

Analysis of the Influence of Foreign Loans, Human Development Index (HDI), and Inflation on Economic Growth in Indonesia

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ABSTRACT

Economic growth is a key indicator of national development and is influenced by macroeconomic and socioeconomic factors. This study examines the effects of foreign loans, the Human Development Index (HDI), and inflation on Indonesia's economic growth using annual secondary data from 1993–2023, comprising 31 observations. The data were obtained from Statistics Indonesia (BPS), Bank Indonesia, and the World Bank. A quantitative explanatory approach was employed using Ordinary Least Squares (OLS) multiple linear regression. Model adequacy was evaluated through classical assumption tests, while hypothesis testing was conducted using t-tests, F-tests, and the coefficient of determination (R^2). The findings show that foreign loans have a positive and statistically significant effect on economic growth ($p < 0.05$), indicating that productive external borrowing supports investment and development. HDI also has a positive and significant influence ($p < 0.05$), demonstrating that improvements in education, health, and living standards contribute to sustainable economic expansion. Conversely, inflation does not significantly affect economic growth ($p > 0.05$) during the observation period, although price stability remains essential for maintaining macroeconomic resilience. The model explains a substantial proportion of the variation in economic growth, as reflected by the R^2 value. However, the presence of autocorrelation indicates a limitation of the OLS model and suggests that future research should apply more robust time-series techniques to obtain more reliable estimates. These findings imply that the government should prioritize the productive allocation of foreign loans, strengthen investment in human capital, and maintain prudent monetary policies to achieve sustainable and inclusive economic growth.

Keywords: Economic Growth, Foreign Loans, Human Development Index (HDI), Inflation, Indonesia



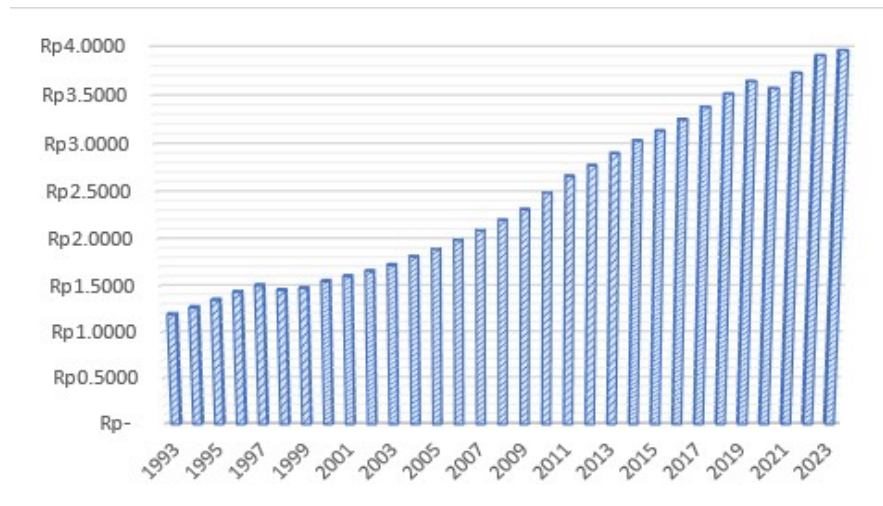
INTRODUCTION

Economic growth is a fundamental indicator of a nation's development progress and overall prosperity. For developing countries like Indonesia, achieving consistent and sustainable economic growth is a complex challenge influenced by various economic and social factors (Abbassy et al., n.d.). Growth in Gross Domestic Product (GDP) serves as a standard measure of economic output and reflects the effectiveness of a nation's policies in leveraging resources to produce goods and services (Dornbusch, Fischer, & Startz, 2014). However, Indonesia faces significant hurdles in fostering growth due to its dependency on external financing, the variability in human resource quality, and the

impact of macroeconomic factors such as inflation (BPS & 2018, n.d.) Theories of economic growth provide a framework for understanding these dynamics. The Harrod-Domar growth model emphasizes the importance of capital accumulation in driving economic growth, particularly for developing countries that face investment deficits. Foreign loans, as an external source of capital, play a crucial role in bridging these deficits by enabling infrastructure and strategic investments (Nugraha & Kamio, 2021) However, improper management of foreign loans can lead to fiscal instability and long-term economic risks.

On the other hand, the endogenous growth theory highlights the role of human capital, innovation, and knowledge accumulation in fostering long-term economic growth (perspectives & 1994, 1994). This theory underscores the importance of the Human Development Index (HDI) as a measure of a nation's progress in education (resilience & 2021, 2022), healthcare, and income levels. Higher HDI scores correlate strongly with increased productivity and economic resilience, as shown in empirical studies such as (Shobri, Hasibuan, & Nasution, 2022). Inflation, an inherent macroeconomic phenomenon, is best understood through monetarist theory, which posits that the money supply directly influences price levels. While moderate inflation stimulates economic activity by encouraging production and consumption (AlFarsi, 2026), excessive inflation disrupts purchasing power, investment confidence, and macroeconomic stability (Salim & F Fadilla, n.d.) Historical evidence from Indonesia, such as during the Asian financial crisis in 1998, demonstrates the detrimental impact of high inflation on GDP (Salim & F Fadilla, n.d.)

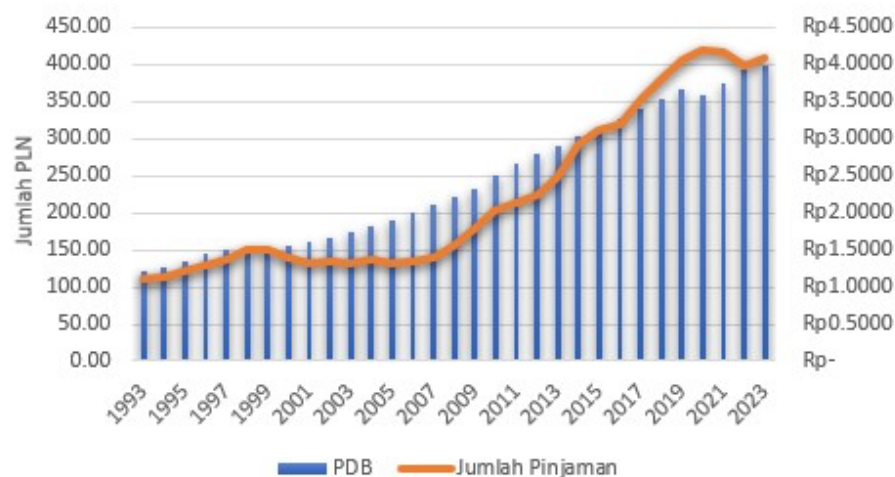
The interplay between these external and internal economic drivers plays a critical role in shaping Indonesia's growth trajectory (Maulidar, Yulfianti, & Prasetyo, 2025) (Basri & Hill, 2011). Empirical studies have examined these factors individually. observed that productive use of foreign loans boosts economic growth, especially when allocated to infrastructure development. Meanwhile, highlighted the role of HDI in enhancing human capital, driving economic competitiveness in the global market. In contrast, inflation's dual nature was analyzed by (Sali (Shobri, Hasibuan, Islam, & 2022, 2022) m & F Fadilla, n.d.), who found that high inflation impairs economic stability while moderate inflation encourages investment and consumer spending. However, there remains a lack of comprehensive studies analyzing the combined effects of foreign loans (Butkiewicz & Yanikkaya, 2005) HDI, and inflation on Indonesia's economic growth over an extended timeline (Haryanto & Wildani, 2025). The relationship between these variables and economic growth is illustrated in Figures 1–4.



Source: Badan Pusat Statistik (2024)

Figure 1. GDP Growth Trends in Indonesia (1993–2023)

For instance, **Figure 1** depicts the GDP growth trend from 1993 to 2023, highlighting significant fluctuations caused by global financial crises and domestic policy interventions. The Asian financial crisis in 1998 resulted in a sharp contraction in GDP (Barro, 2001), while economic recovery was observed in subsequent years, supported by strategic use of foreign loans and macroeconomic reforms. Similarly, the impact of the COVID-19 pandemic in 2020 created a temporary economic dip, with growth resuming in 2021 and beyond.



Source: Statistik Utang Luar Negeri (2024)

Figure 2 Trends in Foreign Loans and GDP Growth (1993–2023)

Foreign loans have played a pivotal role in stabilizing the economy and financing critical projects. As seen in **Figure 2**, external debt steadily increased between 2009 and 2019(Dey & Tareque, 2020), supporting infrastructure projects and spurring domestic growth. However, reliance on foreign loans during uncertain global conditions poses risks of fiscal pressure and economic vulnerability.

Source: Badan Pusat Statistik (2024)

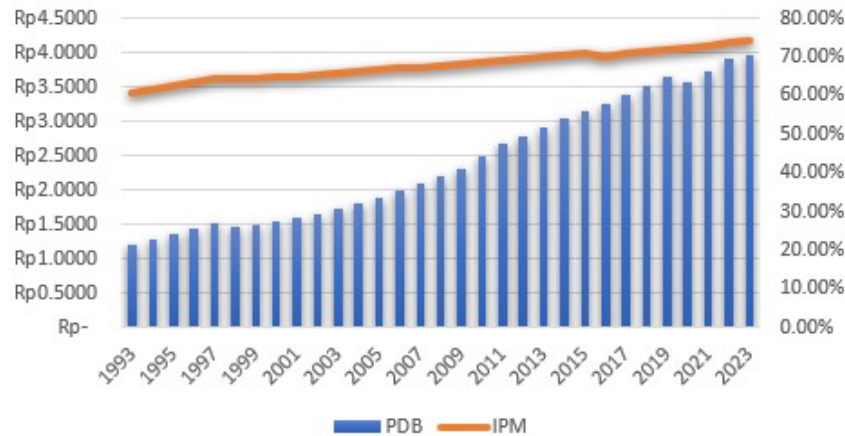
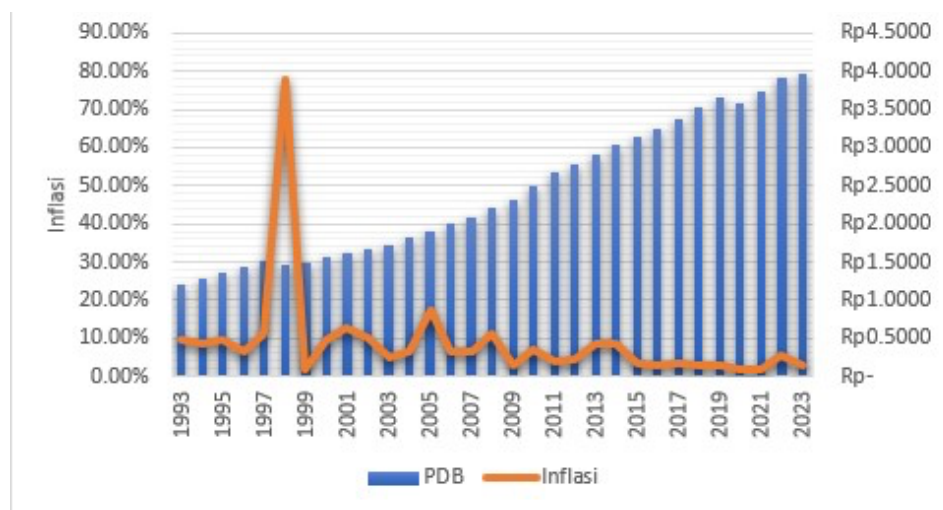


Figure 3. Correlation Between HDI and GDP Growth (1993–2023)

In addition to financial instruments, human capital, as measured by the HDI, has seen consistent improvement. **Figure 3** highlights the relationship between HDI and GDP, showing that investments in education, healthcare, and public welfare have contributed to economic resilience. Despite these improvements, gaps in regional HDI levels remain, indicating the need for more equitable distribution of resources.



Source: Badan Pusat Statistik (2024)

Figure 4. Inflation Trends and Their Impact on GDP (1993–2023)

Inflation, a critical macroeconomic variable, presents both opportunities and challenges for economic stability. As shown in **Figure 4**, inflation rates fluctuated significantly during key periods, such as the 1998 financial crisis and the 2020

pandemic(Gunay & Can, 2022). While low inflation promotes stability, high inflation undermines purchasing power, investment confidence, and overall growth. This study offers a comprehensive analysis of the combined impact of foreign loans, HDI, and inflation on Indonesia's economic growth over three decades. By employing multiple linear regression with a robust methodological framework, the research reveals nuanced relationships among these variables, contributing to the literature on macroeconomic policy and sustainable growth strategies.

Research Problem

Despite extensive research on the determinants of economic growth, the combined effects of foreign loans, the Human Development Index (HDI), and inflation on Indonesia's economic growth remain insufficiently explored. Existing studies have often examined these variables separately, resulting in limited understanding of their interconnected influence on sustainable economic development. To address this gap, this study seeks to investigate how foreign loans influence Indonesia's economic growth, the extent to which HDI contributes to sustainable economic development, and how inflation affects macroeconomic stability and economic growth.

Accordingly, the primary objective of this study is to empirically examine the interplay between foreign loans, HDI, and inflation in shaping Indonesia's economic growth. By providing empirical evidence on these relationships, the study is expected to offer valuable insights for policymakers in optimizing the utilization of foreign loans, strengthening investments in human capital, and maintaining macroeconomic stability to support sustainable long-term economic development.

RESEARCH METHODS

This study employs a quantitative approach to analyze the effects of foreign loans, the Human Development Index (HDI), and inflation on Indonesia's economic growth from 1993 to 2023. The analysis uses secondary data obtained from credible sources such as the Central Bureau of Statistics (BPS), the Ministry of Finance, and the World Bank. The research focuses on employing multiple linear regression analysis to quantify the relationships between the variables. The Ordinary Least Squares (OLS) method is used to estimate the model parameters(Burton, 2021).

Research Location and Scope

The research covers Indonesia as a case study, utilizing national-level economic data over three decades. The temporal scope (1993–2023) ensures comprehensive coverage of economic fluctuations, including major financial crises, recovery periods, and structural adjustments(Azak, 2026). The data represent macroeconomic indicators, such as GDP growth, foreign loans, HDI scores, and inflation rates, which are pivotal in assessing national economic performance.

Main Tools and Data Sources

The primary tools used in this research include statistical software for data analysis (EViews)(Agung, 2011). The accuracy of the regression model is ensured by performing diagnostic tests such as the t-test, F-test, coefficient of determination (R^2), and classical assumption tests. The classical tests include multicollinearity, heteroscedasticity, and autocorrelation tests to validate the reliability and robustness of the regression model.

Data Collection

The data collection involves compiling secondary data from reputable institutions. Foreign loans data are sourced from the Ministry of Finance, HDI data are derived from the United Nations Development Programme (UNDP) reports (Sagar & Najam, 1998), and inflation data are obtained from Bank Indonesia and BPS publications. These datasets are harmonized to ensure consistency and accuracy across the study period.

Analytical Procedure

The analytical procedure follows a structured sequence to ensure accurate and meaningful results:

1. The dependent variable is economic growth (GDP growth), while the independent variables include foreign loans, HDI, and inflation.
2. A multiple linear regression model is specified to test the impact of the independent variables on the dependent variable. The general form of the model is:

$$\text{Economic Growth} = \alpha + \beta_1(\text{Foreign Loan}) + \beta_2(\text{HDI}) + \beta_3(\text{Inflation}) + \varepsilon$$
 Where Y represents GDP growth, X1 is foreign loans, X2 is HDI, X3 is inflation, β_0 is constant, β_1 , β_2 , β_3 are the coefficients, and ε is the error term.
3. The regression model undergoes multicollinearity, heteroscedasticity, normality, and autocorrelation tests to ensure validity.
4. The significance of individual variables is evaluated using the t-test, while the overall model fit is assessed using the F-test and R^2 values.

Statistical Analysis

The analysis is conducted in a systematic manner. First, descriptive statistics summarize the data. Next, correlation analysis evaluates the strength of relationships between variables. Finally, multiple linear regression determines the magnitude and direction of each independent variable's impact on GDP growth.

RESULTS AND DISCUSSION

The study examined the impact of foreign loans, the Human Development Index (HDI), and inflation on Indonesia's economic growth using multiple linear regression analysis. The findings, supported by statistical tests, reveal significant insights into the relationships between the variables. **Table 1** presents the results of the regression analysis

Table 1. Results of Multiple Linear Regression Analysis

Dependent Variable	Y
Method	Least Squares
Date	01/11/25
Time	15:20
Sample	1993–2023
Included observations	31

Variabel	Koefisien (Coefficient)	Std. Error	t-Statistic	Prob.
C	-5.532423	0.229118	-24.146590	0.0000
X1	0.200030	0.051678	3.870680	0.0006
X2	7.806253	0.675570	11.555060	0.0000
X3	-0.136673	0.068287	-2.001434	0.0555

Source: E-views 12 data processing results

The regression equation for the economic growth variable is as follows:

$$Y = -5.5324 + 0.2000X1 + 7.8063X2 - 0.1367X3 + \varepsilon_t$$

Where:

Y = Economic Growth (Dependent Variable)

X1= Foreign Loan

X2= Human Development Index (HDI)

X3= Inflation

The regression equation above, the authors interpret it as follows:

- The table above shows a constant value of (-5.5324) which indicates that all independent variables (X1), (X2), (X3) have a value of zero. Then economic growth (Y) is estimated to have a negative value of -5.5324. This indicates that without the contribution of the independent variables, economic growth cannot be achieved.
- The coefficient of variable X1 (foreign loans) of 0.2000 indicates that each one unit increase in foreign loans will increase economic growth by 0.2000 units, assuming other variables remain constant. This indicates a positive relationship between foreign loans and economic growth.
- The coefficient of variable X2 (HDI) of 7.8063 indicates that a one-unit increase in HDI will increase economic growth by 7.8063 units, assuming other variables remain constant. This shows that HDI has a positive relationship with economic growth.
- The coefficient of variable X3 (inflation) of -0.1367 indicates that an increase in inflation by one unit will reduce economic growth by 0.1367 units, assuming other variables remain constant. This indicates a negative relationship between inflation and economic growth.

The model above shows the relationship between the independent variables (X1, X2, X3) and the dependent variable (Y), where each variable has a different impact on economic growth.

Multicollinearity is done by analyzing the variance inflation factor (VIF) value for each independent variable in the regression model. The VIF value is interpreted as an indicator of multicollinearity which means that if it exceeds the value of 10, which means that there is a very strong relationship between the independent variables and vice versa, the following are the results of Multicollinearity:

Table 2. Multicollinearity Test

Keterangan	Nilai		
Dependent Variable	Y		
Method	Least Squares (OLS)		
Date	01/11/25		
Time	15:20		
Sample	1993–2023		
Included Observations	31		

Variable	Coefficient	Uncentered	Centered
	Variance	VIF	VIF
C	0.052495	740.0551	NA
Foreign Loans	0.002671	1064.078	8.031191
HDI	0.456395	2966.465	8.262566
Inflation	0.004663	1.630664	1.124558

Source: E-views 12 data processing results

Centered VIF shows a value below 10, where VIF of foreign loans shows a value of 8.031191, VIF of HDI shows a value of 8.262566, VIF of Inflation shows a value of 1.124558. VIF is very far from the value of 10, as for the foreign loan variable (8.03) and HDI (8.26), it can be seen that the difference in numbers is not much different from foreign loans and HDI, indicating that there is a strong linear relationship between the independent variables.

This test is carried out with the aim of seeing the effect of each independent variable (X1, X2, X3) on the dependent variable (Y) under certain conditions. The t test is done by calculating the t_{count} with t_{table} . If $|t_{\text{count}}| > t_{\text{table}}$, then H_0 is rejected and H_1 is accepted, it can be concluded that the independent variable has an effect, then if $|t_{\text{count}}| < t_{\text{table}}$, then H_0 is accepted and H_1 is rejected, therefore it can be concluded that the independent variable has no effect. The t-table value can be found with the following formula:

Level of significance (α): 0.05 (5%)

Degree of freedom ($df = n - k$)

$df = 31 - 4 = 27$

$T.INV = (1-0.05:27)$

The result of $t_{\text{table}} = 2.0518$

Table 3. Results of t test

Keterangan	Nilai			
Dependent Variable	Y			
Method	Least Squares (OLS)			
Date	01/11/25			
Time	15:20			
Sample	1993–2023			
Included Observations	31			

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-5.532423	0.229118	-24.14659	0.0000
Foreign Loans	0.200030	0.051678	3.870680	0.0006
HDI	7.806253	0.675570	11.55506	0.0000
Inflation	-0.136673	0.068287	-2.001434	0.0555

Source: E-views 12 data processing results

a) Testing of foreign loan variables

Based on table 3. shows that foreign loans have $|t_{\text{count}}| = 3.870680 > t_{\text{table}} = 2.0518$, then H_0 is rejected and H_1 is accepted. Based on the table above, it can be seen that foreign loans have a significant effect on economic growth partially.

b) Testing the human development index variable

Based on table 3. indicates that the Human Development Index (HDI) has $|t_{\text{count}}| = 11.55506 > t_{\text{table}} = 2.0518$, then H_0 is rejected and H_1 is accepted. With the t_{count} above, the partial test results show a significant influence between the human development index on Economic Growth.

c) Testing the inflation variable

Based on table 3. shows that inflation $|t_{\text{count}}| = 2.001434 < t_{\text{table}} = 2.0518$, then H_0 is accepted and H_1 is rejected. With the t_{count} above, this study shows that inflation has no significant effect on economic growth directly.

This test is conducted to determine the simultaneous influence of the independent variable on the dependent variable in the regression model. The purpose of the F test is to analyze the comparison of F_{count} to the critical value generated. The F test number is calculated using F_{count} with F_{table} . If $F_{\text{count}} > F_{\text{table}}$, then H_0 is rejected and H_1 is accepted, it is assumed that simultaneously the independent variable has a significant effect when $F_{\text{count}} \leq F_{\text{table}}$, then H_0 is accepted, it is assumed that the independent variable has no effect in this case. The F_{table} value can be found with the following formula:

Level of significance (α): 0.05 (5%)

Degrees of freedom:

Numerator ($k - 1$): $k = 4$ (number of parameters including constants), $4 - 1 = 3$

Denominator: ($df = n - k$)

$df = 31 - 4 = 27$

F. INV: ($1 - \alpha$; $k-1$; $n-k$)

F. INV: (1-0.05;3;27)

 $F_{table} = 2.9605$ **Table 4.** F Test Results

R-squared	0.986474	Mean dependent var	0.808119
Adjusted R-squared	0.984971	S.D. dependent var	0.382511
S.E. of regression	0.046893	Akaike info criterion	-3.161981
Sum squared resid	0.059372	Schwarz criterion	-2.976950
Log likelihood	53.01070	Hannan-Quinn criter.	-3.101666
F-statistic	656.3819	Durbin-Watson stat	0.549867
Prob(F-statistic)	0.000000		

Source: E-views 12 data processing results

It can be seen in table 4 above, showing that the F_{count} value obtained on the foreign loan, human development index, and inflation variables is 656.3819 with the F_{table} result of 2.9605. With the results of $F_{count} > F_{table}$ ($656.3819 > 2.9605$) It can be concluded that if the value of 0.000000 is displayed for the probability value, then the appropriate conclusion can be drawn that foreign loans (X1), human development index (X2), and inflation (X3) There is evidence that simultaneously there is a significant effect on economic growth (Y).

The model in this study can be used in analyzing the effect of independent variables on economic growth. The following is the R-Squared and Adjusted R^2 model:

Table 5. Results of the Coefficient of Determination (R^2) and Adjusted R^2

R-squared	0.986474	Mean dependent var	0.808119
Adjusted R-squared	0.984971	S.D. dependent var	0.382511
S.E. of regression	0.046893	Akaike info criterion	-3.161981
Sum squared resid	0.059372	Schwarz criterion	-2.976950
Log likelihood	53.01070	Hannan-Quinn criter.	-3.101666
F-statistic	656.3819	Durbin-Watson stat	0.549867
Prob(F-statistic)	0.000000		

Source: E-views 12 data processing results

The results displayed in Table 5 show an R^2 value of 0.986474, The figure obtained shows how much influence the independent variable has on the dependent variable. It can be concluded that the R^2 value has a value of 98.65% in the dependent variable (economic growth) can be explained by the independent variables (foreign loans, HDI and inflation), where the explanatory percentage is only 1.35% in economic growth cannot be explained by the model or influenced by other factors.

Based on the results above, the adjusted R^2 value is 0.984971. From this it can be concluded that a value of 98.50% in the economic growth variable can be explained by the independent variables. The small difference between the R^2 and adjusted R^2 results indicates that the independent variables in this model can be considered significant and can explain the dependent variable. The results of the data processing that has been done clearly show that the most influential variables are “foreign loans” and the human development index. While in the results of this study there is no relationship between inflation and economic growth, where inflation has a negative impact on economic growth. The results of the data processing above also show that foreign loans and the human development index have influential significance results while inflation has no significant effect.

Contribution to Policy and Practice study suggest several key policy recommendations:

- a. Strengthening governance and debt management systems to ensure foreign loans are utilized effectively and productively.
- b. Prioritizing investments in human capital development, particularly in regions with lower HDI scores, to achieve more equitable and sustainable economic growth.
- c. Implementing monetary policies aimed at maintaining inflation within an optimal range of 2–5%, thus balancing growth with macroeconomic stability.

Future Research Directions

Building upon the findings of this study, future research could explore:

- a. Sectoral Analysis: Investigating how specific sectors, such as education, healthcare, and infrastructure, contribute to economic growth within the context of foreign loans and HDI improvements.
- b. Institutional Factors: Examining the role of institutional quality and governance in moderating the impact of foreign loans and inflation on economic growth.
- c. Comparative Studies: Conducting comparative analyses across other developing countries to identify best practices and policy frameworks for fostering growth.

By addressing these areas, future research can provide a deeper understanding of the interplay between macroeconomic variables and economic growth in diverse contexts.

CONCLUSION

The findings from this research provide significant insights into the dynamics of foreign loans, the Human Development Index (HDI), and inflation, and their effects on Indonesia's economic growth over the period 1993–2023. These insights are summarized as follows: The study reveals that foreign loans positively impact economic growth when allocated to productive sectors such as infrastructure and strategic national development. This is consistent with the conclusions of which emphasized the importance of proper debt management and strategic allocation to maximize the economic benefits of external funding. However, this research also underscores the potential fiscal risks associated with high dependence on foreign debt. HDI emerges as the most significant factor influencing economic growth, emphasizing the pivotal role of education, healthcare, and income levels in fostering productivity and economic resilience. These findings align with the work of who demonstrated that investments in human capital create long-term economic benefits. This reinforces the importance of

continuous improvement in human development metrics to sustain growth.ion was evident in the findings, showing a negative relationship with economic growth. While moderate inflation may encourage investment and consumption, excessive inflation disrupts macroeconomic stability and hinders growth. This finding corroborates previous studies, such as which highlighted the adverse effects of high inflation on economic stability

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