Response of Indonesia's Fisheries GDP to Interest Rates, Inflation, Exchange Rates and Fisheries Sector Performance: A Blue Economy Perspective

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Received: 10th June 2025. Revised: 17th June 2025, Accepted: 20th June 2025.
Available online: 30th June 2025, Published regularly: June 2025.

Abstract
This study analyzes how Indonesia's fisheries GDP (FISHGDP) responds to real interest rate, inflation, exchange rate, fisheries production, and exports within the Blue Economy framework. Using VECM and data from 1985–2024, it examines short- and long-term relationships through IRF and Variance Decomposition. Results show fisheries' GDP responds positively to fish production, and fish exports, but negatively to inflation and exchange rates, with mixed responses to interest rates. In the long term, Meanwhile, the variance decomposition (VD) results reveal that in the long run (period 100), FISHGDP variation is primarily explained by inflation (39.35%), followed by its own past values (34.32%), fisheries production (10.37%), exchange rate (7.99%), real interest rate (7.49%), and exports (0.46%). These findings emphasize the dominant influence of inflation on fisheries sector growth and the importance of production efficiency, exchange rate stability, and macroeconomic control to support Indonesia's Blue Economy development.

Keywords
Keyword: f*isheries GDP, interest rate, inflation, exchange rate, blue economy*.

Abstrak
Studi ini menganalisis bagaimana PDB perikanan Indonesia (FISHGDP) merespons suku bunga riil, inflasi, nilai tukar, produksi perikanan, dan ekspor perikanan dalam kerangka Ekonomi Biru. Dengan menggunakan VECM dan data dari tahun 1985–2024, studi ini mengkaji hubungan jangka pendek dan jangka panjang melalui IRF dan Dekomposisi Varians. Hasil penelitian menunjukkan PDB perikanan merespons positif produksi ikan, dan ekspor ikan, tetapi negatif terhadap inflasi dan nilai tukar, dengan respons beragam terhadap suku bunga. Sementara itu, dalam jangka panjang (periode 100), hasil dekomposisi varians (VD) mengungkapkan bahwa dalam jangka panjang (periode 100), variasi PDB perikanan terutama dijelaskan oleh inflasi (39,35%), diikuti oleh nilai masa lalunya sendiri (34,32%), produksi perikanan (10,37%), nilai tukar (7,99%), suku bunga riil (7,49%), dan ekspor perikanan (0,46%). Temuan ini menegaskan dominannya pengaruh inflasi terhadap pertumbuhan sektor perikanan dan pentingnya efisiensi produksi, stabilitas nilai tukar, dan pengendalian makroekonomi untuk mendukung pembangunan Ekonomi Biru Indonesia.

Kata Kunci: *GDP perikanan, suku bunga, inflasi, nilai tukar, blue economy*

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INTRODUCTION

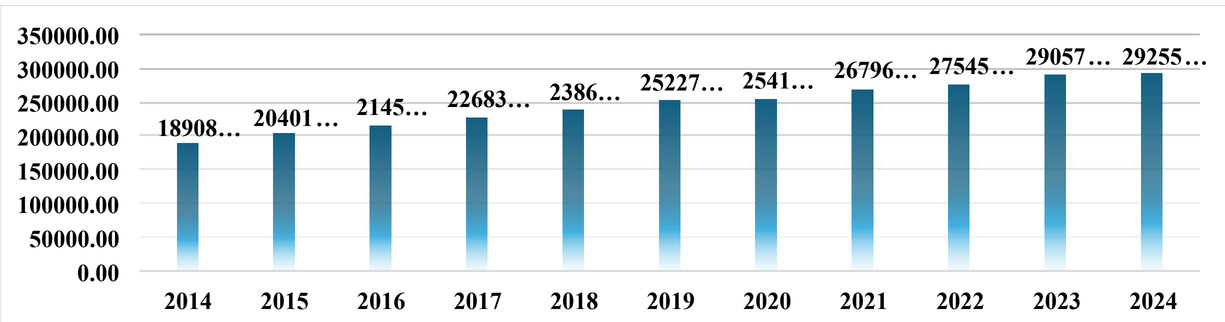
The fisheries and aquaculture sector plays a vital role globally, contributing over USD 192.2 billion in export value and involving more than 61 million people as of 2022 (Food and Agriculture Organization of the United Nations, 2024). In Indonesia, this sector holds enormous potential due to its geographical advantage as the world's largest archipelagic state, with more than 17,000 islands and the second-longest coastline globally (Resa et al., 2016). Despite abundant marine resources, optimal utilization remains a challenge, calling for integrated and sustainable management strategies to enhance its role in national development (Arianto, 2020).

The Indonesian marine area spans over 6.4 million km², including an Exclusive Economic Zone (EEZ) of 3 million km² (KKP, 2024b). Recognized internationally through UNCLOS 1982 and ratified by Law No. 17/1985, Indonesia's maritime status is also reinforced in the 1945 Constitution (Article 25A) and Law No. 27/2007 on coastal and small island management. However, the fisheries sector still faces complex challenges such as climate change, unsustainable fishing practices, commodity price volatility, and macroeconomic instability. Exchange rate fluctuations and inflation directly impact production costs, input prices, and fisher income (Patoni et al., 2024). For instance, the weakening of the rupiah increases the cost of imported goods like feed, fishing gear, and fuel, thus reducing profit margins. On the flip side, it also enhances the competitiveness of fishery exports.

Figure 1 illustrates the growth of Indonesia's fishery sector GDP over the past 11 years (2014-2024), showing a consistent upward trend. Starting at IDR 189 trillion in 2014, it rose steadily to nearly IDR 293 trillion in 2024. This increase highlights the sector's strong potential in both production and trade. In 2023, the fishery sector contributed around 2.66% to Indonesia's total GDP (KKP, 2024a). However, challenges remain, particularly in infrastructure, aquaculture technology, and market access (Ditjen Penguatan Daya Saing Produk Kelautan dan Perikanan, 2023).

As a strategic sector, fisheries contribute not only to national GDP but also to food security and coastal community welfare. Nevertheless, macroeconomic factors particularly interest rates, inflation, and exchange rates affect its performance. In 2023, for example, Indonesia's interest rate reached

Figure 1. Development of Fishery GDP at Constant 2010 Prices (billion rupiah)



Source: Indonesia's Central Bureau of Statistics (processed)

7.28%, significantly influencing capital costs and financing access in productive sectors including fisheries. High borrowing costs can slow economic growth and reduce investment, weakening production capacity and purchasing power. Additionally, the 2024 exchange rate of Rp15,500/USD presents both opportunities and challenges boosting exports but increasing production costs due to imported inputs. Therefore, macroeconomic stability becomes crucial for sustainable and efficient growth of the fisheries industry.

The concept of the Blue Economy offers a sustainable development strategy that integrates economic, environmental, and social dimensions by utilizing marine resources responsibly. It spans various sectors fisheries, aquaculture, marine tourism, renewable energy, and marine transport that together drive economic growth (Caporin et al., 2024; Ovchynnykova et al., 2024; Phang et al., 2023). In Indonesia, the fisheries sector's role in food security has been increasing, reflected in the rising national fish consumption per capita from 1,788 grams in 2019 to 1,896 grams in 2023 (KKP, 2024).

As one of Indonesia's most vital economic sectors, fisheries not only contribute significantly to national income and employment but also serve as a foundation for coastal community livelihoods (Raeskyesa et al., 2020). This trend indicates a growing awareness of fish as a protein source and reflects the sector's rising importance in domestic supply. Despite these advancements, research on the fisheries sector has primarily focused on production or environmental aspects, often overlooking the influence of macroeconomic variables such as interest rates, inflation, and exchange rates. Understanding how these variables interact with sectoral performance, such as production and exports, is crucial in formulating effective policies that support sustainable growth. Furthermore, while the Blue Economy framework is gaining traction in government strategies, it is rarely integrated into empirical macroeconomic studies on fisheries.

This study aims to fill this gap by analyzing how Indonesia's fishery GDP responds to macroeconomic variables namely interest rate, inflation, and exchange rate as well as sectoral indicators like fish production, aquaculture production, and fishery exports. Using a quantitative time-series approach from 1985 to 2024, this research seeks to provide a comprehensive understanding of the interlinkages between macroeconomic conditions and the fisheries sector's economic contribution, while offering valuable insights for policy development aligned with the Blue Economy paradigm.

THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Fishery GDP

Fishery GDP serves as the primary indicator of the fisheries sector's contribution to the Indonesian economy, encompassing value-added from capture fisheries, aquaculture, processing, and trade (KKP, 2017). In macroeconomic theory, GDP is explained through multiple lenses: classical economics emphasizes full utilization of resources; neoclassical theory focuses on capital, labor, and technological innovation; and Keynesian theory highlights the importance of aggregate demand and government intervention (Alfaro et al., 2024; Hasan & Muhammad, 2018).

Real Interest Rate

Real Interest Rate defined as the nominal lending rate adjusted for inflation is a key monetary variable affecting capital accessibility and investment behavior. According to Keynes' liquidity preference theory, interest rates influence the trade-off between holding money and investing in productive assets (Frederic S. Mishkin, 2016). A high real interest rate raises borrowing costs, discouraging investment in the fisheries sector, especially in capital-intensive areas such as aquaculture. Empirical studies (Ankrah Twumasi et al., 2022; Jayadi & Firmansyah, 2021; Paul, 2020) show that rising real interest rates negatively impact fisheries output, investment, and technical efficiency.

Inflation

Inflation affects both input costs and consumer demand. Keynesian and monetarist perspectives explain inflation as either demand-driven or influenced by money supply dynamics (Tasya et al., 2025; Ussa'diyah & Nofrian, 2023). In fisheries, cost-push inflation such as rising feed and fuel prices erodes profit margins, while demand-pull inflation may increase prices and income in the short term. Some studies (Amanda, Resti; Lutfi, 2022; Rizal et al., 2020) suggest that moderate inflation may support sectoral GDP, but excessive inflation can undermine sector stability.

Official Exchange Rate

Official Exchange Rate, which reflects the government-reported rate for currency conversion, directly impacts trade competitiveness and input costs (Wicaksana & Pracoyo, 2020). Theories such as Purchasing Power Parity (PPP), Capital Flow Theory, and the J-Curve explain exchange rate dynamics (Cassel, 1918; Darwanto, 2014; Martoatmodjo, 2016). A depreciating exchange rate may boost export competitiveness but simultaneously raise the cost of imported inputs such as fish feed and fishing gear. Empirical findings (Elisha Omotunde et al., 2023; Ikpesu & Okpe, 2019; Nugroho & Nasrudin, 2022) generally show a complex, often negative, short-term relationship between exchange rate movements and fisheries GDP in developing countries.

Fish Production

Fish Production, as defined in this study, combines both capture fisheries and aquaculture output. This aggregated measure captures the total biomass generated by the sector and is analyzed using the

Gordon-Schaefer model (Gordon, 1954; Schaefer, 1957). This bioeconomic model explains that fishery production is maximized at an optimal level of effort referred to as Maximum Sustainable Yield (MSY) beyond which overfishing reduces long-term profitability and resource sustainability. Empirical studies affirm that fish production positively contributes to GDP (Ahammed et al., 2024; Elzaki, 2024; Sulistijowati et al., 2023), though the impact may be mediated by technological efficiency, infrastructure, and market access.

Fishery Export

Fishery Exports directly increase GDP via the net export's component in national income accounting (Y = C + I + G + (X – M)). According to Ricardo's theory of comparative advantage, countries like Indonesia benefit from exporting marine products due to lower production costs and abundant natural resources (Ricardo, 1821). Numerous studies confirm that fishery exports significantly support sectoral GDP growth and foreign exchange earnings (Emam et al., 2021; Jayadi & Firmansyah, 2021; Kusmaputri & Chinta, 2024), although the effect is stronger when accompanied by domestic value addition.

Given these theoretical and empirical foundations, this study hypothesizes that Indonesia's Fishery GDP responds significantly to variations in real interest rate, inflation, official exchange rate, fish production (combined capture and aquaculture), and fishery exports during the period 1985–2024. Furthermore, it posits that each of these variables contributes differently to GDP dynamics, which will be evaluated through variance decomposition analysis.

RESEARCH HYPOTHESES

This study proposes the following hypotheses:

H1: There is a response short-term and long-term influence of interest rates, inflation, exchange rates, fisheries production and fishery exports on the GDP of the fisheries sector in Indonesia during the period 1985 - 2024.

H2: There is a contribution of shocks from interest rates, inflation, exchange rates, fisheries production, and fishery exports to the variation of fisheries GDP in Indonesia, as indicated by the results of the variance decomposition in the VECM model.

RESEARCH METHOD

Scope of Research

This study utilizes annual time series data from Indonesia covering the period 1985–2024. It involves seven endogenous variables: Fishery GDP (FISHGDP), real interest rate (RIR), inflation (INF), official exchange rate (OER), fish production (FISHPROD), and fishery exports (FISHEXP). The primary focus is on the response of Fishery GDP to the dynamic changes of the other macroeconomic and sectoral variables.

Data Sources

The data used in this study are obtained from reliable and internationally recognized institutions. Fishery GDP and inflation data are sourced from Statistics Indonesia (Badan Pusat Statistik, BPS). Data on real interest rates and official exchange rates are retrieved from the World Bank. Meanwhile, fish production and fishery export figures are collected from the Food and Agriculture Organization of the United Nations (FAO). These secondary time series data cover the period from 1985 to 2024 and serve as the foundation for the empirical analysis.

Econometric Model and Estimation Technique

This study utilizes the Vector Autoregression (VAR) model to capture dynamic interdependencies among the selected variables. VAR models are well-suited for analyzing time series data without requiring strong theoretical assumptions regarding causality (Widarjono, 2013). When the variables are found to be non-stationary but cointegrated, the Vector Error Correction Model (VECM) is employed. VECM enables the investigation of both short-run dynamics and long-run equilibrium relationships, making it particularly appropriate for analyzing macroeconomic interactions in the fisheries sector.

Before estimation, standard pre-testing procedures are conducted. These include the Augmented Dickey-Fuller (ADF) test to assess stationarity, the Johansen cointegration test to detect long-run relationships, and optimal lag selection based on the Akaike Information Criterion (AIC) or similar statistical criteria.

The general form of the VECM equation applied in this study is as follows:

$$\Delta FISHGDPt = a\ 1.0 + a\ 1.1\ FISHGDP_{t-1} + a\ 1.2\ RIR_{t-1} + a\ 1.3\ INF_{t-1} + a\ 1.4\ OER_{t-1} + a\ 1.5\ FISHPROD_{t-1} + a\ 1.6\ FISHEXP_{t-1} + 1\lambda ECT_{t-1}$$

Description:

a = Intercept

$\Sigma k\ \ i = 1$ = The number of lags used in the model, ranging from 1 to k

$FISHGDP_{t-1}$ = First-difference vector of Fishery GDP in year *t* (percent) with lag 1

RIR_{t-1} = First-difference vector of the Real Interest Rate in year *t* (percent) with lag 1

INF_{t-1} = First-difference vector of the Inflation in year *t* (percent) with lag 1

OER_{t-1} = First-difference vector of the Official Exchange Rate in year *t* (percent) with lag 1
$FISHPROD_{t-1}$ = First-difference vector of the Fish Production in year *t* (percent) with lag 1
$FISHEXP_{t-1}$ = First-difference vector of the Fishery Export in year *t* (percent) with lag 1
λ = ECT coefficient or Speed of Adjustment parameter, with a negative sign
ECT_{t-1} = Error Correction Term or residual from the long-run equation
t = Year 1985-2024

Impulse Response Function (IRF)

IRF analysis is used to trace the time path of Fishery GDP in response to one-time shocks in each of the independent variables. This technique provides insight into the dynamic causal relationships and lagged effects within the system, enhancing understanding of macroeconomic shocks on sectoral output.

Variance Decomposition (VD)

Variance Decomposition quantifies the proportion of forecast error variance in Fishery GDP attributable to innovations in each explanatory variable. This allows for evaluating the relative contribution of macroeconomic and sectoral shocks to Fishery GDP variability, supporting more targeted and informed policy recommendations.

RESULT, DISCUSSION, AND MANAGERIAL IMPLICATION

The analysis begins with the stationarity test using the Augmented Dickey-Fuller (ADF) method. As shown in Table 1, the results confirm that all variables real interest rate (RIR), inflation (INF), official exchange rate (OER), fisheries production (FISHPROD), fisheries exports (FISHEXP), and fisheries GDP (FISHGDP) are non-stationary at level but become stationary at first difference. Specifically, the ADF test statistics for the first differences are all significant at the 1% level, with p-values of 0.0000 for most variables, indicating they are integrated into order one, I (1). For example, the first difference of LNFISHGDP yields a t-statistic of -5.738797 with a p-value of 0.0000. These results justify the use of the Vector Error Correction Model (VECM), which is suitable for analyzing both short-run adjustments and long-run relationships among non-stationary but cointegrated variables.

Following this, the stability of the VAR model was tested using the characteristic root approach. As presented in Table 2, all the roots of the companion matrix lie inside the unit circle, with the largest modulus being 0.836677. This confirms that the model is dynamically stable and thus reliable for forecasting and interpreting the results of Impulse Response Functions (IRF) and Variance Decomposition (VD) analyses.

Table 1. Stationarity Test

Variabel	Stage	Prob	t-*statistic*
LNFISHGDP	Level	0.9083	0.347289
	1st Difference	**0.0000**	-5.738797
RIR	**Level**	**0.0000**	-5.879699
	1st Difference		
INF	***Level***	**0.0000**	-6.099208
	1st Difference		
LNOER	*Level*	0.4079	-1.731538
	1st Difference	**0.0000**	-6.477692
LNFISHPROD	*Level*	0.0642	-2.825447
	1st Difference	**0.0000**	-8.888040
LNFISHEXP	***Level***	**0.0254**	-3.242017
	1st Difference		

Source: Output E-views 10 (processed)

Table 2. Stability Test

Root	Modulus
-0.836677	0.836677
-0.278876 - 0.685188i	0.739766
-0.278876 + 0.685188i	0.739766
0.631896	0.631896
-0.499599 - 0.262430i	0.564330
-0.499599 + 0.262430i	0.564330
0.038774 - 0.473594i	0.475179
0.038774 + 0.473594i	0.475179
0.350699 - 0.283383i	0.450884
0.350699 + 0.283383i	0.450884
0.438992	0.438992
-0.028429	0.028429

Source: Output E-views 10 (processed)

In selecting the optimal lag length for the VECM, as shown in Table 3, the Schwarz Information Criterion (SC) identified lag 3 as the most appropriate, as indicated by the asterisk in Table 3. This lag length strikes a critical balance between adequately capturing the dynamic interactions among variables and avoiding model overfitting. The choice of lag 3 is further supported by other criteria such as the Final Prediction Error (FPE), Likelihood Ratio (LR), and Akaike Information Criterion (AIC), which also reach their minimum values at this lag. Hence, adopting a three-lag structure ensures that the model captures sufficient past information without compromising parsimony and forecasting reliability.

The Johansen cointegration test, as reported in Table 4, identifies at least four cointegrating vectors, confirming the existence of a long-run equilibrium relationship among real interest rate, inflation, exchange rates, fisheries production, fisheries exports, and fisheries GDP. This long-term linkage supports the theory that macroeconomic fundamentals influence fisheries sector output over time.

Table 3. Optimal Lag Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-6.237.196	NA	1.71e+08	3.598.397	36.25061*	3.607.602
1	-5.645.146	9.472.786	46899038	3.465.798	3.652.440	3.530.227
2	-5.357.605	3.614.805	85889761	3.507.203	3.853.823	3.626.856
3	-4.674.314	62.47231*	23711637*	33.22465*	3.829.064	34.97343*

Source: Output E-views 10 (processed)

Table 4. Cointegration Test

Hypothesized No. of CE(s)	Eigenvalue	*Trace Statistic*	0.05 *Critical Value*	Prob.**
*None**	0.896351	2.128.369	9.575.366	0.0000
At most 1*	0.795487	1.357.674	6.981.889	0.0000
At most 2*	0.711735	8.180.519	4.785.613	0.0000
At most 3*	0.523890	3.951.341	2.979.707	0.0028
At most 4	0.266365	1.428.181	1.549.471	0.0755
At most 5	0.104443	3.750.531	3.841.466	0.0528

Source: Output E-views 10 (processed)

The impulse response analysis in Figure 2 reveals how fisheries GDP dynamically responds to shocks from key macroeconomic and sectoral variables, namely real interest rate, inflation, exchange rate, fisheries production, and fish exports. First, real interest rate shocks to the GDP of the fisheries sector show a negative response at the beginning of the period, reflecting direct pressure on fisheries business actors due to increasing borrowing costs. After the initial period, the response improved and showed mild fluctuations but only began to stabilize in the low positive range after the 30th to 100th periods. This indicates that in the long term, the impact of interest rates on this sector is more controlled, although it still has a structural influence. Within the framework of Blue Economy development, this condition emphasizes the importance of designing an inclusive and adaptive interest rate policy to the needs of the labor-intensive fisheries sector, as well as the importance of expanding access to cheap and sustainable financing to encourage green transformation and growth in this sector.

Second, inflation shocks show a negative and fluctuating pattern in the short term, with the lowest response values recorded in the 6th and 10th periods. Although there was a slight improvement in several periods, the negative effects tended to persist until around the 30th period, before finally stabilizing in the range of -0.005 to -0.006. Economically, this inflationary pressure reflects the increase in production input costs and the decline in purchasing power of coastal communities, which ultimately suppresses the output of the fisheries sector. This finding confirms that stable and sustainable inflation control is an important prerequisite in supporting inclusive and resilient fisheries sector growth within the framework of Blue Economy development. Third, exchange rate shocks produce a relatively stable negative response in the long term. After an initial decline in the 2nd to

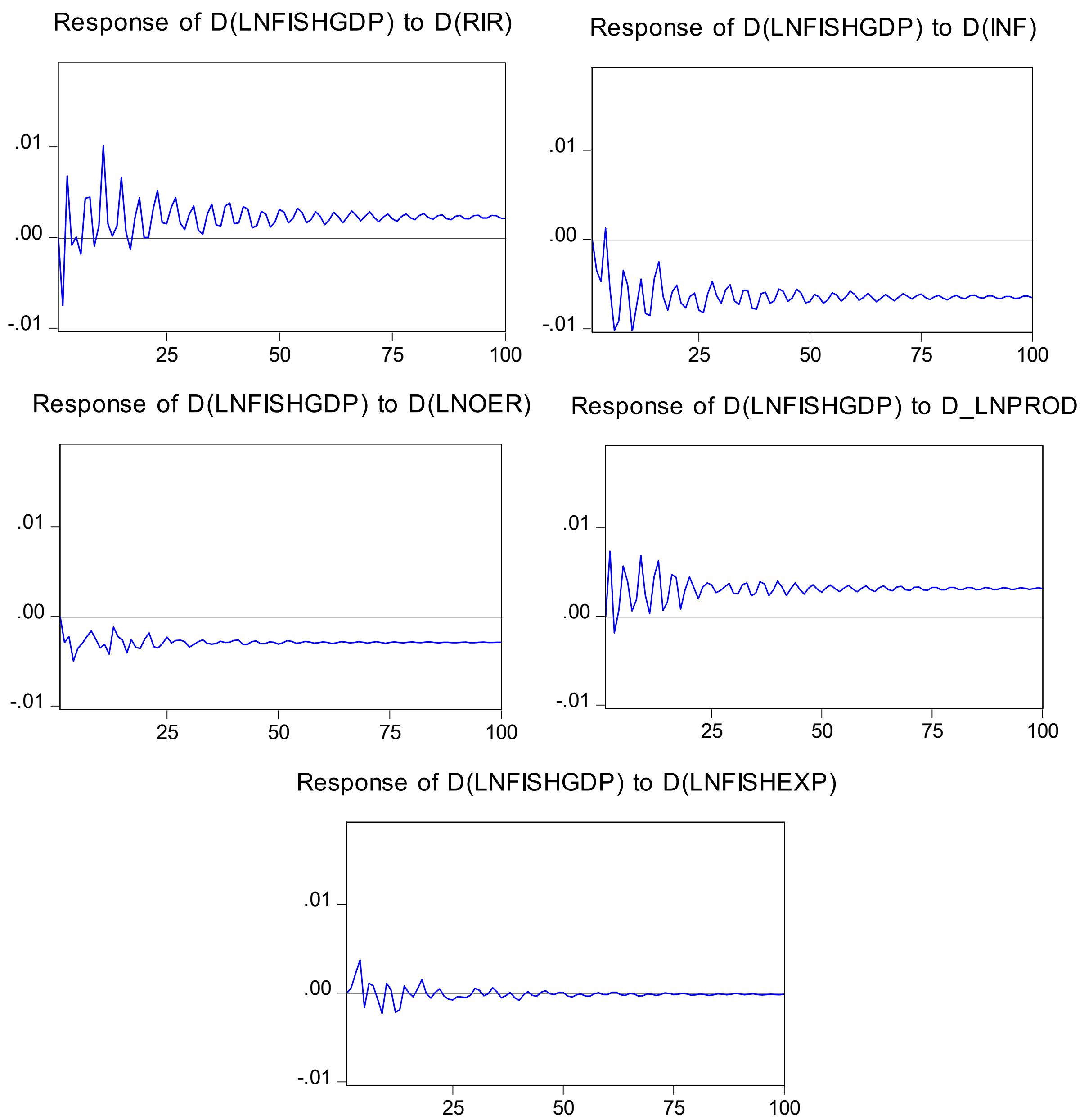


Figure 2. Impulse Response Function Results

Source: Output E-views 10

4th periods, the response continued to move in a low negative range (-0.0025 to -0.0035) until the end of the observation period, without showing significant recovery. Exchange rate depreciation increases the cost of import-oriented production inputs, such as fishing gear and fuel, thereby suppressing business margins and output of the fisheries sector. In the context of the Blue Economy, stabilizing the exchange rate and strengthening import substitution industries are important strategies to increase the resilience of the fisheries sector to external volatility and encourage growth based on domestic added value.

Fourth, shocks from fisheries production show a strong positive response, especially in the early period, with the highest response value in the 2nd period, and tended to be stable in the range of

0.0026 to 0.0035 from the 30th to the 100th period. This pattern indicates that the increase in fisheries production directly drives the growth of this sector and is sustainable in the long term. Within the Blue Economy framework, increased production accompanied by sustainable practices such as environmentally friendly marine cultivation and efficient fish stock management will strengthen the foundation of inclusive and sustainable Indonesian marine development.

Fifth, shocks from fisheries exports show a fluctuating but low-intensity response, with an initial increase in the 4th period followed by a negative reversal in the 5th and 9th periods, then stabilizing in a very low range between -0.0002 to 0.0002 since the 30th period. This reflects that the export sector has not provided a significant boost to the growth of the fisheries sector consistently. In the context of the Blue Economy, this low contribution is an important signal of the need to increase the added value of export products, strengthen logistics infrastructure, and implement fisheries downstreaming and industrialization strategies so that exports can become the main pillar in the development of a resilient, competitive, and sustainable marine sector.

Therefore, the response results for all variables show that there is a long-term relationship between exogenous variables and fisheries GDP such as previous research by (Ahammed et al., 2024; Akseptori et al., 2022; Omotunde et al., 2023; Emam et al., 2021; Ikpesu & Okpe, 2019). Overall, these IRF results suggest that internal dynamics, especially production, are more influential for fisheries GDP than external macroeconomic shocks like interest rates, inflation, or exchange rate volatility. This has managerial implications for policy focus: strengthening domestic production systems and ensuring sustainable harvest practices may yield more predictable and long-term benefits for the fisheries sector compared to relying on macroeconomic tools.

The results of Variance Decomposition show that in the long term (100th period), inflation is the most dominant variable in explaining the variation of GDP in the fisheries sector, with a contribution of 39.35%, followed by fisheries production (10.37%) and exchange rate (7.99%). Real interest rates are in fourth place with a contribution of 7.49%, while fisheries exports remain the smallest contributor with only 0.46%. This finding emphasizes the importance of controlling inflation as well as increasing production efficiency and exchange rate stability as the key to strengthening the national fisheries sector.

Managerial Implications

These findings provide important managerial implications for fisheries sector development in Indonesia. The dominance of inflation in explaining fisheries GDP variation suggests that effective price stabilization policies particularly in managing input costs like fuel and feed are essential to ensure sector resilience. The consistent positive influence of fisheries production highlights the need

Table 7. Variance Decomposition (VD)

Period	S.E.	FISH GDP	RIR	INF	OER	FISH PROD	FISH EXP
1	0.019188	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.022388	73.45635	11.36516	2.411022	1.706910	10.98398	0.076575
3	0.024577	64.46301	17.08932	5.666789	2.234530	9.678742	0.867613
50	0.075610	35.20454	9.268209	36.64980	7.550644	10.50030	0.826502
51	0.076242	35.16248	9.247550	36.69492	7.571838	10.50864	0.814574
52	0.076914	35.21682	9.131528	36.74916	7.561262	10.53759	0.803648
97	0.101520	34.33625	7.559212	39.27378	7.983827	10.37360	0.473334
98	0.101520	34.32631	7.545800	39.29574	7.991179	10.37179	0.469188
99	0.102469	34.33182	7.519032	39.31309	7.995340	10.37557	0.465157
100	0.102947	34.32444	7.492396	39.34939	7.999099	10.37369	0.460980

Source: Output E-views 10 (processed)

for investment in sustainable aquaculture and capture fisheries practices, including technological innovation and capacity-building for fishers. Meanwhile, the adverse effects of exchange rate volatility reinforce the importance of enhancing domestic input substitution and export competitiveness. Policymakers should therefore prioritize macroeconomic stability alongside production efficiency and targeted support mechanisms to strengthen the long-term growth of the fisheries sector under the Blue Economy agenda.

CONCLUSION, SUGGESTION, AND LIMITATIONS

This study concludes that Indonesia's fisheries sector is strongly influenced by macroeconomic dynamics, especially inflation. In the short term, impulse response analysis (IRF) shows that fisheries GDP responds positively to shocks in fisheries production and exports, while inflation and exchange rate shocks tend to suppress growth. In the long run, the results of variance decomposition (VD) reveal that the variation in fisheries GDP (FISHGDP) is primarily explained by inflation (39.35%), followed by its own past values (34.32%), fisheries production (10.37%), exchange rate (7.99%), real interest rate (7.49%), and fisheries exports (0.46%). These findings underscore the critical role of inflation control, production efficiency, and exchange rate stability in fostering a resilient and sustainable fisheries sector. Strengthening these aspects is essential for supporting Indonesia's transition toward a Blue Economy that balances economic growth with marine resource sustainability.

The government should focus on aligning policies with Blue Economy principles by enhancing the stability of real interest rates and exchange rates, as these factors significantly impact the fisheries sector's performance. Emphasizing macroeconomic strategies that support long-term investment in fisheries and aquaculture infrastructure is crucial for sustainable growth. Given that fishery production has the largest long-term influence on fisheries GDP fluctuations, targeted investments and capacity-building in sustainable capture fisheries and aquaculture are essential. Improving technology, logistics, and access to finance for small-scale fishers and producers will help increase productivity and sector resilience.

This study has some limitations. It uses aggregated data for fishery production and exports, which may hide specific sector dynamics. Institutional and environmental factors were not included due to data limits. The VAR model used does not capture causality or structural relationships, suggesting the need for more advanced models in future research. Finally, the results are specific to Indonesia and the study period, so they may differ in other contexts or times.

REFERENCES

Ahammed, S., Rana, M. M., Uddin, H., Majumder, S. C., & Shaha, S. (2024). Impact of blue economy factors on the sustainable economic growth of China. *Environment, Development and Sustainability*, *January*. https://doi.org/10.1007/s10668-023-04411-6

Akseptori, R., Perkapalan, P., Surabaya, N., & Yuniati, R. A. N. (2022). Dinamika Kebijakan Inflasi dan Suku Bunga Terhadap Kinerja Perikanan Indonesia. *Jurnal Ilmu Manajemen*, *10*(2009), 2022. www.bi.go.id.

Alfaro, M., Caballero, B. M., Abante, M. V., Cagang, M. L., & Vigonte, F. (2024). Role of Monetary Policy in Economic Growth and Development: From Theory to Empirical Evidence. *SSRN Electronic Journal*, *Lm*. https://doi.org/10.2139/ssrn.4745717

Amanda, Resti; Lutfi, M. (2022). Pengaruh Tenaga Kerja, Pembiayaan Bank Syariah, Ekspor Dan Inflasi Terhadap Pertumbuhan Ekonomi Sektor Pertanian Di Indonesia Periode 2017-2021. *An Nawawi : Jurnal Hukum Dan Ekonomi Islam*, *2*(2), 1–10. https://doi.org/10.55252/annawawi.v2i1.16

Ankrah Twumasi, M., Jiang, Y., Fosu, P., Addai, B., & Essel, C. H. K. (2022). The impact of credit constraint on artisanal fishers' technical efficiency: Stochastic frontier and instrumental variable approach. *Regional Studies in Marine Science*, *50*, 102149. https://doi.org/10.1016/j.rsma.2021.102149

Arianto, M. F. (2020). Potensi Wilayah Pesisir di Negara Indonesia. *Jurnal Geografi*, *20*(20), 1–7.

Caporin, M., Kuziboev, B., Ibadullaev, E., Khodjaniyazov, E., Marty, P., & Saidmamatov, O. (2024). The Contribution of Green, Blue, and Energy Sources to Economic Development in Central Asia. *Economies*, *12*(9), 1–12. https://doi.org/10.3390/economies12090251

Cassel, G. (1918). Abnormal Deviations in International Exchanges. *The Economic Journal*, *28*(112), 413. https://doi.org/10.2307/2223329

Darwanto. (2014). Adakah Fenomena Marshall-Lerner Condition dan J-Curve di Indonesia. *Jurnal Bisnis Dan Ekonomi*, *21*(1), 18–29.

Ditjen Penguatan Daya Saing Produk Kelautan dan Perikanan, K. kelautan dan P. (KKP). (2023). *Laporan Kinerja Triwulan 1*.

Elisha Omotunde, L., Abraham Alexander, A., Ibrahim Ndatsu, A., & Adebimpe Adeshina, K. (2023). Effect of Exchange Rate and Inflation Rate on Agricultural Sector Output in Nigeria. *Journal of Economics and Allied Research*, *8*(1).

Elzaki, R. M. (2024). Does fish production influence the GDP and food security in Gulf Cooperation Council countries? Evidence from the dynamic panel data analysis. *Aquaculture*, *578*(February), 740058. https://doi.org/10.1016/j.aquaculture.2023.740058

Emam, M. A., Leibrecht, M., & Chen, T. (2021). Fish exports and the growth of the agricultural sector: The case of south and southeast asian countries. *Sustainability (Switzerland)*, *13*(20). https://doi.org/10.3390/su132011177

Food and Agriculture Organization of the United Nations. (2024). *Fisheries and Aquaculture Employment – The State of World Fisheries and Aquaculture 2024*. FAO.

Frederic S. Mishkin. (2016). *The Economics of Money, Banking, and Financial Markets* (11th Editi).

Gordon, H. S. (1954). The economic theory of a common-property resource: The fishery. *Fisheries Economics*, *1*(3), 3–21. https://doi.org/10.4324/9781315193182-1

Hasan, M., & Muhammad, A. (2018). *1| Pembangunan Ekonomi*. http://eprints.unm.ac.id/10706/1/Buku pembangunan ekonomi contoh fix.pdf

Ikpesu, F., & Okpe, A. E. (2019). Capital inflows, exchange rate and agricultural output in Nigeria. *Future Business Journal*, *5*(1), 0–8. https://doi.org/10.1186/s43093-019-0001-9

Jayadi, A., & Firmansyah, T. (2021). the Effect of Government Macroeconomic Policy on Indonesia'S Fisheries Export To the United States in 1989-2019. *Jurnal Ilmu Ekonomi Terapan*, *6*(2), 267. https://doi.org/10.20473/jiet.v6i2.31165

Kementerian Kelautan dan Perikanan (KKP). (2024). *Tabel Dinamis Angka Konsumsi Ikan Nasional*.

KKP. (2017). *Analisis Indikator Kinerja Utama Kelautan dan Perikanan Indonesia* (pp. 1–50). Kementerian Kelautan dan Perikanan.

KKP. (2024a). Laporan Kinerja Kementerian Kelautan dan Perikanan Tahun 2024. *Kementerian Kelautan Dan Perikanan*, *1*, 2080. https://kkp.go.id/an-component/media/upload-gambar-pendukung/kkp/Laporan/Laporan Kinerja KKP/2022/20230316_Laporan Kinerja KKP 2022.pdf

KKP. (2024b). Statistik Sumber Daya Laut dan Pesisir 2024. In *Sustainability (Switzerland)* (Vol. 21). Kementerian Kelautan dan Perikanan. http://scioteca.caf.com/bitstream/handle/123456789/1091/RED2017-Eng-8ene.pdf?sequence=12&isAllowed=y%0Ahttp://dx.doi.org/10.1016/j.regsciurbeco.2008.06.005%0Ahttps://www.researchgate.net/publication/305320484_Sistem_Pembetungan_Terpusat_Strategi_Melestari

Kusmaputri,Ni Made Cahya Chinta, D. (2024). *Fisheries Production, Consumption, and Exports: Drivers of Indonesia's Blue Economy Performance*. *6*(3).

Latifah, Eva; Sutjipto, Hady; Mangara, Togi Haidat; Harahap, Muhammad Nasim; Syaifudin, R. (2024). Analysis of Factors Affecting Indonesian Government Debt Eva. *Jurnal Ilmu Manajemen & Ekonomika*, 27–48. https://ejournal.ipinternasional.com/index.php/ijec

Martoatmodjo, S. (2016). Penerapan Hukum Satu Harga (Law of One Price) Dalam Arbitrage Internasional. *EKUITAS (Jurnal Ekonomi Dan Keuangan)*, *5*(3), 238. https://doi.org/10.24034/j25485024.y2001.v5.i3.1931

Nugroho, A., & Nasrudin, N. (2022). Study of Exchange Rate Volatility and Its Effect on Indonesian Economic Indicators With Potential Exchange Rate Crisis. *Proceedings of The International Conference on Data Science and Official Statistics*, *2021*(1), 436–447. https://doi.org/10.34123/icdsos.v2021i1.108

Ovchynnykova, O., Martinkienė, J., & Navickas, V. (2024). Enhancing Global Sustainability: The Role of the Blue Economy in Preserving Natural Capital. *Challenges in Sustainability*, *12*(1), 65–79. https://doi.org/10.56578/cis120105

Patoni, K. S., Thamrin, A., Buhang, A., & Ladjin, N. (2024). *Dampak Perubahan Kebijakan Moneter Terhadap Stabilitas Mata Uang di Negara Berkembang*. *5*(9), 4529–4542.

Paul, O. (2020). Bank Credits and Yield of Fisheries Production in Nigeria. *International Journal of Research and Innovation in Social Science (IJRISS)*, *IV*(Vi), 621–632.

Phang, S., March, A., Touron-Gardic, G., Deane, K., & Failler, P. (2023). A review of the blue economy, potential, and opportunities in seven Caribbean nations pre-COVID-19. *ICES*

Journal of Marine Science, *November 2022*, 2233–2243. https://doi.org/10.1093/icesjms/fsac230

Raeskyesa, D. G. S., Suryandaru, R. A., & Kadarusman, Y. B. (2020). Analysis on Growth Pattem and Economic Sectors in Bali Province. *Jurnal Ilmu Manajemen & Ekonomika*, *11*(2), 45. https://doi.org/10.35384/jime.v11i2.141

Resa, M., Sabir, P., Oleo, U. H., Maritim, N., Maritim, S., & Lanka, S. (2016). Analisis potensi maritim indonesia. *[1] Sabir MRP, Mokodompit EA. Analisis Potensi Maritim Indonesia. Epub Ahead of Print 15 July 2023. 10.31219/Osf.Io/Dnrt3.*, 1–9.

Ricardo, D. (1821). On The Principles of Political Economy and Taxation. In *History of Economic Thought Books: Vol. third edit.* http://socserv2.socsci.mcmaster.ca/~econ/ugcm/3ll3/michels/polipart.pdf

Rizal, A., Nurruhwati, I., & Apriliani, I. M. (2020). Macroeconomic Factors Influencing the Fisheries Sector Investment. *The International Journal of Business Review (The Jobs Review)*, *3*(1), 1–10. https://doi.org/10.17509/tjr.v3i1.25040

Schaefer. (1957). *Some Considerations of Populatiorr Dynarnics and Economics*. *5*, 669–681.

Sulistijowati, R., Yuliati, L., & Komariyah, S. (2023). Analysis of investment and international trade on the Gross Domestic Product of the fisheries sector in Indonesia: Evidence from the Panel Vector Autoregressive (P-VAR) Model. *IOP Conference Series: Earth and Environmental Science*, *1207*(1). https://doi.org/10.1088/1755-1315/1207/1/012014

Tasya, I., Ginting, B., Dewi, J., Siahaan, S., Khris, Y., & Saragih, C. (2025). *Pengaruh Inflasi Terhadap Pertumbuhan Ekonomi Indonesia Pada Tahun 2016-2020*. *7*(2), 58–62.

Ussa'diyah, N., & Nofrian, F. (2023). Jurnal of Development Economic and Digitalization. *Jurnal Of Development Economic And Digitalization*, *2*(1), 56–76.

Wicaksana, G. O., & Pracoyo, A. (2020). Analysis the Influence of ROE, DER, Inflation and Exchange Rate on LQ45 Company Price 2013-2017 Period. *Jurnal Ilmu Manajemen & Ekonomika*, *11*(2), 81. https://doi.org/10.35384/jime.v11i2.145