

## THE CONTRIBUTION OF FISHERIES SUBSECTOR PERFORMANCE IN INCREASING ECONOMIC GROWTH IN THE EASTERN INDONESIA REGION

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### ABSTRACT

This research was conducted to determine the contribution of the performance of the fisheries subsector to economic growth in the Eastern Indonesia Region. Fishing is important for maintaining community identity, social cohesion and individual fishing status, and as the glue that binds communities together. Solutions to challenges in the marine and fisheries sector require a trend of insight and synergy at the regional level, such as IUU fishing, marine waste, fisheries trade barriers that are linked to tariffs. The Pooled Least Square Linear Regression method is used to analyze panel data using a quantitative approach. The sample data used is provincial data in WPPN RI 714, 715 and 718, which consists of 10 provinces cross-section data, 7 years of time series data. The result is that the performance of the fisheries subsector has a significant and positive influence on economic growth in the Eastern Indonesia Region. The magnitude of the influence of Fisheries Subsector Performance on Economic Growth is very strong and the increase is inelastic. The performance of the fisheries subsector can explain 89.92 percent of changes in economic growth. Measurable fishing is carried out to ensure the sustainability of fish resources is maintained and can provide fishermen's welfare, provide expansion and employment opportunities, increase added value and competitiveness due to fisheries, ensure business certainty, contribute to the world of business, and can increase economic growth.

**Keywords:** *Fisheries Subsector Performance; Economic Growth*

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### INTRODUCTION

Being the largest archipelagic country with a maritime area that can be managed at 5.8 million km<sup>2</sup>, the maritime sector is very strategic for Indonesia. Indonesia's fisheries potential is the largest in the world, both capture fisheries and aquaculture. To maximize fisheries potential, the government issued Government Regulation number 11 of 2023 concerning Measurable Fishing, as well as issuing Minister of Maritime Affairs and Fisheries Regulation number 28 of 2023 concerning Regulations for Measurable Fishing applications. This regulation regulates that Measurable Fishing Zones are determined in each WPPN RI in sea and high seas waters as 6 Zones. The fishing quota in the Measured Fishing Zone consists of: (1) industrial quota, (two) fishermen's quota and (three) activity quota not for commercial purposes.

Capture fisheries are the backbone of many coastal communities and contribute to the local economy, employment and food security. It is estimated that globally more than 39 million people work in the capture fisheries sector. At the same time, trade in fishery products is one of the most advanced sectors because 38 percent of world fish production enters international trade (FAO, 2021). The income level of fishermen is an indicator to see the level of welfare of fisheries farmers. The performance of the fisheries subsector has a major influence on economic growth and has an impact on the welfare of fishermen (Béné et al., 2016; Purno, 2023; Widiyarini et al., 2022). But unfortunately, workers who work in the fisheries sector still experience many obstacles, including a lack of knowledge and a lack of technological adaptation (Alagappan & Kumaran, 2013; Fernandes-Salvador et al., 2022; Hosain et al., 2014).

The shrimp commodity is the largest foreign exchange contributor to the fisheries sector. In 2019, shrimp commodities were successfully produced reaching 861,300 tonnes with an export value of US\$ 1.7 billion. Shrimp became the most exported fishery commodity in 2020. Its volume was recorded to have increased by 15.2% from 2019. In 2020, the export volume of fishery products from Indonesia was 1.26 million tonnes with a value of US\$5.2 billion. This

number increased 6.8% compared to the previous year which amounted to 1.18 million tonnage. homogeneously, the average increase in export volume of fishery products was 4.2% in the last five years. In 2021, shrimp commodities constitute the largest part of the national fisheries export composition using the value of US\$. 2.2 billion. Shrimp is a strategic fishery commodity that needs joint support for development, global business and investment. Apart from shrimp, other commodities such as tuna, tuna and skipjack were also exported at 195.76 thousand tons. then, seaweed exports amounted to 195.57 thousand tons. Squid, cuttlefish and octopus were exported with a volume of 140.04 thousand tons. The export volume of small crabs and crabs reached 27.62 thousand tons. ad interim, the export volume of other fishery products reached 464.58 thousand tons (KKP, 2023).

The fisheries sector contributes to the country's net domestic product, nutritional security, and job creation. Considering the important role of public investment in the growth of the fisheries sector, there must be an increase in fisheries sector investment sponsored by the government (Baba et al., 2019). The government must improve the business environment, so that it can provide a stable investment flow and sustainable economic growth in the long term (Rizal et al., 2019). The marine and fisheries sector has a role in regional economic development, especially in providing protein food and providing employment opportunities. However, the government has not paid special attention to the fisheries sector and entrepreneurs are still only looking for short-term profits (Widiyarini & Latuconsina, 2022). The fisheries sector makes an important contribution in providing employment and generating large revenues from exports of fish and fish products. This sector can develop into an engine of rural economic growth and social development (Gupta, 2019; Pascoe et al., 2019). The fisheries sector also contributes to creating new socio-economic opportunities for fishermen and improving the livelihoods of one of the poorest communities in society while maintaining coastal and marine natural resources (Freduah et al., 2017; Nader et al., 2013).

Various kinds of information on fisheries management in Indonesia have the potential to threaten the preservation of fish resources and the environment, the sustainability of people's livelihoods in the marine and fisheries sector, food security, and economic growth that originates from the utilization of marine and fisheries resources. The practice of fishing activities that violate regulations (illegal fishing), are not reported (unreported), and are not regulated (unregulated fishing) are a threat to Indonesian fishermen. As a maritime country whose territory consists mostly of maritime origin, Indonesia is not free from the threat of fish theft or illegal fishing. Illegal fishing is often carried out by foreign vessels and results in huge losses for Indonesia. Illegal fishing is illegal fishing activities or fishing activities carried out contrary to the provisions of laws and regulations in the fisheries sector. Another problem in the fisheries sector is the rate of return on investment. Fishing communities continue to suffer the impacts of irrational investments. The development of the fisheries sector is not necessarily commensurate with the level of investment in the sector, unlike the industrial and processing sectors. Unplanned investments have a negative impact on the productivity of fishing units, thereby affecting the socio-economic situation of small-scale fishermen (Guedri & Chakour, 2016; Lloret et al., 2018). The level of investment in the fisheries sector is growing faster than the agricultural sector, but investment efficiency in this sector is showing a decline. Over a certain period of time, the level of capitalization in the fisheries sector is very high, but catches tend to decrease (Grimm et al., 2012; Suresh & Shinoj, 2018).

## **RESEARCH METHOD**

This research was conducted to determine the contribution of the performance of the fisheries subsector to economic growth in Eastern Indonesia. The research method used in this research is Pooled Least Square Multiple Linear Regression and simple panel data with a quantitative approach that uses secondary data. The sample data used is provincial data in WPPN RI 714, 715 and 718. The number of provinces used is 10 provinces, which in this study is called a cross-section, while the time series data uses 7 years, which in this study is considered a time

series. The number of observations is 70 panel data consisting of 10 cross-section data and 7 time series data. The data used in this research comes from the Ministry of Maritime Affairs and Fisheries from 2016 to 2022, in the form of panel data.

The sampling technique used is probability sampling, namely a sampling method in which each member of the population has a specific, non-zero chance of being selected as a sample. Sampling in this way allows the research results to be generalized. Random sampling often makes sense for cross-section data, where at a certain point in time, units are selected at random from the population. Wooldridge (2010) proves that random sampling, if stated correctly and there are no restrictions on the dimensions of the time series, allows for temporal.

**Table 1** Variables and Indicators

Variables	Indicators
Fisheries Subsector Performance (x)	Gross Regional Domestic Product based on constant prices for the fisheries subsector, in rupiah units per year.
Economic Growth (y)	Growth rate of Gross Regional Domestic Product based on constant prices for the fisheries sector, in percentage units per year

Source: Ministry of Maritime Affairs and Fisheries, 2022

The data used in this research is panel data in the form of annual reports which have been compiled and published/published by the Ministry of Maritime Affairs and Fisheries in Eastern Indonesia (WPPN RI 714, 715 and 718) in various editions and various other relevant sources. such as national and international journals, dissertations, websites, textbooks and other research results affiliated with this research.

## RESULT AND DISCUSSION

### Statistical Analysis Results

**Table 2** Stationary Unit Root Test Results

Variables	Level		First Difference	
	Chi-square	Statistic	Chi-square	Statistic
Fisheries Subsector	0,3382	26.2975	0,0047	45.8107
Economic Growth	0,1892	29.8673	0,0037	46.6513

Source: data processed by eviews 10

From the results of the unit root test with ADF-Fisher, the results showed that all variables were not stationary at level level, so it was necessary to carry out a stationary unit root test at the first difference level. At the difference level, the results of the stationary unit root test with ADF-Fisher Chi-square showed that all variables were stationary at the first difference level, so the model could be continued using panel data regression.

**Table 3** Simple Linear Regression Results Fixed Effect Model

Economic growth				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
c	55.68444	5.219638	10.66826	0.0000
Fisheries Subsector	0.444497	0.214573	2.071540	0.0419
R-squared	0.899159			

Source: data processed by eviews 10

The interpretation of the regression equation is as follows:

$$y = 55,684 + 0,444 x$$

Constant value = 55.684, which is a statistical calculation, if all *ceteris paribus* variables (economic factors) have continuous values, then the Economic Growth value is 55.684. The coefficient value  $\beta_1 = 0.444$  is the elasticity value of Fisheries Subsector Performance towards Economic Growth of  $E = 0.444$ . An  $E$  value  $< 1$  indicates that the increase in Fisheries Subsector Performance is inelastic to Economic Growth. The magnitude of the influence of Fisheries Subsector Performance has a strong influence on Economic Growth in the Eastern Indonesia Region as shown by  $R\text{-square} = 0.899159$  or 89.92 percent, meaning that the Fisheries Subsector Performance variable can explain 89.92 percent of changes in Economic Growth, the remaining 11, 08 percent is influenced by other factors outside the model studied.

Based on the test results shown in Table 3 above, it can be explained the influence of fisheries subsector performance variables on economic growth variables in the Eastern Indonesia Region. The probability value (p-value) is  $0.0419 < 0.05$  so that  $H_0$  (insignificant influence) is rejected and  $H_a$  (significant influence) is accepted. Thus, it is proven that the performance of the Fisheries Subsector has a significant influence on Economic Growth in the Eastern Indonesia Region.

## **Discussion**

The Eastern Indonesia region is a warehouse for the fisheries sector, but due to the lack of infrastructure, investors are less interested in investing in the fisheries sector. Currently the fishing industry is still concentrated on the island of Java because the infrastructure has been built. Therefore, using MP3EI requires infrastructure development in eastern Indonesia to be realized. Maritime affairs and the economic activities associated with them offer many opportunities. Therefore, building a sustainable marine economy is one of the most important tasks and greatest opportunities in this era (Agustino et al., 2023; Martín Míguez et al., 2019). Fisheries Economic Sustainability planning states policies and procedures for sustainable use of the sea as well as maximizing benefits and enhancing value for present and future generations. This plan provides a framework for resolving conflicts over the use of the sea and its resources, and enables sustainable maritime economic growth in the long term.

Management of marine resources and ecosystems can overcome the challenges of coastal and natural resource degradation, climate change and marine pollution, as well as the socio-economic vulnerability of coastal people who are affected by changes in the condition of marine and coastal ecosystems. The impact of climate change on the maritime and fisheries sector is very large as a result of which the Indonesian government has decided on various policies, carried out mitigation efforts to strengthen its identity as a maritime country, eradicated illegal, unreported, unregulated (IUU) fishing, implemented a moratorium on used foreign vessels, increased speed national economic growth, increasing food sovereignty and encouraging maritime and marine economic development (Atmaji et al., 2021). Global projections until 2050 to meet projected food needs, fish production must increase by 50% from current levels. But growth in domestic fish production is projected to slow due to climate change and other constraints (Dey et al., 2016; Rice & Garcia, 2011).

Solving challenges in the marine and fisheries sector requires a trend of insight and synergy at the regional level, such as IUU fishing, marine waste, fisheries trade constraints related to tariffs, as well as other challenges in the marine and fisheries sector that can be resolved together. The challenges currently faced in marine and fisheries development, especially capture fisheries, include: (a) Inadequate fishing control which has the potential to threaten the sustainability of fish resources and ecosystems; (b) governance of capture fisheries that has not been integrated and has not optimally grown the regional economy in accordance with the potential of its natural fisheries resources; (c) Fishing port infrastructure and connectivity, including other facilities and infrastructure, are inadequate and uneven; and (d) Unstable availability of raw materials due to inadequate competitiveness and quality of fishery products.

To overcome the problems and challenges faced, the Government has prepared a Measurable Fishing policy to become a reference for managing capture fisheries in Indonesia while maintaining marine ecology which contributes to national economic growth and claims for

Indonesia's maritime health. The Measurable Fishing Policy is implemented with the aim of maintaining ecology and biodiversity, increasing regional economic growth and the welfare of fishermen. A Measurable Fishing Policy is needed to eliminate the practice of fishing activities that violate the law (illegal fishing), are not reported (unreported), and are not regulated (unregulated fishing).

Through Measurable Fishing, the Indonesian Government can make optimal use of the exploitation of fish resources by paying attention to the existing carrying capacity and its sustainability through setting measured fishing zones and fishing quotas. Measurable fishing is intended to be a way to ensure the sustainability of fish resources is maintained and can provide fishermen's welfare, provide expansion and employment opportunities, increase the added value and competitiveness of fisheries, ensure business certainty, contribute to the global struggle, and for the country. The fisheries sector can play an important role in job creation and poverty alleviation which will then lead to economic development (Bomdzele et al., 2021; Deka, 2021). This sector can increase investment, the number of jobs and can absorb a lot of work energy (Christensen et al., 2014). The tax allowance policy can encourage the development of the fisheries sector which targets investment at home and abroad (Sundawa et al., 2021), fishermen and fish cultivators. small scale can achieve long-term sustainability (Bjorndal et al., 2014).

In 2021, the fisheries sector showed positive growth, namely an increase of 9.69 percent even though the Covid-19 pandemic was still hitting Indonesia. The Covid-19 pandemic has an impact on the demand and supply chain for agricultural commodities such as fish and fishery products due to the prolonged national lockdown which has a direct impact on the distribution of production and marketing of inland fisheries, marine capture fisheries, seed supply and exports of marine products (Purkait, 2020), and also impacts the lives of millions of people who depend on this sector (Bhendarkar et al., 2021), as well as resulting in a lack of transportation to markets, restrictions on exports of fish and fishery products, and low fish prices (Alam et al., 2022).

Indonesia has great potential to carry out a blue recovery after the Covid-19 pandemic (Blue Recovery) and encourage the transition from extractive efforts to create added value and productivity. The blue economy is a space for creating new discoveries and creativity, both in existing and developing sectors, so that the blue economy can become a driver for increasing inclusive prosperity.

For economic recovery and transformation after the Covid-19 pandemic, Blue Economy means a new approach and new sources of economic growth that are more inclusive and sustainable. The blue economy is a new engine for sustainable and inclusive Indonesian economic growth. The Blue Economy potential is estimated at US \$. 1.33 billion and can absorb 45 million jobs.

The development of the blue economy can expand the use of opportunities to develop high-added value economic activities, such as quality tourism, renewable energy development, circular economy, and marine resource-based processing industries. The development of the blue economy is beneficial for preserving marine biodiversity and marine and coastal ecosystems, and sustainable livelihoods, especially for coastal people. Indonesia's transition to a blue economy is needed as a model for sustainable marine-based industrial development that reduces economic dependence on the extractive sector.

## **CONCLUSION**

This research was conducted to determine the contribution of the performance of the fisheries subsector to economic growth in the Eastern Indonesia Region. Fishing is important for maintaining community identity, social cohesion and individual fishing status, and as the glue that binds communities together. Solving challenges in the marine and fisheries sector requires a common view and synergy at the regional level, such as IUU fishing, marine debris, fisheries trade barriers related to tariffs.

The magnitude of the influence of the performance of the fisheries subsector on economic growth is very strong and the increase is inelastic. The performance of the fisheries subsector can explain 89.92 percent of changes in economic growth. Measurable fishing is carried out to ensure

the sustainability of fish resources is maintained and can provide fishermen's welfare, provide expansion and employment opportunities, increase added value and competitiveness of fishery products, ensure business certainty, contribute to the business world, and can increase economic growth.

For economic recovery and transformation after the Covid-19 pandemic, the Blue Economy is a new approach and a new source of economic growth that is more inclusive and sustainable. The blue economy is a new engine for sustainable and inclusive Indonesian economic growth.

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