

HOW FDI, EXPORT AND PRODUCTIVE-AGE POPULATION INFLUENCE GRDP: INSIGHTS FROM INDONESIA'S ECONOMIC DATA

Septriani Septriani*

Department of Economic Development, Faculty of Economics and Business, University of Bengkulu, Bengkulu, Indonesia.

***Corresponding Author**
Septriani Septriani

Department of Economic Development, Faculty of Economics and Business, University of Bengkulu, Bengkulu, Indonesia.

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Abstract: This study aims to analyze the influence of international trade on Indonesia's economic growth. The data used is secondary data sourced from the Central Bureau Of Statistics and the World Bank. Furthermore, the analysis tool used in this study is multiple linear regressions using time series data during the period 1993-2022. Based on the regression results, the results were obtained that partially the foreign direct investment and export variables had no effect on Indonesia's GDP, while the productive-age population variable had a positive and significant effect on Indonesia's GDP. Meanwhile, simultaneously the variables of foreign direct investment, exports, and productive-age population have a positive effect on Indonesia's GDP. The implications of this research are the need to increase the added value of exports by developing the manufacturing sector and downstream industries and FDI management must be focused on the industrial and service sectors that have a direct impact on economic growth. In addition, it is necessary to diversify the economy. This is because dependence on primary commodities hinders sustainable economic growth. Furthermore, it is necessary to strengthen human resources and skills, because improving the quality of the workforce will increase productivity and encourage economic growth.

Keywords: GRDP, foreign direct investment, export, productive-age population.

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Introduction

As one of the developing countries, Indonesia always conducts various kinds of international relations with other countries to improve the country's economy. The international relations carried out by Indonesia include international trade and other economic integration. The international relations carried out by the Indonesian state include the receipt of foreign direct investment and imports from other countries. Conducting international trade relations and opening Foreign Direct Investment (FDI) for Indonesia is very important to encourage sustainable economic growth and strengthen the country's competitiveness in the global market. In addition, this relationship also strengthens Indonesia's diplomatic relations with other countries. Strong economic ties, including investment flows, can strengthen international cooperation in various fields, be it trade, technology, or infrastructure development.

One of the main indicators that reflect a country's economic progress is the Gross Regional Domestic Product (GDP), which describes the total value of goods and services produced in a region. Based on data obtained from the World Bank, Indonesia has the highest GDP when compared to ASEAN countries.

Although Indonesia has the largest GDP in Southeast Asia, Indonesia has a relatively low GDP per capita when compared to other countries in Southeast Asia. The comparison of GDP in ASEAN countries can be seen in figure 1.

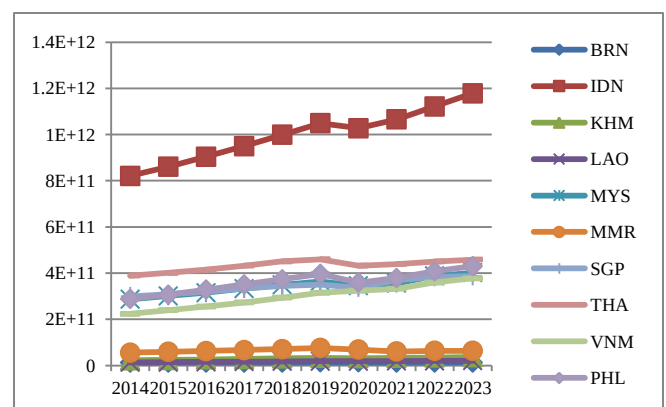


Figure 1. Comparison of GDP of ASEAN Countries
(Constant 2015 US\$)

Source: world Bank (World Development Indicators)

According to the Minister of Finance of the Republic of Indonesia in one of the online media (Reuters), there are several variables that may have encouraged the growth of Indonesia's economy, including household consumption, investment and exports. Therefore, in this study, researchers are interested in taking a deeper look at the factors that determine the size of Indonesia's GDP. FDI is one of the main driving factors for the Indonesian economy. According to Johnshon (2006), FDI flows increase economic growth in developing countries. Solow's theory, regarding economic growth, shows that investment plays a very important role in increasing production capacity and productivity, so that it will ultimately encourage an increase in GRDP. This is because FDI (Foreign Direct Investment) also contributes to technology transfer, improving managerial skills, and expanding access to global markets. This is very important for Indonesia, which is still dependent on the manufacturing sector and natural resource-based industries, where the influx of foreign investment can encourage the modernization process and strengthen the competitiveness of domestic products. The amount of FDI in Indonesia tends to increase from year to year (see figure 2).

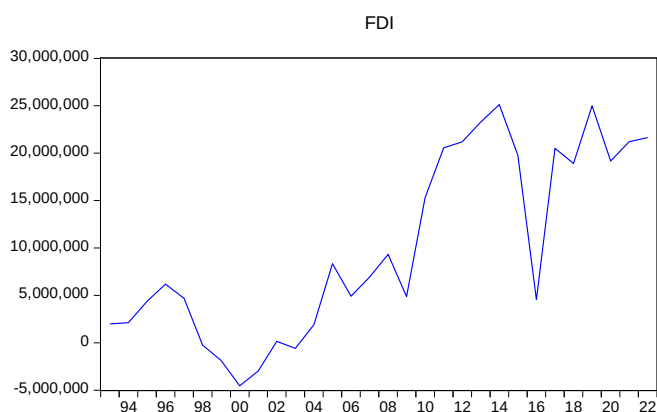


Figure 2. Development of Indonesia's Foreign Direct Investments (1993-2022 Million US\$)

Source: world Bank (World Development Indicators)

In a study conducted by Nair-Reichert and Weinhold (2001) proved that FDI, although it varies from country to country, has a statistically significant influence in countries with open economies. Likewise, the results of a study conducted by Dinh, Vo, and Nguyen (2019), which also found that in the short term, FDI has a negative effect on economic growth, while in the long term, FDI has a positive effect on economic growth. Meanwhile, Marjanać and Grujić (2022); Gökċeli et al. (2022); Gligorić et al. (2017) found that Foreign Direct Investment (FDI) has a positive impact on the economic growth of the recipient country. According to Zhang et.al. (2024), the government must encourage foreign investment to improve the industrial structure and encourage economic growth.

In addition to Foreign Direct Investment (FDI), one of the strategies used to increase Indonesia's GDP is to increase exports. In this case, exports play an important role in connecting Indonesia with the international market. One of the theories that underlie the importance of exports in a country's economy is the Export Growth Theory put forward by Krugman (1991). Krugman argued that higher exports not only increase national income, but also accelerate economic growth by opening access to international markets and increasing foreign investment flows. Research

conducted by Dreger & Herzer (2011), exports has a positive influence on non-export GDP in the short term, and then although in the short term this relationship proves to be positive. This is due to the increased demand for exported goods and services, which in turn drives an increase in GDP. Data obtained from the Central Statistics Agency (BPS) shows that the contribution of exports to Indonesia's GDP tends to increase from year to year (see figure 3).

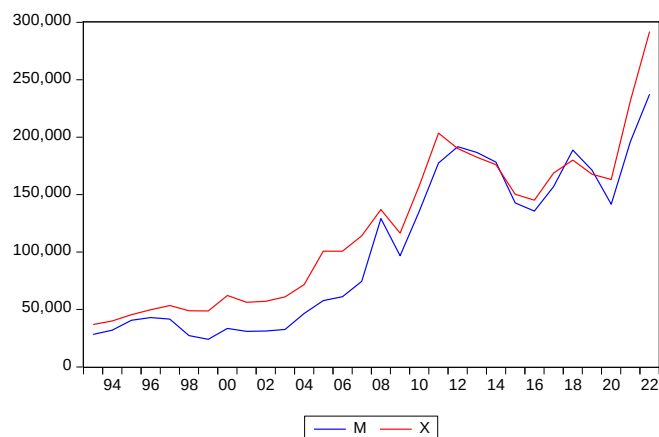


Figure 3. Comparison of Ekspor dan Impor of Indonesia in 1993-2022 (Million US\$)

Source: Central Bureau Of Statistics

If you look at the comparison of Indonesia's exports and imports in 1993-2022, it is clear that almost every year Indonesia experiences a trade balance surplus. In this case, exports have a very important role in the Indonesian economy and contribute significantly to GDP growth. With an increase in exports, it will increase the State's foreign exchange revenue, this revenue is then used to finance imported goods. In addition, exports also encourage increased product competitiveness, as a result of meeting international market standards. Through this increase in competitiveness, it can then have an impact on increasing economic growth. Furthermore, with exports, it will create jobs, so that with many jobs, it will increase people's income and consumption and ultimately strengthen Indonesia's GDP. The theory of international trade proposed by Heckscher-Ohlin states that Net Exports, or net exports, are one of the most crucial elements affecting the gross national product (GNP) (Chairani & Septriani, 2023). In addition, exports not only play a direct role in increasing GDP, but also have a wide positive impact on other economic sectors. Exports stimulate the manufacturing, agriculture, and service sectors, which ultimately creates a chain effect that strengthens the national economy. Thus, strengthening the export sector is an important step to achieve sustainable GDP growth.

Furthermore, in addition to exports, another factor that is no less important in influencing GDP is the productive age population. The productive age population, which consists of individuals between the ages of 15 and 64, has a central role in a country's economy. They contribute not only as a workforce that drives economic sectors, but also as consumers who influence demand for goods and services. With the increase in the number of people of productive age, the country's economic capacity will increase, as more individuals can participate in economic activities. The development of the percentage of Indonesia's productive age population in 1993-2022 can be seen in figure 4.

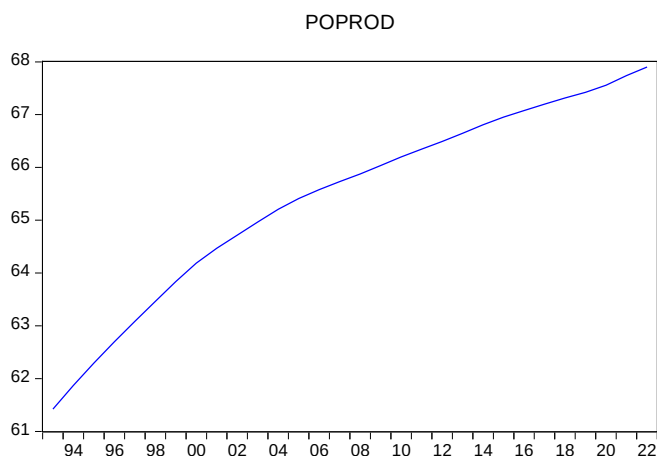


Figure 3. Productive-Age Population of Indonesia in 1993-2022 (percent)

Source: world Bank (World Development Indicators)

In Lewis (1954) economic structure theory, it is said that countries with a high proportion of the productive age population tend to experience an increase in economic productivity. This theory explains how the structural transition in the economy, from labour-intensive agricultural sectors to more efficient industrial and service sectors, can occur more quickly if the country has a large and skilled workforce. According to Nanavyan (2023); Мыцаев & Шамилев (2014), the higher the proportion of productive-age population, the higher the contribution to GDP growth, especially in areas that utilize a lot of labour. Therefore, a country with a productive-age population such as Indonesia has the potential to increase the rate of economic growth, especially if the population gets the opportunity to work in productive sectors. With an increasing number of skilled and productive workforces, the country can accelerate economic development and increase its global competitiveness. In addition, with a large population and a fairly large domestic market, Indonesia is a strategic destination for foreign investors. However, despite Indonesia's great potential, its reliance on various external and internal factors makes it vulnerable to global uncertainty and domestic structural problems.

Therefore, it is necessary to understand the influence of FDI, exports, and productive-age population on GDP, in order to support sustainable economic growth, reduce socio-economic inequality, and strengthen Indonesia's position in the global market. Although many studies discuss the relationship between FDI, exports, and productive-age population, not many have explored the impact of these three factors on the Indonesian economy in depth. This study aims to analyze the influence of FDI, exports, and the productive-age population on Indonesia's GDP, as well as explore the opportunities arising from changes in Indonesia's demographic structure that are expected to increase the productive-age population in the coming decades. The results of this research are expected to provide insights and policy recommendations to accelerate Indonesia's GDP growth.

Method

This study focuses on explaining the relationship between foreign direct investment, exports and the productive-age population to Indonesia's GDP. This study uses secondary data, obtained from the Central Statistics Agency (BPS) and the World Bank. The variables used in this study are one dependent variable

(Gross Regional Domestic Product) and two independent variables, namely exports and productive-age population during the period 1992-2022. Furthermore, the analysis tool in this study is a double linear regression analysis with the Ordinary Least Squares (OLS) model which is then processed using views 9. The equation model used in this study is as follows:

$$GRDP_t = \beta_0 + \beta_1 FDI_t + \beta_2 EXP_t + \beta_3 POPR_t + \varepsilon_t$$

Where: GRDP is Gross Regional Domestic Product (percent), FDI is foreign direct investment (million dollars), EXP is the export value (million dollars), POPR is the percentage of productive-age population (percent), β_0 is intercept/constant, β_1 , β_2 , β_3 is the regression coefficient of FDI, exports, and productive-age population variables, t is the time period (1993-2022) and ε is Error term

Results and Discussions

The results of this study have passed the classical assumption test. Based on the results of multiple linear regressions, the results are obtained as shown in Table 1.

Table 4. Multiple Linear Regression Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-52810127	14032529	-3.763408	0.0009
FDI	-0.009204	0.043317	-0.212480	0.8335
EXP	-13.48562	10.88451	-1.238974	0.2269
POPR	5440885	1425089	3.817926	0.0008

R^2 : 0.381269

Adj. R^2 : 0.307021

F-statistic : 5.135089

Prob (F-Statistic) : 0.006640

Source : Secondary Data (processed, 2024)

Based on the test results in Table 1, the regression equation is obtained as follows:

$$GRDP = -52810127 - 0.009204 FDI - 13.48562 EXP + 5440885 POPR$$

Hypothesis Test

Based on the t-test, it is known that the t-statistical value of the foreign direct investment variable has a positive value with a coefficient of -0.009204 and a probability of 0.8335 (greater than $\alpha=5\%$). These results show that the foreign direct investment variable has no effect on Indonesia's GDP. Meanwhile, the export variable obtained a coefficient value of -13.48562 with a probability of 0.0000 (less than $\alpha=5\%$). This result shows that exports have no effect on Indonesia's GDP, meanwhile, the productive-age population variable has a positive t statistic with a coefficient of 5440885 and a probability of 0.0008. These results show that the productive-age population variable has a positive and significant effect on GDP. Furthermore, simultaneously, the variables of FDI, exports and productive-age population together have a positive effect on Indonesia's GDP. This can be seen from the F-statistical value of 5.135089 (positive value) with a probability of F-statistic of 0.006640 (less than $\alpha=5\%$). Based on the regression results in table 1, an R-Square value of 0.3812 was obtained. These results show that GDP can be explained by the

variables FDI, exports and productive-age population of 38.13 percent, the remaining 61.88 percent is explained by variables outside the model.

Discussion

Based on the results of the t-test, a positive t-statistic and a t-statistic probability of the foreign direct investment (FDI) variable t-statistic of (0.8335), this value is greater than $\alpha = 5\%$. These results show that partially FDI has no effect on Indonesia's GDP or economic growth. Based on data, it is known that from 1993 to 2022, in an effort to accelerate economic growth and development, increase domestic production capacity and increase economic competitiveness. So since the early 1990s, Indonesia began to experience a significant surge in FDI flows. FDI contributes greatly to the increase in capital used to build vital infrastructure and increase production capacity in strategic sectors. FDI in the form of direct investment by foreign companies, plays a major role in sectors such as manufacturing, mining, energy, and infrastructure. Most studies assess that FDI has a positive impact on the economy of recipient countries, especially in developing countries (Dewi & Septriani, 2023). However, based on the results of this research, it was found that foreign direct investment had no effect on Indonesia's GDP or economic growth.

The results of this study are in line with several theories such as the Endogenous Growth Theory) proposed by Paul Romer. This theory emphasizes that economic growth depends not only on the accumulation of capital and labor, but also on the improvement of technology and innovation that can accelerate the pace of economic growth in the long term. The results of this study are in line with several research results conducted by (Gherghina et al., 2019; Jilenga et al., 2016) did not prove the relationship and positive impact of FDI on economic growth. The results of this study are also supported by research findings by Gökçeli et al. (2022), that foreign direct investment does not have a significant effect on the economic growth of developing countries, while in developed countries that host investment, FDI has a significant impact on the economic growth of their countries. According to the results of research by Miteski & Stefanova (2017), FDI in the construction sector does not have a statistically significant impact in encouraging economic growth, while FDI in the industrial and service sectors actually has a positive and significant impact on economic growth. The results of Miteski & Stefanova's (2017) research show that the sector that is the investment destination is very decisive whether or not the investment will have an impact on the economy of the destination country. According to Daliri, H. (2021), FDI depends on the level of income and growth in the host country.

Foreign Direct Investment is particularly suitable in countries with higher GDP growth. Meanwhile, in countries with upper middle income levels, the influence of FDI on economic growth is greater than that of other income groups. In addition, the results of this study are not in line with the Capital Accumulation Theory developed by Robert Solow, where economic growth can be accelerated through additional capital used to increase production capacity, improve infrastructure, and create conditions that support sustainable economic growth.

Meanwhile, the influence of exports on economic growth, when viewed based on the results of the t-test, obtained a negative t-statistic and a t-statistical probability of 0.2269 or greater than $\alpha = 5\%$. The results of this study are not in accordance with the hypothesis where, exports should be able to increase Indonesia's

GDP because there is a significant correlation between exports with changes in foreign exchange reserves (Rustami & Septriani, 2024). Where these foreign exchange reserves should be used to meet Indonesia's import needs. Meanwhile, the results of this study show that partially exports have no effect on GDP or economic growth in Indonesia. This is due to Indonesia's export dependence on primary commodities, such as agricultural and mining products. According to Debnath, et.al (2014); Waithe, et.al (2010), dependence on primary commodities or exports with low added value inhibits the effect of economic spillovers and multipliers, because it limits the development of downstream sectors that can encourage broader and more equitable economic growth. According to Anwer & Sampath (2000), exports have no effect on economic growth, especially in economies that depend on primary exports or that have no domestic value addition. These commodities have relatively low added value and are very vulnerable to price changes in the global market. When prices in the global market decrease, opinions on the exported goods sector also decrease. Meanwhile, the manufacturing sector, which has the potential to contribute to increasing GDP, is relatively underdeveloped.

The results of this study are in line with the results of research in several countries such as Nigeria Adelakun & Olayiwola (2020) and India Debnath et.al (2014); Azharuddin & Paramanik (2014), who found evidence that exports often do not have a significant positive effect on GRDP or economic growth, especially in countries that are less developed, less diversified, or trade-dependent. Exports have always contributed more to GDP growth than changes in the volume of exports themselves (Dreger & Herzer (2011)). The results of this study show that although exports can spur growth in developing countries in the short term, their impact on long-term economic growth is not always positive and is strongly influenced by structural factors that exist in each country. As the results of research conducted by Hardani & Rozani (2024) show that fluctuations in global commodity prices have a significant impact on export revenues, which in turn affects their contribution to GDP. The decline in commodity prices hampers Indonesia's economic stability, given the high dependence on the export of these goods.

In addition, there are several other factors that also affect the ineffect of exports on Indonesia's economic growth, including the structure of Indonesia's exports which is focused on commodities also makes it difficult for this country to diversify export products that are more high added value. This makes Indonesia less able to optimize export potential in increasing GDP in a sustainable manner. Therefore, although commodity exports make a significant contribution to national income, the long-term impact on GDP is not as large due to dependence on these commodities. In addition, the low competitiveness of Indonesia's export sector in the global market. Finally, Indonesia also faces challenges in terms of imbalance in the distribution of export products. Although exports can increase national income, most of the profits from exports are often unevenly distributed across all levels of society or broader sectors. This causes economic inequality that can slow down the rate of GDP growth that is more inclusive and sustainable. Meanwhile, according to Hassan (2020), there is no Granger causality between economic growth and exports in either direction for MENA countries.

Furthermore, as for the influence of the productive age population on economic growth, if viewed based on the results of the t-test, a positive t-statistic and a t-statistical probability of 0.0008 or less than $\alpha = 5\%$ were obtained. These results show that partially the productive age population has a positive and significant effect on GRDP or economic growth in Indonesia. With a larger working-age population, a country can generate more economic output if employment conditions and productivity levels are favorable. Such as research conducted by Nanavyan (2023); Мусаев & Шамилев (2014); Septriani (2023); Juniarti & Septriani (2024), who found that the higher the proportion of productive-age population, the higher the contribution to GDP growth, especially areas that utilize a lot of labor. This is because, with the high number of people of productive age, there will be an increase in consumer demand and the expansion of the domestic market. The working-age population generally earns higher incomes, leading to increased domestic consumption and demand, thus driving business profits. This shows that population-driven demand will increase economic activity in Indonesia. In addition, with a large number of productive age population, it will increase innovation and economic dynamics. Younger working-age populations tend to be more adaptable to technological changes, which can increase total factor productivity (TFP). In Khadiullina, et.al (2022), technological innovation plays a key role in determining the effectiveness of improving labor productivity on GDP.

Although a large workforce can provide benefits, low productivity can be detrimental to a country's economy. Based on the results of research found by Kozlova, et.al (2020), even though an area has a large workforce, but has low productivity, this workforce will only weaken the positive effect on GDP. If the workforce is underskilled or underutilized, the economic gains may be limited despite the supportive age structure. Likewise, if there is a mismatch between job opportunities and the productive-age population, it will cause unemployment and ultimately will harm economic growth. As found by Nanavyan (2023), where GDP losses occur in areas with high unemployment rates, even though a large workforce is available. In addition, the quality of the workforce, both in terms of education, and skill level, is also very crucial than the number in encouraging economic growth or GDP.

Conclusion

Based on the regression results, it was obtained that partially the foreign direct investment and export variables had no effect on Indonesia's GDP, while the productive age population variable had a positive and significant effect on Indonesia's GDP. Meanwhile, simultaneously the variables of foreign direct investment, exports, and the productive age population have a positive effect on Indonesia's GDP. The implications of this research are the need to increase the added value of exports by developing the manufacturing sector and downstream industries and FDI management must be focused on the industrial and service sectors that have a direct impact on economic growth. In addition, it is necessary to diversify the economy. This is because dependence on primary commodities hinders sustainable economic growth. Furthermore, it is necessary to strengthen human resources and skills, because improving the quality of the workforce will increase productivity and encourage economic growth.

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