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Optimization Strategy For The Demographic Dividend In Indonesia 2025-2040: A Labour Market Equilibrium Approach In Indonesia

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Abstract

The demographic dividend is a strategic opportunity for Indonesia to boost economic growth through the dominance of its working-age population. However, this benefit can only be realized if the labour market is able to absorb workers optimally, creating a balance between labour demand and labour supply. This study aims to analyze the effect of the minimum wage, Gross Fixed Capital Formation (GFCF), and the demographic dividend on youth labour absorption as a basis for formulating a strategy to optimize Indonesia's demographic dividend for the 2025–2040 period. The study uses panel data from 34 provinces in Indonesia over the 2015–2024 period sourced from the Central Statistics Agency (BPS). The analysis was conducted using a ***Dynamic Panel Data*** *approach through the* ***Two-Step System Generalized Method of Moments (SYS-GMM)*** *method to address potential endogeneity and capture the dynamics of labour absorption. The SYS-GMM estimation results show that* ***the one-period lagged minimum wage and the demographic dividend have a positive and significant effect on youth labour absorption, while Gross Fixed Capital Formation (GFCF) has a negative but insignificant effect.*** *These findings indicate that the increase in the working-age population needs to be supported by policies capable of strengthening labour market equilibrium through the creation of productive jobs, improving the quality of human resources, and directing investment more toward job creation so that the demographic dividend can be optimized sustainably.*

Keywords : demographic dividend; labour market equilibrium; youth labour absorption;

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INTRODUCTION

The demographic dividend is a condition in which the proportion of the working-age population is greater than the non-working-age population, creating an opportunity for a country to boost economic growth. According to the *demographic dividend* theory, changes in the population's age structure can increase productivity, savings, investment, and economic growth if supported by the quality of human resources and the availability of adequate job opportunities (Bloom et al., 2003; Hayes, 2015). Conversely, if the increase in the working-age population is not matched by the economy's capacity to absorb labour, the demographic dividend can instead lead to rising unemployment and declining national productivity. Thus, the benefits of the demographic dividend do not occur automatically, but depend heavily on the effectiveness of employment and economic development policies.

Indonesia is one of the countries currently entering the demographic dividend phase. Based on population projections, the 2025–2040 period is expected to be the peak of Indonesia's demographic dividend, marked by the dominance of the working-age population in the national population structure. This condition presents a strategic opportunity to boost economic growth through increased labour productivity and production capacity. However, this opportunity also presents challenges, as the growing working-age population must be matched by the creation of job opportunities capable of productively absorbing the additional labour force. If the labour market fails to create a balance between labour demand and labour supply, the demographic dividend has the potential to turn into a development burden (UNFPA, 2024).

From the perspective of labour economics, the successful utilization of the demographic dividend cannot be separated from the concept of **labour market equilibrium (***labour market equilibrium***)**. Labour market equilibrium occurs when the quantity of labour demanded by businesses equals the quantity of labour supplied by the population at a given wage level (Borjas, 2016). On the demand side, firms will add workers if labour costs and profit prospects support production expansion. Meanwhile, on the supply side, an increase in the working-age population will enlarge the supply of labour entering the labour market. Therefore, optimizing the demographic dividend can only be achieved if the increase in labour supply is matched by an increase in labour demand through productive investment and inclusive economic growth.

Various studies have examined the relationship between the demographic dividend and labour absorption, but the results still show mixed findings. Maryam (2025), found that the demographic dividend has the potential to drive economic growth in

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Indonesia, but this growth has not been fully followed by growth in job opportunities. Through an analysis of *Employment Opportunity Elasticity*, the study showed that most economic sectors in Indonesia have low employment elasticity, so economic growth has not been able to absorb additional labour optimally. The study asserted that the success of the demographic dividend requires increased investment, improved human resource quality, and sustainable job-creation policies. However, the study did not analyze the economic factors that directly affect labour absorption, nor did it consider labour market dynamics across periods.

The results of the study by Asia et al. (2024), show that Regional Gross Domestic Product (GRDP) has a positive and significant effect on labour absorption in the era of the demographic dividend, while the working-age population has a negative effect. These findings indicate that an increase in the working-age population does not automatically increase labour absorption if it is not supported by growth in economic activity. Nevertheless, the study only used a few macroeconomic variables and thus did not include labour cost factors or investment as key determinants of labour demand. In addition, the static panel regression approach used has not been able to explain the dynamics of labour absorption adjustment over time.

Research on the economic factors affecting labour absorption also shows inconsistent results. Febiaranti & Utomo (2025), found that Gross Domestic Product (GDP) and economic openness have a positive effect on labour absorption, while the minimum wage, investment, inflation, and government spending have a negative effect. These results indicate that an increase in investment is not always followed by an increase in labour absorption, because capital-intensive investment tends to substitute labour with technology. In contrast, Rini & Septriani (2025) showed that the minimum wage and investment have a positive effect on labour absorption in Indonesia's manufacturing sector. The differing results of these two studies indicate that the effect of investment and wage policy on labour absorption still depends on the characteristics of the economic sector, the region studied, and the analytical approach used.

Based on the various studies above, several research gaps remain. Previous studies generally examined the demographic dividend, investment, and wage policy separately, thus failing to provide a complete picture of the labour absorption mechanism within a labour market equilibrium framework. In addition, most studies still use a static econometric approach and have therefore not been able to capture the dynamic nature of labour absorption, which is influenced by conditions in the previous period as well as potential endogeneity among variables. Furthermore, research on the demographic

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dividend in Indonesia generally uses the proportion of the working-age population or the *dependency ratio* as an indicator, whereas this study uses the demographic dividend as an indicator of the working-age population structure (15-29 years), which is more appropriate for explaining the dynamics of labour absorption.

Building on these gaps, this study makes several contributions: first, it integrates the minimum wage, Gross Fixed Capital Formation (GFCF), and the demographic dividend into a labour market equilibrium framework, so that labour absorption is viewed as the result of the interaction between labour demand and labour supply. Second, this study uses the *Two-Step System Generalized Method of Moments* (SYS-GMM) method, which is able to address potential endogeneity, unobserved heterogeneity, and adjustment dynamics in panel data.

Based on the description above, this study aims to analyze the effect of the minimum wage, Gross Fixed Capital Formation (GFCF), and the demographic dividend on labour absorption in Indonesia, using a labour market equilibrium approach through the *Two-Step System Generalized Method of Moments* (SYS-GMM) method. The results of this study are expected to make an empirical contribution to the development of labour economics literature, while also providing input for the government in formulating a strategy to optimize the demographic dividend for the 2025–2040 period.

LITERATURE REVIEW

Demographic Dividend Theory

The demographic dividend (*demographic dividend*) is a condition in which the proportion of the working-age population is greater than the non-working-age population, creating an opportunity for a country to boost economic growth. According to Bloom et al. (2003), changes in the population's age structure can provide economic benefits through increased labour productivity, domestic savings, investment, and capital accumulation. However, these benefits do not occur automatically, but depend heavily on the government's capacity to create job opportunities, improve the quality of human resources, and maintain economic stability.

From the *demographic dividend* perspective, an increase in the working-age population will expand production capacity if the available labour can be absorbed by the labour market. Conversely, if growth in the working-age population is not matched by the creation of adequate jobs, the demographic dividend can turn into a *demographic burden* marked by rising unemployment and low economic productivity (Hayes, 2015). Therefore,

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the demographic dividend should not only be seen as a demographic phenomenon, but also as a development opportunity that is strongly influenced by labour market conditions.

Labour Market Equilibrium Theory

The *Labour Market Equilibrium* theory is the main foundation of this study. This theory explains that the level of employment is determined by the interaction between labour demand (*labour demand*) and labour supply (*labour supply*). The labour market is said to be in equilibrium when the quantity of labour demanded by firms equals the quantity of labour supplied by households at a given wage level (Borjas, 2016;(Ehrenberg & Smith, 2003). On the demand side (*labour demand*), firms determine the quantity of labour based on the wage level, labour productivity, and their production capacity. The greater a firm's production capacity, the greater its need for labour. Conversely, on the supply side (*labour supply*), the quantity of labour is influenced by demographic characteristics, education level, and individuals' decisions to participate in the labour market.

In this study, the labour market equilibrium approach is used to explain that labour absorption is the result of the interaction between factors affecting labour demand and labour supply. On the demand side, this study uses the minimum wage and Gross Fixed Capital Formation (GFCF) as the main determinants, while on the supply side the demographic dividend is used to represent the size of the working-age labour force.

Wage Theory

Wages are the compensation received by workers in return for their contribution to the production process. This study uses real wages, i.e., wages adjusted for the price level, so that they reflect workers' actual purchasing power. The use of real wages is considered more capable of describing economic incentives than nominal wages because it accounts for changes in inflation.

In neoclassical economic theory, the wage level is one of the main factors determining labour demand. A wage increase will raise production costs, so firms tend to reduce their use of labour if productivity does not increase (Borjas, 2016). However, the *Efficiency Wage* theory put forward by Akerlof and Yellen (1986) explains that paying higher wages can increase workers' motivation, discipline, productivity, and loyalty, thereby increasing a firm's production efficiency. The difference between these two approaches shows that the relationship between wages and labour absorption is not

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always linear, but is instead influenced by labour market characteristics, labour productivity, and economic conditions.

***Investment Theory* (Gross Fixed Capital Formation)**

Investment is one of the important factors determining economic growth and job creation. In this study, investment is proxied using Gross Fixed Capital Formation (GFCF) because it is able to describe the accumulation of capital goods used in the production process, such as buildings, machinery, vehicles, and production equipment. According to the Harrod–Domar growth theory, investment plays an important role in increasing production capacity, thereby driving output growth and creating new job opportunities (Todaro & Smith, 2020). The greater the investment made, the greater a firm's production capacity, and thus the greater the demand for labour.

Labour Absorption Theory

Labour absorption is the ability of an economy to make use of available labour in productive economic activity. In the *Derived Demand* theory, the demand for labour is a derived demand from the demand for the goods and services produced by firms. Thus, an increase in economic activity and production capacity will increase the demand for labour (Borjas, 2016).

In the context of the demographic dividend, labour absorption becomes an important indicator of development success because it shows the extent to which the additional working-age population can be integrated into the labour market. High labour absorption reflects the labour market's ability to create a balance between labour demand and labour supply. Conversely, low labour absorption indicates that the increase in the working-age population has not yet been optimally utilized, thereby potentially increasing unemployment.

The research model that systematically represents the flow of influence among variables is as follows:

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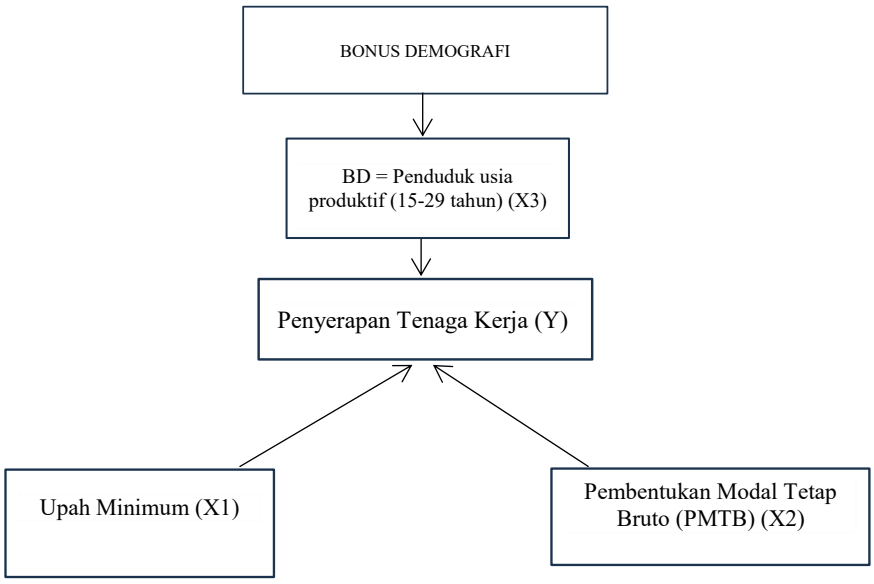


Figure 1. Conceptual Framework

Based on the research model that has been developed, the hypotheses in this study are formulated to test the relationships among the identified variables as follows:

H1: It is hypothesized that the minimum wage has a negative effect on youth labour absorption (15-29 years) in 34 provinces of Indonesia over the 2015-2024 period.

H2: It is hypothesized that Gross Fixed Capital Formation has a positive and significant effect on youth labour absorption (15-29 years) in 34 provinces of Indonesia over the 2015-2024 period.

H3: It is hypothesized that the demographic dividend (the size of the working-age population aged 15-29 years) has a positive and significant effect on youth labour absorption in 34 provinces of Indonesia over the 2015-2024 period.

H4: It is hypothesized that the minimum wage, GFCF, and the size of the working-age population (15–29 years) jointly affect youth labour absorption in 34 provinces of Indonesia over the 2015–2024 period.

RESEARCH METHOD

This study uses a quantitative approach to analyze the effect of the minimum wage, Gross Fixed Capital Formation (GFCF), and the demographic dividend on labour

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absorption in Indonesia. The data used is panel data consisting of 34 provinces in Indonesia over the period 2015–2024. All data are secondary data obtained from publications of the Central Statistics Agency (BPS), covering data on labour absorption, the minimum wage, Gross Fixed Capital Formation (GFCF), and the demographic dividend.

The dependent variable in this study is labour absorption (lnPTK). The independent variables consist of the minimum wage lagged by the previous year (lnUPAH_lag1), Gross Fixed Capital Formation (lnPMTB), and the demographic dividend (lnBD). All variables were transformed into natural logarithmic form to obtain an elasticity interpretation and reduce data heterogeneity. The empirical model used in this study is formulated as follows:

$$lnPTK_{it} = \beta_0 + \beta_1 lnPTK_{i,t-1} + \beta_2 lnUPAH_{i,t-1} + \beta_3 lnPMTB_{it} + \beta_4 lnBD_{it} + \varepsilon_{it}$$

Where:

- $lnPTK_{it}$ = labour absorption in province *i* in year *t*
- $lnPTK_{i,t-1}$ = labour absorption in the previous period
- $lnUPAH_{i,t-1}$ = minimum wage in the previous period
- $lnPMTB_{it}$ = Gross Fixed Capital Formation
- $lnBD_{it}$ = demographic dividend
- β_0 = constant
- $\beta_1, \beta_2, \beta_3, \beta_4,$ = parameter coefficients
- ε_{it} = error term.

The data analysis was conducted using the ***Dynamic Panel Data*** method with the ***Two-Step System Generalized Method of Moments (SYS-GMM)*** approach developed by Arellano & Bond (1991) and Blundell & Bond (1998). This method was chosen because it is able to address potential endogeneity, unobserved individual heterogeneity, and *dynamic panel bias* arising from the presence of a lagged dependent variable. Before estimation, the data were tested using descriptive statistics, a stationarity test, a cointegration test, and panel model selection as preliminary analyses. Subsequently, the validity of the SYS-GMM model was evaluated using the **Arellano–Bond test** to test for second-order autocorrelation (AR(2)) and the **Hansen test** to test the validity of the instruments. All data processing was carried out using **Stata 17**.

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DISCUSSION

1. Descriptive Statistical Analysis

Descriptive statistical analysis was conducted as an initial step to provide a general overview of the characteristics of the research data before estimation using the SYS-GMM method. Descriptive statistics present information on the number of observations, the mean, standard deviation, minimum value, and maximum value (*mean*), standard deviation (*standard deviation*), minimum value (*minimum*), and maximum value (*maximum*) for each research variable. The results of the descriptive statistical analysis are presented in Table 1.

Table 1. Results of Descriptive Statistical Analysis

Variable	Obs	Mean	Std. dev	Min	Max
PTK	340	13.1885	1.002475	11.24269	15.61546
UPAH	340	14.6695	0.249908	13.82036	15.48979
PMTB	340	15.4127	1.152493	13.15576	18.20068
BD	340	13.9024	0.995047	11.95378	16.34739

Source: Stata 17 (processed data)

Based on Table 1, all research variables have 340 observations from 34 provinces over the 2015–2024 period. The GFCF variable shows the largest variation across provinces, while the minimum wage has the lowest variation. This indicates that investment activity across provinces is relatively more heterogeneous than the minimum wage level. In addition, variation in labour absorption and the demographic dividend indicates differences in labour market characteristics and demographic structure across regions in Indonesia. In general, standard deviation values smaller than the mean values indicate that the data have a relatively good spread and are suitable for use in dynamic panel analysis.

2. Stationarity Test

Before estimation using the *Dynamic Panel Data Two-Step System Generalized Method of Moments* (SYS-GMM) method, a stationarity test was first conducted to ensure that the data do not contain a unit root (*unit root*). The stationarity test was conducted using the *Levin-Lin-Chu* (LLC) *Unit Root Test*, which is one method for testing unit roots in panel data under the assumption that all cross-section units have a homogeneous

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cross-section autoregressive process. A variable is declared stationary if its probability value (*p-value*) is smaller than the 5% significance level (α = 0.05). The results of the stationarity test are presented in Table 2.

Table 2. Results of the *Stationarity Test*

Variable	Adjusted t* Level	Prob	Description Level	Adjusted t* First Difference	Prob	Description First Difference
lnPTK	0.6284	0.7351	Not Stationary	-8.9861	0.0000	Stationary
lnUPAH_ lag1	-10.2651	0.0000	Stationary	-5.8418	0.0000	Stationary
lnPMTB	-3.4825	0.0002	Stationary	-6.9896	0.0000	Stationary
lnBD	-0.5091	0.3054	Not Stationary	-11.2371	0.0000	Stationary

Source: Stata 17 (processed data)

Based on Table 2, the results of the Levin-Lin-Chu (LLC) Unit Root Test show that the variables lnUPAH_lag1 and lnPMTB are stationary at level, as indicated by probability values of 0.0000 and 0.0002 respectively (< 0.05). Meanwhile, the variables lnPTK and lnBD are not yet stationary at level because their probability values are greater than 0.05, namely 0.7351 and 0.3054. After first differencing (*first difference*), all variables show probability values of less than 0.05, and are thus declared stationary at *first difference*. These results indicate that the research variables have different orders of integration, namely I(0) and I(1). Therefore, a cointegration test is needed to confirm the existence of a *long-run equilibrium* relationship among the variables before estimation is carried out using the SYS-GMM method.

3. Cointegration Test

After all variables satisfied the stationarity requirement, the next step was to conduct a cointegration test to determine whether there is a long-run equilibrium relationship among the research variables. The cointegration test was conducted using the *Kao Residual Cointegration Test*, which tests the null hypothesis that there is no cointegration relationship among the variables in the panel model. The results of the cointegration test are presented in Table 3.

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Table 3. Results of the Cointegration Test

Type of Test Statistic	Statistic Value	P-Value
Modified Dickey-Fuller	0.0708	0.4718
Dickey-Fuller	-3.9648	0.0000
Augmented Dickey-Fuller	-1.7278	0.0420
Unadjusted Modified Dikey-Fuller	-8.0122	0.0000
Unadjusted Dickey-Fuller	-8.9327	0.0000

Source: Stata 17 (processed data)

Based on Table 3, the results of the *Kao Residual Cointegration Test* show that the *Dickey-Fuller, Augmented Dickey-Fuller, Unadjusted Modified Dickey-Fuller*, and *Unadjusted Dickey-Fuller* statistics have *p-value*s smaller than 0.05, thereby rejecting the null hypothesis that there is no cointegration relationship. Although the *Modified Dickey-Fuller* test is not significant (*p-value* = 0.4718), most of the test statistics show significant results, so it can be concluded that there is a long-run equilibrium relationship among labour absorption, the minimum wage, GFCF, and the demographic dividend.

4. Unbiasedness Test

This study compares the estimation results of the CEM, FEM, FD-GMM, and SYS-GMM models to identify the most efficient estimation model. The most efficient model in this test is the one whose lagged dependent-variable coefficient falls between the lagged dependent-variable coefficients of the CEM and FEM models. The results of the tests conducted are as follows:

Table 4. Results of the Unbiasedness Test

Variable	CEM	FD-GMM	SYS-GMM	FEM
lnPTK L1	0.29908896***	-0.2882418***	-0.14804866**	0.0669
lnUPAH_lag1	-0.04995514	0.68493202***	0.63877582***	0.0104
lnPMTB	0.01141466	-0.0794	-0.083	0.07347477**
lnBD	0.69065341***	0.93460274***	1.2845275***	1.0371945***
constant	0.205627	-	-10.75798***	-3.3926409***

Note: Asterisks *, **, ***, indicate significance at α 5%, 1%, 0.1%

Source: Stata 17 (processed data)

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Based on Table 4, the lag coefficient of the dependent variable (L1.lnPTK) in the CEM and FEM models is 0.2991 and 0.0669, respectively, while in the FD-GMM and SYS-GMM models it is −0.2882 and −0.1480. Based on the concept of the *bounding property* (Bond, 2002), the GMM coefficient should ideally lie between the OLS estimate, which tends to be *upward biased*, and the FEM estimate, which tends to be *downward biased* due to *Nickell bias* (Nickell, 1981). However, in this study, the FD-GMM and SYS-GMM coefficients fall outside this range because they are negative.

Nevertheless, this condition does not necessarily mean that the SYS-GMM estimator is invalid. According to (Roodman, 2009), the validity of a GMM model is determined more by whether the Hansen test, the Arellano–Bond AR(1) and AR(2) tests, and an adequate number of instruments are satisfied. Because the SYS-GMM model in this study meets these criteria, the SYS-GMM estimator can still be used as the main model even though the *bounding property* is not satisfied.

5. Dynamic Panel Data Estimation Results *Dynamic* Panel Data (SYS-GMM)

After all the prerequisite testing stages were satisfied, the model was estimated using the *Two-Step System Generalized Method of Moments* (SYS-GMM) method.

Table 5. Results of the Logistic Regression Analysis Test

Variable	Coefficient	Std.Error	z-statistic	Prob
L1.PTK	-0.1480487	0.0536	-2.76	0.009
lnUPAH lag1	0.6387758	0.1274	5.01	0.000
lnPMTB	-0.083378	0.066	-1.26	0.215
lnBD	1.284528	0.0733	17.53	0.000
Constant	-10.75798	2.0981	-5.13	0.000
AR (1)				0.050
AR (2)				0.187
Hansen				0.198

Source: Stata 17 (processed data)

Based on Table 5, the SYS-GMM estimation equation from this study is obtained as follows:

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$$lnPTK_{it} = -10.75798 - 0.1480487lnPTK_{i,t-1} + 0.6387758lnUPAH_{i,t-1} - 0.083378lnPMTB_{it} + 1.284528lnBD_{it} + \varepsilon_{it}$$

Based on Table 4, the estimation results show that the *Two-Step* SYS-GMM model meets the feasibility criteria. The AR(2) probability value of 0.187 (> 0.05) indicates that the model does not suffer from second-order autocorrelation, while the *Hansen Test* probability value of 0.198 (> 0.05) shows that the instruments used are valid. In addition, the Wald χ^2 value of 92,224.85 with a probability of 0.000 shows that the model is jointly significant overall, so that the independent variables are jointly able to explain the variation in labour absorption.

The lagged youth labour absorption variable (L.lnPTK) has a coefficient of -0.1480487 with a probability of 0.009, which is smaller than 0.05, and thus has a negative and significant effect on youth labour absorption. The negative coefficient indicates a dynamic adjustment, in which labour absorption in the previous period negatively affects labour absorption in the current period. In other words, a 1% increase in labour absorption in the previous period tends to decrease labour absorption **in the current period by 0.148%**, *ceteris paribus*.

The variable for the minimum wage lagged by the previous period (lnUPAH_lag1) has a coefficient of 0.6387758 with a probability of 0.000, and thus has a positive and significant effect on youth labour absorption in Indonesia. This coefficient value indicates that every 1% increase in the minimum wage will increase youth labour absorption by 0.638776%, assuming other variables remain constant (ceteris paribus).

The Gross Fixed Capital Formation variable (lnPMTB) has a coefficient of -0.083378 with a probability of 0.215, and thus has no significant effect on youth labour absorption in Indonesia. Although the coefficient shows a negative direction of relationship, the effect is not statistically significant, so a change in GFCF cannot be proven to affect youth labour absorption during the study period.

The demographic dividend variable (lnBD) has a coefficient of 1.284528 with a probability of 0.000, and thus has a positive and highly significant effect on youth labour absorption in Indonesia. This coefficient value indicates that every 1% increase in the demographic dividend will increase youth labour absorption by 1.284528%, assuming other variables remain constant (*ceteris paribus*).

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6. Long-Run Estimation

Long-run estimation is used to examine the effect of the independent variables on the dependent variable in the long run. The results of the estimation conducted are as follows:

Table 6. Long-Run Estimation Results

Variable	Coefficient	Std.Error	z-statistic	Prob
lnUPAH lag1	0.0111287	0.0465	0.24	0.811
lnPMTB	0.0787454	0.0302	2.61	0.009
lnBD	1.111597	0.0705	15.78	0.000

Source: Stata 17 (processed data)

Based on the long-run estimation results in Table 6, the minimum wage variable (lnUPAH lag1) has a coefficient of 0.0111 with a probability value of 0.811, and thus has no significant effect on labour absorption in the long run. This result indicates that changes in the minimum wage have no meaningful effect on labour absorption once the long-run adjustment process is reached. These findings indicate that the wage effect observed in the short run tends to be temporary and does not persist in the long run.

In contrast, the Gross Fixed Capital Formation variable (lnPMTB) has a positive and significant effect on labour absorption in the long run, with a coefficient of 0.0787 and a probability value of 0.009. This coefficient value indicates that a 1% increase in GFCF will increase labour absorption by 0.08% in the long run, *ceteris paribus*. This result indicates that investment accumulation is ultimately able to create greater production capacity, thereby increasing the demand for labour.

Meanwhile, the demographic dividend (lnBD) has a positive and significant effect, with a coefficient of 1.1116 and a probability value of 0.000. This coefficient indicates that a 1% increase in the working-age population will increase labour absorption by 1.11% in the long run, *ceteris paribus.* The magnitude of this coefficient shows that the demographic dividend is the most dominant factor affecting labour absorption. This finding indicates that an increase in the working-age population (15-29 years) can still serve as a source of employment growth if supported by the economy's capacity to absorb the additional labour.

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Effect of the Minimum Wage on Labour Absorption

Based on the estimation results of the *Two-Step System Generalized Method of Moments* (SYS-GMM), the previous-period minimum wage variable has a positive and significant effect on labour absorption, with a coefficient of 0.6388 and a probability value of 0.000. These results indicate that a 1% increase in the minimum wage can increase labour absorption by 0.6388%, assuming other variables remain constant. These findings indicate that an increase in the minimum wage does not act as a deterrent for firms in absorbing labour, but is instead associated with increased job opportunities.

According to the *Labour Market Equilibrium Theory*, labour absorption is determined by the interaction between labour demand and labour supply. In a growing economy, an increase in the minimum wage can reflect rising economic activity and labour productivity. An increase in worker income drives household consumption, thereby increasing the demand for goods and services. This condition encourages firms to increase their production capacity, which in turn increases the demand for labour (Borjas, 2016; Ehrenberg & Smith, 2003).

This finding can also be explained through the concept of *derived demand*, which states that the demand for labour is a derived demand from the demand for output. When the demand for goods and services increases, firms will increase their use of factors of production, including labour. Thus, a minimum wage increase does not always reduce labour absorption if it is accompanied by increased productivity and market demand (Borjas, 2016).

This finding is in line with the study by Card & Krueger (1993), who found that an increase in the minimum wage in the fast-food industry in New Jersey did not reduce labour absorption, and in fact increased the number of workers compared to restaurants in Pennsylvania, which did not experience a change in the minimum wage. These findings show that the relationship between the minimum wage and labour absorption is not always negative, as described in the neoclassical labour demand theory, but is instead influenced by the characteristics of the labour market in question.

In line with the findings of Card and Krueger (1993), the results of this study indicate that the increase in the minimum wage in Indonesia has not become a burden that drives firms to reduce their use of labour. This condition may occur because most of the labour absorbed consists of skilled workers required in the production process, so firms continue to retain or even add workers despite the wage increase. In addition, the minimum wage increases that occurred during the study period were likely still within a

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level that firms could bear, and therefore did not cause a significant decline in labour demand.

This result also indicates that the characteristics of Indonesia's labour market still show a fairly large role for the informal sector. In this sector, hiring decisions are generally influenced more by production needs and business conditions than by changes in the minimum wage level. Therefore, an increase in the minimum wage is not automatically followed by a decrease in labour absorption, as predicted by neoclassical theory.

This finding is supported by the studies of Wati and Juanda (2024), Jaya and Kholilah (2020), and Febiaranti & Utomo (2025), which show that an increase in the minimum wage can contribute to increased labour absorption if supported by growing economic activity and increased labour productivity. Thus, the effect of the minimum wage on labour absorption is determined not only by the size of the wage, but also by labour market conditions, economic structure, and the capacity of businesses to absorb labour.

Effect of GFCF on Labour Absorption

Based on the estimation results of the *Two-Step System Generalized Method of Moments* (SYS-GMM), the Gross Fixed Capital Formation variable has a coefficient of −0.0834 with a probability value of 0.215, and thus has no significant effect on labour absorption. Consequently, the hypothesis stating that GFCF affects labour absorption is rejected. This result indicates that the increase in investment proxied by GFCF during the study period has not been able to significantly increase labour absorption.

Nevertheless, the results indicate that the increase in GFCF has not yet had a significant impact on labour absorption. This condition indicates that investment in Indonesia during the study period has been directed more toward *capital-intensive* sectors than *labour-intensive* sectors. Additional investment tends to be used for purchasing machinery, modernizing production equipment, building infrastructure, and adopting technology, thereby contributing more to increased capital productivity than to additional labour. As a result, the increase in investment has not automatically been followed by an increase in the demand for labour.

This finding also indicates that investment reflected in GFCF, which is generally formal and officially recorded investment, has not been the main factor driving labour absorption during the study period. This result indicates that increased formal investment has not been fully able to create significant job opportunities. On the other hand, the demographic dividend in this study is shown to have a positive effect on labour absorption. This condition suggests that the labour absorption that has occurred does not necessarily

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come entirely from the formal sector supported by investment, but is likely also sustained by economic activity in the informal sector, which still plays a major role in the structure of Indonesia's economy.

This finding is consistent with the characteristics of the Indonesian economy, which still shows a dualism in the labour market, namely the coexistence of the formal and informal sectors developing side by side. Under these conditions, an increase in formal investment is not always followed by a significant increase in labour absorption if the investment is oriented more toward increasing productivity and production efficiency rather than expanding the use of labour.

This finding is also supported by Mustika & Khairani (2025), who showed that domestic investment plays a role in increasing labour absorption, although its effectiveness is strongly influenced by the characteristics of the investment made. Investment oriented more toward labour-intensive sectors will have a greater impact on labour absorption than capital-intensive investment. Additional investment tends to be used for purchasing machinery, modernizing production equipment, building infrastructure, and adopting technology, so that increased investment contributes more to increased capital productivity than to additional labour. This result is also supported by the study by Syuhada & Tasman (2014), on labour absorption in the MSME sector in Jambi City. That study found that the effect of GFCF on labour absorption depends on the characteristics of the business sector. Investment can increase labour absorption if directed toward labour-intensive sectors, whereas in sectors that rely more heavily on capital, an increase in investment does not always result in a large increase in job opportunities.

Overall, the results indicate that investment as reflected in GFCF has not been the main factor driving labour absorption. This finding suggests that increased investment needs to be accompanied by the development of labour-intensive sectors, improvement in the quality of human resources, and a stronger link between investment and labour market needs in order to have a greater impact on labour absorption.

Effect of the Demographic Dividend on Labour Absorption

Based on the estimation results of the *Two-Step System Generalized Method of Moments* (SYS-GMM), the demographic dividend variable has a positive and significant effect on labour absorption, with a coefficient of 1.2845 and a probability value of 0.000. These results indicate that a 1% increase in the demographic dividend can increase labour absorption by 1.2845%, assuming other variables remain constant. Thus, the

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hypothesis stating that the demographic dividend has a positive effect on labour absorption is accepted.

The results of this study indicate that the increase in the working-age population (15–29 years) has still been absorbed by Indonesia's labour market during the study period. These findings indicate that the labour market mechanism is still able to accommodate the increase in labour supply, so that the demographic dividend makes a positive contribution to increased job opportunities. In fact, compared to the other variables in the model, the demographic dividend has the largest positive effect on labour absorption, indicating that the demographic factor remains one of the main drivers of increased labour absorption in Indonesia.

This finding is in line with the *Labour Market Equilibrium Theory*, which explains that labour absorption will increase if growth in labour supply is matched by an increase in labour demand. In addition, this finding can also be explained through the *Human Capital Theory* put forward by Becker (1962), which states that the working-age population will make a greater economic contribution if it has adequate education, skills, and productivity. Thus, the successful utilization of the demographic dividend is determined not only by the size of the working-age population, but also by the quality of the human resources it possesses.

This finding is in line with the study by Maryati et al. (2021), which shows that changes in demographic structure play an important role in supporting Indonesia's economic development ahead of the demographic dividend era. That study explains that an increase in the working-age population will become development capital if accompanied by the availability of jobs, improved education quality, and labour productivity. Thus, the greater the working-age population that can be absorbed into economic activity, the greater its contribution to economic growth and community welfare. This finding is also consistent with (Yusuf et al., 2023), which asserts that the demographic dividend will only generate economic benefits if the working-age population is able to participate actively in the labour market and obtain productive employment.

Nevertheless, this study has not been able to identify whether the absorbed working-age labour force works predominantly in the formal or informal sector. This finding is important because the success of the demographic dividend is determined not only by the number of workers absorbed, but also by the quality and productivity of the jobs created. Therefore, further research needs to examine the characteristics of the jobs that absorb working-age labour so that the benefits of the demographic dividend can be evaluated more comprehensively.

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Overall, the results demonstrate that the demographic dividend is a strategic opportunity for Indonesia to increase labour absorption and support economic growth. However, this benefit does not occur automatically, but requires policy support focused on improving the quality of human resources, strengthening vocational education and training, developing the skills of young workers, and expanding productive job opportunities. Thus, the demographic dividend can be transformed into a *demographic dividend* that drives economic growth and sustainably improves community welfare.

Strategy for Optimizing the Demographic Dividend through Increased Youth Labour Absorption in Indonesia

The results show that the demographic dividend has a positive and significant effect on labour absorption, while the minimum wage also has a positive and significant effect. In contrast, GFCF has no significant effect. These findings indicate that the increase in the working-age population has been able to directly increase labour absorption, but has not yet been optimally supported by investment or labour market mechanisms in strengthening job creation. Thus, the demographic dividend still represents a *window of opportunity* that must be seized through appropriate policy before the proportion of the elderly population increases.

Based on the research results, the most relevant strategy is to improve the quality of human resources. Although the demographic dividend has directly increased labour absorption, the insignificant interaction results indicate that the increase in the working-age population has not yet been able to strengthen the effectiveness of investment or the effect of wages on labour absorption. This condition indicates that the focus of policy should shift from increasing the quantity of labour to improving the quality of labour through education, vocational education, competency-based training, skills certification, improving worker health, and developing digital skills that align with business needs. In line with the findings of Yusuf et al. (2023), optimizing the demographic dividend requires improving labour quality, expanding job opportunities, and ensuring labour market readiness to absorb the additional labour force, so that the demographic opportunity can produce a *demographic dividend* and not turn into a *demographic burden*. This approach is in line with the *Human Capital Theory*, which emphasizes that labour productivity is determined more by the quality of human capital than by the quantity of labour alone.

In addition to improving the quality of human resources, the government needs to encourage investment that is more oriented toward job creation, particularly in productive sectors with high labour absorption capacity. The results show that GFCF has not had a

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significant effect on labour absorption, so investment policy should not only be directed toward increasing capital accumulation, but also toward developing industries capable of absorbing young workers more broadly. On the other hand, wage policy needs to maintain a balance between improving worker welfare and business sustainability so that labour demand and supply can develop in a balanced manner.

Overall, the results indicate that the success of optimizing the demographic dividend no longer depends on increasing the size of the working-age population, since this variable has already been shown to have a positive effect on labour absorption. The main challenge going forward is to ensure that the working-age population has competencies that match labour market needs and is supported by the creation of productive job opportunities. Thus, the demographic dividend can be optimally utilized as development capital to sustainably increase labour absorption, economic growth, and community welfare.

CONCLUSION

The results show that the minimum wage and the demographic dividend have a positive and significant effect on labour absorption, while GFCF has a negative, insignificant effect. However, this study has not been able to explain whether the labour absorption driven by the demographic dividend occurs more in the formal or informal labour market. Therefore, taking advantage of the *window of opportunity* in the population structure is not sufficient to rely solely on the size of the working-age population (15-29 years); it also needs to be supported by government policies focused on improving the quality of human resources, creating productive jobs, and adopting investment policies more oriented toward sectors with high labour absorption capacity, since this study has not answered whether the absorption driven by the demographic dividend occurs in the formal or informal labour market. Therefore, future research is recommended to examine labour absorption based on formal and informal employment status so that the utilization of the demographic dividend in supporting economic growth can be understood more comprehensively.

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