Enrollment Expansion of Undergraduates in China and Intergenerational Mobility Mode in Social Status

--An empirical analysis based on CGSS²⁰¹⁵

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Abstract: This paper focuses on the policy of expanding undergraduate enrollment in China's educational reform and its influence on social mobility. On the theoretical basis of Blau-Duncan model, structural equation model is constructed to evaluate the effect of education in the social mobility after enrollment expansion. The result shows that in one aspect, enrollment expansion did not change the role of education in reproduction of social class, while in the other aspect, it kept the possibility of social mobility through providing more education opportunities for relatively lower class. That is to say, the expansion of undergraduate enrollment contributed to maintaining the positive role of education in social mobility, rather than simply providing a completely open channel of social mobility. This also reveals that besides policy regulation, market regulation mechanism cannot be ignored. To promote educational equity, more economic reforms are also needed to be implemented and it cannot solely rely on expansion of education scale.

1. Introduction

The acquisition of educational opportunities has always been an essential topic in the sociological field. From different theoretical perspectives and analytical frameworks, sociologists study the factors that influence the access to educational opportunities or the stratification of educational opportunities. Since the reform and opening up, China has been promoting the popularization of basic education and the enrollment expansion of higher education. Specifically, it has increased the rate of basic education through the reform of compulsory education, and provided more opportunities for higher education through the expansion of college enrollment.

Figure 1 is a graph showing the trends in the scale of higher education and the gross enrollment rate of higher education drawn through the collection of the *Educational Statistical Yearbook in China* [1]. It demonstrates that China's higher education opportunities have been showing a growing trend since 1949. Although the number of students in recent years is basically in a stable state, the gross enrollment rate is still in a state of obvious increment. In 1999, China began to implement the undergraduate enrollment expansion policy. Since 2000, China's higher education opportunities have begun to show large-scale growth, which has brought about a series of phenomena, such as promotion of gender equity in education [2, 3]. In addition to the growth of the absolute number of educational opportunities, it is necessary to further explore the internal mechanism of its role. A question worth considering is whether the role of education in social mobility is absolutely strengthened after the expansion of undergraduate enrollment.



Fig.1 Scale of Higher Education and Gross Enrollment Rate

2. Theory and Literature Review

Many studies have found that there exists intergenerational mobility among social strata, such as the positive correlation between parents' income and children's access to education [4]. The mobility of social status among generations is not unchanged, but there exists an *elasticity* and such elasticity can be affected by various factors [5]. With the implementation of a series of policies in China, the originally closed channels of social mobility have become relatively open, showing an evolving trend [6]. And sociologists have made a series of valuable explorations on consequent phenomena.

2.1 Basic Theory

One of the main ways to classify class analysis is macro-level analysis and micro-level analysis. The macro-level analysis mainly focuses on the impact of transitional period and large-scale social change, while micro-level analysis mainly depicts the influence of class on individual behavior choice and opportunity acquisition [7]. A well-known hypothesis is Featherman-Jone-Hauser (FJH) hypothesis, which states that in countries with market economy and nuclear family system, although there are differences in mobility among different countries, the intergenerational correlation patterns are similar [8]. Although there once existed doubts about the applicability of FJH hypothesis in socialist countries, according to corresponding empirical research results, FJH also has some explanatory validity in socialist countries [9]. In China, one of the mainstream analytical approaches to class mobility follows the Blau-Duncan tradition of path analysis, discussing how parental background affects children's status acquisition [10]. Since then, with the progress of other branches of sociology, the Blau-Duncan model has derived a more perfect system on its original basis, such as incorporating gender, race, political loyalty and social network relations [11]. The model construction in this paper will also be based on the inheritance relationship of social status between parents and their descendants.

2.2 Indigenized Research in China

Based on the theoretical system and research methods introduced by the West, combined with China's national conditions and social facts, a series of Chinese studies on social mobility related to education have been conducted. In China, education can increase the human capital of the children of workers, especially those from the lower social and economic status groups, to make up for their competitive disadvantage in terms of pre-endowment factors, so that they have a relatively fair

employment platform, thus providing them with opportunities to enter the high-income stratum [12]. Some scholars used CGSS 2003 data to verify that MMI hypothesis (i.e. maximal Maintained Inequality) also exists in China. That is to say, the increasement of educational opportunities will benefit the dominant class in priority. In other words, the disadvantaged position of the non-dominant class will not improve or even worsen [13]. The result is also in line with the growing importance of education in class mobility concluded by Western scholars [14].

The MMI hypothesis does not mean that the educational reform will lead to the absolute closure of social mobility. For example, some researches have concluded that in the undergraduate education with clear orientation of status, the enlargement of enrollment in Colleges and universities will lead to the enlargement of the comparative advantages of the dominant strata to a great extent, while the enlargement of opportunities in the field of adult higher education with clear orientation has intensified, social and economic disparities among different strata have widened, and the effectiveness of family stratum background has emerged. This is mainly manifested in the rapid growth of the superiority of management stratum in higher education and the erosion of the mechanism of family education background, which means that the pattern of inequality has gradually shifted to the mode of resource transformation coexisting with cultural regeneration [16]. Specifically, the explanatory of human capital, social capital and wealth capital to China's intergenerational income transmission has reached 60% [17].

Based on the above theory and literature review, it is not difficult to find that the expansion of undergraduate enrollment in China has the function of inhibition on social exclusion to some extent, but it will not bring about absolutely monotonous and stable equality of class mobility. In order to explore the impact of undergraduate enrollment expansion on the transmission of intergenerational social status, the following part will make a further discussion.

3. Analytical Framework and Construction of Model

3.1 Basic Theoretical Framework

In Blau-Duncan Model, it simply emphasizes the inheritance of social status between generations [18]. Carnoy and Levin made a proposition that education in democratic countries, on one hand, has the function of reproducing the original productive relations; on the other hand, it also has the function of improving the status of members of poverty-stricken groups by enabling them to acquire the relevant knowledge and qualifications needed to participate in life [19]. Thus, in the Blau-Duncan model, education is placed in the intermediary position of intergenerational social status transmission. The path is demonstrated as figure 2.



Fig.2 Basic Theoretical Framework

For this theoretical framework, a consistent analysis method is the Structural Equation Model (SEM) [20]. Some variables in modern social sciences are hard or even impossible to measure accurately and directly, which are called *latent variables*, such as social status in this research. For these latent variables, most of the traditional statistical methods usually use some explicit indicators to measure indirectly as an alternative, which will lead to the bias of the model, while the structural equation model can make up for the shortcomings of the traditional statistical methods. It can include both observable variables and non-observable variables (i.e. latent variables) by setting paths to integrate direct and indirect relationships between variables. The mathematical form of it is:

$$x = \Lambda_x \xi + \delta \tag{1}$$

$$y = \Lambda_{v} \eta + \varepsilon \tag{2}$$

$$\eta = \beta \eta + \gamma \xi + \zeta \tag{3}$$

x represents exogeneous indicators and, y represents endogenous indicators, ξ is a vector composed of exogenous latent variables and η is a vector composed of endogenous latent variables. Λ_x and Λ_y are matrices of factor loadings, β is a matrix of path coefficients of endogenous latent variables and γ is a matrix of coefficients between endogenous latent variables and exogenous latent variables. δ , ε and ζ are mean-zero random error terms that satisfy uncorrelated assumption. Equation (1) and equation (2) are so called *measurement equation*, equation (3) is so called *structural equation*.

3.2 Composition of Structural Equation Model

Anderson and Gerbing proposed an approach to overcome the problem of model identification, the method decomposes structural equation model into two parts: *Measurement Model* and *Structural Model* [21]. The measurement model includes the relationship between observed variables and latent variables, which is mainly a process of confirmatory factor analysis (CFA). The structural model depicts the correlation among latent variables, which is a model of path analysis. In the measurement model, each factor should contain at least 2 indicators and each indicator is just related to only one factor (i.e. latent variable). In the structural model, its construction of paths must follow recursive causal logic strictly.

The latent variables in the structural equation model are parental social status and children's social status as listed in the theoretical framework. Besides the observed variables used to measure the two latent variables, we also introduce years of children's education as both direct and indirect transferring mechanism in intergenerational transmission of social status.

The indicators (i.e. observed variable) related to social status include do not have a fixed rule, in this case, *occupational prestige, education, income* and *political status* are set to measure the social status, noting that we place the children's education as a mediator variable while the parents' education is set to be a strictly exogeneous variable.

Education has two prevailing methods of measurement, one is set education to be a ordinal variable and the other one makes it as a continuous variable. In this model, we measure it by calculating years of education and take the maximum of parents' education as *parental education*. *Parental income* is measured by subjective scores of family economic conditions at the age of 14. *Parental political status* is a dummy variable that '1' represents at least one of children's parents is communist and '0' otherwise. To estimate occupational prestige, we refer to a regression equation proposed by Li Chunling, its form is:

Occupational Prestige = 10.868 + 3.496 Edu + 0.589 Income

In this equation, *Edu* represents average occupational education and *Income* refers to average occupational monthly salary. And the coefficient of determination of this model is 64%. The calculated results of each occupation is listed below:

Occupation	Average Edu	Average Salary	Occupational Prestige	
Personnel in charge of state organs,	13.21	11.11	63.59	
enterprises and undertakings				
Professional and technical personnel	14.73	10.78	68.71	
Clerk	13.35	10.61	63.79	
Commercial staff	10.08	10.23	52.13	
Production and transportation personne	1 9.19	10.17	48.96	
Service staff	9.32	10.08	49.39	

Table.1 Occupational Prestige

According to the analysis above, the construction of SEM is showed in figure3.



Fig.3 Framework of Sem

4. Data Analysis

4.1 Datasets

The dataset used in this research is CGSS2015 (Chinese General Social Survey 2015) conducted by Renmin University of China, which is a widely used dataset with high quality. The policy of expanding undergraduate enrollment has been implemented since 1999. According to the enrollment age of primary schools and the usual time spent finishing senior high school, it is estimated that the group who first benefited from the policy should be born in 1980. Those who have not completed their bachelor's degree will be excluded, thus the upper bound of the birth year should be 1992 (noting that the year of this survey is 2015 and commonly a student in China need to spend 22years to get a bachelor degree). Considering that our country began to restore the college entrance examination system in 1977 and the age limit was liberalized to 30 years old, we set the lower limit of the birth year to 1947. From this we can get two groups, one has experienced enrollment expansion policy (birth year:1980-1992), while the other one did not (birth year:1947-1979). After splitting the original dataset, we deleted the observations with missing values. Finally, there are 1618 observations in the group that did not experience the enrollment expansion and 781 observations in the group that has benefited from the expansion policy. The two split sub-datasets are then utilized to fit the SEM.

4.2 Results of Sem

Before looking into the path coefficients of SEM, let us first check the fit index related to the default model. SEM1 is the model fitted with the group that did not experienced enrollment expansion and SEM2 is the model fitted with the other group that benefited from the policy. Here we use four regular fit indexes to evaluate the fitness of the model: GFI (Goodness of Fit Index), TLI (Tucker-Lewis Index, which is also called NNFI), CFI (Comparative Fit Index), RMSEA (Root Mean Square Error of Approximation). If GFI, TLI and CFI>0.9, RMSEA <0.08, then we assume the model fitness is ideal.

Table.2 Filless of Sell

Fit Index	SEM1	SEM2	
GFI	0.977	0.989	
TLI	0.934	0.980	
CFI	0.957	0.987	
RMSEA	0.065	0.034	

According to the fitness index listed above, we have reasons to confirm the effectiveness of our models. So then we look into the standardized coefficients of the two models, in the table3, C.R. is Critical Ratio, which is the result of estimate coefficients divided by estimate standard error.

Parameter	SEM1 Coefficients	C.R.(SEM1)	SEM2 Coefficients	C.R.(SEM2)
$\Box_{\Box 1}$	0.37	11.751	0.37	7.879
	0.72	18.491	0.74	11.618
	0.72	18.452	0.68	11.835
$\Box_{\Box 1}$	0.54	13.308	0.41	7.669
	0.70	14.583	0.68	9.450
\Box_{1}	0.19	4.973	0.25	3.884
\square_{21}	0.55	15.951	0.59	10.612
	0.73	14.055	0.69	8.725

Table.3 Results of Sem

All the coefficients are significant, and to make a more obvious demonstration, we also calculate the direct effect and indirect effect of parental social status in the path analysis as showed in table4:

Table.4 Effect of Intergenerational Transmission of Social Status

Parental Social Status	Children's Social Status			
	Direct Effect	Indirect Effect	Total Effect	
Before Expansion	0.19	0.35	0.54	
After Expansion	0.25	0.43	0.68	

The total effect is calculated by the simple regression between parental social status and children's social status.

An intuitive result is that if we compare the indirect effect from education, we may find that the proportion of indirect effect out of total effect is approximately the same. However, we cannot conclude simply that the expansion of enrollment has no influence on class reproduction. In the next chapter we would make a further discussion.

5. Conclusion and Discussion

To explain the mathematical results, first we ought to know that the dominant class always tend to be the first beneficiary in the social transformation as the MMI hypothesis we mentioned in literature review, so it is not surprising to find that the total effect increased. In other words, the gradual social changes led by the state determines the reproductive characteristics of the relative relationship model of strata, rather than reorganization or circulation of social class. Li lulu also verified such phenomenon in one of her articles [23]. Another point worth noting is that China still implements nine-year compulsory education, so there still exists a disconnection in undergraduate enrollment.

In addition to the path coefficients between latent variables, it can also be seen that the function of parental education in the transmission of social status has been slightly strengthened. This means whether let their children enter the colleges is still an individual choice behavior and those who has relatively low parental education may even face a tougher position in upward social mobility. Relying only on expansion of education scale, we cannot expect a substantial improvement of education equality. Other actions must be taken to solve the problem as source.

Based on this conclusion, the approximately unchanged proportion of effect of education shows that in one aspect, enrollment expansion did not change the role of education in reproduction of social class, while in the other aspect, it kept the possibility of social mobility through providing more education opportunities.

To summarize, the policy of enrollment expansion did benefit the relatively lower class to have more opportunities to gain the acquisition of social mobility, while it can hardly change the institutional structure of class reproduction. Education in present society is influenced by many other factors besides the policies made by state, such as the market. China is still on the way to a more comprehensive and sophisticated educational system and thus we can expect further research on the most recent educational reforms implemented by China.

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