Analysis of Indonesia - China Bilateral Economic Sector in the Joko Widodo Era Against Indonesia's GDP

Mochamad Reza Irdiansyah[a*], Aris Soelistyo[b]

[a,b] Development Economics, Faculty of Economics and Business, University of Muhammadiyah Malang, Indonesia

* Corresponding author: m.reza.irdiansyah@gmail.com

Info Articles	Abstract
    	The research conducted aims to analyze the effect of Foreign Debt, Investment, Exports and Imports on Indonesia's GDP in the era of President Joko Widodo. The research here uses a quantitative approach type method so that it is done to collect only the object of research. Indonesia and China are the objects of research. The results of this study can be concluded that foreign debt and exports are significantly positive to the rate of national GDP while China-Indonesia investment and imports are insignificantly negative to Indonesia's GDP. In Indonesia-China bilateral cooperation in the investment and import sectors does not greatly affect Indonesia's GDP. Meanwhile, the impact of the foreign debt and export sectors affects Indonesia's GDP.

INTRODUCTION

The relationship between Indonesia and China has now lasted for 73 years. Indonesia's abundant natural resources make it a place to invest for other countries, one of which is China, by establishing bilateral relations with various countries, especially in the economic sector. At the beginning of Soekarno's reign, relations between these countries experienced ups and downs due to political intervention by Soeharto. However, after the Soekarno era ended, relations between Indonesia and China declined. Bilateral relations carried out under President Joko Widodo, and relations between Indonesia and China have developed. The expansion of infrastructure development requires very large investments, thus encouraging the Indonesian government to carry out intensive economic cooperation with China. President Joko Widodo acknowledged that the 30-year cooperation between China has produced several real results for both regions, especially in the economic sector.

Since China opened trade, internationality changed, and trade began to take place little by little openly and directly. China's position is now a nation similar to Japan and South Korea, industrial efforts are also progressing. Indonesia must be able to benefit from the economic development and industrialization carried out by China. Many industrial materials such as crude palm oil (CPO), rubber, wood and other raw materials. Exports and imports are the main thing for the country's economic growth. In a country that has an excess in the value of its products that cannot be produced by other countries that need it, the country can export (Ronaldo, 2017). Net exports can bring benefits to the country by increasing domestic profits that will be used to pay off high foreign debts. In addition, the profits that can be taken from exports or capital

that cannot be processed domestically can increase the growth of domestic economic activities(Silaban & Rejeki, 2020)

Previous tests (Nawiyah, Puar, 2020)tested "The Effect of Chinese Investment in Indonesia, Indonesian Exports to China, and the Workforce on National Economic Growth". The results of the sub-test (t-test) showed that Chinese investment in Indonesia, Indonesian exports to China, and the Indonesian workforce had a positive and significant impact on Indonesia's economic growth. Simultaneous findings (F-test) reached 96.9% of the Chinese investment variable in Indonesia.

Next, research by (Shopia & Sulasmiyati, 2019) researching "The Effect of Foreign Direct Investment, Exports, and Foreign Debt on ASEAN Economic Growth". According to the results of this study, Foreign Investment, Exports, and Foreign Debt: (1) significantly influenced the economic growth of Indonesia, Malaysia, and Thailand from 2007 to 2016. In some situations, foreign direct investment can significantly influence the economic growth of Indonesia, Malaysia, and Thailand; exports significantly influence the economic growth of Indonesia, Malaysia, and Thailand; foreign debt significantly influences the economic growth of Indonesia and Malaysia, while foreign debt influences the economic growth of Thailand relatively little.

Previous studies only focused on domestic issues in general and ASEAN on export, import, investment, labour and foreign debt variables, until now no one has studied the impact of bilateral cooperation with China with the latest presidential leadership period that examines these variables. Meanwhile, many people do not believe in bilateral cooperation in the debt, investment, export and import sectors on Indonesia's GDP in the era of President Joko Widodo. So it is interesting to know the impact of bilateral cooperation between Indonesia and China. The variables of debt, investment, export, and import are the focus of bilateral cooperation carried out by President Joko Widodo. Where these factors can show the extent of the impact given by the current presidential leadership on national GDP. This information, the purpose of this study provides a view for the government and also the community to know and analyze the impacts influenced by debt, investment, and import-export factors between Indonesia and China on national GDP both partially and simultaneously.

RESEARCH METHODS

This study uses quantitative methods. The variables used in the test are the dependent variable GDP, while the independent variables are debt, investment, exports and imports. This test uses one dependent variable and four independent variables. The operational definition of each variable in this study is as follows: Debt made by Indonesia to China from 2014 to 2023. Foreign investment was made by China in Indonesia during the period 2014-2023 consecutively. Exports and imports made by Indonesia with China during the period 2014 to 2023. Complete data available to detect all existing variables. The type of data is a quarterly time series from 2014 to 2023. All data is transformed into logarithms before testing the data which aims to handle data that has a non-linear relationship with other variables. In addition, so that the data that is not normal will approach normal (Benoit, 2011)

In this case, time series data, which means data arranged based on a predetermined time, is used. Data for this study came from BPS, NSWI and SULNI. In this study, using Multiple Linear Analysis Test was carried out with the dependent variable being GDP, while the independent variables were debt, investment, exports and imports which made it possible to determine the correlation between 2 or more variables to measure the level or closeness of the relationship between the variable factors (Sungkawa, 2015)

The basic model of this research is as follows:

$$(LogY) = \alpha + \beta1\,LogX1 + \beta2\,LogX2 + \beta3Log\,X3 + \beta4Log\,X4 + \mu) \dots\dots\dots\dots(1)$$

Y= GDP/GDP(Million \$); α = constant; ß1, ß2... = regression coefficient; X1= Foreign Debt; X2 = Investment; X3= Export; X4= Import; µ= Term error

Data analysis was conducted in this study using multiple regression analysis methods. Model criteria test using classical assumption test, namely normality test, autocorrelation, heteroscedasticity and multicollinearity. Statistical tests include t-test, F-test and R2 to determine the effect of independent variables on dependent variables both partially and simultaneously.

Some of the tests used in this study include:

Classical Assumption Test

Classical assumption tests help ensure that the regression model used is valid and reliable. This includes checking whether the relationship between the independent and dependent variables is linear.

Normality Test.

This test ensures that the model errors are normally distributed. This is important for the validity of statistical inference.

Autocorrelation Test.

This test ensures that the model errors are normally distributed. This is important for the validity of statistical inference.

Heteroscedasticity Test.

This test is used to detect the presence of non-constant variance of the residuals in a regression model.

Multicollinearity Test.

This test helps detect the presence of multicollinearity, which is when two or more independent variables in a regression model are highly correlated with each other. Multicollinearity can affect the estimation of regression coefficients.

Coefficient Test.

Used to measure the strength and direction of the relationship between the independent and dependent variables. Each regression coefficient indicates how much change is expected in the dependent variable for each unit change in the independent variable, assuming other variables remain constant.

t-test.

The t-test is used to test the significance of each regression coefficient individually. It tests the null hypothesis that the regression coefficient for a particular independent variable is equal to zero.

F test

The F test is used to test the overall significance of a regression model. It tests the null hypothesis that all regression coefficients (except the intercept) are equal to zero, meaning that none of the independent variables affect the dependent variable.

R^2 Test

This test measures the proportion of variation in the dependent variable that can be explained by the independent variables in the regression model. R^2 values range from 0 to 1.

RESULTS

Normality Test Results

The normality test is used to test in regression, whether the confounding variable or residual has a normal distribution or not. The analysis model used to conduct the test is the Jarque-Bera Test. With the following hypothesis:

Table 6. Results of Model Selection with Normality Test

Mean	1.20e- 15
Median	-0.008053
Maximum	0.204238
Std. Dev.	0.075485
Skewness	0.412245
Kurtosis	3.307082
Jarque-Bera	1.290140
Probability	0.524626

Based on the results of the normal test, it can be concluded that the Jarque-Bera test (normality test) shows a probability of more than 0.05 or greater than the error rate, so it can be stated that the data is normally distributed. The results of the probability of the independent variable are 0.524626, which means that the value is more than $\alpha = 0.05$, so it can be decided to accept H0 and reject H1.

Autocorrelation Test Results

In detecting autocorrelation using the Durbin-Watson value. The criteria in the Durbin-Watson test are:
1. If 0 < dw < dL, it means there is an autocorrelation positive
2. If 4 – dL < d < 4, it means there is a negative autocorrelation
3. If 2 < dw < 4 – dU or dU < dw < 2, it means there is no positive or negative autocorrelation.
4. If dL ≤ dw ≤ dU or 4 – dU ≤ dw ≤ 4 – dL, the test is inconclusive. For That can Use other tests or add data
5. If the du value < dw < 4-du then there is no autocorrelation.

Table 7. Results of Model Selection with Autocorrelation Test with Durbin Watson

Variables	Coefficient	Std. Error	t-Statistic	Prob
C	10.11462	0.999587	10.11879	0.0000
X1	0.059519	0.023518	2.530756	0.0160
X2	-0.032795	0.027281	-1.202104	0.2374
X3	0.248436	0.108358	2.292723	0.0280
X4	-0.047186	0.191064	-0.246965	0.8064
R-squared	0.774799	Mean dependent variable		12.48068
Adjusted R-squared	0.749062	SD dependent var		0.159065

SE of regression	0.079682	Akaike information criterion	-2.105087
Sum squared residual	0.222221	Black criterion	-1.893977
Log-likelihood	47.10172	Hannan-Quinn Criterion	-2.028756
F-statistic	30.10416	Durbin-Watson stat	1.821882
Prob (F-statistic)	0.000000		

If in the model it is known that k = 4, dw = 1.82 n = 40 then dl = 1.10 and du = 1.52 which means 0<dw< 4-du, namely 0< 1.82<2.48 or there is no autocorrelation.

Multicollinearity Test Results

This is a test to see if the regression model finds a correlation between the independent variables; a good model will not find a significant correlation between its independent variables. The presence of multicollinearity can be indicated by independent variable coefficients greater than 1.

Table 8. Results of Model Selection with Multicollinearity Test with Correl Test

Variables	LogPDB (Y)	Debt Log (X1)	Loginvestment (X2)	Logexport (X3)	Logimport (X4)
LogPDB (Y)	1	0.658976	0.601294	0.852172	0.830637
Debt Log (X1)	0.658976	1	0.83873	0.584582	0.57766
Loginvestment (X2)	0.601294	0.83878	1	0.627727	0.598071
Logexport (X3)	0.852172	0.584582	0.627727	1	0.973407
Logimport (X4)	0.830637	0.57766	0.598071	0.973407	1

the correlation/multicollinearity test, the correlation value of all variables is less than 1, so the conclusion is to accept H0, namely, there is no multicollinearity.

Heteroscedasticity Test Results

The heteroscedasticity test is used to determine whether there is inequality in the residual variation in the regression model. If the residual variation between two observations remains, it is called homoscedasticity, but if not, it is called heteroscedasticity. Homoscedasticity or heteroscedasticity is a sign of a good regression model. The results of the heteroscedasticity test with the geyser test are presented in Table 9 as follows. Methods that can be used to identify symptoms of heteroscedasticity include the graphical method, park test, geyser test, spearman correlation, and Goldfeld-Qundt test.

Table 9. Results of Model Selection with Heteroscedasticity Test with Glejser Test

F-statistic	1.001549	Prob. F(4,35)		0.4199
Obs *R-squared	4.108265	Chi-Square Prob. (4)		0.3916
Scaled explained SS	4.041083	Chi-Square Prob. (4)		0.4005
Variable	**Coefficient**	**Std.Error**	**t-Statistic**	**Prob.**
C	0.271280	0.605180	0.448264	0.6567

X1	-0.014499	0.014239	-1.018304	0.3155
X2	0.017777	0.016517	1.076306	0.2892
X3	0.059093	0.065603	0.900758	0.3739
X4	-0.077191	0.115675	-0.667306	0.5090
R-squared	0.102707	Mean dependent variable		0.057324
Adjusted R-squared	0.000159	SD dependent var		0.048245
SE of regression	0.048242	Akaike info criterion		-3.108722
Sum squared residual	0.081454	Black circle		-2.897612
Log-likelihood	67.17443	Hannan-Quinn scribe		-3.032391
F-statistic	1.001549	Durbin-Watson stat		1.791842
Prob(F-statistic)	0.419858			

Based on the Glejser heteroscedasticity test, by paying attention to the sig value > 0.05, which is 0.4005, the conclusion is to accept H0, namely to reject H1, which means that there is no heteroscedasticity.

Hypothesis Testing

Hypothesis testing, known as partial testing or F-testing, is conducted to determine whether or not there is a significant effect of the relationship between independent variables and dependent variables, either simultaneously or partially.

F Test (Simultaneous Test)

The F test is used to determine whether or not there is a simultaneous influence between all independent variables, namely Foreign Debt, Investment, Exports and Imports on the dependent variable, namely changes in GDP. Decision-making in this f test is done by looking at the F-statistic value. Df1 is the sample and df2 is the number of samples. Simultaneous testing is carried out to see the effect of independent variables simultaneously on the dependent variable. The value of df1 = k-1 = 4-1 = 3 df2 = nk = 40-4 = 36 Based on the F table with the value of df1 = 3 and df2 = 36 the probability value is 0.05 then the F table value is 2.87 From the regression results above, it can be seen that the calculated F value (30.10)> F table value (2.87) then it can be concluded that Ho is rejected and H1 is accepted, which means that the independent variables, namely changes in GDP, have a simultaneous and joint effect on the dependent variables, namely Foreign Debt, China-Indonesia Investment, Exports and Imports in the 2014-2022 quarter.

t-test (Partial Test)

The t-test aims to determine the effect of each independent variable, namely Foreign Debt, China-Indonesia Investment and Exports on the dependent variable, namely Economic Growth Rate (GDP) by comparing the Prob (t-statistic) of each variable with a degree *of freedom* of 95% (α = 0.05) or by comparing the t-count and t-table. one sample where the t-count value is 0 with a degree of freedom = 36 (N-1), where the t-count is determined from 40 samples and 4 variables. Then the df value is 40-4 = 36. Because the hypothesis of this study uses a 1-way nature, the formula for finding the t-table value: 0.05 / 2; df = 36; 0.025; df = 36

As seen from the value of α/2 = 0.025 and the value of df = 36, the t-Table value of the study is 2.028094.

Decision Result:

a. The foreign debt variable got a result of 2.530756 > 2.028094. This means that the foreign debt variable has a positive and significant effect on Indonesia's GDP.
b. The investment variable got a result of -1.202104 < 2.028094. This means that the China-Indonesia investment variable is negative and not significant for Indonesia's GDP.
c. The Export variable got a result of 2.292723 > 2.028094. This means that the Export variable has a significant positive impact on Indonesia's GDP.
d. The import variable got a result of -0.246965 < 2.036933. This means that the negative export variable is not significant for Indonesia's GDP.

Test Coefficient Determination (R2)

Table 10. R- squared table

R-squared	0.774799
Adjusted R-squared	0.749062

Based on Table 10 above obtained an R-Square value of 0.774799. This shows that the independent variables together can explain the dependent variable of 77.4%, the rest is explained by other variables outside the model of 22.6% (100% - 77.4%).

DISCUSSION

The Impact of Foreign Debt on GDP

National GDP is significantly affected by foreign debt. In previous research (Ramadhani, 2014) on the variable debt is positively significant to GDP. Tests show that an increase in foreign debt will also cause an increase in GDP. The development process of developing countries such as Indonesia requires foreign debt to overcome the savings gap, namely the smaller value of savings compared to the value of investment. With careful (prudential) and targeted fund management, foreign debt can be used to cover the scarcity of expected domestic development funds and can be used to build development projects to pay instalments and interest on debt (Yuliadi, 2017)

The Impact of China-Indonesia Investment on GDP

The China-Indonesia Investment variable got negative but not significant results. In previous research (Didu, 2017) the positive investment variable had a significant effect on GDP. it can be said that the investment will be seen as good investment will result in increased production of goods and services in the economy. However, this study shows that China-Indonesia Investment does not affect the rate of economic growth, this is because many other countries contribute to foreign investment in Indonesia so the influence of investment from China does not affect GDP in Indonesia (Isnainul et al., 2022)

The Impact of Exports on GDP

Export variables get significant positive results on national GDP variables. Previous research (Pridayanti, 2012) shows that the positive export variable has a significant effect on GDP. It can be said that the greater the exports carried out by a country, the greater the economic growth in the country. However, this study agrees with this. This is because the more export variables are carried out, the more it will increase the country's foreign exchange so the results show that exports have a significant positive effect on Indonesia's GDP. The investment will look good. The investment will result in increased production of goods and services in the economy.

So the results show that investment has a significant positive effect on national GDP. However, this study shows that China-Indonesia investment affects GDP, this is because the investment provided by China is very large, increasing GDP in Indonesia (Irene Sarah Larasati, 2018)

Impact of Imports on GDP

The import variable experienced insignificant negative results because imports did not fully provide a surplus for a country's economic growth. In previous research (Adnan & Fernandi, 2022) shows that the import variable has a significant negative impact on GDP. If imports are carried out continuously, competition from foreign products will dominate the domestic market and in terms of quality, domestic products will lose. However, this study agrees with this. This is because the negative import variable does not have a significant effect on Indonesia's GDP (Febriyanti, 2019)

CONCLUSION

In this study, debt variables have a significant positive impact on Indonesia's GDP. Furthermore, export activities can be carried out by a country, so that economic growth in the country will increase. The export variable has a significant positive result where the more exports are carried out, the more foreign exchange the country will also increase so the results show that exports have a significant positive effect on Indonesia's GDP. However, the import variable has a negative insignificant effect on Indonesia's GDP. The investment will look good. Investment will result in an increase in the production of goods and services in the economy. So the results show that negative investment is not significant to Indonesia's GDP. However, this study shows that China-Indonesia investment is also negatively insignificant to Indonesia's GDP, this is because the investment provided by China is more beneficial to its people than the country being invested.

BIBLIOGRAPHY

Nawiyah , Puar, ZM (2020). *NATIONAL THE INFLUENCE OF CHINA INVESTMENT IN INDONESIA, INDONESIA-CHINA EXPORTS, AND LABOR ON NATIONAL ECONOMIC GROWTH. 1*, 151–159.

Shopia , A., & Sulasmiyati , S. (2019). The Influence of Foreign Direct Investment, Exports, and Foreign Debt on ASEAN Economic Growth. *UB Repository*, 198.

Silaban , PS, & Rejeki , R. (2020). The Influence Inflation, Export and Import To GDP in Indonesia 2015-2018 Period. *Niagawan , 9* (1), 56–64.

Adnan , M., & Fernandi, M. (2022). *The Influence of Exports and Imports on Economic Growth in Aceh Province. 1* (2), 1–17.

Benoit, K. (2011). Linear Regression Models with Logarithmic Transformations. *London School of Economics*, 1–8. http://www.kenbenoit.net/courses/ME104/logmodels2.pdf

Didu, S. (2017). *The Influence of Foreign Debt and Foreign Investment (PMA) on Economic Growth in Indonesia.*

Febriyanti , DF (2019). Effect of Export and Import of Gross Domestic Product in. *Ecoplan Journal , 2* (1), 10–20.

Irene Sarah Larasati, SS (2018). *THE EFFECT OF INFLATION, EXPORTS, AND LABOR ON PRODUCTS*. *63* (1).

Isnainul , OK, Pakpahan, EF, & Hadlen, M. (2022). *The Role of Foreign Investment in Accelerating Economic Growth in The Role of Foreign Investment in Accelerating Economic Growth in Indonesia*. *November 2020.* https://doi.org/10.29303/jatiswara.v35i3.266

Pridayanti , A. (2012). *ON ECONOMIC GROWTH IN INDONESIA IN THE PERIOD 2002-2012.*

Ramadhani , MA (2014). The Effect of Budget Deficit, Government Expenditure and Foreign Debt on Economic Growth (Case Study of 6 ASEAN Countries 2003-2012). *FEB Student Scientific Journal*, *2* (1), 1–17.

Ronaldo. (2017). ANALYSIS OF THE INFLUENCE OF EXPORTS ON ECONOMIC GROWTH IN INDONESIA. *ITS Science and Arts Journal*, *6* (1), 51–66. http://repositorio.unan.edu.ni/2986/1/5624.pdf%0Ahttp://fiskal.kemenkeu.go.id/ejournal%0Ahttp://dx.doi.org/10.1016/j.cirp.2016.06.001%0Ahttp://dx.doi.org/10.1016/j.powtec.2016.12.055%0Ahttps://doi.org/10.1016/j.ijfatigue.2019.02.006%0Ahttps://doi.org/10.1

Sungkawa , I. (2015). Application of Multiple Linear Regression to Measure the Efficiency of Groundwater Use Patterns of Rice Intensification (SRI) System in Bandung, Subang, and Karawang Districts. *ComTech: Computer, Mathematics and Engineering Applications*, *6* (2), 259. https://doi.org/10.21512/comtech.v6i2.2270

Yuliadi, I. (2017). Analysis of Indonesia's Foreign Debt Macroeconomic Equilibrium Approach. *EKUITAS (Journal of Economics and Finance)*, *11* (4), 535. https://doi.org/10.24034/j25485024.y2007.v11.i4.2276