

# **The Effect of Bank Monitoring on Profit Efficiency of Banking Companies Listed in the Indonesian Stock Exchange**

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## **Abstract**

This study aims to examine the influence of bank monitoring on profit efficiency of banking companies in the Indonesian Stock Exchange. This paper uses panel data analysis of 29 companies listed in the Indonesian Stock Exchange during the period 2010-2014. Specific fixed-effect regression models for each bank were used in this study to estimate the value of bank monitoring variables. To obtain accurate results, this study uses some control variables, which are bank size, bank profitability, banking liquidity, market share, and bank capital. This study also uses a two-stage research method. First, bank efficiency is estimated using Stochastic Frontier Analysis (SFA). Second, the scores obtained from the first stage are regressed with the bank monitoring variable and a number of control variables using the tobit regression technique. This research finds that bank monitoring variable has a positive and significant effect on the profit efficiency of banking companies listed in the Indonesian Stock Exchange. The results of this study prove that banks allocating more resources for monitoring can earn more efficient profit. This study also provides empirical evidence that bank monitoring can increase the value of banking companies in Indonesia.

**Keywords:** Profit efficiency, bank monitoring, stochastic frontier analysis, Tobit regression.

## **Introduction**

Economic development that occurs in a country cannot be separated from the important role of financial markets (financial markets). In essence, financial markets play a simple role, but that role has big implications for the economy. The role of the financial market is to provide a channel of funds originating from parties experiencing surplus funds both individuals and corporations, to then be channeled to companies, governments, and individuals who seek funding to finance an investment opportunity when internal funds are insufficient (Megginson, 1997:388). In the financial literature, the role is known as the financial intermediary.

Banking is one of the financial institutions that play a crucial role as financial intermediaries in the era of modern economy. Banks allow companies and households to overcome economic uncertainty. Efficient banking sectors reduce the costs and risks associated with the production and trade in goods and services. Thus, banks have an important contribution to stability and economic growth (Herring and Santomero, 1995; Shan, Morris and Sun, 2001). This condition requires

great attention to the assessment of bank efficiency. Because, efficiency is one measure of the bank's performance and health. The concept of efficiency assesses how much output a bank can get from a certain amount of input, or how minimal inputs are used to produce output at a given level.

Various developments and events that occur so far show the great interest of stakeholders related to the importance of efficiency in the banking industry. Increased competition in the financial industry, technological innovation and consolidation, led to an emphasis on banks for cost control and efficient provision of services and bank products (Spong, Sullivan and DeYoung, 1995).

After the global economic crisis of 2008-2009, efficiency became the central issue discussed in various parts of the world. In the United States, the poor performance of banks is seen as the trigger for the global crisis. No exception in Indonesia, efficiency also gets more attention. Moreover, the country implements a bank-based economy system, an economy that relies on the existence of banking as a source of financing. Therefore, efforts to strengthen a healthy, efficient and beneficial banking system for the economy are the key to success in maintaining the sustainability of national economic development.

Theoretically, efficiency is closely related to the value of the bank, therefore low efficiency banks have low values as well. In the literature it is mentioned that there are a number of factors that affect the efficiency level. One of profit efficiency research in Indonesia conducted by Muazaroh et al. (2012) found that bank size, bank liquidity, bank capital, bank profitability and market share had an effect on earnings efficiency. Research by Akhigbe and McNulty (2011) related to earnings efficiency of commercial banks in the United States concluded that bank monitoring has a positive effect on profit efficiency. In other words, the higher the bank's monitoring of the borrower, the higher the profitability of the bank. In addition to bank monitoring, their study also provide some evidences that non-interest income, bank age, bank size, market concentration, ownership type, market risk, and savings account are factors affecting profit efficiency.

A study examining the effect of bank monitoring on profit efficiency is still very limited; only 3 studies have been conducted in the United States while in Indonesia there has been no prior research that comprehensively examines this issue. For example, Akhigbe and McNulty (2011) found that banks monitoring have a positive and significant effect on profit efficiency. In that study, bank monitoring becomes the variable that has the strongest impact on profit efficiency after fee revenue. Based on the result of this research, the researcher wanted to test deeply about the influence of bank monitoring on profit efficiency in the Indonesian Stock Exchange.

## **Literature Review**

### ***Financial Intermediary Theory***

The theory of financial intermediation examines the role of financial intermediaries (commercial banks) as one source of funding for the company. Financial Intermediary or financial intermediary is a financial institution that decides the direct funding link between the saver and the borrower through the transformation of the savings claim in the form of ownership into the borrower's claim. This process is referred to as qualitative asset transformation (Megginson, 1997:388). In the economic sense, financial intermediaries raise funds by selling claims against themselves and then investing the funds in debt and equity issued by individuals, governments, and non-financial corporations.

The article written by Leland and Pyle (1957) is the first literature to popularize the theory of financial intermediation. In the literature it is emphasized that financial

intermediation institutions can reduce the asymmetry of information that occurs between investors and companies. In addition, there is another important role that the bank operates as a financial intermediary, which is called as bank monitoring. Bank monitoring serves to reduce information asymmetry between investors and borrowers. Specifically, as described by Leland and Pyle (1977), Ramakrishnan and Thakor (1984), and Allen (1990), monitoring banks can be seen as collecting information about the quality of the borrower and verifying the borrower's cash flow (Townsend, 1979). Diamond (1984) added that monitoring may also be an act of the bank against aberrant borrowers.

Refers to the complexities of the roles that banks undertake discussions related to feedback obtained by the bank have always been the main concern of the researchers. Some studies focus on the effect of monitoring on profit efficiency. Profit efficiency has been used widely as a measure of bank financial performance. It is generally assumed that monitoring requires a high cost, but nevertheless provides greater benefits than its cost. This concept provides an accurate account of how the financial system works; banks that allocate more resources for monitoring have superior profit efficiency (Akhigbe and McNulty, 2011). In other words, this model assumes that the resources used to make good loans and prevent loan losses will generate or retain earnings greater than the costs incurred for the monitoring activity itself.

### **Efficiency Theory**

The term efficiency was originally introduced by Farrell (1957). Efficiency is defined as the success of a company producing as much output as possible using a number of inputs. Meanwhile, according to Muazaroh et al. (2012), efficiency is defined as the organizational ability to generate maximum output by using a certain input level, or using a minimum input for a given level of output. Both definitions of efficiency refer to economic efficiency or overall efficiency. One measure of economic efficiency is profit efficiency. Profit efficiency is a measure that shows how close a company's profits (banks) relative to the company's profit if it is in best practice (Akhigbe and McNulty, 2011).

Among the various factors that affect the efficiency of earnings in the banking, bank monitoring become the focus in this study. Bank monitoring or bank monitoring is an important activity for banks because it serves to ensure credit allocated can be paid on time by the borrower. Due to its large role in determining the quality of banks, it is possible that bank monitoring are the main factors affecting profit efficiency. This is what encourages researchers to examine the effects of these two variables. In addition, research on the effect of monitoring on bank performance has not received much attention so far, especially in Indonesia, in contrast to other factors that have been tested in many parts of the world.

### **Theoretical Framework**

#### *The Influence of Bank Monitoring on Profit Efficiency*

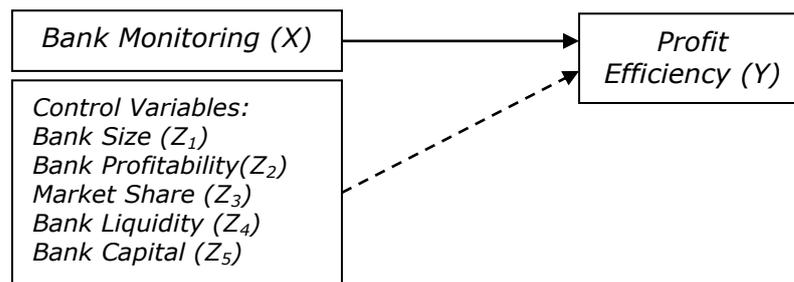
The influence of bank monitoring efforts on profit efficiency by Berger and DeYoung (1997) can be explained by several theories. The first theory is "bad management hypothesis". Based on this hypothesis, the low bank monitoring effort is a reflection of the low quality of banking management. Poor management practices show inadequate underwriting and monitoring capabilities. This directly affects the quality of credit and cash inflow of the bank so as to make the profit efficiency of the bank to be low.

The second theory is "Skimping Hypothesis". This theory explains that savings on monitoring costs will increase the profitability of banks. According to research by Berger and DeYoung (1997) the cost savings of monitoring costs that should be

issued by banks will result in the emergence of more problematic loans and require higher costs to complete. So in the long term this savings will disrupt banking performance. Therefore, high monitoring effort (no savings) will ensure the quality of credit so that it will increase the profitability of banks. The empirical evidence of both theories is generated in a number of studies such as Berger and DeYoung (1997), Vennet (2002), and Akhigbe and McNulty (2011).

H<sub>1</sub>: Bank Monitoring has a positive and significant effect on profit efficiency of banking companies in Indonesia Stock Exchange.

Based on the above explanation, the theoretical framework of this research is as follows:



**Figure 1.** Theoretical framework.

## Research Method

### Population and Sample

The population in this study is the banking listed on the Indonesia Stock Exchange which amounted to 42 companies. Sampling method used is non-probability sampling which is purposive sampling. The sample that meets the criteria in this research is 29 companies, with criterion (1) listed on Indonesia Stock Exchange during 2010-2014 (2) classified as commercial / commercial bank and (3) published financial report for 5 years (2010-2014).

**Table 1.** Operational definitions of variables.

Variables	Symbol	Measurement
Profit Efficiency	PROEEF	Stochastic Frontier Approach (Muazaroh et al., 2012)
Monitoring Proxy	MONITOR	Specific Fixed-Effect Regression Models (Akhigbe and McNulty, 2011)
Market Share	MS	$Size = \ln (Total Asset)$
Profitability	ROA	$ROA = \frac{Earning\ Before\ Tax}{Total\ Assets}$
Size	SIZE	$LDR = \frac{Total\ Loans}{Total\ Deposits}$
Liquidity	LDR	$MS = \frac{Total\ Bank\ Loans_i}{Total\ Loans\ of\ All\ Banks}$
Capital	CAR	$CAR = \frac{Capital}{Risk\ Weighted\ Assets} \times 100\%$

### Research Model

To answer research questions, data analysis and interpretation are required. The method used to analyze the data in this research is Tobit Regression Analysis (Akhigbe and McNulty, 2011). This model is shown by the equation as follows:

$$PROEF_{it} = MONITOR_{it} + SIZE_{it} + ROA_{it} + MS_{it} + LDR_{it} + CAR_{it}$$

Definitions:

- i* : 1, 2, 3, 4..., 29  
*t* : 1, 2, 3, 4, 5  
 PROEF : Bank Profit Efficiency  
 MONITOR : Bank Monitoring Proxy  
 MS : Bank Market Share  
 ROA : Return on Asset  
 SIZE : Bank Size  
 LDR : Loan to Deposit Ratio  
 CAR : Capital Adequacy Ratio

### **Analysis Technique and Hypothesis Testing**

This study uses Eviews Program as a tool of technical analysis. Then, the tobit regression model used in hypothesis testing has to be free from violation of classical assumption. A good regression model is a regression model that meets the BLUE (Best Linear Unbiased Estimation) criteria. To meet this criterion, it takes some testing of the data to be tested by regression analysis. The tests consist of Normality Test, Multicollinearity Test, Heteroscedasticity Test and Autocorrelation Test. Normality test aims to test whether in a regression model, the disturbing or residual variable is normally distributed (Ghozali, 2009). In this study to test the residual normality, the researchers used Kolmogorov-Smirnov non-parametric statistical test (K-S). Multicollinearity test aims to test whether in the regression model found a correlation between independent variables. The autocorrelation test aims to test whether in the regression model there is a correlation between the misuse of use in period *t* and the misuse of the period *t*-1 (previously). Heteroscedasticity test aims to test whether in the regression model there is a resonance of residual variance from one observation to another (Ghozali, 2009).

### **The Result of Classical Assumption Testing**

#### *Normality test*

Normality assumption test in this research is done through statistical test non-parametric Kolmogorov-Smirnov (K-S). Table 2 shows that the significance value of the normality test is 0.056 or above 0.05 so it can be concluded that the residual data is normally distributed.

**Table 2.** One-Sample Kolmogorov- Smirnov Test.

<b>One-Sample Kolmogorov- Smirnov Test</b>	
N	145
Kolmogorov-Smirnov Z	1.339
Asymp. Sig. (2-tailed)	0.056

Source: SPSS Output Result

#### *Multicollinearity Test*

Based on Table 3, it can be seen that all independent variables have Tolerance value above 0.1 and VIF value is far below number 10. This indicates that the independent variables used are not correlated with each other and the data are free of multicollinearity problem.

**Table 3.** Multicollinearity test result.

Model	Collinearity Statistics	
	Tolerance	VIF
1 (Constant)		
MONITOR	0.812	1.232
SIZE	0.282	3.546
ROA	0.710	1.409
LDR	0.779	1.284
MS	0.271	3.691
CAR	0.906	1.103

Source: SPSS Output Result

*Autocorrelation Test*

In Table 4 obtained value DW = 2.003. This value is in the "no autocorrelation" area because  $1.8154 < 2.003 < 2.1846$ . This shows that after transforming process there is no more autocorrelation problem in this model.

**Table 4.** Autocorrelation test results after lag phase II.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.093 <sup>a</sup>	0.009	0.002	0.09939196	2.003

Source: SPSS Output Result

*Heteroscedasticity Test*

The method used to see whether or not heteroscedasticity in the model in this study is the Glejser test. The test is done by comparing the significance of the test with alpha at 5% level. If the significance value is above 5%, then we conclude that heteroscedasticity does not occur in the research model.

From Table 5, we find that the significance value of all variables used in this study is above 0.05 ( $\alpha = 5\%$ ). From these results, it can be concluded that there is no heteroscedasticity in the model.

**Table 5.** Heteroscedasticity test results (Glejser Test).

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error				Beta	Tolerance
(Constant)	0.288	0.134		2.148	0.033		
lagMONITOR	-0.219	0.175	-0.112	-1.251	0.213	0.839	1.192
lagSIZE	-0.015	0.011	-0.215	-1.345	0.181	0.266	3.762
lagROA	0.692	0.438	0.157	1.579	0.117	0.689	1.452
lagLDR	-0.103	0.059	-0.168	-1.750	0.082	0.736	1.358
lagMS	0.256	0.444	0.091	0.575	0.566	0.274	3.650
lagCAR	-0.032	0.129	-0.022	-0.250	0.803	0.880	1.137

Source: SPSS Output Result

## Results and Discussion

Tobit regression is one type of regression used to analyze the effect of independent variables on the dependent variable. Unlike the other multiple regression, tobit regression has the main characteristics, namely the value of the dependent variable, which is limited (censored) and the independent variable, which is unlimited (uncensored). Tobit regression model is tested by using Eviews software version 8. The results are shown in the following Table 6.

**Table 6.** Tobit regression result.

Variable	Coefficient	Std. Error	z-Statistic	Prob. Value
MONITOR	0.6588	0.2124	3.1011	0,0019
SIZE	-0.0603	0.0134	-4.4932	0,0000
ROA	2.0111	0.5481	3.6692	0,0002
MS	1.8105	0.5494	3.2954	0,0010
LDR	-0.0672	0.0737	-0.9109	0,3624
CAR	0.2082	0.1570	1.3260	0,1849
C	0.9728	0.1635	5.9478	0,0000
Akaike info criterion	-1.620	Schwarz criterion		-1.455

Source: EVIEWS Output Result

In Table 6, independent variables, which is bank monitoring (MONITOR) has a significant positive effect on profit efficiency with coefficient value 0.6588 and prob. value 0.0019. However, there are two control variables that do not give significantly affect PROEFF, i.e. LDR and CAR. LDR has prob. value 0.3624, while CAR is 0.1849. Both values are above 0.05 ( $\alpha = 5\%$ ). Therefore, the researchers reexamine the effect of independent variables and control on the dependent variable by excluding LDR and CAR variables from the test. The results in Table 7 show that all the variables significantly influence the profit efficiency variables. The second test also forms a better model than the previous test. This refers to the value of Akaike info criterion and Schwarz criterion of the second regression result higher than the first regression result. Referring to the rules of determining the best equations in tobit regression, tobit regression with the value of Akaike info criterion and Schwarz smaller criterion is the best tobit regression. Akaike info criterion value in the second regression is -1.6297, higher than the first regression of only -1.620. Schwarz criterion value in the second regression is also more than the first regression (-1.5060 versus -1.455). So from both criteria can be concluded that the second regression result is better than first regression result.

**Table 7.** Result of tobit regression without LDR and CAR.

Variable	Coefficient	Std. Error	z-Statistic	Prob.
MONITOR	0.6331	0.2130	2.9730	0,0029
SIZE	-0.0687	0.0123	-5.5874	0,0000
ROA	1.7313	0.5077	3.4099	0,0006
MS	2.1566	0.4916	4.3869	0,0000
C	1.0731	0.1526	7.0308	0,0000
Akaike info criterion	-1.6297	Schwarz criterion		-1.5060

Source: EVIEWS Output Result

The result of tobit regression in Table 7 indicates that the bank monitoring variable (MONITOR) still has a positive and significant effect on profit efficiency with coefficient 0.6331 and prob. value 0.0029. The same thing also happened to 3 other variables, which all control variables still have a significant effect on the dependent variable.

The independent variables of bank monitoring have a positive and significant influence ( $\text{Sig} < 0.05$ ) on profit efficiency of banking in the Indonesian Stock Exchange during 2010 until 2014. The positive sign of the regression coefficient indicates that any increase of the bank monitoring effort will result in an increase in profit efficiency. Also on the contrary, a decrease in monitoring bank efforts will lead to a decrease in profit efficiency. The positive and significant coefficients of bank monitoring on profit efficiency in accordance with the initial assumption, namely the monitoring of banks have a positive and significant impact on the profit efficiency of banks in the Indonesian Stock Exchange. As previously assumed, the bank monitoring efforts reflected on the amount of wages being accumulated for monitoring activities will improve the quality of credit and generate value for banks. So this will push the banking profit to the maximum profit frontier that should be generated. The closer the firm's earnings to the frontier shows the more efficiently the inputs and outputs used to derive those profits.

This research is in line with several theories related to the positive influence of bank monitoring on profit efficiency. The first theory is "bad management hypothesis". Based on the hypothesis developed by Berger and DeYoung (1997), the low bank monitoring effort is a reflection of the low quality of banking management. Poor management practices show inadequate underwriting and monitoring capabilities. As "bad" managers, they may (1) have low skills on credit scoring and will therefore choose a relatively high proportion of loans with low or negative returns (NPV) (2) lack of competence in analyzing the value of collateral used as collateral for credit, and (3) having difficulty monitoring the borrower with purpose ensuring that agreements are adhered to and funds are invested with caution. This lack of monitoring ultimately leads to high number of problem loans so that borrowers have difficulty in repayment of their credit. This directly affects the cash inflow of banks, resulting in lower profit efficiency of banks.

The second theory is "Skimping Hypothesis". This theory explains that the savings to monitoring costs will increase the cost efficiency of the banking system. This is because banks are able to reduce their expenses. But Berger and DeYoung (1997) studies have proven that the cost savings of monitoring that should be incurred will result in the emergence of more problematic credits and the higher cost to complete them. So in the long term this savings will disrupt banking performance. Furthermore, Berger and DeYoung (1997) added that the use of increased cost efficiency as an indicator of the positive effect of monitoring cost savings is considered less fixed. Because the cost efficiency only explains the input side of the bank, it is unable to explain the output side obtained by the bank. Logically, banks that reduce their inputs (cost) certainly have better cost efficiency, but not necessarily have good revenue efficiency, because the cost savings of monitoring will encourage high non-performing loans. Therefore, the use of profit efficiency is considered as the solution to this problem, because profit efficiency is more correct in explaining the main purpose of the bank is profit maximization. Through the assessment of the profit efficiency, high monitoring effort (no savings) will ensure the quality of credit so that it will increase the profitability of banks.

The empirical evidence of this study is also in line with results in a number of studies such as Berger and DeYoung (1997), Vennet (2002), and Akhigbe and McNulty (2011) concluding that monitoring banks have a positive and significant influence on profit efficiency, will increase profit efficiency.

### **Conclusions**

Based on the above empirical results, we can conclude that bank monitoring has a positive effect on the profit efficiency of banking companies listed in the Indonesian Stock Exchange during the period 2010-2014.

## Suggestions

The finding of this research suggests some important points. First, for managerial purpose, which is financial services authority (namely OJK) and Central Bank of Indonesia (namely Bank Indonesia) may arrange and enforce appropriate regulations to banking companies in Indonesia. Therefore, bank monitoring can be done more effectively. Besides this bank monitoring can promote bank to achieve profit efficiency. Second, for investor, this study offers an overview of banking efficiency of banking companies in the Indonesian Stock Exchange and it can be used as a consideration for investors to make investment decisions in banking industry more precisely.

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