



Impact of Exports and Services on Indonesia's GDP (1990–2020)

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Abstract:

In order to increase economic growth in both developed and developing countries, these are human resources, natural resources, capital formation and technology, where growth also has an impact on trade. This study shows the effect merchandise export, food export, communications and computer, travel service to gross domestic product (GDP) in Indonesia. The data used is data obtained from publications carried out by the World Bank in 1990-2020 in Indonesia. The analysis used in this research is multiple linear regression using the method Ordinary Least Square (OLS) to see how big the influence of the variables is merchandise export, food export, communications and computer, travel service to gross domestic product (GDP) in Indonesia. Based on the analysis that has been carried out, gross domestic product in Asia is significantly positively influenced by merchandise export And food exhibit, but simultaneously or together, all variables viz merchandise export, food export, communications and computer, travel service has a positive effect on economic growth in Indonesia.

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Keywords:

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1. Introduction

Trade with economic growth has been a topic of discussion for economists for a long time. These economists formulate an empirical model to capture how trade influences GDP growth is not an easy task, because trade is an endogenous variable (Michelis & Zestos, 2004; Schwartz, 1978; Sims, et al., 1990; Tao & Zestos, 1999; Toda & Phillips, 1994; Zestos & Tao, 2000). The activities referred to in this case are export activities. Indonesia's export value accelerated positively. In the August 2021 period, the export value reached US\$21.42 billion or an increase of 20.95% compared to exports in July 2021 and an increase of 64.10% compared to August 2020. One of the pillars of economic growth and manufacturing in Indonesia is the food and beverage industry. The important role of this strategic sector can be seen from its consistent and significant contribution to the gross domestic product (GDP) of the non-oil and gas industry as well as the increase in investment realization (BPS, 2021).

This study aims to examine whether Indonesia's Gross Domestic Product (GDP) from 1990 to 2020 was affected by merchandise exports, food exports, communications and computer services, and travel services. The analysis will explore how these independent variables contribute to changes in GDP. Given the current digital economic era, market expansion beyond domestic boundaries toward international export destinations is considered a strategic priority for Indonesia (Budiasih, 2022; ERIA, 2022).

2. Literature Review

2.1. Economic Growth

Accelerated economic growth can be realized by emphasizing the development of creative industries. The creative economy refers to a conceptual framework built upon creative assets that hold the potential to drive economic advancement (Howkins, 2011; Halim, 2020). Economic growth itself is characterized by a sustained rise in a nation's capacity to produce and deliver a diverse range of goods and services to meet the needs of its population. The development target does not stop at a high rate of economic growth, but also reaches quality economic growth by taking into account equal distribution of income and alleviating poverty and unemployment. Quality economic growth is growth that creates equal distribution of income, alleviates poverty, and opens up extensive employment/employment opportunities (Muttaqin, 2015; Pettinger, 2016; Kurniawan & Wardhani, 2022).

Economic growth reflects the degree to which economic activities contribute to increasing community income over a given period. Fundamentally, economic activity involves utilizing production factors to generate output, which subsequently results in income distribution to the owners of those factors. As economic growth progresses, it is expected that the earnings of individuals will also experience an upward trend (Asbiantari et al., 2016; Mankiw, 2010; Mohsen, 2015; Solow, 1956).

2.2. Export

According to Law No. 7 of 2014 on Trade, exports are defined as the activity of transporting goods out of the Customs Territory. This process is undertaken by registered business entities officially recognized as exporters, except in cases where alternative provisions are stipulated by the Minister.

Export is an activity of selling commodities to other countries with the expectation of payment in the form of foreign currency (Benny, 2013; Case & Fair, 2007; Suliyanto, 2011; Sumodiningrat, 2007; Todaro, 2002; Sukirno, 2008). The results of exports in a country of course also contribute to increasing economic growth in that country. According to Siswaningsih (2016), exports are an important benchmark for knowing how much economic growth a country has. Apart from that, exports positively and significantly influence economic growth both in the long and short term (Ginting, 2017).

3. Data and Methodology

This study utilizes secondary data in the form of time series spanning the period from 1990 to 2020, with the research conducted in the context of Indonesia. The variables examined include merchandise exports, food exports, communications and computer services, travel services, and GDP. All data were sourced from publications issued by the World Bank.

The dependent variable (Y) in this research is GDP in Indonesia. The GDP value is expressed in United States Dollar exchange rates. Variable merchandise export expressed in United States Dollar exchange rates. Variable food export, communications and computer, travel service expressed in percent units (%).

This study employs both descriptive analysis and multiple linear regression using the Ordinary Least Squares (OLS) method. The descriptive analysis provides a general overview of how export variables relate to economic growth. Meanwhile, the regression model is specified to quantify the extent of the influence that merchandise exports, food exports, communications and computer

services, and travel services have on Indonesia's GDP. The relationship among these variables is expressed through the following linear equation :

$$Y = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \beta_4 X_{4it} + AND \quad (1)$$

Where Y represents the dependent variable, GDP (in USD), X_1 denotes merchandise exports (USD), X_2 is food exports (%), X_3 is communications and computer services (%), and X_4 represents travel services (%). This model allows the researcher to identify and measure the relative contribution of each export category to Indonesia's economic performance over the 1990–2020 period.

4. Result and Discussion

This research analysis uses secondary data with using 4 independent variables, namely *merchandise export* (ME), *food export* (FE), *communications computer* (CC) and *travel services* (TS) as well as the dependent variable GDP. The data used in the research is time series data with a time span of 1990-2020.

Descriptive statistical analysis is conducted to offer a general overview of the dataset utilized in the study. Each research variable is interpreted through its mean, median, maximum, and minimum values. The outcomes of this analysis are presented in the following table :

Table 1. Results of Descriptive Statistical Analysis

Source: Data processed with eviews 10, 2022

	GDP	ME	FE	CC	TS
Mean	492.5161	102.8494	14.75625	19.91387	66.70343
Median	285.8686	86.99600	12.25335	10.65113	54.70876
Maximum	1119.091	203.4970	23.59872	47.61086	98.41461
Minimum	106.1407	25.67500	8.882015	3.645008	23.23207
Std. Dev.	360.6795	58.54438	4.535275	16.04404	25.42789
Observations	31	31	31	31	31

The descriptive statistical analysis in the table 1 above is as follows:

- The dependent variable, GDP, recorded a maximum value of US\$ 1,119.09 billion and a minimum value of US\$ 106.14 million. Its statistical measures include a mean of US\$ 492.52 million, a median of US\$ 285.87 million, and a standard deviation of US\$ 360.68 million
- According to the descriptive statistics, the independent variable merchandise export reaches a maximum value of US\$ 203.5 million and a minimum of US\$ 25.68 million. The mean and median values are US\$ 102.85 million and US\$ 87 million, respectively, while the standard deviation is recorded at US\$ 58.54 million.
- Independent variable *food export* has the highest value of 23.6% and lowest value of 8.88%. Mean, median and standard deviation values for the independent variables *food export* each size 14.76%, 12.25% and 4.54%.
- Independent variable *communications computer* has the highest value of 47.61% and lowest value of 3.65%. Mean, median and standard deviation values for the independent variables *communications computer* each size 19.91%, 10.65% and 16.04%.
- Independent variable *travel services* has the highest value of 98.41% and lowest value amounting to 23.23%. Mean, median and standard deviation values for the independent variables *travel services* each size 66.70%, 54.71% and 25.43%

The relationship between the independent variables (merchandise export (ME), food export (FE), communications and computer services (CC), and travel services (TS)) and the dependent variable, GDP, is examined through multiple regression analysis, utilizing EViews 10 software. The outcomes of the estimated regression equation are summarized in the table below.:

Table 2. Multiple Regression Results

Source: Data processed with eviews 10, 2022

Variable	Coefficient	Std. Error	T-Statistic
C	1.558824	0.954803	1.632614
ME	0.816771	0.083584	9.771828***
FE	1.059720	0.152522	6.947963***
CC	-0.048192	0.047167	-1.021746
TS	-0.049242	0.135540	-0.363300
R Square	0.975250		
Observation	31		
Notes: Significant at ***1%, **5%, *10%			

Referring to the regression results presented in Table 2, the corresponding equation model can be constructed as follows :

$$GDP = 1.558 + 0.817ME + 1.059FE - 0.048CC - 0.059 TS \quad (2)$$

The results of the regression can be concluded that:

- The constant coefficient (β) is valued at 1.558, indicating that when all independent variables are equal to zero, the predicted value of the dependent variable, GDP, is 1.558.
- The *merchandise export* variable has a coefficient of 0.817, indicating a positive relationship. This suggests that, holding other independent variables constant, a one-unit increase in merchandise exports is associated with a 0.817 increase in the GDP value.
- The *food export* variable has a coefficient of 1.059, indicating a positive association. This implies that, assuming other independent variables remain unchanged, a one-unit rise in food exports would lead to an increase of 1.059 in GDP..
- The *communications and computer variable* has a coefficient of -0.048 , indicating a negative relationship. This suggests that, if this variable decreases by one unit while the other independent variables remain constant, GDP is expected to increase by 0.048.

- e. The *travel services* variable has a coefficient of -0.059 , reflecting a negative relationship. This indicates that, with all other independent variables held constant, a one-unit decline in travel services is associated with a 0.059 increase in GDP.

Hypothesis Testing

Partial Test (t-test)

As stated by Ghozali (2013:97), a partial test assesses the extent to which each individual independent variable contributes to explaining variations in the dependent variable. In essence, the t-test is applied to evaluate the significance of the impact of each independent variable on the dependent variable. In this study, the t-test was conducted by examining the significance value of the t-statistic, using a predefined significance level of 0.05 ($\alpha = 5\%$). The hypotheses tested are outlined as follows.:

- 1) Influence *merchandise export* to GDP
 H_0 = Partially *merchandise export* has no effect on GDP.
 H_1 = Partially *merchandise export* influence on GDP.
- 2) Influence *food export* to GDP
 H_0 = Partially *food export* has no effect on GDP.
 H_2 = Partially *food export* influence on GDP.
- 3) Influence *communications computer* to GDP
 H_0 = Partially *communications computer* has no effect on GDP.
 H_3 = Partially *communications computer* influence on GDP.
- 4) Influence *travel services* to GDP
 H_0 = Partially *travel services* has no effect on GDP.
 H_4 = Partially *travel services* influence on GDP

The basis for making decisions from partial test results is to use the significance level:

- 1) If probability $> \alpha$ (0.05), then H_0 is accepted
- 2) If probability $< \alpha$ (0.05), then H_0 is rejected

The t test results can be seen in the following table 3

Table 3. T Test Results

Source: Data processed with eviews 10, 2022

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.558824	0.954803	1.632614	0.1146
ME	0.816771	0.083584	9.771828	0.0000
FE	1.059720	0.152522	6.947963	0.0000
CC	0.048192	0.047167	-1.021746	0.3163
TS	0.049242	0.135540	-0.363300	0.7193

Based on the results presented in the table above, the conclusions regarding the hypothesis testing for each independent variable's effect on the dependent variable are as follows :

- a. H1 = (Partially *merchandise export* influence on GDP)

Prob value. t count *merchandise export* as big as 0.0000 smaller than 0.05 which means *merchandise export* influence on GDP. The conclusion in the research is accepting H1 and rejecting H0 partially *merchandise export* influence on GDP.

- b. H2 = (Partially *food export* effect on GDP)

Prob value. t count *food export* as big as 0.0000 smaller than 0.05 which means *food export* influence on GDP. The conclusion in the research is accepting H2 and rejecting H0 partially *food export* influence on GDP.

- c. H3 = (Partially *communications computer* has no effect on GDP)

Prob value. t count *communications computer* as big as 0.3163 greater than 0.05 which means *communications computer* has no effect on GDP. The conclusion in the research is to reject H3 and accept H0 partially *communications computer* has no effect on GDP.

- d. H4 = (Partially *travel services* has no effect on GDP)

Prob value. t count *travel services* as big as 0.7193 greater than 0.05 which means *travel services* has no effect on GDP. The conclusion in the research is to reject H4 and accept H0 partially *travel services* has no effect on GDP

Model Feasibility Test (F Simultaneous)

According to Ghazali (2013), the simultaneous test, or F-test, evaluates the overall significance of the relationship between the observed data and the estimated regression model. In other words, it is employed to assess whether the independent variables collectively have a statistically significant impact on the dependent variable. The hypotheses for this test are formulated as follows :

H₀ : Simultaneously there is no significant influence between the independent variables *merchandise export* (ME), *food export* (FE), *communications computer* (CC) and *travel services* (TS) to GDP.

H₅ : Simultaneously there is a significant influence between the independent variables *merchandise export* (ME), *food export* (FE), *communications computer* (CC) and *travel services* (TS) to GDP.

Basic decision making from simultaneous test results (*F-test*) are as follows:

- a. When the value of Prob (*F-statistic*) > α (0.05), then H0 is accepted
- b. When the value of Prob (*F-statistic*) < α (0.05), then H0 is rejected

The results of the F test in this research can be seen in the following table:

Table 4. F Test Results

Source: Data processed with eviews 10, 2022

R-squared	0.975250
Adjusted R-squared	0.971442
S.E. of regression	0.058989
Sum squared resid	0.090474
Log likelihood	46.48150
F-statistic	256.1235
Prob(F-statistic)	0.000000

Based on the test results in the table 4 above, then:

- a. H5 = (Simultaneously there is a significant influence between the independent variables *merchandise export* (ME), *food export* (FE), *communications computer* (CC) and *travel services* (TS) to GDP)

Prob value. F (Statistics) is 0.0000 smaller than the significance level of 0.05, so it can be concluded that the estimated regression model is capable of being used to explain the effect independent variable relationship *merchandise export* (ME), *food export* (FE), *communications computer* (CC) and *travel services* (TS) to GDP. The conclusion of the research is that accepting H5 means that simultaneously there is a significant influence between the independent variables *merchandise export* (ME), *food export* (FE), *communications computer* (CC) and *travel services* (TS) to GDP.

Coefficient of Determination Test

According to Ghazali and Ratmono (2013), the coefficient of determination (R-squared) indicates the extent to which the model can account for variations in the dependent variable. The R² value ranges between 0 and 1, where a lower R² suggests that the explanatory power of the independent variables on the dependent variable is minimal. The R-squared results are presented in the following table.

Table 5. Coefficient of Determination Test Results

R-squared	0.975250
Adjusted R-squared	0.971442
S.E. of regression	0.058989
Sum squared resid	0.090474
Log likelihood	46.48150
F-statistic	256.1235
Prob(F-statistic)	0.000000

Source: Data processed with eviews 10, 2022

The results of the coefficient of determination test in the table 5 above show an r square value of 0.9753. This research uses more than 1 independent variable, so the adjusted r square value is used to measure the proportion of influence between the independent variables on the dependent variable. The adjusted r square value is 0.9714, this matter shows that the proportion of influence variable free DOI

merchandise export (ME), *food export* (FE), *communications computer* (CC) and *travel services* (TS) on the dependent variable GDP amounting to 97.14% while the remaining 2.86% is influenced by other variables that are not in the regression model.

The findings of this study align with the research by Sari et al. (2021), which demonstrated that merchandise exports have a significant positive impact on GDP in Southeast Asia. To further stimulate economic growth, enhancing Indonesia's export performance is essential. This can be achieved through improvements in export administration procedures, increased investment in research and development of domestic products, and advancements in infrastructure and facilities (Ginting, 2017). Moreover, the expansion of information and communication technology (ICT) has influenced trade dynamics in the digital era, as evidenced by Oktora and Nora (2019), who found that ICT adoption in export destination countries significantly affects Indonesia's apparel exports.

5. Conclusion

Based on the analysis conducted, it can be concluded that, partially, merchandise exports and food exports significantly affect GDP in Indonesia, whereas communications and computer services, as well as travel services, do not show a significant impact. However, when assessed simultaneously, all independent variables collectively exhibit a significant influence on GDP, as indicated by the F-statistic value being below the 5% significance threshold. Furthermore, the coefficient of determination (R^2) value of 0.971442 suggests that 97.14% of the variation in GDP can be explained by the independent variables included in the model, while the remaining 2.86% is attributed to other factors not captured in the regression.