

Article

Inequality in the Initial Wage of College Graduates at the College-Level Perspective

Yanming Li ^{1,*}, Kangyin Lu ¹ and Kaiyuan Wang ²

¹ School of Economics and Management, Northeast Normal University, Changchun 130117, China; luky440@nenu.edu.cn

² Newark Institute of Rutgers University, Northeast Normal University, Changchun 130117, China; wangky469@nenu.edu.cn

* Correspondence: liym001@nenu.edu.cn; Tel.: +86-135-0445-9069

Abstract: College graduates, as a labor force with high human capital accumulation, have the problem of initial wage inequality, which is worth paying attention to. Based on the collated micro-survey data form “Employment and Entrepreneurship Development Report of Chinese College Graduates”, which contains 339 samples from vocational colleges, 453 from common colleges, and 360 from key colleges, this study empirically analyzed the inequality of college graduates’ initial wages at the college level. We found that the initial wage income level of college graduates is significantly influenced by the college level. The higher the level is, the higher the initial wage. The initial wage of graduates from key colleges is the highest, and the income inequality between them and vocational college graduates is the most significant. Moreover, there are structural differences in the wage premium effect of the college level on college graduates with a change in wage level. In addition, the study found that there is an obvious gender wage difference among college graduates, and political status, academic ranking, and student cadre experience as well as the nature of the workplace all contributed to the formation of wage premiums to a certain extent.

Keywords: college graduates; income inequality; college level; wage premium



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1. Introduction

Since one of the main goals of individuals entering the labor market is to obtain wage income through employment, wage income determines to a large extent the economic status of workers and is also one of the important references reflecting the quality of their employment. The level of human capital accumulation of college graduates is at a relatively high level in the entire labor market, and their employment has always been a central and relevant issue to the whole society. In November 2018, the Ministry of Education of China published the “Notice on Employment and Entrepreneurship of College Graduates”, which clearly points out that promoting the employment and entrepreneurship of college graduates is related to the vital interests of the general public, social harmony and stability, socialist modernization, and the healthy development of higher education [1]. In particular, the employment quality of college graduates is to a certain extent regarded as a weather vane of the labor market and even of the efficiency of economic and social operations. Research regarding the initial wages of college graduates has thus always been of high importance.

In the 21st century, the number of talented people is growing, and training talented people has become an important goal of this era. In order to build a world-class college, the State Council of China approved the establishment of two groups of colleges, named “985 Engineering College” and “211 Engineering College”, respectively. Among them, there are 103 “211 Engineering College”, including only 39 “985 Engineering College”. In addition with some scientific research institutions such as the Chinese Academy of Sciences, the Chinese Academy of Social Sciences, etc., these colleges and scientific research

institutions are the top batch of colleges in China. We also have ordinary colleges and independent colleges, which are funded by ordinary colleges and enterprises, institutions, social organizations, or individuals. Vocational colleges, which focus on training labor skills for the student, are also an important part of the higher-education system in China. To make it easier for readers to understand, Table 1 shows the explanations of different levels of colleges in this study.

Table 1. Explanation and content of the level of college.

Name	Contents
Key college	Including “985 Engineering college”, “211 Engineering college”, and Scientific research institute
Common college	Including ordinary college and independent college
Vocational college	Including colleges that focus on training labor skills such as haircutting or cooking

In the main labor market of college graduates, there are significant differences in initial wage income within the group [2]. The average monthly income of college graduates in 2016 was CNY 3988, according to the 2017 Chinese Undergraduate Employment Report (Blue Book on Employment) released by the MyCOS Research Institute. The average monthly income of 2016 graduates from undergraduate colleges was CNY 4376. The average monthly income of graduates in vocational colleges in 2016 was CNY 3599 [3]. Among undergraduate colleges, the average monthly income of 2016 graduates from 211 engineering colleges were CNY 5691. The average monthly income of 2016 graduates from non-211 engineering colleges was CNY 4201. It can thus be seen that graduates of different undergraduate courses with the same type and length of education had an income gap of nearly CNY 1500 in their initial wage. Education has been regarded as the core of the human capital factor: based on the human capital theory, the higher the level of education, the higher the labor income gained by workers. However, in China’s labor market, there still exists the phenomenon where income inequality arises only from having studied in different colleges, while all other education-related factors are the same.

As equal and full access to employment is a desideratum of the whole society, this study aimed to investigate why there is such an income gap (inequality) in initial wages among college graduates, what factors contribute to this income gap, and how influential these factors are. The analysis is based on survey data, gathered at the middle of 2017. Besides the perception of the factors in equality, we also tried to decompose the mechanism of the inequality and give suggestion for sustainable development for the Chinese labor market.

The rest of the article is organized as follows: Section 2 presents the literature review regarding the influential factors on college graduates’ initial wage; Section 3 describes the data and the methods used in the research; Section 4 presents the statistical analysis and along with the econometric results; Section 5 is dedicated to the main conclusions and suggestions, and the final section refers to the limitations and future research directions.

2. Literature Review

Inequality in the initial wages of college graduates is a hot topic of research until today, and many scholars have carried out more in-depth studies on the basis of previous studies.

The impact on wages of schools and universities at different levels is an important part of related research. The studies of Wales (1973), Solmon and Wachtel (1975), Broecke (2012), and Borgen (2014) have all shown that the characteristics of institutions, especially the quality of institutions, are some of the important factors affecting the income of college graduates. The selected institution can reflect the intelligence and ability of college graduates, and it is an influential reference signal. Even if the content of the graduates’ learning is very weakly related to their employment position, the selected college can also signal information to the employers, who seek to hire college graduates who possess a higher level of intelligence and ability [4–7]. Keng and Lo (2006) researched the starting salaries of

undergraduate and junior college graduates in Taiwan and found that the initial wage of undergraduate graduates was significantly higher than that of junior college graduates [8]. Jason (2012) found through the analysis of empirical data that factors such as college type and college characteristics had a significant impact on the initial wage of undergraduate graduates [9]. Kopeckny and Hillmert (2021) used an application of cross-classified random-effects models to a cohort of the DZHW Graduate Panel showing that there is a considerable amount of wage variation depending on the graduates' alma mater [10]. Because college level is a very difficult concept to define, correlated research results are few. Research on inequality of the initial wage for college graduates has focused more on the following three aspects.

One dimension is other characteristics related to colleges and universities (including the major) and students' life (cadre and internship experiences), etc. Paglin and Rufolo (1990) found that 20% of the gender difference in the average initial wage of college graduates can be explained by the difference in math scores in GRE scores [11]. Chiswick and Miller (2002) found that foreign language proficiency and ability have an important impact on income [12]. Some scholars have promoted the study about the majors. Graham and Gerhart (2000) used 951 graduates who graduated from the same college as a sample and found that the primary factor of the initial wage gap between male and female college graduates was the distribution difference between male and female college graduates in majors. The degree of explanation for this factor was 19–38% [13]. Kent (2010) found through empirical research that gender and undergraduate major not only affected the initial wage level of college graduates but also had a significant impact on the initial wage growth rate in the ten years prior (1998–2008) [14]. Joes and Williams (2020) made an experiment among college graduates and found that subjects' efforts respond strongly to information about others' wages, which has implications concerning the salary gap with their classmates [15]. Cadre and internship experiences are also the important factor that scholars pay attention to. Stanley and Stephenson (1981) used the National Longitudinal Survey of Youth to analyze data and found that work experience during college is positively correlated with salary after graduation [16]. In the research of Debashish, Karthik, and Amol (2001), it was clearly mentioned that the experience of social participation will have a positive impact on employment ability and initial wage [17]. Hakkinen's (2004) research used personal panel data from Finnish colleges from 1987 to 1998 in its analysis. The OLS regression results showed that college graduates' work experience at college is positively correlated with their future income and employment rate. Using the local unemployment rate as an instrumental variable of work experience to correct the endogeneity, it was found that work experience can effectively increase the work income one year after graduation, but this positive effect will decline at a later time [18]. Dougherty (2005) used workers with different years of education as the research object and found that there is, to a certain degree, an inverse relationship between the length of education and the discrimination coefficient. In addition, part-time internships during the college period have a significant impact on the initial wage [19]. Titus (2010), after controlling for factors such as student characteristics, family background, college performance, major, and regional labor market, still found that there is a positive correlation between the weekly working hours of third-year students in four-year colleges and their annual income after graduation [20]. However, some scholars also put forward different opinions, such as Guo (2014), who used Tsinghua University's sample survey data of Chinese college graduates to investigate the impact of various forms of on-campus work experience, such as part-time work and internship on the initial wage of graduates. According to the OLS, the length and density of part-time participation and input had a significant positive effect on the initial wage, while the internship investment had a significant negative effect on the initial wage. The study interpreted this phenomenon as a possible internship investment: many graduates are less competitive in the labor market and thus want to improve their competitiveness through internships. After rectifying the endogenous problem through quasi-experimental design

methods such as instrumental variables, the research results showed that the three types of work have no significant impact on the initial wage of graduates [21].

Features of the profession also influence the initial wage of college graduates. Gerhart (1990) used a sample of employees in a large private company in the United States from 1976 to 1986 and found that 43% of the starting salary gap between male and female college students can be explained by professional differences [22]. The research of Rumberger and Thomas (1993) showed that among the same educated groups, there are differences in educational returns, and the sources of differences include differences in college students' professional choices, differences in school quality, and differences in school performance [23]. Joy (2003) used the Blinder–Oaxaca decomposition method to find that the unexplainable part of the gender wage difference of American college graduates is as high as 75%, indicating that there are other effects. A large amount of literature shows that the gender difference in the initial wage of graduates is mostly determined by the graduate's professional choice [24]. Machin and Puhani (2003) similarly showed that professional factors have an extremely important impact on the wage gap of college graduates. For German and British college graduates, it was found that the difference in majors can explain 20% of the gender wage gap in the UK and 26–35% of the gender wage gap in Germany [25]. Liu, Zhang, and Chong (2004) used the survey data of Hong Kong, China as the research object and analyzed the impact of occupational segmentation on wage income differences [26]. Triventi (2013) used the monthly initial wage of college graduates in 11 European countries as the dependent variable, adopted the Blinder–Oaxaca wage difference decomposition method to test the degree of gender discrimination, adding factors such as human capital and job characteristics to the measurement model, and found that job characteristics include influencing factors such as job type, occupation, position, and department [27]. This also extends the research on the matching of academic use with the occupation. For example, Rafferty (2012) studied the impact of matching academic use on the salary level of college graduates in European countries. In the measurement model, factors such as personal characteristics and job characteristics were added as control variables. The job characteristics included variables such as job position, occupation, and industry type [28]. Grubb's (1997) research found that regardless of bachelor's degree or associate degree, male or female, generally speaking, those who were matched with academic use had higher monetary benefits of education than those who did not match with academic use [29]. However, some studies show that the matching of learning and use does not have a significant impact on the initial wage. For example, Miller and Volker (1984) examined the initial wage of Australian science and economics graduates and found whether the occupation is related to economics and the initial wage. There is no significant relationship between salaries [30].

Another important factor affecting the initial wage of graduates is personal characteristics, including the family background and the important gender dimension. In terms of the influence of family background on the initial wage of college graduates, Magruder's (2010) survey of young South Africans found that during the job-hunting process, fathers provide children with useful social network connections to lead their children into their industry. The social-network connection resources provided by fathers can increase the probability of their sons being hired [31]. Checchi, Ichino, and Rustichini (2014) conducted a comparative study on the intergenerational mobility of occupation types, work income, and educational level in the United States and Italy, and the results confirmed family background as an important factor that affects the employment results and income level of the labor market [32]. There are significant gender differences in the initial wage of college graduates, and this phenomenon has also been captured by many other scholars. The study of Belzil & Hansen (2002) showed that the wage gap between male and female college graduates in the United States fluctuated drastically in the 20th century. It showed a downward trend from 1914 to 1940 and an upward trend from 1950 to 1995. Moreover, the increase in wage inequality and the rate of workers return to education have increased hand in hand [33]. Dey and Hill's (2007) survey found that for American college graduates

with a bachelor's degree in the early 21st century, a year after graduation, the average monthly salary of women working in administrative positions can reach 93% of men's. Of course, the difference in the initial wage of graduates is not entirely due to gender [34]. Fan and Sturman (2019) found that despite the hope that greater representation of women with higher degrees would reduce or eliminate the gender wage gap for new entrants to the labor market, their research results show that newly graduated men with an associate, bachelor's, or master's degree still earn significantly higher wages than newly graduated women with the same degree [35].

Additionally, some scholars interpret the initial wage variance from the perspective of policy. Glauser, Zangger, and Becker (2019) found that the initial wage difference between bachelor's and master's graduates will become less volatile over time, since employers constantly update their beliefs about graduates' employability [36]. Trennt and Euler (2019) found that, in the private sector, where wage development mechanisms vary, individual performance indicators play a much greater role in the wage returns of non-phd graduates, whereas among staff, control of senior positions is the most-important factor [37]. Ma (2019) used samples in China and drew the conclusion that the higher-education expansion policy does not affect the wage level of young college graduates. The difference in the policy impact on wage by various wage percentiles is small, and the negative effect disappears in the long term [38]. Hailemariam, Sakutukwa, and Dzhumashev (2020) found that income inequality responds negatively to positive innovation shocks among college graduates initially, but this effect becomes positive with some time lag for top-income inequality [39].

From the above literature analysis, we can see that studies that take the college level as the core variable are few. On the one hand, at the college level, it is difficult to reach a consensus. On the other hand, compared with China, the number of colleges and the running characteristics of a college make a significant difference. Taking the Chinese higher-education system into research, the research on income inequality with different college levels has especially important social and theoretical implications.

3. Data and Methods

Based on previous studies, the authors found that most of the current research on the impact of the level of colleges on graduates' salary income used the level of colleges as an explanatory variable in the process of overall research on human-capital factors or as control variables to produce the effect of the results, leading the research conclusions to be relatively simple. These studies seldom take the institutional level as the main research variable to carry out analysis and especially the empirical research. However, the level of research institutions has very important implications for the formulation of higher-education policies, employment policies, and income-distribution policies for college graduates. According to the hierarchy of colleges in China, there are mainly 985 engineering colleges and 211 engineering colleges, scientific research institutes, common colleges, independent colleges, and vocational colleges. Different levels of running a college represent different financial investments and even completely different social influences and statuses. Therefore, discussing the issue of college graduates' initial wage premium from the perspective of colleges may be more instructive for the promotion of education equity and the improvement in college graduates' employment security and other related issues.

The empirical research data in this article comes from a questionnaire survey carried out by the Ministry of Education's "Report on Employment and Entrepreneurship Development of Chinese College Graduates" undertaken by the Employment and Entrepreneurship Education Research Institute of Northeast Normal University. A survey of 2016 graduates of 985 engineering colleges and 211 engineering colleges, scientific research institutes, ordinary colleges, independent colleges, and vocational colleges in 29 provinces in China was carried out, and 6282 valid samples were finally obtained. To carry out this research, the authors carried out a second screening of the valid data, excluding all the samples of postgraduates, overseas students, and unemployed students, and finally obtained 1152 samples related to this research.

Based on the classic Mincer wage equation, this study attempted to construct two semi-logarithmic wage-determination equations to examine the impact of college level on the initial wage of college graduates. The first equation uses college level as a categorical variable to perform a full sample regression. The second equation decomposes the college level into two dummy variables for regression, as follows:

$$\ln \text{wage} = \alpha + \beta \text{university} + \gamma_1 \text{gender} + \gamma_2 \text{party} + \gamma_3 \text{rank} + \gamma_4 \text{leader} + \gamma_5 \text{workplace} + \gamma_6 \text{company} + \varepsilon \quad (1)$$

$$\ln \text{wage} = \alpha + \beta_1 u_1 + \beta_2 u_2 + \gamma_1 \text{gender} + \gamma_2 \text{party} + \gamma_3 \text{rank} + \gamma_4 \text{leader} + \gamma_5 \text{workplace} + \gamma_6 \text{company} + \varepsilon \quad (2)$$

Here is a comparison of variable names used in all models in Table 2.

Table 2. Explanation and content of model variables.

Name	Contents
Ln wage	Annual salary for a contract job
College	College-level classification variables
u_1	College-level dummy variable, graduated from common college: $U_1 = 1$; from vocational college: $U_1 = 0$
u_2	College-level dummy variables, graduated from key college: $U_2 = 1$; from vocational college: $U_2 = 0$
Gender	Male: 1; female: 0
Party	Party member: 1; otherwise: 0
Rank	Rank = 4 if you rank in the top 5% of your class; rank = 3 for the top 10%; rank = 2 for the first 30%; rank = 1; otherwise, rank = 0
Leader	As a student cadre: 1; otherwise: 0
Workplace	Workplace = 2 if the workplace is a provincial capital city or municipality directly under the Central Government; non-provincial cities, workplace = 1; township or rural, workplace = 0
Company	If the contracted unit is a unit within the system (public institutions, state-owned enterprises, and party and government organizations) or a foreign-funded enterprise, then company = 1; for enterprises outside the system (including entrepreneurship), company = 0

According to the constructed empirical measurement model, we conducted descriptive statistical analysis on the 1152 empirical research samples finally obtained. Figure 1 analyzes the core density of the explanatory variable logarithmic salary. We found that the logarithmic-salary core-density curve presents an approximately normal distribution pattern, indicating that the quality of the research data is good and that it meets the basic theoretical requirements of statistical regression analysis. The tail on the right reflects the fact that college graduates have high incomes. By grouping the research samples according to the level of their graduated colleges, classifying and counting the average annual wage of contracted jobs of college graduates (see Figure 2), it can be seen that there are obvious differences in the salaries of college graduates from different levels of colleges. The average annual salary of contracted jobs for key college graduates is the highest, at CNY 73,878; the average annual salary of regular college graduates is second, at CNY 55,717; the contracted annual salary of vocational college graduates is the lowest, at CNY 48,534. This is also consistent with the data-analysis conclusions presented in the report of the MyCOS Research Institute, which intuitively reflects that the higher the level of the institution, the higher the initial average wage level of college graduates.

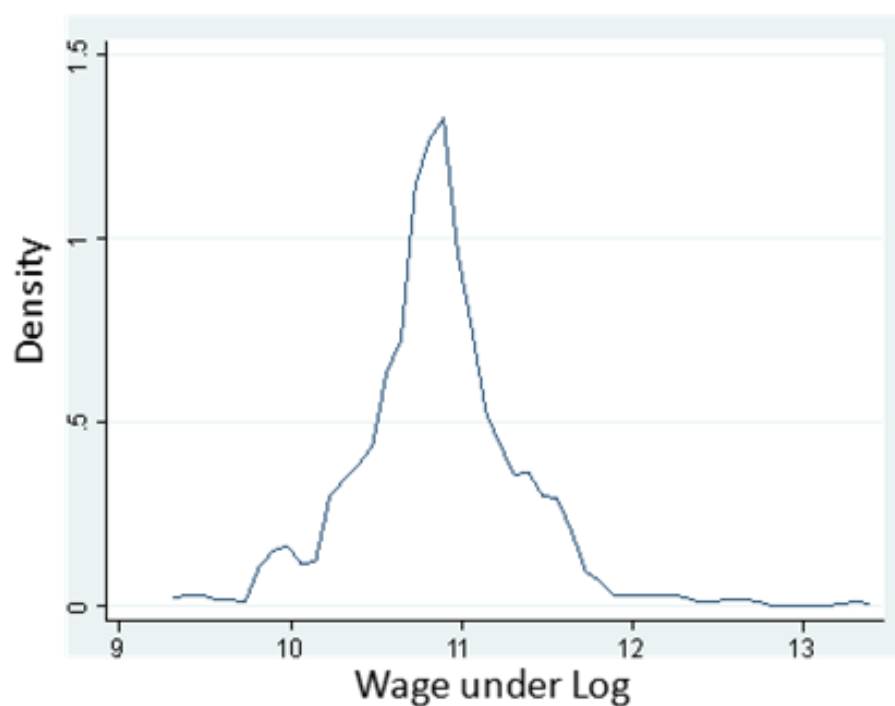


Figure 1. Kernel density curve of sample logarithm wage.

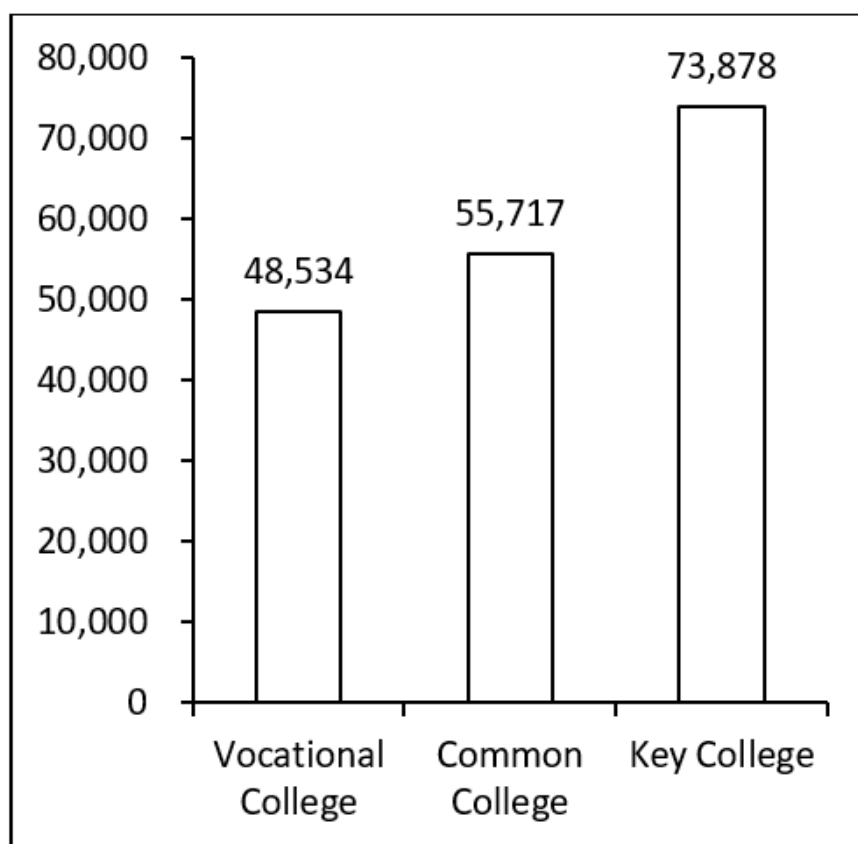


Figure 2. The average annual income, in CNY, of the college level sample.

We first conducted cross-descriptive statistics on each explanatory variable and the level of institutions (as shown in Table 3). From the perspective of gender, the sample was relatively evenly distributed at each college level. The proportion of female samples in

ordinary colleges was relative to that of males. From the perspective of politics, there were more non-party members than party members at all levels of colleges, which is consistent with the general distribution in society. As is known, colleges have strict organizational procedures and inspection requirements for the development of student party members and have clear standards and operating norms in terms of training time, selection, etc. Therefore, it is easier for student party members to obtain a human-capital premium while job-hunting. In the sample data, key colleges had the most party members, followed by ordinary colleges, and vocational colleges had the least party members. This number distribution is also consistent with the basic structure of the development of party members among college graduates in China; from the perspective of ranking, the number of college graduates in the top 10% and 30% is the largest, and the sample in the bottom 50% is the smallest. As the sample data consist of college graduates who have signed employment, it can also be explained, to a certain extent, regardless of the level of the institution. For college graduates, the better the grades, the easier it is to find a job and achieve an employment contract. Finally, through statistical analysis of the sample data regarding whether they served as student leaders during their studies, we found that in all levels of colleges, there are relatively more people who have served as student leaders in the group of college graduates who have completed work contracts, which shows that serving as student leaders helps college graduates achieve signed job contracts. This may be because, from the perspective of employers, serving as a student cadre represents stronger interpersonal skills and organization and coordination capabilities, thus making it easier to enter professional roles and adapt to the professional environment more quickly.

Table 3. Variables classified and measured by college level.

Variable	Variable Categories	Vocational College		Common College		Key College		Total	
		Frequency	Proportion	Frequency	Proportion	Frequency	Proportion	Frequency	Proportion
Gender	Male	177	31.2%	199	35.1%	191	33.7%	567	49.2%
	Female	162	27.7%	254	43.4%	169	28.9%	585	50.8%
Politics Status	Party member	53	17.0%	115	36.9%	144	46.2%	312	27.1%
	Non-party member	286	34.0%	338	40.2%	216	25.7%	840	72.9%
Score Ranking	Top 5%	57	27.4%	83	39.9%	68	32.7%	208	18.1%
	Top 10%	134	32.9%	164	40.3%	109	26.8%	407	35.3%
	Top 30%	93	28.0%	136	41.0%	103	31.0%	332	28.8%
	Top 50%	40	29.2%	49	35.8%	48	35.0%	137	11.9%
	Bottom 50%	15	22.1%	21	30.9%	32	47.1%	68	5.9%
Whether Student Leader	Yes	188	26.5%	287	40.5%	234	33.0%	709	61.5%
	No	151	34.1%	166	37.5%	126	28.4%	443	38.5%
Work Place	Provincial capital city	136	21.6%	242	38.4%	252	40.0%	630	54.7%
	Non-provincial capital city	150	36.9%	166	40.8%	91	22.4%	407	35.3%
	Township/rural area	53	46.1%	45	39.1%	17	14.8%	115	10%
Nature of Unit	In-system unit	145	23.4%	245	39.5%	230	37.1%	620	53.8%
	Out-system unit	194	36.5%	208	39.1%	130	24.4%	532	46.2%

We also divided the locations of the contracting units of the college graduates in the sample into provincial capital cities, non-provincial capital cities, and townships/rural areas. The statistics show that the employment locations of college graduates at any level of colleges are mainly concentrated in provincial capital cities, judging from the horizontal comparison of colleges, the higher the level of colleges and the greater the proportion of college graduates working in provincial capitals or municipalities. This also shows that college graduates from higher-level colleges are more likely to work for provincial capitals or municipalities directly under the Central Government, and it also reflects that

the rich social resources and greater development of these cities are more attractive to college graduates. Finally, we divided college graduates into two types according to the nature of their employment units: within the system and outside the system. It can be found that there are differences in the employment flow of college graduates from different levels of colleges. It can be seen that college graduates place more value in the professional ideal of “learning and excellence” and favor internationalization, high salaries, and wide-field employment opportunities, while graduates of vocational colleges work more outside the system.

4. Results

To investigate the impact of college level on the initial wage of college graduates, we first used the least-squares method (OLS) to regress all samples. The regression results of Equations (1) and (2) are shown in Table 4. First of all, from the regression results of the categorical variables at the college level (Equation (1)), the regression coefficient of the college-level variables was 0.162, which is significantly positive at the 1% significance level. This shows that the higher the college level, the higher initial wage of college graduates. From other factors, the regression coefficient of the gender variable is significantly positive, indicating that the initial wage of male college graduates is higher than that of female college graduates, which means that there is still gender wage variance in high human-capital groups; the regression results of political outlook show that if college graduates are party members, their initial wage will be about 8% higher than that of non-party college graduates; the regression coefficient of score ranking was significantly positive, which is consistent with the descriptive statistical results, indicating that the better the college graduates perform, the higher the initial wage of the graduates will be; if a college graduate has served as a student cadre during the period, his/her initial wage will be about 6% higher than that of other college graduates, and the regression coefficient of the location nature variable of the contracting unit of the college graduate is significantly positive at the 1% level, indicating that the wages earned by college graduates working in provincial capital cities are higher than those in non-provincial capital cities, while college graduates working in townships/rural areas have the lowest initial wages, which may be due to the economic development level of the workplace and the impact on the local labor market wage level. It is worth noting that the regression results of the nature of the contracted units of college graduates are not significant. This may be because some of the college graduates who work in units outside the system choose to start their businesses or enter a job. In addition, graduates employed by domestic private-listed companies and industry giants, such as Huawei, Tencent, and other large companies, earn a higher income than some college graduates working within the system or foreign-funded enterprises. We can intuitively see from the above analysis that the initial wage premium of college graduates' stems from the combined effect of the abovementioned related variables.

In order to further examine the differences in the impact of different college levels on the initial wage of college graduates, we processed the college-level variables as dummy variables and then performed a regression analysis (Equation (2)). From the regression results, for the ordinary or independent college dummy variables, the regression coefficient of 0.079 was significant at the 5% level, indicating that compared with vocational colleges, the initial wage of college graduates from common colleges was 7.9% higher ($e^{0.079}-1$). The regression coefficient of the college dummy variable was 0.323, which is significant at the 1% level, indicating that the initial wage was 32.3% higher than that of college graduates from vocational college. The difference in the impact of college level on the initial wage of college graduates is reflected more in the difference between key colleges and common colleges. The regression results of other variables are consistent with the regression results of Equation (1). From a gender perspective, men have a salary advantage. Party members, outstanding grades, student cadre experience, and college graduates working in provincial capitals are more likely to obtain a high-level initial wage.

Table 4. Full-sample regression results of income determination of college graduates.

Variable	Equation (1)	Equation (2)
College level	0.162 *** (0.018)	
Common college		0.079 ** (0.032)
Key college		0.323 *** (0.035)
Gender	0.114 *** (0.026)	0.107 *** (0.026)
Politics status	0.082 ** (0.032)	0.078 ** (0.032)
Score ranking	0.028 ** (0.012)	0.029 ** (0.012)
Whether was a student leader	0.056 ** (0.028)	0.058 ** (0.028)
Workplace	0.064 *** (0.021)	0.063 *** (0.021)
Nature of unit	0.018 (0.028)	0.019 (0.028)
Constant term	10.411 *** (0.049)	10.445 *** (0.050)
F	25.22 ***	23.41 ***
Adjusted R square	0.128	0.135
Sample size	1152	1152

Note: Standard error in brackets ***, **, represent significance at the 1%, 5%, levels, respectively.

Based on regression model 1 (Equation (1)), we analyzed and investigated the contribution of each variable to the initial wage premium of college graduates by using the Sharpley value decomposition method. The decomposition results are shown in Table 5. From the decomposition results, it can be seen that the contribution of the college level of the college graduates to the wage variance within the group of college graduates was as high as 57.98%, which was much higher than all other variables. This shows that the college level has a premium on the wages of college graduates. The degree of explanation was very high; in addition, the contribution of the location of the contracting unit of college graduates to the wage variance of college graduates was 11.65%, indicating that the high level of social and economic development in the employment city will produce a wage premium; gender factors also have a higher impact on the wage variance of college graduates, at 10.29%, which means that the most-significant gender wage variance in the labor market still exists among college graduates with a high level of human capital accumulation; the political outlook of college graduates will have a wage premium at 10.2%, which confirmed that party member status in the Chinese labor market will promote the emergence of wage-premium effects; the contribution of the performance score ranking, student cadre experience, and the unit nature to the wage variance of college graduates were 2.77%, 4.7%, and 2.41%, respectively, indicating that these three factors have a relatively small impact on the wage premium of college graduates.

Table 5. Decomposition of Shapley value based on regression Equation (1).

Variable	Shapley Value	Proportion
College level	0.078	57.98%
Gender	0.014	10.29%
Political status	0.014	10.20%
Score ranking	0.004	2.77%
Whether was a student leader	0.006	4.70%
Workplace	0.016	11.65%
Nature of unit	0.003	2.41%
Total	0.134	100.00%

We further regressed the research samples into groups according to the type of college and investigated the influence of each influencing factor on the wages of college graduate groups at different college levels. From the regression results in Table 6, the regression coefficients of gender factors in the three types of colleges were significantly positive. The comparison of the coefficients shows that the gender wage variance in key colleges is the largest, followed by ordinary colleges and vocational college graduates. This means that in higher-level colleges, female college graduates and male college graduates have a greater initial wage variance. The political profile factor is only significant in the group of college graduates graduating from key colleges. This may be due to the relatively small number of party members in non-key colleges, and college graduates in non-key colleges are more inclined to start their own businesses and engage in work outside the system. The regression coefficients of performance-score-ranking factors in the group regression were not significant, indicating that in the same level of college graduates, the performance ranking had almost no effect on their initial wage. The regression coefficient of whether or not they were student cadres during the college was not significant in the regression of the sample of graduates from vocational colleges, but the regression result in the sample of graduates from ordinary colleges and key colleges was significantly positive, and the regression coefficient of the sample from key colleges was higher. This also reflects from the aspect that because vocational colleges focus on the training of skilled talents, their graduates are also engaged in more-skilled jobs in their employment. Comprehensive capabilities, such as organization and coordination capabilities, were not of high importance. The variable of the nature of the workplace was only significant in the regression of the sample group of common college graduates, indicating that there was no obvious regional difference in the initial wage level of college graduates between the key colleges and vocational colleges. The reason may be that vocational colleges have signed cooperative training agreements with enterprises, and the situation of targeted employment of graduates is common, so the place of work has almost no effect on the initial wage. For key colleges, their graduates have a greater proportion of employment in developed cities, so the impact of the workplace on wages is also minimal, while for common colleges, their student employment space is more scattered, so being employed in areas with higher levels of economic development may lead to wage-premium effects. The regression results of unit nature variables were not significant in vocational-college sample groups, which reflects that such sample jobs are professionally oriented and that the work is homogenized. These results are significantly positive in the regression of the sample group of common colleges and significantly negative in the regression of the sample group of key colleges, indicating that if college graduates in common colleges work within the system, their wages will be higher than those outside the system. While college graduates from key colleges work outside the system to create wage premiums. This can be explained by the fact that under the environment where China strongly encourages entrepreneurship, during the period of studying in key colleges, more national support for college graduates can be obtained. Funding support for innovation and entrepreneurship competitions, participating in the college's industry-college research integration project, etc. give graduates an advantage if they choose to start a business after graduation, as they

have a certain preliminary foundation and are more likely to succeed in starting a business, thereby generating good economic benefits.

Table 6. Sample regression results grouped by college level.

Variable	Vocational College	Common College	Key College
Gender	0.082 * (0.044)	0.110 ** (0.043)	0.121 ** (0.051)
Political status	0.079 (0.061)	−0.066 (0.049)	0.221 *** (0.055)
Score ranking	0.020 (0.021)	0.028 (0.020)	0.034 (0.022)
Whether was a student leader	−0.041 (0.045)	0.102 ** (0.044)	0.115 ** (0.056)
Workplace	−0.007 (0.033)	0.103 *** (0.032)	0.073 (0.046)
Nature of unit	0.075 (0.046)	0.072 * (0.043)	−0.102 * (0.054)
Constant term	10.598 *** (0.075)	10.447 *** (0.077)	10.714 *** (0.098)
F	1.66 ***	5.26 ***	7.02 ***
Adjusted R square	0.029	0.066	0.107
sample size	339	453	360

Note: Standard error in brackets ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

5. Conclusions and Suggestions

This study had the purposes to investigate the key factors influencing the initial wage of college graduates and to validate the inequality of the initial wage led by the college level in the college-graduates group. The research results can be useful for improving the quality of employment of college graduates and also the sustainable development of the Chinese labor market.

5.1. Conclusions

This study used the micro-survey data of the “Report on the Employment and Entrepreneurship Development of Chinese College Graduates” to empirically study the effect of the wage premium of college graduates on the level of institutions, finding that the higher the college level is, the higher the initial wages also are and that there is an obvious gender wage difference among college graduates, and political status, academic ranking, and student cadre experience, as well as the nature of the workplace contributed to the formation of wage premiums to a certain extent. The results confirm the previous studies from Borgen (2014) [7], Jason (2012) [9], Kopečný and Hillmert (2021) [10], Titus (2010) [20], Rafferty (2012) [28], and Fan and Sturman (2019) [35]. We drew the conclusions from three aspects as follow:

Firstly, at the individual level of college graduates, factors such as gender, political status, score ranking, and student cadre experience will affect the initial wage level of college graduates to varying degrees. The specific performance is as follows: there are still obvious gender wage differences within the group of college graduates. Male college graduates are more likely to obtain higher wages than female college graduates, and this gender wage difference is the most obvious in key colleges. Party membership helps college graduates obtain high-paying jobs, and this is more clearly reflected in the group of college graduates from key colleges. The higher the score ranking of college graduates, the higher the initial wage, which reflects the wage-premium effect of the quality of human capital. The experience of student cadres during their studies helps college graduates obtain a higher wage, which reflects the wage premium generated by personal abilities other than learning. Secondly, the college level has a significant positive impact on the initial wage of college graduates, and the college level promotes a significant wage-premium effect in the group of college graduates. Compared with non-key colleges, graduating from key

colleges will help college graduates obtain significantly higher wage premiums, and it is the variable that contributes most to wage premiums. Finally, the workplace and its nature and the impact of the location of the workplace on the wage level of college graduates reflect the effect of the regional economic development level on the return of human capital. The nature of the contracted unit has no significant impact on the overall wages of college graduates, while the impact of the nature on the wages differs among different college groups. This is mainly due to the groups outside the system, including self-employed college graduates whose high income will weaken the influence of the nature of work on the wages of college graduates in the measurement.

This study enriches the knowledge development in the field of initial wage inequality of college graduates. It reveals that the college level is the most-dominant factor that leads to wage premiums in China. Moreover, this study also makes a move in a new direction for research within the area of wage premiums and inequality of college graduates in China by showing that college level is the most-significant factor on college graduates' initial wage. And this is an important feature suggesting that the Chinese labor market is different from other countries.

5.2. Suggestions

The importance of scientific research is to promote the development of knowledge and social progress. For the development and improvement of Chinese labor market, this study is of some social significance. From the above research conclusions, it is not difficult to see that, even in the elite social group, which is regarded as having a relatively high level of human capital, college graduates still face problems such as inequality of opportunities, large income gaps, and even gender discrimination in the process of employment. Therefore, the social implications of this study are to promote fair and orderly competition in employment and improve the quality of employment of college graduates and to provide evidence and a theoretical basis that help the government, colleges, and college graduates to make scientific decisions and practice together.

Combined with the results of the empirical research in this study, we believe that the following aspects can be guided and adjusted. First, at the individual level of college graduates, one should solidly complete major studies, cultivate a sense of lifelong learning and focus on strengthening the training of professional capabilities, and on this basis, participate in social practices and services extensively, thereby improving social skills, accumulating human and social capital value, and continuously increasing one's employment prospects. Second, at the college level, on the one hand, we must strengthen the cultivation of college graduates' academic ability, and on the other hand, we must pay attention to the guidance of college graduates' employment and entrepreneurial ability. Necessary actions include combining the employment data of employed college graduates, actively analyzing the employment trends and employment requirements of various industries in the market, and strengthening college–enterprise cooperation, college–government cooperation, and resource sharing to create an open and dynamic employment practice platform for college graduates. Third, at the labor-market level, we must emphasize the comprehensive consideration of the overall quality and professional abilities of college graduates and eliminate practices such as “one size fits all,” which leads to the exclusion of specific college graduates from jobs. In terms of salary levels, it is possible to implement market-based income pricing mechanisms that are consistent with the initial wage and are subsequently linked to performance appraisal. Fourth, in terms of policy formulation, it is necessary to further improve the pertinence and effectiveness of the employment policy for college graduates, to guide the whole society to form a joint force, and to solve the problems of employment discrimination and unequal employment opportunities faced by colleges, effectively reducing the waste and unbalanced allocation of human capital and maximizing the labor value embodiment of college graduates' employment.

Of course, we should also rationally acknowledge that the difference in the level of college graduates attending colleges is mainly caused by the college entrance examination.

As the most-important selection system in China, the college entrance examination has advantages in terms of fairness in selection and other aspects, making it difficult for it to be completely replaced in the short term. The scores of the college entrance examination can reflect, to a large extent, the learning ability of the students at that time. The high income of college graduates who have received higher education at higher institutions is also a predictable result of the further accumulation of human capital. Under such realistic conditions, to meet the requirements for development prospects, income levels, and welfare guarantees, students will study harder, attend high-level colleges, and find employment in economically developed cities. College graduates are an important part of the labor market, as well as indispensable human resources for regional economic development; therefore, if we pursue comprehensive, balanced, and sustainable development for the whole country, there is still room for further optimization of the spatial layout of China's higher education.

6. Limitations and Future Research

This study has two limitations that need to be paid attention to. Firstly, the data used in this study were cross-section data; the conclusion and the enlightenment of the research can only exhibit the time-point information. Therefore, future studies need to look for high-quality panel data, which can help to focus on the dynamic changes of the inequality in initial wage of college graduates. Secondly, this study focused on factors that impact on the initial wage and consider them as dominate elements. However, there is lack of investigating the consistent fact that the human capital of workers can have higher returns not only through differences in the initial wages, but also in the subsequent progress in the careers. Future studies may consider how the career development and personal effort can eliminate the inequality of the initial wage.

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