



Determinants of Islamic Rural Bank Financing in Indonesia

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Abstract

This research is designed to empirically investigate the determinants of Islamic rural banking financing in Indonesia after 2008 global financial crisis covering period 2009.1-2014.12. The methods applied in this research are Error Correction Model (ECM) and VAR/VECM. The results of ECM model demonstrate that the variable third party funds (DPK) and non-performing financing can significantly affect Islamic rural banking financing both in the short run and long run, while Return on Asset (ROA) and Profit-and-loss sharing does not have a significant influence. Islamic rural bank financing, however, was influenced by inflation and exchange rate as the proxy of macroeconomic variables in the short and long run. Furthermore, Impulse Response Function (IRF) and variance decomposition results show that Profit-and-loss sharing (PLS) has the largest positive impact to financing (39.08%), followed by third party fund (19.6%) and inflation (8.9%). While, the variables that contribute to reduce financing are non-performing financing (9.02%), followed by ROA (7.76%) and exchange rate (2.48%).

Key words : *Islamic rural bank, financing, Profit-and-loss sharing, Error Correction Model, VAR/VECM.*

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INTRODUCTION

The role of financial institutions is crucial in accelerating economic growth, without exception of microfinance institutions. The existence of microfinance institution operates as financial intermediary that has a main function to collect funds from those who have excessive funds to those who have not, it is expected the country's economy could run well. Besides, the economic growth of a country is primarily influenced by the productivity of small and micro entrepreneurs (SMEs) sectors. Some of them, cannot be accessed by conventional banks. The development of the SMEs sector can greatly be assisted by the microfinance institutions that have a function to distribute funds into productive sector.

In this case, the microfinance institution is Islamic rural banks (BPRS), since there have been many Islamic rural banks operating in rural environment. Moreover, Islamic rural banks have been famous in rural communities, so that both parties have as a business partner. The growth of Islamic rural bank can be enhanced with the support of the banking variables and macro-economic factors. Table 1 depicts the performance of bank financial performance. In this case the most important factor is the growth of third party funds (DPK), since it saw a rapid growth during four years, increasing from 0.725 in

2009 to 3,156 in 2012 (the Indonesian Banking Statistics, Dec. 2012).

Because of the biggest funds used in banking operations are public fund. Banks use the equivalent rate to attract customers putting their funds into the bank so that the third-party fund can increase, if the bank receives a huge fund so that the market share will increase. The increasing of market share can increase financing Islamic rural bank performances. The increasing of third-party fund is also in line with the fluctuation of equivalent rate value of 12.30 in 2009 and 11.61 in 2010, it means that there is increasing by 11.72. Value equivalent rate in 2009 had the highest value compared to the value in 2010 and 2011; it caused bank needs the trust of people to saving their money in banks so that they give high value equivalent rate to attract customers in order to save money in their bank (Indonesian Banking statistics, Dec. 2012).

Non Performing Financing (NPF) value of the post-crisis in 2009 has been decrease by 7.30 in 2009, 6.50 in 2010 and 6.11 in 2011. It shows the non-performing financing in a better condition after economic crisis in 2008. Low of non-performing financing can increase the confidence of the Islamic rural banks to distribute its financing, so that that market discipline into distribution of funding will support the growth of financing itself and improve the profitability of the Islamic rural bank (www.bi.go.id).

Table 1. The growth of Islamic rural bank behavior and Macroeconomic Variable (%)

Indicator	Year			
	2009	2010	2011	2012
Depositor Fund (DPK)	0.725	2.819	1.970	3.156
Retrun on Asset	3.58	3.49	2.67	2.64
Non Performing Financing	7.03	6.50	7.05	6.15
Profit and Loss Sharing	12.30	11.61	11.72	6.27
Inflation	2.78	6.96	3.79	4.30
Exchange rate	9.15	9.11	9.11	9.17

Source: Indonesian Banking Statistics, 2014

Islamic rural bank (BPRS) as financial institutions based on real sector, on the external side of BPRS has direct relevance and higher sensitivity to macroeconomic conditions occur. As the macro variables that are a reflection of the Indonesian economy, the symptoms caused by macroeconomic conditions feared to have negative impacts on the performance of BPRS. When the good macroeconomic performance, the performance of BPRS financing will also be good and *vice versa*.

According to Islamic Banking Development Report (LPPS) in 2009, the growth of Islamic bank assets has been slowed in 2009, despite the all of Islamic bank asset tends positive. Slowdown of asset growth affected by the condition of real sector such as the persistence of the national economic downturn, customer's purchasing power has not fully recovered the high economic costs impacts on their business expansion restriction and reduction of consumption. However, the slowdown in the Islamic banking industry is relatively minor compared with the slowdown in the national financial industry in general.

Based on the explanation above, this paper aims to examine the growth of Islamic rural bank financing in 2009 because it has begun to recover the economy in Indonesia after the 2008 crisis and it is also used as a reference standard economic growth in Indonesia that is represented by the growth of Islamic financing in Indonesia, as well as analyze the factors in the bank that may affect the fluctuation of Islamic bank financing in Indonesia.

Islamic Rural bank (BPRS) as one of the financial institutions of Islamic banking, which is the pattern of operations follows the principles of sharia or Islamic Muamalat. The

rationale for the operation of BPRS is in addition based on the demands of implementation shari'a which is the desire of Muslims in Indonesia, as well as an active step in a restructuring economy of Indonesia who poured in a variety of packages of financial prudence, monetary, banking in general. In particular is to fill it up to the wisdom that frees banks in setting interest rate, later known as the bank without interest (Sumitro, 2004). The legal basis of Islamic banking is to avoid usury, and the second practice Islamic principle in banking, especially rural banks is the purpose of the benefit. As inscribed in the holy book Quran on the prohibition of usury among Surah Ar-Rum (30): 39, Surah Al-Baqarah (2): 275, Surah An-Nisa (4): 146.

BPRS establishment is inseparable from the history of conventional BPR. The legal status of RB was first recognized in Pakto October 27, 1998, as part of the Policy Package for Financial, Monetary and Banking. Historically, ISLAMIC RURAL BANK is the manifestation of many financial institutions, such as Bank Village, Village Office, Market Bank, Bank Employees Lumbung Select Nagari (LPN), Village Credit Institutions (LPD) and other institutions can be equated with it. Since the issuance of Law No. 7 of 1992 on the subject of banking, financial institutions are clarified through permission from the finance minister (Sudarsono, 2008: 90).

Implementation of ISLAMIC RURAL BANK conducting business based on sharia principles was in turn governed by Decree of the Director of Bank Indonesia No. 32/36 / KEP / DIR / 1999 on 12 May 1999 of the Rural Bank based on Sharia principles. In this case, technically, sharia ISLAMIC RURAL BANK can be interpreted as a financial institution as a conventional BPR, the operation using the principles of sharia (*ibid.*).

With the development of Islamic Rural Bank in Indonesia, studies related to the Rural Bank Sharia, both in terms of financing and its

efficiency also needs to be discussed. Therefore, most researchers still focus the discussion on conventional bank financing products. Several studies conducted in Indonesia, for example Haryati (2009) which investigated the growth of bank credit in Indonesia in 2004-2008. Variables used in this research is the growth of excess liquidity, deposit growth, the growth of loans / deposits received, equity growth, Indonesia bank rate, inflation rate and the foreign exchange rate.

The method used is multiple linear regression analysis. The results showed that each variable in the variable national banks deposit growth and loan growth received significant positive effect on credit growth, while the foreign banks-a mixture of all the growth variables funding sources had significant influence on the growth of credit. Macroeconomic variables on national banks all have significant influence on the growth of credit; BI interest rate and exchange rate have a significant negative effect, inflation has a significant positive effect.

Pratama (2010) examined the factors affecting bank lending policies (Study on Commercial Banks in Indonesia Period 2005-2009). The variables used were DPK, CAR, NPL, and the interest rate of Bank Indonesia Certificates (SBI). The analysis technique used is multiple linear regression. Based on this study showed that the DPK positive and significant impact on bank lending. CAR and NPL significantly negative effect on bank lending. While the interest rate of Bank Indonesia Certificates (SBI) and not significant positive effect on bank lending.

Kusnandar (2012) examined the factors affecting Small Medium Enterprise (SME) lending by banks in Indonesia. Variables used in this research are banking financial ratios (CAR, NPL, DPK, ROA) and macro variables (GDP, inflation, exchange rate). The method

used in this research is multiple regression analysis. The results showed that the banking financial ratios affecting SME lending. While a stable macro variables also affect the provision of SME loans.

As performed by Utari et.al (2012) examine the optimal real credit growth in Indonesia. Variables used in this research are deposits, NPL, real GDP, inflation and lending rates in Indonesia. The method used in this study is a *Markov Switching (MS) MS Univariate and Vector Error Correction Model*. The results showed that there is a co-integration relationship between real credit to the real GDP, inflation and lending rates. In the long term, demand for loans was positively affected by economic activity and negatively by the credit interest rates and inflation. While in the short term loan growth affected by NPL ratio and third party funds (DPK).

In addition to research conducted in Indonesia, the research on financing or bank credit also performed in India as done by Vighneswara Swamy (2012) who examined the bank credit in India during the pre and post global crisis in 2008. The variables used were aggregate Deposits, Investments, money at call and short notice, borrowings, bank nifty, lending rates, Cash-Deposit Ratio, Investment-Deposit Ratio, credit-deposit ratio. Methods of data analysis used in this study is a method that uses a model JJ Vector Auto Regressive (VAR) and estimates based on the method Maximum likelihood (ML). The results showed that the studied those variables significantly affect the bank credit.

In addition to research in India, Berrospide and Edge (2010) examined the effect of bank capital (Equity / Assets, Tier 1 Capital Ratio, Total Capital ratio) and macroeconomic variables (GDP, inflation, and interest rates) against credit in the United States. The method used in this research is the Panel regression.

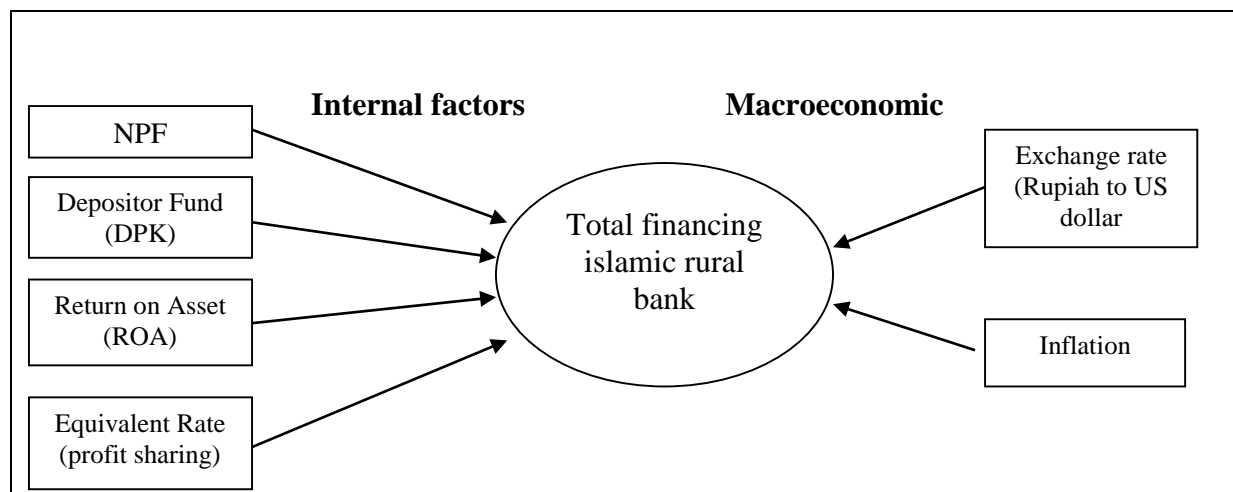


Figure 1. Research Framework

The results showed that the bank's capital significant positive effect on the provision of credit. This means a growing capital was highly likely to increase credit growth. However, for the macroeconomic variables it was evident that only GDP had a significant influence in lending performance.

Islamic Rural Bank, as conventional banks in general, have the same internal factors albeit there are differences in principle. Thus, the above studies can be concluded that there are some internal variables banks and macroeconomic variables that affect the financing in the bank, in this case the rural banks of Sharia, namely: Third Party Funds, return on assets (ROA), Non-Performing Financing (NPF), Profit-and-loss sharing (equivalent rate) of the bank's internal variables as well as inflation, exchange rate of macroeconomic variables.

RESEARCH METHODS

The data used in this research is secondary data. Secondary data such as time series (time series) as well as the monthly Islamic Rural Bank independent variable data that are external to the period January 2009 - December 2014. The selection of these data in

consideration of the availability of the data after the 2008 global crisis as well as the number of observations as much as 72 (monthly data) is deemed to have representative. The data used is the level of funding channeled, Depositor fund/Third Party Fund (DPK), Return on Assets (ROA), Non Performing Financing (NPF), Profit share (equivalent rate), exchange rate and inflation. Data of Depositor Fund (DPK), Financing (FINC) and Exchange rate are transformed into the natural logarithm (ln) to obtain valid and consistent results

Method of Error Correction Model (ECM) applied in this study is based on Error Correction Model Domowitz-Elbadawi proposed by Domowitz and Elbadawi (1987). This method had also been applied by previous researchers, among others, Utama (2013) and Revania (2014) who attempted to empirically identify the factors affecting import. Step in formulating a ECM model according Domowitz and Elbadawi is as follows (Widarjono, 2013):

Specifying the expected relationship in the observed model.

$$\ln FINC_t = \alpha_0 + \alpha_1 \ln DPK_t + \alpha_2 NPF_t + \alpha_3 ROA_t + \alpha_4 PLS_t + \alpha_5 \ln Exrate_t + \alpha_6 INF_t \dots \dots \dots (3.1)$$

The formation process variable imbalance adjustment according Domowitz and Elbadawi which is based on a single quadratic cost function can be formulated as follows:

$$C_t = b_0 [FINC_t - FINC_t^*]^2 + b_1 \{ (FINC_t - FINC_{t-1}) - f_t (Z_t - Z_{t-1}) \}^2 \dots\dots\dots(3.2)$$

Equation (3.2) is a single quadratic cost function. The first component of this equation describes the cost imbalance and the second component is the cost of adjustment. $FINC_t$ represent the number of $FINC$ actual in period t , Z_t is a vector of variables that affect $FINC$ which in this case is influenced by independent variables X (DPK, NPF, ROA, PLS, eXRate and INF), b_0 and b_1 is a row vector that gives weight to each costs and f_t is a row vector that weights the elements of Z_t and Z_{t-1} .

Minimizing the cost function in equation (3.2) to variable $FINC$ and equating to zero will produce the following equation:

$$b_0 [FINC_t - FINC_t^*] + b_1 [(FINC_t - FINC_{t-1}) - f_t (Z_t - Z_{t-1})] = 0$$

or can be written into the following equation:

$$(b_0 + b_1)FINC_t = b_0 FINC_t^* + b_1 FINC_{t-1} + b_1 f_t (Z_t - Z_{t-1}) \dots\dots\dots(3.3)$$

Vector Z consists of variable X (DPK, NPF, ROA, PLS, EXRate and INF) so that the equation (3.3) can be expressed as follows:

$$(b_0 + b_1)FINC_t = b_0 FINC_t^* + b_1 FINC_{t-1} + b_1 f_t (Z_t - Z_{t-1}) \dots\dots\dots(3.4)$$

Equation (3.4) can be expressed in the following equation:

$$FINC_t = b FINC_t^* + (1 - b)FINC_{t-1} + (1 - b) f_t (Z_t - Z_{t-1}) \dots\dots\dots(3.5)$$

where $b = b_0 / (b_0 + b_1)$

f_t consists $f_1 = fDPK$, $f_2 = fNPF$, $f_3 = fROA$, $f_4 = fPLS$, $f_5 = fExrate$, $f_6 = fINF$

Furthermore, substituting the equation (3.1) into the equation (3.5) in order to obtain the following equation:

$$\ln FINC_t = b(\alpha_0 + \alpha_1 \ln DPK_t + \alpha_2 NPF_t + \alpha_3 ROA_t + \alpha_4 PLS_t + \alpha_5 \ln EXrate_t + \alpha_6 INF_t) + (1 - b) FINC_{t-1} + (1 - b) f_t (Z_t - Z_{t-1}) \dots\dots\dots(3.6)$$

Equation (3.6) is a short-term analysis of Islamic rural bank financing even though short-term results were able to make predictions on the long term. However, the main problem arises when modeling equations used are not stationary, because when a model is not stationary it can't be estimated by using OLS (*ordinary least squares*) and will generate spurious regression. As a workaround, use the possibility of change (Δ) in each variable, thus:

$$\begin{aligned} \Delta \ln FINC_t = & \beta_0 + \sum_{i=1}^n \beta_1 \ln DPK_{t-i} + \sum_{i=1}^n \beta_2 NPF_{t-i} \\ & + \sum_{i=1}^n \beta_3 ROA_{t-i} + \sum_{i=1}^n \beta_4 PLS_{t-i} \\ & + \sum_{i=1}^n \beta_5 \ln EXrate_{t-i} + \sum_{i=1}^n \beta_6 INF_{t-i} \\ & + \beta_7 \Delta \ln DPK_{t-i} + \beta_8 \Delta NPF_{t-i} \\ & + \beta_9 \Delta ROA_{t-i} + \beta_{10} \Delta PLS_{t-i} \\ & + \beta_{11} \Delta \ln EXrate_{t-i} \\ & + \beta_{12} \Delta INF_{t-i} + ECT + \mu_t \end{aligned}$$

$$ECT = \Delta \ln DPK_{t-1} + \Delta NPF_{t-1} + \Delta ROA_{t-1} + \Delta PLS_{t-1} + \Delta \ln EXrate_{t-1} + \Delta INF_{t-1} \dots\dots\dots(3.7)$$

Where:

- FINC : Total financing of Islamic bank obtained from Islamic Banking Statistics (SPS)-BI.
- DPK : Total Depositor Fund or Third-party fund obtained from Islamic Banking Statistics (SPS)-BI.
- NPF : Non-Performing Financing (%) of Islamic rural bank obtained from Islamic Banking Statistics (SPS)-BI.
- ROA : Return on Asset obtained from Islamic Banking Statistics (SPS)-BI.
- PLS : the rate of profit and loss sharing (Equivalent rate) obtained from Islamic Banking Statistics (SPS)-BI.
- EXrate : Exchange rate, Rupiah against US Dollar obtained from Indonesian Financial Statistics-BI.
- INF : Inflation obtained from Indonesian Financial Statistics-BI.
- ECT : Error correction or residual lag 1 of equivalent
- ε_t : Standar Error

In this research, we are also using vector auto regressive (VAR)/vector error correction model. In general, VAR is used to analyze the dynamic impact of the surprise factor contained in the system variables. VAR

analysis conducted by considering some of the endogenous variables jointly in a single model. Each endogeneous variable is explained by its value in the past and past values of all other endogeneous variables in the model were analyzed. However, if there is a long-term relationship in a variable then the model can be developed into VECM (Ascarya, 2012). The general model of VECM can be expressed as equation (3.18)

$$\Delta x_t = \mu_t + \Pi x_{t-1} + \sum_{i=1}^{k-1} \Gamma_i \Delta x_{t-i} + \varepsilon_t$$

Where:

- x_k is k selected endogenous variables, specific for each model;
- ε_k is disturbance or error term with zero means and constant variance-covariance.

Islamic rural bank financing model:

$$x_k = [\text{Finc, DPK, NPF, ROA, PLS, EXrate, inflation}]$$

Following the model in equation (3.1), the equation of VAR model in matrix for Islamic rural bank financing can be written as follows:

$$\begin{bmatrix} \ln FINC_t \\ \ln DPK_t \\ NPF_t \\ ROA_t \\ PLS_t \\ \ln EXrate_t \\ INF_t \end{bmatrix} = \begin{bmatrix} \alpha_{10} \\ \alpha_{20} \\ \alpha_{30} \\ \alpha_{40} \\ \alpha_{50} \\ \alpha_{60} \\ \alpha_{70} \end{bmatrix} + \begin{bmatrix} \alpha_{11} & \alpha_{12} & \alpha_{13} & \alpha_{14} & \alpha_{15} \\ \alpha_{21} & \alpha_{22} & \alpha_{23} & \alpha_{24} & \alpha_{25} \\ \alpha_{31} & \alpha_{32} & \alpha_{33} & \alpha_{34} & \alpha_{35} \\ \alpha_{41} & \alpha_{42} & \alpha_{43} & \alpha_{44} & \alpha_{45} \\ \alpha_{51} & \alpha_{52} & \alpha_{53} & \alpha_{54} & \alpha_{55} \\ \alpha_{61} & \alpha_{62} & \alpha_{63} & \alpha_{64} & \alpha_{65} \\ \alpha_{71} & \alpha_{72} & \alpha_{73} & \alpha_{74} & \alpha_{75} \end{bmatrix} \begin{bmatrix} \ln FINC_{t-1} \\ \ln DPK_{t-1} \\ NPF_{t-1} \\ ROA_{t-1} \\ PLS_{t-1} \\ \ln EXrate_{t-1} \\ INF_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \\ \varepsilon_{5t} \\ \varepsilon_{6t} \\ \varepsilon_{7t} \end{bmatrix} \dots\dots\dots(3.8)$$

$$\begin{bmatrix} \Delta \ln FINC_t \\ \Delta \ln DPK_t \\ \Delta NPF_t \\ \Delta ROA_t \\ \Delta PLS_t \\ \Delta \ln EXrate_t \\ \Delta INF_t \end{bmatrix} = \begin{bmatrix} \alpha_{10} \\ \alpha_{20} \\ \alpha_{30} \\ \alpha_{40} \\ \alpha_{50} \\ \alpha_{60} \\ \alpha_{70} \end{bmatrix} + \begin{bmatrix} \alpha_{11} & \alpha_{12} & \alpha_{13} & \alpha_{14} & \alpha_{15} \\ \alpha_{21} & \alpha_{22} & \alpha_{23} & \alpha_{24} & \alpha_{25} \\ \alpha_{31} & \alpha_{32} & \alpha_{33} & \alpha_{34} & \alpha_{35} \\ \alpha_{41} & \alpha_{42} & \alpha_{43} & \alpha_{44} & \alpha_{45} \\ \alpha_{51} & \alpha_{52} & \alpha_{53} & \alpha_{54} & \alpha_{55} \\ \alpha_{61} & \alpha_{62} & \alpha_{63} & \alpha_{64} & \alpha_{65} \\ \alpha_{71} & \alpha_{72} & \alpha_{73} & \alpha_{74} & \alpha_{75} \end{bmatrix} \begin{bmatrix} \Delta \ln FINC_{t-1} \\ \Delta \ln DPK_{t-1} \\ \Delta NPF_{t-1} \\ \Delta ROA_{t-1} \\ \Delta PLS_{t-1} \\ \Delta \ln EXrate_{t-1} \\ \Delta INF_{t-1} \end{bmatrix} - \lambda \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \\ \varepsilon_{5t} \\ \varepsilon_{6t} \\ \varepsilon_{7t} \end{bmatrix} \dots\dots\dots(3.9)$$

Furthermore, if the data shows stationary in first difference and cointegration between variables, the the VAR model will be combined with correction error model, namely Vector Error Correction Model (VECM). Therefore, VECM model equation of Islamic rural bank financing system are as equation 3.20. Where, Δ is the change of variable from previous period, λ is an adjustment level from short-term to long-term equilibrium.

RESULTS AND DISCUSSION

Testing the unit root is using Augmented Dicky-Fuller (ADF), which aims to see whether the time series data is stationary or not with comparing statistical Mac Kinnon Critical value at α = 1 percent, 5 percent and 10 percent. If the current level of data tested is not stationary, it will be

followed by a integration degree test at first difference. The following table result of unit root test at level. Table 2 shows that all variables are stationary at first differences. It can be shown of ADF value (financing, third-party fund, return on asset (ROA), non-performing financing (NPF), equivalent rate, inflation, exchange rate) is bigger than critical value of Mac Kinnon. These data shows probability value of each variable smaller than 1 percent, 5 percent and 10 percent. In the ECM methods, the requirements that must be fulfilled are all variables must be in the same degree. By testing of integration degree test above means that all the requirements has been fulfilled at first difference.

Once the variable has been stationary in the first differences, then we can conduct cointegration test to know whether there is long-term relationship among all variables. This study is using Johansen co-integration test.

Table 2. ADF Test Summary

Variable	ADF Value		McKinnon Critical Value (0.05)	
	Level	1 st Difference	Level	1 st Difference
<i>ln</i> FINC	-2.107834	-5.834515	-2.903566	-2.903566
<i>ln</i> DPK	-1.488592	-7.702444	-2.902953	-2.903566
ROA	-1.600731	-9.781826	-2.902953	-2.903566
NPF	-2.873127	-10.95137	-2.902953	-2.903566
PLS	-2.825242	-10.48167	-2.902953	-2.903566
INF	-2.855500	-4.229806	-2.903566	-2.903566
<i>ln</i> EXrate	-0.222571	-7.239539	-2.902953	-2.903566

Source: Primary data, processed.

If the trace statistic value and maximum eigenvalue statistic is greater than the critical value 0.05, it means that it has cointegration among all variables. The following table test results Johansen cointegration (see Appendix 1).

Based on the test results of cointegration Johansen above, it can be seen from the test trace statistic and maximum eigenvalues statistic indicate the existence of cointegration at significance level $\alpha = 5$

percent, so it can be concluded that all variables namely third-party fund (DPK), return on asset (ROA), non-performing financing (NPF), Inflation, PLS (Profit-and-Loss sharing) and exchange rate, they have long term effects on Islamic rural bank financing.

Error Correction Model test shows that all variables cointegrated which means have long-term relationship. Here are the results of long-term estimates:

Table 3. Error Correction Model Estimation Result

Variable	Short-term		Long-term	
	Coefficient	t-Statistic	Coefficient	t-Statistic
Constant	2,164	9,37***	2.522	5.40***
$\Delta \ln$ DPK	1,038	8,69***	0.996	85.24***
Δ ROA	-1,167	-1,258	-0.857	-0.806
Δ NPF	3,971	7,58***	3.519	4.06***
Δ INF	0,303	1,139	0.327	1.362
Δ PLS	0,170	0,545	0.0003	0.648
$\Delta \ln$ EXrate	-0,190	-2,48**	-0.269	-4.27***
$\Delta \ln$ DPK (-1)	0,997	107,3***		
Δ ROA (-1)	-0,673	-1,273		
Δ NPF (-1)	3,773	8,65***		
Δ INF (-1)	0,246	2,046**		
Δ PLS (-1)	0,116	0,361		
$\Delta \ln$ EXrate (-1)	-0,236	-7,69***		
ECT	0,992	16,01***		
R^2	0.999		0.995	
Adjusted R^2	0.997		0.995	
S.E. of regression	0.013058		0.030241	
F-statistic	5876.451***		2434.343***	
D-W stat	1.678532		0.593449	
BG-LM test	4.587.8[0.1009]			
ARCH test	1.170.2[0.0689]			
Partial Correlation	< 0.85			

Notes: ***, **, * represent significant at 1%, 5%, and 10%, respectively. BG-LM test is used to detect auto-correlation problem; ARCH test is applied to test the homogeneity of variance; and Partial Correlation is to detect multi-correlation.

Source: Data Processed.

The estimation equation in the long term and short term can be obtained, showing the coefficient of determination adjusted (Adjusted R^2) is 0.99, it means the ability of third-party fund, return on asset (ROA), non-performing financing (NPF), Inflation, PLS (Equivalent Rate) and exchange rate to explain the changing of Islamic rural bank financing is 99.9084 per cent while the remaining 0.016 percent influenced by other factors outside model. Generally, the result of parameter significant test known that the F-statistic of 5876.451 with a probability value of F-statistic $0.000 < \alpha$ (level of significance) 1 percent. This shows that third-party fund, return on asset (ROA), non-performing financing (NPF), Inflation, profit-and-loss sharing and exchange rate are significantly on Islamic rural bank financing.

Based on the estimation results can be seen that the coefficient on the variable Error Correction Term (ECT) is significant at the 1 percent level of significance and has a positive sign and is therefore said that the model ECM can be used to estimate the model in this study. Or in other words the specification of the model used in this study are valid.

Based on estimation result, it can be created mathematic equation as follows:

$$\ln \text{FINC} = 2,164423 + 1,038631 \ln \text{DPK} + 3,971966 \text{ npf} - 0,190979 \ln \text{Kurs} + 0,997165 \ln \text{DPK}(-1) + 3,773358 \text{ npf}(-1) + 0,246909 \text{ inf}(-1) - 0,236852 \ln \text{Kurs}(-1) - 0,992607 \text{ ect}$$

Interpretation of individual regression coefficients (t-test) long term are as follows:

Third-party fund (DPK) variable effect on the growth of Islamic rural bank with statistical t-test, it shows that coefficient value positively of 0.997165 means that if the variable in deposits increased by 1 percent, there will be an increase of 0.997 to variable financing with a value of 107.3304 and probability value of 0.0000 which is significant at $\alpha = 1$ percent. This

suggests that in the long run third-party fund variable has a significant positive effect on the changing of Islamic rural bank financing.

The effect of return on asset (ROA) toward Islamic rural bank financing by t-statistic test shows that the coefficient negatively of 0.67345, t-statistic value negatively 1,273743 and probability value of 0.2079 which is not significant $\alpha = 1$ percent, 5 percent and 10 percent. It shows that ROA does not have significant effect in changing on Islamic rural bank financing.

The effect of non-performing financing toward Islamic rural bank financing by t-statistic test shows that the coefficient positively of 3.773358, means that if the variable of non-performing financing increased by 1 percent, there will be an increase of 3.773 to variable financing with a statistic value of 8.652624 and probability value of 0.0000 which is significant at $\alpha = 1$ percent. This suggests that in the long run, non-performing financing variable has a significant positive effect on the changing of Islamic rural bank financing.

The effect of inflation toward Islamic rural bank financing by t-statistic test shows that the coefficient positively of 0.246909, means that if the variable of inflation increased by 1 percent, there will be an increase of 0.246 percent to variable financing with a statistic value of 2.046354 and probability value of 0.0000 which is significant at $\alpha = 5$ percent. This suggests that in the long run, inflation variable has a significant positive effect on the changing of Islamic rural bank financing.

The effect of PLS (Equivalent rate) toward Islamic rural bank financing by t-statistic test shows that the coefficient negatively of 0.116496, t-statistic value 0.36104 and probability value of 0.7194 which is not significant $\alpha = 1$ percent, 5 percent and 10 percent. It shows that equivalent rate does not have significant effect in changing on Islamic

rural bank financing. The effect of exchange rate toward Islamic rural bank financing by t-statistic test shows that the coefficient negatively of -0.236852, means that if the variable of exchange rate increased by 1 percent or *depreciation*, there will be a decrease of 0.236 percent to variable financing with a statistic value of 7.695763 which is significant at $\alpha = 1$ percent. This suggests that in the long run, exchange rate variable has a significant effect on the changing of Islamic rural bank financing.

Vector Error Correction Model (VECM) is several procedures of data testing should be followed as a standard procedures for using VAR/VECM method, such as unit root test, stability test, optimum lag test, and cointegration test. After all requirements have been met, results can be generated. The complete results of all VECM procedures can be obtained from the authors.

Unit root test results show that all of variables are not stationary in level, except three variables reach stationer in *level* in McKinnon Critical Value 0.10 that is inflation, growth and PLS, but all variables are stationary in first difference (see table 4 in previous section.)

The VAR system at its optimal lag should be stable. Unstable VAR system will make the result of Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD) are not valid. The stability test based on modulus or unit circle will be applied to determine if the VAR system at its optimal lag is stable within its unit-circle or modulus less than one. Stability test result for original VAR system (optimal lag = 1) shows that Islamic rural bank financing model is stable with maximum lag up to six as show at table 6.

One problem of the VAR system is autocorrelation. To overcome this problem,

optimal lag length should be applied. Therefore, optimal lag length should be obtained using test of optimal lag. The selection of optimal lag length in this study will be based on the shortest lag of *Schwarz information criterion* (SC), *Final prediction error* (FPE) and *Hannan-Quinn information criterion* (HQ). Table 2. in appendix shows the results of the optimal lag selection for Islamic rural bank financing. Based on SC, FPE and HQ the optimal lag for financing is 1 (one).

All variables in financing model are stationary at first difference $I(1)$, so that the long-term relationships among variables can only be obtained if they have satisfied the criteria of integration process. Cointegration test based on trace statistics will be applied to determine the number of equation systems that can explain long-term relationship. Johansen cointegration test results for Islamic rural bank financing model with Trace Statistic show that there exist 3 (three) cointegrating equations at the 5% critical value (see Appendix 3).

The results of Impulse Response Function show responses variable Financing (FINC) against shocks from the bank's internal variable (bank behavior), which in this case is the Islamic rural bank, as well as of Macroeconomics variables. In Figure 2 shows that there are three variables that were positively responded by Financing (FINC), namely the profit-and-loss sharing 'PLS' (equivalent rate), Third-party fund (lnDPK) and Inflation (INF). This means that these three variables have a positive impact on Islamic rural banks financing in Indonesia. In addition, there are three variables that reduce Financing (FINC), namely Non-Performing Financing (NPF), Return on Assets (ROA) and the exchange rate (lnExrate). This means that the three variables have negative impacts in term of reducing Islamic rural banks financing. The

impact of shocks variables that were positively responded by Financing (FINC), began to stabilize after a period of 10-15, while the variable shocks that were responded negatively by Financing stable after 15-20. Profit-and-loss sharing (PLS) provides the greatest positive impact in improving the financing, followed by a variable Third-party funds and then inflation. Meanwhile, variable Non-Performing Financing (NPF) provides the greatest impact in reducing financing in BPRS followed by Return on Assets and Exchange rate.

Furthermore, the Forecast Error Variance Decomposition (FEVD) indicates that the variable PLS make a positive contribution to the financing of 39.08 percent, followed by lnDPK with a contribution of 19.6 percent and inflation (INF) amounted to 8.9 percent. In contrast, the largest negative contribution to the financing of BPRS caused by NPF (9.02%), ROA (7.76%) and exchange rate (2.48%). These results can of course be used as an evaluation that BPRS financing is not only influenced by the internal but also external factors of the bank, in this case the macroeconomic conditions.

In this study deliberately used two (2) methods of research to explore and enrich the analysis, so the results will be obtained become

more comprehensive. The analysis will begin by discussing the bank's internal factors and continued with a discussion on the impact of macroeconomic variables. *Bank's internal factors (bank's behavior)*

In the ECM model, indicates that the variable Third-party fund (lnDPK) have a positive effect on the financing of Islamic rural bank (BPRS). This can be seen from the coefficient in the short term in period t at 1.0386, the previous period $t-1$ at 0.99716 and the value of long-term coefficient of 0.99654, all coefficient is positive and significant effect of the financing on the critical value of 5% (see table 4). This is similar to the results shown by the model VECM via Impulse Response Function where financing can respond positively to shocks variable lnDPK and stabilized after the 13th period.

Third party funds are the source of the greatest in the process of distribution of funds from the public to society (intermediary). The positive influence of DPK to BPRS financing in long-term and short-term shows that BPRS in Indonesia perform its function both as a financial intermediary. DPK has an important role in financial institutions, it is because the amount of financing depends on the amount of funds available (Muhammad, 2005: 52).

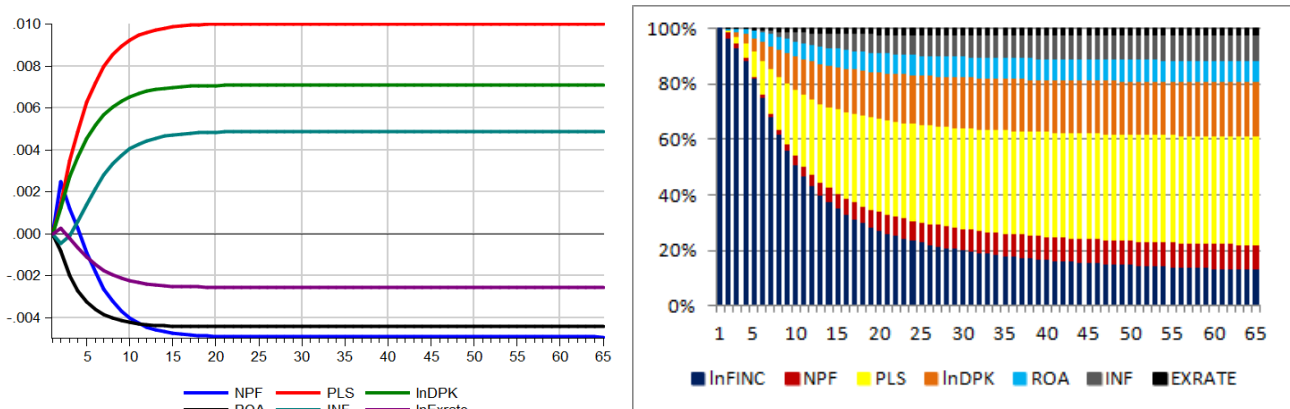


Figure 2. Impulse Response Function (left) and Forecast Error Variance Decomposition (right) for Islamic Rural Bank Financing

When financing submitted by the public is getting higher, it would be in line with the increase in positive surplus in the form of income that will be earned by the BPRS itself. Therefore, BPRS need to implement strategies for effective marketing to attract people who have excess funds to be able to keep it in BPRS. Thus, the results in deposits that affect the growth of BPRS financing in line with research conducted by Pratama (2010) and Haryati (2009).

Variable Return on Assets (ROA), which indicates the profitability of the BPRS has a negative coefficient on the short-term at period t with a value of -1.1666, period $t-1$ with the coefficient value of -0.67345 or in the long term with the coefficient of -0.856787, every coefficient is worth the negative and not significantly affect the financing. While in VECM model, ROA has a negative influence and permanent, meaning that ROA reduce the impact of financing. BPRS level of profits does not necessarily increase the financing but it has a tendency to lower the financing.

This can happen because in 2010 the growth of Islamic banks are increasingly flourishing due to a conventional commercial bank opened Islamic bank makes a new competitor for BPRS so that the public interest would be filing financing in BPRS declined slightly. As a result, the IRF chart we can observe that the ROA BPRS moved down, profits obtained more allocated to the development of the company's assets and a little portion of the revenue is used to increase the capital in expanding its business expansion.

Meanwhile, variable Non-Performing Financing (NPF) for ECM model shows a positive coefficient in both the short term and in the long term. In the short term period t

coefficient of NPF is the largest coefficient in comparison with other variables that is equal to 3.971966, and amounted to 3.77335 for the period $t-1$, while for long-term coefficient of 3.519818; every coefficient is positive and significantly affect the financing. This certainly could happen for several reasons, including the quality factor of financing, that the high value of NPF cause nominal financing continues to grow. Bad financing unresolved but the BPRS should still add financing, ultimately what happens is an increase in the remaining principal debt outstanding or unpaid.

The yield on the ECM model has differences with the output from the VECM model. Through the IRF chart can be seen that the variable NPF has the largest negative contribution to the financing, meaning that the more the number of NPF then the loan amount will be further reduced. This negative influence is beginning to stabilize after a 15th period (see figure 2) by reducing the contribution of financing by 9.02 percent. Variable NPF in Islamic banking is an indicator of credit risk are very concerned, because if the credit risk increases, banks will be more cautious in providing financing. Thus, it is unlikely that a bank will reduce financing and focus repair, recovery financing problems.

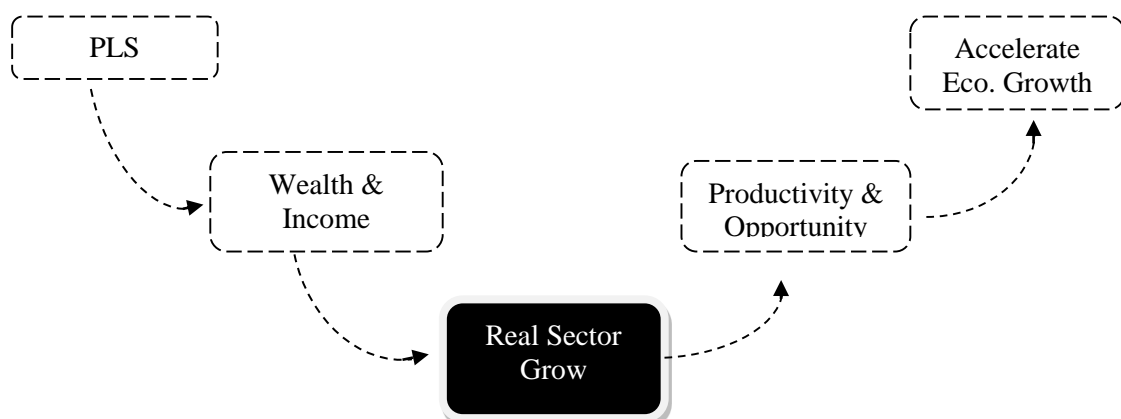
The last variable of the banks behavior is profit-and-loss sharing (PLS). In ECM model, variable PLS coefficients is positive in period t , the previous period ($t-1$) as well as in the long term, although nothing is statistical significantly affect the financing with a positive coefficient means financing provided BPRS has been with the system for the results having an impact positive for financing. Through VECM approach, get a graph which shows that PLS has a positive impact for financing. This is reinforced by evidence that PLS has the largest positive

contribution to the financing (39.08% see in figure 2). This means that the system for the results being able to touch and move the real sector economic activities. According Sakti (2007), PLS implications for the real sector is crucial, because if the PLS is applied properly will foster a favorable investment climate and fair so that the concentration of wealth can be prevented, the distribution of income and wealth growth in real sector were stable. The growth of the real sector will increase labor productivity and opening up more job opportunities, eventually driving the pace of economic growth based on the real sector. Thus, BPRS financing with PLS system should be encouraged and enhanced since that is what will sustain economic growth and promote the welfare of society.

Macroeconomics variables

Not only banks behavior factors that affect the performance of bank financing, macroeconomic conditions also become an integral part of the financing. In this study macroeconomic variables are represented by a variable exchange rate and inflation. Variable exchange rate as described in the ECM model, has a coefficient of negative

worth, both in the short and long term. This is evident from the coefficient of -0.190979 t period, the previous period ($t-1$) at -0.23685 and in the long term by -0.26948 ; all significant at the 5% critical value. Meanwhile, VECM model also shows the same thing that the exchange rate variable has a negative impact or contribution to the financing of 2.48%; this value is the smallest value when compared with other variables that have negative impact. Variable exchange rate stabilized after 12th period (see figure 2). Exchange rate variable, in this case the value of the rupiah against the US dollar, there is a term appreciation and depreciation. When the value of the rupiah against the US dollar increase, means is happening appreciation; or Rupiah exchange rate become stronger (ex. 1 US \$ = Rp 12.000 to 1 US \$ = Rp 11.000), and *vice versa*, if Rupiah falls in value against the US dollar, means is happening depreciation, for example, 1 US \$ used to equal Rp 10,000 when it turns to 1 US \$ is equal Rp 12,000. In this study, the increase in the exchange rate in question is depreciation, so that when the exchange rate falls in value (Rupiah become weaker) impact on decreasing Islamic rural bank financing.



Source: Sakti (2007)

Figure 3. Profit-and-Loss Sharing (PLS) Implications

Indonesia as the State importers some essential commodities, such as beef, fruits and others, if the Rupiah depreciates (rupiah become weaker) then the price will rise causing sluggish economy and society tends to depress consumption so that the financing would be decreased. When Rupiah in a bad condition employers will be more careful in taking financing because of the credit-risk will also be high. From the side of BPRS, the bad condition of the rupiah will tend to seek financing with better quality and of course this is not easy at all. Finally, the financing also declined.

Macroeconomic condition that contributes to affect financing is inflation. In ECM model, inflation has a coefficient of 0.303697 worth in period t , amounted to 0.246909 in the previous period ($t-1$) and amounted to 0.327668 in the long term. All coefficients are positive but that affect significantly only in period $t-1$, so the inflation that occurred earlier period provides a significant effect for increased financing. Similar results were also obtained from VECM model, where variable inflation contributes positive impact on financing with a value contribution of 8.9% and stabilized in 15th period.

The impact of inflation towards financing (bank credit) was accordance with Haryati (2009), where the inflation gave positive impact to credit growth.

CONCLUSION

This paper provides some important findings. *First*, based on both ECM model and Impulse Response Function, Third Party Funds (InDPK) had affected positively on the BPRS financing in the long term and short term. The positive influence of DPK to finance

long-term and short-term shows that the ISLAMIC RURAL BANKsharia in Indonesia perform its function both as a financial intermediary. This means that it is a must for Islamic rural bank to always focus on improving the quality and quantity of third party fund. In addition, Profit-and-loss sharing, as suggested by many proponents of Islamic economics, is the main factor that differentiates Islamic banking practices from conventional counterpart. It is apparent from this study that PLS gives a significant influence to financing, based on VECM. Regarding credit risk, BPRS must reduce the non-performing financing as it can bring about instability of Islamic rural bank performance as a whole. Given the macroeconomic condition, it is also found that inflation could not reduce the financing growth, indicating the stability of Islamic rural bank. In contrast, the volatility of exchange rate may probably limit financing. Islamic rural bank, however, should be aware of knowing exchange rate volatility. *Second*, referring to the variance decomposition result, Profit-and-loss sharing (PLS) has the largest positive impact to financing (39.08%), followed by InDPK (19.6%) and inflation (8.9%). While, the largest contribution to the financing of BPRS caused by NPF (9.02%), followed by ROA (7.76%) and exchange rate (2.48%).

REFERENCES

- Achsani, Noer Azam, Oliver Holtemoller, and Hizir Sofyan. (2005). "Econometric and Fuzzy Modeling of Indonesian Money Demand." In *Statistical Tools for Finance and Insurance*, edited by Pavel Cizek, Wolfgang Hardle, and Rafal Weron, 249-270. Berlin Heidelberg, Germany: Springer-Verlag.
- Antonio, M. Syafi'i. (2012). *Bank Syariah: dari Teori ke Praktik*. Jakarta: Gema insani.
- Ascarya, Heni Hasanah and Noer Azam Achsani. (2008). *Perilaku Permintaan Uang dalam Sistem Moneter*

- Ganda di Indonesia. *Buletin Ekonomi Moneter dan Perbankan* (Juli): 53-78.
- Ascarya. (2009). "Lessons Learned from Repeated Financial Crises: An Islamic Economic Perspective". *Bulletin of Monetary Economics and Banking* 12(1): 27-69.
- Ascarya. (2012). "Transmission Channel and Effectiveness of Dual Monetary Policy in Indonesia". *Bulletin of Monetary Economics and Banking* 14(3): 269-298.
- Baltagi, Badi H. (2011). *Econometrics*. 5th Edition. London, New York: Springer Heidelberg Dordrecht.
- Berrosipide, Jose M and Edge, Rochelle M. (2010). "The Effects of Bank Capital on Lending: What Do We Know, and What Does It Mean?". *International Journal of Central Banking* 6(4): 5-54.
- Burhanuddin, Susanto.(2008). *Hukum Perbankan Syariah di Indonesia*. Yogyakarta: UII pres.
- Domowitz, I. and I. Elbadawi. (1987). An Error-Correction Approach to Money Demand: The Case of Sudan. *Journal of Development Economics* 26: 257-275.
- Enders, Walter. (2004). *Applied Econometric Time Series*. John Wiley & Sonc, Inc.
- Gambacorta, Leonardo and Marques-Ibanez, David. (2010). "The New Bank Lending Channel: lesson from crisis". *Journal of Financial Stability*.
- Ghazali, Imam. (2013). *Aplikasi Analisis Multivariate Dengan Program IBM SPSS 21*. Semarang: Badan Penerbit Universitas Diponegoro.
- Gujarati, Damodar N. (2004). *Basic Econometrics*. Fourth Edition. London: McGraw-Hill.
- Haryati, Sri. (2009). "Pertumbuhan Kredit Perbankan di Indonesia: Intermediasi dan Pengaruh Variabel Makro Ekonomi". *Jurnal Keuangan dan Perbankan*, Vol. 13, No. 2, pp. 299-310.
- Huda et. al. (2009). *Ekonomi Makro Islam: Pendekatan Teoritis*. Jakarta: Kencana Prenada Media Group.
- Insukindro. (1998). "Pendekatan Stok Penyangga Permintaan Uang: Tinjauan Teoritis dan Sebuah Studi Empirik di Indonesia". *Ekonomi dan Keuangan Indonesia XLVI*(4): 451-471.
- Karim, Adiwarman A. (2007). *Ekonomi Makro Islam*. Jakarta: Raja Grafindo Persada.
- (2010). *Bank Islam: Analisis Fiqh dan Keuangan*. Jakarta: Raja Grafindo.
- Kasmir. (2012). *Manajemen Perbankan*. Jakarta: Raja Grafindo Persada.
- Kuncoro, Mudrajad. (2007). *Metode Kuantitatif: Teori dan Aplikasi Untuk Bisnis dan Ekonomi*. Yogyakarta: UPP STIM YKPM.
- Kusnandar, Engkus. (2012). *Analisis Faktor-Faktor Yang mempengaruhi Pemberian Kredit UMKM Oleh Perbankan Di Indonesia*. Tesis. Fakultas Ekonomi Universitas Indonesia.
- Pandia, Frianto. (2012). *Manajemen Dana dan Kesehatan Bank*. Jakarta: Rineka Cipta.
- Pratama, Billy Arya. (2010). *Faktor-Faktor Yang Mempengaruhi Kebijakan Penyaluran Kredit Perbankan (Studi pada Bank Umum di Indonesia Periode Tahun 2005 - 2009)*. Tesis. Semarang: Program Pasca Sarjana Universitas Diponegoro.
- Revania, L. (2014). ANALISIS FAKTOR-FAKTOR YANG MEMPENGARUHI IMPOR JAGUNG DI INDONESIA TAHUN 1982 - 2012. *JEJAK: Jurnal Ekonomi Dan Kebijakan*, 7(1), 102-112. doi:http://dx.doi.org/10.15294/jejak.v7i1.3847
- Sakti, Ali. (2007). *Sistem Ekonomi Islam: Jawaban atas Kekacauan Ekonomi Modern*. Jakarta: Paradigma & Aqsa Publishing.
- Sudarsono, Heri. (2008). *Bank Dan Lembaga Keuangan Syariah: Deskripsi Dan Ilustrasi*. Yogyakarta: Ekonisia.
- Sudarsono, Heri. (2009). "Dampak Krisis Keuangan Global terhadap Perbankan di Indonesia: Perbandingan antara Bank Konvensional dan Bank Syariah". *Jurnal Ekonomi Islam* 3(1): 12-23.
- Sumitro, Warkum. (2004). *Asas-asas perbankan Islam dan Lembaga-Lembaga terkait*. Jakarta: Raja Grafindo.
- Swamy, Vighneswara. (2012). "Financial Instability, Uncertainty and Bank Lending Behavior". *International Journal of Banking and Finance* 9(4): 74-95.
- Utama, E. R. (2013). Analisis Faktor-Faktor yang Mempengaruhi Impor Minyak Mentah di Indonesia. *Journal of Economics and Policy* 7(1): 85-91.
- Utari, G.A Diah., Arimurti, Trinil., Kurniati, and Ina Nurmalia. (2012). "Pertumbuhan Kredit Optimal". *Buletin Ekonomi Moneter dan Perbankan*.
- Widarjono, Agus. (2013). *Ekonometrika: Pengantar dan Aplikasinya*, Edisi Keempat, Yogyakarta: UPP STIM YKPN.