

The Effect of Blue Economy Factors on Economic Growth in Asia

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ABSTRACT

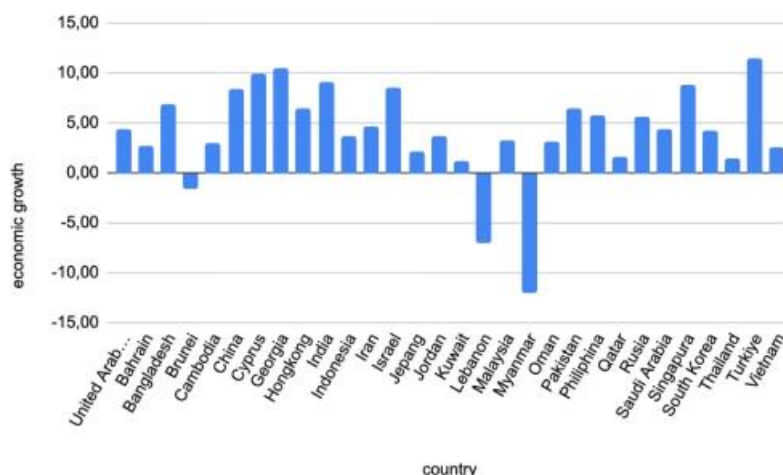
This research aims to analyse the effect of factors blue economy on economic growth in Asia. This research uses a combination of data cross section 30 Asian countries and data time series 2009 to 2019. The selected models are Feasible Generalized Least Square (FGLS). The research results show that the growth of capture fisheries, aquaculture, ports, investment and the workforce has a significant effect on economic growth. Aquaculture, ports, investment and the workforce have a positive and significant effect on economic growth. Meanwhile, the capture fisheries growth variable has a negative and significant effect on economic growth.

Keywords: Economic Growth, Fisheries, Investment, Labour Force, Ports, Panel Data Regression.

1. INTRODUCTION

Economic growth is very important for national development. Gross Domestic Product (GDP) is an indicator that is often used to see a country's economic growth. A country's economic growth can be achieved by utilizing existing natural resources, but along with technological developments, many countries are starting to take into account the impact of large-scale exploitation. This is what led to the concept of sustainable economic development with the existence of programs green economy and blue economy. Draft blue economy very suitable to be applied in countries on the Asian continent. This is related to the vast sea areas of countries in Asia which are rich in natural resources such as fish, coral reefs, seaweed and salt.

Most countries on the Asian continent have positive economic growth, as in Figure 1. This positive economic growth shows that these countries were able to restore economic stability after the Covid-19 pandemic. Brunei Darussalam, Lebanon and Myanmar have not been able to restore the country's economic growth. Türkiye is the country with the highest economic growth in 2021 at 11.44%. Cyprus, India, and Singapore also have significant economic growth. Meanwhile, Indonesia was able to increase its economic growth, although not significantly.



Picture 1.1 Graph of Economic Growth for Countries on the Asian Continent in 2021

Source: World Bank (2024)

Blue economy has certain principles which aim to create guaranteed sustainability of natural resources along with generating good economic growth in the marine sector (Findley, 2020). The maritime economy includes various assets and resources that help world economic growth (Ahammed et al., 2024). Countries in Asia that have vast waters can optimize their marine resources by focusing on the fisheries sector. In addition, sea transportation manages 80% of the volume of product exchange worldwide (Alharthi and Hanif, 2020). Ports are the heart of the maritime shipping industry, they are the departure, entry and transfer points for all goods, services and passengers transported by ship (Ninawe, 2017).

The concept of sustainability is deep blue economy has become a special view of all countries in the world. Basically, blue economy emphasizes creativity and innovation in processing marine raw materials into derivative products by reducing waste or zero-waste (Findley, 2020). This will help in achieving Sustainable Development Goals (SDGs) 14, namely the preservation and sustainable use of marine resources (Alharthi and Hanif, 2020). A country's GDP can be obtained from sectors blue economy one of which is fisheries and ports. However, sector blue economy rarely receives proper attention and processing, even though the sea provides many benefits for the country's economy. So, it is necessary to put the concept into practice blue economy in the sustainable use of marine resources. Research that discusses the influence of factors blue economy on economic growth is relatively rare. Therefore, research on this topic is important to do.

2. LITERATURE REVIEW

2.1 Theoretical Foundations

2.1.1 Production Theory

The production function explains how companies combine various inputs to create their products. The production function is a complex model of economic dynamics that characterizes the economic and mathematical dependence of output (product quantity) on the production factors used (such as resources, technology).

Solow Growth Production Function:

$$Y = F(K, L) \dots\dots\dots (1)$$

$$y = f(k) \dots\dots\dots (2)$$

Variable K is the amount of capital stock and variable L is the amount of labour. The Solow growth production function shows the quantity produced from each combination of production factors (labour and capital) that obtains optimal production results.

The basic objectives of this production function are measuring productivity, determining marginal product, and determining the cheaper combination of production factors for a certain number of products. The Cobb-Douglas production function is a special form of the production function. In 1928, Charles Cobb and Paul Douglas published a paper stating that production is determined by labour and capital (Dritsaki and Stamatou, 2018).

With assumption return to scale which is constant, the Solow growth production function becomes equation (1) and equation (2), where y is output per worker and k is capital per worker. Based on equation (2), as capital per worker increases, output per worker will also increase. As the proportion of capital to labour continues to increase, production reaches a peak point and then begins to decline; this is the beginning of the law's marginal revenue which is decreasing. Thus, a balance can be achieved when the level of savings and investment is in line with the proportion of capital and labour, which will result in stability in the economy.

2.1.2 Blue Economy

Theory blue economy is a concept of sustainable economic development based on the wise use of marine resources. This theory proposes that marine resources be used optimally and sustainably, so that they can create wealth and prosperity for society and the environment (Findlay, 2020). Marine resources, including through fisheries management, aquaculture and sustainable tourism (Battacharya and Dash, 2021).

Draft blue economy has an ultimate goal, namely blue ocean and blue sky. Society has abundant natural resources, but the sky and sea are still blue. Draft blue economy implements how to utilize sustainable economic resources. A sustainable economy should not undermine the sustainability of the systems it interacts with while maintaining its own viability, that is, economic sustainability (Findley, 2020).

2.1.3 Fisheries

Fisheries consist of capture fisheries and aquaculture. In line with its linkage in the fish chain, fishing is also important in fisheries governance because of a series of practices that connect humans directly with the marine environment (Fabinyi *et al.*, 2020). The growth of fish in marine populations increases every year. The increase in the number of fish populations will be at its maximum point and then fish growth will decrease. Sustainable fisheries are realized when the fish population will remain constant due to the annual growth of fish alone being taken. Fishing that exceeds the annual catch quota can reduce the number of fish populations. If this continues then the population will approach zero (Hallwood, 2014).

The focus in the best fisheries management is conservation and sustainability of natural resources using an ecosystem approach, food supply security, and maximization of economic performance (FAO, 2020). The number of fishery populations must be maintained below the optimum line in order to be sustainable, so it is necessary to establish fishing restriction regulations. Restrictions can take the form of closing certain areas, determining the type of net that may be used, and limiting the size of the vessel. The implementation of the policy of determining the types of nets permitted makes the cost of catching fish greater, which makes the total cost increase so that the number of fish decreases and the price for some fish becomes more expensive (Field, 2008).

2.1.4 Logistics

Logistics is a multifaceted component in trade operations that focuses on processes, competencies and technology (Yingfei *et al.*, 2022). Logistics is a component of supply chain management and is responsible for planning, controlling, storing products, services and information from the point of origin to consumption to meet consumer demand. In the port environment, logistics includes a series of important functions that support the smooth and efficient process of cargo handling. This includes activities such as receiving and issuing goods, maintaining a balance between supply and demand, monitoring inventory levels, and arranging the delivery of goods as needed (Almeida, 2023).

Ports play an important role in transporting goods and raw materials. Ports are generally known as places where cargo moves between ships and trucks, trains, pipeline networks, storage facilities, or refineries (Bureau of transportation statistics, 2017). Container shipping has also become an important driver in reshaping global supply chain practices enabling global procurement strategies for multinational companies and the development of global production networks (Notteboom *et al.*, 2022). The role of ports in the transportation chain has the potential to shape the social and environmental impacts of transportation system performance throughout the world (Bergqvist and Minions, 2019).

2.1.5 Investment Theory

Neoclassical growth theory states that increased investment in physical capital causes economic growth. Investment is generally believed to be able to support national economic growth which functions as domestic savings (Sredojević *et al.*, 2016). In Sollow's economic growth model, the capital stock increases as the portion of output saved or invested increases, but decreases due to depreciation (Alharthi and Hanif, 2020). Foreign investment can support a faster economic development process such as infrastructure development and purchasing production factors (Muryani *et al.*, 2021).

2.1.6 Workforce

Neoclassical economic growth theory and endogenous growth theory believe that economic growth mainly depends on the input of labor, capital, and other production factors as well as technological progress, and

labor is a key factor in economic growth (Shi, 2021). The Solow neoclassical growth model is a development of the Harrod-Domar model, the theory of including a second factor, labor, and a third factor, technology, into the economic growth equation. In contrast to the Harrod-Domar model which assumes a constant return to scale, the Solow neoclassical growth model shows a decrease or constant due to labor and capital factors (Muryani and Amalia, 2018). A high number of workers will increase productivity thereby increasing the country's GDP. A high unemployment rate can hinder economic growth, while a high participation rate can support growth. Labor plays a direct role in the production process of goods and services.

2.2 Previous Research

Aquaculture production and capture fisheries production have a positive effect on economic growth in Pakistan (Oyakhilomen and Zibah, 2013). Fisheries, marine tourism, capital/investment are positive and significant for economic growth (Surwar, 2022). Fisheries have a positive and statistically significant impact on the economic growth of SAARC countries, using the method Generalized Least Square Technique (GLS) (Alharthi & Hanif, 2020).

Factor blue economy such as aquaculture, agriculture, forestry and fisheries production, as well as total fisheries production, have a positive and significant impact on China's economic growth (Ahammed et al., 2023). However, according to research by Oyakhilomen and Zibah (2013) fisheries production was not significant in influencing economic growth during the period studied and this was due to the low yield of domestic Nigerian fisheries and the considerable loss of foreign exchange earnings due to increased fish imports to bridge the demand-supply gap. The maritime container transportation variable has a significant and positive effect on economic growth (O'zera et al., 2021). There is a direct positive and significant influence of port efficiency and port output (port container traffic) on economic growth in Africa (Ayesu et al., 2023).

3. RESEARCH METHODS

3.1 Scope of Research

The variables in this research come from theory, previous research and several references. After determining the variables, the next step is collecting data, originating from secondary data from the world bank. The variables in this research are the growth variables of capture fisheries, aquaculture, ports, investment, and growth of the workforce that forms fixed capital on the economic growth of 30 countries on the Asian continent. This research uses the period from 2009-2019. Basically, there are important variables that also have an influence on economic growth variables, but not all of them are included in the model due to data limitations. Therefore, the estimation results from this research have a tendency to cause problems omitted variable bias. This empirical model refers to previous research by Alharthi and Hanif (2020) and Ayesu *et al.* (2023):

$$\ln G_{it} = \alpha_{it} + \beta_1 PTKP_{it} + \beta_2 \ln PB_{it} + \beta_3 \ln PL_{it} + \beta_4 \ln I_{it} + \beta_L L_{it} + e_{it} \dots \dots \dots (3.1)$$

Information:

- lnG : Natural log of Gross Domestic Product (GDP)
- PTKP : Growth of capture fisheries
- lnPB : Natural log of aquaculture
- lnPL : Natural log of Port (container traffic)
- lnI : Natural log of investment (Gross fixed capital formation (GFCF))
- lnLL : Labor force growth
- e : error term

3.2 Operational Description

1. GDP

GDP is the sum of gross value added by all producers in the economy plus product taxes and minus subsidies that are not included in the product value. Data are in constant 2015 prices, expressed in US dollars. Dollar figures for GDP were converted from domestic currency using 2015 official exchange rates (World Bank, 2023).

2. Growth of Capture Fisheries

Capture fisheries growth is the increase in the number of capture fisheries each year. Capture fisheries production measures the volume of caught fish landed by a country for commercial, industrial, recreational and subsistence purposes. Internal units (World Bank, 2023).

3. Aquaculture Production

Aquaculture production, aquaculture is the cultivation of aquatic organisms including fish, molluscs, crustaceans, and aquatic plants. Aquaculture production specifically refers to the output of aquaculture activities, intended for final harvest for consumption. The amount of aquaculture production is measured in metric tons (World Bank, 2023).

4. Port

The port referred to in this research is the number of container traffic. Container traffic is measured from the flow of containers from land to sea transportation modes, and vice versa, in twenty foot equivalent units, namely Twenty-Foot Equivalent Unit (TEUs) which are standard sized containers. Data refers to coastal shipping as well as international travel. The unit of container traffic is in units (World Bank, 2023).

5. Investment

The investment referred to in this research refers to Gross Fixed Capital Formation (GFCF). GFCF (gross fixed capital formation) is expenditure on additional fixed assets of the economy plus the net change in inventory levels. The investment variable unit is in the form of US dollars (World Bank, 2023).

6. Workforce growth

Labor force growth is the increase in the number of workers every year. The labor force is the population aged 15 years and over who provide labor for the production of goods and services for a certain period of time. However, not everyone who works is included. (World Bank, 2023).

4. RESEARCH RESULTS

4.1 Statistical Description of Variables

The following Table 4.1 shows a statistical description for each variable used in this research:

Table 4.1 Summary Statistics Variable Description

Variable	Mean	Std Dev	Min	Max
GDP (constant), Billion USD	868	2020	11,1	14300
Capture fisheries growth (%)	5,84	28,06	-54,5	227,1
Aquaculture (million tonnes)	3,25	10,7	0,004	68,4
Continue				
Variable	Mean	Std Dev	Min	Max
Port (million units)	14,2	34,2	0,95	244
Investment, Billion	689	2050	1,51	14300
Workforce Growth (%)	2,14	2,77	-4,03	16,23

Source: STATA 14, data processed

Table 4.1 is presented in the form of original numbers before being transformed into natural logarithms to maintain appropriate interpretation of each variable. This research uses 330 observations for each variable with 30 countries on the Asian continent. In this study the dependent variable is Gross Domestic Product (GDP) with an average value of 868 billion USD.

4.2 Model Selection and Testing Classical Assumptions

There are three panel data regression models, namely regression Common Effect Model(CEM), Fixed Effect Model(FEM), and Random Effect Model(REM). Selection of the best model with Test Hausman to determine the best model between FEM or REM. However, when p-value > 0.05 then the selected model is CEM and continued with the Lagrange Multiplier (LM)Test to determine the best model between CEM or REM.

Table 4.2 Model Selection Test Results

Model Selection Test	Variable	Result
Hausman test	Prob > Chi2	0,000

Source: STATA 14, data processed

Based on Table 4.2, it can be seen that the test results use Test Hausman by comparing REM and FEM, it shows that the Prob value > chi2 < significance level (0.00 < 0.05) so that it rejects H0 and accepts the hypothesis H1 so that the best model selected is Fixed Effect Model.

The following are the estimation results Common Effect Model, Fixed Effect Model, and Random Effect Model:

Table 4.3 Estimation Results for CEM, FEM, and REM

Variable	Info	CEM	FIVE	REM
	Coef.	6,73**	15,76***	13,11***
Cons.	Std.Err.	(0,24)	(0,47)	(0002)
	Prob.	0,032	0,000	0,000
	Coef.	-0,001**	-0,0004**	-0,0004**
PTKP	Std.Err.	(0,000)	(0,0001)	(0,0002)
	Prob.	0,000	0,030	0,039
	Coef.	0,05***	0,102***	0,138***
PB	Std.Err.	(0,008)	(0,015)	(0,014)
	Prob.	0,000	0,000	0,000
	Coef.	0,073***	0,019**	0,022**
PL	Std.Err.	(0,013)	(0,009)	(0,11)
Continue				
Variable	Info	CEM	FIVE	REM
	Prob.	0,000	0,046	0,046
	Coef.	0,706***	0,35***	0,44***
I	Std.Err.	(0,013)	(0,017)	(0,017)
	Prob.	0,000	0,000	0,000
	Coef.	0,014**	-0,005**	-0,0039
L	Std.Err.	(0,006)	0,023	(0,002)
	Prob.	0,038	0,020	0,143

Information: () standard error; * p < 0.1; ** p < 0.05; *** p < 0.01

Source: STATA 14, data processed

After selecting the best model, the next step is to test the classical assumptions which consist of: multicollinearity, heteroscedasticity, and autocorrelation.

The following are the results of the classical assumption test and their interpretation:

Table 4.4 Classic Assumption Test Results

Information	Variable	Result
Multicollinearity Test (Correlation)	Ln timer and ptkp	-0,03
	Lpl and ptkp	-0,09
	Lpl and ln timer	0,55
	Lni and ptkp	-0,12
	Lni to ln timer	0,63

	Lni to lnpl	0,69
	ll and ptkp	-0,07
	ll and lnpb	-0,25
	ll and lnpl	-0,16
	ll to lni	-0,19
Heteroscedasticity Test	Prob > chi2	0,000
Autocorrelation Test	Prob > F	0,000

Source: STATA 14, data processed

1. In Table 4.4, there is a multicollinearity test method Correlation where shows the magnitude of the correlation value between the dependent variables. All correlation values are below 0.80 so it can be interpreted that there is no multicollinearity problem.
2. In the heteroscedasticity test, what needs to be done is to compare prob > chi2 with a significance level of 5%. Based on the results of the heteroscedasticity test with the method Modified Wald Test Table 4.4 shows that the prob value > chi2 < 0.05 or 0.00 < 0.05, thereby rejecting the assumption of the absence of heteroscedasticity and accepting the hypothesis H1 that there is a heteroscedasticity problem.
3. In the autocorrelation test using Wooldridge Test as seen in Table 4.4, if the prob value > F < significance level (5%), then H0 is rejected and H1 is accepted. The autocorrelation test shows that the prob>F value <0.05 or 0.00 <0.05, thereby rejecting the assumption of the absence of autocorrelation and accepting the hypothesis H1 that there is an autocorrelation problem.

4.3 Method FGLS

The estimation results can be seen in Table 4.5 as below:

Table 4.5 FGLS Estimation Results

Variable	Coefficient	Standard Error	With	P> z
C	6,73***	0,246	27,29	0,000
Ptkp	-0,0014**	0,0006	-2,18	0,029
Lnpb	0,050***	0,0086	5,83	0,000
Lnpl	0,073**	0,0136	5,39	0,000
lni	0,706***	0,0138	50,94	0,000
ll	0,014**	0,0067	2,11	0,035
R-squared	0,63			
Prob > F	0,000			

Note: * p < 0.1; ** p < 0.05; *** p < 0.01

Source: STATA 14, data processed

Based on test results Hausman, indicates that the selected model is Fixed Effect Model as stated in Table 4.5. However, there are heteroscedasticity and autocorrelation problems which can be seen in Table 4.4 so the model must be treated. One way that can be done is to use Feasible Model Generalized Least Square Regression (FGLS). The FGLS model can efficiently overcome the problems of autocorrelation and heteroscedasticity (Wooldridge, 2010).

1. When capture fisheries growth increases by 1%, it experiences decline economic growth of 0.0004% with assumptions equal to the table. The capture fisheries growth variable has a p-value of 0.029, which means that at the 10% and 5% significance levels, this variable has a partially significant influence on economic growth.
2. When the number of aquacultures increases by 1%, economic growth will decrease of 0.05% with assumptions equal to the table. The aquaculture variable has a p-value of 0.000, which means that at the 10%, 5% and 1% significance levels, this variable has a partially significant influence on economic growth.

3. When the port increases by 1%, economic growth will increase up 0.073% with assumptions equal to the table. The port variable has a p-value of 0.000, which means that at the 10%, 5% and 1% significance levels, this variable has a partially significant influence on economic growth.
4. When investment rises by 1%, economic growth occurs experienced an increase 0.7% assuming equal to the table. The investment variable has a p-value of 0.000, which means that at the 10%, 5% and 1% significance levels, this variable has a partially significant influence on economic growth.
5. When labor force growth increases by 1%, economic growth decreases of 0.014% with assumptions equal to the table. The capture fisheries growth variable has a p-value of 0.035, which means that at the 10% and 5% significance levels, this variable has a partially significant influence on economic growth.

5. DISCUSSION

5.1 The Effect of Capture Fisheries Growth on Economic Growth

Based on the research results, it shows that the capture fisheries growth variable has a negative and significant effect on the economic growth of 30 countries in Asia during the period 2009 - 2019. This result was obtained because the results of capture fisheries fluctuate every year. Based on data from 30 Asian countries, it is known that capture fisheries experienced a decline in fish catches in 2013, 2018 and 2019. The government is placing restrictions on fish catches so that fisheries populations in the ocean can be sustainable. The growth of capture fisheries decreased in 2011, 2013 and 2018. Fish growth will increase and then decrease at a certain maximum point (Field, 2008).

The results of this regression are different from another similar research conducted by Majed (2020). Majed's research found that total fisheries production has a positive and significant impact on economic growth. Meanwhile, this study found that total fisheries were significantly positive. Meanwhile Aspi research et al. (2023) in the Philippines shows that the total fisheries production variable does not have a significant effect on economic growth due to externalities, the correlation of fisheries variables with other variables and efforts to deal with overfishing. Another finding by Ilyas et al. (2022) found that fisheries and economic growth are negatively related.

This difference is partly due to its small influence and the presence of other larger factors that influence economic growth. Another factor that causes fisheries production to rise but GDP to fall is fishing theft by foreign vessels. At the end of 2015 there were many newly discovered cases of fishing theft by foreign vessels. In 2016 Indonesia issued Presidential Decree no. 7 concerning the Acceleration of Development of the National Fisheries Industry so as to increase fisheries production in 2017. The increasing demand for fish due to increasing population will put greater pressure on coastal fisheries resources and coastal waters which are already depleting (Lee and Viswanathan, 2022). Negative externalities weaken fishing's contribution to the national economy (Suherman et al., 2020).

5.2 The Effect of Aquaculture on Economic Growth

Based on the research results, it shows that the aquaculture variable has a positive and significant effect on the economic growth of 30 countries in Asia during the period 2009 - 2019. An increase in total fisheries production by 1% will increase economic growth by 0.05% with the assumption equal to the table. These regression results are in line with research conducted by Majed (2020). This research looks for the influence of the blue economy sector on economic growth. One of the sectors included in the blue economy is aquaculture. Majed's research results found that there was a significant positive relationship between fisheries.

This finding is in line with research by Alharthi and Hanif (2020) and Ahammed et al. (2024) who found that in the sector blue economy such as fisheries have a positive and significant effect on economic growth. These findings are also in line with Ngarya's research et al. (2023), Rehman (2019), and Muniz et.al (2022). This research discusses how aquaculture relates to economic growth. Aquaculture helps meet demand for fish.

5.3 The Effect of Ports on GDP Economic Growth

Based on the research results, it shows that the port variable (container traffic) has a positive and significant effect on the economic growth of 30 countries in Asia during the period 2009 - 2019. These results show that every 1% increase in the number of container traffic will increase economic growth by 0.073%. Increased port activity has an impact on international trade that occurs in a country. International trade activities in the form of exports can increase state income (Mudronja et al., 2020).

Based on research results, these findings are in line with research by Munim and Schramm (2018) which states that the quality of port infrastructure has a positive effect on logistics performance and the national economy. Mudronja et al. (2020) supports these findings showing that port operations have a positive impact on the economic growth of their regions and that it is important to pay attention to other driving factors such as human resources and investment in research and development. Other research by Yudhistira and Sofiyandi (2018) and Cong et al. (2020) found that port activities influence the economic growth of a region.

5.4 The Effect of Investment on Economic Growth

The results of regression analysis with panel data show that the investment variable has a positive and significant effect on economic growth in 30 Asian countries during the period 2009 - 2019. This shows that the higher the investment, the greater the Gross Domestic Product (GDP). Based on these results, it can be interpreted that when there is an increase in investment of 1%, it will increase economic growth by 0.7% with the assumptions equal to the table. This finding is in line with neoclassical economic theory which states that investment is a factor that influences economic growth (Sredojević et al., 2016). Economic growth by changes in the amount of production in the long term is caused by changes in infrastructure in factors of accumulation and technological growth. Increases in human resources, physical capital and technological changes have an impact on increasing productivity which can influence economic growth.

The positive influence of investment on economic growth is in line with research by Alharthi and Hanif (2020). Alharthi and Hanif's research (2020) makes fixed capital one of the variables that influences economic growth. In addition, research by Alharthi and Hanif (2020) shows that labour and investment play a significant and positive role in driving economic growth in developing countries in South Asia. Research results from Ali (2015), Zahir and Rehman (2019), and Kong et al. (2020), which shows a positive relationship between investment and economic growth.

The results of this study contradict Alvarado's findings et al. (2017) which states that investment (FDI) does not always have a positive effect on economic growth. FDI has a positive and significant influence on products in high-income countries, whereas in upper-middle-income countries the influence is uneven and insignificant. The effect of FDI on lower middle-income countries is negative and statistically significant. This is because the productive structure in Latin America shows that foreign investment is oriented towards exploiting natural resources, causing economic growth to fluctuate which can result in low productivity.

5.5 The Effect of Labor Force Growth on Economic Growth

Based on the research results, it shows that the labour force growth variable has a positive and significant effect on the economic growth of 30 countries in Asia during the period 2009 - 2019. This shows that the higher the growth of the workforce will increase the Gross Domestic Product (GDP). This result can be interpreted as an increase in labour force growth of 1% which will increase economic growth by 0.014%, assuming equal to the table. This result is in line with neoclassical growth theory in which economic growth is influenced by, among other things, labour.

These regression results are in line with research conducted by Shi (2021), Adam et al. (2029) results show that the workforce has a significant effect on economic growth. Other research that is in line with the results of this research was conducted by Alharthi and Hanif (2020) and Ahmammed et.al (2024). This research includes the labour variable as a control variable for economic growth, the results show that labour has a positive effect on economic growth.

6. CONCLUSION

Based on the research results, it can be concluded that the variables of capture fisheries growth, aquaculture, ports, investment and workforce growth have a significant effect on economic growth in 30 countries in Asia in 2009 - 2019. The variables of aquaculture, ports, investment and workforce growth have an influence significant and positively related to economic growth. This means that when the variables of aquaculture, ports, investment and labor force growth increase, economic growth will increase. Meanwhile, the capture fisheries growth variable has a negative effect on economic growth.

The following are suggestions proposed by researchers:

1. The government's role is expected to further improve port infrastructure and tourism to improve the quality of ports in order to strengthen trade relations with other countries. The government is expected to be able to optimize sustainable fisheries resource management programs.
2. For future researchers who will use a similar topic, it is hoped that they can add other variables that can influence economic growth, such as maritime transportation variables.

This research is limited by the time span used, it does not cover the conditions of the Covid-2019 pandemic and focuses on the scope before the Covid-19 pandemic.

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