The Impact of Urban Education on the Income Gap of Urban Residents: Evidence from Central China

Daxue Kan 1,*, Lianju Lyu 1, Weichiao Huang 2 and Wenqing Yao 3

1 School of Economics and Trade, Nanchang Institute of Technology, Nanchang 330099, China; 2011994310@nit.edu.cn
2 Department of Economics, Western Michigan University, Kalamazoo, MI 49008-5330, USA; huang@wmich.edu
3 Business Administration College, Nanchang Institute of Technology, Nanchang 330099, China; 2021351005@nit.edu.cn
* Correspondence: 2011994292@nit.edu.cn

Abstract: It is very important for a country’s sustainable economic and social development to reduce the income gap between urban residents. Through investigating the impact of urban education level and its different levels on the income gap of urban residents in Central China, this paper provides the basis for formulating scientific and rational urban education development policies in Central China. Based on Central China’s urban dynamic panel data, this paper examines the impact by using the system GMM (Generalized Method of Moments). The results show that overall, the improvement of urban education level helps to narrow the income gap of urban residents in Central China cities. Specifically, improvement of primary education level and secondary education level helps to narrow the income gap of urban residents, and improvement of higher education level enlarges the income gap of urban residents. Nonetheless, with further development of higher education in the cities, the income structure of lower-middle-income and low-income groups will be optimized, and subsequently higher education in cities will probably narrow the income gap between urban residents. In terms of the type of cities, improvement of education level in provincial capitals widens the income gap of urban residents, and improvement of education level in prefecture-level cities and county-level cities helps to narrow the income gap of urban residents. For all three types of cities, improvement of primary education level helps to narrow the income gap of urban residents, and the improvement of higher education level widens the income gap of urban residents. The improvement of secondary education level widens the income gap of urban residents in provincial capital cities but reduces the income gap of residents in prefecture-level cities and county-level cities. The policy implication from this study is that, to effectively and expeditiously narrow the income gap of urban residents in Central China, prefecture-level and county-level cities need to vigorously develop urban education, especially urban primary education and secondary education. At the same time, cities in Central China also need to actively develop higher education. Although the income gap of urban residents might be widened temporarily in the short term, the development of urban higher education will increase property income and net operating income of the local middle-low-income and low-income groups in the long term. Ultimately this policy would optimize the income structure of local urban residents and narrow the income gap of urban residents.

Keywords: Central China; urban education; income gap of urban residents

1. Introduction

Since the reform and opening up, Central China has significantly improved urban educational level (urban education refers to schooling and training that take place in large, densely populated areas with diverse populations), with average educational attainment reaching 10.25 years in 2020 (the study covers six provinces in Central China, including Shanxi, Anhui, Jiangxi, Henan, Hubei, and Hunan). At the same time, the income of urban...
residents in Central China grew rapidly. In 2020, the per capita disposable income of urban residents reached USD 5701, an increase of 8.24% from 2019 (data source: China Statistical Yearbook). However, the income gap of urban residents in Central China is still large. In 2020, the income disparity ratio of the total income of the high-income group plus the middle- and upper-income group to that of the lower-middle-income group plus the low-income group was about 2.71 (data source: China Statistical Yearbook). Therefore, what impact does urban education have on the income gap of urban residents in Central China? Does urban education expand the income gap of urban residents or narrow the income gap of urban residents in Central China? Urban education comprises three different levels: urban primary education, urban secondary education, and urban higher education. The core purpose of urban primary education is to instill citizenship and socialization skills into urban residents, while urban secondary education is about delivering adequate skills and knowledge to equip young people of the city with the means to face challenges and advance their social and learning development. Urban secondary education also produces a semi-skilled labor force and supplies graduates who could go on to urban higher education. Urban higher education mainly provides a skilled workforce in various highly diverse fields of endeavor in the city with professional qualifications; urban higher education mainly comprises university and polytechnic delivery modes, and it functions to produce a highly skilled labor force for specific vocations in the city (Young and Hordern, 2020; Alam and Forhad, 2021) [1,2]. Does each specific level of urban education expand the income gap of urban residents or narrow the income gap of urban residents in Central China? To narrow the income gap while improving the income level of urban residents in Central China, which level of urban education should be developed? To address these questions, this paper empirically analyzes the impact of urban education level and its different levels on the income gap of urban residents in Central China and provides suggestions for the formulation of scientific and reasonable urban education development policies to narrow the income gap of urban residents in Central China. This study helps to enrich the theory of educational economics and improve the research content of income distribution theory. It provides a new empirical basis for improving the income level of urban residents and narrowing the income gap of urban residents in Central China. As the income gap of urban residents has also widened in some other developing countries (Naito and Nishida, 2017; Van and Marcella, 2021) [3,4], this study also provides a reference for other developing countries similar to Central China to which level of urban education to develop to narrow the income gap of urban residents.

2. Literature Review

There have been many systematic studies on the relationship between education level and income distribution, such as Schultz’s human capital theory, Becker’s human capital theory, and Mincer’s human capital theory, all aiming to explain the wage gap according to the different amounts of worker’s capital accumulated through formal education and training. Mincer (1958), Schultz (1961), Becker and Chiswick (1966), Becker (1993), and Mussida and Picchio (2014) confirmed the existence of a positive correlation between education and income and that the gap in the level of formal education widens the personal income gap. Therefore, in order to narrow the income gap, the key point is to increase investment in formal education [5–9]. Theoretically, education supports improving graduates’ socioeconomic outcomes and careers by injecting citizenship values and making sure they are employable, but some studies showed that students with a lower socioeconomic status and prior engineering backgrounds in the same discipline do not succeed in subsequent programs and professional careers, compared to their higher socioeconomic status counterparts who have no previous engineering background; engineering education and career advancement are not saliently linked (Alam and Forhad, 2021; Alam, 2021) [10,11]. Marginson (2019) argued that the relationship between education and work is heterogeneous, and it is impossible to formulate a theory to explain such complex dynamics [12]. At present, Chinese studies are mainly based on time series data.
and panel data to empirically analyze the impact of education in China as a whole and in different provinces on urban–rural income distribution and income inequality. While no consensus has emerged from these studies, most have found that the improvement of education level helps to narrow the income gap between urban and rural areas, and the impact of education on the income gap between urban and rural areas is heterogeneous across regions and provinces [13–24]. Scholars have also explored the impact of education on the urban–rural income gap in Latin America, Europe, Islamic countries, South Asian Association for Regional Cooperation, Greece, Pakistan, and other countries (regions). Most studies have shown that a more equal distribution of education contributes significantly to reducing income inequality and that educational expansion is a major factor in reducing educational inequality and thus income inequality (Battistón and Gasparini, 2014; Khan et al., 2015; Celikay and Sengur, 2016; Hall, 2018; Qazi et al., 2018; Shahabadi et al.; 2018; Coady and Dizioli, 2018; Arshed, et al., 2018; Lee and Lee, 2018; Arshed, et al., 2019; Panori and Psycharis, 2019; Alxandersen et al., 2021) [25–36].

Some scholars have also studied the impact of different levels of education on the income gap. Luo et al. (2013), Cai and Chen (2013), and He and Zheng (2013) analyzed the impact of low education level and high education level on the urban–rural income gap [37–39]. Ma (2016), Zhang and Yi (2017), Cai and Huang (2019), and Zhao and Zhu (2022) empirically studied the impact of higher education on the urban–rural income gap [40–43]. These studies found that there are significant differences in the impact of higher education on the urban–rural income gap in different regions. Li and Guan (2018) and Tian et al. (2020) discussed the impact of compulsory education and vocational education on the urban–rural income gap in China, respectively [44,45]. They pointed out that improvement of compulsory education and vocational education level helps to narrow the urban–rural income gap.

Some other scholars have focused on the impact of rural education level and its different levels on the rural income gap. For example, Xiong and Zhang (2010), Wu and Zhang (2017), Fang and Huang (2017, 2019), and Peng (2021) focused on the impact of rural education on the rural income gap [46–50]. Some studies showed that the improvement of rural education level does not necessarily reduce rural income inequality, but a more equal distribution of rural education contributes significantly to reducing the rural income gap. Cheng et al. (2014), Cui and Wu (2017), Liu and Yang (2019), and Shi et al. (2021) studied the impact of different levels of rural education on the rural income gap [51–54]. There are also some studies that focused on the impact of urban education level on the income gap of urban residents, most of which showed that urban education is a major factor in reducing the income gap of urban residents (Zhang et al., 2012; Tian and Zhou, 2017; Li and Xu, 2017; Wang and Deng, 2020; Wu et al., 2020; Chen and Huang, 2021; Xing et al., 2022) [55–61].

In summary, there have been many fruitful studies concerning the impact of education on the urban–rural income gap and the impact of rural education on the rural income gap but few studies concerning the impact of different levels of urban education on the income gap of urban residents. It is quite conceivable that the education level and its different levels can affect the income gap by improving the quality and skills of workers (quality and skill effect), promoting occupation conversion of workers (occupation conversion effect), improving labor productivity (productivity effect), boosting labor mobility and transfer (labor flow effect), and so on. Therefore, this study aimed to add and contribute to the existing literature by: (1) constructing a dynamic panel model, using Sys-GMM to deal with endogenous estimation problems, to analyze the impact of urban education level and its different levels on the income gap of urban residents in Central China based on city-level data from 1998 to 2019; and (2) ascertaining the heterogeneous effect in provincial capitals, prefecture-level cities, and county-level cities.
3. Methods
3.1. Model Construction

Based on the existing literature on the influencing factors of income gap, we specify the income gap of urban residents ($Cs$) as the dependent variable and take the urban education level ($Ce_t$), urban primary education level ($Cz_t$), urban secondary education level ($Cj_t$), and urban higher education level ($Cq_t$) as the focused independent variables, and we include the relevant control variables, such as urbanization level ($Cz$), health investment of urban residents ($Cj$), mobility investment of urban residents ($Cq$), per capita GDP ($Rg$), minimum wage standard ($Zd$), industrial structure ($Cy$), and financial development level ($fr$). We construct and estimate the following models:

$$
\ln Cs_{it} = c + a_0 \ln Cs_{it-1} + a_1 \ln Ce_{it} + a_2 \ln Cz_{it} + a_3 \ln Cj_{it} + a_4 \ln Cq_{it} + a_5 \ln Rg_{it} + a_6 \ln Zd_{it} + a_7 \ln Cy_{it} + a_8 \ln fr_{it} + \epsilon_{it}
$$

Among them, $i$ and $t$ represent the $i$ cities (the sample cities are 141) and the year (the sample period is 1998–2019), respectively. Due to the inertia of widening or narrowing the income gap, there is likely to be a lag effect; hence the lag term of the income gap of urban residents is added to the model, which also includes other factors that have not been considered to affect the income gap of urban residents. Additionally, a logarithmic regression model is constructed to deal with heteroscedasticity problem commonly exhibited in the above macro variables.

3.2. Variable Measurement and Data Description

Since the existing statistical data divide the income of urban residents into five levels, namely, the low-income group, lower-middle-income group, middle-income group, middle- and upper-income group, and high-income group, we can use the internationally recognized Gini coefficient to measure the income gap, which is calculated mainly on the basis of the ratio of the unequal area and the completely equal area of Lorenz curve, as follows:

$$
G = 1 - \sum_{j=1}^{5} (W_{j-1} + W_j) \times P_j
$$

(1)

In the above formula, $G$, $P_j$, and $W_j$ are, respectively, the Gini coefficient of urban income, the number of population in each group/total population, and the accumulated income in group $j$/all groups.

We measure the independent variables urban education level, urban primary education level, urban secondary education level, and urban higher education level following the measurement method of Kan and Lyu (2020) [62], such that: urban education level = urban primary education level + urban secondary education level + urban higher education level, where urban primary education level = the proportion of urban illiterate and semi-illiterate population × 2 years + proportion of population with primary education × 6 years; urban secondary education level = proportion of population with junior high education × 9 years + proportion of population with senior high education × 12 years; urban higher education level = proportion of population with junior college education or higher education × 16 years.

Finally, other variables are measured as follows. The urban population/total population, health care expenditure of urban residents, transportation and communication expenditure of urban residents, GDP/population, output value of tertiary industry/GDP, (balance of deposits and loans of financial institutions/GDP + balance of loans of financial institutions/balance of deposits of financial institutions)/2 are used to measure urbanization level, health investment of urban residents, mobility investment of urban residents, per capita GDP, industrial structure, and financial development level, respectively. The original data of the above variables were obtained from the China Statistical Yearbook, social
and economic statistics yearbook of China’s counties and cities, and provincial statistical yearbooks. The minimum wage data of cities in Central China published in China’s urban statistical yearbook are used to measure the minimum wage standard.

3.3. Diagnostic Tests and the System GMM Method

In order to make the regression results more accurate and to avoid obtaining the pseudo regression estimation results, we need to use Levin, Lin and Chu (LLC), Breitung, and Hadri tests and other methods to test the stationarity of the data series of the above variables in the model and Pedroni and Kao test methods to test the cointegration relationship between variables. The test results are shown in Tables 1 and 2. It is found that a few of the first-order difference values of each variable do not reject the original hypothesis, and most of the whole set of variables pass the unit root test of stationarity. It is also found that when the dependent variables are, respectively, urban education level, urban primary education level, urban secondary education level, and urban higher education level, the statistics and probability values obtained from Pedroni and Kao tests show that there is a cointegration relationship between variables. However, there are potential endogenous problems that can cause unreliable regression results. The endogenous problems could arise from the correlation between the dependent variable (income gap of urban residents) and its lagging term. The dependent variable (income gap of urban residents) will affect the urbanization level, health investment of urban residents, mobility investment of urban residents, per capita GDP, and other control variables. There is also a possible correlation between the independent variables (urban education level, urban primary education level, urban secondary education level, and urban higher education level) and the urbanization level, health investment of urban residents, migration investment of urban residents, per capita GDP, and other control variables. To address the potential endogeneity bias, the system GMM method is used to estimate the model. In order to test the reliability of the regression results, the robustness test is carried out in Section 4.3 by re-estimating the model with an alternative measure of the dependent variable. In the estimation, we select the independent variable lagged by two periods as the instrumental variable. Because the consistency of system GMM estimation results depends on the validity of instrumental variable and the correlation of second-order sequences, Sargan statistics and Arellano–Bond statistics are used to test the validity of instrumental variable and the correlation of second-order sequences, respectively. The results are shown in Table 3. Sargan test value is normal, indicating that the selected instrumental variable is effective and overcomes the endogenous problems. Arellano–Bond AR(2) value indicates that the residual has no second-order autocorrelation.

Table 1. Panel unit root test results of first-order difference value of variable.

| Panel Unit Root Test Method | LLC  | Breitung | Hadri | IPS  | Fisher-ADF | Fisher-pp |
|-----------------------------|------|----------|-------|------|-------------|-----------|
| lnCs                        | −19.605 | −5.314 | 5.687 | −6.779 | 146.512     | 146.903    |
| (0.000)                     | (0.000) | (0.000) | (0.000) | (0.000) | (0.000)     | (0.000)    |
| lnCe₁                       | −7.067 | 1.129   | 5.732 | −2.238 | 87.033      | 103.305    |
| (0.000)                     | (0.800) | (0.000) | (0.003) | (0.000) | (0.000)     | (0.000)    |
| lnCe₂                       | −6.983 | 1.115   | 5.686 | −2.214 | 86.019      | 102.100    |
| (0.000)                     | (0.809) | (0.000) | (0.003) | (0.000) | (0.000)     | (0.000)    |
| lnCe₃                       | −9.146 | 1.462   | 7.440 | −2.907 | 112.715     | 133.764    |
| (0.000)                     | (0.650) | (0.000) | (0.002) | (0.000) | (0.000)     | (0.000)    |
| lnCe₄                       | −7.508 | −0.304  | 6.023 | −1.686 | 85.172      | 100.832    |
| (0.000)                     | (0.291) | (0.000) | (0.040) | (0.016) | (0.001)     | (0.000)    |
| lnCz                        | −22.631 | −6.766  | 6.297 | −7.230 | 160.845     | 191.638    |
| (0.000)                     | (0.000) | (0.000) | (0.000) | (0.000) | (0.000)     | (0.000)    |
Table 1. Cont.

| Panel Unit Root Test Method | LLC | Breitung | Hadri | IPS | Fisher-ADF | Fisher-pp |
|----------------------------|-----|----------|-------|-----|-------------|-----------|
| lnCj                       | −13.719 (0.000) | −1.497 (0.052) | 3.834 (0.000) | −6.245 (0.000) | 156.258 (0.000) | 216.113 (0.000) |
| lnCq                       | −7.262 (0.000) | −0.298 (0.000) | 5.829 (0.000) | −1.631 (0.040) | 82.454 (0.017) | 97.617 (0.001) |
| lnRg                       | −9.834 (0.000) | −2.023 (0.196) | 0.598 (0.000) | −4.189 (0.000) | 116.615 (0.000) | 139.412 (0.000) |
| lnZd                       | −15.026 (0.000) | −1.639 (0.000) | 4.195 (0.000) | −6.838 (0.000) | 171.103 (0.000) | 236.644 (0.000) |
| lnCy                       | −7.952 (0.000) | −0.326 (0.000) | 6.382 (0.000) | −3.025 (0.000) | 89.287 (0.000) | 106.895 (0.000) |
| lnJr                       | −7.267 (0.000) | −2.521 (0.003) | 2.682 (0.000) | −3.025 (0.000) | 89.287 (0.000) | 106.895 (0.000) |

Note: The p-value for each corresponding test statistic is displayed in parenthesis.

Table 2. Cointegration test results of panel data.

| Test Method | Urban Education Level | Urban Primary Education Level | Urban Secondary Education Level | Urban Higher Education Level |
|-------------|-----------------------|-------------------------------|--------------------------------|-----------------------------|
| Pedroni     | Panel-v               | −0.377 (0.010)                | −0.215 (0.009)                | −0.343 (0.010)              | −0.338 (0.009)              |
|             | Panel-p               | −3.323 (0.009)                | −2.400 (0.006)                | −3.271 (0.008)              | −3.162 (0.007)              |
|             | Panel-ρ               | −11.65 (0.000)                | −9.858 (0.000)                | −8.152 (0.000)              | −7.874 (0.000)              |
|             | Panel-ADF             | −3.829 (0.000)                | −4.842 (0.000)                | −2.447 (0.007)              | −2.373 (0.008)              |
|             | Group-ρ               | −4.663 (0.000)                | −3.494 (0.005)                | −4.599 (0.000)              | −4.445 (0.000)              |
|             | Group-ADF             | −13.43 (0.000)                | −12.680 (0.000)               | −11.674 (0.000)             | −11.301 (0.000)             |
|             | Kao                   | −2.874 (0.002)                | −2.721 (0.003)                | −2.750 (0.003)              | −2.746 (0.003)              |

Note: The p-value for each corresponding test statistic is displayed in parenthesis.

Table 3. The impact of urban education level on the income gap of urban residents in Central China.

| Urban Education Level | Urban Primary Education Level | Urban Secondary Education Level | Urban Higher Education Level |
|-----------------------|-------------------------------|--------------------------------|-----------------------------|
| C                     | 2.498 ** (0.036)              | 2.739 (0.143)                  | 2.035 (0.108)               | 1.967 * (0.067)             |
| lnCt-1                | 0.260 (0.108)                 | 0.221 * (0.075)                | 0.234 * (0.059)             | 0.229 (0.146)               |
| lnCc1/lnCc2/lnCc3/lnCc4 | −0.065 * (0.074)              | −0.032 * (0.089)               | −0.068 * (0.046)            | 0.031 ** (0.035)            |
| lnCt                  | 0.066 ** (0.043)              | 0.054 ** (0.037)               | 0.053 * (0.071)             | 0.062 ** (0.028)            |
| lnCt-1                | −0.090 ** (0.029)             | −0.088 * (0.090)               | −0.082 ** (0.065)           | −0.080 * (0.076)            |
| lnCq                  | 0.057 (0.185)                 | 0.053 (0.202)                  | 0.056 (0.160)               | 0.064 (0.132)               |
| lnCc1                 | 0.053 * (0.062)               | 0.057 * (0.074)                | 0.061 * (0.058)             | 0.055 * (0.069)             |
| lnCc2                 | −0.039 ** (0.036)             | −0.040 ** (0.028)              | −0.037 * (0.064)            | −0.033 ** (0.045)           |
| lnCc3                 | −0.044 * (0.079)              | −0.046 ** (0.041)              | −0.049 ** (0.036)           | −0.048 * (0.083)            |
| lnCc4                 | 0.028 (0.160)                 | 0.023 (0.139)                  | 0.020 (0.152)               | 0.026 (0.174)               |
| Wald test             | 1032.246                      | 887.750                       | 1007.994                     | 965.837                     |
| Sargan test           | 0.231                         | 0.207                         | 0.229                        | 0.223                       |
| Arellano-Bond AR (1)  | 0.005                         | 0.004                         | 0.005                        | 0.005                       |
| Arellano-Bond AR (2)  | 0.217                         | 0.205                         | 0.216                        | 0.214                       |

Note: * and ** indicate that the variable is significant at the level of 10% and 5%, respectively.

4. Results and Discussion

4.1. The Impact of Urban Education Level on the Income Gap of Urban Residents

From Table 3, we can see that when the urban education level in Central China increased by 1 percentage point, the Gini coefficient of urban income decreased by 0.065 percentage points, which was significant at the 10% level. This indicates that the improvement of urban education level in Central China is conducive to narrowing the income gap of
urban residents. This result is similar to the findings of Tian and Zhou (2017), Wang and Deng (2020), and Chen and Huang (2021) [52,53,55]. The reason for this result may be that urban education leads to an increase in per capita wage income higher than that in per capita property income but not a significant improvement in per capita net operating income and transfer income. The income of urban lower-middle-income and low-income groups is primarily wage income and transfer income. In contrast, for urban middle-income, middle- and upper-income, and high-income groups, property income and net operating income account for a relatively high proportion of their income groups. As for why urban education can significantly increase per capita wage income, it may be that Central China’s urban residents have an adequate education level, skill level, and high labor productivity enabling them to obtain information and change to higher-paying jobs. At the same time, enterprises employing them incur relatively low training costs, and they can better meet the needs of urbanization and industrialization in the region for talents with certain skills. All these reasons lead to a significant increase in the per capita wage income. On the other hand, Central China urban residents do not own a large amount of property, and their property investment and financial management ability is relatively limited. With a limited amount of property and limited suitable investment and financial management channels available for them to choose in the market, a higher education level only results in limited improvement of per capita property income. Urban education did not significantly improve the per capita net operating income of urban residents because urban education in Central China did not provide residents with the knowledge, skills, and experience needed to engage in production and operation activities, and also most of the urban residents engaged in small-scale production and operation activities, which did not generate substantial net operating income. Finally, while education enables urban residents to be employed, earn and receive some wage income, and transfer income in the format of pensions and other benefits, it also makes it difficult for them to obtain other transfer income such as social relief and welfare payments by the government, resulting in no increase in per capita transfer income.

From Table 3, we can see that a 1 percentage point increase in urban primary education level in Central China lowered the Gini coefficient of urban income by 0.032 percentage points, which is significant at the 10% level, indicating that the improvement of the urban primary education level helps to narrow the income gap of urban residents. The reason for this result may be that the improvement of urban primary education level is conducive to the increase of per capita wage income and per capita transfer income but not conducive to the increase of per capita property income and per capita net operating income. For the lower-middle-income and low-income groups with a higher proportion of wage income and transfer income, urban primary education is conducive to the improvement of the income of these two groups, while for the middle-income, middle- and upper-income, and high-income groups with a higher proportion of property income and net operating income, urban primary education will not directly raise the income of these three groups. As for why urban primary education level will only help to increase per capita wage income and per capita transfer income, it may be that the quality and skills of urban residents with only primary education are relatively low, making them less competitive in the labor market to carry out transformation, and thus they are mostly employed in the urban primary and secondary product processing industry, low-end manufacturing industry, and traditional service industry. Therefore, the level of primary education human capital is conducive to improving the per capita wage income of urban residents but only by a small margin. Meanwhile, urban residents with only primary education may receive more social relief and welfare transfer payments from the government, which further improves per capita transfer income. As for why primary education level is not conducive to the increase of per capita property income and per capita net operating income, it may be that those with only primary education typically have a single source of income, generally at a low-income level, and few engage in production and operation activities. In addition, their property
income is mainly interest income, and they typically own less property, unable to derive property income through leasing, dividend distribution, and property appreciation.

From Table 3, we can see that a 1 percentage point increase in the urban secondary education level in Central China decreased the Gini coefficient by 0.068 percentage points, which is significant at the 5% level, indicating that the improvement of urban secondary education level helps to narrow the income gap of urban residents. The reason may be that the improvement of secondary education level in Central China leads to an increase in per capita wage income more than in per capita property income and per capita net operating income but is not conducive to the increase of per capita transfer income. For the lower-middle-income and low-income groups with a higher proportion of wage income and transfer income, secondary education is still conducive to the improvement of the income of these two groups. Meanwhile, for the middle-income, middle- and upper-income, and high-income groups with a higher proportion of property income and net operating income, urban secondary education did not significantly improve the income of these three groups. As for why urban secondary education can increase per capita wage income, it may be that urban residents with secondary education have an adequate education level, skill level, and high labor productivity, enabling them to obtain pertinent information and change to higher-paying jobs. In addition, enterprises employing them incur relatively low training costs, and they can better meet the needs of urbanization and industrialization in the region for talents with certain skills. All these reasons lead to a significant increase in per capita wage income. On the other hand, urban residents with secondary education are engaged in production and operation activities with a smaller scale that can only generate limited net operating income. At the same time, the financial management ability of urban residents at this level of education is relatively poor. They do not own a large amount of property and do not know how to access more suitable investment and financial management channels to earn more, resulting in low per capita property income. The reason for the negative impact of secondary education on per capita transfer income is that urban residents at this level of education have a certain amount of wage income, making them not eligible to continue to receive various social relief funds and welfare payments from the government.

From Table 3, we can see that a 1 percentage point increase in urban higher education level in Central China increased the Gini coefficient of urban income by 0.031 percentage points, which is significant at the 5% level, indicating that improvement of urban higher education level widened the income gap of urban residents. The reason may be that the improvement of higher education level is conducive to the improvement of per capita wage income, per capita property income, per capita net operating income, and per capita transfer income, but it plays a greater role in the improvement of per capita property income and per capita net operating income. For the lower-middle-income and low-income groups with a higher proportion of wage income and transfer income, urban higher education plays a relatively low role in boosting the income of these two groups. Meanwhile, for the middle-income, middle- and upper-income, and high-income groups with a higher proportion of property income and net operating income, urban higher education plays a relatively large role in raising the income of these three groups. Although the improvement of urban higher education seems to widen the income gap of urban residents in Central China, following the development of higher education and optimization of urban residents’ income structure, the proportion of property income and net operating income in the income structure of lower-middle-income and low-income groups will be higher than that of wage income and transfer income. This will cause further improvement of urban higher education level to narrow the income gap of urban residents over time. As for why urban higher education level increases per capita wage income and per capita net operating income, it may be attributed to the greater quality and skill effect, occupation conversion effect, productivity effect, and labor flow effect of higher education so that urban residents with higher education are more likely to be employed in industries with high value-added capital and technology or engage in production and operation activities in these industries, thereby increasing their per capita wage income and per capita net operating income. As
for why urban higher education level is conducive to the increase of per capita property income, it may be that urban residents with higher education have a stronger ability of information acquisition and financial management, more diversified sources of property income, and more real-estate property and hence are capable of earning property income through various investment and financial management methods such as leasing, dividend distribution, and property appreciation. At the same time, urban residents with higher education may receive more pensions transferred by the government, which makes them earn more per capita transfer income. However, relatively speaking, higher education has a greater effect on the per capita net operating income and per capita property income of urban residents.

Finally, Table 3 shows that urbanization level, mobility investment of urban residents, per capita GDP, and financial development level increased the Gini coefficient of urban income, although the estimated coefficients of mobility investment of urban residents and financial development level are not significant. The results indicate that improvement of urbanization level and per capita GDP widened the income gap of urban residents, while improvement of mobility investment of urban residents and financial development level did not significantly widen the income gap of urban residents. Table 3 also shows that improvement of health investment of urban residents, minimum wage standard, and industrial structure help to narrow the income gap of urban residents.

4.2. Heterogeneity Analysis by Different Types of Cities

We further explore the possible heterogeneous impact of urban education level and its different levels on the income gap of urban residents in provincial capital cities, prefecture-level cities, and county-level cities. Table 4 shows that as the education level increased by 1 percentage point, the Gini coefficient of urban income in provincial capital cities increased by 0.019 percentage points and in prefecture-level cities and county-level cities decreased by 0.061 percentage points and 0.078 percentage points, respectively. This indicates that the improvement of education level in provincial capital cities widened the income gap of urban residents but reduced the income gap of urban residents in prefecture-level cities and county-level cities. The reason may be that urban education in provincial capital cities increases all four kinds of income but has a greater effect on per capita property income and per capita net operating income. In contrast, urban education in prefecture-level cities and county-level cities increases per capita wage income more than per capita property income but does not significantly improve per capita net operating income and transfer income. It may be that, compared with prefecture-level cities and county-level cities, provincial capital cities have proportionally more capital-intensive industries, high value-added manufacturing industries, and modern service industries. Urban residents in provincial capital cities are more likely to be employed in these industries or more able to engage in production and operation activities in these industries. More educated residents in provincial capital cities also have stronger financial management ability and have more opportunities to earn property income through various investment and financial management methods such as rent, dividend, and property appreciation. They may also have more opportunities to obtain government transferred benefits and pensions. In comparison, the effect of urban education on per capita net operating income and per capita property income is greater in provincial capital cities. While urban education significantly improved per capita wage income and per capita property income in prefecture-level cities and county-level cities, it had no significant effect on per capita net operating income and per capita transfer income in these cities.
Table 4. The impact of urban education level on the income gap of urban residents in different types of cities.

|                     | Provincial Capital Cities | Prefecture-Level Cities | County-Level Cities |
|---------------------|---------------------------|------------------------|--------------------|
|                     | Urban Education Level     | Urban Primary Level    | Urban Secondary Level | Urban Higher Level |
|                     | C                         | lnCs_{t-1}             | lnCe_{1}           | lnCe_{2}           | lnCe_{3}           | lnCe_{4}           | Urban Education Level | Urban Primary Level    | Urban Secondary Level | Urban Higher Level |
|                     | 2.563                     | 0.231 *                | 0.019 **           | −0.012*           | 0.028 **           | control variable   | Yes                 | Yes                 | Yes                 | Yes                 |
|                     | lnCs_{t-1}                | 2.831 *                | 0.225 **           | −0.012*           | 0.028 **           |                     | Yes                 | Yes                 | Yes                 | Yes                 |
|                     | lnCe_{1}                  | 2.094 *                | 0.242 *            | −0.061*           | 0.020 **           |                     | Yes                 | Yes                 | Yes                 | Yes                 |
|                     | lnCe_{2}                  | 3.719 *                | 0.263 **           | −0.061*           | 0.073 *            |                     | Yes                 | Yes                 | Yes                 | Yes                 |
|                     | lnCe_{3}                  | 4.086 *                | 0.217 **           | −0.061*           | 0.073 *            |                     | Yes                 | Yes                 | Yes                 | Yes                 |
|                     | lnCe_{4}                  | 3.012 *                | 0.245              | 0.217 **           | 0.035 *            |                     | Yes                 | Yes                 | Yes                 | Yes                 |
|                     | lnCe_{5}                  | 3.487 **               | 0.304 **           | 0.073 *           | 0.085 *            |                     | Yes                 | Yes                 | Yes                 | Yes                 |
|                     | lnCe_{6}                  | 3.826 **               | 0.248 *            | 0.085 *           |                     |                     | Yes                 | Yes                 | Yes                 | Yes                 |
|                     | lnCe_{7}                  | 2.843 *                | 0.252              | 0.085 *           |                     |                     | Yes                 | Yes                 | Yes                 | Yes                 |
|                     | lnCe_{8}                  | 3.329                  | 0.237 **           | 0.085 *           |                     |                     | Yes                 | Yes                 | Yes                 | Yes                 |
|                     | lnCe_{9}                  | 3.658 *                | 0.259 *            | 0.085 *           |                     |                     | Yes                 | Yes                 | Yes                 | Yes                 |
|                     | lnCe_{10}                 | 2.721                  | 0.259 *            | 0.085 *           |                     |                     | Yes                 | Yes                 | Yes                 | Yes                 |

Note: * and ** indicate that the variable is significant at the level of 10% and 5%, respectively.
Table 4 also shows that a 1 percentage point increase in the primary education level decreased the Gini coefficient of urban income by 0.012 percentage points, 0.036 percentage points, and 0.043 percentage points in the three types of cities, respectively; a 1 percentage point increase in secondary education level increased the Gini coefficient of urban income in provincial capital cities by 0.028 percentage points and decreased the Gini coefficient in prefecture-level cities and county-level cities by 0.073 percentage points and 0.085 percentage points, respectively; a 1 percentage point increase in the higher education level increased the Gini coefficient of urban income by 0.020 percentage points, 0.035 percentage points, and 0.044 percentage points in the three types of cities, respectively. This means that the improvement of primary education level in the three types of cities in Central China will help to narrow the income gap of urban residents, the improvement of higher education level in the three types of cities will widen the income gap of urban residents, and the improvement of secondary education level will increase the income gap in provincial capital cities but will narrow the income gap of urban residents in prefecture-level cities and county-level cities. The reason for the differential impact of secondary education could be that capital- and technology-intensive industries, high value-added manufacturing industries, and modern service industries account for a relatively high proportion of the industrial structure of provincial capital cities, and the urban labor force with secondary education can hardly meet the needs of the above industries. This is unfavorable to the lower-middle-income and low-income groups whose income source is mainly wage income. Meanwhile, in the industrial structure of prefecture-level cities and county-level cities, the proportion of labor-intensive industries, low value-added manufacturing industries, and traditional service industries is relatively high. The urban labor force with secondary education can better meet the needs of the industrial structure and production and operation activities in prefecture-level cities and county-level cities and thus significantly improve the per capita wage income of the two types of urban residents and narrow the income gap of residents in these two types of cities.

4.3. Robustness Test

To test the robustness of the empirical results, we experiment with an alternative measure of the income gap of urban residents: the ratio of the total income of urban residents in the high-income group and the middle- and upper-income group to the total income of residents in the lower-middle-income group and the low-income group. Tables 5 and 6 show that when the control variables are added, the size and significance level of the estimated coefficients of urban education level and its different levels on the income gap of urban residents remained more or less the same. Thus, this study passes the robustness test.

Table 5. Results of robustness test (1).

| Urban Education Level | Urban Primary Education Level | Urban Secondary Education Level | Urban Higher Education Level |
|-----------------------|-----------------------------|--------------------------------|----------------------------|
| C                     | 3.214 ** (0.045)            | 2.903 * (0.081)                | 3.116 (0.123)               |
| lnC_{t−1}             | 0.228 (0.117)               | 0.249 * (0.062)                | 0.217 * (0.064)             |
| lnC_{t}/lnC_{t−1}     | −0.067 * (0.053)            | −0.035 ** (0.040)              | −0.071 * (0.059)            |
| control variable      | Yes                         | Yes                            | Yes                        |
| Wald test             | 1071.367                    | 903.642                        | 995.796                    |
| Sargan test           | 0.239                       | 0.211                          | 0.226                      |
| Arellano-Bond AR (1)  | 0.005                       | 0.004                          | 0.005                      |
| Arellano-Bond AR (2)  | 0.242                       | 0.209                          | 0.213                      |

Note: * and ** indicate that the variable is significant at the level of 10% and 5%, respectively.
|                          | Provincial Capital Cities | Prefecture-Level Cities | County-Level Cities |
|--------------------------|---------------------------|-------------------------|---------------------|
|                          | Urban Education Level     | Urban Primary Education Level | Urban Secondary Education Level | Urban Higher Education Level | Urban Education Level | Urban Primary Education Level | Urban Secondary Education Level | Urban Higher Education Level |
| _C_                     | 2.632 *                   | 2.620 **                 | 1.946 *             | 3.817                | 4.194                | 2.881 **                 | 3.335 *             | 3.927 *             |
| lnCs_{t-1}               | 0.226 *                   | 0.221 *                  | 0.237 *             | 0.278 **             | 0.228 **             | 0.240                | 0.297 *             | 0.224 **             |
| lnCe_1                   | 0.021 **                  |                         |                     |                      |                      |                     |                     |                      |
| lnCe_2                   | −0.013 **                 |                         |                     |                      |                      |                     | −0.039 *             | −0.081 *             |
| lnCe_3                   | 0.029 **                  |                         |                     |                      |                      | −0.074 **            |                     | −0.046 **             |
| lnCe_4                   |                           |                         |                     |                      |                      | 0.038 *              |                      | 0.082 **              |
| control variable         | Yes                       | Yes                     | Yes                 | Yes                  | Yes                  | Yes                 | Yes                 | Yes                  |
| Wald test                | 1022.084                  | 853.038                 | 930.073             | 882.156              | 662.102              | 916.780             | 867.258             | 834.879              |
| Sargan test              | 0.228                     | 0.199                   | 0.211               | 0.204                | 0.155                | 0.213               | 0.201               | 0.183                |
| Arellano-Bond AR (1)     | 0.005                     | 0.004                   | 0.005               | 0.005                | 0.003                | 0.005               | 0.004               | 0.003                |
| Arellano-Bond AR (2)     | 0.212                     | 0.193                   | 0.199               | 0.197                | 0.151                | 0.202               | 0.195               | 0.171                |

Note: * and ** indicate that the variable is significant at the level of 10% and 5%, respectively.
5. Conclusions

The urban education level in Central China has improved significantly, but the income gap of urban residents has not seen significant narrowing. Can we conclude that improving urban education cannot narrow the income gap of urban residents? This paper investigates the impact of urban education level and its different levels on the income gap of urban residents using the system GMM and based on the dynamic panel data of Central China. The main findings are as follows:

First, overall, the improvement of urban education level in Central China helps to narrow the income gap of urban residents. Separately, the improvement of primary education level and secondary education level helps to narrow the income gap of urban residents in Central China, but the improvement of higher education level appears to enlarge the income gap of urban residents. However, with further development of higher education in cities, the income structure of lower-middle-income and low-income groups will be optimized, and over time, higher education in cities will probably narrow the income gap between urban residents.

Second, the impact of education varies by the type of cities. The improvement of education level in provincial capitals widens the income gap of urban residents but narrows the income gap of urban residents in prefecture-level cities and county-level cities. The improvement of primary education level helps to narrow the income gap of urban residents in three types of cities, the improvement of higher education level widens the income gap of urban residents in the three types of cities, and the improvement of secondary education level widens the income gap of urban residents in provincial capital cities but reduces the income gap of urban residents in prefecture-level cities and county-level cities. Similarly, with further development of higher education in the three types of cities and secondary education in provincial capital cities, the income structure of lower-middle-income and low-income groups in cities will also be improved, and it is expected to narrow the income gap of urban residents ultimately.

According to the above empirical results, in order to reduce the income gap of urban residents as soon as possible, Central China needs to vigorously develop urban education. When increasing the investment in urban primary and secondary education, it is necessary to coordinate primary and secondary education resources, improve the income of primary and secondary education teachers, and improve the quality of the two kinds of education to narrow the income gap of urban residents. At the same time, Central China also needs to develop urban higher education. Although that might widen the income gap of urban residents in the short term, development of urban higher education will increase the proportion of property income and net operating income in the total income of lower-middle-income and low-income groups, optimize the income structure of urban residents, and then reduce the income gap of urban residents.

In terms of different types of cities, provincial capital cities need to actively develop primary education, while prefecture-level cities and county-level cities need to actively develop primary education and secondary education to narrow the income gap of urban residents. At the same time, taking the forward-looking approach, cities in Central China in the long term also need to actively develop higher education, and provincial capital cities need to develop secondary education, especially to increase the skill or vocational training of secondary education. Although the development of higher education in the three types of cities and secondary education in provincial capital cities may widen the income gap of urban residents in the short term, it will increase the proportion of property income and net operating income in the total income of lower-middle-income and low-income groups and optimize the income structure of these groups, and then it will be possible to narrow the income gap of urban residents in the long term. Therefore, for the three types of cities in Central China, the following measures can be taken to develop higher education: to make full use of the policy advantages of the rise of Central China, while undertaking the industrial transfer from Eastern China, it is necessary to introduce high-tech industries, including capital- and technology-intensive, high-end manufacturing, and emerging service
industries, according to the situation of the city, so as to improve the employment rate of urban residents in the above-mentioned high-tech industries and then improve the expected rate of return of residents to participate in higher education. At the same time, the three types of cities can provide fee relief and policy subsidies for students from poor urban families to receive higher education, reduce the cost of their participation in higher education, increase policy support for poor urban families in terms of higher education enrollment, and give priority to enrollment under the same conditions. For provincial capital cities, non-high-tech industries in the industrial structure, including labor-intensive low-end manufacturing and traditional service industries, also need a skilled labor force with secondary education. Therefore, it is necessary to improve the expected income of urban residents with secondary education in the corresponding industry, and at the same time, provincial capital cities also need to reduce the cost of secondary education for students from poor urban families and give priority to them under the same conditions when enrolling students so as to develop urban secondary education.

Author Contributions: Conceptualization, D.K. and L.L.; methodology, W.H.; software, W.Y.; validation, D.K., L.L., W.H. and W.Y.; formal analysis, D.K.; resources, L.L.; data curation, W.Y.; writing—original draft preparation, D.K.; writing—review and editing, W.H.; visualization, L.L.; supervision, W.H.; project administration, L.L.; funding acquisition, D.K. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Social Science Foundation of Jiangxi Province, grant number 21JL08D; Philosophy and Social Sciences Foundation of the Ministry of Education, grant number 18JHQ092; Humanities and Social Sciences Foundation of Jiangxi Province, grant number JJ21212; Postgraduate Innovation Special Foundation of Jiangxi Province, grant number YC2021-S809; and Educational Sciences Foundation of Jiangxi Province, grant number 21YB207.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Acknowledgments: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References
1. Young, M.; Hordern, J. Does the vocational curriculum have a future? J. Vocat. Educ. Train. 2020, 74, 1–21. [CrossRef]
2. Alam, G.M.; Forhad, M. Clustering secondary education and the focus on science: Impacts on higher education and the job market in Bangladesh. Comp. Educ. Rev. 2021, 65, 310–331. [CrossRef]
3. Naito, K.; Nishida, K. Multistage public education, voting, and income distribution. J. Econ 2017, 120, 65–78. [CrossRef]
4. Van, G.; Marcella, T. An Econometric Study of the Impact of Education on the Economic Development of Low-Income Countries. MPRA Paper No. 107729. 2021, Volume 5, pp. 1–24. Available online: https://mpra.ub.uni-muenchen.de/107729/1/MPRA_paper_107729.pdf (accessed on 18 May 2021).
5. Mincer, J. Investment in human capital and personal income distribution. J. Political Econ 1958, 66, 281–302. [CrossRef]
6. Schultz, T.W. Investment in human capital. Am. Econ. Rev. 1961, 51, 1–17.
7. Becker, G.S.; Chiswick, B.R. Education and the distribution of earnings. Am. Econ. Rev. 1966, 56, 358–369.
8. Becker, G.S. Human Capital: A Theoretical and Empirical Analysis with Special Reference to Education, 3rd ed.; University of Chicago Press: Chicago, IL, USA, 1993; pp. 1–390.
9. Mussida, C.; Picchio, M. The gender wage gap by education in Italy. J. Econ. Inequal. 2013, 12, 117–147. [CrossRef]
10. Alam, G.M.; Forhad, M. What makes a difference for further advancement of engineers: Socioeconomic background or education programs? High. Educ. 2021, 7, 1–20. [CrossRef]
11. Alam, G.M. Do urbanized socioeconomic background or education programs support engineers for further advancement? Int. J. Educ. Reform 2021, 30, 344–360. [CrossRef]
12. Margison, S. Limitation of human capital theory. Stud. High. Educ. 2017, 44, 287–301. [CrossRef]
13. Chen, B.K.; Zhang, P.F.; Yang, R.D. Government investment in education, human capital investment and China’s urban-rural income gap. Manag. World 2010, 26, 36–43.
14. Yang, X.J. Human capital investment of Chinese farmers and urban-rural income gap: Empirical analysis based on provincial panel data. J. Agrotech. Econ. 2013, 4, 13–25.
Sustainability 2022, 14, 4493

15. Yang, J.; Lai, D.S.; Qiu, M.Y. What kind of education policy can reduce income inequality? Econ. Res. 2015, 50, 86–99.
16. Li, X.Y.; Liu, H.; Chen, Y. Education expansion, education distribution and income gap in China: An empirical analysis based on provincial panel data. Educ. Econ. 2016, 26, 23–28.
17. Zhan, G.H.; Zhang, X.W. External effect of educational services capital on urban-rural income disparity. Financ. Trade Res. 2017, 28, 37–46.
18. Fang, C.; Luo, Y.Z.; Huang, B. Postgraduate education expansion, accumulation of human capital and the income gap of labor force: On the spatial distribution mechanism of income gap. China High. Educ. Res. 2018, 3, 93–98.
19. Yu, X.; Chen, S.K. Will education widen the income gap of the floating population? Educ. Econ. 2019, 35, 30–42.
20. Liao, Y.; Zhang, W. Research on the relationship between public education investment and national income difference. Univ. Educ. Sci. 2019, 5, 58–67, 125.
21. Wang, Y.; Xiong, W.; Lai, D.S. The educational benefits of farmers returning to their hometown and income inequality under the rural revitalization strategy: Based on a comparative analysis. Educ. Res. 2019, 40, 120–138.
22. Guan, H.J.; Li, X.; Tan, Y. Education input, transaction costs and regional income disparities. J. Financ. Econ. 2019, 6, 57–78.
23. Nie, H.F.; Xing, C.B. Education expansion, assortative marriage, and income inequality in China. China Econ. Rev. 2019, 55, 37–51.
24. Zhou, J.; Zhao, W. Contributions of education to inequality of opportunity in income: A counterfactual estimation with data from China. Res. Soc. Strat. Mobil. 2018, 59, 60–70. [CrossRef]
25. Battistón, D.; Cédias, F.D.C.E.; García-Domench, C.; Gasparini, L. Could an increase in education raise income inequality? Evidence for Latin America. Lat. Am. J. Econ. 2014, 51, 1–39. [CrossRef]
26. Khan, M.Z.U.; Rehman, S.; Rehman, C.A. Education and income inequality in Pakistan. Educ. Sci. Theory Pract. 2015, 12, 1860–1866.
27. Celikay, F.; Sengur, M. Education expenditures and income distribution: An empirical analysis on European countries. Humanomics 2016, 32, 248–257. [CrossRef]
28. Hall, J.D. The effects of the quality and quantity of education on income inequality. Econ. Bull. 2018, 38, 2476–2489.
29. Qazi, W.; Razza, S.A.; Jawaid, S.T.; Karim, M.Z.A. Does expanding higher education reduce income inequality in emerging economy? Evidence from Pakistan. Stud. High. Educ. 2016, 43, 338–358. [CrossRef]
30. Shahabadi, A.; Nemati, M.; Hosseinidoust, S.E. The effect of education on income inequality in selected Islamic Countries. Int. J. Asia Pac. Stud. 2018, 14, 61–78. [CrossRef]
31. Coady, D.; Diziolı, A.G. Income inequality and education revisited: Persistence, endogeneity and heterogeneity. Appl. Econ. 2017, 50, 2477–24761. [CrossRef]
32. Arshed, N.; Anwar, A.; Kousar, N.; Bukhari, S. Education enrollment level and income inequality: A case of SAARC economies. Soc. Indic. Res. 2018, 140, 1211–1224. [CrossRef]
33. Lee, J.-W.; Lee, H. Human capital and income inequality. J. Asia Pac. Econ. 2018, 23, 554–583. [CrossRef]
34. Arshed, N.; Anwar, A.; Hassan, M.S.; Bukhari, S. Education stock and its implication for income inequality: The case of Asian economies. Rev. Dev. Econ. 2018, 23, 1050–1066. [CrossRef]
35. Panori, A.; Psycharis, Y. Exploring the links between education and income inequality at the municipal level in Greece. Appl. Spat. Anal. Policy 2017, 12, 101–126. [CrossRef]
36. Alexandersen, N.; Zachrisson, H.D.; Wilhelmsen, T.; Wang, M.V.; Brandlistuen, R.E. Predicting selection into ECEC of higher quality in a universal context: The role of parental education and income. Early Child. Res. Q. 2015, 20, 2747–2761. [CrossRef]
37. a-Domench, C.; Gasparini, L. Could an increase in education raise income inequality? Econ. Bull. 2018, 38, 2476–2489.
38. Qazi, W.; Razza, S.A.; Jawaid, S.T.; Karim, M.Z.A. Does expanding higher education reduce income inequality in emerging economy? Evidence from Pakistan. Stud. High. Educ. 2016, 43, 338–358. [CrossRef]
39. Shahabadi, A.; Nemati, M.; Hosseinidoust, S.E. The effect of education on income inequality in selected Islamic Countries. Int. J. Asia Pac. Stud. 2018, 14, 61–78. [CrossRef]
40. Coady, D.; Diziolı, A.G. Income inequality and education revisited: Persistence, endogeneity and heterogeneity. Appl. Econ. 2017, 50, 2477–24761. [CrossRef]
41. Arshed, N.; Anwar, A.; Kousar, N.; Bukhari, S. Education enrollment level and income inequality: A case of SAARC economies. Soc. Indic. Res. 2018, 140, 1211–1224. [CrossRef]
42. Lee, J.-W.; Lee, H. Human capital and income inequality. J. Asia Pac. Econ. 2018, 23, 554–583. [CrossRef]
43. Arshed, N.; Anwar, A.; Hassan, M.S.; Bukhari, S. Education stock and its implication for income inequality: The case of Asian economies. Rev. Dev. Econ. 2018, 23, 1050–1066. [CrossRef]
44. Panori, A.; Psycharis, Y. Exploring the links between education and income inequality at the municipal level in Greece. Appl. Spat. Anal. Policy 2017, 12, 101–126. [CrossRef]
45. a-Domench, C.; Gasparini, L. Could an increase in education raise income inequality? Econ. Bull. 2018, 38, 2476–2489.
46. Qazi, W.; Razza, S.A.; Jawaid, S.T.; Karim, M.Z.A. Does expanding higher education reduce income inequality in emerging economy? Evidence from Pakistan. Stud. High. Educ. 2016, 43, 338–358. [CrossRef]
47. Shahabadi, A.; Nemati, M.; Hosseinidoust, S.E. The effect of education on income inequality in selected Islamic Countries. Int. J. Asia Pac. Stud. 2018, 14, 61–78. [CrossRef]
49. Fang, C.; Huang, B. The decomposition of educational return and income gap of China’s rural residents: Causal inference based on micro econometrics. *Econ. Surv.* 2019, 36, 49–55.

50. Peng, N.Y. Empirical study on the influence of educational investment on farmers’ incomes in poverty-stricken regions. *Stat. Decis.* 2021, 3, 67–70.

51. Cheng, M.W.; Shi, Q.H.; Jin, Y.H. Incomes level, structure and its causes. *J. Quant. Tech. Econ.* 2014, 31, 3–19.

52. Cui, Y.P.; Wu, Y. The impact of education and training on migrant workers’ income in Suzhou: A reexamination on rate of return of education and training. *Educ. Econ.* 2017, 33, 42–50.

53. Liu, G.Q.; Yang, Z.Q. The impact of differentiated basic education on the income distribution in rural China: An explanation from the perspective of heterogeneity in returns to education. *Educ. Res.* 2019, 40, 69–84.

54. Shi, X.J.; Fang, S.L.; Gao, X.W. Preliminary education, vocational training and migrant workers’ income: Based on the perspective of life cycle. *J. Financ. Econ.* 2021, 1, 153–168.

55. Zhang, Z.Y.; Du, P.; Wang, F. Demographic impact on income inequality: Evidence from Shenzhen and Chongqing. *Popul. Res.* 2012, 36, 78–90.

56. Tian, L.; Zhou, Y.B. A study on the income gap of Chinese urban residents based on the adjustment of education and age structure. *Econ. Perspect.* 2017, 3, 74–85.

57. Li, L.M.; Xu, K. Human capital, social capital and income gap: A quantile regression analysis of Chinese urban residents’ income. *Fudan Educ. Forum* 2017, 15, 83–90.

58. Wang, S.G.; Deng, Y. Property income share, education investment and income gap: An empirical analysis based on the provincial panel data of urban residents in China from 2000 to 2017. *Labor Econ. Rev.* 2020, 2, 1–17.

59. Wu, Q.; Liu, X.; Ding, W.N. Analysis on the heterogeneity impact of education investment on the income level and income gap. *Macroeconomics* 2020, 5, 111–117, 144.

60. Chen, X.D.; Huang, X.F. An analysis of the generation mechanism of opportunity inequality of income distribution urban residents in China: How important is the transmission function of education? *Eduac. Econ.* 2021, 5, 39–48+88.

61. Xing, C.B.; Chen, C.F.; Cao, X.Y. On the rural-urban differences in and the regional distribution of the returns to education: Empirical evidence from the Chinese Household Income Project Survey between 1995 and 2018. *Educ. Res.* 2021, 9, 104–119.

62. Kan, D.X.; Lyu, L.J. The impact of rural education level and its different levels on farmers’ income gap in the Central China. *Chin. J. Agric. Resour. Reg. Plan.* 2020, 8, 220–227.