

Analysis of Model Construction for the Factors of Income Gap among Teachers in Vocational Colleges in Zhejiang Province under the Background of Common Prosperity

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Abstract: At present, with the rapid development of China's social economy and the proposed policy of common prosperity, the problem of teachers' income gap has attracted increasing attention. Especially in the field of higher vocational education, the problem of teachers' income gap is not only related to the quality of teachers' life, but also affects the quality of education and social equity. This paper focuses on the current situation of teachers' income in Zhejiang Province under the background of common prosperity, probes into six key factors affecting income, and puts forward four specific adjustment measures. The results of the two groups of questionnaires are as follows: In the analysis and research on the factors of teacher income gap, internal factors are more critical than external factors, and the comprehensive score of the proposed adjustment measures for income gap is about 93.4 points, which can be regarded as effective. The results of this model can guide the government and relevant departments to adjust the salary structure of teachers, promote the fair distribution of educational resources, and then promote the common prosperity of the whole society.

Keywords: Common Prosperity, Vocational College Teachers, Income Gap Problem, Model Construction

1. Introduction

With the rapid development of China's economy and the implementation of the policy of common prosperity, it is more important to pay attention to the income gap in the field of education. As an important part of the education system, the income gap of teachers in higher vocational colleges directly affects the quality of education and social equity. Especially in the economically developed Zhejiang Province, this problem is worth further study.

This paper first discusses the status quo of teachers' income in vocational colleges in Zhejiang Province under the background of common prosperity, including basic salary, bonus, allowance, etc., and compares the income differences of teachers in different colleges, disciplines and professional titles with the help of investigation cases. Next, this paper discusses the various factors that affect teachers' income, and puts forward four internal factors (educational background, title level, scientific research achievements, work experience) and two external factors (institution and subject field) that lead to the income gap of teachers in higher vocational colleges. Then this paper analyzes and establishes the base salary model, bonus and allowance model, total income model and income difference model. Finally, this paper gives some measures to adjust the income gap by improving the wage level of the low-income group, optimizing the income distribution structure, improving the education and training opportunities, and strengthening the social security system, and proves the effectiveness of the method proposed in this paper according to the questionnaire experiment.

2. Related Works

The construction of factor analysis model of teachers' income gap in higher vocational colleges has an important impact on the long-term sustainable development in the field of education. Chen Dandan found that many elements such as projects, papers, awards and books played an important role in the

income distribution of college teachers, and constructed a form of hierarchical sequence under the guidance of certain rules to determine the ways and gaps affecting the income distribution of teachers [1]. Hu Yongmei analyzed the salary gap between ordinary young teachers and "hat" talents by using the large-scale survey data of teachers' salaries in some universities, and explored the sources and influencing factors of the salary gap between the two types of teachers by using Oaxaca-Blinder decomposition and unconditional quantile regression decomposition [2]. Sha Suhui applied Kernel density estimation and Markov chain analysis methods to analyze in detail the status and evolution trend of regional income difference of preschool teachers' salaries in China from 2010 to 2017 from the perspective of time and space, and the results showed that the salary level of preschool teachers kept increasing, but the salary level among regions tended to be solidified [3]. In another work, Hu Yongmei made use of part of the large-scale survey data of college teachers' salary and analyzed the three factors of individual, discipline and system in the decision of college teachers' salary. She found that there was a high degree of difference between seniority allowance and year-end incentive performance salary of college teachers, and the increase of basic salary and allowance share could reduce the difference of teachers' total annual salary [4].

These methods all put forward the common problems of teachers' income gap and give some countermeasures and suggestions, but lack of concrete experimental results. Therefore, through investigation and questionnaire survey, this paper collects the actual problems of teachers' income gap in higher vocational colleges in Zhejiang Province and analyzes and discusses the countermeasures [5-6]. Finally, this paper puts forward feasible solutions and adjustment measures to optimize the income distribution structure to achieve common prosperity.

3. Methods

3.1 Analysis of Teachers' Income Status in Zhejiang Province

Under the background of common prosperity, the income status of teachers in higher vocational colleges in Zhejiang Province presents certain differences and complexities [7-8]. In terms of basic salary, the basic salary structure of teachers in most vocational colleges is relatively fixed, but it will vary according to the teacher's title, seniority and educational background. Teachers with senior titles (professor, associate professor) usually enjoy a higher base salary. At the same time, there are certain differences in the basic salary level among different colleges, especially between the top vocational colleges and general vocational colleges in the province, which is mostly related to the financial situation, geographical location and educational resources of the schools.

According to the survey, the work situation of a teacher in Jiaxing, Zhejiang Province in 2022 is as follows: Coordinate a public higher vocational college in Haining, Jiaxing, Zhejiang Province and has establishment, teaching the main subject, first-class teacher (technical grade 8 post). Among them, the main income is monthly salary, housing subsidy and provident fund, performance pay, holiday benefits and weekday meals. After deducting five insurances and one fund each month, the salary of the card is divided into two, the average of the more is about 9,000 yuan, and the less is about 300 yuan after deducting tax. Each month, the individual and the school pay half of the housing provident fund, a total of about 4,230 yuan, and the newly hired teachers' provident fund is about 30,000 yuan a year. In terms of performance, most of the performance has been pre-paid in the monthly salary, the specific amount of unknown miscellaneous items including full attendance award, safety award, civilized unit award, price subsidy and teaching award, a total of about 8,000 yuan, and the annual assessment total of about 38,000 yuan. The total cost of all holidays is about 3,000 yuan, and the monthly meal allowance is about 500 yuan. After calculation, the total annual income is about 222,960 yuan, excluding the provident fund salary and assessment performance, the total amount is about 172,000 yuan. This is the specific situation of investigating individual teachers. Part of the survey results on the income level of teachers in higher vocational colleges in Zhejiang Province are shown in Table 1.

Table 1 considers teachers by institution, discipline, and title level, and lists factors such as base salaries, bonuses, and allowances. Such data can be used for subsequent analysis to gain insight into the impact of different factors on teachers' income. It can be seen that in addition to the basic salary, the total income of teachers also includes other income such as bonuses and allowances. This income is often related to the quality of teachers' teaching, research results, and the variety of projects they participate in. Driven by the policy of common prosperity, some higher vocational colleges will increase the reward for teachers with outstanding teaching and scientific research performance, in order to motivate teachers to improve their teaching and scientific research level. However, this can also lead

to a widening of the income gap, as these bonuses and allowances tend to go more to teachers who are already high-performing [9-10].

Table 1: A case study on the income level of teachers in higher vocational colleges in Zhejiang Province

Academy	Subject	Title level	Basic salary(yuan/month)	Bonus (yuan/year)	Allowance (yuan/month)
School A	Science and engineering	Senior professional title	12000	15000	2000
School B	Humanities	Intermediate professional title	10000	12000	1500
School C	Art subjects	Junior professional title	8000	10000	1000
School D	Department of commerce	Intermediate professional title	11000	13000	1800
School E	Technology	Junior professional title	8500	9000	1200
School F	Medicine	Senior professional title	13000	18000	2500

There are also differences in the salaries of teachers in different subjects. Science and engineering teachers will have more opportunities for additional income due to their participation in more research projects and industry-university-research collaborations. By contrast, liberal arts teachers may have fewer opportunities in this area. This difference not only reflects the market demand for different subject skills, but may also affect teachers' tendency to choose areas of specialization. In the context of common prosperity, higher vocational colleges and policy makers are required to pay more attention to fairness and balance when formulating salary policies to ensure the reasonable distribution of teachers' income [11-12].

3.2 Key Factors Affecting Teachers' Income

There are many reasons for the income gap of teachers in higher vocational colleges in Zhejiang Province. First, the financial situation and geographical location of different colleges lead to the differences in basic salary and bonus allowance; second, teachers' personal educational background, professional title level, work experience and scientific research results also cause individual differences in income; third, the market demand of different subject areas and the imbalance of research fund support also have an impact on teachers' income; fourth, differences in administrative positions and differences in teaching quality are also important factors. These factors combine to form the current income gap phenomenon. Therefore, the analysis of key factors affecting teachers' income is shown in Figure 1:

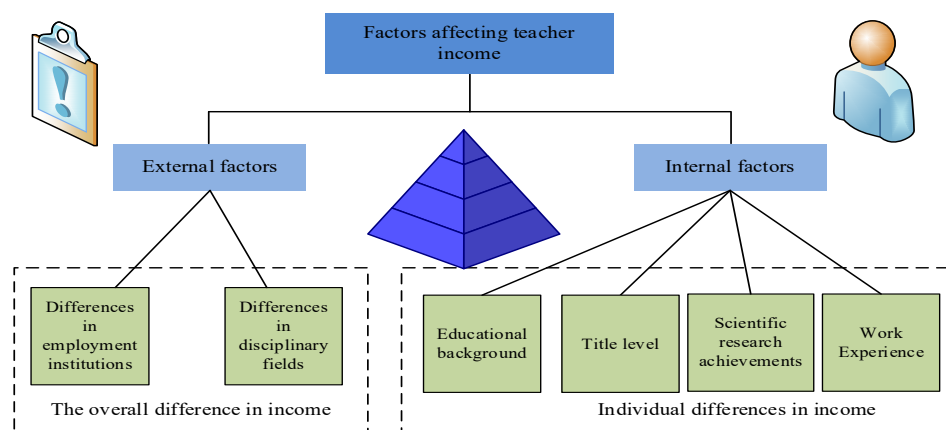


Figure 1: Map of key factors affecting teachers' income

The above key factors can be divided into the overall difference in income caused by external factors, which is mainly composed of different colleges and universities and different subject fields; the

other is the individual difference in income caused by internal factors, which is mainly composed of educational background, professional title level, scientific research achievements and work experience. The better and more well-known the institution, the more it can provide a wider range of social resources and better employment opportunities. At the same time, under the background that the country attaches great importance to the development of the real economy and accelerates the construction of a modern industrial system, the average income of teachers in the field of science and engineering will be relatively higher than that of liberal arts.

In the context of common prosperity, combined with the above key factors affecting teachers' income, this paper builds a mathematical model to analyze the income gap of teachers in higher vocational colleges in Zhejiang Province, as shown in Figure 2:

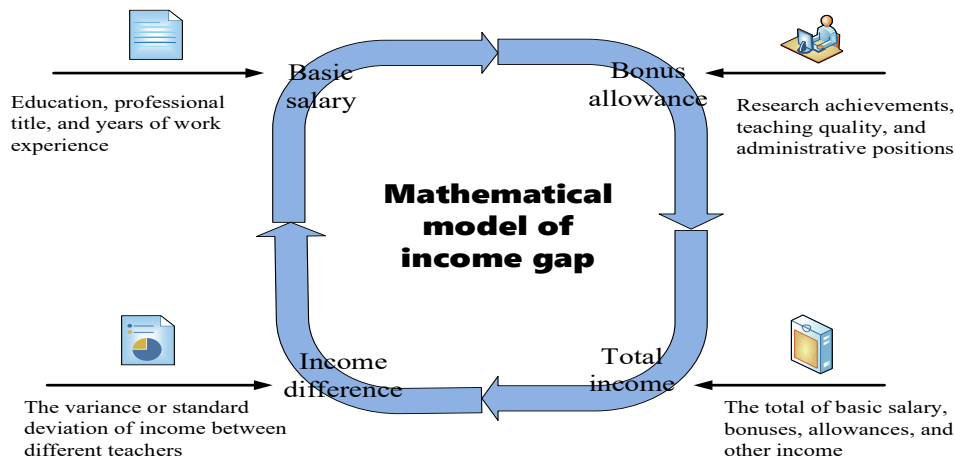


Figure 2: The mathematical model of income gap problem

The basic wage model can be regarded as a function of education, professional title and working years, and its expression is as follows:

$$W_b = f(E, T, Y) \tag{1}$$

Among them, W_b represents basic salary, E represents education level, T represents professional title level, and Y represents years of work. The bonus and allowance model relates the bonus and allowance to scientific research results, teaching quality and administrative positions, and its expression is as follows:

$$B = g(R, Q, A) \tag{2}$$

Among them, B stands for prizes and allowances, R stands for research achievements, Q stands for teaching quality, and A stands for administrative positions. The total revenue model refers to the sum of base salary, bonus, allowance and other income, which is expressed as follows:

$$I_{total} = W_b + B + O \tag{3}$$

Among them, I_{total} represents total revenue and O represents other revenue (such as project funding). The income difference model means that the analysis of income difference can be expressed by the variance or standard deviation of income among different teachers, and its expression is as follows:

$$D = \sqrt{\frac{1}{N} \sum_{i=1}^N (I_i - \bar{I})^2} \tag{4}$$

Among them, D represents the income gap, I_i represents the income of the i teacher, I represents the average income, and N represents the total number of teachers.

3.3 Income Gap Adjustment under the Common Prosperity Policy

In the context of common prosperity, the primary goal of the policy is to raise the income level of low-income groups and ensure that their basic needs are met. This must be achieved by raising the minimum wage, increasing financial subsidies for low-income teachers, and providing them with additional financial incentives. For junior teachers with professional titles in higher vocational colleges, their actual income can be increased by providing special bonuses and living allowances. Therefore, the income gap adjustment measures under the common prosperity policy are shown in Table 2:

Table 2: Measures to adjust the income gap of teachers in higher vocational colleges

Serial Number	Measure	Analysis
I	Improve the wage level of low-income groups	Raise the minimum wage standard and increase financial subsidies for low-income teachers
II	Optimize income distribution structure	Increase tax burden on high-income teachers and increase financial transfer payments to low-income teachers
III	Enhance education and training opportunities	Jointly carry out teacher training programs to provide learning of new technologies and teaching methods
IV	Strengthening the social security system	Establish and improve the social security system to provide more comprehensive social security for low-income groups

As can be seen from Table 2, optimizing the income distribution structure is also an effective and reasonable measure. Adjusting the income gap between high-income groups and low-income groups can be achieved through reasonable tax policies and income redistribution mechanisms. For high income teachers, their tax burden can be moderately increased by adjusting the income tax rate, while increasing the financial transfer payment to low income teachers, so as to reduce the income gap.

At the social level, the income gap can be macro-controlled by improving education and training opportunities and strengthening the social security system. By providing more education and training opportunities, low-income teachers can improve their professional skills and teaching level. This not only helps their personal career development, but also helps to improve their income level, establish and improve the social security system, and provide more comprehensive social security (medical insurance, pension insurance and unemployment insurance) for low-income groups. This can reduce the financial pressure on them due to health, age or other social factors, thereby indirectly increasing their real income level.

4. Results and Discussion

After analyzing the factors of the income gap of teachers in higher vocational colleges in Zhejiang Province, in order to evaluate the influence of the key factors and the actual effect of income gap adjustment measures, the questionnaire survey experiment was carried out.

4.1 Experiment 1: Survey on the Importance of Key Factors

Before the questionnaire survey experiment, in order to ensure the accuracy of the questionnaire survey results, six teachers from A vocational college in Zhejiang Province were randomly selected as experimental subjects and numbered A~F to investigate their views on the importance of key factors of teacher income gap. Design questionnaire: It includes multiple multiple choice questions and grading questions to allow teachers to evaluate the influence of different factors on income gap. Distribute questionnaires: Sending questionnaires to teachers via email or online platforms. Data collection: Setting deadlines and collect completed questionnaires. Finally, they rated the teachers on a scale of 1 to 10 to determine which factors (external and internal) they thought were most critical to the teacher income gap problem. Specific experimental results are shown in Figure 3.

Among them, the yellow column represents the ranking of the internal factors of the six higher vocational college teachers' income gap, and the blue column represents the ranking of the external factors. It can be concluded that internal factors (educational background, professional title level, research achievements, work experience) average 8.5 points, while external factors (institution, subject field) average 7.5 points. This shows that the internal factors are relatively more critical in the income gap of teachers in higher vocational colleges under the policy of common prosperity. This may be because the teaching and research performance of individual teachers is an important factor in

determining the level of income.

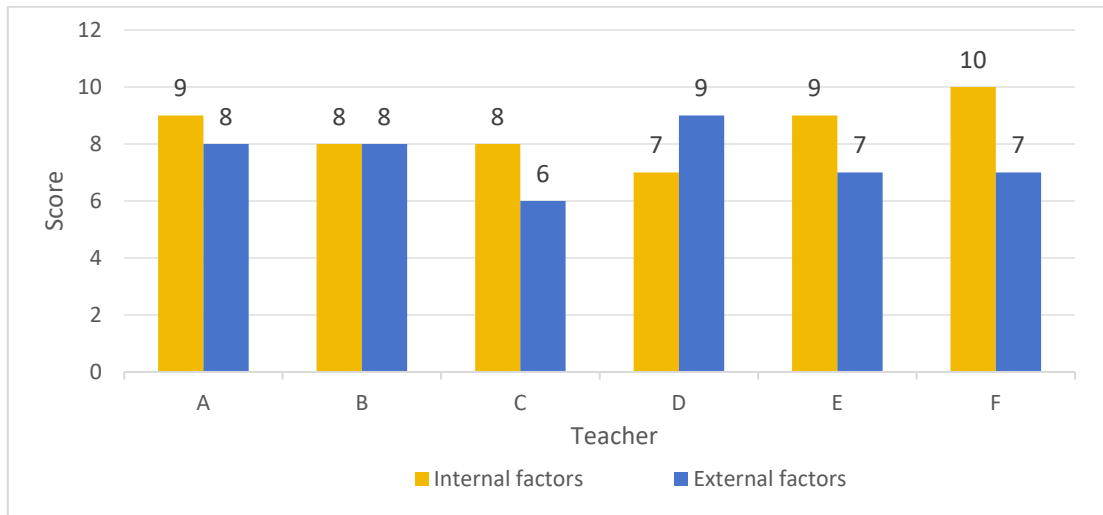


Figure 3: Experimental results of ranking important factors of teacher income gap

4.2 Experiment 2: Satisfaction Survey on Measures to Adjust Income Gap

After discussing the results of the survey on the importance of the above key factors, the questionnaire survey experiment on the satisfaction of measures to adjust income gap was carried out. Experimental purpose: The purpose of this study was to study participants' satisfaction with measures to adjust the income gap of teachers in vocational colleges (I~IV) in Table 2 above, and to understand their overall impression of these strategies. The specific process is the same as above, the overall effective evaluation of the four measures is carried out and the score is used for visualization, and the way is measured by 0 to 100 points. According to its standard assumption, the score above 80 meets the requirements, and above 90 can be considered satisfactory. The final experimental results are shown in Figure 4:

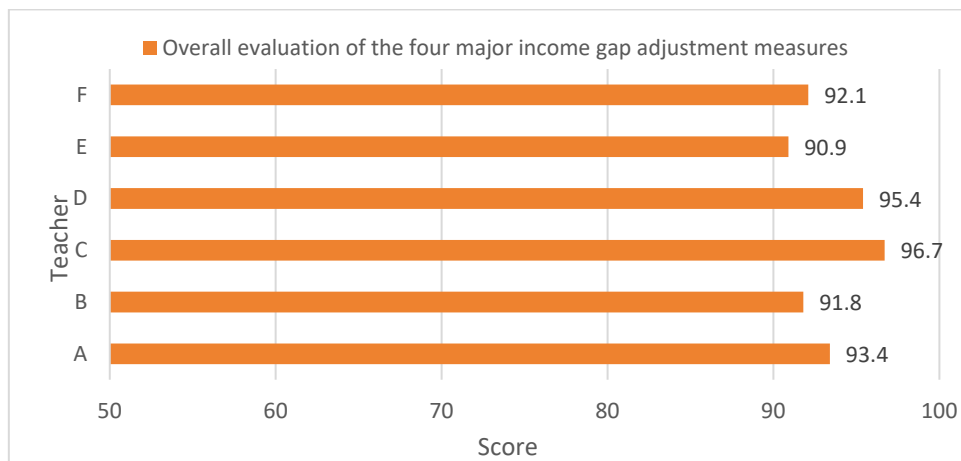


Figure 4: Experimental results of satisfaction scores of income gap adjustment measures

Among them, the orange column indicates the overall evaluation of six higher vocational college teachers on the four income gap adjustment measures. It can be seen that the highest satisfaction score of teacher C is 96.7 points, and the lowest satisfaction score of teacher E is 90.9 points. The comprehensive score of the income gap adjustment measures proposed under the background of the four common prosperity policies is about 93.4 points. This shows that measures to improve the wage level of low-income groups, optimize the income distribution structure, improve education and training opportunities, and strengthen the social security system have a good effect on adjusting the income gap of teachers.

5. Conclusions

By constructing a factor analysis model of the income gap of teachers in vocational colleges in Zhejiang Province under the background of common prosperity, we can systematically analyze various factors affecting the income gap of teachers in vocational colleges, so as to provide decision-making basis for policy makers. This will help to adjust and optimize the teachers' income distribution mechanism and realize a more reasonable distribution of educational resources. This paper first analyzes the current income level of teachers in vocational colleges in Zhejiang Province, including basic salary, bonus, allowance, etc., and compares the income difference of teachers in different colleges, different disciplines and different professional titles. Secondly, based on the collected data and information, this paper makes an in-depth analysis and discussion, explores various factors that affect teachers' income, and puts forward four internal factors and two external factors that lead to the income gap of teachers in higher vocational colleges. Finally, this paper puts forward feasible solutions and strategy optimization suggestions, and finds that it has good practical application effect by using the questionnaire experiment. As the sample number of teachers in higher vocational colleges is relatively small, this paper has some shortcomings in the exploration of this project, and it will be further perfected and improved in the future research. Future studies can further refine and deepen this model, and consider more variables such as the level of regional economic development, the size of institutions, and the characteristics of disciplines. After adding more statistical survey data, the research can also be extended to other provinces and education levels to gain a broader and deeper understanding.

References

- [1] Chen Dandan, Xiong Jin. *The "tournament System" of college teachers' income Distribution: Formation and reflection. Contemporary Education Forum*, 2019,1(4):49-59.
- [2] Hu Yongmei, Yuan Jing. *How big is the salary gap between ordinary young teachers and "hat" talents in Chinese universities? Peking University Education Review*, 2021, 19(3):41-61.
- [3] Sha Suhui, Fu Weidong, Li Zhao. *Regional differences and dynamic evolution of preschool teachers' salary income in China. Educational Economics Review*, 2019,6(4):106-118.
- [4] Hu Yongmei, Yuan Jing. *An empirical study on the salary gap of college teachers in China. Journal of Beijing Normal University (Social Sciences Edition)*, 2021, 2021(006):27-49.
- [5] Han E S. *The Effects of Teachers' Unions on the Gender Pay Gap among U.S. Public School Teachers. Industrial Relations: A Journal of Economy and Society*, 2020,59(4):563-603.
- [6] Health E P. *Retracted: Income Gap Equalization Based on PSO Algorithm in Edge Computing Environment. Journal of Environmental and Public Health*, 2023, 2023(10):82-91.
- [7] Xue Huiyuan, Zhang Yonggao. *Evaluation and Optimization Path of China's Long term Care Insurance Policy from the Perspective of Common Prosperity: Based on the PMC Index Model. China Health Policy Research*, 2023, 16 (6): 10-19.
- [8] Peng Gang, Yang Delin, Julie. *Measurement of Urban Common Prosperity in China, Spatial Characteristics and Dynamic Evolution. Chinese Soft Science*, 2022,4 (S01): 289-303.
- [9] Andreas H, Susanne S. *Long-Term Trends in the Gender Income Gap within Couples: West Germany, 1978–2011. Social Politics*, 2022,2022(3):1-12.
- [10] Lee J H, Kim W. *Impact of Production-Distribution Income Gap on Household Consumption and Housing Prices in the Region. Journal of Public Policy Studies*, 2022,10(3):39-42.
- [11] Yu Xin. *Special Topic on "Resolutely Pursuing the Path of Common Prosperity" ① Reducing Income Distribution Gap to Help Guangdong Achieve Common Prosperity. Guangdong Economy*, 2022, 3 (11): 6-17.
- [12] Zhao Rui, Lu Qilin, Mao Shangyi. *Analysis of the Adjustment Mechanism of Income Gap among the Elderly in China from the Perspective of Common Prosperity. Social Governance*, 2023, 1 (4): 102-110.