
University and over	1.254***	1.179***	1.174***	1.142***	1.166***
	(0.068)	(0.070)	(0.070)	(0.078)	(0.075)
Fedu		0.047***			
		(0.011)			
Medu			0.064***		
			(0.013)		
*Edu *Fedu*				0.008***	
				(0.003)	
Edu Medu*					0.009***
					(0.003)
Constant	8.350***	8.231***	8.166***	8.286***	8.266***
	(0.160)	(0.162)	(0.164)	(0.161)	(0.163)
N	5,654	5,654	5,654	5,654	5,654
R^2	0.374	0.376	0.376	0.375	0.374

Note: The regressions in above table are ordinary least squares estimation. Standard errors are in parentheses. * indicates that the coefficient is significant at 10%. **indicates that the coefficient is significant at 5%. ***indicates that the coefficient is significant at 1%.

Table 4. Characteristics of respondents by parental educational attainments

		Education level of individuals[a]		Annual earnings of individuals		N (%)	
		Mean	Std. Dev.	Mean	Std. Dev.		
Father	No formal education	1.595	1.243	17352	21559	2179	(38.54%)
	Primary school	2.426	1.443	27408	32996	1716	(30.35%)
	Middle school	3.310	1.664	33980	33129	1011	(17.88%)
	High school	3.872	1.706	43726	58673	429	(7.59%)
	Technical school	4.369	1.662	51465	98555	130	(2.30%)
	College	4.663	1.515	55775	59762	89	(1.57%)
	University and over	4.730	1.469	75670	94842	100	(1.77%)
Mother	No formal education	1.779	1.319	19484	29277	3149	(55.70%)
	Primary school	2.813	1.534	31096	35961	1415	(25.03%)
	Middle school	3.777	1.643	41451	44517	668	(11.81%)
	High school	4.606	1.462	53347	67027	236	(4.17%)
	Technical school	4.670	1.354	48586	45494	88	(1.56%)
	College	5.148	1.139	64724	73496	54	(0.96%)
	University and over	5.000	1.347	85678	111511	44	(0.78%)

Note:

[a] The education level of individuals is defined in the note b of Table 1 as (*Edu*).

revenues, there is an obvious positive correlation between parental educational achievements and children's earnings. The children with highly-educated parents have more education opportunities and better guidance.

Table 3 shows the results of the ordinary least squares estimation of advanced Mincer earnings function, which consider the variables of family educational background. All the coefficients are significant at the 1% level and the signs are the same as the theory expected. Compared with the coefficients in the basic model (the first column of Table 3), R-square rises, and the rate of return to every education level falls significantly, which indicates that the omission of family background variables may lead to overstating the returns to education. Both father's and mother's educational achievements have significant direct positive

impacts on individual earnings, and the influence of mother's educational attainment is greater than the one of father's.

Next, I use two interaction terms of parental education level and individual educational level (*Edu*) to analyze how family educational backgrounds influences individual earnings indirectly through individual educational attainments. After introducing the interaction terms, the rate of returns to every education level in advanced Mincer earnings function falls. The interaction term of mother has a significant positive impact on individual earnings, which is bigger than the father's indirect effects. The possible reason is that for most families in China, the one who rears and trains kids in home is mother. Mother spends more time with children as they grow up, generating greater effects on kids in every respect than father.

Variables of parental education levels (*Fedu* and *Medu*) and their interaction terms all have significant positive impacts on individual earnings, certifying that the family educational background can influence individual earnings directly, meanwhile it also have an impact on individual revenues indirectly through individual educational attainment.

3. The direct and indirect effects of family social background on individual earnings

Table 5 exhibits individual educational attainments and earnings, which grouped by parental working statuses. More than a half of the parents are self-employed, 69.6% of the fathers and 80.14% of the mothers, and their children's educational achievements (2.048 and 2.117) and average annual earnings (22302 yuan and 23332 yuan) are obviously lower than the others'. For the parents from enterprise, public institution and government offices, their children's average education level achieved and earnings are higher

than the others', especially the parents from government offices, which is the highest. Perhaps because social economic status and earnings of self-employed parents are lower than others, and they fail to offer employment information and social relationship network for their children. Since the education cost in every education level is different, which becomes higher as the education level rises, parents with low earnings are hard to afford children's higher education.

The regression results of advanced Mincer earnings function with variables of family social background and corresponding interaction terms are shown in Table 6. After introducing the new control variables, R^2 increases, and the rate of return to every education level declines, which means the estimation without family background variables may be biased upward. Both mother's and father's working statuses generate significant impacts on the individual's income, and mother's effect is bigger than father's. Compare with the individuals whose parents are self-employed, the

Table 5. The individual educational attainments and earnings by family social backgrounds

		Education level		Annual earnings		N	(%)
		Mean	Std. Dev.	Mean	Std. Dev.		
Father	Self-employed	2.048	1.483	22301.8	28200.0	3936	(69.61%)
	Social organization	2.034	1.431	27012.7	42874.7	145	(2.56%)
	Enterprise	3.648	1.616	42024.5	47634.9	976	(17.26%)
	Public institution	3.608	1.761	40080.0	57795.3	423	(7.48%)
	Government offices	3.938	1.898	45475.9	91558.1	146	(2.58%)
	Military	3.000	1.981	31058.6	26182.1	28	(0.50%)
Mother	Self-employed	2.117	1.510	23331.8	34461.9	4531	(80.14%)
	Social organization	3.135	1.475	33691.9	24196.8	37	(0.65%)
	Enterprise	3.896	1.555	44009.6	45543.0	788	(13.94%)
	Public institution	4.433	1.578	50786.1	61721.5	254	(4.49%)
	Government offices	4.605	1.516	63608.4	72749.7	38	(0.67%)
	Military	3.833	1.835	36053.3	14610.2	6	(0.11%)

Table 6. The estimation of advanced Mincer function involving family social backgrounds

Variables	Reg.1	Reg.6	Reg.7	Reg.8	Reg.9
Age	0.080***	0.079***	0.081***	0.079***	0.080***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Age^2	-0.001***	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Female	-0.417***	-0.418***	-0.420***	-0.418***	-0.419***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
Rural	-0.521***	-0.499***	-0.462***	-0.505***	-0.489***
	(0.030)	(0.031)	(0.032)	(0.031)	(0.031)
Primary school	0.215***	0.213***	0.214***	0.214***	0.215***
	(0.049)	(0.049)	(0.049)	(0.049)	(0.049)
Middle school	0.587***	0.580***	0.578***	0.582***	0.585***
	(0.049)	(0.049)	(0.049)	(0.049)	(0.049)
High school	0.787***	0.774***	0.757***	0.774***	0.769***
	(0.057)	(0.057)	(0.057)	(0.057)	(0.057)
Technical school	0.909***	0.895***	0.886***	0.888***	0.885***
	(0.070)	(0.070)	(0.070)	(0.070)	(0.070)
College	1.064***	1.047***	1.025***	1.031***	1.011***
	(0.065)	(0.066)	(0.066)	(0.068)	(0.067)
University and over	1.254***	1.233***	1.204***	1.204***	1.171***
	(0.068)	(0.069)	(0.069)	(0.074)	(0.072)
Fwork		0.064**			
		(0.030)			
Mwork			0.172***		
			(0.036)		
*Edu *Fwork*				0.015*	
				(0.009)	
*Edu * Mwork*					0.032***
					(0.009)
Constant	8.350***	8.343***	8.291***	8.351***	8.321***
	(0.160)	(0.160)	(0.160)	(0.160)	(0.160)
N	5,654	5,654	5,654	5,654	5,654
R^2	0.374	0.374	0.376	0.374	0.375

Note: The regressions in above table are ordinary least squares estimation. Standard errors are in parentheses. * indicates that the coefficient is significant at 10%. **indicates that the coefficient is significant at 5%. ***indicates that the coefficient is significant at 1%.

individuals whose parents have stead jobs have higher revenues. The underlying reason may be similar to the one above, which is that mother focuses on the family and spends more time on their kids.

Two interaction terms of individual educational level (*Edu*) and family social background (*Mwork* and *Fwork*) are significant and positive in the estimation. It indicates that the family social background not only has directly influences on individual earnings, but also effects individual earnings indirectly via individual educational attainments. The interaction term of individual educational level (*Edu*) and father's working status (*Fwork*) is not as significant as the mother's, which suggests father's indirect effects on children's income via education is limited, even though his direct influence on the earning is significant.

4. Compare the effect of family educational backgrounds and the one of social backgrounds

In comparison to the coefficients of family educational backgrounds, the coefficients of family social backgrounds are larger, which shows that the direct and indirect effects of family social backgrounds on individuals' earnings and jobs is greater, while the indirect effect of family social background is not as significant as the one of educational background. The self-employed parents have few business relationships and initial investments for their kids when their profession careers begin to start. In contrast, the parents, working in social organization, enterprise, public institution, government offices and military, have more employment information and social networks to help their kids get the jobs or

promotions, which goes against earnings equality and social harmony.

A common feature of family social and educational backgrounds is that mother's effect is larger and more significant than father's. In most families, mother is customarily the one who stays at home and accompanies their kids. The well-educated mother can train the kid to do the physical growth experience and active thinking, which is benefit for his spiritual intelligence and personal ability. The kid is more likely to get higher education enrollments, and then has access to better jobs with high incomes.

To conclude with the data analysis, family social background and educational background not only have an impact on personal revenues directly, but also influence individual earnings indirectly through education level obtained by the individuals, both statistically significant. The indirect effect mainly comes from the mother. And the impact of family social background on personal earning is greater.

V. Conclusions and Discussion

With the individual-level data from CGSS in 2013, this paper is focused on the direct and indirect effects of family backgrounds on personal earnings and the rates of returns to education. The indirect effects mainly refer to the impact on individual earnings via influencing individual educational achievement. In the estimated results of advanced Mincer earnings function with family backgrounds variables, R-square rises and the rates of return to education fall, which verifies that the omission of family backgrounds results in overstating the returns to education. All this suggests that the family backgrounds are significant determinants of personal incomes. Compared with the family

educational backgrounds, the impacts of family social backgrounds are greater. The influences of mother's educational achievement and working status on individual earnings are bigger than the one of father's, as well as their interaction terms. Maybe it's because mothers customarily take the responsibility of taking care of kids, and spend more time on disciplining them. So highly educated mother is able to give better guidance to children, producing more indirect effects on their earnings in the future. And the mother with a steady job and higher educational achievement is more likely as a role model for their kids and offer more help.

Individuals can't change their parental backgrounds through hard work or individual efforts. The strong influence of the family factors on individual earnings suggests that the job market institution is not perfect yet. The education acquired is a major determinant to individual revenues. The higher level of education attained, the more possibility to get better job with high income. The job seekers with high academic qualifications are more likely to get well paid jobs. The education is considered as an important tool to promote the mobility of different social strata, to eliminate individual earnings inequality. This intergenerational transmitting may expand the income gap from one generation to the next. It's very necessary to perfect relevant institutions of student loans and labor market system, which contributes to narrow the earning gap and promote social equity.

Note*

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2 Although the dominant influencing mechanisms of family educational background via indirect effect, it can't be denied that there may be direct effect from it. I will also estimate its possible direct effect in the equation and make a comparison.

3 The CGSS survey of 2013 reports the education levels as 13 categories, so I need to merge the similar categories. The no formal education category includes home education and never attending school. The high school category includes vocational high school and ordinary high school. The technical school category includes technical secondary school ("Zhongzhuan" in Chinese) and technical colleges ("Jixiao" in Chinese). The college category indicates "Dazhuan" (both of adult higher education and regular higher education) in Chinese. People of university and over category include university student (both of adult higher education and regular higher education), graduate students and over.

4 Some respondents are still in school or already retired even though their ages are between 16 years old to 65 years old. So I need to exclude these respondents who are not in the labor market.

5 Such as annual bonus, sales commissions.

6 The dummy variable of gender *(Female)* takes the value 1 when the individual is female, takes the value 0 when the individual is male.

7 The dummy variable of residence registration status (*Rural*) takes the value 1 if the individual is from rural area or his status is vacant, takes the value 0 if the individual is from non-rural, urban (previous rural), urban (previous

non-rural) and military registration status.

[8] Since the average age of the respondents is 44 years old, most of their parents have retired now. So it's meaningless to take their working statuses now as the proxy variables. The impact of family social background works around the individual graduated. Thereby, it's reasonable to use their working statuses when the individual was 14 years old as the proxy variables.

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