

Fertility Decline and Teacher Surplus: An Upcoming Challenge in China

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Abstract: A major demographic transformation in China, marked by declining fertility rates, is anticipated to deeply impact the educational field. With the reduction in student registrations owing to declining birth rates, there's a probable decrease in teacher demand, possibly resulting in a surplus of teachers. The study delves into the link between declining fertility rates and teacher surplus, investigates the possible effects of an excess in the teaching staff, and deliberates on policy measures to lessen adverse effects. This research seeks to shed light on China's response to a rising challenge by examining demographic patterns, educational workforce strategies, and governmental actions, aiming to maintain a sustainable equilibrium between teacher availability and demand.

Keywords: Fertility Decline; Teacher Surplus; Demographic Change; Education Policy; China; Workforce Planning; Student Enrollment Trends

1. Background

For decades, China's demographic shifts, driven by policies from the one-child rule in 1979 to the three-child policy in 2021, have deeply impacted its society. Despite these adjustments aimed at reversing the declining fertility trend, the fertility rates have continued to fall. This persistent decline in birth rates has led to significant demographic shifts, notably an aging population and a decreasing number of school-age children, which in turn has resulted in an oversupply of teachers. This surplus of educators is emerging as a critical challenge for China's educational system, necessitating a reevaluation of educational policies and resource allocation to address the changing dynamics of demand within the sector.

2. Identification of key dimensions

2.1 Cause and Contributing Factors

The problems of low fertility and teacher overpopulation in China are manifold and linked to decades of demographic policies, socio-economic changes and changes in the educational environment. China's demographic changes have been strongly influenced by the one-child policy, which was introduced in 1979 to slow population growth and has had a major impact on the country's society and economy^[6]. Although the family planning policy has been replaced by the three-child policy in 2021, the decline in fertility has not stopped. Instead, fertility rates have continued to decline and significant demographic changes have taken place, including an ageing population and a decline in the number of school-age children, which in turn has led to a surplus of teachers^[5].

The decline in China's birth rate is due to several important factors. First, due to strict birth control measures, rapid socio-economic development and urbanization, people's social values and lifestyles have subtly changed. Secondly, rising standards of living, educational attainment and employment opportunities have led to a widespread conception of late marriage and late childbearing among modern people, especially women^[4]. At the same time, financial pressures on local authorities and the housing crisis have made schools cautious about recruiting new teachers, which could lead to a reduction in pupil numbers in the future^[5]. In addition, education reforms and the expansion of higher education since the late 1990s have played a major role. While these reforms aim to improve the quality of teaching and respond to the growing needs of the economy, they have also led to a "teaching mania", with many people wanting to enter the profession because they see it as stable and prestigious. This has created a mismatch between the number of teachers and the real needs of schools, which is exacerbated by the declining pupil population^[4].

According to the research, tackling fertility decline requires not only policy changes but also a comprehensive strategy that in-

cludes support for families, better conditions for raising children and a better work-life balance^[12]. This includes not only reproductive promotion, but also the social and economic support that families need to raise children in a supportive environment.

2.2 Impacts and Consequences

First, declining fertility rates will lead to major demographic changes^[2]. According to Huang et al. (2019), China's population will progressively age as the fertility rate shrinks. Both the economy and society will face numerous obstacles as a result, labor shortages and aging problems are inevitable. In the field of education, the surplus of teachers also has several effects^[10]. To begin with, too many teachers may lead to the waste and unbalanced distribution of educational resources, with some areas having excessive concentration of educational resources, while others are experiencing a shortage^[1]. Secondly, Hung (2011) showed that the excess number of teachers may increase the competitive pressure of teachers, resulting in increased job instability and even employment difficulties^[11].

Nowadays, the continuing decline in China's fertility rate will exacerbate the surplus of teachers, which will lead to several consequences:

Teachers' career prospects will be affected. As fertility rates fall, school enrolment is likely to shrink, leading to an oversupply of teachers. There is also a mismatch between supply and demand of authorized staff size of teachers in China, which will lead to fierce competition in the teacher job market, and the personal development of teachers will be influenced, especially the newly graduated teachers may face employment difficulties.

Teacher salaries and benefits will go down. Teacher surplus can lead to an excessive quantity of teachers in the job market, reducing teacher wages and perks. This will affect teachers' life quality and work enthusiasm, and reduce teachers' work motivation and work performance.

The quality of education and student learning outcomes will suffer. Too many teachers will distract the school's resources and energy, affecting the quality of teaching and students' academic performance. Simultaneously, it will affect students' educational level and future development.

The problem of allocation of educational resources has intensified. He pointed out that on the one hand, there is a surplus of teachers, and on the other hand, there is a shortage of quality education resources. The distribution structure of educational resources is unbalanced and the regional distribution is uneven, which will affect the equity and quality of education^[7].

Overall, China's education system will be significantly impacted by the issue of falling fertility and surplus teachers. To face this challenge and maintain the quality and equality of education, the government, educational institutions, and other societal sectors must collaborate.

2.3 Policy and Practice

In discussions of policy and practice, our focus has shifted to understanding the factors behind the global and Chinese low fertility rates. Within the worldwide framework, the abrupt decrease in population growth seems almost ubiquitous, triggered by the worldwide surge in wealth post-war, coupled with shifts in education and healthcare linked to socioeconomic progress^[15]. The one-child policy in China, initiated in 1979 and concluded in 2015, aimed to maintain China's population under 1.2 billion by 2000, by limiting children to one per couple. The fundamental reason behind China's present low fertility rate is attributed to this factor^[3]. All of this has led to a decline in the newborn population, a decline in school-age children, and a failure to adjust the recruitment of teachers, all of which has led to a surplus of teachers becoming an education problem in China and in some countries. In other words, policy might vary, as current fertility rates in numerous countries led to teacher surplus^[20].

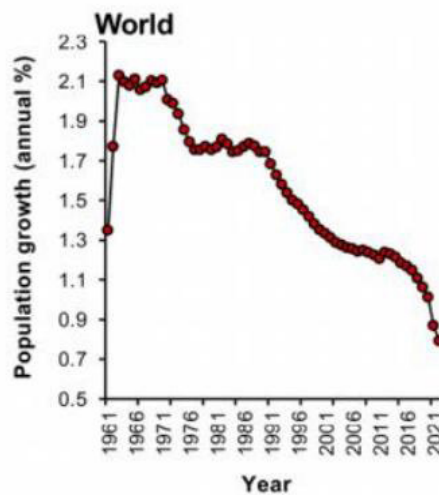


Figure1 World Population Growth

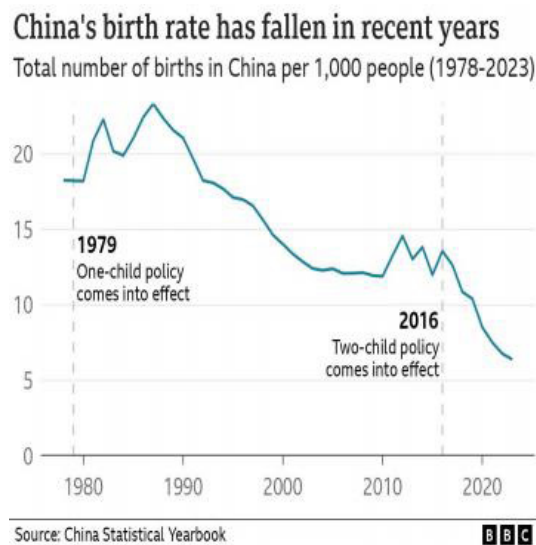


Figure2 China's Birth Rate

To counteract this decline, every OECD nation, with the exception of the U.S., has implemented paid maternity leave, offering job security and a measure of income substitution, primarily aimed at enhancing compatibility between family and career, and boosting child welfare. Furthermore, as the issue of aging populations grows worldwide, certain nations have promoted immigration to counterbalance falling birth rates^[9]. Such policies could encourage parents to have more children or, through immigration policies, increase the number of school-age children, thereby increasing the demand for teachers and reducing the teacher surplus. Last but not least, the emphasis is on educational reforms aimed at reducing teacher excess and enhancing educational quality. Measures taken involve funding teacher education programs, revising curricula for contemporary needs, and fostering opportunities for continuous learning^[15]. The implementation of the third-child policy and related initiatives in China is expected to enhance the nation's demographic composition and facilitate the execution of its national plan to proactively address the aging population^[21]. And in some place, such as FengTai district of Beijing, put forward 'explore the establishment of teacher withdrawal mechanism^[20]. According to the latest circular issued by the Shandong provincial Department of Education, China is also raising the enrollment threshold for normal university students, reducing or limiting the enrollment of normal education students. These policies attempt to solve the problem of teacher surplus by increasing the number of students and reducing the number of teachers.

Various strategies and programs, including family support policies and educational system overhauls, have demonstrated

encouraging outcomes in tackling fertility reduction and teacher excess^[16]. Nonetheless, there are constraints, including unequal access to educational and job prospects, societal standards related to family planning, and administrative hurdles in executing policies. Furthermore, certain policies might lead to unforeseen outcomes, like worsening gender disparities or expanding socio-economic inequalities^[8]. For example, while the Three-Child Policy aimed to reverse fertility decline, it may perpetuate gender inequalities and exacerbate demographic imbalances.

Similarly, efforts to address teacher surplus may lead to unemployment or underemployment among educators, particularly in regions with low demand for teachers^[20].

3. Evidence-based Critical Analysis

According to the data announced by the National Bureau of Statistics in January

17 January, at the end of 2023, the national population was 140,967,000, 2.08 million less than at the end of the previous year. Annual births of 9.02 million people, 540,000 fewer than the previous year, the birth rate of 6.39 per thousand; deaths of 11.1 million people, the mortality rate of 7.87 per thousand; natural population growth rate of -1.48 per thousand.

However, according to the data from the Ministry of Education of the People's Republic of China, in 2023, there are a total of 498,300 schools of all levels and types nationwide, 20,200 fewer than in the previous year, a decrease of 3.9 percent; 291 million students enrolled in all levels and types of academic education, 1,512,600 fewer than in the previous year, with a decrease of 0.52 percent; and 18,917,800 full-time teachers, an increase of 114,200 over the previous year, an increase of 0.6 percent, seen as the worldwide biggest educational system.

Based on the available official data, the pupil-teacher ratio in 2023 was 13.32:1 with 3,073,700 full-time preschool teachers nationwide, slightly improved over 2022 of 14.26:1. As for the compulsory education, including primary school and junior high school, the 2023 pupil-teacher ratio of primary school was 16.22:1, compared

with 16.19:1 in 2022, and junior high school pupil-teacher ratio in 2023 was 12.84:1, slightly over 2022 with 12.72:1. In terms of senior school education, in 2023, the pupil-teacher ratio of regular senior secondary school was 12.66:1 and secondary vocational school was 17.67:1, comparing with 12.72:1 of regular senior secondary school and 18.65:1 of secondary vocational school in 2022. Similarly, in 2023, the student-teacher ratio was 17.51:1 for regular undergraduate schools, 17.57:1 for undergraduate-level vocational schools, and 18.92:1 for vocational schools, while in 2022, the student-teacher ratio of regular undergraduate schools was 17.65:1, 18.31:1 for undergraduate-level vocational schools, and 19.69:1 for vocational schools, increased at varying degrees in the relevant figures.

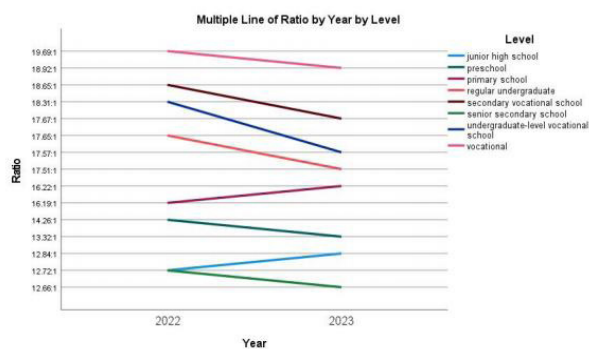


Figure3 Ratio of Pupil-teacher in 2022 and 2023

From the figure we can see the student-teacher ratio across most educational levels appears to be lower in 2023 compared to 2022, apart from primary school and junior high school, the increase of the former can be attributed to the comprehensive Two-Child Policy and the delay retirement policy: the former ensures the current number of school-aged children, while the latter guaranteed the numbers of on-duty teachers. The 2021 Double Deduction Policy is also a major factor in this phenomenon, and from a long-term view, more students are likely to choose or can only choose secondary vocational schools.

Additionally, this figure reflects the situation of fertility decline and teacher surplus to some extent. With the decline of fertility numbers of newborns, number of students in the compulsory level(primary to junior high school) will remain decreasing, by 2035,

the total number of students in compulsory education will drop by about 30 million, with an excess of about 1.5 million primary school teachers and 370,000 junior high school teachers^[14].

What is inevitable is that a lower student-teacher ratio presents that the class size is getting smaller, as well as classroom management, which enhances and improves student engagement, creates a more conducive learning environment and better academic outcome improvement^{[18][13]}.

4. Recommendations and Future Direction

Education serves a certain population, and changes in population size and structure profoundly affect the supply of education. Population is an important variable in the allocation of educational resources. A comprehensive understanding of the characteristics of changes in the school-age population is the basis for scientifically addressing the impact of population changes on education. In response to the analysis of the decline in birth rates and the professional difficulties faced by teachers mentioned above, in the future, China can attempt to establish a degree warning mechanism, establish a collaborative mechanism between population and educational resource allocation, implement small class teaching, implement a teacher exit mechanism, and improve teacher selection standards to alleviate conflicts.

5. Conclusion

This study explores the challenges faced by China in terms of declining fertility rates and teacher surplus. Research has found that as the fertility rate decreases, China's population structure gradually ages, leading to a shortage of labor and an oversupply of teachers. An excess of teachers may lead to wastage of educational resources and increased competitive pressure. To address this issue, it is recommended to implement small class teaching, improve teacher selection standards, and establish a teacher exit mechanism. At the same time, the article emphasizes the importance of policy adjustments, social support, and educational reform to promote the rational allocation of educational resources and sustainable development of society. However, this research did not delve into the specific impact of teacher surplus on educational quality in detail. Future research can delve into how teacher surplus affects student learning outcomes, teaching quality, and educational equity. Moreover, the root causes of the problem of teacher surplus can be deeply explored from multiple perspectives such as policy, population structure, and education system, providing more references for formulating targeted policies.

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