

The Role of Digital Economy and International Trade on Economic Growth in Indonesia

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Abstract: In recent years, economic growth has shown fluctuating numbers, one of the consequences of which is Covid-19. The digital economy utilizes fintech technology such as p2p lending has a strategic role in economic growth activities moderated by export, import, and population variables. The data in this study uses Indonesian panel data from 2020 to 2022. The data analysis technique uses the Panel Data Regression method. Based on the results of the partial test of p2p lending has a negative and significant effect, exports have a positive but not significant effect, imports have a negative and insignificant effect and population has a positive and significant effect on economic growth. The results of the simultaneous test of all variables have a significant effect on economic growth.

Keywords: *Fintech, P2P lending, Export, Import, Population, Economic growth*

Introduction

Economic growth is a very important factor in seeing the increase and shrinkage of income or domestic production in one country from year to year. To calculate a country if the development and economic growth rate goes well, it is seen from the indicator, namely GDP (*Gross Domestic Product*).

A country's economy is certainly not far from the global economy. One very important factor in the economic development of a country is economic relations between countries as well as international trade is where it can be seen with the level of global demand increasing with Indonesian products or services. Not only that, exports, imports, inflation, and exchange rates are also the assessment of a country. The discussion of economic growth raises several empirical literature that another major factor in economic growth is that by conducting international trade and trade policies openly, the country must strive to be more liberal in trade in order to produce higher growth (Astuti & Ayuningtyas, 2018)

International trade (exports and imports) plays an important role in Indonesia's economic growth. As a country with abundant natural resource wealth, Indonesia has great potential to develop a strong export and import sector. One important indicator that shows the importance of international trade is the development of Indonesia's exports and imports over the past few years. Statistical data shows that in 2021, Indonesia's export value reached USD 202.6 billion, an increase of 17.56% from the previous year. Meanwhile, Indonesia's import value reached USD 176.9 billion, an increase of 10.2% from the previous year. This shows that Indonesia's international trade has grown rapidly and has great potential to increase economic growth.

The fintech digital economy has become a rapidly growing global trend. In Indonesia, the fintech digital economy sector has grown in recent years. Several fintech companies such as Gojek, Tokopedia, and OVO have become market leaders in various sectors, including e-commerce, ride-hailing, and digital payments. The importance of fintech digital economy in Indonesia's economic growth can be seen from the significant market growth. According to data from the Indonesian Fintech Association, the value of e-commerce transactions in 2020 was IDR 211 trillion, an increase of 11.5% from the previous year. In addition, the value of digital payment transactions in Indonesia in 2020 amounted to Rp 3,167 trillion, an increase of 39% from 2019.

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In addition, population has an important role in the economy. According to Darma, (2021) With population growth going up, it will form a potential market. This is because the more the population, it can form production activities and the more inhabitants, the more consumers. However, in contrast to Yuniarto's research, (2021) For very high densely populated areas, it can affect the quality of life. In these areas can cause several problems such as socio-economic, welfare, security, land availability, clean water, and food needs. The biggest impact is environmental damage.

Some previous studies have shown different or uncertain results in their research on the role of the digital economy and international trade on economic growth, even some studies focus more on one variable, for example, more focused on the digital economy that does not add international trade variables. In Wang et al (2022) obtained results in their research focusing on the digital economy alone, it revealed that the role of the digital economy in economic growth is very significant and makes their economic growth have a positive impact on the country.

In the study, Wahyuningtyas et al (2019) revealed the results of their analysis, the digital economy with indicators of the value of e-commerce transactions has a positive and significant effect in the short term on economic growth, while in the long term the value of e-commerce transactions has an effect but not significant on economic growth in 1996-2019.

Meanwhile, in another study, Adha (2020) has a different opinion that the development of the digitalization industry is rumored to have an impact that technology takes over human jobs. Some other jobs require workers to have more skills to avoid being eliminated from the job market. So that developing countries, especially Indonesia, the development of the digitalization industry has become the center of public attention. And also in Ng et al (2023) Markets around the world tend to be highly protected and regulated and the emergence of fintech innovation can be considered a new threat to the level of supervisory and influence exerted by regulatory authorities and policymakers.

Therefore, judging from previous research there are several weaknesses in various variables for this reason, this study is to perfect previous research that has uncertainty. The contribution that differs this research from previous research is by adding fintech digital economy variables and combining fintech with international trade. This study uses a different method, namely Regression Panel Data for comparison with previous research and with the addition of variables that can affect economic growth. Therefore, this study raises the formulation of the problem, namely:

1. Does fintech p2p lending affect economic growth?
2. Do exports have an influence on economic growth?
3. Do imports influence economic growth?
4. Does population affect economic growth?

Literature Review

Economic Growth

The economic growth of a country is very important because it has a role in the income of the community and the state, also being one of the main bases of the development of a country. The Theory of Economic Growth can be divided into two parts: Classical Growth Theory and Modern Economic Growth. According to Indayani & Hartono, (2020) economic growth is income that experiences an increase in the output of goods and services in a certain period. Economic growth can also be seen through increasing the production of industrial goods, the amount of education, developing infrastructure development, increasing the service sector and also increasing the capital of a country.

Classical Economic Growth Theory (Adam Smith)

Adam Smith said that society goes through different stages of growth. First, people hunt for food. Later, they began to raise animals and grow crops. After that, they started trading with each other. Eventually they reached the industrial stage where they made something using machines. According to Adam Smith, as society changes, their economy becomes better. This happens because people start specializing in different jobs and working together to create something.

Theory of Comparative Advantage (David Richardo)

This theory was developed by David Richardo. This theory reveals that countries tend to focus on producing goods or services produced at a lower cost than other countries. Although a country can produce all kinds of goods more efficiently than other countries, a country's trade can still be profitable if those countries take advantage of existing comparative advantages.

Comparative advantage is divided into two parts, namely a country that has abundant resources and a country that has sophisticated and superior technology, so that it can utilize with relatively low production costs compared to other countries (Anggrasari et al., 2021).

Endogenous Growth Theory

This theory is intended to add another theory called Neo-Classical Growth Theory. Neo-Classical Growth Theory says that the economy grows because of new technologies. Without new technology, the economy will not continue to grow in the long run. But Solow's model, which is part of the Neo-Classical Growth Theory, does not explain how new technologies occur.

Endogenous Growth Theory according to Todaro, (2011) discusses how things in an economic system can make it grow. It is said that when people invest in science and create new technologies, it helps the economy grow.

Population Theory (Marxist School)

According to Marxist School Theory in Aprilya & Juliprijanto's research, (2022) Population growth can greatly affect job opportunities, where the more the population, the more people look for work. This phenomenon is not a problem, but a human error itself. For example, the population living in a capitalist nation. The capitalists can take the fruits of the workers and make them not able to make ends meet.

Theoretical Framework

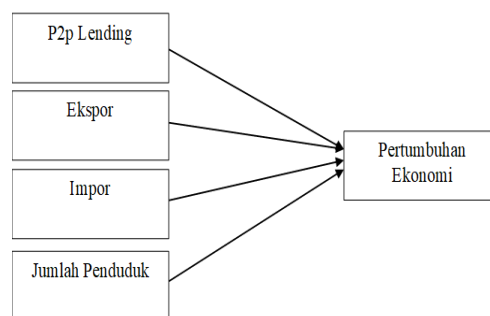


Figure 1. Theoretical Framework

Hypothesis Development

The hypotheses in this study are:

1. The influence of Fintech P2P lending on economic growth


Fintech has expanded financial access, improved and facilitated transactions, facilitated the growth of the digital economy, and fostered innovation, which overall contributed to Indonesia's economic growth. In the Endogenous Growth Theory "Financial Technology" by promoting better productivity it can be considered as endogenous factors that contribute to economic growth. Research conducted by Maulana & Wiharno, (2022) shows that Peer to peer (P2P) lending has a positive and significant influence on economic growth.

H1: Fintech has a positive effect on economic growth

2. The effect of exports on economic growth

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In the Theory of Comparative Advantage where countries that apply the theory, will tend to produce goods and services efficiently and have relatively lower production costs. The goods can then be exported to international markets, creating an additional source of income and increasing the country's production capacity.

Thus, exports have a significant positive impact on the country's economic growth. In Hanifah's research, (2022) In the short term, export variables are significant at a significance level of 5 percent.

H2: Exports have a positive effect on economic growth

3. The effect of imports on economic growth

According to the Theory of Comparative Advantage, through smart imports, countries can provide consumers by providing more efficient access to goods and services from their trading partner countries, strengthening engagement in global supply chains, and providing direct benefits to consumers at lower costs or better quality. Nevertheless, the implementation of this theory must be well managed to maximize benefits and minimize negative risks, according to the conditions required by a country.

In Supiyadi & Anggita's research, (2020), the level of imports has a significant negative effect on economic growth.

H3: Imports have a significant negative effect on economic growth

4. The effect of population on economic growth

Population growth can theoretically increase economic growth, increasing population can expand markets and expanding markets can increase in the economy. In addition, he added, the population can provide a large workforce, so companies open jobs with various skills and levels of expertise that can increase productivity and economic competitiveness.

Research conducted by Hasanuddin & Roy, (2022) Results show that population has a positive and significant effect on economic growth.

H4: Population has a positive and significant effect on economic growth.

Methodology

This research is included in the type of research that is classified as quantitative. Quantitative Method is an approach that takes its decisions with its economic and managerial.

The data used in this study is panel data using the 2020-2022 period obtained from the Financial Services Authority (OJK), and using the Central Statistics Agency (BPS). The unit of analysis is 34 provincial data in Indonesia.

The data used in this study is panel data. According to (Kuncoro, 2011) Panel data is a combination of two data that cross *place* (*cross section*) with data recorded during a certain time interval (*time series*). There are several variables that affect economic growth in Indonesia in this study, namely fintech, exports, inflation and population. The equation is described in the panel data estimation model. In general, the panel data regression model equation is as follows:

$$Y = \beta_1 \text{Fintech}_i + \beta_2 \text{Export}_i + \beta_3 \text{Import}_i + \beta_4 \text{Pop}_i + \varepsilon_i$$

Description:

Y : Economic Growth

Pop : Population

$\beta_1 - \beta_5$: coefficient

i : *cross section*

t : *time series*

ε_i : *error term*

Results and Discussion

Chow Test

Table 1. *Chow Test*

Effects Test	Statistics	d.f	Prob.
Cross-section F	1559.397490	(33,64)	0.0000
Cross-section Chi-square	682.474063	33	0.0000

Source: Eviews 9

Based on the results of the chow-test or *likelihood ratio-test* presented in the table above, it is obtained that the probability value of the *chi-square cross-section* is 0.0000 or smaller than α (0.05). Therefore H0 is rejected and Ha is accepted, meaning that the model chosen between FEM and CEM is a *fixed effect model*.

Hausman Test

Table 2. *Hausman-Test*

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	50.330253	4	0.0000

Source: Eviews 9

Based on the results of the *Hausman-Test* presented in the table above, it is obtained that the probability value of the *cross-section* is 0.0000 or smaller than α (0.05). Therefore H0 is rejected and Ha is accepted, meaning that the model chosen between FEM and REM is a *fixed effect model*.

Fixed Effect Model Estimation

Table 3. *Fixed Effect Model Estimation*

Variabel	Coefficient	Std. Error	t-Statistic	Prob.
C	-301004.1	174565.7	-1.724.303	0.0895
P2p lending	-0.307358	0.082115	-3.743.010	0.0004
Exsport	9.21E-07	2.64E-06	0.349093	0.7282
Import	-1.69E-06	2.40E-06	-0.701834	0.4853
Population	7.932.505	2.179.323	3.639.894	0.0005
Adjusted R Square	0.998538			

Source: Eviews 9

Based on the results of the fixed effect estimation above, it can be interpreted as follows:

From the estimated model, the Adjusted R2 value is 0.998538. This means that the independent variables namely fintech p2p lending, exports, imports and population in the model can explain economic growth in Indonesia of 99.8538% while 0.0926% is explained by other variables that are not included in this research model.

The coefficient of fintech p2p lending is -0.307358 and the value is negative, so the increase in fintech p2p lending has a significant negative effect on economic growth in Indonesia. If the value of fintech p2p lending increases by 1 percent, then economic growth in Indonesia decreases by 0.307358 percent.

The coefficient of exports is 9.21E-07 and is not significant which means that if there is an increase in exports by 1 percent, economic growth in Indonesia increases by 9.21%.

The coefficient of imports is -1.69E-06 and is not significant, where the value is negative, imports have a negative effect on economic growth in Indonesia. If the value of imports increases by 1 percent, then economic growth in Indonesia decreases by 1.69%.

The coefficient of the population is 7,932,505 and the value is positive, so population growth has a positive effect on economic growth in Indonesia.

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Multicollinearity Test

Table 4. Multicollinearity Test

	P2P	Log(Export)	Log(Import)	Pop
P2P	1.000000	0.013633	0.075129	0.358696
Log(Export)	0.013633	1.000000	0.785898	0.214254
Log(Import)	0.075129	0.785898	1.000000	0.265206
JP	0.358696	0.214254	0.265206	1.000000

Source: Eviews 9

The correlation coefficient between X1 and Log(X2) is $0.013633 < 0.85$, X1 and Log(X3) is $0.075129 < 0.85$, X1 and X4 is $0.358696 < 0.85$, Log(X2) and Log(X3) are $0.785898 < 0.85$, Log(X2) and X4 are $0.214254 < 0.85$, Log(X3) and X4 are $0.265206 < 0.85$, it can be concluded that free from Multicholinerity problems or pass the Multicholinerity Test.

Heteroscedasticity Test

Table 5. Heteroscedasticity Test

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-8725.751	27470.85	-0.317637	0.7518
P2p	-0.015668	0.013198	-1.187164	0.2396
Log (Export)	51.67598	429.6575	0.120272	0.9046
Log (Import)	-164.8599	488.4762	-0.337498	0.7368
Pop	1.668360	3.392502	0.491779	0.6246

Source: Eviews 9

Based on the table above, the results of testing heterokedaticity assumptions can be known using the residual absolute method. Probability Variable values X1, log(X2), log(X3), and X4 of 0.2396, 0.9046, 0.7368, 0.6246 > 0.05 , it can be concluded that the data studied do not occur symptoms of heteroscedasticity or pass the heteroscedasticity test.

Partial Test Results (T Test)

Table 6. Partial Test Results (T Test)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-301004.1	174565.7	-1.724.303	0.0895
P2p lending	-0.307358	0.082115	-3.743.010	0.0004
Export	9.21E-07	2.64E-06	0.349093	0.7282
Import	-1.69E-06	2.40E-06	-0.701834	0.4853
Population	7.932.505	2.179.323	3.639.894	0.0005

Source: Eviews 9

Based on the table above, it can be concluded from several variables that have a partial influence as follows:

1. The financial technology (Fintech) variable on economic growth results t calculated above amounted to $-3.743010 < t$ table 1.983971 and prob value $0.0004 < 0.05$ then H0 was rejected and Ha was accepted, meaning that fintech variables have a positive and significant effect on economic growth.
2. In the processed products above export variables to economic growth, the results of t calculated above amounted to $0.349093 < t$ table 1.983971 and prob values of $0.72821 > 0.05$, then H0 was accepted and Ha was rejected, meaning that export variables had a positive and insignificant effect on economic growth.
3. The import variable to economic growth results t calculated above is $-0.701834 < t$ table 1.983971 and the prob value of $0.4853 > 0.05$ then H0 is accepted and Ha is rejected, meaning that the import variable has a negative insignificant effect on economic growth.
4. In the above estimation of the variable number of population to economic growth, the results of t calculated above amounted to $3.639894 > t$ table 1.983971 and the value of prob $0.0005 < 0.05$, then H0 was rejected and Ha was accepted, meaning that the variable number of population had a positive and significant effect on economic growth.

Simultaneous Test Results (F test)

Table 7. Simultaneous Test Results (F test)

Description	Value
F-statistic	1865.590
Prob(F-statistic)	0.000000

Source: Eviews 9

The results of the fixed effect model show that the calculated F value is 1865,590 > F table is 2.46548 and the prob value. (F-Statistic) of 0.000000 < 0.05. This means that the variables fintech, exports, imports and population together have a significant effect on economic growth in Indonesia.

Coefficient of Determination (R²)Table 8. Coefficient of Determination (R²)

Description	Value
R-squared	0.999074
Adjusted R-squared	0.998538

Source: Eviews 9

Based on the table above, the *adjusted R Squared* value is 0.999074 or 99.9074%. The value of the coefficient of determination shows that independent variables consisting of fintech, exports, imports, inflation and population are able to explain the variable of Indonesia's economic growth of 99.9074%, while the remaining 0.0926% is explained by other variables that are not included in this research model.

Conclusion

Based on the results of testing and analysis that have been presented by the author in the previous section about the role of fintech digital economy and international trade on economic growth in Indonesia using the panel data regression method, the conclusions that the author gets are as follows.

The digital economy of fintech, exports, imports and the number of capable population can affect economic growth in Indonesia simultaneously. However, the increase in fintech peer to peer lending individually has an impact on economic growth. From the results of the partial test above that peer to peer lending negatively affects economic growth where the results of t-statistical values are smaller than t-table values. Thus, the increasing number of loans on peer to peer lending platforms can reduce economic growth significantly. This situation is as a result of data with previous studies there is a difference where in theory peer to peer lending has a positive impact but in the results of this study is negative.


The next variable, namely exports, has an insignificant influence on economic growth. From the partial test results above that exports have a positive and significant influence. This is supported by a positive coefficient result. The existence of exports will help international trade in Indonesia run well and ultimately can increase economic growth.

Import variables have a negative and insignificant effect on economic growth in Indonesia. Based on the test results, the *fixed effect* model shows insignificant. This is also supported by negative coefficient results and also on t-statistic results that are smaller than t-tables. Thus, the increasing interest in state imports can result in declining economic growth. This situation confirms evidence from a number of previous studies showing that imports are an important factor in increasing or decreasing economic growth in any country.

The last variable used by researchers is the number of population, the number of population has a positive and significant effect on economic growth in Indonesia. Based on the test results, the *fixed effect* model shows significant. This is also supported by positive coefficient results

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and also on t-statistical results that are greater than t-tables. Thus, the increasing number of productive population of the country can carry out economic growth increases. This situation confirms evidence from a number of previous studies showing that population is an important factor in increasing or decreasing economic growth in any country.

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