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DETERMINANTS OF PROFITABILITY IN BANKING INDUSTRY: A CASE STUDY OF INDONESIA

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ABSTRACT

The purpose of this study is to investigate the determinants of profitability in Indonesian banking industry. This research defines profitability as basic earning power (BEP) and return on equity (ROE) with variables like basic condition, market structure, banking characteristics and performance as its determinants. Both credit market and deposit market channel of Indonesian banking were used to analyze the data. The Structure-Conduct Performance (SCP) paradigm was used to offer theoretical perspective. Data was collected through purposive sampling technique, randomly picked from Indonesian banks financial statements during 2001-2014. The dynamic panel GMM-Arellanno Bond was used as the tool analysis. The results show that basic condition, market structure, banking characteristic, and performance significantly influence profitability. Based on this result, the study recommends that Indonesian banking segment should improve its market structure through enhancement of performance particularly that of individual banks. It also recommends that regulations and policy planning of national banking industry should be directed to retaining and increasing profitability without relying on market power, nor requiring collusion or high interest to get higher profit. The implication of the current research will be seen in judging the durability of bank profitability and finding means to make it strong enough despite the influence of crisis, money market and inflation, although it may be still sensitive to exchange rate volatility.

Contribution/ Originality: This study contributes to the existing literature since the determinants of banking profitability are seen holistically in this study. Based on *Structure-Conduct-Performance* (SCP) versus *Efficiency Structure Hypothesis* (ESH) Paradigm test, this study has attempted to detect the condition of the Indonesian Banking Industry, whether it is still collusive or has gained efficiency in the current time.

1. INTRODUCTION

Profitability is an important tool to evaluate the internal performance of a company. It helps to determine whether it has succeeded in achieving its ultimate objectives. Such an evaluation is the result of organizing managerial procedures and utilizing changes in external conditions and optimizing assets utilization. Adelopo *et al.*

(2018) and Pinto *et al.* (2018) have discussed the relationship between banking profitability and micro-macroeconomic factors. They have linked the dynamics of bank profitability with internal factors (banking characteristics) as well as external factors (market industry and basic condition). This research uses the basic logic of Structure-Conduct-Performance Paradigm, the neoclassical theory. It has long been central to the study of banking management in carrying out its duties in the economic system. Moreover, this theory considers and adjusts the conditions of the banking industry's market system and the basic conditions of a country's economy.

Gugler and Peev (2018) too have examined the profitability of banks in the USA, Germany, Great Britain, France, Italy and Switzerland. The finding shows that profitability was affected by the 2008-2010 crisis and capital adequacy. Likewise, Adelopo *et al.* (2018) have studied the Economic Community of West African States' banks and results suggest that size, cost management, and liquidity have an effect on profitability before, during, and after the financial crisis. Pinto *et al.* (2018) show that profitability is affected by capital adequacy and financial leverage. This study also revealed that an increase in Capital Adequacy Ratio (CAR) will create a negative impact on bank profitability. The financial crisis and oil prices too affect the financial leverage of banks and negatively impact their profitability.

The Return on Assets (ROA) of Indonesian banking was ranked at first place in Asia-Pacific region during 2011-2012 at percentage 2.65% (in 2011) and 2.7% (in 2012). Moreover, the report from Status Report on the Philippines Financial System (2012) also showed that ROA and ROE of Indonesian banking was also the highest among South-East Asia countries, with 2.6% and 20.3% respectively. This indicates that the performance of Indonesian banking is in a good state and management behavior and market structure condition of Indonesian banking are a few interesting topics of research. The objective of this research was therefore to find out whether the performance was due to management's ability in utilizing market trends or due to the internal efficiency of banks to increase national assets productivity.

Meanwhile, based on the percentage of basic earning power (BEP) too, Indonesian banking industry showed a good performance. In 2001-2014 for instance, BEP of Indonesian banking increased from 0.2% to 2.9%. Even though it slightly decreased to 1.49% during 2005, it continued to remain stable at 1.6% during 2005-2011. Lastly, BEP of Indonesian banking increased to 2.6% during 2011-2014. This is a good indicator of performance because there was an improvement in banking assets productivity. The highest BEP percentage of Indonesian banking industry comes from joint-venture banks which have 5.18 percentage, followed by foreign banks at 2.57%, foreign exchange banks at 2.31%, non-foreign exchange banks at 2.30%, and state-owned bank at 1.34%.

Looking at total assets of Indonesian banking during 2001-2014, the performance showed a significant increase in total assets. In 2001, total asset of Indonesian banking was only 1,099,699 billion rupiahs. It significantly increased to 5,615,150 billion rupiahs in 2014 with a growth rate of 14.92% per year, though dominated by foreign exchange banks and state-owned banks.

The condition of market structure of Indonesian banking also showed an interesting phenomenon. In 2001, Indonesia had 145 banks and 6,757 branch offices. Meanwhile the total assets were 1,099,699 billion rupiahs, the total credit was 316,059 billion rupiahs, and total deposit was 957,417 billion rupiahs. In 2005, the number of total banks decreased to 131 banks while the branch office increased to 8,236 offices. In contrast, the total assets increased to 1,469,827 billion rupiahs, total credits also increased to 695,648 billion rupiahs, while total deposits were 1,166,065 billion rupiahs. In 2010, the number of total banks still decreased to 122 banks while total branch offices increased to 13,837 offices. Total assets increased to 3,008,853 billion rupiah, total credits also increased to 1,710,677 million rupiahs, and total deposits remained at 1,166,065 billion rupiahs. Lastly, in 2014, the number of total banks further decreased to 119 banks and total branch offices significantly increased to 19,948 offices. Total assets increased to 5,615,150 billion rupiahs, total credit was 3,526,364 billion rupiahs, and total deposit was 3,943,697 billion rupiah. Hence, during 2001-2014, there was a decrease in total banks from 145 banks to 119 banks meanwhile the branch offices significantly increased from 6,765 to 19,948 offices. This means there was a tight

competition in Indonesian banking industry which caused some banks made an exit from the market or merge with other banks. Meanwhile, the banks which can maintain their existence in the industry kept spreading their offices in the country.

The phenomenon shows that Indonesian banking profitability is related to both internal and external activities. The banking internal activity is shown by ALMA (assets liability management) which becomes the guidelines in banking management because ALMA is an integrated set of the entire banking management activities to achieve the objectives and optimally utilize the entire resource capacity. Each activity of ALMA is directed to the balance between risk and return which remains oriented towards management of change in order to fundamentally maximize value of firm.

The growth of total assets and ROA of Indonesian banking industry is an interesting phenomenon that can be developed as a research question: Is the high profitability affected by the good management capability or is it a consequence of the market condition? However, a few important aspects of phenomenon are the existence of global crisis that occurred during 2008-2010 and the implementation of Indonesian Banking Architecture during 2004-2012.

Often it is believed that market share of individual Indonesian banking has a negative influence on profitability. This research is in accordance with Mala (2017) and Jumono et al. (2016) which stated Indonesian banking has oligopoly market structure and it is apparently the strongest factor which influences banking performance. However, Mulyaningsih and Daly (2011) concluded Indonesian banking was in monopolistic condition during 2001-2009. Ye et al. (2012) stated that structure-conduct-performance hypothesis theory (SCP) and market power (MP) tends to lead to increasing profits because there is collusion behavior in determining lending rate and deposit rate.

This study addresses two main problems, 1) first, did the dynamics of Indonesian banking profitability related to basic condition, conduct, and performance during 2001-2014 occur because of collusive behavior or management efficiency? 2) Secondly, what are the factors that explain the profitability of Indonesian banking? This study is distinct from previous studies in many aspects: first it covers a longer period of 14 years, from 2001-2014; second, it uses both deposit and credit markets; third, its analysis used the DPD Arrelano Bond; finally, in this study the performance is represented by profitability assuming that it can be affected by internal condition (ALMA variable) as well as external condition (market and socio-economics factors).

2. LITERATURE REVIEW

2.1. Basic Theory

The Basic Theory concept comes from the logical basic framework which is derived from theories and previous researches by banking experts. Figure 1 is the conceptual framework that explains how banking profitability comes from internal factor and external factor.

2.2. Factors Affecting Banking Profitability

Simatele (2015) examined the relationship between structure and behavior in South African banking sector and on panels in 11 South African banks, the results of which showed that concentration affected behavior. The profit-structure relationship is predominantly explained by the structure of doing hypotheses and partly by efficiently scaling hypotheses. These results indicate how policies that hinder concentration and encourage competition in the banking sector are socially beneficial.

Bucevska and Misheva (2017) investigated the relevance of the Structure-Conduct-Performance (SCP) hypothesis versus the efficiency hypothesis in explaining 127 commercial banks performance in six Balkan countries, Slovenia, Croatia, Serbia, Bosnia and Herzegovina, Montenegro, and Macedonia. The estimation results show that efficiency is significantly and positively related to profitability, while industry concentration variables are

not significant in explaining profitability (supporting the efficiency hypothesis). In addition, among bank-specific control variables, only size is not significant, other variables affect inflation and economic growth too have an impact on bank profitability.
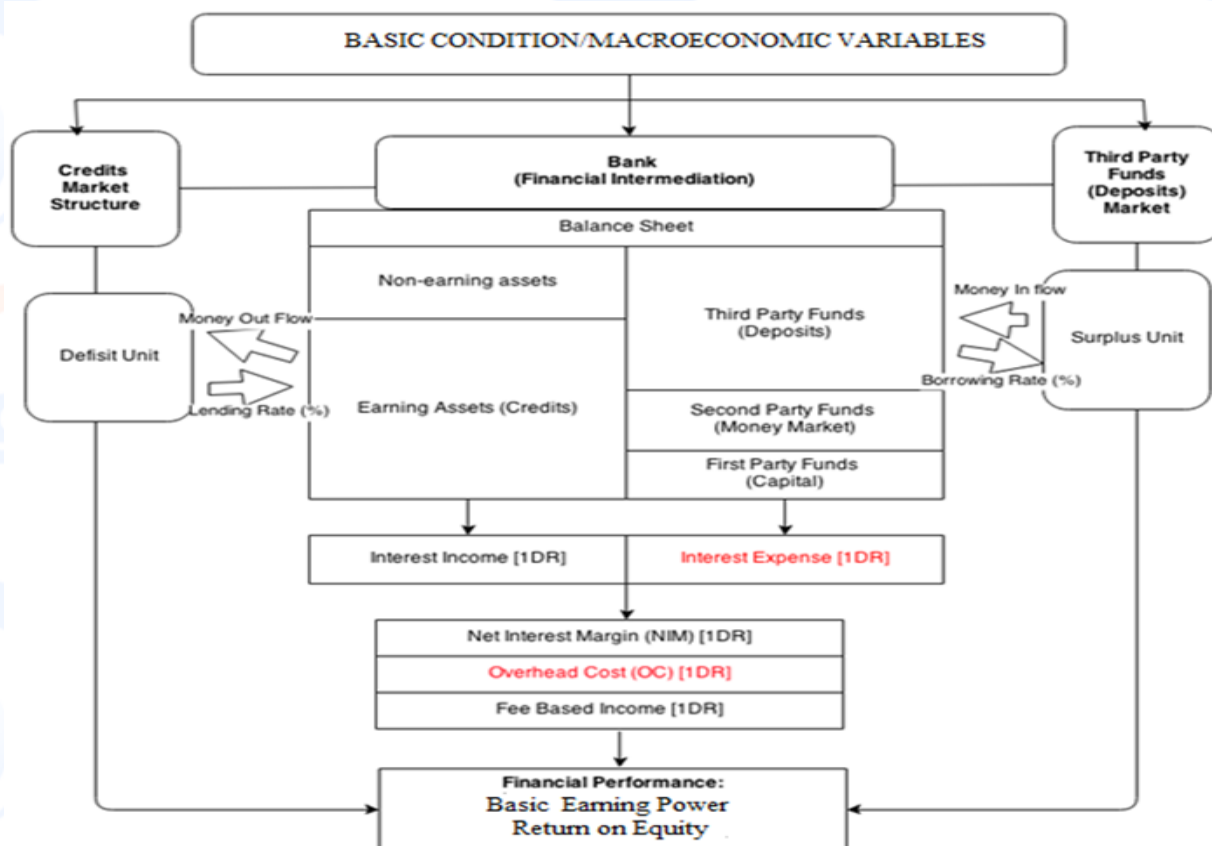

Figure-1. Conceptual Framework

Source: Taken from Madura (2017)

Gavurova *et al.* (2017) investigated the structure and performance in the European Union (EU) banking market during 2008-2015. The banking market structure was measured by two main concentration indicators, which are Herfindahl-Hirschman Index (HHI) and the Concentration Ratio for 5 largest banks (CR5). The results showed a steady development in concentration until 2012, and a significant decline in 2012. Since 2013, the concentration level increased, reaching its historical maximum at the end of 2014, when an increase in market concentration reflected mainly a decrease in the number of credit institutions. Performance was measured by profitability indicators: Return on Assets (ROA) and Return on Equity (ROE). Since 2008, the study further revealed, questionable market developments have been affected by the financial crisis, which resulted in low profitability until the end of 2013. However, in the state of increase in profitability in the European banking market has increased slightly. This study also examined the relationship between structure and performance in order to test the existence of a structure-behavior-performance (SCP) paradigm in EU conditions. The presence of this paradigm was verified using the Granger causality test for panel data. The results of analysis show agreement of only one-way relationship between performance of the banking sector and banking market concentration. This finding however does not confirm the existence of SCP paradigm, but it is in line with the hypothesis there is a negative relationship between concentration and performance in the European banking market.

Tan *et al.* (2017) found that Chinese commercial banks with higher levels of insolvency risk have higher profitability (ROA and ROE). The study finds that a higher competition leads to lower profitability in Chinese banking industry, and that Chinese commercial banks with higher levels of cost efficiency have lower ROA. In other

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words, what applies in the Chinese banking industry is the structure-behavior-performance paradigm rather than the efficient-structure paradigm.

Profitability is regarded as an intermediate objective towards achieving the ultimate objective, which is to maximize the value of the company according to another study (Salavatore, 2015; Artha and Mulyana, 2018). The optimal profitability is also one of the focuses of ALMA banking activity, a variable of the study that acts as a proxy of banking conduct. This is particularly relevant because ALMA is a guideline in conducting internal resource management with external conditions such as the dynamics of the market conditions and basic conditions.

In another study, Ramlall (2009) used the theoretical framework about the factors affecting profitability along with industry characteristics, level of concentration of banking market, and macroeconomic variables. The bank-specific industry characteristics include the size of banks and efficiency. Meanwhile macroeconomic factors that potentially affect profitability are economic growth, inflation, and interest rates.

Theoretically, there is a correlation between profitability and market conditions as stated by Rothaermel (2012). According to the author, the more market is concentrated, the greater would be the benefits reached by firms. In contrast, the higher is the number of competitive banks in the market the greater is the possibility to get closer to normal profitability and market efficiency. The hypothesis of structure-conduct-performance (SCP) also states that market structure of the industry will determine how the industry behaves, therefore the structure and the behavior will determine performance. The level of market concentration will also depend on structure size and level of competition or collusion between companies in an industry. In this case, the increase in market concentration will result the collusion behavior rather than making a safe competition. This condition causes the management of the industry to set a high price in order to improve profitability.

In addition, it is also stated that globalization, economic conditions, and technological change may also affect the performance of the company. The external factors of industry environment accelerate the environmental changes and affect the performance of the company. The meaning of industrial environment in this context is the bargaining power possessed by buyers and suppliers, the entry of potential competitors, their substitutes, and the intensity of industry competition.

Smirlock (1985) observed that the relationship between level of market concentration and level of bank profitability has no correlation in banking. The profitability does not come from the collusive behavior, but this occurs because of the high efficiency of the leading company.

2.3. Relationship among Value of Firm, Profitability, ALMA, and SCP

The purpose of financial management is to maximize the value of a company. Salavatore (2015) mathematically formulated the company's value as the present value of a company's cash flow expected to be received in future, while profit remains the dominant part of the company's free cash flow.

Richard and Christopher (2010) stated that the concept of profit can be divided into economic profit and accounting profit. Accounting profit is calculated out of total revenue that remains after meeting the net explicit cost. Meanwhile the economic profit is calculated out of total revenue that remains after meeting both net explicit and implicit net costs.

In banking industry, the concept of accounting profit is particularly useful in the assessment of the health of bank. Bank for international settlement (BIS) adopted ROA as the aspects of earnings in all the components of CAM(E)LS. The acronym "CAMEL" stands for those components of a bank's condition that are assessed: Capital adequacy, Asset quality, Management, Earnings, and Liquidity. A sixth component, a bank's Sensitivity to market risk, was added in 1997; hence the acronym was changed to CAMELS. The calculation of ROA is by applying the theory du Pont which is by dividing profit before tax (PBT) with total assets (TA), or by multiplying profit margin (PM) with asset utilization (AU). Profit margin is calculated by dividing profit before tax with total revenue, while assets utilization is calculated by dividing total revenue and total assets.

In theory of ALMA (asset-liability management), a profit is one of the goals to reach long-term objective, which is to maximize the value of the company. ALMA is also a major part of the banking management strategy. Goedken (2012) stated ALMA is needed for setting banking goals, policies, measurement systems, and the development of the bank's strategy. ALMA also becomes the guiding principle of any bank activity because ALMA can maintain the health of banks. BIS (Bank for International Settlement) adopted ALMA and used CAMELS method instead to assess the health of banks as well as to anticipate external changes related to inflation and interest rates and changes in the currency.

The profitability in the industry is often used to represent its performance. The performance (P) in the traditional SCP theory is represented as a function of Conduct (C) and Structure (S). The relationship is expressed as "P = f (S, C)". Conversely, in theory of efficiency structure hypothesis, Conduct (C) and Structure (S) is represented as a function of Performance (P). It is mathematically expressed by "C = f (P) and S = f (P)".
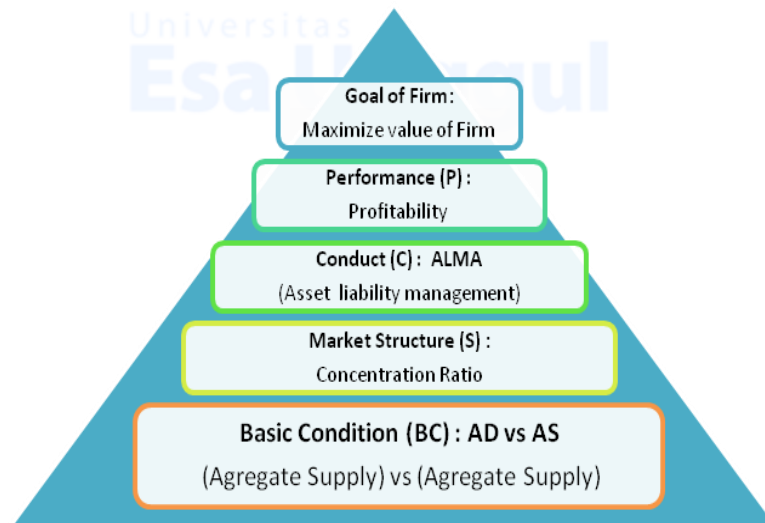

Figure-2. The Relationship between Basic Condition, Market Condition, ALMA, Profitability, and Value of Firm
Source: Adapted from Madura (2017), Baye and Prince (2016), Salavatore (2015)

This study adopts the concept of SCP as a grand theory to discuss the relationship between profitability, behavior, and market condition of Indonesian banking. Figure 2 represents the profitability as a performance based on SCP approach.

Neuberger (1997) made the SCP framework that can be adapted to banking characteristics situation. As intermediary institutions, banks face agency problems; as well as problem of imperfect information. Another unique feature is that banking industry is highly regulated industry and it must follow prudential regulation in addition to other public policies. The study concluded that institutional economics factor as profitability determinants, which are asymmetric information and agency problems.

3 RESEARCH METHOD

3.1. Research Model and Theoretical Framework

This research falls in the category of applied research as it aims to apply research carried out by previous researchers and to develop it theoretically. To assess the level of market competition of banking industry, this study hence proposes to use three theoretical approaches: traditional hypothesis, differentiation hypothesis, and efficiency hypothesis. Traditional hypothesis theory assumes that a large market concentration can lead to lower costs which make a collusive behavior. The differentiation hypothesis theory assumes that a more efficient company will gain a large market share and get more profitability. Meanwhile the efficiency hypothesis theory assumes that market shares and market concentration is the representative of efficiency of the company; hence it is more efficient to get a

larger market share and market concentration. Moreover, this research is also categorized as explanatory research because it aims to clarify the relationship between variables through hypothesis testing (Cooper and Schindler, 2013; Etale *et al.*, 2016).

The reason for keeping a time span of 2001 to 2014 for this research was that the Indonesian banking has a different value and size for each unit with a lot of frequency over a time period. The Banking industry in Indonesia also demands a manageable approach, in terms of intellectual aspects such as time, cost, and compliance with the rules. Moreover, banking industry has a very strategic position as an intermediating institution between surplus units (SU) and deficit units (DU). This study aims to produce useful information in improving Indonesian banking financial system in order to judge its sustainability. This research also uses secondary data, which is financial statement of individual banks. The population consists of all commercial banks operating in Indonesia during 2001-2014. The study uses purposive sampling technique, which is adjusting sampling based on certain criteria (Cooper and Schindler, 2013). The criteria for the sampling include (1) the bank is not s merger bank, (2) the bank is not an Islamic bank, but dual banking can be included, (3) the bank has all variables of this research (4) the data of the banks is not doubtful, and (5) the bank must have a complete financial reports from 2001 to 2014. The final number of sampling taken for this research was 97 banks.

The basic idea of modeling the relationship of profitability with internal factors (conduct or banking characteristics) and external factors (market structure and the basic condition) refers to the theory of structure-conduct-performance (SCP). The econometric model in this research study also refers to Bhatti and Hussain (2010) and Gajurel and Pradhan (2010) who tested the theory SCP on commercial banks using regression model.

The model is modified and adapted in this study to suit the conditions in the Indonesian banking sector. SCP-based approach is used to find out the profitability determinants. Basic condition is proxied with macroeconomic variables, which includes variable of M2 (money supply), ICT (information communication technology), and the global financial crisis. Conduct is proxied with ALMA main variables that include Islamic bank unit activity. This study also uses the analysis of two channels, namely deposits market channel and bank credit markets channel to see more clearly the comparison between two markets.

The econometrics model of deposit market channel is:

$$\pi_{it} = c_d + \beta_1 \pi_{i,t-1} + \beta_1 RRGWM_{it} + \beta_2 LDR_{it} + \beta_3 NPL_{it} + \beta_4 DER_{it} + \beta_5 TETA_{it} +$$
$$\beta_6 Sensitivity_{it} + \beta_7 NIIOC_{it} + \beta_8 OCREV_{it} + \beta_9 FBIREV_{it} + \beta_{10} dUUS_{it} +$$
$$\beta_{11} depMS_{it} + \lambda_1 depHHI_t + \lambda_2 SBI_t + \lambda_3 gofERN_t + \lambda_4 dM2rr_t$$
$$\lambda_4 Inf_t + \lambda_5 dfincris_t + \lambda_6 gofGNI_t + \lambda_7 ICTInternet_t + e_{it} \qquad \ldots\ldots\ldots\ldots\ldots(1)$$

The econometrics model of credits market channel is:

$$\pi_{it} = c_l + \delta \pi_{i,t-1} + \delta_1 RRGWM_{it} + \delta_2 LDR_{it} + \delta_3 NPL_{it} + \delta_4 LAR_{it} + \delta_5 TETA_{it} +$$
$$\delta_6 Sensitivity_{it} + \delta_7 NIIOC_{it} + \delta_8 OCREV_{it} + \delta_9 FBIREV_{it} + \delta_{10} dUUS +$$
$$\delta_{11} loanMS_{it} + \eta_1 loanHHI_t + \eta_2 Inf_t + \eta_3 gofERN_t + \eta_4 SBI_t + \eta_5 M2rr_t +$$
$$\eta_6 dfincris_t + \eta_7 gofGNI_t + \pi_8 ICTInternet_t + e_{it} \qquad \ldots\ldots\ldots\ldots\ldots..(2)$$

Whereas β, λ, δ and η are the regression coefficients, i indicates individual banks, while t is the year. π is proxied with basic earning power (BEP) and return on equity (ROE); X_{it} is composed by variable of banking characteristics such as LDR (loan to deposit ratio), RRGWM (reserve requirements/statutory minimum), NPL (non-performing loan), DER (debt to equity ratio), LAR (loan to asset ratio), TETA (total equity to total assets ratio), sensitivity (risk mitigation), NII/OC (net interest income to overhead cost ratio), OHC/REV (overhead cost to revenue ratio), FBI/Rev (fee-based income to revenue), dUUS (dummy of Islamic business units in conventional banks).

The specific industry variables and macroeconomic are dFincris (dummy global financial crisis), gofGNI (economic growth), ICTinternet (development of Internet usage), M2rr (the money supply at various levels of

reserves), Inf (Inflation), ERN (exchange rate nominal amount Rp/USD), SBI (Bank Indonesia certificate interest rate), and HHI (index of banking market concentration). The detailed description of explanatory variables in this study can be seen in the operational definition of each research variable. The reason of gofGNI and ICT to be included as a representation of the basic condition refers to Neuberger (1997) who stated basic condition containing asymmetric information problem.

Since technological development is more dominated by the development of ICT, the development of internet usage index (gofinternet) becomes a proxy for ICT (which is capable of reducing asymmetric information) along with the growth and purchasing power through economic growth.

3.2. Sampling Technique and Operational Definitions

The definitions of variables of this study are based on their meaning and understanding evolved in the previous research. The dependent variables in this research are BEP and ROE. The independent variables are classified into three groups; (1) first, a group of macroeconomic variables as a representation of basic condition; (2) second, a specific industry variable group as a representation of structure of the market (financial market and banking) and (3) third, a group of ALMA variable as a representation of conduct, which represents the characteristics of the bank.

According to Firdaus (2012) the important criteria used to find the best GMM dynamic model should be unbiased, reliable, and have a consistent instrument. The model is unbiased if the estimator showing null hypothesis is not rejected. Profitability-lag_1 GMM is between OLS and FE; (OLS < GMM < FE). The instrument is valid if the Sargan test does not reject the null hypothesis; and consistent if statistical test of AR_1 indicates the null hypothesis is rejected, while AR_2 statistic shows the null hypothesis is not rejected.

4. DETERMINANTS OF INDONESIAN BANKING PROFITABILITY

The results of inferences analysis using dynamic model of Arellano-Bond GMM through analysis of credits market channel are briefly presented in Table 2. The model has been investigated and the results have been eligible as not biased, valid, instrument and consistent.

The model is unbiased, it can be seen from estimator $L_1\pi$ ($BEPlag_1$, $ROElag_1$) on the GMM estimators which is between ordinary least square (OLS) and fixed effect (FE). The instrument is valid because Sargan test does not reject the null hypothesis ((Pr (chi²) > 5%)). The model is also consistent because AR_1 statistics shows that the null hypothesis is rejected ((Pr (z) < 5%)), while the AR_2 statistics shows the null hypothesis cannot be rejected ((Pr (z)> 5%)) (see below Table 2).

In summary, there are three findings which can answer the research questions; 1) during 2001 to 2014, the profitability of the previous year has a positive effect on the profitability of the current or the following year in the Indonesian banking industry; 2) the pattern of industrial market is still collusive, and 3) the management control of operating expenses has succeeded in bringing efficiency.

The effect of prior year profitability on the current year profitability can be seen from coefficient $L_1\pi$ on BEP and ROE of deposits market and credits market. They show a significant positive value. The small coefficient (close to zero) indicates that the deposit market and credit market are increasingly competitive. The existence of collusive behavior in the market can be seen from the market concentration index (depHHI and loanHHI) which has a positive significant on BEP and ROE, while the market share (loanms and depms) are not significant.

The indication of efficiency in operating expense can be seen from effectiveness in controlling operating expenses which has a negative influence on the variable OHC/REV (overhead costs) and has a positive impact of NII/OC (profit structure) on BEP and ROE through deposit market and credit market.

Table-1. Determinant of Profitability, Definition, Notation, and Impact

Variable			Definition	Notation	Impact
INDEPENDENT VARIABEL	$\Pi(t)$	➤ *Profit ,BEP$_{it}$*	❖ *Operating Profit/Asset (%)*	BEP$_{it}$	
		➤ *Profit ,ROE$_{it}$*	❖ *Net Income/Equity (%)*	ROE$_{it}$	
Banking Perform	$\Pi(t-1)$	➤ *Profit ,BEP$_{i(t-1)}$*	❖ *Operating Profit/Asset (%), lag-1*	BEP$_{i(t-1)}$	+
		➤ *Profit ,ROE$_{i(t-1)}$*	❖ *Net Income/Equity (%), lag-1*	ROE$_{i(t-1)}$	+
Basic Condition	*Macro Economic*	➤ *Global Financial Crisis (2008-2010)*	❖ *Dummy in the crisis period* ❖ *Dummy excluded in the crisis*	dFinCris=1 dnormal=0	−
		➤ *Economy Growth*	❖ *Growth of Gross National Income*	gofGNI	+
		➤ *Technology-ICT*	❖ *Internet users (per 100 people)*	gofInternet	+
Industry Specific – Banking Market Structure	*Market Share and Competition*	➤ *Market Share of Deposits*	❖ *Deposits/Market Deposit (%)*	depMS	+
		➤ *Concentration Ratio of Deposits Market*	❖ *Herfindahl-Hirschman index of Deposits Market (point)*	depHHI	+
		➤ *Market Share of Credits*	❖ *Credits / Market Credits (%)*	loanMS	+
		➤ *Concentration of Credits Market*	❖ *Herfiendahl-Hirschman index of Credits Market (point)*	loanHHI	+
		➤ *Money Supply*	❖ *Money Supplly to Reserve (%)*	M2/RR	+
		➤ *ForEx Market*	❖ *Exchane Rate of Rupiah/USD*	ERN	−
		➤ *Money Market*	❖ *Interest Rates of BI (%)*	SBI	−
Conduct – ALMA Specific Banking Characteristics	*Explicit*	➤ *Reserve Requirement*	❖ *Minimum Statutory Reserves (%)*	RRGWM	
		➤ *Liquidity*	❖ *Loan to Deposit Ratio %)*	LDR	+
		➤ *Dual banking*	❖ *Dummy of dual banking* ❖ *Dummy of conventional banking*	dUUS=1 dKonv=0	+
		➤ *Portion of Credits*	❖ *Loan/Asset Ratio(%)*	LAR	+
	Implicit	➤ *Portion of Deposits*	❖ *Deposits/Equity(%)*	DER	+
		➤ *Assets Quality*	❖ *Non Performing Loan (%)*	NPL	−
		➤ *Risk Mitigation*	❖ *CAR- 8%*	Sensitivity	−
		➤ *Banking Capital*	❖ *Equity/Assets Ratio (%)*	TETA	−
		➤ *Revenue Diversification*	❖ *FBI/Revenue (%)*	FBI/REV	+
		➤ *Profit Structure*	❖ *Net Int Income/Ovrhead Cost (%)*	NII/OC	+
		➤ *Overhead*	❖ *Overhead Cost /Revenue (%)*	OHC/REV	−

The basic condition which is represented by variable dfincris (the financial crisis from 2008 to 2011), inf (inflation), and SBI (SBI rate) does not significantly affect profitability. This shows Indonesian banking management strategy is in a good condition in facing external interference. Meanwhile the other macroeconomic variables such as gofInternet (development of internet usage index), m2rr (the money supply) gives significant positive effect on profitability; however gofGNI (growth of national income) has a negative impact on the profitability. To clarify further the main finding, the interpretation of the description of effect of any variables that affect the BEP and ROE will be explained clearly.

Table-2. Determinants of Indonesian Banking Profitability

Independent Variable	π-BEP				π-ROE			
	Deposit Market		Loan Market		Deposit Market		Loan Market	
	Coef .	Sig	Coef.	Sig	Coef.	Sig	Coef.	Sig
$L_1.\pi$	0.26672	a	0.24455	a	0.13468	b	0.13561	b
dfincris	0.18267		0.04201		0.41529		0.44613	
gofInternet	0.58515		0.70976		8.17646	b	6.46102	
m2rr	0.16885		0.06683		4.6142	a	4.70585	a
gofGNI	-0.63364		-1.41487		-26.7383	c	-25.2012	
gofern	2.08989	c	1.53026	c	-4.2898		-7.49692	
Inf	-0.01809		-0.02509		-0.21757		-0.11831	
Sbi	-0.08715		-0.06937		-0.27042		-0.28637	
depms	-0.35414				1.86049			
dephhi*size	-0.08373	a			-0.35324	b		
dephhi	0.01195	a			0.05784	b		
loanms			-0.08654				-2.77596	b
loanhhi*size			-0.1183	a			-0.49712	a
loanhhi			0.0166	a			0.08565	a
NII/OC	0.00105	b	0.00102	b	0.00126		0.00127	
OC/Rev	-0.04448	a	-0.04417	a	-0.04359		-0.04743	
FBI/Rev	0.03192	c	0.03067	b	0.06831		0.05763	
trgwm	-0.00179		-0.00394	b	-0.00508		-0.00504	
ldr	0.00148		-0.00454		-0.03857	c	-0.03782	
lar			0.0455	a			-0.00138	
npl	-0.01144		-0.01647		-0.52688		-0.51035	
der	0.00042				-0.00037			
teta	-0.0018		-0.01033		0.02752		0.02647	
sensitivity	0.01635	b	0.01827	a	-0.06932		-0.0763	
dUUS	0.42083		0.34341		-9.28992	b	-8.4686	c
_cons	3.7819	a	2.2964	c	9.5926		10.3718	
Number of obs/group	1154	97	1154	97	1154	97	1154	97
Wald chi²(22)/Prob	230.96	a	425.35	a	104.15	a	127.74	a
FE_ $L_1\pi$.	0.194	a	0.171	a	0.104	a	0.099	a
Abond_ $L_1\pi$	0.267	a	0.245	a	0.135	b	0.136	b
OLS_ $L_1\pi$	0.447	a	0.444	a	0.209	a	0.209	a
Sargan , chi²(82)/Prob	78.184		82.635		86.773		82.937	
AR₁, **z /Prob**	-3.4	a	-3.616	a	-2.671	a	-2.724	a
AR₂, **z /Prob**	-1.927		-1.833		-0.061		-0.037	

Notes: a : significant at α= 1%, **b** : Significant at α=5%, **c** : Significant at α=10%

4.1. The Implication of Prior Year Profitability on Current Year Profitability

In this study, it is proved that there is a significant effect of prior profitability ($L_1\pi$) on π the profitability of the current year (π) because the $L_1\pi$ coefficient shows a positive value as shown in the analysis of credit market and deposit market. The $L_1\pi$ coefficient is positive and significant at 99% confidence level ($\alpha = 1\%$) in the analysis of BEP, while the $L_1\pi$ coefficient is also positive and significant at 95% confidence level in ROE analysis. The finding is consistent with the research result from Kundid *et al.* (2011) and Chronopoulos *et al.* (2013).

The positive value of $L_1\pi$ coefficient can be interpreted as a response to the percentage of how much the bank's profitability in the current year is a result of 1% change in the bank's prior year profitability. In practical sense, the finding of this study shows the success of the cooperation between the bank (the Board of Commissioners and Board of Directors) and FSA (Financial Services Authority) in controlling Indonesian banks performance.

4.2. The Effect of Financial Crisis on Profitability

During 2008-2010, the world financial crisis had an impact on Indonesian economic activity even though the economic growth was still positive during the crisis. The crisis affected the decline of the exchange rate and the increase of interest rate; however the profitability of Indonesian banking remained positive.

The analysis results proves that the conditions of global financial crisis during the period 2008-2010 has a positive effect but not significant on the BEP and ROE. Variable of dfincris coefficient (dummy crisis) shows a positive value but it is not significant, which means profitability of banking grows in line with the level of crisis even though it does not affect significantly. This shows Indonesian banking system is strong enough to face global financial crisis. It also proves that financial and banking authorities have learned from the past crisis events. In such a crisis, there was a slow growth of banking assets at 7.7% in 2010, but operating profit and net profit of the bank is nominally relatively constant.

4.3. The Effect of ICT on Profitability

ICT (Information Communication and Technology) is one of the keys to increase the innovation pace of companies. ICT development has a direct influence on all sectors. As a result, the increase of transparency and asymmetric information will retard the capacity of ICT to improve the quality and quantity of the economy through an increase of aggregate demand (AD) and aggregate supply (AS). The implication is an increase in national income and savings society and increased ability of banks to extend credit.

In this research, the development of ICT is represented by gofinternet (development of internet usage index of Indonesian citizens), and it shows a significant positive effect on ROE. In deposits market, gofinternet shows a positive value at 8.176 (significant at 5%). This means internet is able to provide information acceleration to consumers throughout the country.

The development of internet usage and its utilization index also has implications on ROE. In this case, the increase in ROE occurs because net income marginal grows more than marginal equity. In other words, the development index of internet used by the public is able to improve ROE. The development of internet usage in Indonesia contributes to the value of firm.

4.4. The Effect of Economics Growth on Profitability

Economic growth (gofGNI) has a negative effect on ROE. In deposits market, the coefficient of gofGNI shows a negative value at 26.73 (significant at $\alpha = 10\%$). This means the increase in citizen national income has negative implication on ROE. Supposedly, economic growth under normal conditions will be followed by volume growth in deposits, the volume of credit, and banking assets. There will also be an increase of NII (net interest income), NOI (net operating income) and NI (net income). When NOI growth is in line with the growth of TA (total assets), the impact of BEP will be insignificant on economic growth. The deposits growth is followed by the increase of equity. If equity growth is higher than net income, then ROE will be decreased. This is the reason why the economic growth has a negative and significant effect towards ROE. This finding is not consistent with the result of Ongore and Kusa (2013) who stated the decrease in economic growth will make the credits volume decreases so that it affects negatively on banking profitability.

4.5. The Effect of Money Supply on Profitability

The money supply is represented by m2rr. The influence of m2rr on ROE is significant and positive as seen in the analysis of the determinants of ROE both in deposit and credit market. The coefficient of m2rr is 4.61 (significant at 1%) in deposits market, while m2rr coefficient is 4.71 (significant at 1%) in credits market. This means money supply in various levels of reserves is able to contribute positively to the value of the company by increasing productivity equity of ROE.

This finding supports the theory of transmission monetary particularly in investment which stated that the policy of monetary expansion by decreasing the interest rate to increase money supply will also raise the price of equity (Pe) as the implication of investment cost and subsequently it will also increase ROE (q). However, this

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finding does not support the research of Sufian and Chong (2008) who stated that money supply does not affect profitability.

4.6. The Effect of Inflation on Profitability

Inflation does not have significant impact on profitability, the result shows the relationship between inflation and profitability is negative and insignificant both in deposits market and credits market. This indicates that management of banking has anticipated inflation through pricing strategy. The important thing to find out is whether the price is stable because of the real banking efficiency.

This finding is inconsistent with the research of Syafri (2012) who stated the inflation has negative and significant on profitability. However, this research supports the finding of Ongore and Kusa (2013) and Bourke (1989).

4.7. The Effect of Forex (Foreign Exchange) on Profitability

USD exchange rate which is represented with gofERN variables (growth rate Rupiah/USD) has a negative effect in BEP. For deposits market, the gofERN coefficient is at 2.090 (significant at $\alpha = 10\%$), while for credits market the gofERN coefficient is at 1.530 (significant at $\alpha = 10\%$). This indicates BEP Indonesia is sensitive to fluctuations of USD price. If the rupiah depreciated (USD appreciated) then BEP will increase.

This research supports the finding of Ogunleye (1995) which states that bank profitability could be affected by the nature of the exchange rate of a country and asserts that bank profitability is largely limited by a fixed exchange rate regime; while in the regime of partial, it directly comes from foreign exchange market.

4.8. The Effect of Indonesian Interest Rate Money Market on Profitability

Ogunleye (1995) argued that when interest rate goes up or down, then it will have an impact on bank profits through revenue adjustments with the bank's operations. In Indonesia the size of interest rate will indirectly affect profitability through bank base rate. If the interest rate of SBI (Bank Indonesia Certificates) increases, the rates of deposits and loans also increase so that people may prefer to save money and expect to get higher return. Therefore, if the credits distribution decreases and interest income from credits also decreases, it results in the decline of profitability.

This research result proves that interest rate does not significantly affect BEP and ROE (see the credit market channel analysis and market deposits). Interest rate coefficient is negative and not significant. The decline of interest rate affects the increase of interest income. Conversely, if the interest rate increases, there will be a decline in interest income and that ultimately decreases profitability. However, the finding is different from the research of Molyneux and Thornton (1992) which stated that the interest rate has a significant and positive influence on bank profitability.

4.9. The Effect of Market Structure on Profitability

This research uses Herfiendahl Hirschman Index (HHI) as the representative of market structure; this index allowed the researcher to assess the level of market competitiveness. A high HHI shows a high market concentration in an industry, which means the industry, has a low level of competitiveness. The result also shows that HHI has a positive and significant impact on BEP and ROE, however HHI*size (the interaction variable between HHI and size) has a negative and significant impact on BEP and ROE.

A positive and significant value of HHI on BEP and ROE indicates that market structure has a positive influence towards banking profitability because the conduct affects performance as the result of changes in market structure. Meanwhile the negative effect of interaction variable between HHI*size towards BEP and ROE indicates that the decline of HHI during 2001-2014 makes its interaction negatively affecting bank profitability. The growth

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of company's size is constrained by the competitive condition of the banking market. This is reasonable because the conditions of market competition constrain the expansion of the bank.

The influence of depms (market share of deposits) and loanms (market share of loan) are expected to be significant and positive effect towards profitability; however the research result doesn't support the expectation. This indicates that the differentiation of banking products is still not efficient. The variable of depms and loanms variable has a positive and insignificant effect on the BEP and ROE. Meanwhile loanHHI (the concentration index of credit markets) and depHHI (deposit market concentration index) have a significant and positive effect (at α = 1%) on BEP and ROE. Based on the criteria, it can be concluded that the condition of credit markets and the banking deposit market are still collusive and not efficient.

The positive and significant influence of HHI also means bank profitability comes from market concentration (market power), meanwhile the coefficient MS (market share) which has an insignificant effect means that the banking product differentiation has not been able to provide a significant positive effect in improving the bank's profitability. A supporting indicator that the banking market is not efficient can also be seen in the behavior of the price.

The price of money can be seen in the form of difference between lending rate (interest rate of loan) and borrowing rate (interest rate of deposit) which is often known as net interest margin (NIM) or spread. A low spread means the bank is more efficient. Figure 3 shows the evidence that spread of banking in Indonesia is still very thick (height), it means the selling price is still relatively high because the spread rate is still high. In future, if the competition increases, the spread rate absolutely is going to be thin, and therefore banks should increase fee based income (FBI) and cost effectiveness in order to maintain the operational income.
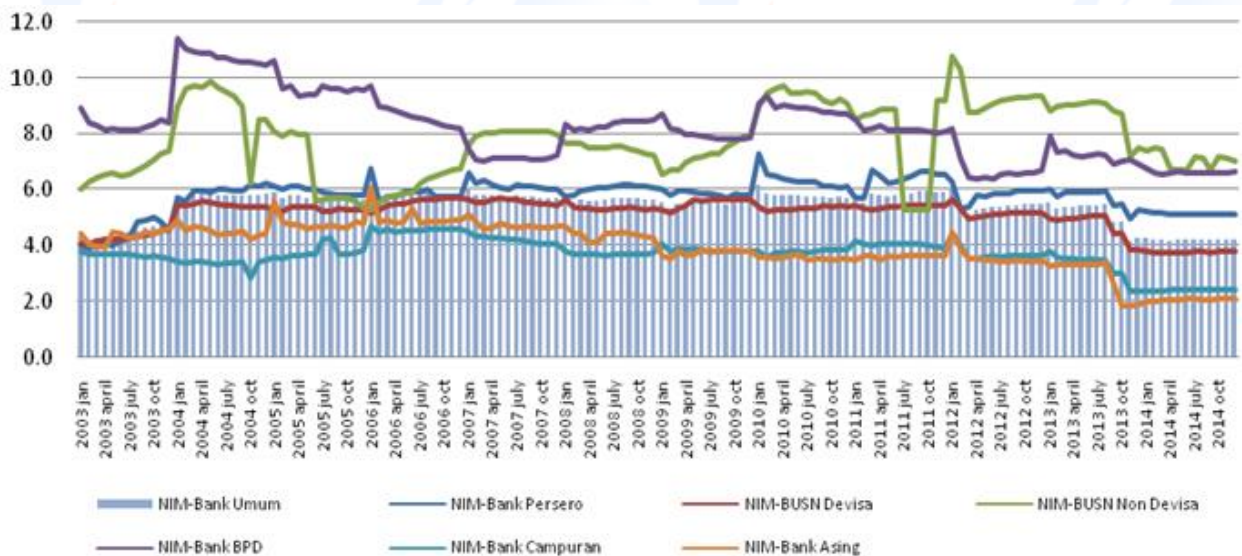

Figure-3. The dynamic of NIM (Net Interest Margin) Indonesian Banking Industry during 2003-2014
Source: Indonesian Banking Statistics

4.10. The Effect of Liquidity on Profitability

In this research, liquidity is represented by loan to deposit ratio (LDR), loan to asset ratio (LAR), and statutory reserve. All of the variables have a significant influence on profitability.

LDR has a significant and negative effect on ROE, which is shown by the coefficient LDR = -0.0386 (significant at 90% confidence level). This means the greater loan which results from excess liquidity (internal liquidity of banks) can lead to a decline in ROE. Under normal condition, however, when the distributed credit is high, it will make an excess of liquidity and in an increase of the ROE. The finding supports the result of Bhatti and Hussain (2010) and Alexiou and Sofoklis (2009) which gave the conclusion that LDR has a negative and significant effect on banking ROE.

LAR has a positive and significant effect on profitability in credits market channel, which is shown by the coefficient at 0.0455 (significant at α = 1%). This means the more credits are distributed to market, the higher is profitability. Therefore, the growth of profitability is in line with the growth of credits. Gul *et al.* (2011) stated that a high distributed credit makes a greater interest income so that the profitability also increases. If LAR increases, profitability will also increase. To avoid the problem of bank insolvency, bank should hold liquid assets that can be easily converted to cash. Therefore, the higher LAR will reduce internal liquidity. The portion of high liquid assets will have an implication in lowering profitability (Bourke, 1989). The level of internal liquidity of banks is one of the determinants of profitability.

Statutory reserve has a negative and significant influence on profitability in credits market, which is shown by the coefficient at -0.003 (significant at 5%). This is because larger reserve requirement funds might make bank lose the opportunity to invest in more profitable venture. The empirical data shows the statutory reserve of Indonesian banking is higher than the margin, which is at 5%. This means there is over-liquidity. However this is also an indication that needs to be examined because the high statutory reserve usually is followed by a fall in profitability resulting from an increase in cost of funds.

4.11. The Effect of Assets Management on Profitability

In this research, the asset management variable is represented by NPL (non-performing loans).The results show that the NPL does not significantly affect profitability. NPL reflects the size of the credit risk; the smaller the NPL, the lower is the risk of bank credit. The data from 2001-2014 shows a decline in NPL, which means profitability is normally increased during this period. Under normal conditions, if NPL decreases it will usually be followed by rising profitability. This finding is contrary to the result of Gelos and Roldos (2002) and Miller and Noulas (1997).

4.12. The Effect of Liability on Profitability

This research proves that debt to equity ratio (DER) does not significantly affect BEP and ROE in deposits market. The composition of the debt-equity structure of the bank financial has no significant effect on profitability. DER is an indicator that can be used to measure the bank's ability to resolve some or all of the debt, both short-term and long-term funds from the bank's equity capital. A high DER means a low bank solvency because the capacity to pay debts of the company is very low, and the risk is relatively high. The result supports the finding of Javaid *et al.* (2011).

4.13. The Effect of Capital on Profitability

This study has proved that TETA (capital portion of the assets) does not have a positive influence on BEP and ROE. The increase in TETA increases bank solvency but it is not significant. The profitability is not significantly affected by TETA (because the increase in net interest income (NII) is equivalent to the increase in cost of funds. The increase in TETA indirectly is in the form of nominal income growth; however the increase in operating profit is equivalent to the increase in assets; while the increase in net income is equal to the percentage of the bank's equity. This makes BEP and ROE mathematically looks relatively fixed. This shows TETA does not significantly affect the profitability. This finding is contrary to the research of Javaid *et al.* (2011).

4.14. The Effect of Sensitivity to Market Risk on Profitability

In this study, the sensitivity is represented by excess-CAR. The high CAR means a strong solvability in bearing market risk. This research proved that excess-CAR has a positive and significant influence on BEP. In deposits market, the coefficient is at 0.0164 (significant at 5%); while in credits market the coefficient is is at 0.0183

(significant at 1%). The stronger the banks in bearing market risk, the greater is the ability of banks to reach BEP. The finding is contrary to research of Dietrich and Gabrielle (2010) and Gul et al. (2011).

4.15. The Effect of Revenue Structure on Profitability

The revenue structure is proxied with NII/OC ratio. If the ratio is greater than 1, the condition of the bank's profit structure is strong because interest income (II) is able to cover interest expense (IE) and overhead cost (OC). So, if the fee based income (FBI) is equal to zero, the operating profit will be negative; but if the operating profit is positive that means FBI also helps to cover overhead costs.

The result shows that NII/OC ratio has a significant and positive effect on BEP, which is shown by the coefficient at 0.00105 (significant at 5%) in deposits market channel, and the coefficient at 0.00102 (significant at 5%) in credits market. This means NII has the ability to cover OC. Nevertheless, the management of bank needs to (1) implement the effective control of overhead expenses because the amount of NII will be smaller along with the increasing level of competition among banks and other financial institutions (2) the marketing management banks need to further promote banking products which leads to the maximization of FBI. This is the most important key to success if the banks want strong profitability and solvency capital to grow in future.

4.16. The Effect of Overhead Cost on Profitability

The overhead cost (OC) is non-interest expense that must be paid in carrying out any operation. In general, the largest part of the overhead expenses incurred comes from salaries and wages (Sufian and Chong, 2008).

The result of this study shows that OC/REV has a negative and significant effect on BEP and ROE, which is shown by the coefficient at -0.0445 (significant at 1%) in deposits market, and the coefficient at -0.044 (significant at 1%) in credits market. This shows that the banks manage to save overhead expenses in line with the development of their operating income.

4.17. The Effect of Fee Based Income on Profitability

Rose and Hudgins (2012) stated that assets utilization measures the extent to which banks effectively utilize the management of all its assets. The assets management is effective if it is used properly in generating total revenue. If the assets utilization is low, this means bank is unable to manage assets until the optimum so that bank has to increase revenues or dispose of some assets that are considered as unproductive.

In this study, the proportion of fee-based income is represented by FBI/Rev ratio. The analysis shows FBI/Rev has a significant positive effect on BEP. The coefficient of FBI/Rev has a positive value of 0.0319 (significant at 90%) in deposits market, while the coefficient is at 0.0307 (significant at 95%) in credits market. This means the role of FBI as a secondary income succeeds in increasing the profitability of banks. This study supports the research of Sufian and Chong (2008).

4.18. The Effect of Shariah Unit Existence on Profitability

In this study, the effect of the existence of sharia business unit which operates at conventional banks on profitability is insignificant. The coefficient of *shariah* dummy (*duus*) is negative at -9.2899 (significant at 95%) in deposits credit, while in credit market the coefficient is at -8.4686 (significant at 90%). This occurs because the unit products in *shariah* banks in Indonesia still have a small market share (which is at 5% in 2014, *source: FSA*). The existence of *shariah* business unit within the conventional bank still is complementary for a pioneering Islamic banking market, therefore *shariah* banking unit must contend dealing with conventional units which are already established and well organized.

5. CONCLUSION AND IMPLICATION

The existence and sustainability of profitability in Indonesian banking industry is significantly associated with behavior and performance of the bank. In addition, the profitability is also shown to be affected by market structure and the basic macroeconomic conditions such as the growth of the money supply (MS) and ICT (information and communication technology). The implication of the current research will be seen to judge the durability of bank profitability and find means to make it strong enough despite the influence of crisis, money market and inflation, although it may be still sensitive to exchange rate volatility.

Another implication is that Indonesian banking market structure will learn how to cope with the change towards increasingly fierce competition. AEC (ASEAN Economic Community) should learn to anticipate how to prevent the erosion of domestic banking market share. All local banks, national, and international level should also construct a strategy to maintain and enhance its customers. Every bank should be more responsive to external changes. Therefore, the efficiency will be the key to the sustainability of the existence of a bank in an increasingly competitive market.

To realize a solid banking industry, consolidation is also required in addition to requiring improvements in various fields, especially to answer the challenges faced by Indonesian banking. This study will also help to formulate policy, planning, and strategic development, while banks in Indonesia would learn to focus more on efficiency and performance, behavior, and structure of the national banking market needs. This is important because banking industry in Indonesia still faces following challenges :(1) Low capacity of bank credit (2) Banking structure being not optimal (3) Insufficient community's needs in banking services (4) Banking supervision needs to be improved (5) Weak banking capability (6) Non-sustainable profitability and operational efficiency of banks (7) Need to improve protection of customers.

It is recommended that in future, regulation and policy planning and development of the national banking industry should be directed to 1) A resolution to accelerate the restructuring of banking industry which aims at bringing efficiency in the banking market and to make market competition more healthy. 2) Effectiveness of cost structure and optimization of interest income that could result a growth rate of credits.

These two options will force banks to work smartly in retaining and increasing profitability which should be oriented to effectiveness and efficiency. The banking market will no longer rely on market power, which means there is no collusion such as maintaining the high interest to get higher profit.

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