



Analysis on the Necessity of Public Financial Security During the Process of Popularizing Upper Secondary Education in China

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Abstract

The paper analyzes the necessity of financial security as for expanding upper secondary education. Firstly, from the aspect of upper secondary education as a quasi-public product, financial security is the duty of government. Secondly, from the aspect of education equity, financial ensurance contributes to the increase of the education opportunity for school-age population, and then affects the popularity and equalization of upper secondary education. Finally, from the aspect of empirical analysis, upper secondary education financial input plays an important role for expanding upper secondary education.

Key words: Public financial security; Popularizing upper secondary education; China

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INTRODUCTION

CPC and Chinese government have developed a clear policy objective for popularizing upper secondary

education. In 2007, “National Education Development Eleventh Five-Year Plan” proposed the gross enrollment rate would be round 80% by 2010 (State Council of People’s Republic of China, 2007). “National Medium and Long-term Educational Reform and Development Program (2010-2020)” published in 2010, proposed the upper secondary education enrollment rate would be 87% by 2015 and 90% by 2020 (The Central Committee of CPC, 2010). The reality is that our upper secondary education enrollment rate increased rapidly in recent years, but regional differences in popularity are huge and in some areas it’s far from the goal (Jiang, 2013). Meanwhile there are different voices arguing whether government should take the main role in supporting upper secondary education for a long time. This paper’s view is clear and strong that government either theoretically or empirically should take the responsibility for popularizing upper secondary education and public finance should ensure the process.

1. PUBLIC FINANCE GUARANTEE IS GOVERNMENT’S RESPONSIBILITY

There are still a lot of controversies over the standard of division of public goods and private goods. Most scholars divide them according to non-rivalness (consumption) and non-excludability, and some scholars divide them according to whether the goods are provided by the government (Chen, 2006; Li, 1999). The two criteria are the most popular views nowadays. We think that if people simply judge goods private or public only by who provides them, then the behavior of the government will be the criterion. So there is no need to find a theoretical base which can be a theoretical guidance for government’s behavior. Because as long as it is the government that provides the goods, the goods will be labeled as the “public goods”. The government can participate activities unnecessary, and some programs with low investment benefit but positive externality become “private goods”

only because the government did not provide them, then the government can evade responsibility publicly. Therefore we should still define upper secondary education as public goods from the point of consumption according to the traditional distinction between public goods and private goods, and we claim that it should be provided by government.

For upper secondary education services, there are three main opinions: The first one is upper secondary education is publicly supplied private goods (Atkinson and Stiglitz), the second is pure public goods (Lao Kaisheng), the last is quasi-public products (Buchanan, Wang Shanmai and Yuan Liansheng). But no matter which one of these three opinions, they all think the government is duty-bound to upper secondary education, and their difference lies upon the proportion of government investment. But what are the differences exactly between this stage education as a quasi-public product, compulsory education, and higher education. So there's no further analysis on the topic to make sure whether government financial ensurence should be the same or different among the three stages of education academically. Some scholars think that upper secondary education, especially that in rural areas should be a pure public goods, to which government should reduce or exempt students from tuition and fees, while others think that education of this stage should take cost sharing mechanism, to which government should gradually increase the ratio of average high school tuition.

In a segment of public goods, Heyman (1999) mentioned the degree of non-rivalness and non-excludability is different along with different products. Actually it is impossible to draw a clear boundary between the pure public goods and pure private products, and there exist a lot of things in the middle.

The paper thinks that not all of the products have fixed inherent features, say, nature of water, 0 Celsius degree is the boundary, above which water is liquid and under which water is solid. 100 Celsius degrees is another boundary, and more than 100 degrees water becomes gaseous vapor. Given this, an American economist, Loyd G. Reynolds in his book referred to an item may be a private goods in some respects, on the other hand it is a quasi public goods (Reynolds, 1994). Similarly, in the macro level, when a kind of education has 100% popularizing rate, which is large enough to accommodate all the school-age population, and the allocation of resources is equalized, this kind of education is a pure public goods with non-rivalness of consumption and unnecessary excludability. On the premise of equalized resource allocation, the popularizing rate of 100% is the line differentiate quasi public goods from the pure public goods. But this strict precondition is an ideal state, therefore, the author thinks that any education can't be pure public goods, but with the popularity of this kind of education, it is closer to the end of pure public goods.

So we will classify educational products, arranging them between public goods and private goods. And we get the following Figure:

Pure Public Goods	Compulsory Education (Almost Popularized)	Upper Secondary Education (Popularized Only in Some Areas and Cities)	Higher Education	Private Tutoring	Private Goods
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Figure 1
Classification of Different Educational Goods

Upper secondary education in our country is gradually popularized. Along with the popularization, upper secondary education moves to the end of pure public goods to be a quasi-public goods that are closer to the pure public goods than higher education and private tutoring. Therefore among those educational products, the government's fiscal investment should also be in this order to design, namely the fiscal investment proportion in compulsory education should be the highest, the second is the upper secondary education. And along with the popularization of upper secondary education, the proportion should be gradually close to the compulsory education. Then comes higher education, and the last is private tutoring.

2. FINANCIAL GUARANTEE IS THE IMPORTANT PREMISE OF REALIZING FAIR EDUCATION

Educational equity involves the fairness in educational field, whose theme and contents are how to allocate the

corresponding rights, opportunities and resources of education among society members. Educational equity can be divided into horizontal and vertical, and the former refers to equal treatment to all the educatees, while the latter refers to the different treatments to the disadvantaged. At the same time, the educational equity can be evaluated through educational systems and the related educational policies, to see if they help the fair allocation of educational rights, opportunities, and resources.

At present both McMahan and Torsten Husen have a system study on educational equity. McMahan's Equity, referring to the same treatment to the same people; Vertical Equity, referring to different treatments to different people; As well Intergenerational Equity, which is to ensure that the inequality of previous generation will not completely continue (McMahan, 1991).

Torsten Husen put forward the equality of educational opportunity, and he divides the educational equity into three stages, namely equity at the starting point, process equity and result equity. Equality firstly is the same

starting point, which means no matter what their social backgrounds are, people can receive education without any restriction. Secondly equality can be an intermediary stage, and all sorts of difference can be taken into consideration, but are based on the equal treatment of everyone, including two aspects of subjective factors and objective factors. Subjective factors refer to whether teachers in the teaching process treat students equally without considering their family background, intellectual level and educational degree; Objective factors mean whether the input of resources is equal, such as human resources, financial input, equipments, housing, etc. Result equity, that is equal academic achievement, which means the equality of opportunity of being accepted by the society with academic success.

In reality for upper secondary education there are a lot of unfairness, such as entering demonstration senior high schools through paying large amount of school choice fees or sponsorship fees, and so on to enjoy high-quality high school education services; Such as enormous educational resources allocation differences of regions, between urban and rural areas, among schools, in groups; As for those families who cannot afford tuition fees, only let the children give up upper secondary education. It is said that in the rural areas about 89% of junior middle school graduates abruptly lost the chance to receive further education, especially rural "left-behind children". If they go out to work, and they are child labor, clearly illegal. If they don't go out to work, all day hanging in the society, and a few years later the young might be marginalized, excluded from mainstream society (Tang, 2007). But if this continues, the offsprings of the group also face the same problem, the intergenerational unfairness continues. Through education they can't change their fate, the gap between rich and poor being more serious.

To promote the balance of educational resources allocation of upper secondary, and promote the equal development of upper secondary education, the main responsibility is the government's. The government should provide its citizens with roughly equal public educational resources to ensure the realization of education fairness, so should in upper secondary education. So under the situation of large difference existed among schools, the government should use fiscal lever, with the incremental changes in education funds, to gradually balance the stock gap of software and hardware between public schools, and narrow the huge gap existed at present in the stage of education. For the disadvantaged in society fiscal tilt should be done for the sake of vertical equity, including students with disabilities, students with family economic difficulties, orphans, migrant workers' children, etc., to ensure that they may not give up upper secondary education because of economic reasons.

3. FINANCIAL SECURITY IS A KEY FACTOR OF POPULARIZING UPPER SECONDARY EDUCATION

In our country at the upper secondary education is not compulsory, so people are free to choose. The collection of individual needs for education forms the social needs of the whole education. Educational scale is determined by the social demand and supply of education. Financial policies of education affect the social demand and supply of education, while social demand and supply decide the size of the upper secondary education.

In addition to fiscal policies, factors affecting the degree of educational popularization mainly include the level of economic development, the school-age population. We use the function $P = f(a, b, c, d)$, in which "a" stands for a variety of financial systems, including student financial assistance, financial subsidies and tuition system. "b" stands for economic development level, "c" represents the school-age population, and "d" is on behalf of the social structure of household income. These factors work together, causing different degrees of change in educational demand and supply, affecting the change of the scale of education, thus affecting the popularity of the education.

Firstly, economic development level has a great influence on the development of education. In general, the higher the level of economic development, the better the development of education will be. Liu (2009) observed the relationship between the Gross Enrollment Ratio of upper secondary education and GNI per capita all over the world, economic development level to a large extent determines the individual and the whole social demand for upper secondary, which is one of the important factors affecting the development of upper secondary education. Secondly population structure will also have a major impact on demand for education, the rise of school-age population will increase the potential demand. If the supply is given, and educational scale is invariant, increase in school-age population means decline in educational popularization. Thirdly social structure of the family income will also affect the popularization of education. If family income disparity is enormous, wealth being more concentrated in rich families, the ability of poor families to pay becomes weaker, which reduces the demand for education and causes decline in the degree of educational popularization. Factors are many and varied, financial policies and the combination of these factors influence the development of education. According to the function, control the level of economic development, school-age population scale and family income, to examine the influence of financial policy on the popularization of upper secondary education.

According to the above analysis, for financial security patterns we choose the following indicators: (a) the level

of government input, that is the proportion of senior high school educational spending budget in the general education funds. (b) the structure of government spending on education, because the upper secondary education is mainly in the charge of two levels of governments: the city and the county, this article selected the proportion of educational expenditure of the city government in the total amount of educational spending of the two levels of government. The tuition policy selected (c) the real amount of tuition and fees per student. Level of economic development we chose (d) per capita GDP. The school-age population size we selected (e) the total population, mainly because the regional school-age population is unavailable. Household income structure chose (f) the urban and rural income ratio, namely the ratio of urban per capita disposable income divided by net income of the rural. The explained variable is the ratio of junior high school entering senior high school. Data from China Statistical Yearbook (2004-2008) and China Educational Funds Statistical Yearbook (2004-2008).

Assuming the influence of each independent variable on senior high school entrance ratio is different if time changes, we'll judge whether the data is suitable for the time fixed effect model. After using hausman test by Stata 10, the results show that we should choose fixed effect. From the above analysis and assumptions, build the model as follows:

$$seniorprom_{i,t} = \alpha_0 + \beta_1 * gdp_{cap_{i,t}} + \beta_2 * popu_{i,t} + \beta_3 * differ_ci_rural_{i,t} + \beta_4 * eduexprate_ci_coun_{i,t} + \beta_5 * inputrate_{i,t} + \beta_6 * ptuition_{i,t}$$

Subscript i,t means the i th area and the t th year, and *seniorprom* refers to the rate of junior high graduates entering senior high school, while *gdpcapi* as GDP per capita. *popu* stands for population (ten thousand people), *differ_ci_rural* for urban and rural income ratio, *eduexprate_ci_coun* for the proportion of educational expenditure of the municipal government in the total amount of educational spending of the two levels of government (cities and counties), *inputrate* for the proportion of government input in senior high school, and *ptuition* for students' average tuition and fees.

Econometric results from panel data of 31 provinces, autonomous regions and municipalities directly under the central government from 2003 to 2007 are (software stata 10 used) :

Table 1
Effects of Financial Policies on Upper Secondary Education

Explanatory variable	Model 1	Model 2
GDP Per Capita	0.00126*** (-0.00017)	0.00128*** (0.000169)
Population	-0.00783*** (0.00325)	-0.0078** (0.00325)
Difference between Urban and Rural Income	-2.1154	-2.1624

To be continued

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Explanatory variable	Model 1	Model 2
Expenditure of Municipal Government Accounting for Two Levels	(1.448776) 0.12039 (0.13675)	(1.4464)
Government Input Rate	0.30765*** (0.111446)	0.29494*** (0.110403)
Average Tuition and Fees	0.0029*** (0.00160)	0.00288** (0.00158)
Sample Volume	155	155
Test Result of Model	Fixed Effect	Fixed Effect

Note. Standard error is shown in brackets. *, ** and *** represent 1%, 5% and 10% statistical significance.

From the model 1, model is significant under the 0.01 level. To analyze the influence of each variable, the per capita GDP, population scale, China government input and the influence of average tuition and fees are significant, while urban and rural household income rate is not significant statistically (p is 0.147), the proportion of municipal government's spending on education in the total amount of spending of the two levels of government is not significant either. But the p value of the urban and rural household income is close to 0.1, therefore, it could be weak influence on explained variable, which is left in the model 2. In Model 2 the per capita GDP, population scale, Chinese government input and average tuition and fees are also placed in, and the results show that coefficient and significance of the two models have no great changes, so the models have a certain robustness.

Per capita GDP has a positive impact on upper secondary education popularization, which is in agreement with our theoretical assumptions, the higher the level of economic development, the better the development of education. Since there is no school-age population, with a total population to replace it, a negative correlation is found between the population and the popularization of upper secondary education, which is consistent with hypothesis, that is, the greater the population size of this area, the more school-age population, under the condition of the given educational supply, popularization will be lower. From the above analysis, the key of popularization lies in economically underdeveloped areas, and should focus on the most populous provinces. Central government should increase the transfer payment to the less developed areas and provinces with large population, in order to ensure achievement of policy objectives of popularizing upper secondary education.

And financial impact on the development of the upper secondary education is mainly shown by government input and average tuition and fees. Lower government input means lower popularization, which is consistent with our hypothesis. To increase popularization of upper

secondary education, we must increase the investment of the government. In the models, it is suggested that every 1% increase in government input, the rate of junior high graduates entering senior high school will have a 0.3% rise.

Tuition increase has a positive impact on the popularization of upper secondary education, which shows an increase in tuition and fees is an important factor in upper secondary education popularization. Actually as one of the financial systems the tuition and fees system in a certain extent brought funding support for educational development, which is the result of financial responsibility transference from the government to the students' families, at the same time due to charging higher tuition and fees, local governments and schools have incentives to increase educational supply. This is why a few years ago many demonstrative high schools were in debt troubles in order to expand enrollment. Relying on charging higher tuition and fees to promote the development of education is actually a kind of system defects. In fact, in recent years the proportion of upper secondary education tuition and fees in the total education budget is continuously rising in our country, and this is not a long-term solution.

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