

Internal and External Factors Affecting Banking Profitability: Evidence from Dual Banking System in Indonesia

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Implementing the dual banking system in Indonesia offers options for customers to use banking services. Before selecting which service to use, customers should perceive each bank's advantages and disadvantages. It can be carried out by conducting a performance evaluation of each bank that generates high profitability measured by the Return on Assets (ROA) value. This study aims to perform internal and external factors analysis that affect bank profitability and to compare profitability between Islamic and Conventional banking in Indonesia using the Vector Error Correction Model (VECM) method. The result shows that variable Capital Adequacy Ratio (CAR) and Financing to Deposit Ratio (FDR) have a significant positive effect on Islamic Model in the long term, whereas policy rate and oil price (COP) hold a significant negative effect. In the Conventional Model, variable CAR, policy rate, and COP hold a significant positive effect, while the exchange rate shows a negative effect. FEVD results indicate that in Islamic Model, the diversity of banking profitability can be explained by various variables, indicating that Islamic banking is more engaged in the real sector than conventional banking.

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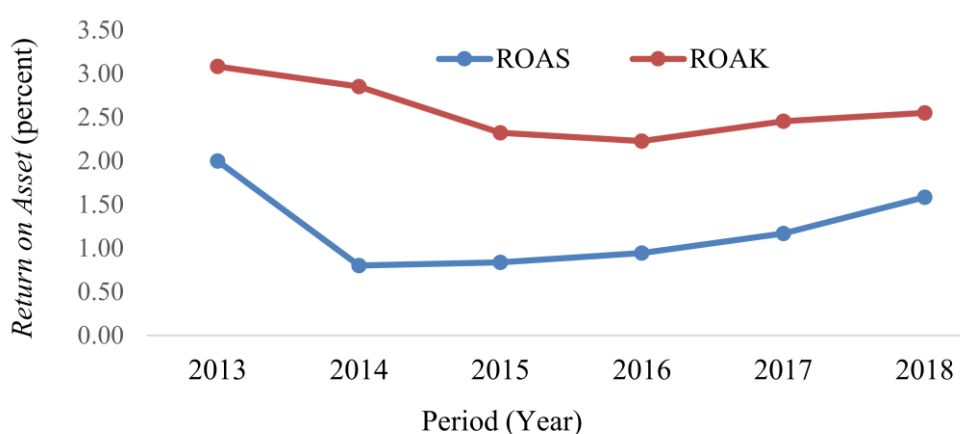
INTRODUCTION

Indonesia is a country that adheres to a dual banking system, where conventional and Islamic banking operates side by side. The development of Islamic banking began with Law Number 10 of 1998 concerning amendments to Law Number 7 of 1992. This regulation provides a more robust legal basis for ample opportunities to develop Islamic banking in Indonesia. The law regulations allow conventional banks to open sharia branches known as Unit Usaha Syariah (UUS). So, it can be said that after the enactment of Law Number 10 of 1998, commercial banks can simultaneously carry out two business activities, conventionally and based on sharia principles (Sudarsono, 2007).

The adoption of a dual banking system in Indonesia provides an option for customers to use banking services. Before using the two banks' services,

it is better if customers weigh the advantages and disadvantages of each bank. This is to ascertain whether the banking used is safe regarding capital and capabilities. According to Widokartiko et al. (2016), this can be realized by banking performance in generating high profitability.

Banking performance is a description of the financial condition and achievements achieved by the bank in its operations. The success of this performance can be seen in terms of the resulting bank profitability. According to Muhammad (2005), Return on Assets (ROA) is a method of assessment that can be used to measure the profitability or profit of a bank, namely the level of profit achieved by a bank with all total assets in the bank. Assofi and Hani (2017) state that using appropriate and efficient assets will positively affect profitability, and an increase in profitability will also positively affect the total assets owned by banks.



Source: Financial Services Authority (SPI and SPS) (2018), compiled

Figure 1 . Comparison of the development of ROAS and ROAK year 2013-2018

Figure 1 shows that both Islamic and conventional banking showed fluctuating ROA movements in 2013-2018. Based on the explanation above, the problem is that the nominal total assets owned by Islamic banking have continued to increase until now, as well as conventional banking. Total assets can be influenced by several factors, including banks' performance in generating profits or what is commonly referred to as profitability. In fact, with increasing total assets, the profitability of Islamic and conventional banking tends to fluctuate.

This study contributes to the existing literature on the empirical determinants of bank profitability on several grounds. First, although many previous studies have examined the profitability comparison between

Islamic and conventional banks, our research has a gap where our research not only looks at the determinants that affect profitability but also analyzes whether it is the opposite, namely the profitability that affects the determinant. Second, unlike most existing studies, for the determinants, we use not only the effects of bank-specific (internal) factors but also external factors like GDP, CPI, exchange rate, policy rate, and oil price may also affect the bank performance. Therefore, this research focuses on analyzing the internal and external factors that affect bank profitability and vice versa, as well as comparing profitability between Islamic and conventional banking in Indonesia using the Vector Error Correction Model (VECM) method.

LITERATURE REVIEW

The dual banking system is a system that adheres to two systems at once, namely Islamic and conventional banking, which are implemented by a country simultaneously. Each system is on its path but still under the same monetary authority, namely the monetary provisions enforced by Bank Indonesia (Hasanah and Achsani, 2015). A dual banking system has been adopted in Indonesia since 1992, when the first Islamic bank in Indonesia emerged, namely Bank Muamalat.

One of the performances of a company can be seen based on the level of profitability generated. According to Winarso (2014), a company's profitability shows the company's ability to generate profits during a specific period at certain levels of sales, assets, and share capital. The success of a company in generating profits can be seen from the profitability ratio. Return on Assets (ROA) is one of the indicators of profitability, where ROA is a measure of the income on assets of a bank. The greater the profitability ratio of a bank, the better the ability to obtain profits or profitability (Fahmi 2013).

Every company (banking) will try to improve performance by increasing its profitability. The financial performance of a bank can show the financial condition of the bank. Before conducting transactions in a bank, customers will naturally consider the performance of the banking system in order to know for sure that the selected bank is safe both in terms of capital and liquidity. One indicator that can be used in considering performance is profitability, which is reflected in ROA.

According to Muhammad (2005), one of the assessment methods that can be used to measure a bank's profitability rate is by looking at the ratio of Return on Assets (ROA). This ROA ratio can reflect the financial health of a bank. A high ROA ratio indicates that a bank has used the assets or banking assets optimally to make a profit. According to Bank Indonesia regulations, 1.5% is the best minimum standard for measuring ROA in Indonesian banks. The greater the ROA value of a bank, the greater the level of profit it will get. The greater the profit, the better the position of a bank in terms of asset use (Dendiwijaya 2005).

Profitability, proxied by ROA and macroeconomic conditions, is positively correlated with economic activity. If an economy is in a growth phase, it is advantageous to reduce financial pressure and increase financial distress. Rabaa and Younes (2016)

examined the impact of financial performance on economic growth. The dependent variables used are Gross Domestic Product (GDP) and independent variables in the form of specific banks, macroeconomic variables (Industrial Production Index, Consumer Price Index and Money Market Rate), banking performance (ROA, ROE, and ethical performance in the form of zakat performance ratios, income), and profit-sharing). The results found a significant positive relationship between GDP, ROA, and ROE banking performance.

Izhar and Asutay (2007) analyzed the profitability of Islamic banking with evidence from Bank Muamalat Indonesia (BMI), concluding that financing activities are a source of BMI profitability, while service activities' contribution to the profitability of the studied banks is not significant. Their results also show a positive relationship between inflation and profitability. Rachmat and Komariah (2017) examined the factors influencing profitability at Islamic Commercial Banks (BUS) from 2010 to 2015 using the regression method. The independent variables used include CAR, NPF, and FDR. The results show that only CAR and NPF affect ROA, while FDR has no significant effect.

Sodiq (2015) examines the effect of macroeconomic variables on the profitability of Islamic banks in Indonesia from 2009 to 2014 using the multiple regression method. The variables used include interest rates, GDP, CAR, KAP, FDR, GWM, ROA, and ROE. The results show that inflation does not affect the profitability of Islamic banking. GDP and interest rate variables have a significant effect on the profitability of Islamic banking.

DATA AND METHODOLOGY

The type of data used in this study is secondary data in the form of time-series data. The data used are monthly data from January 2013 to December 2018. The data used in the study were obtained from several sources, including the Financial Services Authority (OJK), Bank Indonesia (BI), Statistics Indonesia (BPS), and Crude Oil Prices: West Texas Intermediate - Cushing, Oklahoma (DCOILWTICO). Besides, this research also refers to journals, articles, books and other literature related to research. The variables used in this study are as follows.

The quantitative method used in this research is the Vector Error Correction Model (VECM). This method's choice is based on the study's objectives, namely to see the response given by an aspect in the event of shocks to the factors that influence it. In

addition, the VECM method is used based on another objective, namely, to see the contribution of each factor in explaining the diversity of the dependent variable. The use of the VECM model requires that several tests be carried out before estimating the model, which is called the pre-estimation test, namely the stationarity test, the determination of the optimum lag, the VAR stability test, the Granger causality test, and the cointegration test. Meanwhile, for the VECM test itself, there are two essential methods: Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD).

Vector Autoregression and Vector Error Correction Model are two econometric models that are often used to analyze dynamic relationships between time variables (Nugroho & Rusydiana, 2018). The main differences between the two are whether the data used is stationary or not, and whether there is a long-run relationship (cointegration) between the variables.

In general, the VECM model used can be written as follows:

The model I: The Profitability (ROAS) of Islamic banking:

$$\begin{aligned} \Delta ROAS = & a_0 + \sum_{i=1}^{k-1} a_{11}(i) \Delta CARS_{t-i} \\ & + \sum_{i=1}^{k-1} a_{12}(i) \Delta FDR_{t-i} \\ & + \sum_{i=1}^{k-1} a_{13}(i) \Delta NPF_{t-i} \\ & + \sum_{i=1}^{k-1} a_{14}(i) \Delta LN_CPI_{t-i} \\ & + \sum_{i=1}^{k-1} a_{15}(i) \Delta POL_RATE_{t-i} \\ & + \sum_{i=1}^{k-1} a_{16}(i) \Delta LN_ER_{t-i} \\ & + \sum_{i=1}^{k-1} a_{17}(i) \Delta LN_COP_{t-i} + \varepsilon_t \end{aligned}$$

Model II: The profitability (ROAK) of Conventional banking:

$$\begin{aligned} \Delta ROAK = & a_0 + \sum_{i=1}^{k-1} a_{11}(i) \Delta CARS_{t-i} \\ & + \sum_{i=1}^{k-1} a_{12}(i) \Delta LDR_{t-i} \\ & + \sum_{i=1}^{k-1} a_{13}(i) \Delta NPL_{t-i} \\ & + \sum_{i=1}^{k-1} a_{14}(i) \Delta LN_CPI_{t-i} \\ & + \sum_{i=1}^{k-1} a_{15}(i) \Delta POL_RATE_{t-i} \\ & + \sum_{i=1}^{k-1} a_{16}(i) \Delta LN_ER_{t-i} \\ & + \sum_{i=1}^{k-1} a_{17}(i) \Delta LN_COP_{t-i} + \varepsilon_t \end{aligned}$$

a_0 : The intercept vector of size (nx1)

a : Matrix with elements a_{jk} , where $a_{jk} \neq 0$; (ROAS / ROAK, NPF / NPL, FDR / LDR, LN_CPI, LN_ER, LN_COP, POL_RATE).

a_i : Matrix of size coefficients (nxn) with elements $a_{jk}(i)$; (ROAS / ROAK, NPF / NPL, FDR / LDR, LN_CPI, LN_ER, LN_COP, POL_RATE).

ε_t : The error vector of size (nx1) with the element ε_{it}

ROAS/ROAK : The ratio of bank profitability.

CARS/CARK : Capital adequacy ratio.

FDR/LDR : The ratio of the amount of financing in the bank.

NPF/NPL : Non-performing financing ratio.

LN_CPI : Natural logarithm of the Consumer Price Index.

POL_RATE : The policy interest rate.

LN_ER : The natural logarithm of the Rupiah exchange rate against the USD.

LN_COP : Natural logarithm of world crude oil prices.

Table 1. Variables, Symbols, Units, and Data Sources

No	Variables	Symbols	Units	Data Sources
1	Return on Assets	ROA	Percent	SPS dan SPI-OJK
2	Capital Adequacy Ratio	CAR	Percent	SPS dan SPI-OJK
3	Financing to Deposit Ratio	FDR	Percent	SPS-OJK
4	Loan to Deposit Ratio	LDR	Percent	SPI-OJK
5	Non-Performing Financing	NPF	Percent	SPS-OJK
6	Non-Performing Loan	NPL	Percent	SPI-OJK
7	Consumer Price Index	CPI	Indeks	BPS
8	Policy Rate	POL_RATE	Percent	BI
9	Exchange Rate	ER	Rupiah	BI
10	Oil Price	COP	Dollar/Barel	DCOILWTICO

RESULTS AND DISCUSSION

The unit root test was carried out to determine the stationarity of the data. This study conducted the unit root test using the Augmented Dickey-Fuller (ADF-test) method. Based on the unit root test results, the only stationary variables at the level are Islamic banking ROA (ROAS) and LN_CPI. Other variables, namely ROA of conventional banking (ROAK), Capital Adequacy Ratio of Islamic and conventional banking (CARS / CARK), NPF / NPL, FDR / LDR, exchange rates (exchange rates), world crude oil prices (COP), and policy interest rates. The (Policy Rate) is stationary at the first difference level. The result of this unit root test indicates that the research data used is integrated and does not have a unit root at the level and first difference.

The optimum lag length can be determined based on several criteria. The optimum lag selection is selected based on the smallest lag in the lag interval. The optimum lag test results in the Islamic Model show that the optimum lag is in the first lag based on the Schwarz Bayesian Criterion (SC) and Hannan-Quinn information criterion (HQ) criteria, as well as the fifth lag based on the Likelihood Ratio (LR) criteria, Final Prediction Error (FPE), and Akaike Information Criterion (AIC).

In the conventional model, the optimum lag is in the first lag based on SC, HQ, and FPE. Based on AIC, the optimum lag is on the fifth lag and based on LR is the third lag. In this study, the optimum lag is determined based on the SC criteria so that the optimum lag is in the first lag in both the Islamic Model and the Conventional Model.

The VAR stability test was carried out to see the validity of the Impulse Response Function (IRF) and Forecast Error Decomposition Variance (FEVD) analysis. Based on the VAR stability test results, the modulus value of all the roots of polynomial characteristics in both the Islamic and conventional banking profitability models is less than one. So, it can be said that the whole model is stable. The VAR stability test results for each model can be seen in the appendix.

Granger Causality Test Results

Based on the results of the causality test at the optimum lag 1, it can be seen that the one-way and two-way relationships between variables in the study. The following are the results of the causality test in the study:

Islamic Model: ROAS affects one-way NPF. ROAS and POL_RATE have a two-way effect (influence each other).

Conventional Model: NPL affects one-way ROAK. ROAK affects LN_CPI one way. ROAK affects POL_RATE. LN_ER affects ROAK one way. LN_COP affects ROAK in one-way.

Cointegration Test Results

The cointegration test carried out in the study used the Johansen Cointegration Test. In the Islamic Model, the results show two cointegration ranks, meaning that at least one cointegration equation can explain the entire Islamic Model. In conventional banking profitability, the cointegration test results indicate that there is one co-integrated equation that can explain the overall profitability model of conventional banking.

VECM Estimation Test Results

Islamic Model VECM Estimation

Based on the estimation results of the VECM Islamic Model (Table 2), the CARS variable has a significant positive effect on the profitability of Islamic banking in the long run. Following the initial

hypothesis, the VECM estimation results show a significant positive relationship. The CARS variable has increased, so the bank's performance in facing the possible risk of loss will improve, and in the end, it will increase profitability. This is following research conducted by [Sударsono \(2017\)](#).

Table 2 Islamic Model VECM test results

Variables	Coefficient	t-statistic
Long-run		
CARS(-1)	0.175221	[3.22932]*
FDR(-1)	0.087702	[3.94670]*
NPF(-1)	-0.044942	[-0.36162]
LN_CPI(-1)	0.011531	[0.27688]
POL_RATE(-1)	-0.300732	[-3.78009]*
LN_COP(-1)	-0.869943	[-3.65746]*
LN_ER(-1)	-0.426929	[-1.68168]

Information: Sign (*) indicates significant at $\alpha = 5\%$.

Source: Data analysis (2019)

FDR has a significant positive effect on the long-term profitability of Islamic banking. The amount of the FDR coefficient on profitability is 0.087702. This means that if there is an increase in FDR of 1%, the profitability of Islamic banking will increase by 0.08%.

The Policy Rate variable has a significant negative effect. This follows the research of [Noman et al. \(2015\)](#). The increase in the policy rate causes the interest rate for credit or financing to go up, which causes the margin of Islamic bank financing to increase. If the financing margin for customers increases, Islamic

banking will face the risk of increasing the NPF, which can reduce the profits of Islamic banking. A decrease in profits results in a decrease in ROA. The policy rate has a movement that is quite the same as the BI Rate or 7-day Repo Rate.

Based on the long-run VECM estimation results, the world crude oil price (LN_COP) has a negative effect on the profitability of Islamic banking with a coefficient of -0.869943. This means that if the world crude oil price increases by one per cent, the profitability of Islamic banking will decrease by 0.86 per cent.

Table 3 Conventional Model VECM test results

Variables	Coefficient	t-statistic
Long-run		
CARK(-1)	0.497785	[6.18346]*
LDR(-1)	0.006334	[0.22233]
NPL(-1)	-0.303136	[-1.06097]
LN_CPI(-1)	0.051000	[1.57688]
POL_RATE(-1)	0.301557	[5.13023]*
LN_COP(-1)	0.475142	[2.29603]*
LN_ER(-1)	-5.476607	[-6.95915]*

Information: Sign (*) indicates significant at $\alpha = 5\%$.

Source: Data analysis (2019)

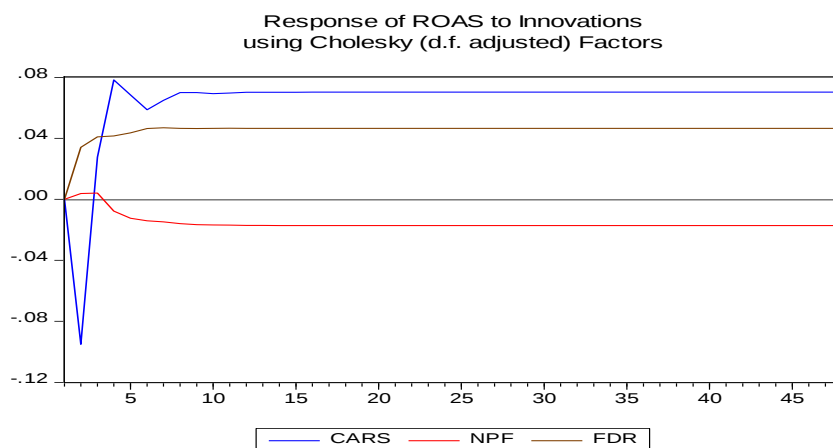
Conventional Model VECM Estimation

Based on the Conventional Model VECM estimation (Table 3), CARK has a significant positive

effect on profitability. Unlike the Islamic Model, the POL_RATE and LN_COP variables in the Conventional Model have a significant positive effect. In addition, the exchange rate variable in the

Conventional Model has a significant adverse effect on the profitability of conventional banking in the long term with a coefficient of -5.476607. This means that if the exchange rate increases by 1%, the profitability of conventional banking will decrease by 5.47%.

Impulse Response Function (IRF) Test Results



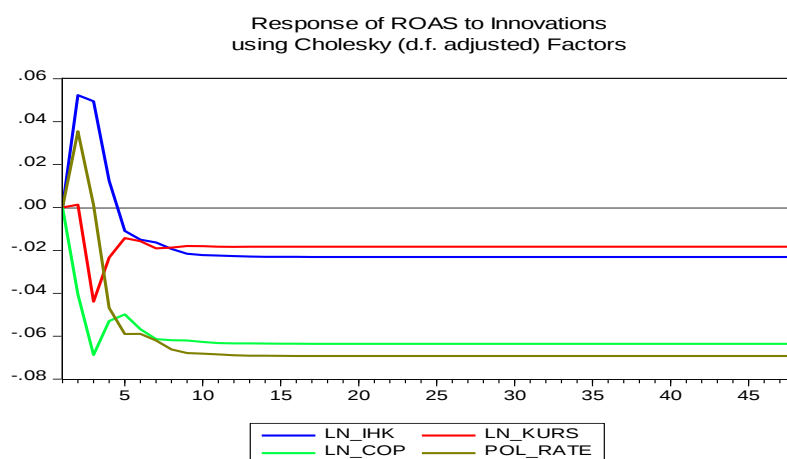
Source: Data analysis (2019)

Figure 2 Response to shocks of the internal factors on Islamic banking

Islamic Model IRF Results

Based on Figure 2, it can be seen that only shocks to the NPF will be responded to negatively by the profitability of Islamic banking. FDR and CARS will be responded positively even though at the

beginning of the CARS period, the CARS received negative responses. From the results of the IRF, all external factors will be responded to negatively by the profitability of Islamic banking.

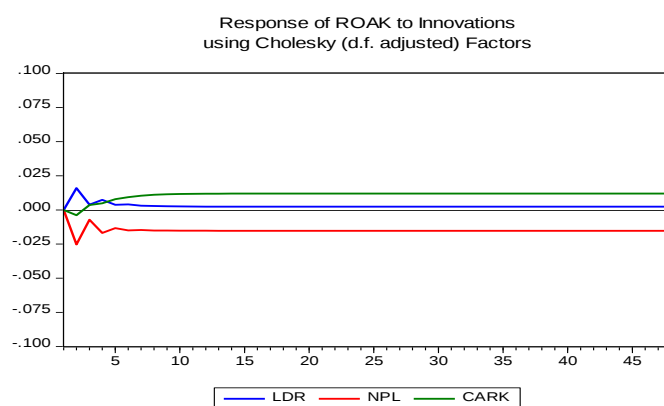


Source: Data analysis (2019)

Figure 3 Response to shocks of the external factors on Islamic banking

However, the external variables LN_CPI and POL_RATE will have a positive response at the beginning of the period. Based on Figure 3, it can be seen that the long-run stability for each variable started around the 20th period onwards.

Conventional Model IRF Results

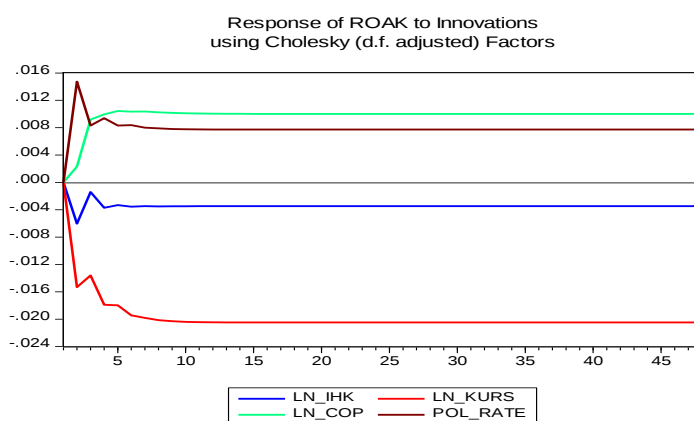


Source: Data analysis (2019)

Figure 4 Response to shocks of the internal factors on Conventional banking

Based on Figure 4, shocks to the LDR and CARK variables will be responded to positively by conventional banking's profitability, while shocks to

NPL will be responded to negatively. Long-run stability started to show from the 20th period onwards.



Source: Data analysis (2019)

Figure 5 Response to shocks of the external factors on Conventional banking

Based on Figure 5, the shocks that occur in the LN_COP and POL_RATE variables will be responded to positively, while the shocks to LN_CPI and LN_ER will be responded to negatively by the profitability of conventional banking. The long-run stability will start from the 16th period onwards.

The results of the analysis of Forecasting Error Variance Decomposition (FEVD)

FEVD result of Islamic Model

Figure 6 shows the contribution of each variable to the shocks caused to the profitability of

Islamic banking. In the Islamic Model, the contribution of other variables can be seen clearly and classified as strong in explaining Islamic banking's profitability. Until the 48th month (fourth year), it can be shown as a whole through Figure 6 that the variables explaining the diversity of the profitability of Islamic banking based on the most dominating order are as follows: CARS is 26.79990 per cent, POL_RATE is 24.42463 per cent, LN_COP is 21.37198 per cent, FDR of 11,59130 per cent, ROAS itself of 9,141402 per cent, inflation of 3,200577.

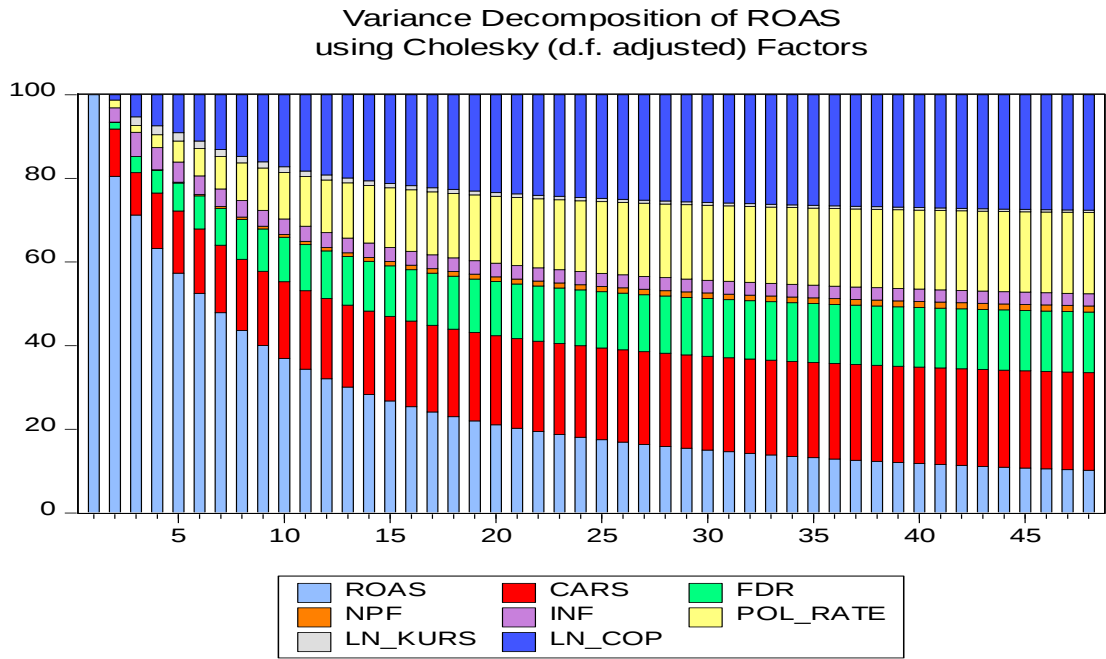


Figure 6 Results of FEVD of the Profitability of Islamic banking

FEVD result of Conventional Model

In contrast to the Islamic Model, each variable's contribution is less visible and less

dominating in the Conventional Model. Only a few variables can explain the diversity of profitability of conventional banking.

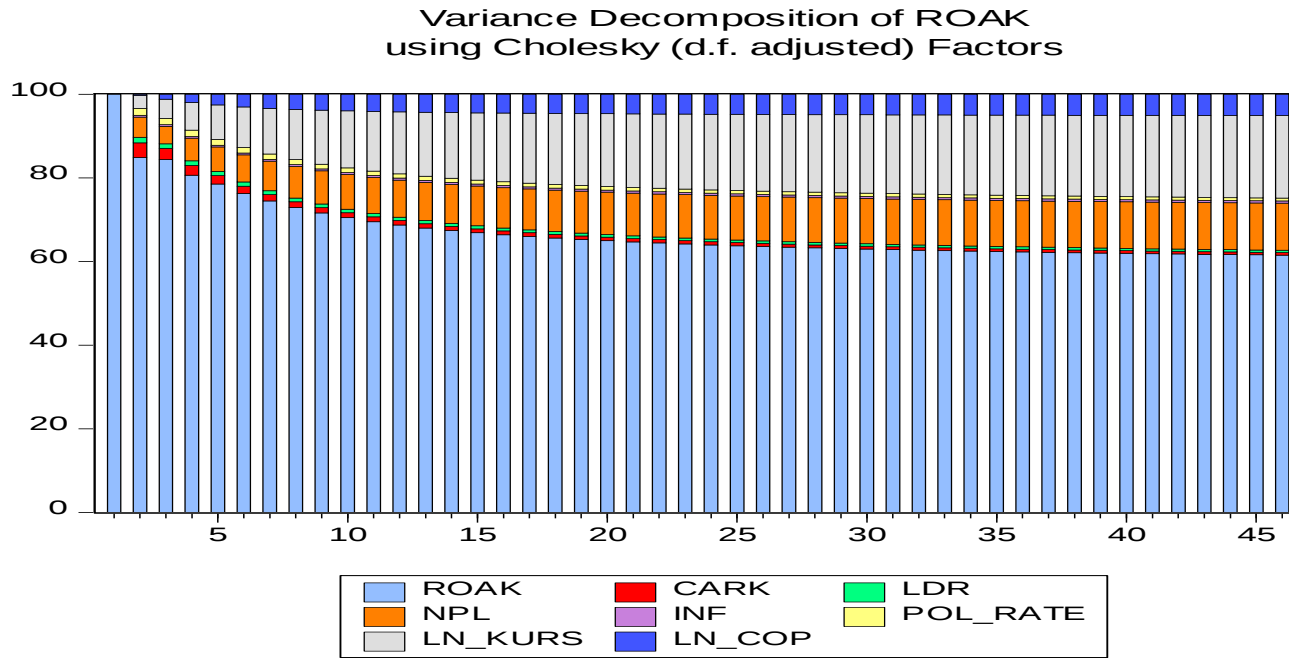


Figure 7 Results of FEVD of the Profitability of Conventional banking

Table 4 Comparison of VECM test results for Islamic and Conventional Models

Islamic		
Variables	Coefficient	t-statistics
CARS(-1)	0.175221*	[3.22932]
FDR(-1)	0.087702*	[3.94670]
NPF(-1)	-0.044942	[-0.36162]
LN-CPI(-1)	0.011531	[0.27688]
POL_RATE(-1)	-0.300732*	[-3.78009]
LN_ER(-1)	-0.426929	[-1.68168]
LN_COP(-1)	-0.869943*	[-3.65746]
Conventional		
Variables	Coefficient	t-statistics
CARK(-1)	0.497785*	[6.18346]
LDR(-1)	0.006334	[0.22233]
NPL(-1)	-0.303136	[-1.06097]
LN_CPI(-1)	0.051000	[1.57688]
POL_RATE(-1)	0.301557*	[5.13023]
LN_ER(-1)	-5.476607*	[-6.95915]
LN_COP(-1)	0.475142*	[2.29603]

Information: Sign (*) indicates significant at $\alpha = 5\%$.

Source: Data analysis (2019)

The variables that affect Islamic and conventional banking profitability have been explained in the previous discussion based on the VECM results. In connection with this study which discusses profitability in the dual banking system, the comparison between the test results for Islamic and conventional banking will be further explained in this section. The comparison of VECM results for the two bank profitability can be seen in Table 4.

Based on the VECM test results in Table 4, it can be seen that the profitability of Islamic banking is more influenced by CARS and FDR on internal factors, as well as POL_RATE and LN_COP on external factors. Not much different from Islamic banking, conventional banking is also more influenced by CARK on internal factors and POL_RATE and LN_COP on external factors. The difference is that in conventional banking, there is only one variable influencing internal factors, in contrast to Islamic banking, which is influenced by two variables. Another difference is that the external factors, apart from being influenced by POL_RATE and LN_COP, are also influenced by LN_ER, where LN_ER in Islamic banking does not affect the resulting profitability.

The CAR variable in both Islamic and conventional banking has a significant positive effect. This shows no difference between Islamic and conventional banking when viewed from the relationship between profitability and the CAR variable.

The CAR variable itself shows the capital adequacy ratio, in the sense that this study shows that if there is an increase in capital in both Islamic and conventional banks, the profitability generated by each bank will increase. The difference that occurs is the level of increase in profitability received. In Islamic banking, if there is an increase in the capital adequacy ratio by one unit, the resulting profitability will increase by 1.7%, *ceteris paribus*. Unlike the case in conventional banking, the increase in profitability obtained was greater if there was an increase in capital adequacy in conventional banking, which was 4.97%.

The FDR and LDR variables have different effects on Islamic and conventional banking profitability. The variable FDR or LDR describes the amount of financing distributed by banks to the public. The VECM results show that an increase in the ratio of disbursed financing will cause an increase in the profitability obtained by Islamic banking, *ceteris paribus*, and the results show a significant effect. In contrast to Islamic banking, in conventional banking, an increase in the financing ratio will increase the profitability received by conventional banking. However, this is less influential, which can be seen in Table 4 that the LDR has no significant effect on the profitability of conventional banking. This means that in terms of distributing financing, Islamic banking contributes more to distributing financing to the public than conventional ones. In conventional banking, the

financing of funds distributed by banks is more directed to other sectors, not directly intended for the public. So it can be said that when viewed from the FDR and LDR side, Islamic banking is more involved in the real sector, where the distributed financing is provided for community needs such as providing financing to MSMEs (pro-small businesses) and other community parties, with the result that this can be one of the driving forces for the welfare of the community and for building the country.

The increase in the risk of non-performing financing, proxied by the NPF and NPL by the profitability of Islamic and conventional banking, does not show quite different behaviour. This can be seen in Table 4, where the VECM results in both Islamic and conventional banking show a negative but insignificant effect. The negative effect of the NPF and NPL variables is in line with the theory that if the risk ratio of problem financing increases, it will cause a decrease in banking performance, which will affect the decline in profits. However, the influence of NPF and NPL is not significant, so it can be said that in determining the profitability of Islamic and conventional banking, it is not too influenced by problems such as bad credit but more by the business portfolios carried out by each bank.

Bank profitability is not only influenced by internal factors, which in this case is shown by internal banking performance but can also be influenced by external factors. External factors that can affect bank profitability include LN_CPI, which can show the amount of inflation, POL_RATE, which is the reference in determining interest rates, LN_ER, which assesses the size of the Indonesian currency against foreign currencies; and LN_COP, which shows the amount of world crude oil sold in the international market. In the VECM results shown in Table 4, there is no difference in behaviour by the profitability of Islamic and conventional banking if there is an increase in the LN_CPI variable. These two banks will have a positive effect if there is an increase in LN_CPI. However, this is not significant enough for both. So it can be said that LN_CPI does not sufficiently influence the profitability of Islamic and conventional banking.

The POL_RATE variable has different behaviour in influencing profitability. POL_RATE will have a significant negative effect on the profitability of Islamic banking, while in conventional banking, it will have a significant positive effect, *ceteris paribus*. The difference in behaviour between the two banks can occur because the interest rate decreases and the

investment portfolio will move towards an interest rate-based or more towards the financial sector such as SBI, SBIS, deposits and others. So that if the interest rate is raised, the profitability of conventional banking will increase, and vice versa, the profitability of Islamic banking will decrease. This shows that conventional banking is more reactive to POL_RATE than Islamic banking because this movement in POL_RATE will affect the investment portfolio to securities where conventional banking is more engaged in the investment sector (financial sector). Islamic banking has been affected by the decline in the increase in POL_RATE. This is because the financing sector (real sector), which is the portion of Islamic banking, is rushed to the financial sector, such as investing in SBIS and others so that this can reduce the profitability it generates.

Other external factors that can affect profitability include LN_ER. The effect of LN_ER on profitability, both Islamic and conventional, shows a negative effect. There is a difference in the behaviour of the two banks where the influence of LN_ER is only significant on the profitability of conventional banking. This indicates that conventional banking's profitability is still very much influenced by the exchange rate because conventional banks generate profits from exchange rate businesses (financial sector). The profitability of Islamic banking is not affected by the exchange rate variable for many reasons, including a fatwa prohibiting doing exchange-based business. Besides that, it can also be due to its exposure which makes Islamic banking less playful in exchange rates, one of which can be seen from the lack of business in the import and export sector. In contrast, to the case in Islamic banking, the exchange rate is insignificant. This indicates that Islamic banking does not play in the financial sector, but rather the profit obtained is through other sectors, namely the real sector, which is directly related to society.

The world crude oil price, which LN_COP describes, is another external factor used in this research. Based on the VECM results in Table 4, the differences in behaviour shown by Islamic and conventional banking can be seen. The world crude oil price has a significant negative effect on Islamic banking's profitability and a significant positive effect on conventional banking, *ceteris paribus*. The LN_COP variable is closely related to the real sector, where LN_COP can directly affect input prices. If LN_COP increases, other input goods' prices, such as transportation and other increases, will also increase.

The increase in input prices will result in businesses that make the real sector sluggish; it will impact the decline in profitability generated by Islamic banking. Unlike the case with conventional banking, it will have a positive effect because if there is an increase in LN_COP, it will decrease business in the real sector. The decline in business in the real sector has resulted in conventional banking returning to the business sector it is used to, namely the financial sector, and this can lead to an increase in the profits it generates.

Comparison of Profitability Responses Based on IRF Results

The comparison of bank profitability responses based on the results of the IRF in the event

of a shock to the profitability itself can be seen in Figure 8. These results indicate that both Islamic and conventional banking will respond positively. This indicates no difference in behaviour between Islamic and conventional banking responding to profitability shocks proxied by ROA. The difference that occurs is the difference in value where the value tends to be higher for conventional banking, and conventional banking can also stabilize more quickly than Islamic banking. This proves that profitability is more profitable than other variables that can influence it.

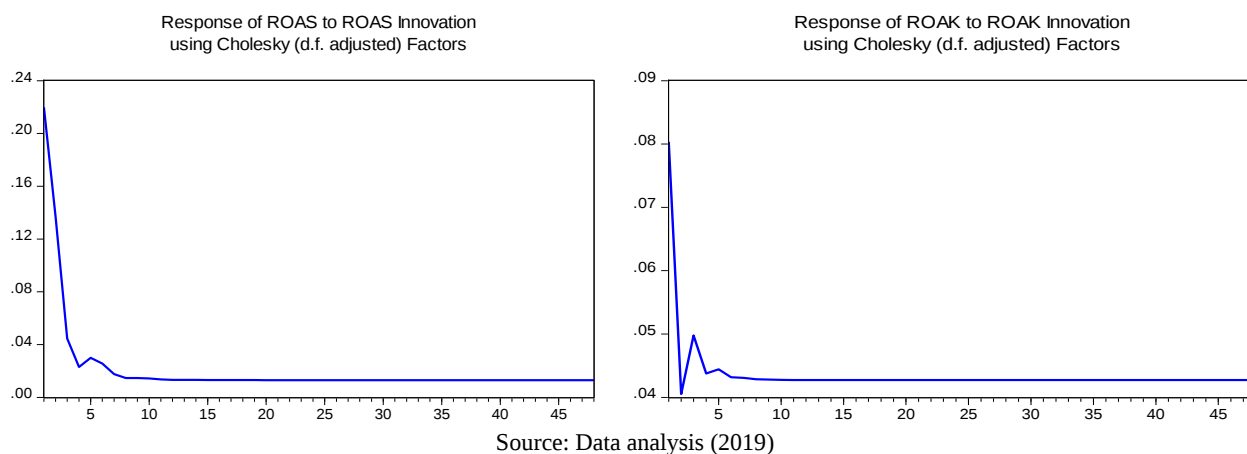


Figure 8 Comparison of Response to shocks to the profitability of Islamic banking (left) and Conventional banking (right)

Shocks that occur in internal factors on Islamic and conventional banking profitability can be seen in Figure 2 and Figure 4. Based on this figure, it can be seen that there is no difference in behaviour between the two, where the CAR and FDR / LDR variables will be responded positively to both Islamic banking and conventional, as well as the NPF / NPL variable will be responded negatively. The amount of value in responding to shocks to these internal factors tends to be greater in Islamic banking than in conventional and tends to stabilize more quickly. This proves that Islamic banking in obtaining profit depends not only on the previously generated profit but also on other factors that explain that Islamic banking is more involved in other sectors (real sector).

Other factors that affect profitability are external factors (Figure 3 and Figure 5). External factors used in the study include LN_CPI, POL_RATE, LN_ER, and LN_COP. Islamic and conventional banking will respond differently to shocks

that occur to external factors. In Islamic banking, if there is a shock to all external factors, it will be responded to negatively. In contrast to Islamic banking, if there is a shock to external factors, not all of them will be responded to negatively by conventional banking's profitability, but POL_RATE and LN_COP will respond positively. This indicates that in generating profit, conventional banking is more influenced by POL_RATE or policy interest rates, where this interest rate is one of the sectors that play a role in the money market. In Islamic banking, POL_RATE is not very influential because, in its operation, it does not operate based on an exciting system but rather a profit-sharing system.

Comparison of the Contribution of Each Variable to Profitability Based on the FEVD Results

The results of FEVD on the profitability of Islamic and conventional banking can be seen in Figures 6 and 7, which can be summarized in Table 5.

Based on this table, it can be seen that there is a significant difference between the two. It can be seen that Islamic banking tends to be more varied than conventional banking. In addition, the amount of decomposition given by the variable is more significant than that of conventional banking. This shows that in

Islamic banking, profitability can be described by various other variables, not only by the profitability itself. The variables that describe the profitability significantly contribute to explaining the diversity of the profitability of Islamic banking.

Table 5 Comparison of the results of the FEVD test for the Islamic and Conventional Models

Period (Months)	Banking					
	Syariah			Conventional		
			Percent			percent
1	1	ROAS	100.00%	1	ROAK	100.00%
	2	NA	0.00%	2	NA	0.00%
	3	NA	0.00%	3	NA	0.00%
12	1	ROAS	32.07%	1	ROAK	69.72%
	2	CARS	19.21%	2	LN_ER	14.85%
	3	LN_COP	19.16%	3	NPL	8.88%
24	1	LN_COP	24.56%	1	ROAK	63.98%
	2	CARS	21.85%	2	LN_ER	18.07%
	3	ROAS	18.12%	3	NPL	10.45%
36	1	LN_COP	26.58%	1	ROAK	62.30%
	2	CARS	22.83%	2	LN_ER	19.20%
	3	POL_RATE	17.90%	3	NPL	11.01%
48	1	LN_COP	27.63%	1	ROAK	61.42%
	2	CARS	23.35%	2	LN_ER	19.79%
	3	POL_RATE	18.71%	3	NPL	11.30%

Information: Sign (*) indicates significant at $\alpha = 5\%$.

Source: Data analysis (2019)

Based on the FEVD results shown in Table 5, there is a difference between Islamic and conventional banking's profitability. This can be seen in the variables that contribute the most to the diversity of profitability. In Islamic banking, it can be seen that there is a change in the variables that have contributed the most. In the first period, it can be seen that what best describes the diversity of the profitability of Islamic banking is the profitability itself (ROAS), but in the 12th period, the contribution of ROAS is getting smaller and is followed by other variables, namely CARS and LN_COP. In the 24th period, an enormous contribution was no longer shown by ROAS but by LN_COP, followed by CARS and only after that was it shown by ROAS. In the 36th and 48th periods, ROAS was no longer included in the top three variables that contributed the most to the diversity of Islamic banking, but the POL_RATE variable illustrated the profitability. In Islamic banking, it can be said that more plunge into the real sector to generate profits, which can be shown from the many other variables that explain the diversity of profitability in Islamic banking.

In contrast to Islamic banking, in conventional banking, the most considerable contribution of the variables that explain the diversity of profitability of conventional banking is shown by the same variables for all periods except the first period, wherein this period the profitability can only be described by the profitability of itself. In the 2nd and subsequent periods, the order of the variables that contributed the most to explaining the diversity in Islamic banking profitability was ROAK, LN_ER, and NPL. This shows that in conventional banking, profitability cannot be overstated by other variables. The profitability obtained tends to be based on the profitability itself. Other variables contribute to explaining profitability and tend to be smaller than in Islamic banking. Only LN_ER and NPL have shown a sizeable contribution, where this factor is included in the financial sector (financial). So, it can be said that based on the results of the FEVD, the profitability of conventional banking is more obtained from the financial sector (money market). This can be seen from the FEVD results, which show that not too many other variables can explain the diversity of conventional

banking profitability as well as from variables that can explain it tends to lead to the financial sector.

CONCLUSION

The Islamic model's VECM estimation results show that CARS and FDR have a positive effect in the long run. The policy rate and COP variables significantly adversely affect the profitability of Islamic banking. In the conventional CARK model, policy rate and COP have a significant positive effect. The exchange rate variable has a significant adverse effect on the profitability of conventional banking.

In the Islamic model, shocks to internal factors, namely CARS and FDR, will be responded to positively by Islamic banking's profitability. As for NPF, the shock to the NPF variable will be responded to negatively by profitability. On the other hand, shocks that occur to all external factors in the study will be responded to negatively by the profitability of Islamic banking. As well as the Islamic model, on the Conventional model, shocks that occur to internal factors, namely CARK and LDR, will be responded to positively by conventional banking profitability. Meanwhile, shocks to other internal factors, namely NPL, will be responded to negatively by profitability. In contrast to the Islamic model, shocks to external factors are not all responded negatively.

The difference in profitability between Islamic and conventional banking based on the long-term VECM results can be seen in the differences in behaviour. In Islamic banking, the policy rate has a negative effect, while conventional banking is positive. This can happen if the policy rate decreases, then the investment portfolio will move towards an interest rate-based or more towards the financial sector. This sector is the realm of conventional banking, so conventional banking has a positive effect and negative Islamic banking.

Differences in behaviour can also be seen in the world oil price variable, where Islamic banking has a negative effect, and conventional banking is positive. This is because the world oil price variable is closely related to the real sector, which can directly affect input prices. The increase in input prices will result in sluggish businesses in the real sector, resulting in a decline in Islamic banking profitability. It is different from conventional banking, which has a positive effect because the decline in business in the real sector has resulted in conventional banking returning to the business sector that it usually applies to, namely the

financial sector, which can lead to an increase in the profits it generates.

Another difference in behaviour that can be seen based on the VECM results is the exchange rate variable, which significantly affects conventional banking and not Islamic banking. This indicates that the profitability of conventional banking is still very much influenced by the exchange rate because conventional banking generates profits from exchange rate businesses (financial sector). The exchange rate variable does not influence the profitability of Islamic banking because of many things, including the existence of a fatwa prohibiting doing exchange-based business, besides that it can also be due to its exposure which makes Islamic banking less involved in exchange rates, one of which can be seen from the lack of business import and export sector.

With the results obtained, we recommend strengthening the role of internal factors that are more effective in carrying out operational activities to increase the profitability of Islamic banking. In addition, based on the results of FEVD, which shows that other variables have influenced the profitability of Islamic banking, the result shows that Islamic banking contributes more to the real sector. This is already good, but it needs to be developed so that the contribution of each variable continues to increase so that the contribution of Islamic banking to the real sector can be maximized.

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