
REGIONAL MACROECONOMIC DETERMINANTS OF UMR



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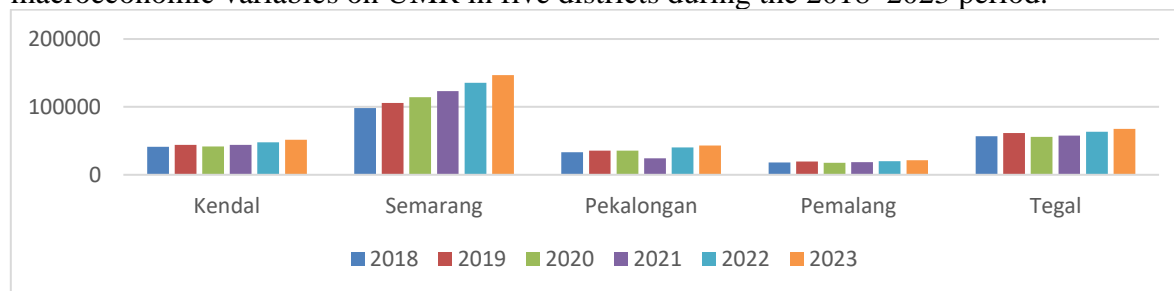
Abstract

This study examines the role of regional macroeconomic conditions in shaping the Regional Minimum Wage (UMR) across five districts/cities in Central Java Province during the 2018–2023 period. Unlike prior studies that primarily focus on national indicators or limited economic variables, this research integrates fiscal capacity, social conditions, and human capital indicators within a regional panel data framework. The independent variables include Gross Regional Domestic Product (GRDP), poverty rate, number of Micro, Small, and Medium Enterprises (MSMEs), Regional Budget (APBD), number of investment projects, and educational participation. Panel data regression with the Random Effect Model (REM), selected through Chow and Hausman tests, is employed for analysis. The results show that all variables simultaneously have a significant effect on UMR determination. However, partially, only the poverty rate, APBD, and educational participation significantly influence UMR. A higher poverty rate is associated with increased UMR, indicating that wage policy responds not only to economic capacity but also to social pressure and welfare considerations. The positive effect of APBD highlights the importance of regional fiscal strength in supporting higher wage standards, while educational participation reflects the contribution of human capital quality to wage-setting mechanisms. In contrast, GRDP, MSMEs, and investment projects do not exhibit significant effects, suggesting that economic growth and investment do not automatically translate into higher wages at the regional level. This study contributes to the literature by demonstrating that UMR determination is more strongly driven by social and fiscal factors than by conventional growth indicators, emphasizing the need for region-specific, inclusive wage policies grounded in local macroeconomic realities.

Keywords: Fiscal Decentralization, Regional Budget (APBD), Educational Participation, Poverty Rate, Panel Data Analysis

INTRODUCTION

The advancement of regional economies is closely shaped by governmental capacity and the performance of productive sectors in fostering equitable prosperity, one aspect being the fair and contextually appropriate determination of the Regional Minimum Wage (UMR). Acting as both a benchmark for decent remuneration and an instrument of policy intervention, the UMR plays a vital role in narrowing income gaps and enhancing living conditions (Indradjaja & Abadi, 2025). In light of the growing intricacy of domestic and global economic conditions, the determinants of UMR have become increasingly interconnected, particularly within regional contexts (Ramdhansya & Indrawati, 2022). Under the framework of fiscal decentralization and regional autonomy, Indonesian local governments possess broad discretion in formulating economic and labor-related measures, including wage-setting policies. Accordingly, investigating the contribution of regional macroeconomic indicators to these wage determinations becomes essential. In recent years, disparities in wages alongside localized economic strains have become more pronounced, especially in Central Java, where districts and municipalities exhibit diverse economic profiles (Silviana & Tallo, 2020). This research seeks to assess the influence of selected macroeconomic variables on UMR in five districts during the 2018–2023 period.



Graph 1. GRDP per Capita

(Source: Central Java Province Statistics Agency)

From 2018 to 2023, both Kendal Regency and Semarang City experienced steady growth in per capita GRDP; however, this progression was not consistently mirrored in their minimum wage adjustments. GRDP, commonly viewed as an indicator of regional economic prosperity, illustrates the average income, purchasing capacity, and overall welfare of residents (Hanifah & Sulaeman, 2022). Elevated GRDP levels signify stronger consumer power, greater household expenditure, and increased contributions to the local economy, all of which influence labor market conditions and wage-setting policies (Husada & Yuhan, 2022). Moreover, rising GRDP often reflects gains in productivity, efficiency, and competitiveness, thereby providing a foundation for higher wage benchmarks (Ginting & Purwanti, 2024). Drawing from Keynesian theory, as articulated by John Maynard Keynes, reducing wages can erode purchasing power, dampen demand, and slow production, potentially leading to higher unemployment. Consequently, Keynes supported proactive governmental action, particularly through fiscal tools like expanding public expenditure to stimulate employment and curb joblessness (Keynes, 2015).

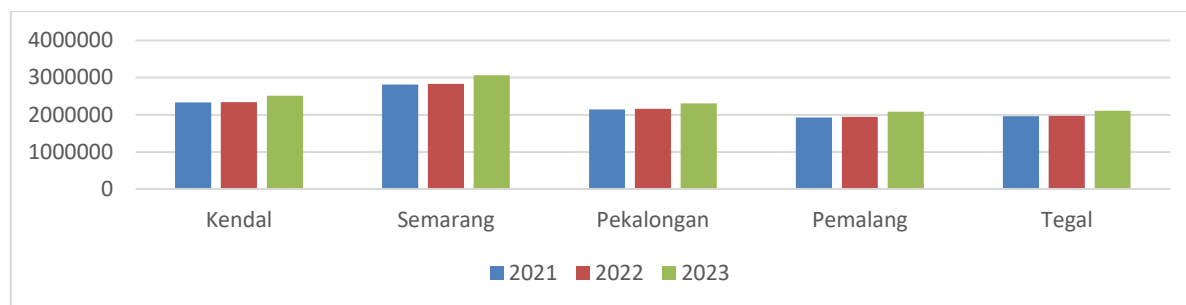


Chart 2. Regional Minimum Wage

(Source: Central Java Provincial Statistics Agency)

The Regional Minimum Wage (UMR) represents a strategic policy tool implemented by the government to safeguard the welfare of workers, particularly those with low skill levels and minimal negotiating leverage in the labor market. Serving as a wage threshold, it aims to guarantee an adequate standard of living, mitigate poverty, and reduce income disparities (International Labour Office, 2012). Based on the patterns illustrated in Graph 2, UMR levels across the five observed districts/cities show notable variation. Semarang City persistently posts the highest rate, amounting to Rp3,060,349 in 2023, underscoring its function as a pivotal economic and industrial hub in Central Java. Kendal Regency occupies the next position at Rp2,508,300, bolstered by the rapid development of its industrial estates. In contrast, Pekalongan, Pemalang, and Tegal regencies register comparatively modest wage levels of Rp2,305,823, Rp2,081,783, and Rp2,106,238, respectively, within the same period. These divergences not only reflect differences in regional economic frameworks but also suggest the impact of broader macroeconomic variables such as gross regional domestic product (GRDP), fiscal strength (APBD), poverty incidence, and human capital quality on local wage policy decisions.

The extent of educational engagement and the prevalence of micro, small, and medium enterprises (MSMEs) significantly influence labor quality and supply, which in turn affect wage determination. According to regional growth theory, uneven economic progress among areas is largely determined by local governments' ability to manage resources, attract capital inflows, and optimize public expenditure (Zulhija & Benardin, 2025). Metrics like GRDP, APBD, and the scale of investment projects serve as indicators of a region's economic capacity to drive equitable and sustained growth. Stronger GRDP performance and robust investment portfolios generally enhance productivity and earnings potential, thereby enabling upward adjustments to the UMR (Wiryawan & Pratiwi, 2024). On the other hand, poverty rates expose the magnitude of inequality in development outcomes, often placing pressure on wage-setting mechanisms (Maskur et al., 2023). Jurisdictions with high poverty levels tend to experience socioeconomic barriers that restrain improvements in labor welfare (Ningrum et al., 2024). Furthermore, institutional perspectives stress the necessity for local authorities to harmonize economic efficiency with social equity through sound economic governance (Rahmaini & Sujito, 2021). Consequently, the conceptual foundation of this research affirms that UMR policy formation is shaped not merely by labor market conditions but by an interconnected web of regional macroeconomic determinants.

Previous research has examined the determinants of Indonesia's Regional Minimum Wage (UMR), yet notable limitations persist, particularly in studies that apply panel data across multiple districts or cities over extended periods while incorporating institutional

dimensions. Zuliasari and Rachmawati (2021) found that GRDP and poverty significantly affected UMR in East Java, but their analysis excluded fiscal capacity indicators such as the regional budget (APBD), which are crucial under Indonesia's fiscal decentralization system. Likewise, Puspasari and Handyani (2020) emphasized the role of education in influencing UMR; however, their reliance on cross-sectional data constrained the ability to capture dynamic policy adjustments and interregional heterogeneity in wage-setting processes.

From an institutional and political economy perspective, minimum wage determination in Indonesia extends beyond market fundamentals and is shaped by decentralized governance, regional fiscal authority, labor regulations, and government responsiveness to social and political pressures. Models that omit these institutional features or employ static approaches are insufficient to explain how local governments reconcile economic performance, labor welfare, and political accountability when setting wage floors. Consequently, existing empirical studies provide only partial explanations and fail to capture the complex interactions between macroeconomic conditions, fiscal capacity, and policy discretion at the district level.

To address these gaps, this study employs a panel data framework, comparing the Common Effect, Fixed Effect, and Random Effect models, with model selection guided by Chow and Hausman tests. The analysis focuses on five districts/cities in Central Java—Kendal, Semarang, Pekalongan, Pemalang, and Tegal—chosen for their diverse economic structures, fiscal capacities, poverty levels, and human capital development. By examining the influence of GRDP, poverty, MSME activity, regional budget allocations, investment, and educational participation on UMR over six years, this research contributes to the literature by integrating macroeconomic and institutional perspectives within a district-level panel analysis, offering policy-relevant insights for more inclusive and balanced regional wage-setting.

REVIEW OF LITERATURE

The Regional Minimum Wage (UMR) serves as a key policy instrument for safeguarding worker welfare, particularly for low-skilled labor with limited bargaining power in the labor market. It establishes a statutory wage floor intended to ensure a decent standard of living, reduce poverty, and promote a more equitable income distribution (International Labour Office, 2012). Anita et al. (2022) define the minimum wage as the lowest level of remuneration mandated by the government to meet workers' basic living needs and uphold social justice in employment relations. In Indonesia, although the UMR framework is governed by national legislation, its determination is decentralized and adjusted to regional macroeconomic conditions such as economic growth, inflation, and welfare indicators. Consequently, minimum wages are set at the provincial or district/municipal level, reflecting local productivity, business capacity, and economic structure (Sukirno, 1994).

Empirical studies on minimum wage determination and impacts, however, reveal divergent findings. Some research emphasizes the role of macroeconomic growth indicators—such as Gross Regional Domestic Product (GRDP)—in driving wage increases, arguing that higher regional output enhances firms' ability to pay higher wages. Other studies highlight social indicators, including poverty rates and cost-of-living measures, as more

influential determinants, suggesting that wage policies are often shaped by social protection considerations rather than purely economic performance. This divergence indicates that minimum wage setting is not solely an outcome of market efficiency but also reflects political, institutional, and redistributive objectives.

From a labor market perspective, classical and neoclassical theories posit that wage levels are determined by the interaction of labor supply and demand, with equilibrium wages reflecting marginal productivity (Putra, 2021). However, these models assume competitive labor markets and perfect information, conditions that rarely hold in developing regions. In reality, labor markets in Indonesia are frequently characterized by monopsonistic tendencies, informal employment dominance, and asymmetric bargaining power, which weaken workers' ability to negotiate fair wages. As a result, government intervention through minimum wage policies becomes necessary to correct market failures and establish minimum income standards.

Despite their contributions, prior empirical models often rely on limited sets of economic variables—such as output growth or employment levels—without adequately incorporating fiscal capacity, human capital, or social vulnerability indicators. Studies that focus exclusively on economic growth may overlook the role of regional fiscal decentralization, particularly the influence of local government budgets (APBD) in financing social protection and labor-related programs. Similarly, models emphasizing business indicators, such as the number of firms or investment projects, may fail to capture how education and poverty conditions shape wage policy decisions. These omissions constrain the explanatory power of previous models and lead to inconsistent empirical findings across regions.

Moreover, existing research frequently adopts cross-sectional or short time-series approaches, limiting the ability to account for unobserved regional heterogeneity and dynamic policy adjustments. Such methodological limitations reduce the robustness of conclusions regarding minimum wage determinants. Therefore, a panel data approach that integrates macroeconomic, fiscal, social, and human capital variables is required to better capture the complexity of UMR determination at the regional level.

In this context, the present study contributes to the literature by addressing these gaps through the incorporation of regional fiscal capacity, poverty conditions, educational participation, and investment dynamics within a panel data framework. By doing so, it provides a more comprehensive and context-sensitive explanation of minimum wage determination in decentralized regional economies.

RESEARCH METHOD

This study empirically examines the influence of regional macroeconomic variables on the determination of the Regional Minimum Wage (UMR) across five districts/cities in Central Java Province over the period 2018–2023. The research adopts a purposive sampling strategy, whereby the selected regions Kendal, Semarang, Pekalongan, Pemalang, and Tegal—were chosen based on three criteria: (1) consistent availability of complete secondary data for all variables during the observation period, (2) representation of both urban and semi-industrial regions within Central Java, and (3) relevance to regional wage policy dynamics due to variations in fiscal capacity, poverty levels, and economic structure. This approach

ensures data reliability while capturing heterogeneity in regional economic conditions relevant to UMR determination.

Secondary data were obtained from the Central Statistics Agency (BPS), ensuring standardized measurement and comparability across regions and years. The unit of analysis is the district/city-year observation. The dependent variable is the annual Regional Minimum Wage (UMR). The independent variables include Gross Regional Domestic Product (GRDP), poverty rate, number of Micro, Small, and Medium Enterprises (MSMEs), regional budget (APBD), number of investment projects, and educational participation.

Educational participation is measured using the Gross Enrollment Ratio (GER), which reflects the proportion of students enrolled at a given education level regardless of age. GER is employed because it better captures overall access to education and human capital accumulation across regions with heterogeneous demographic structures, compared to APS or APM, which are more age-restrictive.

The study employs panel data regression analysis, combining cross-sectional and time-series dimensions to enhance estimation efficiency and control for unobserved heterogeneity. Three estimation models are considered sequentially: the Common Effect Model (CEM), the Fixed Effect Model (FEM), and the Random Effect Model (REM). Model selection is conducted using the Chow test to compare CEM and FEM, followed by the Hausman test to determine the appropriateness of FEM versus REM. A non-significant Hausman test result indicates that individual effects are uncorrelated with the regressors, justifying the use of REM, which provides more efficient estimates.

The empirical model is specified as follows:

$$\log UMR_{it} = \beta_0 + \beta_1 \log PDRB_{it} + \beta_2 \text{Poverty}_{it} + \beta_3 \log UMKM_{it} + \beta_4 \log APBD_{it} + \beta_5 \log Inv_{it} + \beta_6 \text{Edu}_{it} + \varepsilon_{it}$$

To improve model validity and interpretability, several variables—UMR, GRDP, number of MSMEs, APBD, and investment projects—are transformed using natural logarithms. This transformation stabilizes variance, mitigates heteroscedasticity, reduces the influence of extreme values, and allows estimated coefficients to be interpreted as elasticities. Poverty rate and educational participation, already expressed in percentage terms, are not log-transformed.

To address potential issues of heteroscedasticity and serial correlation commonly present in panel data, the estimation applies **robust standard errors using the Generalized Least Squares (GLS) approach** under the Random Effect framework. This adjustment enhances the reliability and consistency of statistical inference.

Panel data regression is particularly suitable for this study due to its methodological advantages, including increased degrees of freedom, control over unobserved region-specific characteristics, and the ability to capture temporal dynamics in economic and social variables that influence wage policy.

Despite these strengths, this study has several limitations. First, the analysis is confined to five districts/cities, which may limit the generalizability of the findings to other regions. Second, the use of secondary data restricts the inclusion of institutional and political factors that may also affect UMR determination. Finally, the study focuses on macro-level indicators and does not capture firm-level or labor market behavioral dynamics, which could be explored in future research.

RESULTS AND DISCUSSION

Table 1. CEM, FEM, and REM Regression Results

Variabel	Regression Coefficient		
	CEM	FEM	REM
C	14,0442	-21,6078	14,0442
logPDRB	-0,0737	2,0548	-0,0737
Poverty	0,0138	0,1270	0,0138
logUMKM	-0,0267	-0,0530	-0,0267
logAPBD	0,0166	-0,0109	0,0166
logInv	0,0239	0,0143	0,0239
Edu	0,0199	0,0083	0,0199
R ²	0,7753	0,9325	0,8707
Prob. F-Stat.	0,0000	0,0000	0,0000

Chow Test

-Cross-section F (4,17) = 22,04; Prob. F (4,17) = 0,0000

Hausman Test

-Cross-section χ^2 (6) = 10,61; Prob. χ^2 (6) = 0,1011

Wooldridge Test

-Cross-section F (1,4) = 22,852; Prob. F (1,4) = 0,0000

Heteroscedasticity Test

-Cross-section χ^2 (5) = 26,67; Prob. χ^2 (5) = 0,0001

(Source: Processed with Stata MP17)

Based on Table 1, the selection of the most appropriate model was conducted through two stages: the Chow test and the Hausman test. The Chow test, which compares the Common Effect Model (CEM) with the Fixed Effect Model (FEM), yielded an F-probability value of 0.0000, below the 0.05 significance level, indicating that the FEM is more suitable than the CEM. Subsequently, the Hausman test was performed to decide between the Random Effect Model (REM) and FEM, producing a probability value of 0.1011, which exceeds the 0.05 threshold. Consequently, the null hypothesis (H0) was accepted, confirming that the REM is the most appropriate model for this study.

Table 2. REM Regression Results

$logUMR_{it} = 14,0442 - 0,0737logPDRB_{it} + 0,0138Poverty_{it} - 0,0267logUMKM_{it}$
(0,648) (0,056)* (0,622)
$+0,0166logAPBD_{it} + 0,0239logInv_{it} + 0,0199Edu_{it}$
(0,000)*** (0,189) (0,004)***
$R^2 = 0,8707; F = 72,45; Prob. F = 0,0000$

(Source: Processed with Stata MP17).

Discussion

Based on Table 2, the F-statistic probability value is 0.0000, which is less than the significance level $\alpha = 0.05$, indicating that the null hypothesis (H0) is rejected. This means that, collectively, the Gross Regional Domestic Product (GRDP), poverty rate, number of Micro, Small, and Medium Enterprises (MSMEs), Regional Budget (APBD), investment projects, and educational participation significantly influence the Regional Minimum Wage (UMR) in the districts of Kendal, Semarang, Pekalongan, Pemalang, and Tegal during 2018–2023. The coefficient of determination (R²) is 0.8707, meaning that 87.07% of the variation in UMR can be explained by the variations in these variables, while the remaining 12.93% is attributed to other factors outside the model.

The REM model's constant values show that Pekalongan district in 2019 had the lowest constant, indicating the lowest growth impact of the studied variables on UMR during 2018–2023. Conversely, Semarang city in 2022 had the highest constant, representing the highest growth effect of these variables on UMR within the same period.

Table 2 also reveals that poverty rate, APBD, and educational participation have a significant partial effect on UMR, evidenced by their t-test probabilities being significant at 1% and 10% levels. Meanwhile, GRDP, MSMEs, and investment projects do not show significant effects, as their t-test probabilities are not statistically significant.

The poverty coefficient is 0.0138, meaning a 1% increase in poverty rate raises the UMR by 1.38%. This suggests local governments tend to raise wages as a responsive measure to socioeconomic pressures caused by high poverty levels (Yusnike & Natalia, 2023). This policy aims to protect the purchasing power of low-income workers and prevent further economic hardship (Rahmi & Riyanto, 2022). This finding aligns with Zhang (2024), who stated that poverty is a critical determinant in adjusting minimum wage policies because regions with higher poverty face social pressure to improve living standards. Increasing the UMR is viewed as an intervention to reduce welfare gaps and promote income redistribution (Mudana & Purbadharmaja, 2024).

The coefficient for log APBD is 0.0166, indicating that a 1% increase in regional budget spending on the labor sector raises UMR by 0.0166%. This suggests that higher fiscal capacity enhances a region's ability and willingness to set better minimum wage standards (Sakti et al., 2024). Nurkodri et al. (2024) support this by emphasizing government spending's crucial role in creating conducive economic conditions for social welfare improvements. Public expenditures often fund labor sector support such as training subsidies, economic infrastructure development, and incentives for labor-intensive industries, all contributing to minimum wage increases (Liuyi et al., 2023).

The educational participation coefficient (Edu) is 0.0199, meaning every 1% increase in secondary education participation boosts UMR by 1.99%. This supports Harini et al. (2024), who found that human capital quality contributes to higher minimum wages. Similarly, Kokkinopoulou et al. (2025) highlight that improved productivity through education reflects the marginal product of labor, which translates into wage structure. Damayanti (2024) also found a positive correlation between education level and UMR, as better-educated workers tend to have higher capacity and wage demands.

Although theoretically GRDP is considered a primary indicator for setting UMR levels, the estimation results show that log GRDP does not significantly affect UMR. This is likely due to uneven regional income distribution or dominance of non-labor-intensive sectors, meaning economic growth does not automatically translate into wage increases. This finding contrasts with Putra & Arif (2023), who found GRDP significantly influences UMR in East Java. The discrepancy suggests that structural economic factors such as uneven development and dominant sectors must be considered when analyzing the relationship between economic growth and minimum wages.

The MSME variable shows a negative but insignificant impact on UMR. Despite being key labor absorbers, MSMEs' low productivity and informal nature may explain why their growth does not directly raise minimum wages (Khotimah & Surhatono, 2023). MSMEs often operate on a small scale and informally, making them less bound to comply fully with minimum wage regulations or unable to meet those standards optimally (Ramadhan &

Juanda, 2021). This agrees with Munarni et al. (2024), who argue that informality and low efficiency hinder MSMEs' ability to drive wage increases. Therefore, policies aiming to enhance MSME capacity should include formalization and skills training programs to increase their impact on wages.

Finally, investment projects do not show a significant influence on UMR. This may be because investments in the five studied districts are still concentrated in non-labor-intensive sectors or have not generated substantial spillover effects to local employment (Ali et al., 2022). This contrasts with Nofriza (2024), who reported positive effects of investment on UMR in advanced industrial regions. The effectiveness of investment on wages thus depends heavily on the sector type and distribution of invested capital. Consequently, investment policies should prioritize productive sectors capable of boosting economic capacity and intensive labor absorption.

CONCLUSION

This study synthesizes evidence that regional macroeconomic conditions significantly shape the determination of the Regional Minimum Wage (UMR) in five districts/cities of Central Java during 2018–2023, with wage-setting driven more by social and fiscal considerations than by aggregate growth indicators. Poverty rates, regional fiscal capacity (APBD), and educational participation emerge as key determinants, indicating that UMR functions as a social protection instrument, a reflection of local budgetary strength, and a response to improvements in human capital. In contrast, the insignificance of GRDP, MSME numbers, and investment projects suggests structural gaps between economic growth, investment inflows, and wage transmission at the local level. Policy implications point to the need for actionable tools, including prioritizing APBD allocations for labor-intensive and wage-support programs, expanding access to secondary and vocational education aligned with local labor demand, and strengthening the informal sector through skills training, credit access, and gradual formalization. This study is limited by its restricted regional scope, short observation period, and exclusion of institutional and sectoral factors; therefore, future research should incorporate broader regional coverage, longer time horizons, and governance-related variables, as well as apply dynamic or spatial panel approaches to better capture wage dynamics.

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