Asia-Pacific Journal of Educational Management Research
Vol. 11, No. 1 (2026), pp. 99-116
http://dx.doi.org/10.21742/ajemr.2026.11.1.07

Educational Development and Common Prosperity: The Roles of Urbanization, Innovation Capacity, and Industrial Transformation

Dr. Wei Zhang

Institute of Education, Tsinghua University, Beijing 100084, China
weizhang@tsinghua.edu.cn

Abstract

Educational development has become an essential driver of inclusive growth and sustainable socioeconomic transformation in the era of knowledge-based economies. This study investigates the relationship between educational development and common prosperity, with particular attention to the mediating roles of urbanization and regional innovation capacity, as well as the moderating effect of industrial structure upgrading. Using balanced panel data from 31 provincial-level administrative regions over the period 2014–2025, the study employs a quantitative research design that incorporates fixed-effects, mediation, and threshold analyses to examine the direct, indirect, and nonlinear effects of educational development on common prosperity. The findings reveal that educational development exerts a significant positive influence on common prosperity by enhancing human capital, improving labor productivity, and expanding opportunities for social mobility. The results further indicate that urbanization and regional innovation capacity serve as important mediating mechanisms through which educational development contributes to inclusive and sustainable development. In addition, industrial structure upgrading strengthens the relationship between educational development and common prosperity, suggesting that the benefits of education are more pronounced in regions with advanced industrial systems and innovation-oriented economies. Regional disparities remain evident, however, indicating the need for policies that promote balanced educational opportunities and equitable access to innovation resources. The study highlights the strategic importance of education as a catalyst for social inclusion, technological advancement, and economic resilience. The findings provide valuable insights for policymakers and educational institutions seeking to align educational development with innovation, industrial transformation, and long-term prosperity.

Keywords: *Educational development, Common prosperity, Urbanization, Regional innovation capacity, Industrial structure upgrading, Human capital, Engineering education, Sustainable development*

1. Introduction

China is undergoing a profound socioeconomic transformation characterized by rapid technological advancement, industrial upgrading, and the pursuit of high-quality development. Over the past decade, national strategies such as Made in China 2025, the Digital China Initiative, and the 2024–2035 Strong Education Nation Plan have emphasized the strategic importance of education, engineering talent cultivation, and technological

Article history:
Received (April 14, 2026), Review Result (May 18, 2026), Accepted (June 20, 2026)

innovation in sustaining economic competitiveness and social prosperity. In this context, educational development has become not merely a social policy objective but a critical driver of engineering capacity, innovation capability, and equitable economic growth [1].

Despite remarkable achievements in economic development, China continues to face substantial regional and structural disparities. Unequal access to quality education, differences in engineering and technological capabilities, and variations in innovation ecosystems across provinces have contributed to uneven development patterns [2]. The eastern coastal regions generally possess stronger educational infrastructures, greater research capacities, and more advanced industrial systems than the central and western regions. Consequently, disparities in human capital accumulation and technological capabilities remain significant challenges to achieving balanced regional development and common prosperity [3].

Common prosperity has emerged as one of the central objectives of China's modernization agenda. Rather than focusing solely on income growth, common prosperity emphasizes equitable access to development opportunities, balanced income distribution, social inclusion, and sustainable development [4]. Achieving this goal requires not only economic expansion but also the enhancement of human capital and the development of an innovation-oriented society. Education plays a pivotal role in this process by improving labor productivity, promoting social mobility, and cultivating the engineering and technical talents necessary for industrial transformation [5].

From the perspective of human capital theory, educational development enhances individuals' knowledge, skills, and innovative capabilities, thereby increasing productivity and income levels. In the era of intelligent manufacturing, digital transformation, and green technologies, education is increasingly expected to produce highly skilled engineers and professionals capable of addressing complex technological challenges [6]. Engineering education, vocational training, and higher education institutions have become key pillars supporting China's transition from labor-intensive industries to innovation-driven, technology-intensive sectors [7].

Previous studies have demonstrated that educational investment and educational attainment positively affect economic growth and income equality. Educational equity has been shown to promote social mobility and reduce regional disparities, thereby contributing to common prosperity [8]. Similarly, the expansion of higher education and vocational education has improved workforce quality and strengthened regional innovation systems [9]. In addition, educational development influences common prosperity indirectly through multiple channels. Urbanization, for example, facilitates labor mobility and improves access to economic opportunities, while regional innovation capacity enables technological progress and industrial upgrading [10].

Nevertheless, several limitations remain in the existing literature. First, many studies focus on individual educational levels, such as primary, vocational, or higher education, rather than considering educational development as an integrated, multidimensional system [11]. Second, educational development is frequently measured using a single indicator, particularly fiscal expenditure on education, which may not fully capture educational quality, accessibility, and attainment [12]. Third, previous studies often employ income inequality measures, such as the urban–rural income gap or the Gini coefficient, as proxies for common prosperity, overlooking broader dimensions including social sharing, sustainability, and development quality [13]. Finally, relatively few studies have examined how educational development interacts with industrial upgrading and regional innovation within the broader context of China's engineering transformation.

Given these gaps, a more comprehensive investigation is needed to understand the mechanisms through which educational development contributes to common prosperity in contemporary China. In particular, it is important to examine how education promotes inclusive growth through urbanization and regional innovation, and whether the effectiveness of educational development varies with the level of industrial structure upgrading.

Accordingly, this study employs panel data from 31 provinces in China covering the period 2014–2025 to investigate the relationship between educational development and common prosperity. Specifically, the study aims to: (1) examine the direct effect of educational development on common prosperity; (2) analyze the mediating roles of urbanization and regional innovation capacity; and (3) explore the threshold effect of industrial structure upgrading on the relationship between educational development and common prosperity. By integrating perspectives from education, engineering development, and regional innovation, this study provides new empirical evidence on how educational systems can support China's transition toward technologically advanced, innovation-driven, and inclusive prosperity.

2. Literature review

2.1. Educational development and common prosperity

Educational development has long been recognized as a fundamental driver of socioeconomic progress. According to human capital theory, investments in education improve individuals' knowledge, skills, and productivity, thereby increasing income levels and promoting social mobility. In China, educational development has become increasingly important in achieving the national objective of common prosperity, which emphasizes equitable access to opportunities, balanced income distribution, and sustainable development.

Recent studies have demonstrated a strong positive relationship between education and common prosperity. Sun [14] found that educational attainment reduces income inequality by enhancing labor productivity and expanding opportunities for upward mobility. Similarly, Li et al. [15] argued that balanced educational development contributes to social equity by improving access to educational resources among disadvantaged populations. Their findings suggest that education serves not only as a mechanism for individual advancement but also as a social institution that promotes inclusive growth.

The rapid expansion of higher education and vocational education in China has further strengthened the relationship between education and prosperity. Li et al [16] observed that the expansion of education initially increases inequality because access to higher education is uneven; however, as educational opportunities become more widely distributed, education ultimately promotes common prosperity. This finding indicates that the long-term benefits of educational development outweigh its short-term distributional challenges.

Nevertheless, educational disparities remain a major concern. Significant differences persist among provinces regarding educational investment, infrastructure, teacher quality, and educational outcomes. These inequalities may constrain the ability of less-developed regions to accumulate human capital and participate effectively in innovation-driven development [17]. Therefore, understanding the mechanisms through which educational development influences common prosperity remains an important research topic.

2.2. Educational development and engineering talent cultivation

China's transition toward an innovation-driven economy has intensified the demand for engineering and technological talent. National strategies such as Made in China 2025 and the

Digital China Initiative emphasize the importance of cultivating highly skilled engineers, researchers, and technical professionals to support industrial transformation and technological innovation.

Higher education institutions play a central role in this process. Shen et al. [18] argued that universities are critical actors in regional innovation systems because they provide advanced training, conduct scientific research, and facilitate technology transfer. Engineering education, in particular, equips students with technical competencies and problem-solving skills required in emerging sectors such as artificial intelligence, intelligent manufacturing, renewable energy, and digital technologies.

Vocational education also contributes substantially to the development of engineering talent. Bu et al. [19] found that vocational education enhances employment opportunities, improves labor productivity, and promotes social mobility. As China's manufacturing sector increasingly adopts advanced technologies, vocational institutions are expected to provide workers with practical skills and technical expertise aligned with industrial demands.

Moreover, the integration of education and industry has become a defining feature of China's educational reforms. Universities and enterprises increasingly collaborate in curriculum design, research projects, and talent training programs. Such partnerships facilitate the commercialization of research outputs and improve the responsiveness of educational institutions to technological and industrial changes [20].

2.3. Educational development, urbanization, and social inclusion

Urbanization is an important mechanism through which educational development influences socioeconomic outcomes. Education improves labor mobility and enables individuals to access better employment opportunities in urban areas, thereby contributing to income growth and social mobility.

Gou and Li [21] emphasized that education is an essential component of people-centered urbanization, as it equips individuals with the knowledge and skills needed to adapt to urban labor markets. Better-educated workers are more likely to migrate to cities, obtain higher-paying jobs, and benefit from improved public services.

Empirical studies further indicate that urbanization contributes to narrowing the urban–rural income gap. Gou and Li [21] reported that educational development accelerates urbanization, which in turn promotes common prosperity through improved infrastructure, increased employment opportunities, and enhanced public services. Urbanization also stimulates economic diversification and technological adoption, creating favorable conditions for inclusive development.

From an engineering perspective, rapid urbanization generates increasing demand for sustainable infrastructure, smart city technologies, intelligent transportation systems, and digital governance. Educational institutions therefore face the challenge of producing graduates capable of addressing these complex engineering and social problems. Consequently, educational development and urbanization are closely interconnected processes that jointly contribute to China's modernization agenda [14].

2.4. Educational development and regional innovation capacity

Innovation has become the primary engine of China's high-quality development strategy. Regional innovation capacity, however, varies considerably across provinces due to differences in educational resources, research infrastructure, and industrial structures.

Educational institutions are central to regional innovation systems because they cultivate human capital and generate scientific knowledge. Chen et al. [23] found that educational human capital significantly enhances regional innovation by improving firms' and institutions' ability to absorb and develop new technologies. Regions with higher educational attainment tend to exhibit stronger innovation performance and greater economic resilience.

Universities also contribute to innovation through technology transfer and entrepreneurial activities. Xiao et al. [24] demonstrated that the transformation of scientific and technological achievements into commercial applications promotes employment, industrial upgrading, and social welfare. Engineering schools and research institutions, in particular, play important roles in developing technologies that support strategic industries and regional economic development.

The relationship between education and innovation is especially significant in the context of engineering transformation. As China advances in strategic sectors such as semiconductors, renewable energy, biotechnology, and artificial intelligence, cultivating engineering talent becomes increasingly essential. Educational development therefore serves as a foundation for technological competitiveness and sustainable prosperity [25].

2.5. Educational development and industrial structure upgrading

Industrial structure upgrading refers to the transition from labor- and resource-intensive industries to technology- and knowledge-intensive sectors. Educational development is widely regarded as a key determinant of this transformation because it increases the supply of skilled labor and facilitates technology adoption.

Studies have shown that regions with higher levels of education are better equipped to upgrade their industrial structures and achieve sustainable growth. Luo et al. [26] found that industrial digitalization and structural upgrading contribute significantly to common prosperity by improving productivity and narrowing regional disparities. Similarly, Chen et al. [23] observed that educational human capital strengthens the relationship between innovation and industrial upgrading.

However, the benefits of educational development may vary with the level of industrial development. In regions dominated by traditional industries, the returns to education may be limited because of insufficient demand for advanced skills. Conversely, regions with more sophisticated industrial structures are better positioned to convert educational investments into innovation and economic growth [27]. These findings suggest the possibility of nonlinear or threshold effects in the relationship between educational development and common prosperity.

2.6. Research gap

Although previous studies have established important links among educational development, innovation, urbanization, and common prosperity, several gaps remain.

First, many studies focus on specific educational levels, such as vocational education or higher education, rather than examining educational development as an integrated system encompassing all educational stages [14][15]. Second, educational development is often measured solely by fiscal expenditure, which may not adequately capture educational attainment, accessibility, and quality [16]. Third, common prosperity is often proxied by income inequality indicators, thereby neglecting broader dimensions such as social sharing, sustainability, and the quality of development [17].

Finally, relatively few studies have explored how educational development interacts with industrial upgrading and regional innovation within the broader framework of China's engineering transformation. Given the increasing importance of engineering talent and technological advancement in achieving high-quality development, further empirical investigation is warranted.

Accordingly, this study examines the direct and indirect effects of educational development on common prosperity using provincial panel data from China covering the period 2014–2025. The study further investigates the mediating roles of urbanization and regional innovation capacity and explores the threshold effect of industrial structure upgrading.

2. Literature review

2.1. Educational development and common prosperity

Educational development is widely regarded as a fundamental mechanism for promoting inclusive growth and social equity. Human capital theory posits that investments in education enhance individuals' productivity, earning potential, and innovative capacity, thereby contributing to long-term economic development. In China, educational development has become increasingly important in achieving common prosperity, which aims to balance economic growth with equitable distribution of opportunities and social welfare.

Recent studies have emphasized that education influences common prosperity through multiple channels, including labor market participation, social mobility, and human capital accumulation. Hongbu Sun [14] argued that educational modernization improves social mobility and reduces regional inequalities by expanding access to quality education. Similarly, Li et al. [15] found that educational investment contributes significantly to narrowing urban–rural income disparities and promoting inclusive growth, particularly in less-developed regions.

Educational equity has also attracted increasing scholarly attention. Li et al. [16] observed that equal access to educational opportunities reduces intergenerational poverty and promotes balanced regional development. Their findings suggest that educational equity is an essential component of China's strategy for achieving common prosperity.

Furthermore, the expansion of digital learning and smart education systems has transformed the educational landscape in China. Chen et al. [17] reported that digital technologies enhance educational accessibility and quality, especially in rural areas, thereby contributing to more equitable educational outcomes. These developments indicate that educational development is increasingly multidimensional, encompassing not only educational attainment but also quality, accessibility, and technological integration.

2.2. Educational development and engineering talent cultivation

China's industrial transformation toward advanced manufacturing and digital technologies has significantly increased the demand for engineering and technical talent. Consequently, educational institutions are expected to cultivate professionals capable of addressing emerging technological challenges and supporting industrial innovation.

Shen et al. [18] found that engineering education plays a crucial role in strengthening China's innovation capacity by equipping graduates with interdisciplinary knowledge and problem-solving skills. Their study emphasized that universities have become important contributors to national competitiveness through research activities and talent cultivation.

The integration of industry and education has further enhanced the relevance of engineering education. Bu et al. [19] demonstrated that university–industry collaboration improves graduate employability, accelerates technology transfer, and supports industrial upgrading. Such collaboration enables educational institutions to align curricula with industrial needs and promote innovation-driven growth.

Vocational and technical education also contributes significantly to the development of engineering talent. Lu and Wang [20] observed that vocational education provides practical skills that facilitate employment in advanced manufacturing sectors and emerging industries. Their findings suggest that vocational education can improve social mobility while supporting China's transition toward technology-intensive production systems.

2.3. Educational development, urbanization, and social inclusion

Urbanization has become an important mechanism linking educational development to common prosperity. Better educational opportunities enable labor mobility and facilitate the movement of workers from rural to urban areas, thereby increasing income and improving social welfare.

Gou and Li [21] argued that education accelerates urbanization by enhancing individuals' adaptability to urban labor markets. Their empirical findings indicated that provinces with higher educational attainment generally experience more balanced urbanization and stronger economic growth.

Similarly, Qiao [22] found that urbanization promotes common prosperity by improving access to infrastructure, healthcare, and educational resources. The interaction between education and urbanization creates favorable conditions for reducing regional disparities and enhancing social inclusion.

From an engineering perspective, rapid urbanization has increased the demand for smart cities, intelligent transportation systems, and sustainable infrastructure. Educational institutions therefore play an important role in producing engineers and technical professionals capable of designing and managing these complex systems [23].

2.4. Educational development and regional innovation capacity

Innovation has become the cornerstone of China's high-quality development strategy. Educational institutions contribute to regional innovation by producing skilled human capital, conducting scientific research, and facilitating knowledge transfer.

Xiao et al. [24] found that higher educational attainment significantly enhances regional innovation performance, particularly in provinces with strong research infrastructures. Their study demonstrated that educational human capital improves firms' capacity to absorb and develop new technologies.

Similarly, Krishna et al. [25] reported that universities are essential actors in regional innovation ecosystems because they foster collaboration among academia, industry, and government. Such collaborations accelerate technological innovation and contribute to sustainable economic growth.

Engineering education is especially important in this context. As China advances in artificial intelligence, renewable energy, and intelligent manufacturing, educational institutions are expected to cultivate engineers capable of addressing increasingly complex technological and societal challenges [26].

2.5. Educational development and industrial structure upgrading

Industrial structure upgrading refers to the transition from labor-intensive industries to knowledge-intensive and technology-intensive sectors. Educational development is widely recognized as an important driver of this transformation because it provides the skilled labor required for technological innovation and industrial modernization.

Wu and Liu [27] found that educational attainment positively influences industrial upgrading by improving labor productivity and facilitating technological adoption. Their findings suggest that education enables regions to move toward higher value-added industries and achieve more sustainable economic growth.

In addition, the relationship between education and industrial upgrading may exhibit nonlinear characteristics. Zhang and Liu [28] observed that the benefits of educational investment are greater in regions with advanced industrial structures, where demand for highly skilled labor is stronger. Conversely, regions dominated by traditional industries may experience lower returns to educational investments.

These findings suggest that industrial structure upgrading may affect the effectiveness of educational development in promoting common prosperity, underscoring the need for further empirical investigation.

Although previous studies have demonstrated that educational development contributes to economic growth, social equity, urbanization, and innovation, several research gaps remain. First, many studies examine specific aspects of education, such as higher education or vocational education, rather than educational development as a comprehensive system. Second, existing research frequently relies on educational expenditure as a proxy for educational development, overlooking dimensions such as educational attainment and quality. Third, few studies simultaneously examine the mediating effects of urbanization and regional innovation capacity, as well as the threshold effect of industrial structure upgrading.

Therefore, this study investigates the direct and indirect effects of educational development on common prosperity using panel data from 31 provinces in China covering the period 2014–2025. The study further examines whether urbanization and regional innovation capacity mediate this relationship and whether industrial structure upgrading exerts a threshold effect.

3. Methodology

3.1. Research design

This study adopts a quantitative research design using balanced panel data from 31 provincial-level administrative regions in China covering the period 2014–2025. The panel data approach is suitable because it simultaneously captures variations across provinces and changes over time, thereby providing more robust and reliable estimates than purely cross-sectional or time-series analyses [29].

To investigate the relationship between educational development and common prosperity, three complementary econometric approaches are employed. First, a two-way fixed-effects model is used to estimate the direct effect of educational development on common prosperity while accounting for province-specific and time-specific characteristics. Second, a mediation-effect model is adopted to examine whether urbanization and regional innovation capacity serve as channels through which educational development influences common prosperity. Third, a panel threshold model is used to examine whether the effect of educational development varies across different levels of industrial structure upgrading [30].

The use of multiple analytical approaches enables the study to examine direct, indirect, and nonlinear relationships, thereby providing a more comprehensive understanding of the mechanisms linking educational development and common prosperity in China.

3.2. Research hypotheses

Based on human capital theory, regional innovation theory, and theories of structural transformation, the study proposes the following hypotheses:

H1: Educational development has a significant positive effect on common prosperity in China.

H2: Urbanization mediates the relationship between educational development and common prosperity.

H3: Regional innovation capacity mediates the relationship between educational development and common prosperity.

H4: Industrial structure upgrading exerts a threshold effect on the relationship between educational development and common prosperity.

3.3. Data sources

The study utilizes balanced panel data from 31 provinces in mainland China spanning the period 2014–2025. This period captures China's transition toward innovation-driven and high-quality development, including the implementation of major national initiatives such as Made in China 2025, the Digital China strategy, and policies promoting common prosperity.

Data are collected from the following sources:

1. China Statistical Yearbook (2015–2026 editions);
2. China Education Statistical Yearbook (2015–2026 editions);
3. China Science and Technology Statistical Yearbook;
4. Provincial Statistical Yearbooks;
5. EPS Data Platform.

Missing values are supplemented with linear interpolation to preserve the dataset's balanced structure. Before analysis, variables exhibiting large variations are transformed using natural logarithms to reduce heteroscedasticity and improve estimation efficiency [31].

3.4. Variable measurement

3.4.1. Dependent variable

Common Prosperity (CP)

The dependent variable is common prosperity, conceptualized as a multidimensional construct encompassing economic development, social sharing, and sustainability. Following recent studies, a composite index is constructed using the Principal Component Analysis (PCA) approach [32].

The index includes indicators reflecting:

- Development, such as income levels and consumption;
- Sharing, including educational resources, healthcare, infrastructure, and social security;
- Sustainability, represented by innovation, ecological indicators, and economic quality.

Higher index values indicate higher levels of common prosperity.

3.4.2. Independent variable

Educational Development (EDU)

Educational development is measured by the average years of schooling among the population aged six years and above. This indicator is widely used to represent a region's educational attainment and human capital because it incorporates the distribution of educational levels across the population [33].

Higher values indicate greater educational development and a stronger accumulation of human capital.

3.4.3. Control variables

To reduce potential omitted variable bias, several control variables are included in the analysis:

1. Fiscal Decentralization (FD) – measured by the ratio of local fiscal revenue to local fiscal expenditure;
2. Social Consumption (SC) – measured by the ratio of total retail sales of consumer goods to Gross Domestic Product (GDP);
3. Technological Development (TD) – represented by the value of technology market transactions;
4. Openness to the Outside World (OPEN) – measured by the total import and export volume of foreign-invested enterprises.

These variables are selected because they may influence economic development, income distribution, and social welfare, which are closely related to common prosperity.

3.4.4. Mediating variables

Two mediating variables are examined in this study:

1. Urbanization (URB), measured by the proportion of permanent urban residents in the total population.
2. Regional Innovation Capacity (INNO), measured by the number of domestic patents granted in each province.

These variables are included because previous studies suggest that educational development can promote common prosperity indirectly by accelerating urbanization and enhancing regional innovation capabilities.

3.4.5. Threshold variable

The threshold variable is Industrial Structure Upgrading (IS), which reflects the transition from labor-intensive industries to technology-intensive and knowledge-intensive industries.

A higher value of the industrial structure upgrading index indicates a more advanced industrial system. The threshold analysis is conducted to determine whether the effect of educational development on common prosperity varies across different stages of industrial development.

4. Results and findings

4.1. Descriptive statistics

Table 1 presents the descriptive statistics of the major variables included in this study. The results indicate substantial variation among Chinese provinces in terms of educational development, common prosperity, and innovation capacity. The average value of common prosperity suggests moderate progress toward balanced development, while the relatively large standard deviation indicates considerable regional disparities.

Educational development exhibits a relatively stable distribution across provinces; however, differences in educational attainment remain evident between economically developed eastern regions and less-developed central and western regions. Similarly, regional innovation capacity and industrial structure upgrading display notable variations, reflecting the uneven distribution of innovation resources and industrial modernization across China.

As shown in Table 1, the mean values of fiscal decentralization, social consumption, and technological development indicate that provincial governments have adopted different development strategies and resource allocation patterns. These disparities may affect the effectiveness of educational development in promoting common prosperity and therefore justify including these variables as controls in the empirical analysis.

Table 1. Descriptive statistics of variables (2014–2025)

Variable	Observation	Mean	Standard Deviation	Minimum	Maximum
Common Prosperity	372	9.214	0.385	8.371	10.257
Educational Development	372	2.346	0.142	1.582	2.684
Fiscal Decentralization	372	3.852	0.491	2.014	4.617
Social Consumption	372	3.771	0.224	2.967	4.405
Technological Development	372	5.102	2.317	-2.873	9.327
Openness to the Outside World	372	8.231	1.854	3.204	11.784
Urbanization	372	0.658	0.142	0.356	0.914
Regional Innovation Capacity	372	8.615	1.973	4.125	12.706
Industrial Structure Upgrading	372	2.438	0.276	1.814	3.124

4.2. Baseline regression results

The baseline regression results are presented in Table 2. The findings reveal that educational development has a statistically significant and positive effect on common prosperity. This result supports Hypothesis H1, suggesting that improvements in educational attainment contribute to more balance and inclusive socioeconomic development.

Several mechanisms may explain the positive relationship between education and common prosperity. First, education enhances human capital by improving individuals' knowledge and skills, thereby increasing labor productivity and income levels. Second, educational development promotes social mobility and reduces inequality by expanding access to opportunities. Third, education supports technological innovation and industrial upgrading, which are essential for sustainable economic growth.

As shown in Table 2, the coefficient of educational development remains positive and statistically significant across all model specifications, indicating that the results are robust to

the inclusion of control variables. Among the control variables, fiscal decentralization, social consumption, and technological development also exhibit positive effects on common prosperity, whereas openness to the outside world shows a relatively weaker effect.

Table 2. Baseline regression results

Variables	Model 1	Model 2	Model 3	Model 4
Educational Development	0.521***	0.467***	0.402***	0.356***
Fiscal Decentralization	—	0.184***	0.171***	0.168***
Social Consumption	—	—	0.128***	0.121***
Technological Development	—	—	0.009**	0.008*
Openness to the Outside World	—	—	—	0.006
Province Fixed Effects	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes
Observations	372	372	372	372
R^2	0.985	0.988	0.991	0.992

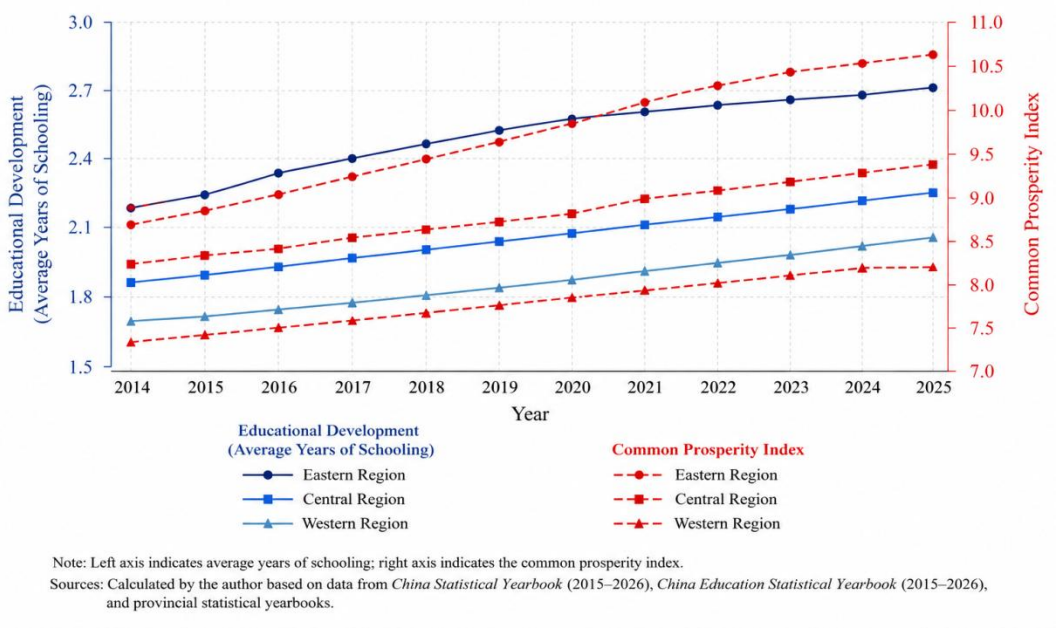
*Note: ***p < .01, **p < .05, *p < .10.*

4.3. Regional differences

To further examine regional heterogeneity, the study compares educational development and common prosperity across eastern, central, and western China. The results demonstrate that eastern provinces generally exhibit higher levels of educational attainment and common prosperity than central and western provinces.

As illustrated in Figure 1, the eastern region consistently outperforms the other regions, reflecting its stronger economic foundations, higher levels of educational investment, and more advanced industrial structures. Although central and western provinces have made substantial progress during the study period, regional disparities remain evident.

Figure 1. Regional Differences in Educational Development and Common Prosperity (2014–2025)



Note: Left axis indicates average years of schooling; right axis indicates the common prosperity index.

Sources: Calculated by the author based on data from *China Statistical Yearbook* (2015–2026), *China Education Statistical Yearbook* (2015–2026), and provincial statistical yearbooks.

The findings shown in Figure 1 suggest that educational development is more strongly associated with common prosperity in regions with advanced industrial structures and

stronger innovation ecosystems. This observation provides preliminary evidence for the threshold effect examined later in the study.

4.4. Mediating roles of urbanization and innovation

The study further investigates whether urbanization and regional innovation capacity serve as mediating mechanisms between educational development and common prosperity.

The results indicate that educational development promotes common prosperity not only directly but also indirectly by accelerating urbanization and enhancing innovation capacity. Better educational opportunities improve labor mobility, facilitate migration to urban areas, and expand access to employment opportunities. At the same time, education strengthens regional innovation systems by cultivating skilled workers and promoting scientific research.

The conceptual relationships among these variables are summarized in Figure 2.

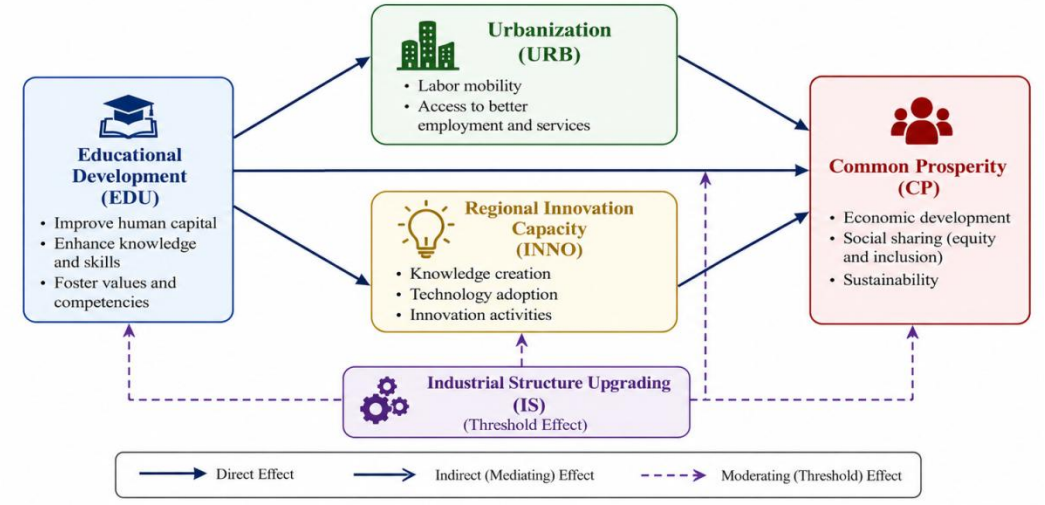


Figure 2. Conceptual pathways linking educational development and common prosperity

As illustrated in Figure 2, educational development influences common prosperity through multiple pathways. The direct effect reflects the contribution of education to human capital formation and income growth, whereas the indirect effects operate through urbanization and innovation. Furthermore, industrial structure upgrading may strengthen or weaken these relationships depending on the stage of regional development.

Overall, the results demonstrate that educational development is a critical driver of common prosperity in China and that its effects extend beyond education itself to encompass urban transformation, technological innovation, and industrial modernization.

5. Discussion

The findings of this study demonstrate that educational development is a critical driver of common prosperity in China. The empirical results indicate that provinces with higher levels of educational attainment generally exhibit greater common prosperity, suggesting that education contributes substantially to balanced economic growth, social inclusion, and sustainable development.

Several factors may explain the positive relationship between educational development and common prosperity. First, education enhances human capital by improving individuals' knowledge, technical competencies, and problem-solving abilities. In the context of China's transition toward an innovation-driven economy, these competencies are increasingly important for supporting industrial upgrading and technological advancement. As the economy shifts from labor-intensive industries to knowledge-intensive sectors, educational development becomes an essential foundation for sustainable growth.

Second, education promotes social mobility by expanding access to employment opportunities and increasing income potential. Individuals with higher educational attainment are generally better positioned to participate in emerging industries, particularly those associated with engineering, advanced manufacturing, digital technologies, and scientific innovation. Consequently, educational development contributes not only to individual welfare but also to broader societal prosperity.

The results also reveal considerable regional differences in the relationship between educational development and common prosperity. As illustrated in Figure 1, eastern provinces consistently demonstrate higher levels of educational development and common prosperity than central and western provinces. This disparity may be attributed to differences in economic development, educational infrastructure, industrial composition, and innovation ecosystems.

The regional variation observed in this study suggests that the effectiveness of educational investments depends on the broader socioeconomic environment. Regions with advanced industrial structures and stronger innovation capacity are better able to translate educational achievements into economic and social benefits. Conversely, less-developed regions may require complementary investments in infrastructure, technology, and institutional capacity to realize the benefits of educational development fully.

Furthermore, the findings indicate that educational development influences common prosperity through multiple pathways. As shown in Figure 2, education contributes directly to human capital formation and indirectly through urbanization and regional innovation capacity. Improved educational opportunities facilitate labor mobility and enable individuals to access better employment prospects in urban areas. At the same time, education strengthens innovation systems by producing skilled workers, researchers, and engineers capable of developing and adopting new technologies.

Another important finding is the role of industrial structure upgrading in shaping the relationship between educational development and common prosperity. The results suggest that the benefits of educational development become more pronounced as regions progress toward more advanced industrial structures. Provinces characterized by technology-intensive industries and innovation-oriented economies are better positioned to transform educational achievements into higher productivity, increased income, and improved social welfare.

From an engineering perspective, these findings underscore the strategic importance of cultivating engineering talent and strengthening science and technology education. China's modernization agenda increasingly relies on advanced manufacturing, artificial intelligence, renewable energy, and digital technologies. Consequently, educational systems must adapt to the changing demands of industry by providing students with interdisciplinary knowledge, technical expertise, and the ability to innovate.

The findings also have important policy implications. Policymakers should continue to promote equitable access to education while simultaneously improving educational quality and relevance. Investments in engineering education, vocational training, and university–industry collaboration can help align educational outcomes with labor market needs and

accelerate technological innovation. Moreover, targeted support for less-developed regions may help reduce regional disparities and promote more balanced development across the country.

Overall, the results demonstrate that educational development is not merely a social investment but a strategic mechanism for achieving common prosperity. By enhancing human capital, promoting innovation, and supporting industrial transformation, education serves as a cornerstone of China's long-term development strategy and its pursuit of inclusive and sustainable prosperity.

6. Conclusion

This study examined the relationship between educational development and common prosperity in China using panel data from 31 provinces covering the period 2014–2025. Specifically, the study investigated the direct effect of educational development on common prosperity, the mediating roles of urbanization and regional innovation capacity, and the moderating role of industrial structure upgrading.

The findings demonstrate that educational development plays a significant role in promoting common prosperity. Provinces with higher levels of educational attainment tend to exhibit better outcomes in terms of economic development, social sharing, and sustainability. These results indicate that education is not only an important component of human capital formation but also a strategic driver of inclusive and sustainable development.

The study further reveals that educational development influences common prosperity through multiple pathways. Educational improvement facilitates urbanization by increasing labor mobility and expanding access to economic opportunities. At the same time, education enhances regional innovation capacity by cultivating skilled human resources and strengthening technological capabilities. These indirect effects highlight the multifaceted contribution of education to socioeconomic development.

Moreover, the analysis indicates that upgrading the industrial structure influences the effectiveness of educational development. Regions with more advanced industrial structures are better able to translate educational achievements into economic and social benefits. This finding underscores the importance of aligning educational policies with industrial and technological development strategies.

The results of this study have several policy implications. First, policymakers should continue to promote equitable access to education while improving educational quality across regions. Particular attention should be given to narrowing disparities between eastern, central, and western provinces to ensure that all regions benefit from educational advancement.

Second, greater emphasis should be placed on engineering education, vocational training, and science and technology programs. As China advances toward an innovation-driven economy, educational institutions should equip students with interdisciplinary knowledge, technical competencies, and innovation capabilities that meet the needs of emerging industries.

Third, stronger collaboration among universities, industries, and government agencies should be encouraged to enhance technology transfer, promote innovation, and improve workforce readiness. Such collaborations can facilitate the integration of education with industrial development and contribute to long-term economic competitiveness.

Despite its contributions, this study has several limitations. The analysis is conducted at the provincial level and may not fully capture variations within provinces or across specific cities and regions. Additionally, the study focuses primarily on formal educational indicators and

does not consider other dimensions of learning, such as lifelong education, informal learning, or digital competencies. Future research may explore these dimensions and investigate how emerging educational technologies influence common prosperity.

In conclusion, educational development remains a cornerstone of China's pursuit of common prosperity. By enhancing human capital, fostering innovation, supporting industrial upgrading, and promoting social inclusion, education serves as a powerful mechanism for achieving balanced and sustainable development. The findings of this study provide empirical evidence that investments in education are essential not only for economic growth but also for building a more equitable, innovative, and prosperous society.

References

[1] State Council of the People's Republic of China, The 2024–2035 Strong Education Nation Plan, Beijing: State Council, **(2025)**

[2] Higher Education, Digital Economy, and Common Prosperity, ECNU Review of Education, (2025). DOI: 10.1177/20965311241264828

[3] X. Wang, J. Ruan, Education helps to achieve shared prosperity: Evidence from China, Frontiers in Education, (2024), Vol.9, Article 1296141. DOI: 10.3389/feduc.2024.1296141

[4] T. Zhao, F. Jiao, Z. Wang, Digital economy, entrepreneurial activity, and common prosperity: Evidence from China, Journal of Information Economics, (2023), Vol.1, No.1, Article 5. DOI: 10.58567/jie01010005

[5] Y. Deng, C. Li, S. Wang, R. Tang, The impact of economic openness on common prosperity: Insights from provincial panel data, International Review of Economics & Finance, (2025), Vol.98, Article 103908. DOI: 10.1016/j.iref.2025.103908

[6] D. Wang, Y. Zhao, H. Liu, Higher education, population mobility, and the development of the digital economy, Finance Research Letters, (2024), Vol.69, Article 106112. DOI: 10.1016/j.frl.2024.106112

[7] J. Duan, Y. Wang, Vocational Education, Labor Income Share and Common Prosperity, International Journal of New Developments in Education, (2023), Vol.5, No.19, pp.6-20. DOI: 10.25236/IJNDE.2023.051902

[8] J. Li, E. Xue, Y. Wei, Y. He, How popularising higher education affects economic growth and poverty alleviation: Empirical evidence from 38 countries, Humanities and Social Sciences Communications, (2024), Vol.11, No.1, Article 520. DOI: 10.1057/s41599-024-03013-5

[9] Z. Yang, C. Shen, F. I. Lam, Scientific and Technological Innovation and Cooperation in the Greater Bay Area of China: A Case Study of University Patent Applications and Transformation, Sustainability, (2023), Vol.16, No.2, Article 571. DOI: 10.3390/su16020571

[10] R. Zhou, S. Chen, B. Zhang, Smart city construction and new-type urbanization quality improvement, Scientific Reports, (2023), Vol.13, Article 21074. DOI: 10.1038/s41598-023-48490-x

[11] R. Wei, Z. Yu, Y. Mo, Higher Education Human Capital Expansion and Common Prosperity: Evidence from China, SAGE Open, (2025). DOI: 10.1177/21582440251389096

[12] F. Atsu, S. Adams, Financial development and innovation: Do institutions and human capital matter?, Heliyon, (2023), Vol.9, No.8, Article e19015. DOI: 10.1016/j.heliyon.2023.e19015

[13] H. Shen, M. Qin, T. Li, X. Zhang, Y. Zhao, Digital finance and industrial structure upgrading: Evidence from Chinese counties, International Review of Financial Analysis, (2024), Vol.95, Article 103442. DOI: 10.1016/j.irfa.2024.103442

[14] H. Sun, Research on the Development of National Education Modernization under the Guidance of Concept Modernization, Proceedings of the 2021 2nd Asia-Pacific Conference on Image Processing, Electronics and Computers (IPEC2021), (2021), pp.1-5. DOI: 10.1145/3452446.3452461

[15] Z. Li, Y. Chu, H. Fang, Hierarchical Education Investment and Economic Growth in China, SAGE Open, (2022). DOI: 10.1177/21582440221108159

[16] B. Li, W. Nie, X. Zuo, H. Zuo, How does education affect knowledge and intergenerational social class mobility in China?, Journal of Innovation & Knowledge, (2025), Vol.10, No.3, Article 100678. DOI: 10.1016/j.jik.2025.100678

[17] R. Chen, Y. Wu, Z. Chen, P. Zhou, Advancing educational equity in rural China: The impact of AI devices on teaching quality and learning outcomes for sustainable development, Frontiers in Psychology, (2025), Vol.16, Article 1588047. DOI: 10.3389/fpsyg.2025.1588047

[18] J. Shen, T. Li, M. Wu, The New Engineering Education in China, Procedia Computer Science, (2020), Vol.172, pp.886-895. DOI: 10.1016/j.procs.2020.05.128

[19] F. Bu, X. Tian, L. Sun, M. Zhang, Y. Xu, Q. Guo, Research on the Impact of University–Industry Collaboration on Green Innovation of Logistics Enterprises in China, Sustainability, (2024), Vol.17, No.11, Article 5068. DOI: 10.3390/su17115068

[20] Y. Lu, T. Wang, Quality Evaluation Model of Vocational Education in China: A Qualitative Study Based on Grounded Theory, Education Sciences, (2023), Vol.13, No.8, Article 819. DOI: 10.3390/educsci13080819

[21] Y. Guo, X. Li, Regional inequality in China's educational development: An urban-rural comparison, Heliyon, (2024), Vol.10, No.4, Article e26249. DOI: 10.1016/j.heliyon.2024.e26249

[22] L. Qiao, D. Guo, C. Wu, H. Wang, Exploring common prosperity in China's counties: From the perspective of bank branch expansion, Cities, (2025), Vol.158, Article 105724. DOI: 10.1016/j.cities.2025.105724

[23] H. Chen, S. Wang, Y. Li, Aligning Engineering Education for Sustainable Development through Governance: The Case of the International Center for Engineering Education in China, Sustainability, (2021), Vol.14, No.21, Article 14643. DOI: 10.3390/su142114643

[24] S. Xiao, J. Sheng, G. Zhang, Rising Tides of Knowledge: Exploring China's Higher Education Landscape and Human Capital Growth, Journal of the Knowledge Economy, (2025), Vol.16, pp.4392-4421. DOI: 10.1007/s13132-024-02102-9

[25] V. V. Krishna, X. Zhang, Y. Jiang, The Rise of Chinese Universities: Research, Innovation and Building World-class Universities, Science, Technology and Society, (2025). DOI: 10.1177/09717218241257716

[26] J. Luo, Y. Zheng, B. Fu, H. Luo, Cultivation of innovative talent engineering practice ability under the background of Emerging Engineering Education, Proceedings of the 2019 14th International Conference on Computer Science & Education (ICCSE), (2019), pp.720-724. DOI: 10.1109/ICCSE.2019.8845415

[27] N. Wu, Z. Liu, Higher education development, technological innovation and industrial structure upgrade, Technological Forecasting and Social Change, (2020), Vol.162, Article 120400. DOI: 10.1016/j.techfore.2020.120400

[28] Y. Zhang, J. Liu, Does Education Affect Economic Growth? A Re-Examination of Empirical Data from China, Sustainability, (2021), Vol.14, No.23, Article 16289. DOI: 10.3390/su142316289

[29] B. H. Baltagi, Econometric Analysis of Panel Data, (2021), 6th Edition

[30] B. E. Hansen, Threshold effects in non-dynamic panels: Estimation, testing, and inference, Journal of Econometrics, (1999), Vol.93, No.2, pp.345-368. DOI: 10.1016/S0304-4076(99)00025-1

[31] J. M. Wooldridge, Introductory Econometrics: A Modern Approach, (2020), 7th Edition, Cengage Learning

[32] Y. Zhao, X. Li, H. Wang, Measuring common prosperity in China: A multidimensional index approach, Social Indicators Research, (2023), Vol.167, No.2, pp.541-563. DOI: 10.1007/s11205-022-03052-5

[33] R. J. Barro, J. W. Lee, Education matters: Global schooling gains from the 19th to the 21st century, Oxford Review of Economic Policy, (2021), Vol.37, No.3, pp.486-507. DOI: 10.1093/oxrep/grab018

This page is empty by intention.