The Fortress of Educational Inequality

An Empirical Analysis Based on Beijing Municipality

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Abstract. Educational equality is one of the most important issues in the education field. This paper examines the issue of educational equality at the compulsory education level in Beijing, adding the perspective of "free choice equality" to the previous theories about education equality. Rawls proposes the "veil of ignorance" to ensure the relatively equal distribution of resources and the effective protection of vulnerable social members while Coleman and Husen classify educational equality into three aspects: starting point equality, process equality, and outcome equality. Under this theoretical framework, the equality of compulsory education in Beijing has reached a high level. Beijing has a very high enrollment rate in both primary and secondary schools. Beijing's educational resources have been consciously distributed equally, and have a good degree of completion. However, if examined in the extended framework with free choice equality, it still has some significant drawbacks. Beijing's educational equality does not give students more opportunities to choose their own futures. This research adds "freedom of choice" equality to the development of modern education.

Keywords: Compulsory education · Educational equality · Beijing · Sociology

1 Introduction

On July 24th, 2021, the State Council of China published *The Instructions on Further Reducing Homework Burden and Off-Campus Training for Students at the Compulsory Education Stage*. One of its purposes is to promote educational equality by eliminating extracurricular tutoring from off-campus institutions [1]. However, can such a policy really help improve educational equality? Furthermore, Beijing is one of the most developed areas in educational facilities. Are the policy and practice of compulsory education in Beijing compatible with educational equality? Why the majority of students do not attend random allocation, which is the fairest way of secondary school enrollment? Does the reform of the high school examination enhance the free choice of students? How to set up criteria to measure? Based on the background, this paper focuses on the following questions: What other problems of inequity in compulsory education exist in Beijing? What improvements are needed?

1.1   Literature Review

Educational equality is an old topic full of controversy and debate. There have been abundant and comprehensive studies on it, both theoretical and empirical. Rawls' research is the basis for many scholars' studies [2, 3]. Rawls reckons that justice consists of two principles: the first is the principle of equal freedom, and the second is the principle of fair opportunity and distinct treatment. Equal freedom is superior to fair opportunity and distinct treatment, and fair opportunity is still superior to distinct treatment. With regard to establishing a distributional mechanism in line with justice, Rawls proposes the "veil of ignorance" to ensure the relatively equal distribution of resources and the effective protection of vulnerable social members. On the basis of firmly protecting individual freedom and equality of opportunity, Rawls advocates the principle of distinct treatment to restrict social inequality as much as possible and improve the situation of the most disadvantaged people in society. Dworkin argues that there are two kinds of equality: equality of welfare and equality of resources. The former emphasizes quantitative equality while the latter focuses on the distribution based on people's relative differences in economic, cultural, and educational environments [4]. Dworkin prefers the latter. There are two principles of equality. The first principle requires governments to carry out laws or policies which can ensure that citizens are not discriminated against because of their economic background, gender, race, and disadvantages. The second principle demands that governments, to the largest extent, strive to make the development of citizens consistent with the choices they make for themselves. Amartya Sen proposes equality based on viable capabilities [5]. The measurement of equality is based on the actual viable ability and self-realization possessed by the social members.

The studies of Coleman and Husen are very important. Their research framework can generalize many issues and provides an important basis for the theoretical framework of this paper [6, 7]. Coleman and Husen classify educational equality into three aspects: starting point equality (the opportunity to begin an academic career without any discrimination), process equality (equal treatment of people of different ethnic and social origins), and outcome equality (the opportunity to gain academic achievement) [6, 7]. The three-equality framework is the most widely adopted theory on the issue of educational equality. Coleman and Husen's three-equality framework analyzes and evaluates educational equality more from the perspectives of governments or schools. However, educational equality is not only the public obligation of the governments and schools but also a private affair for families and students. Education decisions are most important for families and students. Regarding private decision-making and free choice of families and students, Coleman and Husen do not go far enough.

Ni et al. introduce the situation of educational equality in the U.K. and the U.S., spanning five historical stages from the late 19th century to 2010 [8]. They systematically review the evolution of educational ideology, show the contents of many educational laws and policies, and summarize common features and trends in the two countries. Regarding the situation in China, Yang analyzes the historical root of educational inequality in China – elitism and a hierarchical school system [9]. He summarizes the specific forms of inequitable allocation of educational resources and fiercely criticizes the policy of educational industrialization and the practices of "school selection" and "school adjunction" with high enrollment fees. Wen analyzes the current educational inequality

in China in terms of urban/rural gaps and social classes and then deliberates on the bottleneck of the educational system and relevant policies [10]. Their research is very useful for this paper, because their analysis and sources are more relevant to China's compulsory education.

1.2   Research Methods

In this paper, a revised theoretical framework is established to discuss the issue of educational equality. Free choice equality, on behalf of families and students, is introduced into Coleman and Husen's three-equality framework. Thus, educational equality is composed of two pillars (governments/schools and families/students) and four educational equalities. A series of criteria are set up to evaluate the situation of educational equality.

From the perspective of governments and schools, Coleman and Husen's three equalities are considered. First, starting point equality is evaluated by two criteria: distribution of resources and compensation mechanism for underdeveloped areas and disadvantaged people, and rights to acquire compulsory education. Second, process equality is considered from two aspects, namely, the system of curriculum and teaching standards and equal treatment without discrimination. Third, outcome equality is determined by two criteria: a fundamental degree of education after compulsory education and a fair and competitive examination to enable social class mobility.

From the perspectives of families and students, free choice equality is included, which is determined by two criteria: students' equal freedom to choose their interests and individual development and families' freedom to make an additional educational investment.

Based on the above four-equality framework and eight criteria, an empirical study on compulsory education in Beijing is conducted. This paper looks into the data in Beijing's educational annals and relevant policies, which provide a comprehensive, consecutive, and solid foundation of research. Correspondingly, the merits and drawbacks of compulsory education in Beijing are analyzed.

This paper argues that Beijing has remarkable achievements in terms of educational equality, especially concerning starting point equality. However, there are still remarkable deficiencies in process equality and outcome equality. The current policy in Beijing is not sufficient in terms of freedom of choice if a higher level of equity in education is pursued.

2   A Solid Foundation for Educational Equality at the Compulsory Education Level in Beijing

The problem of uneven educational resources makes the differential compensation mechanism proposed by Rawls extremely important. However, it is difficult to measure the imbalance in educational resource allocation and its impact on students, whether extra benefits or extra imparity, much less calculate the amount of compensation. In particular, the viable capability proposed by Sen is based almost entirely on individual differences, which makes direct compensation to disadvantaged families and students difficult to

achieve. Therefore, the government tends to adopt realistic (sub-optimal) options to promote educational equality. On the one hand, the government will make a macroeconomic compensation by tilting resource allocation toward behindhand regions and disadvantaged schools to narrow the gap between regions and schools. On the other hand, the government adopts a "veil of ignorance" – an open and transparent lottery mechanism to guarantee that each family or student gets equal access to the best educational resources and facilities. If all students know they will be assigned to a leading or a backward school, and there is no power overwhelming the "veil" or changing the lottery result, it is possible to dynamically promote a balanced allocation of educational resources at the social level. In this regard, Beijing's compulsory education presents a double-faced situation.

2.1   What Has Been Done?

According to the data released by the Beijing Municipal Education Commission at the annual news conference on educational undertakings, Beijing's primary school enrollment rate reached over 99% and junior school enrollment rate reached over 96% in 2018 [11]. The two enrollment rates both exceeded 99% in 2019 and 2020 [12, 13]. There are 131 school districts in Beijing. 70% of the primary and junior schools are incorporated into the school district system to guarantee students' equal access to compulsory education and the starting point of equality [12].

Beijing's current compulsory education curriculum program and curriculum standards were published respectively in 2001 and 2011. In April 2022, the Education Ministry of China issued the revised Compulsory Education Curriculum Program and Curriculum Standards (2022 Edition), which consists of a new curriculum program and 16 curriculum standards. It makes uniform and clear requirements on the content and manner of teaching and learning, thus guaranteeing the process equity in the compulsory education period.

Based on the number of students enrolled at the beginning of 9th Grade and those who graduated from junior schools disclosed by the Beijing Municipal Education Commission, spanning from the school year 2014/2015 to the school year 2021/2022, the junior school graduation rate (graduated/enrolled) in Beijing can be calculated [14]. In the 8-year period, only two years recorded a graduation rate of 80%, while the rest were all above 90% and three years peaked at 96%. Such figures effectively meet the goal of outcome equality of compulsory education so as to guarantee an overall and fundamental educational quality in the population.

2.2   How Does the Macro-compensation Mechanism Work?

According to the GDP ranking among 16 districts in Beijing in 2021, the top four are Haidian, Chaoyang, Xicheng, and Dongcheng, and the bottom five are Huairou, Miyun, Pinggu, Mentougou, and Yanqing. According to the data of the overall education budget per student (OEBS) and the public education expenditure budget per student (PEEBS) for primary school and junior school from 2016 to 2020 released by the Beijing Municipal Education Commission, although Huairou, Miyun, Pinggu, Mentougou, and Yanqing rank last in terms of GDP, they generally rank at the top in terms of OCBS and PEEBS

for both primary and junior schools [15]. The same trend is also reflected in terms of the average annual growth rate. In 2020 OCBS and PEEBS of nearly all districts declined due to the Coronavirus epidemic shock on economic growth and fiscal revenue, while those of Huairou, Miyun, and Yanqing kept a positive growth rate (7%–17%). From the perspective of education resource allocation, significant compensation has been given to backward districts.

2.3   Student-Teacher Ratio (STR)

STR reflects the average number of students taught by a full-time teacher. The smaller it is, the more teachers are assigned to the same number of students. From the school year 2014/2015 to 2021/2022, the STR of a primary and junior school in each district is relatively stable. However, the difference between districts is very significant. Taking the 2021/2022 school year as an example, the STRs of Huairou, Miyun, Pinggu, Mentougou, and Yanqing remain at 11.05–14.02 (primary school) and 5.91–7.58 (junior school), while those of Haidian, Chaoyang, Xicheng, and Dongcheng are at 13.08–24.54 (primary school) and 6.69–8.52 (junior schools, with Chaoyang lower at 5.63) [14]. A significant priority is given to backward districts in terms of the number of teachers, which also guarantees starting point equality.

3   Admission Channels to Junior Schools: Hidden Status and Endowment Discrimination

3.1   Actual Stratification of Schools and Different Ways to Choose Junior Schools

In terms of hardware facilities, faculty capability, and teaching quality, junior schools in Beijing can be divided into three tiers: municipal key schools, district key schools, and common schools. Although the education administration has explicitly banned crowning two types of key schools based on the consideration of educational equality at the compulsory education level, the disparity between schools is widely known. The stratification of schools originated from China's key-school system since the founding of the country. It also brings out a pyramidal structure in the education system by tilting resources to some regions and certain schools, so as to focus on training the talented students needed for economic and technological development [9]. Despite its profound historical origins, the practice of concentrating investment in key schools and selecting students with outstanding academic capabilities, especially at the compulsory education stage, is completely inconsistent with the basic concept of educational equality.

From the analysis of the officially disclosed data, there are seven patterns to enter a junior school in Beijing.

A. Registration for admission, which means after students fill the registration chart with one or more preferred schools, a lottery will be held to decide whether they can enter the target schools. In this channel, the provided junior schools are usually common ones, with few quotas in key schools.

B. Direct admission, which means that an elementary school is given a certain number of quotas so that some of its graduated students will be directly granted into the corresponding junior schools (usually key schools).

C. Talented student admission, which means that a junior school (usually top key schools) can admit students with special talents in language, mathematics, or art according to its own criteria and preference.

D. Accommodation admission, which means that a student is permitted to live in the dormitory after admission, generally for those who live far away from school.

E. Private school admissions, which means a student chooses private junior schools and also gives up public (free) junior schools.

F. Independent enrollment, including first, selected enrollment, which means that municipal and district key schools can recruit students according to their own criteria. Most of the time, they will choose students who have excellent academic performance. Second, policy guarantee refers to quotas to key junior schools set aside by the local government for important businesses or government agencies in the district. Third, faculty's children enrollment, which means quotas to key junior schools, especially those affiliated with a university, are reserved for faculty's children.

G. Random allocation, which means students not enrolled through the former 6 channels, will resort to the lottery, the result of which (usually a common school) must be obeyed unconditionally.

3.2   Hidden Status and Endowment Discrimination

According to the degree of openness and transparency, random allocation is essentially a lottery mechanism. Registration for admission is also a lottery, and although the number of places in municipal key schools is very small, it is still a fair way.

Talented student admission (C), accommodation admission (D), and independent enrollment (F) are based on the autonomy of key schools. Both the selection mechanism and the publication of results lack transparency and are prone to rent-seeking. The core purpose is that municipal key schools and district key schools want to screen out students with the outstanding academic capability to maintain the advantage of student resources in the subsequent competition, but such conducts clearly violate the basic principle of educational process equality.

Every year Beijing's education administration releases the policy on junior school admission, and then its branches in 16 districts follow to publish specific schedules and places of admission for patterns A to E. Based on statistics of Haidian District from 2017 to 2021, which is one of the top developed school districts in Beijing, the proportion of pattern F and G (as a total) in all junior school admissions can be calculated ranging from 39.94% (2017) to 57.76% (2020).

Beijing's education administration has never released the independent number of independent enrollment and random allocation. It is a smart approach to mixture the most and the least transparent type of enrollment. It aims to avoid drawing the public's attention to schools' independent enrollment. Take Haidian District as an example again, in 2021 some institutions estimated that the final number of participants in random allocation is about 35%, and the number of independent enrollment is about 18.9% [16].

The trend is also quite clear that Beijing's education administration has been making efforts to reduce the apparent inequalities. It carries out the elimination of special-talented student enrollment and a significant reduction in accommodation enrollment, although their percentages are of secondary importance. As long as the magic box of independent enrollment is not opened, the dark reef of educational inequality will not disappear.

Within the theoretical framework, since it is impossible to alternate the inequality of initial school conditions and to provide effective compensation for individual students, an open and transparent lottery mechanism (based on school districts) becomes a suboptimal option to promote educational equality. It is not a complex theoretical problem. However, why does the number of random allocations never exceed half in practice?

The core reason is that high-quality educational infrastructures are an important resource endowment for the local governments and education administrations, together with key schools with the largest vested interests. Both sides want to collect talented students into key schools through potential filtration in order to maintain the school brand and competitive advantage in the long run. Key schools are exploited to guarantee education funding, maintain government relations and attract corporate investment by granting certain enrollment facilities to the children of government employees and corporate executives. It is the hidden identity/endowment discrimination, the alienation of public resources in education, and the realization of public power.

4   The Policy Adjustment of Senior School Entrance Examination (SSEE): Suppressed Free Choice Under the Garb of Equality

Coleman and Husen's theory has difficulty in explaining how consistency-based starting point equity and process equality can achieve diversified outcome equality and capability. A potential answer is provided by Rawls and Dworkin. Both of them examined and evaluated equality with free choice as a precondition of equality. Without a free choice for families and students, it is difficult to obtain educational equality solely relying on the educational supply from education administration and schools.

4.1   Policy Adjustment Changes of Beijing's Senior School Entrance Examination (SSEE) (2003–2022)

From 2003 to 2006, there were five subjects for SSEE (Chinese, Mathematics, English, Physics, and Chemistry). The total scores of 570 consisted of Chinese, Mathematics, and English 120 respectively, Physics 100, Chemistry 80, and Physical education 30. From 2007 to 2017, 10 more points were added to Physical Education, with the total score of 580.

From 2018 to 2020, there were seven subjects, including a combined Biology/Chemistry exam. The total scores were increased to 660 while the scores of the three main subjects Chinese, Mathematics, and English were decreased to 300. Students had to choose three out of five subjects to participate in SSEE (Physics, Biology/Chemistry, History, Politics, and Geography), but at least one subject should be picked from Physics and Biology/Chemistry and Physical education40.

Since 2021, there have been nine subjects but the total scores do not change. Biology and geography are examined in Grade 8 with the higher score counted in the total; Chemistry and History are examined in Grade 9 with the higher score counted in the total. In addition, there is also 40 points for Physical Education.

It is easy to find out that Beijing's SSEE policy was stable from 2003 to 2017, with the subjects and total scores remaining the same (only physical education increased by 10 scores in 2007). SSEE was substantially adjusted in 2018 and once again in 2020. In terms of trend, the total number of subjects increased significantly (from five to nine), and an attempt was made to introduce optional examination subjects in 2018 (three subjects out of five). It was quickly abolished in 2021 when students surprisingly found they had to participate in SSEE of all subjects.

4.2 The Disappearing Free Choice

The good intention of the 2018 policy adjustment is clear. The arrangement of choosing 3 out of 5 subjects helps students increase their freedom of course choice and participate in SSEE with the subjects which they are really interested in and good at. It can also enhance the competitiveness of students who are more skilled in liberal arts than science, so as to promote fair competition among students. However, due to many students dropping Politics and Chemistry/Biology, the policy was modified again in 2021 to make all 9 subjects mandatory for SSEE. The adjustment shatters students' expectations of policy stability. The positive effects of the 2018 reform are discarded, the free choice of SSEE subjects nearly disappears and the total learning burden of students increases dramatically. Prior to 2018, students still had some free choice based on their own interests beyond examination subjects. In the contrast, in the school year 2020/2021 and 2021/2022 all subjects are under the dramatic pressure of SSEE. It seems to be fair for all students, for the SSEE score is still the sole criteria for senior school enrollment. Nevertheless, it hampers the free choice equality and students' specific capability. Unfortunately, it started in the right direction but made a turn in the wrong way.

5 The Double Reduction Policy: Improper Interference in Private Decision-Making

5.1 Double-Reduction Windfall

According to a survey organized by the National Research Group, 36.5% of students in compulsory education take off-campus training for more than 4 h per week. 16.1% of them reach 8 h or more. 82.5% of them spend weekends, and 63.7% of them spend winter and summer vacations in off-campus training. 21.6% of students attend training in 4–6 subjects, and 4.9% of them participate in more than 6 subjects. Before the double reduction policy, there were 400,000 off-campus training institutions in China with nearly 8 million teachers. In contrast, there were 210,800 compulsory-education schools and 10,294,900 full-time teachers [17].

The double reduction policy was published in July 2021. It aims to reduce the homework burden on students and constraint off-campus training. The effect was immediate

due to the strong push from the government. As extracurricular homework was minimal, in-school tutoring was encouraged, exams were strictly limited, and extracurricular time increased significantly. In contrast, K12 subject-based education institutions closed or announced their transformation. Alternative services, such as "private tutors" or "home tutors" emerged.

5.2   Improper Intervention in Private Decision-Making

Educational decisions and educational expenditure are the most important for families and students. Thus, additional investment is needed in addition to the homogenous public education system. By enhancing competitive advantage, students can achieve more advantages in the social stratification, which is also understood as "excess returns".

Homework can be reduced and extracurricular institutions can be eliminated. Do the reduction of students' learning burden and promotion of educational equity really succeed? According to the theoretical analysis in this paper, it is comprehensible that extracurricular institutions exist and have been growing so rapidly. Firstly, there is still independent enrollment and endowment discrimination in key junior schools. Families and students would like to gain a competitive advantage through extracurricular training or private tutoring. Secondly, students need to pass a competitive examination (SSEE) to realize initial social stratification. In the context of significant growth in total subjects, students' learning pressure spontaneously creates roaring demands for extracurricular training or private tutoring. Finally, in order to guarantee the educational process equality, schools adopt a unified curriculum and teaching arrangements that can only guarantee basic educational goals. Participation in the competitive exams still requires additional investment from families.

As long as there is no change to the baton of competitive examinations, or to the significant growth of examination subjects, private demands for additional investment will not disappear. It cannot solve the problem by relying on in-school practice or training. From the incentive, both reducing student burden and promoting educational equity are correct, but interfering with the private decision-making of families and students is a deflected and unsustainable tool. First, schools will have difficulty in covering the demand for in-school training, and they will be under exhausting work and moral pressure. Second, alternative forms of private training and home tutors will quickly emerge, certainly at a higher cost than the original extracurricular institutions, and fewer families will be able to afford it. Double-reduction raises the threshold and crowds-out private educational investment. Educational equality is exacerbated in this way.

6   Conclusion

Under the Coleman and Husen framework, equality of compulsory education in Beijing has reached a high level, especially in terms of the macro-compensation mechanism. However, if examined in the extended framework with free choice equality, it still has some significant drawbacks.

The independent enrollment of key junior schools is the last bastion to be overcome to achieve educational equality. It requires great resolution and courage to implement

the unified random allocation of junior school enrollment presently. Once the problem of selected enrollment is solved, the competition among schools will shift from talented students to teaching quality. Equalization of resources and mobility of teachers will reduce the gap between schools, which will further accelerate educational equality.

The intention of the 2018 SSEE policy reforms is correct, but it was aborted in halfway. Promoting free choice of families and students should be advocated, rather than being limited in the veil of equality. In this way, the 2021 policy reform has the worst outcome and should be corrected as soon as possible. For example, the government can keep the total exam subjects (5 subjects) unchanged, with 3 compulsory exams (Chinese, Mathematics, English) and 2 optional exams (one from Physics and Biology/Chemistry, and the other from History, Politics, and Geography). Without increasing the total study burden, it would promote students' free choice, and protect their academic interests in exam subjects.

Double-reduction raises the threshold and crowds-out private educational investment. Educational equality is exacerbated in this way. What the government should do is guarantee families' and individuals' free choices and maintain an educational system with fair opportunities. Interfering with families' private decision-making and the education market structure will bring about new educational inequalities and market distortions. As a result, it cannot improve educational equality or enhance educational efficiency.

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