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Non-Parametric Analysis To Identify Microeconomic Variables Influence Income Distribution In Indonesia Big Cities

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Abstrak

Penelitian ini bertujuan untuk mendapatkan pemahaman lebih dalam mengenai karakteristik, perilaku, dan faktor-faktor yang mempengaruhi gaji individu di sektor swasta formal, serta menelusuri pola distribusi gaji pada populasi tersebut. Penelitian ini menggunakan analisis deskriptif. Dalam analisis ini, variabel pendidikan muncul sebagai faktor yang paling relevan. Hampir semua distribusi menunjukkan peningkatan tahunan dalam bobot gaji untuk setiap persentil. Di sektor swasta, khususnya di wilayah perkotaan, terdapat tantangan dalam mencapai kesepakatan gaji bipartit tanpa mekanisme negosiasi wajib. Komite pengupahan, yang berperan memberikan kerangka kerja bagi masing-masing komite pengupahan, berperan penting dalam memfasilitasi proses tersebut.

Kata Kunci: *Perilaku, Gaji, Swasta, Pekerja*

Abstract

This research aims to gain a deeper understanding of the characteristics, behaviors, and factors that influence individual salaries in the formal private sector, as well as explore salary distribution patterns in this population. This research uses descriptive analysis. In this analysis, the educational variable emerged as the most relevant factor. Nearly all distributions show annual increases in salary weights for each percentile. In the private sector, particularly in urban areas, there are challenges in reaching bipartite salary agreements without mandatory negotiation mechanisms. The wage committee, whose role is to provide a framework for each wage committee, plays an important role in facilitating the process.

Keyword: *Behavior, Private, Wages, Workers*

INTRODUCTION

A significant increase in wage dispersion in developed countries began in the early nineties. This phenomenon has become an important element in the composition of the labor market, especially in connection with the introduction of important reforms that deregulate and make the labor market more flexible. In this period, developed countries began to withdraw from collective negotiations, there was no clear legal framework, and there was an insertion into new economic dynamics (Afifah et al., 2018). This causes a process of deterioration in the quality of work and uncertain working conditions. Over time, this phenomenon has developed into one of the main characteristics of the labor market in these developed countries. The main causes of this increasing spread of wages include deregulation of the labor market, flexibility of wage policies and employment contracts, increased global competition, technology and industrial automation, and structural changes in the economy (Tannady & Sitorus, 2017). This increased wage dispersion can have a variety of impacts, such as heightened wage inequality, increased economic uncertainty for workers, and changes in the labor market's structure. Efforts to address their negative impacts often involve worker protection policies, improving skills, and creating new job opportunities in developing economies (Rahayu et al., 2018).

The broader economic, social, and institutional context can further develop interpretations of the issue of wage distribution inequality. One aspect that can be considered is the impact of globalization and technology on the structure of the labor market. Globalization has significantly altered production and trade practices, potentially influencing wage distribution (Arliani et al., 2019). Apart from that, technological developments also play an important role in shaping the structure of the labor market. Rapidly developing technology can change skill demands and job qualifications, which in

turn can affect wage distribution. In addition, changes in institutional mechanisms in terms of industrial relations and employment policies can also be a significant factor in determining wage distribution (Tannady & Filbert, 2018). By considering these factors, we can see that the interpretation of inequality in wage distribution depends not only on supply and demand dynamics and changes in institutional mechanisms but also on broader external factors. By broadening this view, we can have a more holistic understanding of the problem of unequal wage distribution and consider more comprehensive solutions (Lois et al., 2017).

The institutional mechanisms of the labor market underwent significant deregulation. The absence of wage committees and the decline in the national minimum wage have rendered it a less significant basis for salaries. The government also eliminated or weakened protection mechanisms for trade union activities (Awa, 2024). In terms of relative remuneration based on qualification level, there has been a significant increase in demand for workers with higher education requirements, but without a corresponding increase in supply. This causes demand for unskilled workers to begin to decline while supply remains stable (Alfiah et al., 2023). The nineties saw a positive trend in educational returns, but the deregulation of institutional mechanisms led to a reversal of this trend. There were changes again in the institutional mechanism, especially with the reorganization of the wages committee. However, the returns to education continue to increase, indicating a contrast in the main direction of the determinants of wage dispersion. Therefore, we can conclude that shifts in the labor market's institutional mechanisms significantly influence the dynamics of wage distribution (Annas et al., 2023).

A series of transformations began to occur in economic and social conditions of great importance, which would determine most of the conditions of national events, including the labor market (Anggraini et al., 2024). This stage, covering the first three decades, is characterized by important economic growth, leading to the emergence of new companies and the expansion of existing ones, with an increase in the number of workers. The state also plays an innovative role, increasingly intervening in various aspects of the economy and labor market. The state forms many labor laws, which condition the framework of action within which production relations develop (Tannady et al., 2023). In the economic process, although the main axis of production remains centered on agricultural and livestock activities aimed at exports, there is great momentum in industrial development. This also changed the structure of employment, as most new jobs emerged in urban areas, meaning that unions began to have a structure that was more likely to thrive.

RESEARCH METHOD

We will conduct a descriptive analysis of the sample characteristics to derive pertinent conclusions from the analyzed data. The second step is to study the relationship between variables by using regression to estimate parameters that serve as the basis for determining individual salary levels. The importance of regression is to be able to produce a mechanism for determining salary standards and see the extent to which different factors contribute as determinants. Next, we will conduct a semi-parametric study to understand the movement of the salary distribution curve. We will conduct this analysis on individuals living in populations, specifically focusing on workers in the formal private sector. Formal workers are those who contribute to social security and, therefore, have pension rights. We will form a series of regressions based on cross-sectional data, utilizing multiple linear regression models for each year. We will perform non-parametric estimation on the salary distribution function using the kernel method, enabling the complete expression of the salary distribution curve. Although the hypothesis of normality will be tested for the period under consideration, which is planned to be compared with the Kolmogorov-Smirnov test, it is assumed a priori that this hypothesis will be rejected.

RESULT AND DISCUSSION

Of the total workers in the region, this research will focus on private sector employees, which is the largest sector with a proportion of 60% of the total workers. Within this sector, there are different subgroups, including workers who carry out their duties under formal parameters, which is the focus of this research. This year, the number of formal workers in the private sector reached 70% of total workers. We only consider key activities in our analysis. Despite the overall average salary being higher when accounting for additional work, the analysis reveals lower hourly wages, suggesting that part-time work receives a lower salary. However, the degree of salary dispersion is also higher, and the difference is not very significant in this case. Furthermore, about 20% of individuals in this year have multiple jobs, and most of them work in informal conditions.

The analysis shows that company size has a significant influence on the level of salary received by employees. Smaller companies tend to pay lower salaries than larger companies. Various factors, such as lower economies of scale in small companies, limited financial resources to pay higher salaries, or simpler organizational structures that influence the payroll decision-making process, may contribute to this. In carrying out primary regression analysis, a number of variables tested did not provide relevant results in determining salary levels. Various factors, such as the variable's lack of a significant relationship with salary level

or issues in the survey data, can lead to this outcome. It is important to ensure that the variables used in the analysis are valid and relevant to achieve accurate results in determining the factors that influence employee salary levels.

The analysis results show that although the R² value is lower in the final model compared to the model that includes all variables, the level of significance is higher in the final model. This shows that the variables selected in the final model are ultimately more relevant in explaining salary determination. Salary distributions adjusted to the expected theoretical split result in lower median salaries and reduced salary dispersion. However, in empirical practice, there are elements that make salary distributions inconsistent with theoretical estimates. The model shows a high concentration on the left side of the distribution, but there is a strong correlation with the accumulated concentration data on the right side of the distribution. This suggests that the model has a tendency to predict lower salaries well but may be less accurate in estimating higher salaries.

From the results of the analysis, there is an increase in the number of people working in the private sector, as well as an increase in the proportion of formal employees in this sector compared to the previous year. This reflects similar trends in most economic sectors. The education variable continues to show an increase in the marginal return product of its quadratic expression, which indicates that the value of education is increasingly influential in increasing salaries. Experience also shows similar behavior, with longer work experience tending to have a greater influence on salary. However, certain branches of activity had negative results, which may indicate differences in other factors influencing salaries in those branches. Further analysis is necessary to address the persistent differences by gender and geographic location. Empirical results show an average salary growth of 0.1% and a general variance reduction of 3%. This indicates a moderate increase in workers' bargaining power as well as perceived income concentration. This increase is likely to be greater at the lowest salary levels. Therefore, it is likely that workers with the lowest salaries experience greater increases in their earnings, while the variation between individual salaries is likely to decrease overall.

A moderate increase in workers' bargaining power could mean that workers have more leverage in negotiating their wages, perhaps in response to policy or economic changes affecting the labor market. Perceived income concentration is a phenomenon where certain groups, such as the lowest-paid workers, tend to experience larger increases in their income. The implications of these findings could be particularly important in the context of income inequality and wealth distribution. Increasing wages at the lowest levels could help reduce income gaps between different groups as well as reduce economic uncertainty for workers

on low incomes. However, to fully understand the long-term impact of these changes, including potential side effects that may arise over a longer period of time, further analysis is necessary.

The number of new jobs generated can be an important indicator for understanding labor market dynamics and their impact on wage distribution. In periods of economic recovery, when unemployment declines, better employability conditions begin to reintegrate those who were previously inactive in the labor market. However, this process may leave behind people experiencing worse employability conditions, and those returning to the labor market may earn lower wages. The entry of new workers into the labor market can also increase the variance in individual characteristics among workers. The dispersion of the independent variables in the analysis model can reflect this, and an increase in marginal returns can lead to a rise in pay differences. This suggests that external factors, such as overall economic conditions, can significantly influence wage distribution and workforce characteristics. The results of the analysis show a significant increase in average salaries, and this trend is visible across the distribution curve. This is in line with data from previous years and shows an improvement in economic conditions. The variance also decreased significantly, although slightly higher. The analysis also notes that the relationship between earnings at various percentiles and the percentile indicates that the salary distribution is more even compared to previous years. These results show that there has been a positive improvement in salary distribution and a decrease in inequality. This reflects more stable economic conditions and the possibility of policies that support more equitable and inclusive economic growth.

The analysis still leaves open an interpretation regarding movements in the salary distribution structure that do not stem from variations in the model's variables. This shows that other factors outside the model can influence salary distribution, such as institutional schemes for salary distribution. Most likely, the gradual re-establishment of wage committees has resulted in the standardization of certain salary levels, which in turn has contributed to a reduction in wage dispersion. However, in subsequent years, its influence on the spread rate was less relevant. We expect the impact of new institutional schemes to contribute to the increase in the average salary level. This increase may be small at first, but as the system develops and strengthens, the growth rate will continue to increase. This shows that institutional policies can play an important role in shaping the structure of salary distribution and influencing overall salary levels.

The increase in average wages in these years was primarily due to a period of strong economic growth and growing demand for jobs. Another contributing factor is low salary

levels, which have led to a significant increase in overall salary levels. The conducted tabulation reveals a 3% growth in the average salary and a 15% decrease in the variance. The effect of the existence of a minimum wage is visible in this analysis. Although salary growth is above the average minimum wage growth, its presence affects salary dispersion. The wage variance increases, indicating a tendency toward greater dispersion. This shows that minimum wage policies can influence not only average salary levels but also the overall salary distribution. The theoretical salary estimation model shows the same trend as what happens in the empirical data. There are likely several factors that have not been considered that contribute to the increase in wages and salary dispersion.

CONCLUSION

In this analysis, the educational variable emerges as the most relevant factor on the supply side but also contributes to increasing dispersion on the demand side. Another important modification in the salary determination variable is a modification in the negotiation structure. These modifications tend to result in greater salary concentration by standardizing negotiations, thereby reducing the degree of dispersion that may have resulted from varying levels of previous negotiations. Changes in institutional settings, particularly regarding minimum wages, appear to have resulted in a more concentrated distribution of wages. Almost all distributions exhibit this, with the salary weight for each percentile relative to the percentile increasing annually. This shows that the factors influencing the salary structure have not resulted in significant changes in the last four years. This could lead to a more concentrated distribution of income, with the consequence that a large proportion of the population relies on income from their work. Therefore, understanding the factors that influence the level of salary dispersion can help in planning better policies to improve income distribution.

An analysis of the history and evolution of the wages committee provides deep insight into the country's employment relations system. Wage committees play an important role in providing a framework for salary discussions and negotiations, as well as influencing the dynamics of labor relations between workers and employers. The history of wage committees shows that this instrument primarily supported the growth and consolidation of union structures, improved workers' negotiating positions, and increased pressure for wage increases. Furthermore, the absence of the wage committee can lead to employer dominance in labor relations, potentially intensifying asymmetry in negotiations.

In the private sector, especially in urban areas, there are challenges in reaching bipartite-type salary agreements without mandatory negotiation mechanisms. The wages

committee, whose role is to provide a framework for action to the respective wages committees, has been important in facilitating the process. However, the failure to reach agreement in the negotiation round highlights the importance of the wage committee in achieving a more egalitarian salary distribution.

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