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The Influence Mechanisms of Population Aging on Education Public Policy in China

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Abstract. Against the global wave of demographic transition, population aging has become a long-term structural challenge facing most economies worldwide, profoundly altering the operating logic of public service systems and public policy design. This paper systematically examines the multi-dimensional impacts and core influence mechanisms of population aging on China's education public policy, aiming to clarify the logical chain of demographic shift driving education policy reform and optimization. The study finds that population aging has driven the three-fold expansion of education policy coverage from stage-based education to full-life-cycle lifelong education, fundamentally reconstructed the internal structure of the education policy system including elderly education, vocational education and higher education policies, and altered the allocation logic of education public resources such as fiscal funds and facility resources. This study identifies two core operating mechanisms of the above impacts: the demand-driven adjustment mechanism and the resource reallocation mechanism, which act on education policy from the demand side and supply side respectively to form a complete influence logic. The findings not only enrich the theoretical research on demographic transition and public policy innovation but also provide evidence-based and actionable reference for the optimization of China's education public policy.

Keywords: Population aging, education public policy, influence mechanism, public resource allocation, lifelong education

1. Introduction

Against the background of global population transformation, population aging has become one of the most profound structural changes in reshaping global socio-economic development and public policy governance. As the largest developing country in the world, China is experiencing an unprecedented acceleration of population aging. By 2025, the proportion of the population aged 60 and above will exceed 21%, marking the rapid transformation of the population into a deeply aging society. This irreversible demographic change not only subverts China's traditional demographic dividend model, but also fundamentally challenges the basic logic of public policy design, especially in the field of education public policy, which is closely related to population structure and human capital accumulation.

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The existing literature extensively explores the impact of population aging on economic growth, pension security systems, and medical and health policies, with perfect theoretical frameworks and empirical evidence in these areas. However, there is still a significant research gap on the systemic impact of population aging on educational public policy. Although some studies have studied isolated aspects such as the reform of the education policy for the elderly or the adjustment of vocational education in the context of aging, few studies have comprehensively analyzed how aging can reshape the full scope of educational public policies, including its coverage, structural layout and resource allocation logic. More importantly, the core impact mechanism of population aging on educational public policies has not been systematically deconstructed in the Chinese context, so there is a lack of a comprehensive theoretical explanation for the adaptive evolution of China's education policy system in population changes.

In order to make up for this research gap, this paper systematically studies the multi-dimensional impact of population aging on China's education and public policy, and deconstructs its core operating mechanism. This study adopts the dual analysis framework of theoretical analysis and policy text research. First of all, it reveals the impact of aging from the three core dimensions of policy coverage, policy type and structure, and public resource allocation. On this basis, this paper identifies and elaborates on two core impact mechanisms: the demand-driven adjustment mechanism and the resource redistribution mechanism, which constitute a complete logical chain for population aging to reshape education public policies. These findings not only enrich the theoretical research on population transformation and public policy innovation, but also provide evidence-based and actionable references for optimizing China's education public policy in the context of the serious aging of the population.

2. Multi-dimensional impact analysis of population aging on education public policy

China's unprecedented population aging-with the population aged 60 and above exceeding 21% by 2025 has reshaped the socioeconomic structure and the underlying logic of education public policy. This section deconstructs its multi-dimensional impacts from three core dimensions: policy coverage, type and structure, and resource allocation.

2.1. Impact on the coverage of education public policy

The most intuitive impact of aging is the three-fold expansion of education policy coverage, marking a shift from stage-based education to full-life-cycle lifelong education [1].

First, the beneficiaries of education policies are no longer limited to teenagers and working age population but include the elderly in the inclusive public education service system, achieving lifelong coverage of education services. Du and Sun note that elderly education has become an indispensable component of China's education policy system, breaking the age limit of traditional education policies [2]. Second, policy coverage has expanded from formal education to non-formal education, elderly vocational skills training, and health and wellness education. Wang identifies this field expansion as a core feature of China's elderly education policy evolution, filling gaps in traditional education policy frameworks [3]. Third, policy coverage has tilted toward rural key aging areas and regions with concentrated advanced-age populations, addressing the structural shortage of education public services for rural elderly groups and matching the urban-rural inversion feature of China's aging.

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2.2. Impact on the type and structure of education public policy

Aging has fundamentally reconstructed the internal structure of China's education policy system, driving adaptive adjustments across multiple education policy types.

First, elderly education policies have transformed from a loosely organized state marked by sporadic implementation and fragmented local pilot projects, into a systematic, inclusive institutional arrangement with unified national-level coordination, guaranteed funding for school operation, standardized development of the teaching workforce, and a fully refined curriculum system. Du and Sun highlight that China's elderly education policy has evolved from scattered, uncoordinated local pilots to a cohesive national-level systematic framework [2]. While Wang confirms that this nationwide policy diffusion is driven by both the internal growing learning demands of the elderly population and external pressure from international policy norms, ultimately forming a full-chain system that covers the full scope of elderly education delivery, including standardized school operation, stable funding guarantees, professional teacher development, and systematic curriculum improvement [3].

Second, vocational education policies have incorporated comprehensive aging-adaptive content through targeted optimization of specialty setup and training programs. Specifically, policies have added core modules tailored to the needs of an aging society, including elderly nursing, health and wellness care services, and intelligent elderly-assistive technology, with the overarching goal of enhancing the labor force's ability to adapt to the development of the silver economy. Bloom et al. point out that population aging forces economies to hedge against labor supply contraction by improving the quality of human capital, with vocational education acting as the core policy tool to deliver this outcome [4]. China's vocational education policies have not only systematically strengthened silver economy-related majors and elderly service skills training (with the aforementioned aging-adaptive modules as the core carrier) but also made adaptive adjustments to align with automation-driven skill demand shifts that have been further accelerated by population aging) [5]. These targeted policy adjustments fulfill a dual function: they both cultivate high-caliber professional talent for the sustained development of the silver economy and comprehensively improve the human capital of the working-age population [6].

Third, higher education policies have strengthened aging-oriented talent cultivation. Lee and Mason find that human capital accumulation is the core path to offset aging's negative impact on economic growth in East Asia, and higher education professional structure adjustment is the key policy means [7]. China's higher education policies have expanded enrollment in elderly care, geriatric medicine, and elderly industry management majors, providing high-end talent support for an aging society [6].

2.3. Impact on the resource allocation of education public policy

Aging has fundamentally altered the resource allocation logic of education public policy, reflected in the reconstruction of financial and facility resource allocation.

First, financial resources have undergone structural transfer. Hu and Liu show that population structure changes directly affect the scale and structure of China's public education investment, with accelerated aging driving a moderate tilt of education fiscal spending from basic and higher education to elderly education and rural aging-supporting education [8]. Cross-country research by Sanchez-Romero and Prskawetz confirm that pension system generosity affects public resource distribution between pension security and education investment, forcing China's education fiscal

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policies to optimize internal investment structure and improve resource use efficiency amid rising pension spending [9].

Second, aging has promoted cross-age sharing and spatial optimization of education facilities. The superposition of low birth rate and aging has caused idleness of basic education facilities in rural areas and small cities, prompting policies to open idle school and university facilities to elderly education institutions [2]. Acemoglu and Restrepo note that demographic shifts drive capital and facility reallocation [10]. China's education facility sharing policies realize the reuse of idle education capital, solving the shortage of elderly education facilities while avoiding resource waste.

3. Analysis of core influence mechanisms of population aging on education public policy

The above impacts are driven by two core operating mechanisms: the demand-driven adjustment mechanism and the resource reallocation mechanism, which together form the logical chain of aging reshaping education public policy.

3.1. Demand-driven adjustment mechanism

The core path of this demand-driven adjustment mechanism, whereby population aging drives the adaptive adjustment of education policies from the demand side, is that population aging triggers the systematic reconstruction of social education demand, and the emerging new demands generated by multiple key subjects—specifically the elderly population, the labor market, and the silver economy industry—force the adaptive adjustment of education policy supply, with the entire mechanism operating through three core channels.

First, the awakened education demand of the elderly forms direct policy pressure. With improved material living standards, the elderly's growing demand for cultural, wellness, and digital skills education directly drives the supply of elderly education policies [2]. Wang confirms that elderly education demand is the core internal driving force for the diffusion of China's elderly education policies, with local policy innovation essentially a response to local elderly demand [3].

Second, social demand for human capital upgrading forms policy coercion. The decline in the working-age population share has shifted China's economic growth driver from quantitative demographic dividend to qualitative human capital dividend, forcing education policies to strengthen lifelong skill improvement for the working-age population [4]. Lee and Mason also confirm that human capital improvement is the core path to sustaining long-term economic growth amid aging in East Asia, with education policy as the core implementation tool [7].

Third, industrial talent demand from the silver economy forms policy guidance. Aging has spawned large-scale silver economy industries including elderly health care, tourism, and intelligent services, creating huge demand for relevant professional talents. This forces education policies to adjust professional settings to cultivate matching talent, which is also consistent with Acemoglu and Restrepo's finding that aging spawns new elderly-related industries and new skill requirements for the labor force [5, 6].

3.2. Resource reallocation mechanism

The core path of this resource reallocation mechanism, whereby population aging forces the transformation of education policies from the supply side, is that it promotes the systematic reconstruction of education policies from the supply side by changing public resource constraints and allocation patterns, with its underlying logic rooted in the soaring pension-related expenditure,

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mounting fiscal pressure, and the idleness, shortage and mismatch of relevant supporting facilities, and the entire mechanism operates through three core channels.

First, as the first core operating channel of the aforementioned resource reallocation mechanism—the core path whereby population aging forces the transformation of education policies from the supply side, with its underlying logic centered on three key realities: soaring pension-related expenditure, mounting fiscal pressure, and the idleness, shortage and structural mismatch of relevant supporting facilities—the rising population dependency ratio brings intergenerational public resource redistribution pressure. The continuous increase in the elderly dependency ratio drives rapid growth in pension and medical public spending, leading to intergenerational reallocation of fiscal resources between elderly care, medical care, and education [9]. Hu and Liu predict that rising pension spending will create a crowding-out effect on China's public education investment, forcing education policies to optimize internal resource allocation and improve financial efficiency while ensuring basic education equity [8].

Second, the superposition of low birth rate and aging drives spatial reconstruction. The decline in school-age population has caused widespread idleness of basic education facilities, while elderly education facilities are in serious shortage. This mismatch drives policies to formulate facility sharing rules, realizing cross-age and cross-regional reallocation of education facility resources. As Acemoglu and Restrepo note, demographic shifts drive capital stock reallocation; China's facility sharing policies reallocate idle basic education capital to elderly education, improving overall resource use efficiency [2].

Third, rising local fiscal pressure drives innovation in education investment and financing mechanisms. Aging aggravates local fiscal revenue and expenditure pressure by affecting economic growth and tax base changes, forcing education policies to explore diversified investment and financing mechanisms and guide social capital to participate in education public service supply [6]. Bloom et al. also note that diversified institutional design is needed to ensure public service supply amid aging [4]. China's policies encouraging social participation in elderly education expand the total supply of education resources, extending the resource reallocation mechanism to diversified supply subjects.

4. Policy implications for the optimization of China's education public policy under the background of population aging

Based on the above impact analysis and mechanism deconstruction, this section puts forward targeted policy implications for optimizing China's education public policy amid deep aging.

4.1. Improving the systematic structure of the education policy system

The foregoing analysis of the demand-driven adjustment mechanism clarifies that population aging has put forward explicit requirements for the expansion of education policy coverage and structural optimization. However, China's current education policy system still has prominent institutional shortcomings in elderly education and full-life-cycle education supply. In response to the requirements brought by the demand-driven mechanism, it is essential to improve the lifelong education system at the institutional level and fill the institutional gaps of elderly education.

The core is to break the age limit and departmental barriers of traditional education policies and build a full-life-cycle lifelong education policy system. First, accelerate the legislative process of elderly education, improve the full-chain institutional design of elderly education, and promote its transformation to a legalized and inclusive system [2, 3]. Second, optimize the professional setup

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policy of vocational and higher education, establish a dynamic adaptation mechanism between professional settings and demographic and industrial changes, and strengthen silver economy-related talent cultivation [7]. Finally, promote the aging-friendly integration of basic education resources, and provide institutional support for cross-age sharing of education facilities [1].

4.2. Optimizing the resource allocation policy of education public services

In response to the requirements for policy coverage expansion and structural adjustment brought by the aforementioned demand-driven adjustment mechanism, it is essential to improve the lifelong education system from the institutional level, so as to systematically remedy the institutional shortcomings of elderly education.

The core is to build a fair, efficient and sustainable education resource allocation system. First, promote the structural adjustment of education fiscal investment, and tilt spending to elderly education, rural aging areas and underdeveloped regions on the premise of ensuring basic education equalization [8]. Second, establish a cross-age education facility sharing mechanism, formulate unified standards for the opening and aging-friendly transformation of idle education facilities, and improve resource use efficiency [1, 5]. Finally, improve the diversified supply mechanism of education resources, guide social capital to participate through tax incentives and government service procurement, and alleviate local fiscal pressure [6, 9].

4.3. Formulating differentiated and targeted policy implementation rules

China's aging presents significant urban-rural and regional heterogeneity, so a one-size-fits-all policy model cannot achieve expected effects [3]. It is necessary to formulate differentiated implementation rules based on regional aging characteristics, economic development level and education resource endowment: for rural areas with high aging degree, focus on supplementing elderly education infrastructure and promoting urban-rural resource equalization; for developed urban areas with concentrated advanced-age population, focus on improving the elderly education system and silver economy talent cultivation; for county areas with superimposed aging and low birth rate, focus on idle facility allocation and working-age population skill improvement. Meanwhile, establish a dynamic policy evaluation mechanism to continuously optimize policy design and improve implementation accuracy [1].

4.4. Strengthening the talent training policy for aging adaptation

Human capital accumulation is the core driving force to offset aging's negative impact on economic growth [4]. First, strengthen the training policy for elderly education teachers, establish a professional training and certification system, and improve incentive and guarantee mechanisms to solve the shortage of professional teachers [2]. Second, improve the training policy for silver economy-related talents, promote universities and vocational colleges to optimize professional settings, deepen industry-education integration, and cultivate practical talents [6]. Finally, strengthen the lifelong skill improvement policy for the working-age population, build a full-career vocational training system, improve the quality of human capital, and give full play to the human capital dividend [5, 7].

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5. Conclusion

Against the backdrop of China's accelerating transition into a deep aging society, this study systematically examines the multi-dimensional impacts of population aging on the country's education public policy and deconstructs the core underlying operating mechanisms through a dual framework of theoretical analysis and policy text research.

This study draws two key conclusions. First, population aging exerts a systematic, structural impact on China's education public policy across three core dimensions: it drives the three-fold expansion of policy coverage from stage-based formal education to full-life-cycle lifelong education, fundamentally reconstructs the internal structure of the education policy system through adaptive optimization of elderly education, vocational education and higher education policies, and reshapes the allocation logic of public education resources including fiscal funds and educational facilities. Second, these impacts are driven by two mutually complementary core mechanisms: the demand-driven adjustment mechanism acting from the demand side, and the resource reallocation mechanism operating from the supply side, which together forms the complete logical chain of demographic shift reshaping education policy.

This study fills the research gap of holistic theoretical deconstruction of aging's influence on education public policy in the Chinese context, enriching the theoretical research on demographic transition and public policy innovation. Meanwhile, the targeted policy implications proposed provide evidence-based and actionable reference for the optimization of China's education public policy amid deep population aging, supporting the high-quality and sustainable development of education public services in the long run.

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