

The Effect of Average Wages, Population Growth, and Inflation on Gross Domestic Product in Indonesia, 2010-2024

Erina Aprillia

Jurai Siwo Lampung State Islamic University

Email: Erinaaprillia828@gmail.com

M. Mujib Baidhowi

Jurai Siwo Lampung State Islamic University

Email: baidhowi34@gmail.com

Yuyun Yunarti

Jurai Siwo Lampung State Islamic University

Email: yuyunyunarti300977@gmail.com

Abstract

This study aims to analyze the effect of average wages, population growth, and inflation on Gross Domestic Product (GDP) in Indonesia over the period 2010–2024. This study uses a quantitative approach with secondary data obtained from official publications of the Central Statistics Agency (BPS) and other related sources. The analytical method used is multiple linear regression with the assistance of statistical software. The results show that, partially, average wages have a positive and significant effect on GDP with a significance value of 0.018 (< 0.05), population growth has a negative and significant effect on GDP with a significance value of 0.001 (< 0.05), while inflation has a negative but not significant effect on GDP with a significance value of 0.738 (> 0.05). Simultaneously, average wages, population growth, and inflation have a significant effect on GDP, as indicated by an F-value of 83.969 with a significance level of 0.000 (< 0.05). The coefficient of determination (Adjusted R Square) of 0.950 shows that 95.0% of the variation in GDP can be explained by the three independent variables in the model, while the remaining 5.0% is influenced by other factors outside the study. These results indicate that employment and demographic aspects play an important role in driving Indonesia's economic growth, while the relatively controlled inflation during the study period has not yet had a significant effect on GDP.

Keywords: Average Wages, Population Growth, Inflation, Gross Domestic Product

1. Introduction

The increase in Indonesia's Gross Domestic Product (GDP) during the 2010–2024 period has not always moved in line with developments in average wages, population growth, and inflation. In 2010, GDP grew from 3.13% to 10.80% in 2024. Average wages rose from 2.99% to 10.28%, while population growth actually declined from 1.49% to 1.11%. On the other hand, inflation, which reached 8.38% in 2013 and fell to 1.57% in 2024, was not always followed by a corresponding change in GDP. These differences in direction and pattern of development raise questions about which factor actually plays a larger role in driving changes in Indonesia's GDP. In addition, there are several empirical phenomena indicating that the relationship between average wages, population growth, inflation, and Gross Domestic Product (GDP) does not always follow theoretical predictions. During the study period, increases in average wages tended to be followed by rising public purchasing power and economic

activity that drove GDP growth. In contrast, the continued increase in population growth has not been fully matched by improvements in the quality of human resources and the availability of employment opportunities, so that population growth has not yet been able to make an optimal contribution to national output. Meanwhile, inflation in Indonesia during the 2010–2024 period remained relatively controlled, although it did rise in certain years, so that changes in inflation have not exerted sufficient pressure on consumption, investment, or GDP growth.

This phenomenon indicates that the relationship between average wages, population growth, inflation, and Gross Domestic Product (GDP) does not always follow theory or have an equally large influence. Therefore, empirical research is needed to analyze how each variable affects GDP in Indonesia. Studies on the factors that influence GDP are important because GDP is one of the main indicators used to measure a country's economic performance. Research by (Mustika, 2011) shows that economic growth is influenced by various economic and demographic factors. This finding is supported by research by (Nabila & Muljaningsih, 2024) which explains that changes in GDP are influenced not only by production factors, but also by evolving social and economic conditions in a country.

One factor that influences GDP is average wages. In the Neoclassical Growth Theory, labor is one of the main production factors that determines the level of economic output. Wage increases can serve as an incentive for workers to improve productivity, thereby driving an increase in national output. In addition, wage increases can also raise public purchasing power, which affects the increase in consumption and economic activity. Research by (Kasnelly & Sucitra, 2022) found that wages have a positive effect on economic growth. Similar results were also found by (Tuwinanto & Rahadi, 2021) which shows that wage increases can improve labor productivity and drive economic growth. However, (Simanjuntak & Sa'roni, 2019) explains that the effect of wages on economic growth is also influenced by labor market conditions and worker productivity.

In addition to average wages, population growth is also a factor that potentially influences GDP. The Neoclassical Growth Theory developed by Robert Solow explains that population growth can increase the amount of labor available in the economy, thereby potentially increasing national output. However, high population growth does not always have a positive impact if it is not accompanied by improvements in the quality of human resources and adequate employment opportunities. Research by (Mustika, 2011) shows that population growth has a positive relationship with economic growth. This finding is supported by research by (Yusrya, 2023) and (Anisa Putri et al., 2023) which state that population can become development capital if it is able to contribute to the production process and economic activities.

Another factor often associated with changes in GDP is inflation. According to Keynesian Theory in (Marissa et al., 2025), inflation is regarded as one of the indicators that influences aggregate demand through consumption, investment, government spending, and net exports. Low and stable inflation can drive economic activity, whereas high inflation can reduce public purchasing power and hinder economic growth. Research by (Herman, 2017) shows that inflation has a negative relationship with economic growth. This finding is reinforced by research by (Siti et al., 2023) which explains that uncontrolled inflation can suppress economic growth through a decline in consumption and investment. Meanwhile, research by (Sujatmiko et al., 2025) shows that the effect of inflation on economic growth is highly dependent on the level and stability of the inflation that occurs.

From an economic theory perspective, the relationship between average wages, population growth, inflation, and Gross Domestic Product (GDP) can be explained through a combination of the Neoclassical Growth Theory and Keynesian Theory. The Neoclassical Theory in (Hasan et al., 2020) states that labor and population size are production factors that contribute to increasing national output, while the Keynesian Theory in (Marissa et al., 2025) emphasizes the importance of price stability in maintaining aggregate demand and economic growth. The relevance of this theory became even more apparent during the Covid-19 pandemic, which began in 2020 and falls within the study period.

The pandemic caused a slowdown in economic activity, a decline in labor productivity, disruptions in the labor market, and a contraction in Indonesia's economic growth due to restrictions on public activity and declining production activity (Nugraha et al., 2023). On the other hand, restrictions on economic activity put pressure on workers' income and wages, while changes in demand and supply also affected the inflation rate (Rahmayani & Putri, 2021). In addition, a large population is an important factor in the post-pandemic economic recovery process because it serves as both a source of labor and a domestic market that can drive an increase in aggregate demand and GDP growth (Siregar et al., 2024).

Based on the theoretical foundation and results of previous studies, it can be presumed that average wages, population growth, and inflation are related to Gross Domestic Product (GDP) in Indonesia. According to the Neoclassical Growth Theory, increases in wages and population growth have the potential to drive an increase in economic output through improved labor productivity and the availability of production factors. Meanwhile, Keynesian Theory explains that inflation can affect economic activity through changes in aggregate demand, which ultimately impacts economic growth. Based on the theoretical foundation, research phenomena, and results of previous studies, the hypotheses of this study are as follows.

1. H1: Average wages have a positive effect on Gross Domestic Product (GDP) in Indonesia over the 2010–2024 period.
2. H2: Population growth affects Gross Domestic Product (GDP) in Indonesia over the 2010–2024 period.
3. H3: Inflation has a negative effect on Gross Domestic Product (GDP) in Indonesia over the 2010–2024 period.
4. H4: Average wages, population growth, and inflation simultaneously affect Gross Domestic Product (GDP) in Indonesia over the 2010–2024 period.

Therefore, including the variables of average wages, population growth, and inflation in this study is important to explain the dynamics of changes in Indonesia's GDP during the periods before, during, and after the Covid-19 pandemic. Unlike most previous studies, which generally focus on only one or two variables, this study simultaneously integrates aspects of employment, demography, and macroeconomic stability. In addition, the use of data up to 2024 is expected to provide a more current empirical picture of the factors that influence Gross Domestic Product (GDP) in Indonesia.

Literature Review

Neoclassical and Keynesian Economic Theory

The Neoclassical Growth Theory explains that economic growth is determined by the main factors of production, namely labor, capital, and technology. In the model developed by Robert Solow in (Hasan et al., 2020), increases in capital and labor will drive output, but in the long run economic growth is determined more by technological progress that increases productivity. The relationship between labor and capital determines the size of output, while technology plays a role in increasing efficiency so that the economy can reach a steady state (Krisnawati & Iskak Elly, 2022).

The Keynesian Theory in (Marissa et al., 2025), proposed by John Maynard Keynes, explains that economic activity is heavily influenced by aggregate demand, which consists of consumption, investment, government spending, and net exports. In this theory, inflation at a moderate level can reflect increasing public demand, thereby driving production activity and economic growth (Herman, 2017). However, if inflation is excessive and uncontrolled, public purchasing power will decline and create uncertainty that can hinder investment and economic activity (Siti et al., 2023). Therefore, inflation stability is one of the important factors in maintaining sustainable economic growth and increasing national output (Sujatmiko et al., 2025). This condition shows that inflation can have different effects on economic growth depending on its level and stability (Kusumatrisna et al., 2019).

Average Wages (X_1)

Average wages are the compensation received by workers for their contribution to the production process. Wages reflect the marginal productivity value of labor, so that an increase in

productivity will be followed by an increase in the level of wages. This is supported by research by (Kasnelly & Sucitra, 2022) which states that wages are closely related to labor as a main production factor in economic activity. In addition, wages also play a role in determining the level of labor productivity, where a good wage system can drive improved performance and economic output (Tuwinanto & Rahadi, 2021).

Nevertheless, the relationship between wages and GDP is not always directly positive. In some conditions, wage increases that are not followed by productivity increases can actually suppress economic growth (Simanjuntak & Sa'roni, 2019). This occurs because production costs increase, thereby reducing the competitiveness of the industrial sector. Empirical research shows that wages can have different effects depending on the economic structure and sector being analyzed. In addition, in the long run, wages can affect economic growth through the mechanism of consumption and public purchasing power (Anisa Putri et al., 2023). Therefore, the relationship between wages and GDP needs to be analyzed empirically to determine the direction and magnitude of the effect.

Population Growth (X_2)

The increase in population within a region over a certain period is commonly referred to as population growth. In neoclassical economic theory, population growth is considered an important factor that can affect economic growth through an increase in the labor force. The larger the population, the greater the potential labor force, thereby increasing production capacity. Research by (Anisa Putri et al., 2023) shows that population size influences economic growth and can increase national output. In addition, population size is also related to other economic indicators such as GDP (Mustika, 2011). This shows that population growth plays an important role in a country's economic dynamics.

On the other hand, high population growth does not always have a positive impact on the economy. This is especially true if it is not accompanied by improvements in the quality of human resources and the availability of employment opportunities. Empirical research shows that population size can affect economic variables through certain mechanisms, such as being a variable that influences economic growth through GDP (Ratnawita et al., 2025). In addition, research by (Yusrya, 2023) shows that population growth affects the poverty rate and income distribution. Therefore, it is important to empirically analyze the effect of population growth on GDP in order to determine the actual relationship.

Inflation (X_3)

Inflation is a condition characterized by a general and continuous increase in the prices of goods and services over a certain period. In Keynesian theory, inflation at a low and stable level can drive economic activity through increased aggregate demand, production, and investment. However, inflation that is too high can reduce public purchasing power, thereby hindering economic growth. Research by (Herman, 2017) shows that inflation has a negative effect on economic growth in Indonesia because excessive price increases can reduce public consumption. In addition, research by (Rio & Hendra, 2026) explains that inflation that is stable at a low to moderate level tends to support economic growth, whereas high inflation can suppress purchasing power, investment, and national output.

On the other hand, the relationship between inflation and economic growth is not always negative. Controlled inflation can reflect increasing economic activity and public demand. Research by (Siti et al., 2023) shows that high and uncontrolled inflation can suppress economic growth through a decline in purchasing power and investment. Meanwhile, more recent research by (Rio & Hendra, 2026) explains that inflation at a low to moderate level tends to support economic growth, while high inflation has the potential to reduce national output. Therefore, the effect of inflation on Gross Domestic Product (GDP) needs to be analyzed empirically to determine the direction and magnitude of its effect in Indonesia during the study period.

Gross Domestic Product (GDP) (Y)

Gross Domestic Product (GDP) is the main indicator used to measure a country's economic performance through the total value of goods and services produced over a certain period. GDP reflects the level of economic activity and is an important indicator in the analysis of economic growth and public welfare (Yanuar, 2010). According to (Ganar et al., 2021), GDP is closely related to other variables such as labor and investment in driving economic growth. Furthermore, research by (Febiaranti & Utomo, 2025) confirms that GDP is an important variable in economic analysis because it is able to describe macroeconomic conditions in aggregate.

In the empirical context of Indonesia, GDP is often used as the dependent variable in economic research because it is able to explain the relationship between production factors and economic growth. GDP is influenced not only by internal factors such as labor and wages, but also by external factors such as investment and government policy. Research by (Nabila & Muljaningsih, 2024) shows that changes in GDP can be influenced by the dynamics of the number of workers and wage levels in a particular economic sector. Research by (Ratnawita et al., 2025) also shows that various economic factors, such as labor, investment, and population size, jointly contribute to changes in GDP value.

2. Research Method

This study uses a quantitative approach with an associative research design aimed at analyzing the effect of average wages, population growth, and inflation on Gross Domestic Product (GDP) in Indonesia. The independent variables in this study consist of average wages (X_1), population growth (X_2), and inflation (X_3), while the dependent variable is Gross Domestic Product (Y). The data used are secondary time-series data for the 2010–2024 period obtained from official publications of the Central Statistics Agency (BPS). The data collection technique was carried out using the documentation method by downloading and processing data from the official BPS website, so that the data used has good validity and reliability because it comes from an official government institution.

The data analysis method used is multiple linear regression analysis to test the effect of the independent variables on the dependent variable, both partially and simultaneously. Before conducting the regression analysis, the data were tested using classical assumption tests, including tests for normality, multicollinearity, heteroscedasticity, and autocorrelation. Hypothesis testing was then conducted through the partial test (t-test), simultaneous test (F-test), and coefficient of determination test (R^2). The entire data processing and analysis in this study was carried out using the *Statistical Package for the Social Sciences* (SPSS) software, version 26. The research model used in this study is therefore as follows.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

Description:

Y = Gross Domestic Product (GDP)

a = Constant

$\beta_1, \beta_2, \beta_3$ = Regression coefficients

X_1 = Average Wages

X_2 = Population Growth

X_3 = Inflation

ε = Error term

Results and Discussion

Classical Assumption Test

Normality Test

The normality test aims to determine whether the data in the study are normally distributed or not. A good regression model is one that has a normally distributed residual. The normality test can be

performed using the *One Sample Kolmogorov Smirnov*. If the significance value is greater than 0.05, the data are declared to be normally distributed, whereas if the significance value is less than 0.05, the data are not normally distributed.

One-Sample Kolmogorov-Smirnov Test					
		X1	X2	X3	Y
N		15	15	15	15
Normal Parameters ^{a,b}	Mean	6.6673	1.3133	4.0573	6.6660
	Std. Deviation	2.36249	.11518	2.25210	2.39372
Most Extreme Differences	Absolute	.149	.158	.214	.092
	Positive	.113	.093	.214	.092
	Negative	-.149	-.158	-.135	-.087
Test Statistic		.149	.158	.214	.092
Asymp. Sig. (2-tailed)		.200 ^{c,d}	.200 ^{c,d}	.063 ^c	.200 ^{c,d}

Based on the test results above, the Asymp. Sig. (2-tailed) values obtained for the variables average wages (X1), population growth (X2), inflation (X3), and Gross Domestic Product (Y) are all greater than 0.05. This indicates that all variables are normally distributed, so the regression model satisfies the normality assumption and is suitable for further analysis.

Heteroscedasticity Test

The heteroscedasticity test is used to determine whether there is unequal variance of the errors or residuals across observations in the regression model. One commonly used method for detecting heteroscedasticity is the Park test. This method is performed by regressing the absolute value of the residual on the independent variables in the model. If an independent variable has a significant effect on the absolute residual value, it can be concluded that heteroscedasticity is present in the regression model. Conversely, if the significance value is greater than the significance level (0.05), the model is declared free of heteroscedasticity.

		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
Model		B	Std. Error	Beta		
1	(Constant)	-1.678	2.184		-.768	.458
	X1 (Average Wages)	.075	.071	.968	1.052	.315
	X2 (Population Growth)	.976	1.274	.613	.767	.459
	X3 (Inflation)	.003	.032	.031	.079	.938

a. Dependent Variable: Y_PDB

The heteroscedasticity test using the Park test shows that the significance value for average wages is 0.315 (> 0.05), for population growth is 0.459 (> 0.05), and for inflation is 0.938 (> 0.05). This indicates that there is no heteroscedasticity in the regression model.

Multicollinearity Test

The multicollinearity test aims to determine whether there is a high correlation between the independent variables in the regression model. A good regression model should not exhibit multicollinearity. Multicollinearity can be detected from the Variance Inflation Factor (VIF) and Tolerance values. If the VIF value is less than 10 and the Tolerance value is greater than 0.1, it can be concluded that there is no multicollinearity in the model.

Coefficients ^a		
		Collinearity Statistics
Model		Tolerance VIF

1	X1 (Average Wages)	.126	7.922
	X2 (Population Growth)	.167	6.004
	X3 (Inflation)	.510	1.960

Based on the test results above, the Tolerance value is > 0.10 and the VIF value is < 10 . It can therefore be concluded that there is no multicollinearity in the regression model, so that the independent variables can be used together.

Autocorrelation Test

The autocorrelation test is used to determine whether there is a correlation between the residuals at a given time period and those from the preceding period. This test is particularly important for time-series data such as that used in this study. The autocorrelation test can be performed using the Durbin-Watson test. If the Durbin-Watson value falls within a certain range ($du < DW < 4-du$), it can be concluded that there is no autocorrelation.

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.981 ^a	.962	.950	.39790	1.781
a. Predictors: (Constant), X3_Inflasi, X2_Pertumbuhan Penduduk, X1_Upah Rata-rata					
b. Dependent Variable: Y_PDB					

Based on the test results above, the Durbin-Watson (DW) value obtained is 1.781. This value falls within the range $1.7501 < 1.781 < 2.2499$ ($du < DW < 4 - du$). It can therefore be concluded that the regression model does not exhibit autocorrelation.

Multiple Linear Regression Analysis

Multiple linear regression analysis is a statistical method used to test the effect of two or more independent variables on a single dependent variable, and to determine the direction of the relationship shown by the regression coefficients, whether positive or negative.

Coefficients ^a					
Model		Unstandardized Coefficients		Standardized Coefficients	Sig.
		B	Std. Error	Beta	
1	(Constant)	26.059	6.898		3.778
	X1 (Upah Rata-rata)	X1 (Average Wages)	.746	.404	2.829
	X2 (Pertumbuhan Penduduk)	X2 (Population Growth)	6.121	-.597	-4.577
	X3 (Inflasi)	X3 (Inflation)	.278	-.026	-.344
a. Dependent Variable: Y_PDB					

Berdasarkan persamaan regresi yang diperoleh, dapat dijelaskan sebagai berikut:

1. Based on the regression equation obtained, the results can be explained as follows:
2. The constant value of 26.059 indicates that if the variables Average Wages, Population Growth, and Inflation are held constant, or equal to zero, the value of Gross Domestic Product (GDP) is 26.059. This value reflects the baseline level of GDP that is not influenced by the three independent variables in the research model.
3. The regression coefficient value for Average Wages of 2.109 indicates a positive relationship between Average Wages and Gross Domestic Product (GDP). This means that every one-unit increase in Average Wages will increase GDP by 2.109 units, assuming the variables Population Growth and Inflation remain constant.
4. The regression coefficient value for Population Growth of -28.012 indicates a negative relationship between Population Growth and Gross Domestic Product (GDP). This means that every one-unit increase in Population Growth will decrease GDP by 28.012 units, assuming the variables Average Wages and Inflation remain constant.

The regression coefficient value for Inflation of -0.096 indicates a negative relationship between Inflation and Gross Domestic Product (GDP). This means that every one-unit increase in Inflation will decrease GDP by 0.096 units, assuming the variables Average Wages and Population Growth remain constant.

Hypothesis Testing

The partial hypothesis test (t-test) was conducted to determine the effect of each independent variable on the dependent variable. The test was carried out by comparing the significance value (Sig.) with a significance level of 0.05. ^a			
Model		t	Sig.
1	(Constant)	3.778	.004
	X1 (Upah Rata-rata)	X1 (Average Wages)	.018
	X2 (Pertumbuhan Penduduk)	X2 (Population Growth)	.001
	X3 (Inflasi)	X3 (Inflation)	.738
a. Dependent Variable: Y_PDB			

Berdasarkan hasil pengolahan data menggunakan SPSS, diperoleh bahwa variabel Upah Rata-Rata (X_1) memiliki nilai signifikansi sebesar 0,018 ($< 0,05$) dengan nilai t-hitung sebesar 2,829, sehingga dapat disimpulkan bahwa Upah Rata-Rata berpengaruh signifikan terhadap Produk Domestik Bruto (PDB). Dengan demikian, H1 diterima. Variabel Pertumbuhan Penduduk (X_2) memiliki nilai signifikansi sebesar 0,001 ($< 0,05$) dengan nilai t-hitung sebesar -4,577, yang menunjukkan bahwa Pertumbuhan Penduduk berpengaruh signifikan terhadap Produk Domestik Bruto (PDB). Dengan demikian, H2 diterima. Sementara itu, variabel Inflasi (X_3) memiliki nilai signifikansi sebesar 0,738 ($> 0,05$) dengan nilai t-hitung sebesar -0,344, sehingga dapat disimpulkan bahwa Inflasi tidak berpengaruh

signifikan terhadap Produk Domestik Bruto (PDB) di Indonesia periode 2010–2024. Dengan demikian, H3 ditolak karena inflasi tidak berpengaruh signifikan terhadap Produk Domestik Bruto (PDB).

Based on the results of data processing using SPSS, the Average Wages variable (X_1) has a significance value of 0.018 (< 0.05) with a t-value of 2.829, so it can be concluded that Average Wages has a significant effect on Gross Domestic Product (GDP). Therefore, H1 is accepted. The Population Growth variable (X_2) has a significance value of 0.001 (< 0.05) with a t-value of -4.577, indicating that Population Growth has a significant effect on Gross Domestic Product (GDP). Therefore, H2 is accepted. Meanwhile, the Inflation variable (X_3) has a significance value of 0.738 (> 0.05) with a t-value of -0.344, so it can be concluded that Inflation does not have a significant effect on Gross Domestic Product (GDP) in Indonesia during the 2010–2024 period. Therefore, H3 is rejected because inflation does not have a significant effect on Gross Domestic Product (GDP).

Simultaneous Test (F-test)

The simultaneous test (F-test) was conducted to determine whether the independent variables jointly affect the dependent variable. ^a			
Model		F	Sig.
1	Regression	83.969	.000 ^b
	Residual		
	Total		

a. Dependent Variable: Y_PDB

b. Predictors: (Constant), X3_Inflasi, X2_Pertumbuhan Penduduk, X1_Upah Rata-rata

Berdasarkan hasil pengujian pada gambar diatas, diperoleh nilai F-hitung sebesar 83,969 dengan tingkat signifikansi sebesar 0,000 ($< 0,05$). Hal ini menunjukkan bahwa variabel upah rata-rata, pertumbuhan penduduk dan inflasi secara simultan berpengaruh signifikan terhadap Produk Domestik Bruto (PDB). Dengan demikian, H4 diterima.

Based on the test results shown above, an F-value of 83.969 was obtained with a significance level of 0.000 (< 0.05). This indicates that the variables average wages, population growth, and inflation simultaneously have a significant effect on Gross Domestic Product (GDP). Therefore, H4 is accepted.

Koefisien determinasi (R^2) merupakan ukuran statistik yang digunakan untuk mengetahui seberapa besar kemampuan variabel independen dalam menjelaskan variasi variabel dependen dalam suatu model regresi The coefficient of determination (R^2) is a statistical measure used to determine how well the independent variables explain the variation in the dependent variable in a regression model (Saptopitoyo et al., 2024)

. The R^2 value indicates the proportion of variation in the dependent variable that can be explained by the independent variables, so the higher the R^2 value, the better the model explains the relationship between the variables studied. ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.981 ^a	.962	.950	.39790	1.781
a. Predictors: (Constant), X3_Inflasi, X2_Pertumbuhan Penduduk, X1_Upah Rata-rata					
b. Dependent Variable: Y_PDB					

Based on the analysis shown in Table 8, the coefficient value (R^2) obtained is 0.950, or 95.0%, meaning that the variable Y is explained by 95.0% by the variables X1 and X2. The remaining 5.0% is influenced by other variables not discussed in this study.

3. Discussion

The Effect of Average Wages on Gross Domestic Product

The results show that average wages have a positive and significant effect on Gross Domestic Product (GDP) in Indonesia during the 2010–2024 period. This is indicated by a significance value of 0.018 (< 0.05) and a regression coefficient of 2.109, which indicates that an increase in average wages is followed by an increase in GDP. This finding shows that a rise in wages not only improves worker welfare but also drives labor productivity and public purchasing power, which in turn increases economic activity. This finding is consistent with research by (Alexander et al., 2017) which found that wages have a positive effect on economic growth because they can improve labor productivity and regional output. In addition, research by (Anisa Putri et al., 2023) also shows that wages have a positive effect on Indonesia's economic growth in the long run.

This study is consistent with the Neoclassical Growth Theory proposed by Robert Solow in (Hasan et al., 2020) which explains that labor is one of the main production factors that determines the level of output of an economy. From the neoclassical perspective, an improvement in the quality and productivity of labor, reflected through wage increases, will drive an increase in production capacity, thereby contributing to economic growth and an increase in Gross Domestic Product (GDP).

Thus, the higher the average wages received by workers, the greater the community's ability to consume goods and services. This increase in consumption will drive aggregate demand, increase company production, and expand economic activity, which ultimately contributes to an increase in Gross Domestic Product (GDP). This result indicates that wage-increase policies accompanied by improvements in labor productivity can serve as one instrument for driving Indonesia's economic growth.

The Effect of Population Growth on Gross Domestic Product

In this study, population growth has a significant effect on Gross Domestic Product (GDP), with a negative direction of relationship, consistent with the research by (Aprilya & Juliprijanto, 2022). This indicates that every increase in population size is followed by a decrease in GDP within the research model. In other words, population growth is not accompanied by an increase in economic output, but instead correlates with a decline in GDP value.

According to the neoclassical theory proposed by Robert Solow in (Hasan et al., 2020), population growth can, in principle, drive economic growth if accompanied by improvements in the quality of human resources and the availability of employment opportunities. However, the results of this study show that these conditions have not yet been met, so that the increase in population is not accompanied by improvements in productivity and labor absorption. As a result, population growth does not produce a proportional increase in output, and this has a negative impact on GDP.

This condition shows that an increase in population that is not matched by the quality of human resources, the availability of employment opportunities, and improved productivity can become a burden on the economy. If most of the population growth is not absorbed into productive activities, then an increase in population size may actually reduce its contribution to national output, causing GDP growth to slow down.

The Effect of Inflation on Gross Domestic Product

The results show that inflation has a negative but not significant effect on Gross Domestic Product (GDP) in Indonesia during the 2010–2024 period. This is indicated by a significance value of 0.738 (> 0.05) with a regression coefficient of -0.096, which indicates that an increase in inflation tends to decrease GDP. This finding shows that inflation fluctuations during the study period were not strong enough to directly affect changes in national output. This finding is consistent with research by (Fatmasari & Aji, 2024) which explains that the effect of inflation on economic growth is influenced by various other macroeconomic conditions, so that it does not always have a strong partial impact. In addition, (Sujatmiko et al., 2025) states that the relationship between inflation and economic growth is highly dependent on the level and stability of the inflation that occurs.

This finding can be explained through Keynesian Theory, which states that inflation affects the economy through changes in aggregate demand. Under conditions where inflation remains relatively controlled, public consumption and investment have not experienced a significant decline, so that national output can be maintained. Therefore, inflation in this study has not been able to exert a significant effect on Gross Domestic Product (GDP).

This result indicates that the inflation rate in Indonesia during the study period remained relatively controlled, so that it did not exert significant pressure on consumption and investment. Thus, although inflation increased or decreased, these changes have not been able to have a significant impact on either the increase or decrease of Gross Domestic Product (GDP).

The Effect of Average Wages, Population Growth, and Inflation on Gross Domestic Product

The results of the simultaneous test show that average wages, population growth, and inflation jointly have a significant effect on Gross Domestic Product (GDP). This is indicated by an F-value of 83.969 with a significance level of 0.000, which is smaller than 0.05. This finding confirms that changes in GDP are not influenced by a single economic factor in isolation, but rather by a combination of various interacting variables in the economy. In other words, although inflation does not have a significant partial effect on GDP, when analyzed together with average wages and population growth in a single model, the three variables are able to have a significant effect on GDP. This indicates a relationship between employment aspects, demographic dynamics, and economic stability in shaping national output.

The coefficient of determination (Adjusted R Square) of 95.0% indicates that the model has a very strong ability to explain the variation in GDP. This means that most of the change in GDP in this study can be explained by the combination of the variables average wages, population growth, and inflation, while the remaining 5.0% is influenced by other factors outside the research model. This high coefficient of determination indicates that the three variables make a substantial contribution to explaining the dynamics of Indonesia's economy during the 2010–2024 period.

In this context, policies are needed that focus not only on increasing wages, but also on improving labor productivity, managing population growth, and maintaining inflation stability. Wage increases accompanied by productivity improvements can drive output growth, while population growth needs to be supported by improvements in the quality of human resources so that it can contribute to the economy. On the other hand, stable inflation needs to be maintained so as not to disrupt public purchasing power and investment activity. Therefore, synergy between employment, population, and price-stability policies is an important factor in driving economic growth and increasing Gross Domestic Product (GDP).

4. Conclusion

Based on the results of this study, it can be concluded that average wages have a positive and significant effect on Gross Domestic Product (GDP) in Indonesia during the 2010–2024 period, while population growth has a significant effect on GDP in a negative direction. Meanwhile, inflation has a negative but not significant effect on GDP, indicating that inflation during the study period was relatively controlled and has not yet had a meaningful effect on changes in national output. Simultaneously, average wages, population growth, and inflation have a significant effect on GDP in Indonesia. In addition, the coefficient of determination of 95.0% indicates that the variation in GDP can be explained by these three variables, while the remaining 5.0% is influenced by other factors outside the research model. These findings indicate that improving the quality and productivity of labor, managing population growth, and maintaining inflation stability are important factors in driving economic growth and increasing Gross Domestic Product (GDP) in Indonesia.

Future research is expected to develop the research model by including other independent variables related to economic growth, such as investment, unemployment, government spending, and exports, so that the model's ability to explain changes in Gross Domestic Product (GDP) can be further

optimized. In addition, the scope of the study could be expanded and different analytical methods used to obtain more comprehensive results.

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