Financial Technology and Economic Growth

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Abstract. In this paper, we analyze the impact of fintech, labor force, domestic investment, foreign direct investment, HDI, and export variables on economic growth. The data used is semester data per province from 2020 – 2021. The data is processed using panel data (*pooling data*). Source of data from the Central Bureau of Statistics, OJK, and the Ministry of Trade. The results showed that Fintech, Labor Force, Foreign Direct Investment, HDI, and Exports had a significant positive effect on economic growth, while Domestic Investment was not significant.

Keywords: Fintech, Labor Force, DI, FI, HDI, Exports, Economic Growth.

1 Introduction

Economic growth is an increase in the production of economic goods and services in one period. State economic growth is the improvement of a nation's production capacity that results in production and increased people's living standards. The inputs used in the production process consist of capital, labor, and technology [10]. Now, technology is the determinant of civilizational change. The development of the Industry 4.0 era has had a significant impact on the growth of digitalization in Indonesia. Technology influences the financial industry with the presence of Financial Technology, which is so close to society, especially during the COVID-19 pandemic. The growth of the Fintech business ecosystem in Indonesia during the Covid-19 pandemic has astounded the world. Based on data from Word Bank, in 2007, Fintech users were only 7%, then in 2011, it increased to 20%, and in 2014, it increased again to 36%. In 2017, it significantly increased, reaching more than 78%. Based on data from the OJK as of January 2021, the Fintech industry of the P2P Lending type reached 148 companies with total financing reaching 73 trillion.

The development of Fintech in Indonesia is related to internet use. The data show that internet users in Indonesia at the beginning of 2021 were 202.6 million people out of Indonesia's population of 274.9 million. Internet users in 2021 will increase by 27 million people, or 15.5 percent, compared to January 2020. The presence of fintech is closely related to E-commerce, which provides online buying and selling platform services, while fintech is centered on companies that innovate financial services. So, fintech and e-commerce are part of the start-ups that are currently growing rapidly. According to Turban et al. (2015), e-commerce uses the Internet as a medium for buying and selling or exchanging data, digital goods, or services [12]. In Indonesia, the development of e commerce has increased quite significantly, which is proven by the fact that the use of electronic transactions dominates because the costs are cheap and

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practical. Coupled with the ease of internet access, consumers can access e-commerce applications faster and more efficiently. Consumers can feel a different and new sensation because all the goods and services needed are available through e-commerce applications, so consumers do not need to meet directly with the provider of goods and services. t

Fintech plays a role in solving various economic problems, including increasing the equality of the population's welfare, helping to fulfill the very large domestic financing needs, and encouraging the distribution of national financing, which is still uneven. Fintech can help new developments in the technology start-up sector, which continues to grow. Let us compare it with banking, which has played a role in financial services. There are several weaknesses that banking has concerning strict regulations and limitations of the banking industry in serving people in certain areas. Currently, more is needed for the community to be served by the traditional financial industry. Therefore, the community is looking for alternative funding other than traditional industry services. The community needs alternative financing that is more transparent, as well as service costs that are efficient and reach the community.

Research conducted by Seema Wati Narayan shows that fintech has a positive influence on Indonesia's economic growth in 2018. Likewise, the research results conducted by Najwa and M Daud also provide the same results in Malaysia. This research wants to analyze the influence of fintech on economic growth in Indonesia until 2020. It will include other macro variables such as Labor Force, Domestic Investment, Foreign Direct Investment, HDI, and Exports on Indonesia's economic growth. So many factors influence the economic growth of a country. Increasing production factors such as capital, labor, and technology will increase national output, which, in the end, if there is a continuous increase, will encourage a country's economic growth.

2 Theoretical Foundations and Hypotheses

The theory used in this research is related to economic growth, fintech, labor force, domestic investment, foreign investment, HDI, and exports. An important variable in this research is fintech.

2.1 Economic growth

The economic development of a country can be measured by economic growth, which shows the growth in production of goods and services in an economic area within a certain time interval. This production is measured in the concept of added value (value added) created by economic sectors in the region concerned, collectively known as Gross Domestic Product (GDP).

According to Word Bank, Financial Technology is an industry consisting of companies that use technology to make financial systems and the delivery of financial services more efficient. The Financial Services Authority defines fintech as innovation in the financial services industry that utilizes technology. The product is a system used to carry out easier and more specific financial transaction mechanisms. The National Digital Research Center states that fintech is an innovation in financial services that is given a touch of modern technology. The Financial Stability Board (FSB) defines fintech as technological innovation that can produce new business models, applications, processes, or products with material effects related to the provision of financial services. Meanwhile, Fintech Weekly states that fintech is a business that aims to provide financial services using modern software and technology [7].

The labor force is the population of working or productive aged 15-64 years who already have a job, are looking for work, or are preparing for a new business. Population growth affects the size of the workforce. If the working age group increases, the workforce will also increase. An increase in the workforce will encourage economic activity, which will, in turn, improve community welfare.

Domestic investment (DI) is investing capital to conduct business in the territory of the Republic of Indonesia carried out by domestic investors using domestic capital.

Foreign Direct Investment (FDI) is an investment activity to carry out production activities in the territory of the Republic of Indonesia carried out by foreign investors, with foreign capital either entirely or jointly with domestic investors.

The Central Statistics Agency states that the Human Development Index is an important indicator for measuring success in building the quality of human life. HDI explains how residents can access development results in obtaining income, health, education, and so on. The human development index (HDI) compares life expectancy, literacy, education, and living standards for all countries worldwide, usually measured by real income per person.

Exports are a component of aggregate expenditure that influences national income. Increasing exports will increase aggregate expenditure and, in turn, increase national income.

Hypothesis:

H_1 Fintech has a significant positive influence on economic growth
The H_2 Labour Force has a positive influence on economic growth
H_3 Domestic Investment has a positive influence on economic growth
H_4 Foreign Direct Investment has a positive influence on economic growth
H_5 HDI has a positive influence on economic growth
H_6 Exports have a positive influence on economic growth

3 Methods

This quantitative research was conducted to analyze the influence of Fintech, Labor Force, Direct Investment, Foreign Direct Investment, HDI, and Exports on Economic Growth in Indonesia. The data used is provincial data for two years, 2020 and 2021. The tool for processing the data is Eviews 10. The data sources for this research are BPS, OJK, and the Ministry of Trade.

Table 1. Operational definition of research variables.

No	Variable	Proxy	Unit	Data Source
1.	Eco growth (G)	GDP Growth	%	BPS
2.	Fintech	Accumulated Funds provided to lenders	Billion Rupiah	OK
3	AK	Labor Force Formal	%	BPS
4.	PMDN	Domestic Investment	Billion Rupiah	BPS
5.	PMA	Foreign Investment	Million US $	BPS

6. IPM	Human Development Index	Indeks	BPS
7. *Ekspor*	Ekspor	Million US $	Ministry of Trade

Research Model

$G = a_0 + a_1\ Fintech_{it} + a_2\ LF_{it} + a_3 DI_{it} + a_4\ FDI_{\ it} + a_5 HDI_{\ it} + a_6\ Export_{\ it} + \mu$.................. (1)

Notes

G = Economic Growth (%)

a = Constanta

$a_1 - a_6$ = regression coefficient

Fintech = Financial Technology

LF = Labor Force

DI = Domestic Investment

FDI = Foreign Direct Investment

HDI = Human Development Index

Export = Export

μ = error term

Panel Data

Panel data is combined data between cross-section data and time series data. Panel data models can be used to obtain better (efficient) estimation results. Several techniques are used to estimate panel data.

Fixed Effect Model (Fixed Effect Model)

The existence of variables that are not all included in the model equation allows for an intercept that is not constant, or in other words, this intercept may change for each individual and over time.

Random Effect Model (Random Effect Model)

This model reflects differences between individuals through errors or residuals. This is different from the fixed effect model, which uses an intercept to reflect differences between individuals. The random effect model is a technique to overcome the uncertainty of the fixed effect model.

4 Results and Discussion

Table 2. Regression result.

Variable	Coefficient	Std. Error	t-Statistic	P-value
C	-1161.884	0.117908	-9854.163	significant
Fintech	3.644353	8.01E-05	45517.42	significant
LF	18.70055	0.000248	75349.09	significant
DI	-0.960850	4.13E-06	-232559.9	significant
FDI	0.031405	6.50E-06	4834.698	significant
HDI	246.3076	0.013892	17730.42	significant
Export	3.565802	1.13E-05	316146.7	significant

R^2 = 0.919042

$G = -1161.884 + 3.644353\ Fintech_{it} + 18.70055\ LF_{it} - 0.960850\ DI_{it} + 0.031405\ FI_{it} + 246.3076\ HDI_{it} + 3.565802\ Ekspor_{it} + e_{it}$

Based on the regression equation above, the results are as follows:

The constant of -1161.884 explains that if the value of the independent variable is 0, then economic growth will fall by -1161.884%. If fintech increases by 1%, it will increase economic growth by 3.644353%. An increase in the labor force of 1% will increase economic growth by 18.70055%. If Domestic Investment increases by 1%, it will reduce economic growth by 0.960850%. If Foreign Investment increases by 1%, it will increase economic growth by 0.031405%. If the HDI increases by 1%, it will increase economic growth by 246.3076%. If exports increase by 1%, it will increase economic growth by 3.565802%.

The five variables, Fintech, Labor Force, Foreign Investment, HDI, and Exports, have a significant positive effect on economic growth, except Domestic Investment. This means that the five variables provide results in accordance with theory and empirical studies that previous researchers have carried out. Increasing public loans will increase the capital needed by the community to develop their businesses. In accordance with production theory, increasing capital will increase output and will ultimately increase national output. In accordance with production theory, increasing labor will also increase output, on the one hand, as an input in the production process.

On the other hand, it is a large market, so that in the end, it will encourage national output. Likewise, for FI, HDI, and Exports, increasing FDI drives the domestic economy and creates jobs so that it will boost national output. The higher the HDI, the higher productivity will increase, thereby increasing economic growth. Likewise, if exports increase, of course, it will increase labor absorption, increase national output, and ultimately encourage economic growth. One variable that does not match the hypothesis is Domestic Investment., because this study uses provincial data showing differences in conditions in each province.

5 Conclusion

Based on the regression result, it can be concluded that.

1. Fintech positively and significantly influences economic growth, in accordance with the hypothesis that fintech has a positive effect on economic growth.
2. The Labor Force positively and significantly influences economic growth, in accordance with the hypothesis that the labor force has a positive effect on economic growth.
3. Domestic investment negatively and significantly influences economic growth, which is not in accordance with the hypothesis that Domestic Investment has a positive effect on economic growth.
4. Foreign Direct Investment positively and significantly influences economic growth, in accordance with the hypothesis that fintech has a positive effect on economic growth.
5. HDI positively and significantly influences economic growth, in accordance with the hypothesis that HDI has a positive effect on economic growth.
6. Exports positively and significantly influence economic growth, in accordance with the hypothesis that Exports have a positive effect on economic growth.

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