



VECM Analysis of Islamic Blue Banking Fisheries Linkages in South Sulawesi

A.Vira Yulianti¹, A.Syathir Sofyan², Ayu Ruqayyah Yunus³

^{1,2,3}Universitas Islam Negeri Alauddin Makassar

E-mail: andivira55@gmail.com¹, a.syathir@uin-alauddin.ac.id²,
ayu.ruqayyahy@uin-alauddin.ac.id³

ABSTRAK- Sektor perikanan memiliki peran strategis dalam perekonomian Indonesia. Namun, akses terhadap pembiayaan formal, khususnya pembiayaan yang sesuai dengan prinsip syariah (Islam), masih relatif terbatas. Penelitian ini bertujuan untuk menganalisis pengaruh Dana Pihak Ketiga (DPK), Pembiayaan Syariah untuk Sektor Perikanan, dan *Non-Performing Finance* (NPF) terhadap kesejahteraan nelayan pembudidaya ikan di Sulawesi Selatan, yang diukur melalui Nilai Tukar Nelayan Pembudidaya Ikan (NTNP). Penelitian ini menggunakan pendekatan kuantitatif dengan menerapkan metode *Vector Error Correction Model* (VECM) untuk menguji hubungan jangka panjang dan jangka pendek antarvariabel. Analisis menggunakan data deret waktu bulanan yang mencakup periode Januari 2017 hingga Juli 2024, yang diperoleh dari Otoritas Jasa Keuangan (OJK) dan Badan Pusat Statistik (BPS). Hasil penelitian menunjukkan bahwa NPF berpengaruh signifikan terhadap NTNP, baik dalam jangka panjang maupun jangka pendek. DPK ditemukan memiliki pengaruh signifikan dalam jangka panjang, sedangkan pembiayaan syariah hanya berpengaruh signifikan dalam jangka pendek. Temuan ini menunjukkan bahwa variabel *Islamic Blue Banking* lebih relevan dalam memengaruhi NTNP dalam jangka panjang, sementara hubungan jangka pendek antarvariabel belum menunjukkan keterkaitan statistik yang kuat.

Kata kunci: *Islamic Blue Banking; Kesejahteraan Perikanan; VECM; NTNP; Sulawesi Selatan*

ABSTRACT- The fisheries sector plays a strategic role in the Indonesian economy; however, access to formal financing, particularly Sharia-compliant (Islamic) financing, remains relatively limited. This study aims to analyze the influence of Third Party Funds (DPK), Sharia Financing for the Fisheries Sector, and Non-Performing Finance (NPF) on the welfare of fish-farming fishermen in South Sulawesi, as measured by the Fish-Farming Fishermen's Terms of Trade (NTNP). This research adopts a quantitative approach by applying the *Vector Error Correction Model* (VECM) to test the long-run and short-run relationships among the variables. The analysis utilizes monthly time series data covering the period from January 2017 to July 2024, obtained from the Financial Services Authority (OJK) and the Central Statistics Agency (BPS). The results indicate that NPF has a significant effect on NTNP in both the long run and the short run. DPK is found to have a significant influence in the long run, whereas Sharia financing is only significantly influential in the short run. These findings suggest that the *Islamic Blue Banking* variables

are more relevant in affecting NTNP in the long term, while the short-run relationship among the variables has not yet demonstrated a strong statistical linkage.

Keywords: *Islamic Blue Banking; Fishery Welfare; VECM; NTNP; South Sulawesi*

INTRODUCTION

Indonesia is recognized as an archipelago country, boasting 17,058 islands, a coastline of 99,123 km, and a marine area of approximately 5.8 million (Ramadhan & Violita, 2024). This geographical condition positions Indonesia's marine potential as a key factor supporting the national economy, particularly through the fisheries sector. This potential is evidenced by data from Central Statistics Agency which recorded that the total catch by local fishermen across Indonesia reached 7,164,302 tons in 2019 (BPS, 2024).

However, this substantial potential is not adequately supported by the financial sector to develop an industry capable of boosting the GDP. This is substantiated by the Sharia Banking Statistics for March 2020, which indicated that Sharia Commercial Banks (BUS) and Sharia Business Units (UUS) only channeled IDR \$1.409\$ billion in financing to this sector (Chandra Ramadhan et al., 2022). As a sector with a crucial role in the national economy, the potential of the fisheries sector has not been optimally utilized to enhance the welfare of the community, especially fishermen. Research by (Zebua et al., 2017) suggests that the low welfare level of coastal communities is influenced by five major factors. low productivity levels, traditional fishing methods, poor financial management, difficulty accessing capital, and reliance on rudimentary technology.

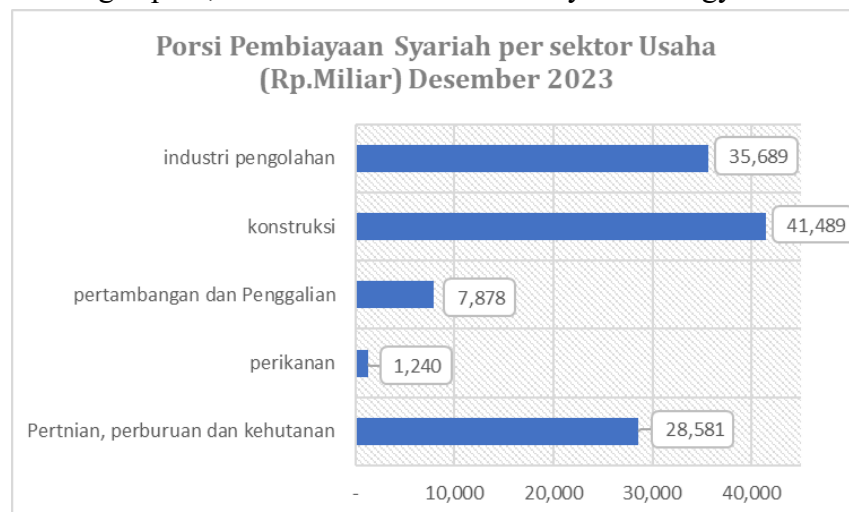


Figure 1. Sharia Financing Allocation

Source: Islamic Banking Statistics December 2023 (processed data)

The comparative distribution of Sharia financing across business sectors (Figure 1.1) highlights specific sector priorities. The construction sector received the highest allocation at IDR \$41.489\$ billion, followed by the processing industry sector at IDR \$35.589\$ billion. In contrast, the fisheries sector received the lowest amount of financing, valued at

<http://journal.uin-alauddin.ac.id/index.php/attawazun/index>

Publisher: Fakultas Ekonomi dan Bisnis Islam UIN lauddin Makassar

only IDR \$1.240\$ billion, indicating that the sector requires greater attention to increase its contribution.

This situation continues to create challenges for fishermen, as the main obstacle is the limited capacity of fishing households to expand their businesses because they rely solely on personal capital (Ramadhan & Violita, 2024). The low level of bank financing in the fisheries sector is linked to bankability issues and the perception that fisheries are a high risk industry, which increases the potential for Non Performing Finance. To address this issue, alternative financing, particularly through sharia banking based on the real sector, is considered more suitable for supporting the fisheries industry (Laili & Tanjung, 2019). Therefore, a financing model that can encourage fisheries entrepreneurs to increase their production is necessary (Raihan & Rosyadi, 2020).

Optimizing the marine economy requires well designed financial support schemes (Nøstbakken et al., 2011). In this regard, Islamic Blue Finance can serve as a strategic alternative grounded in Islamic financial principles. Islamic finance is distinguished by its approach to asset management, funding, and corporate governance, all of which are conducted in accordance with Islamic law (Faizi et al, 2024). The concept of Islamic Blue Finance originates from the broader philosophy of Islamic finance and is developed based on the principles of Maqasid al-Sharia, while also aligning with the Sustainable Development Goals (SDGs) (Sofyan et al., 2024) . In practice, this concept can be implemented in the marine sector through various instruments, including the Islamic capital market, Islamic social finance, Islamic Blue Banking, and blue infrastructure financing.

Islamic Blue Banking is a Sharia-based banking model designed to support the financing of sustainable marine economic sectors, including fisheries, maritime transport, and coastal conservation. This approach integrates Islamic financial principles, such as justice, transparency, and the prohibition of *riba*, with broader sustainable development goals, particularly the preservation of the marine environment and the empowerment of coastal communities (Bukhari et al., 2020).

The Islamic Blue Banking variables analyzed in this study include Third Party Funds (DPK), Sharia financing for the fisheries sector, and Non-Performing Finance (NPF). DPK represents the main source of funds for Sharia banks, which are used to channel financing to various sectors, including fisheries. Sharia financing contributes to improving the productivity of the fisheries sector, while NPF indicates the level of financing risk. The relationship among these variables is important to examine, as the level of DPK affects the bank's financing capacity, while the quality of financing influences sectoral productivity and financial stability. A high level of NPF may also indicate weaknesses in risk management. Therefore, examining these relationships is expected to provide a clearer picture of the effectiveness of Islamic Blue Banking in supporting the fisheries sector, particularly in regions with strong potential such as South Sulawesi.

The Islamic Blue Banking variables analyzed in this study include Third Party Funds (DPK), Sharia Financing for the Fisheries Sector, and NonPerforming Finance. DPK represents the main source of funds for Sharia banks, which are used to channel financing

<http://journal.uin-alauddin.ac.id/index.php/attawazun/index>

Publisher: Fakultas Ekonomi dan Bisnis Islam UIN lauddin Makassar

to various sectors, including fisheries. Sharia financing contributes to improving the productivity of the fisheries sector, while NPF indicates the level of financing risk. The relationship among these variables is important to examine, as the level of DPK affects the bank's financing capacity, while the quality of financing influences sectoral productivity and financial stability. A high level of NPF may also indicate weaknesses in risk management. Therefore, examining these relationships is expected to provide a clearer picture of the effectiveness of Islamic Blue Banking in supporting the fisheries sector, particularly in regions with strong potential such as South Sulawesi.

The fisheries sector in South Sulawesi has experienced capital intensification, contributing to national fisheries growth while also transforming small scale production system (Zulaika et al., 2024). However, it's contribution to the Regional Gross Domestic Product (PDRB) has continued to decline, indicating a relatively limited role in regional economic development (Zulaika et al., 2024).

This condition highlights the importance of examining the welfare of fishermen, particularly in the aquaculture and capture fisheries sub sectors. One commonly used indicator is the Fish Farming Fishermen's Terms of Trade (NTNP), which serves as a proxy for fishermen's welfare. NTNP is derived from a combination of the Fishermen's Terms of Trade (NTN) and the Fish Farmers' Terms of Trade (NTPi), and it reflects the purchasing power of fishermen in meeting both consumption needs and production inputs.

LITERATURE REVIEW

The concept of the blue economy has been widely discussed as a framework for balancing marine resource utilization with sustainability and coastal welfare. Studies in this area consistently show that although the fisheries sector contributes significantly to economic growth, its impact on fishermen's welfare is often limited due to structural inefficiencies in value chains, including unequal bargaining power and high production costs (Pauli, 2010). This indicates that economic expansion in marine sectors does not automatically translate into improved welfare outcomes.

In addition, literature on fisheries economics highlights that fishermen's income is highly dependent on access to productive capital. However, small-scale fishermen often face financial exclusion due to limited collateral, high risk perception, and asymmetric information in credit market (Béné et al, 2016). These constraints reduce their ability to invest in better fishing technology and operational inputs, which ultimately affects productivity and income stability.

From the financial intermediation perspective, banking risk particularly Non Performing Financing (NPF) plays a crucial role in determining credit allocation to the real sector. Higher levels of credit risk tend to reduce banks' willingness to extend financing, especially to high-risk sectors such as fisheries (Louzis et al, 2012). This mechanism suggests that financial sector stability is directly linked to productive sector performance through credit availability.

Within the Islamic finance literature, Islamic Blue Finance has been proposed as an alternative financing model that integrates sustainability principles with Sharia-compliant

<http://journal.uin-alauddin.ac.id/index.php/attawazun/index>

Publisher: Fakultas Ekonomi dan Bisnis Islam UIN lauddin Makassar

financial mechanisms. Islamic finance emphasizes risk-sharing, asset-backed financing, and ethical investment principles aligned with *Maqasid al-Sharia*, making it theoretically suitable for supporting sustainable marine (Mirakhor, 2014). However, empirical studies indicate that the short-term impact of Islamic finance on welfare indicators remains limited, while long-term relationships are more evident but still underexplored (Beck, 2013).

Empirical findings from emerging regions, including Indonesia, suggest that Islamic blue finance has not yet demonstrated a strong direct effect on fishermen's welfare indicators such as Terms of Trade (NTNP) in the short run. Nevertheless, financial inclusion and credit distribution remain important channels that may influence long-term welfare improvements in coastal communities(OJK, 2022).

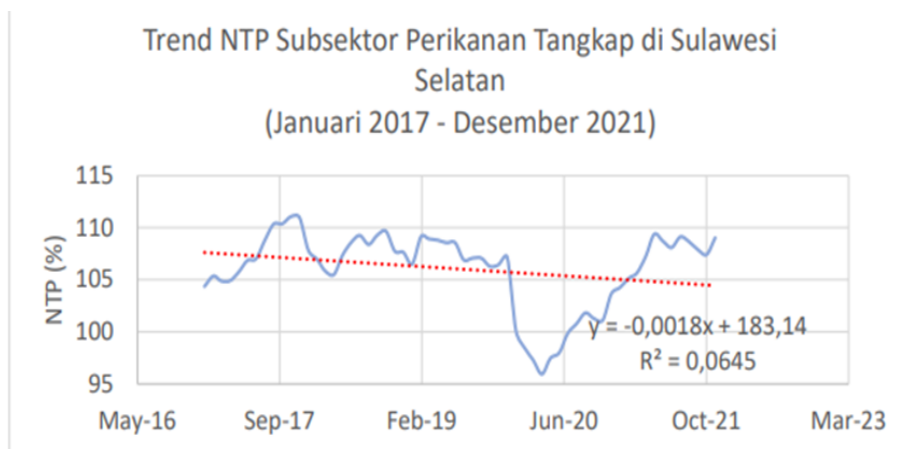


Figure 2. Trend Graph of the Fishery Capture Sub-sector's Terms of Trade (NTP)

Source: (Firmansyah & Amran Asriadi, 2022)

Analysis of the trend in the Fishery Capture Sub-sector's Terms of Trade (NTP) in South Sulawesi (Figure 1.2) shows a declining trend from January 2016 to December 2021. This decline suggests that the welfare level of fishermen (farmers) in South Sulawesi, as measured by the Terms of Trade, is categorized as not yet prosperous. The NTP decline is linked to the high operational costs in managing capture fisheries (labor, facilities, infrastructure, and fuel), meaning the prices received by fishermen do not align with the revenue obtained from fishing activities (Firmansyah & Amran Asriadi, 2022).

This situation is compounded by limited human resources, lack of capital, exploitative fish trade networks for producers, and the negative impact of fisheries modernization leading to resource overexploitation. Furthermore, financing disbursement to the fisheries sector is influenced by internal banking factors, such as high NPF. High NPF can lead to a reduction in Sharia bank funding or financing, including for fisheries. Consequently, if fishermen lack capital due to limited financing, their productivity and income decrease, potentially lowering the fishermen's Terms of Trade. This is supported by research showing that while Islamic blue finance may not contribute to NTNP or the maritime economy in the short run in the Sulampua region, it has a significant long-run relationship among variables

METHODE

This study employs secondary monthly time series data covering the period from January 2017 to July 2024. The dataset consists of Sharia banking indicators, namely Third Party Funds (DPK), Sharia Financing for the fisheries sector, and Non-Performing Financing (NPF), as well as the Fish-Farming Fishermen's Terms of Trade (NTNP) in South Sulawesi. The data were obtained from www.ojk.go.id and www.bps.go.id.

The selection of variables is based on theoretical and empirical considerations. DPK represents the main source of banking liquidity that determines the capacity of Islamic banks to extend financing to productive sectors. Sharia financing is included as a direct channel of capital distribution to the fisheries sector, while NPF is used to capture credit risk and banking sector stability. NTNP is employed as a proxy for fishermen's welfare, reflecting the purchasing power of fishing households. These variables are expected to capture the financial transmission mechanism from banking performance to sectoral welfare.

To analyze both short-run and long-run dynamics among the variables, this study applies the Vector Error Correction Model (VECM), which is derived from the Vector Autoregressive (VAR) framework and is appropriate for non-stationary time series data that are cointegrated. The long-run specification of the model is expressed as:

$$NTNP_t = \beta_0 + \beta_1 DPK_t + \beta_2 FIN_t + \beta_3 NPF_t + \varepsilon_t$$

Meanwhile, the short-run dynamics are specified in the VECM form as:

$$\Delta NTNP_t = \alpha_0 + \Sigma \alpha_1 \Delta DPK_{t-1} + \Sigma \alpha_2 \Delta FIN_{t-1} + \Sigma \alpha_3 \Delta NPF_{t-1} + \lambda ECM_{t-1} + \varepsilon_t$$

where ECM represents the error correction term capturing deviations from long-run equilibrium.

RESULT AND DISCUSSION***Stationarity Test***

The condition of data stationarity is crucial and must be satisfied as it enables more effective and accurate predictions by statistical models. Data are considered stationary, meaning they do not contain a unit root, if the t-statistic is smaller than the MacKinnon critical value at 5% or if the p-value is less than the 5% significance level. The following section presents the results of the Phillips-Perron test performed on the observed data at the first difference level.

Table 1. Stationarity Test Results

Variabel	Statistik t	Nilai Kritis 5%	p-value	Keputusan
Pembiayaan	-108,74	-2,86	0,01	Stationary at First Difference
NPF	-108,16	-2,86	0,01	Stationary at First Difference

DPK	-109,90	-2,86	0,01	Stationary at First Difference
NTNP	-112,84	-2,86	0,01	Stationary at First Difference

Source: Processed data (R studio) year 2025

Based on the testing performed, it is evident that all four variables exhibit a t-statistic value smaller than the 5% critical value and a p-value smaller than the 5% significance level. Consequently, the decision is made that the data do not contain a unit root. Following the successful declaration of stationarity for all the Financing, NPF, DPK, and NTNP data, the dataset can proceed to the next stage of testing

Optimum Lag Length Determination

The determination of the optimum lag length is intended to ascertain the duration of the period during which a variable is influenced by its own past values, as well as by other endogenous variables. The optimal lag length can be determined by examining several criteria, including the Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC), and Hanna-Quinn Information Criterion (HQ). The results of the optimal lag length test are presented in the following table:

Table 2. Optimum Lag Length Results

Lag ke-	AIC	HQ	SC	FPE
1	142.6989	143.0435	143.5551	9.42E+61
2	142.9038	143.5355	144.4735	1.16E+62
3	142.8193	144.7381	145.1024	1.08E+62
4	143.0604	144.2663	146.0569	1.42E+62

Source: Processed data (R studio) year 2025

Based on the lag length testing using four statistical criteria, all criteria consistently indicate that Lag 1 is the most optimal lag. This conclusion is supported by the lowest values observed across all indicators (FPE, AIC, SC, and HQ) at Lag 1 compared to all other tested lags.

Cointegration Test

The Cointegration Test is performed to determine the long-run relationship among variables that have satisfied the integration requirements specifically, that all variables are stationary at the first difference. This study employs the Johansen Cointegration Test. If the calculated trace statistic value is greater than the 0.05 critical value, the data are considered cointegrated (indicating a long-run relationship) otherwise, they are not. The results of the Johansen Cointegration Test are presented below:

Table 3. Johansen Cointegration Test Results

Hipotesis	Trace Statistic	Nilai Kritis 5%	P-Value (indikatif)	Keputusan
$r = 0$	141.82	70.6	< 0.05	There is cointegration

$r \leq 1$	80.9	48.28	< 0.05	There is cointegration
$r \leq 2$	39.21	31.52	< 0.05	There is cointegration
$r \leq 3$	12.83	17.95	> 0.05	There is no cointegration
$r \leq 4$	2.75	8.18	> 0.05	There is no cointegration

Source: Processed data (R studio) year 2025

Based on the results of the Johansen Cointegration Test, which compares the trace statistic with the critical value, it is indicated that there are three significant cointegrating relationships among the tested variables. However, at hypotheses $r \leq 3$ and $r \leq 4$, the trace statistic value is smaller than the critical value. This suggests that no more than three cointegrating relationships exist within the system.

Vector Error Correction Model Estimation (VECM)

First, the VECM estimation results for the Financing variable were obtained using a lag of p-1.

Table 4. VECM Estimation Results for Financing

Variabel	Koefisien	Std. Error	t-Value	p-Value	Signifikansi
ect1	0.001051	0.002475	0.425	0.672	Not Significant
constant	2.52034	5.996083	0.42	0.675	Not Significant
Pembiayaan.dl1	-0.454526	0.104789	-4.338	0.00004	Significant (*)**
NPF.dl1	-0.010046	0.034867	-0.288	0.774	Not Significant
DPK.dl1	0.01078	0.081384	0.132	0.895	Not Significant
NTNP.dl1	-2.119602	4.907105	-0.432	0.667	Not Significant
Covid.dl1	-0.036335	0.944828	-0.038	0.969	Not Significant

Source: Processed data (R studio) year 2025

The VECM estimation results indicate that the Error Correction Term (ECT) is positive but statistically insignificant (p-value = 0.672), implying the absence of a long-run adjustment mechanism. Within the Vector Error Correction Model framework, this suggests weak long-term integration, where short-term disequilibria are not corrected over time. In the short run, lagged financing has a negative and significant effect (-0.4545; $p < 0.01$), indicating that previous increases in financing may not translate into productive outcomes, possibly due to inefficiencies or mismatch with the fisheries sector characteristics.

This finding contrasts (Abduh & Azmi Omar, 2012). who find a positive contribution of financing to the real sector. However, it supports (Beck, 2012). who argues that financing effectiveness depends on institutional quality. In Indonesia, (BI, 2020) also highlights that sector-specific risks can reduce the effectiveness of financing.

Second, the VECM estimation equation based on the NPF variable is as follows:

Table 5. VECM Estimation Results Variable NPF

Variabel	Koefisien	Std. Error	t-Value	p-Value	Signifikansi
ect1	0.0611	0.0075	8.124	3.96E-12	Significant (***)
constant	148.1106	18.2379	8.121	4.02E-12	Significant (***)
Pembiayaan.dl1	-0.0708	0.3187	-0.222	0.8247	Not Significant
NPF.dl1	-1.1901	0.1061	-11.222	< 2e-16	Significant (***)
DPK.dl1	0.962	0.2475	3.886	0.0002	Significant (***)
NTNP.dl1	-16.3556	14.9256	-1.096	0.2764	Not Significant
Covid.dl1	1.636	2.8738	0.569	0.5707	Not Significant

Source: Processed data (R studio) year 2025

The VECM results indicate that the Error Correction Term (ECT) is positive and statistically significant (0.0611; $p < 0.01$), confirming the existence of a long-run adjustment mechanism toward equilibrium within the Vector Error Correction Model framework. This suggests that deviations from long-run equilibrium are corrected over time, with a moderate adjustment speed of 6.11% per period. In the short run, NPF is significantly influenced by its own lag with a negative coefficient (-1.1901; $p < 0.01$), indicating a mean-reverting behavior in financing risk. Meanwhile, DPK has a positive and significant effect on NPF (0.962; $p < 0.01$), implying that an increase in DPK may be associated with higher financing risk, likely due to expanded financing activities that are not fully supported by strong risk management practices.

These findings are consistent with recent empirical studies in Indonesia. (Setiawan et al., 2024) find that NPF dynamics in Islamic banking are primarily driven by internal banking conditions and risk management quality rather than external expansion factors alone. Similarly, (Mubarok et al., 2026) show that rapid financial expansion without adequate control increases credit risk in Islamic banks. However, the positive relationship between DPK and NPF contrasts with (Wijayanti & Suprayitno, 2025), who argue that deposit growth can improve financing performance when accompanied by effective intermediation efficiency. This difference suggests that in sector-specific contexts such as fisheries financing, the effectiveness of fund mobilization is highly dependent on risk governance and borrower characteristics.

Third, the VECM estimation equation based on the DPK variable is as follows:

Table 6. VECM Estimation Results Variable DPK

Variabel	Koefisien	Std. Error	t-Value	p-Value	Signifikansi
ect1	0.0056	0.003	1.887	0.0627	Significant (***)
constant	13.5686	7.1967	1.885	0.0629	Significant (***)
Pembiayaan.dl1	-0.0954	0.1258	-0.758	0.4505	Not Significant
NPF.dl1	-0.1038	0.0418	-2.481	0.0151	Significant (***)
DPK.dl1	-0.4399	0.0977	-4.504	2.19E-05	Significant (***)
NTNP.dl1	-0.785	5.8897	-0.133	0.8943	Not Significant

Covid.dl1	-0.4711	1.134	-0.415	0.6789	Not Significant
------------------	---------	-------	--------	--------	-----------------

Source: Processed data (R studio) year 2025

The VECM results indicate that the Error Correction Term (ECT) is positive and weakly significant (0.0056; $p = 0.0627$), suggesting a slow long-run adjustment process toward equilibrium within the Vector Error Correction Model framework. This implies that deviations from equilibrium are corrected at a very low speed (0.56% per period), indicating limited responsiveness of DPK to disequilibria in the system. In the short run, NPF has a negative and significant effect on DPK (-0.1038; $p = 0.0151$), indicating that an increase in financing risk reduces deposit mobilization, likely due to declining public confidence in banking stability. Additionally, DPK shows a negative and highly significant own-lag effect (-0.4399; $p < 0.01$), suggesting adjustment dynamics in liquidity behavior over time.

These findings are consistent with recent studies in Indonesian Islamic banking. (Fitri & Sriyana, 2023) show that banking stability and depositor behavior are highly sensitive to financing risk (NPF). However, the weak adjustment speed of DPK contrasts with (Wijayanti & Suprayitno, 2025) who argue that deposit growth in Indonesian Islamic banking can be relatively stable when supported by strong financial intermediation efficiency. This suggests that in sector-specific financing such as fisheries, depositor response is more cautious due to higher perceived risk and uncertainty.

Next, fourth, the VECM equation based on the NTNP variable is as follows:

Table 7. VECM Estimation Results Variable NTNP

Variabel	Koefisien	Std. Error	t-Value	p-Value	Signifikansi
ect1	0.000091	0.0000535	1.697	0.0935	Significant (***)
constant	0.219	0.1297	1.689	0.0951	Significant (***)
Pembiayaan.dl1	0.00293	0.00227	1.291	0.2003	Not Significant
NPF.dl1	-0.00141	0.000754	-1.87	0.0651	Significant (***)
DPK.dl1	0.0003	0.00176	0.172	0.8637	Not Significant
NTNP.dl1	-0.2883	0.1061	-2.716	0.0081	Significant (***)
Covid.dl1	-0.00856	0.02044	-0.419	0.6766	Not Significant

Source: Processed data (R studio) year 2025

The VECM results indicate that the Error Correction Term (ECT) is positive and weakly significant (0.000091; $p = 0.0935$), suggesting the existence of a long-run adjustment mechanism within the Vector Error Correction Model framework, although the speed of adjustment is extremely slow (approximately 0.0091% per period). This implies that deviations in the fisheries welfare indicator (NTNP) are corrected only marginally over time, reflecting low responsiveness of welfare adjustment to systemic disequilibria. In the short run, NPF has a negative and marginally significant effect on NTNP (-0.00141; $p = 0.0651$), indicating that an increase in financing risk tends to reduce fishermen's terms of trade. This suggests that higher credit risk may weaken income stability and productivity

<http://journal.uin-alauddin.ac.id/index.php/attawazun/index>

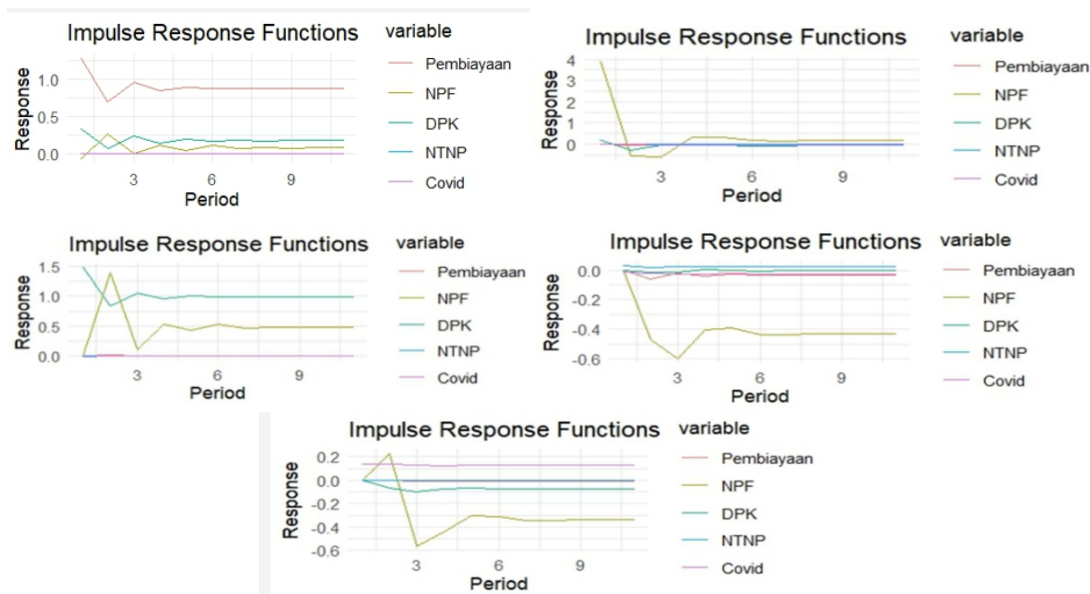
Publisher: Fakultas Ekonomi dan Bisnis Islam UIN lauddin Makassar

in the fisheries sector. Meanwhile, lagged NTNP is negative and significant, indicating persistence and mean-reverting behavior in welfare dynamics

These findings are consistent with recent empirical studies in Indonesia (Fitri & Sriyana, 2023) that financial instability and rising NPF negatively affect real sector welfare through reduced access to productive financing. Similarly (Salim et al., 2024) find that credit risk has a measurable impact on sectoral economic performance, particularly in vulnerable sectors such as agriculture and fisheries. However, the weak magnitude of the NPF effect in this study contrasts with (Mubarok et al., 2026), who report stronger macro-financial transmission effects on sectoral output. This difference suggests that in the fisheries sector, the impact of financial shocks on welfare is dampened, possibly due to informal financing mechanisms and adaptive household strategies.

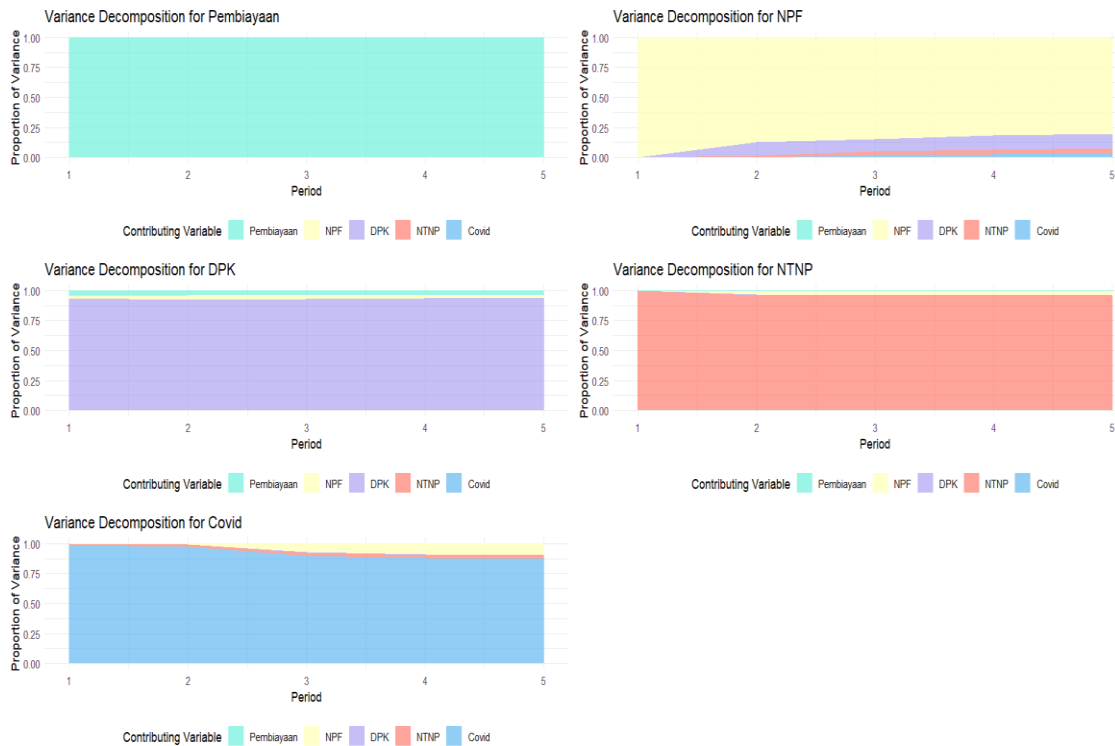
Impulse Response Function (IRF)

The Impulse Response Function (IRF) is used to assess the duration of the effects of shocks in one endogenous variable on other endogenous variables until the influence dissipates. Below are the analysis results of the response of Financing, NPF, DPK, NTNP, and COVID to shocks over 10 periods.



Source: Processed data (R studio) year 2025

The Impulse Response Function (IRF) analysis over 10 periods showed that DPK demonstrated positive and stable responses to shocks, highlighting their crucial role as primary drivers in the fisheries sector. Conversely, NPF reacted negatively and fluctuated, particularly early on, suggesting that increased NPF hinders the system's effectiveness. NTNP showed a small, gradual positive response. Notably, the COVID-19 variable had a very minor, short-lived impact, indicating its temporary nature without significant long-term effects on system stability.

Variance Decomposition

Source: Processed data (R studio) year 2025

Based on the results of the Variance Decomposition analysis over five periods, it can be concluded that most variables in this model are more influenced by themselves than by other variables. The Financing variable is dominated almost entirely by its own contribution, showing a high internal dependence. A similar pattern occurs with DPK and NTNP, where more than 90% of their variation originates from the variable itself, reflecting stability and dominant internal influence. Meanwhile, NPF shows a more open contribution to other variables, being primarily influenced by DPK and NTNP gradually. As for the COVID variable, it was initially dominated by its own contribution but began to show influence from the NPF and DPK variables over time. Overall, these results indicate that most variables tend to have a strong determination towards themselves, with the exception of NPF and COVID which are more responsive to cross-variable interactions within the system.

CONCLUSION

Based on the VECM estimation results, a long-term relationship was found between the Islamic Blue Banking variables (Financing, DPK, and NPF) and the Fishermen/Fish Cultivator's NTNP in South Sulawesi. The Impulse Response Function results indicate that financing provides a positive and stable response to shocks, while NPF responds negatively, suggesting that increased financing risk can hinder fishermen's welfare. DPK shows a moderate positive influence, and NTNP responds slowly and gradually to shocks. Meanwhile, the COVID variable shows a small and quickly subsiding impact.

<http://journal.uin-alauddin.ac.id/index.php/attawazun/index>

Publisher: Fakultas Ekonomi dan Bisnis Islam UIN lauddin Makassar

The Variance Decomposition results confirm that most variables are more influenced by themselves, showing strong internal stability, with the exception of NPF and COVID, which are gradually influenced by other variables in the system. These findings affirm that the effectiveness of Islamic Blue Banking, particularly in terms of providing financing and implementing stringent risk management practices, plays a crucial role in improving fishermen's welfare in South Sulawesi.

REFERENCES

- Abduh, M., & Azmi Omar, M. (2012). Islamic banking and economic growth: the Indonesian experience. *International Journal of Islamic and Middle Eastern Finance and Management*, 5(1), 35–47. <https://doi.org/10.1108/17538391211216811>
- Beck, T., Demirgüç-Kunt, A., & Merrouche, O. (2013). Islamic vs. conventional banking: Business model, efficiency and stability. *Journal of Banking & Finance*, 37(2), 433–447. <https://doi.org/https://doi.org/10.1016/j.jbankfin.2012.09.016>
- Beck, T. (2012). *Finance and growth – lessons from the literature and the recent crisis July 2, 2012*. <https://api.semanticscholar.org/CorpusID:15989185>
- Béné, C., Arthur, R., Norbury, H., Allison, E. H., Beveridge, M., Bush, S., Campling, L., Leschen, W., Little, D., Squires, D., Thilsted, S. H., Troell, M., & Williams, M. (2016). Contribution of fisheries and aquaculture to food security and poverty reduction: Assessing the current evidence. *World Development*, (79), 177–196. <https://doi.org/https://doi.org/10.1016/j.worlddev.2015.11.007>
- BPS. (2024). *Produksi Perikanan Tangkap Menurut Provinsi dan Jenis Penangkapan, 2000-2020*. Badan Pusat Statistik. <https://www.bps.go.id/id/statistics-table/1/MTcwNSMx/produksi-perikanan-tangkap-menurut-provinsi-dan-jenis-penangkapan--2000-2020.html>
- Bukhari, S. A. A., Hashim, F., & Amran, A. (2020). Green Banking: a road map for adoption. *International Journal of Ethics and Systems*, 36(3), 371–385.
- Chandra Ramadhan, F., Sirri, A., & Riez dita, A. (2022). Konsepsi Model Pembiayaan Perikanan Dan Kelautan Sebagai Alternatif Peningkata Ekonomi Kelautan Indonesia. *Journal Islamic Banking*, 2(2), 55–61. <https://doi.org/10.51675/jib.v2i2.385>
- Faizi, F., Hudaefi, F. A., & Bukhari, H. (2024). (2024). Exploring the potential of Islamic Blue Finance for sustainable ocean economy in Indonesia. *Journal of Islamic Monetary Economics and Finance*.
- Firmansyah, & Amran Asriadi, A. (2022). Trend Nilai Tukar Petani Perikanan Budidaya Dan Perikanan Tangkap Di Provinsi Sulawesi Selatan. *Jurnal AGRIBIS*, 15(2), 2045–2053. <https://doi.org/10.36085/agribis.v15i2.3569>
- Fitri, S. D., & Sriyana, J. (2023). Analisis Faktor-Faktor yang Memengaruhi Tingkat Non-Performing Financing (NPF) di Bank Umum Syariah Indonesia Periode 2015-2021. *Jurnal Informatika Ekonomi Bisnis*, 232–239.
- Indonesia, B. (2020). *Kajian stabilitas sistem keuangan Indonesia*.
- Kuangan, O. J. (2022). Laporan perkembangan keuangan syariah Indonesia. In Otoritas Jasa Keuangan (Ed.), *Laporan perkembangan keuangan syariah Indonesia*.
- Laili, N., & Tanjung, H. (2019). Analysis of Factors Affecting Islamic Bank Financing for the Fisheries Sector in Indonesia. *ABDIMAS TALENTA: Jurnal Pengabdian Kepada Masyarakat*, 4(2), 568–583. <https://doi.org/10.32734/abdimastalenta.v4i2.4176>
- Louzis, D. P., Vouldis, A. T., & Metaxas, V. L. (2012). Macroeconomic and bank-specific

<http://journal.uin-alauddin.ac.id/index.php/attawazun/index>

Publisher: Fakultas Ekonomi dan Bisnis Islam UIN lauddin Makassar

- determinants of non-performing loans in Greece: A comparative study of mortgage, business and consumer loan portfolios. *Journal of Banking & Finance*, 36(4), 1012–1027. <https://doi.org/https://doi.org/10.1016/j.jbankfin.2011.10.012>
- Mubarok, F., Wibowo, M., Pradana, H. D., & Yaacob, Z. (2026). The Influence of Macroeconomic Shocks, Operational Efficiency, and Financing Risk: An Empirical Study of NPF in Indonesian Islamic Banks. *Falah: Jurnal Ekonomi Syariah*, 11(1), 22–42.
- Nøstbakken, L., Thébaud, O., & Sørensen, L.-C. (2011). Investment behaviour and capacity adjustment in fisheries: a survey of the literature. *Marine Resource Economics*, 26(2), 95–117.
- Pauli, G. A. (2010). *The blue economy: 10 years, 100 innovations, 100 million jobs*. Paradigm publications.
- Raihan, M. A., & Rosyadi, I. (2020). Analisis Faktor-Faktor Yang Mempengaruhi Pembiayaan Perbankan Syariah Sektor Pertanian Di Indonesia Tahun 2015-2017. *Repositori UMS*, 2(6). [http://eprints.ums.ac.id/id/eprint/86225%0Ahttp://eprints.ums.ac.id/86225/11/NAS KAH PUBLIKASI ku baru.pdf](http://eprints.ums.ac.id/id/eprint/86225%0Ahttp://eprints.ums.ac.id/86225/11/NAS%20KAH%20PUBLIKASI%20ku%20baru.pdf)
- Ramadhan, R., & Violita, E. S. (2024). Capturing the Potential Implementation of Islamic Financing with Supply Chain Finance Model Fisheries Sector in Belitung. *Falah: Jurnal Ekonomi Syariah*, 9(1), 43–57. <https://doi.org/10.22219/jes.v9i1.31601>
- Salim, A., Zakiyah, A. E., Nabilah, R. S., Kirana, M. T., & Dewanti, C. P. (2024). The Influence of Macroeconomic Variables on Non-Performing Finance in Sharia Commercial Banks. *Journal of Islamic Economics and Philanthropy*. <https://api.semanticscholar.org/CorpusID:273002961>
- Setiawan, C., Purwanto, P., & Cakranegara, P. A. (2024). The Impact of Internal and External Variables on Non-performing Financing (NPF) of Islamic Banks in Indonesia. *JBTI: Jurnal Bisnis: Teori Dan Implementasi*, 15(2), 178–194.
- Sofyan, A. S., Sofyan, S., Yulianti, A. V., & Rusanti, E. (2024). *Unlocking Maritime Economic Potential Through Islamic Blue Finance : VECM and ANP Approaches*.
- Wijayanti, U., & Suprayitno, E. (2025). Unraveling the Performance of Islamic Banking: An Analysis of Determinant Factors of Islamic Commercial Banks' Financing 2018–2023. *Journal of Islamic Economic Laws*, 8(02), 101–127.
- Zamir, I., & Mirakhor, A. (2014). *Islamic finance: Principles and practice*. Palgrave Macmillan.
- Zebua, Y., Wildani, P. K., Lasefa, A., & Rahmad, R. (2017). Faktor Penyebab Rendahnya Tingkat Kesejahteraan Nelayan Pesisir Pantai Sri Mersing Desa Kuala Lama Kabupaten Serdang Bedagai Sumatera Utara. *Jurnal Geografi*, 9(1), 88–98.
- Zulaika, S., Harsono, I., Mahmudin, T., Yahya, A. S., & Sutanto, H. (2024). Pengaruh Kebijakan Pemerintah dan Kemitraan Bisnis dalam Pengelolaan Perikanan Berkelanjutan terhadap Kesejahteraan Nelayan dan Pertumbuhan Ekonomi di Sulawesi Selatan. *Jurnal Multidisiplin West Science*, 3(01), 41–55. <https://doi.org/10.58812/jmws.v3i01.944>