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The Effect of Minimum Wage on Unemployment in North Kalimantan

Kurniawan[1*], Mince Angreyani[1], Rahmat[1], Lio Bijumes[1], Rozilee Asid[2], Vincente Manuel Luis Guterres[3]

[1]Bulungan Tarakan Collage of Economics, Tarakan, Indonesia;
[2]University Malaysia Sabah, Kota Kinabalu, Malaysia;
[3]National University of Timor Lorosae, Dili, Timor Leste

[*]E-mail: mahakaryakurniawanamir@gmail.com

Abstract
The annual minimum wage changes cause shifts in the labor market equilibrium. In a competitive labor market, the demand and supply of minimum wages result in a new minimum wage each year. There is no clear evidence regarding the impact of the minimum wage on unemployment. The purpose of this study is to provide evidence on the impact of the minimum wage on unemployment in North Kalimantan. This evidence offers insights for policymakers in setting the minimum wage. This study was conducted using an ordinary least squares (OLS) approach. This study used aggregate data from five sample districts/cities in North Kalimantan province for the period 2017–2024. This study provides strong evidence that the minimum wage has a positive but insignificant effect on unemployment in North Kalimantan. This finding highlights the need for appropriate minimum wage determination, taking into account the efficiency wage theory, which encourages workers to accept better wages. The implication of this study is that annual minimum wage increases do not significantly reduce labor demand and increase unemployment in North Kalimantan.

Keywords: Minimum Wage; Unemployment; Efficiency Wages Theory; North Kalimantan

INTRODUCTION

When analyzing a competitive labor market using a basic supply and demand model, it becomes evident that implementing a minimum wage above the equilibrium level results in reduced labor demand and increased labor supply. Consequently, one of the most significant outcomes of the minimum wage is forced unemployment. The impact of social

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welfare policies such as the minimum wage on population health varies depending on the prevailing unemployment rate within society. According to data from the Central Bureau of Statistics (BPS) in 2024, the open unemployment rate in North Kalimantan was recorded at 3.90 percent, with 15,343 individuals unemployed in August 2025. Unemployment presents a significant challenge for both the government and the private sector as a key economic indicator. During times of high labor supply, labor bargaining data tends to be weak, resulting in difficulties in reaching wage agreements between workers and employers.

The Minister of Manpower's regulations regarding the determination of minimum wages serve as the foundation for local governments to issue annual decrees concerning minimum wage rates in their respective regions. The minimum wage is an effective government intervention to address labor market failures. According to Mankiw (2018), the efficiency wages theory posits that companies operate more efficiently when wages exceed the equilibrium level. Higher wages can contribute to improved worker health, reduced absenteeism, enhanced worker quality, and increased worker effort. Pindyck & Rubinfeld (2018) further explain that the efficiency wages theory accounts for wage discrimination and unemployment, acknowledging that wage rates can influence labor productivity. In developing countries, workers' productivity is influenced by wage rates due to nutritional factors, as better-paid employees can afford better-quality food, leading to improved health and higher productivity. The efficiency wage theory can explain the existence of unemployment. Todaro & Smith (2018) argue that human capital, encompassing education, health, and other human capacities, is a measure of the quality of human resources. High-quality human resources result in increased productivity.

The efficiency wage model posits that, in equilibrium, firms may find it beneficial to pay wages above the market clearing level. High wages can decrease turnover, enhance worker effort, prevent collective action among workers, and attract higher-quality employees. Simplified versions of the efficiency wage model can elucidate phenomena such as normal forced unemployment, segmented labor markets, and wage differentials across firms and industries for workers with similar productive characteristics (Katz, 1986; Hermansyah et al., 2025). In a competitive labor market, individuals seeking employment should be able to find jobs that offer wages commensurate with the workload. However, many areas experience significant unemployment despite many people actively searching for work. Many unemployed individuals are willing to work for lower wages than those already employed. This raises the question of why companies do not increase employment to increase profits.

Evidence explaining the effect of minimum wages on unemployment is limited. This study aims to examine the effect of minimum wages on unemployment in North Kalimantan. The ultimate goal is to develop a comprehensive model that addresses the complexity of unemployment issues in the region. This additional evidence aims to support the efficiency wage theory and improve labor welfare.

LITERATURE REVIEW

Minimum wages can improve welfare by stimulating improvements in low-skill labor markets, bringing them closer to the efficient level, and offsetting associated job losses (Levecchia, 2020; Dube & Zipperer, 2024). There is also no clear evidence that minimum wages reduce employment (Neumark & Corella, 2021) or its influence is close to 0 (Kunaschk, 2024). These minimum wage increases have no significant impact on layoff rates (Abbate & Jiménez, 2025). Minimum wage increases have no substantial impact on unemployment rates, labor force participation, or labor market transitions. Overall, there is little evidence of changes in job search effort in response to minimum wage increases (Cengiz et al., 2022; Broecke et al., 2017; Giupponi et al., 2024).

Other evidence suggests that minimum wage increases have a significant impact on job retention, both for directly and indirectly affected workers (Ferraro et al., 2018). A strong positive relationship has been found between minimum wages and unemployment, particularly in rural or low-cost areas (Brunt & Barilla, 2018; Dharsana et al., 2024). Minimum wage increases reduce employment among low-skilled workers, who often choose to move from areas with higher minimum wages (Monras, 2019). Minimum wage increases lead to higher rates of involuntary unemployment, but they also encourage skills development because some individuals are able to avoid unemployment (Gerritsen & Jacobs, 2020).

In a general equilibrium model, a higher minimum wage can increase aggregate employment (Marjit, 2021). Other evidence suggests that minimum wage increases reduce employment in both the formal and informal sectors. Furthermore, minimum wage increases lead to a decrease in the unemployment rate due to a decrease in labor force participation (Siregar, 2020). Other evidence suggests that higher minimum wages lead to an increase in informal employment (Broecke et al., 2017).

The negative impact of minimum wages extends to all types of employment. Certain vulnerable groups, such as individuals earning below the minimum wage, low-skilled individuals, youth, female workers, and the elderly, experience slightly greater adverse impacts. Analysis of minimum wages confirms a strong relationship between minimum wage dynamics and employment over time (Paun et al., 2021; Dreepaul-Dabee & Tandrayen-ragoobur, 2023; Garcia-Louzao & Tarasonis, 2023).

Furthermore, minimum wage increases are likely to reduce suicide rates among individuals with a high school education or less, particularly during periods of high unemployment (Kaufman et al., 2020; Kusumawati et al., 2024). Different countries provide varying evidence regarding the impact of minimum wages on unemployment. In the case of the labor market, there is no clear correlation between minimum wage levels and unemployment (Karamanis et al., 2018). The likely interpretation is that there is no clear evidence regarding the impact of minimum wages on unemployment.

METHODOLOGY

This study uses a quantitative descriptive approach to achieve its objectives. The descriptive analysis aims to examine unemployment and minimum wage data in districts/cities in North Kalimantan. This study utilizes the most recent available data to provide a comprehensive description. A quantitative approach was adopted to explain the impact of minimum wages on unemployment in North Kalimantan. This study uses a sample of five districts: Malinau, Bulungan, Nunukan, Tana Tidung, and Tarakan. Aggregate data from five districts and cities in North Kalimantan province were used for this study.

Data are sourced from the August National Labor Force Survey (Sakernas) conducted by the North Kalimantan Central Statistics Agency. Sakernas is designed to collect accurate and reliable data to describe the employment situation during the census period. The data period used in this study ranges from 2017 to 2024, selected based on data availability. A total of 40 data observations (eight years and five districts/cities) are included in the analysis.

Table 1. Research variable

No	Variable	Description
1	Unemployment	The open unemployment rate is the percentage of the number of unemployed to the total labor force. Unemployment in rural and urban areas
2	Minimum Wage	The minimum wage is the lowest wage (including regular allowances but excluding overtime pay) paid to employees (per type of position/job).

Source: BPS (2024b)

This study employed the ordinary least squares (OLS) data analysis technique, as outlined by Wooldridge (2018). The Stata 16 application was utilized for the data analysis process. Based on the theory and results of previous research, the ordinary least squares (OLS) regression model built in this study is described in the following equation.

$$Unemployment = \alpha + ß_1 LogMinimumWage + u_i \ldots (1)$$

Where unemployment (Y) dependent variable, β (slope), u (unobserved variable), minimum wage (X) independent variable, Log (logarithm), i (coverage), and t (time period). This equation explains the effect of the minimum wage on unemployment in North Kalimantan.

RESULTS

The analysis of the fixed effect model of ordinary least squares (OLS) reveals significant insights into the relationship between the minimum wage and unemployment in North Kalimantan. The detailed results can be found in Table 2 and 3.

Table 2. Summary

Variable	Obs	Mean	Std. Dev.	Min	Max
Unemployment	40	4.48125	1.057448	2.68	7.24
Minimum wage	40	3.636553	.0635466	3.429960	4.188174

Source: Estimation results

The data in Table 2 explains the characteristics of minimum wages and unemployment in North Kalimantan. The lowest unemployment rate (min) in North Kalimantan was 2.68 percent and the highest (max) was 7.24 percent. The lowest minimum wage (min) in North Kalimantan was Rp 3,429,960 and the highest (max) was Rp 4,188,174.

Table 3. OLS results

Unemployment	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Minimum wage	.0347424	2.699442	0.01	0.990	-5.429991	5.499476
_cons	4.255859	17.51341	0.809	0.809	-31.19819	39.70991

Source: Estimation results

The evidence presented in Table 3 indicates that the minimum wage has a positive but insignificant effect on unemployment in North Kalimantan. Minimum wage increases do not significantly impact labor supply in North Kalimantan. Studies that describe similar evidence include Karamanis et al. (2018), Boffy-Ramirez (2019), Bonin et al. (2020), Kunaschk, (2024); Giupponi et al. (2024); and Cengiz et al. (2022). However, this contradicts existing evidence showing a positive and significant effect of the minimum wage on unemployment as found by Gerritsen & Jacobs (2020), Levecchia (2020), Broecke et al. (2017), Neumark & Corella (2021), Ferraro et al. (2018), Brunt & Barilla (2018), Monras (2019), Paun et al. (2021), Garcia-Louzao & Tarasonis, (2023); Marjit (2022); and Dube & Zipperer (2024).

It should be noted that setting a minimum wage above the equilibrium level reduces labor demand but increases labor supply. Conversely, setting a minimum wage below the equilibrium level increases labor demand while reducing labor supply. This dynamic can lead to unemployment because the market cannot absorb all available labor. The efficiency wage theory encourages workers to accept better wages at the equilibrium level. The results of this study strengthen the efficiency wage theory. Unfortunately, some

workers may choose unemployment over accepting wages below the minimum wage threshold. These findings highlight the challenges faced by districts and cities in North Kalimantan in determining minimum wages. Striking a balance between meeting workers' wage demands and considering employers' wage supply is a complex task. It is crucial for the government to ensure that employers provide wages in accordance with the established minimum wage. Workers forced to accept wages below the minimum wage due to irrevocable agreements are considered unemployed.

CONCLUSION

The study results indicate that the minimum wage has no significant effect on unemployment in North Kalimantan. The theoretical implication of this study is that annual minimum wage increases do not reduce labor demand in North Kalimantan. A higher minimum wage will increase worker productivity and overall labor market outcomes according to the efficiency wage theory. The practical implication of this study is that the government, in setting the minimum wage each year, must achieve a balance between worker demand and employer supply. It is important to understand that setting a higher minimum wage will not reduce job supply and increase unemployment. The government needs to be careful in determining the minimum wage to prevent potential labor market failure. A limitation of this study is the limited sample size. In future research, expanding the sample size will provide stronger results and a deeper understanding of this topic.

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