THE COMPARISON OF PERFORMANCE AMONG NINE BIGGEST BANKS IN INDONESIA BEFORE AND AFTER THE IMPLEMENTATION OF INDONESIA BANKING ARCHITECTURE

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Abstract

Like in many countries, banking industry in Indonesia is more dynamic in the last decade. Level of market competition among banks tends to increase continuously. This phenomenon has encouraged banks to create the more advanced products and services to fulfill the growing needs of modern banking customers. As the monetary authority, Bank Indonesia has launched the Indonesia Banking Architecture to manage these dynamics. IBA is a fundamental framework of banking system and provides a direction for banking operational in Indonesia within 5 to 10 years. It is expected that IBA will create conducive environment which will enable banks to improve their performance. This research is aimed to compare and analyze the performance of nine biggest banks in Indonesia before and after the implementation of IBA in 2004. The performance indicators used are including ROA, ROE, NIM, CAR, LDR, and NPL. The data on these indicators are collected in the period of 2000-2009. The period of 2000-2004 is considered as before the implementation of IBA, while 2005-2009 is defined as after the implementation of IBA. The main tool of analysis used in this research is the mean equality test.

Keywords: bank, Indonesia Banking Architecture, performance.

1.   INTRODUCTION

In our modern life, banks are defined as institutions that issue deposit liabilities that are checkable and extend loans to commercial businesses or individuals. These two characteristics often used to differentiate banks from the other financial institutions. But, of course, banks do many other things too. The word bank itself is derived from the Italian word "banca", which refers to the "table, counter, or place of business of a money changer. Banks also issue time and savings deposits and offer many other types of loans including mortgages and consumer loans. Recently, many of them also provide electronic fund transfers, debit cards, international trade-related payments, credit cards, leasing, trust services, financial guarantees, and advisory and accounting services.

The banking sector is considered to be an important source of funding for most business. Bank runs have both microeconomic and macroeconomic effects (Dornbusch, Fischer, and Startz, 2004: 415). The former takes the form of disintermediation. Having lost deposits, banks are no longer able to make loans to support business investment and purchases of private homes. The latter takes the form on an increase in the currency-deposit ratio, and therefore, a drop in the money multiplier. Unless the central bank offsets this by increasing the monetary base, the macroeconomic effect is a drop in the money supply. A run on a bank occurs when depositors rush to try to withdraw cash because they believe others will also try to do so.

A bank success depends on many factors, but especially important is its ability to attract funds by offering deposit liabilities. Three categories of deposits are transactions deposits, savings deposits, and time deposits. Because deposits are the main source of bank funds, banks continually strive to increase deposits. In recent decades, banks have developed other non-deposit sources of funds such as repurchase agreements or borrowings. A bank success is also depends on local and regional factors, such as the population and economic vitality of the bank's service area, and its ability to attract deposits away from competing financial institutions or from banks in other geographical regions.

In the context of assets, a bank must decide how best to use its funds to meet its objectives, especially maximizing profits. Stockholders want to see that the bank's management does not lose sight of this goal. However, banking can be a risky business and the management and stockholders will also want to minimize the risks faced in the pursuit of profits. The bank will try to diversify its portfolio to ensure a considerable margin of liquidity and safety. Safety is very important because banks are highly leveraged institutions. Their assets are overwhelmingly supported by borrowed funds, which are either deposit or non-deposit liabilities. Most, if not all banks, hold a mix of loans (including business loans, consumer credit, and mortgages), government securities, corporate and foreign bonds, and other assets. In addition to these interest-earning assets, banks also hold reserve (cash) assets to help meet their liquidity and safety objectives. Another reason that banks hold reserve assets is to fulfill the central bank's requirement.

Bank's concern about liquidity are generated in part by the nature of their sources of funds. Checkable deposits, for example, which are obviously payable on demand, can and often do fluctuate widely. Non-deposit liabilities have the potential to fluctuate even more. If a bank's solvency is questioned or if another depository institutions offers more attractive rates, a bank can quickly lose some non-deposit funds that are usually placed for a relatively short time period. When deposits and non-deposit liabilities fall, even the most solvent bank must have a cushion of liquidity to enable it to meet these withdrawals. Such liquidity needs can be satisfied by holding some highly liquid assets and non-interest bearing cash reserves.

As banks regulator, a central bank uses its policies and instruments to encourage an appropriate competitive environment in banking industry. It is assumed that this environment will be able to improve banks performance. Al-Obaidan (2009: 70) has concluded that central bank's policies affect the economic efficiency of the banking industry in the Gulf Cooperation Council (GCC). GCC member countries are including Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and United Arab Emirates (UAE). The monetary stability allows management of commercial banks to allocate resources more efficiently as reflected by the significant and positive relationship between technical efficiency and monetary stability. Also, monetary stability allows management of commercial banks to rely on market prices to maximize the output level for given resources. Consequently, banks that operate in a relatively more stable price environment have higher scale efficiency than their counterparts that operate in economies with higher inflation rates.

Brissimis and Delis (2010) has examined the role of bank liquidity, capitalization, and market power as internal factors influencing bank's reaction in terms of lending and risk-taking to monetary policy impulses. Heterogeneity in the response of banks to a change in monetary policy is an important element in the transmission of this policy through banks. The ultimate impact of a monetary policy is a better bank performance. Brissimis and Delis (2010: 34-35) found that bank-level responses to policy rate changes in the United States of America (USA) and Euro are often far from the average. As banks have a special role in the financing of economic activity, their heterogeneity behavior is of particular importance to researchers and policy-makers alike. Banks with healthier balance sheets and market power follow different strategies from the ones with weaker balance sheets, and in some cases they seem to take advantage of the market. However, when it comes to risk-taking and profitability, it is well-known that during sudden episodes of financial turmoil, the balance sheet strength of even the healthiest banks quickly deteriorates and those banks exposed to high risks may become insolvent.

Based on his research on the monetary policy and bank performance in Nigeria, Nwezeaku (2010) emphasized that policy formulation and implementation inconsistencies appear to hinder the full impact of monetary policy on

the economy. Meanwhile, Ioannidu (2005) has examined whether monetary policy responsibilities alter the central bank's role (the Federal Reserve System) as a bank supervisor. He found that the indicators of monetary policy affect the supervisory actions of the Fed, but do not affect the actions of the Comptroller of the Currency and the Federal Deposit Insurance Corporation.

According to Tran (2010: 312), it is clear that although the financial system is coping with the global financial crisis, the soundness of the Vietnamese banking system has become stronger than what it was decades ago. Its current health is partially due to the continuous reform process of the banking legal environment. In this innovation, the digestion of international standards of supervision and intervention mechanisms, capital adequacy requirements, and flexible and timely monetary policy are decisive factors that have improved the soundness and performance of the banking sector. Thus, in the future, the banking legal environment should continuously be reformed in accordance with the market principles and international standards on capital adequacy and supervision requirements. Tran has used both financial variables and non-financial variables to analyze bank performance. Financial variables are including capital structure and solvency, management, profitability, bank size, and growth. Meanwhile, the non-financial variables are consisting of customer satisfaction, leadership, and technology.

From the emprical facts, it appears that the monetary policy provide by the central bank can and does benefit the performance of banks. But, in some circumstances, it impacts negatively on bank performance when it does not operate very flexibly and in a timely manner when the economy needs its activation. So, effects of monetary policy instruments on the performance of banks vary greatly in different periods of time. In several developing countries, the monetary policy has impacted positively on the performance of banks in recent years. However, Tran (2010) has indicated that this effect is not statistically significant in case of Vietnam because the nature of monetary policy and its effects on the stability of the economy as well as on bank performance are still controversial. There are also many reseaches on the issue of monetary policy and bank performance. Some of it are Duygun-Fethi and Pasiouras (2001), Kosmidou and Zopounidis (1008), Mishkin (2008), Neely and Wheelock (1997), Said and Tumin (2011), Scholtens (2000), and Tarawneh (2006).

Most developing countries have been taking different plans and strategies to their financial sector (Tarawneh, 2006: 103). Commercial banks are the most dominant financial institutions in any country. In Indonesia, Bank Indonesia has launched a strategic policy called the Indonesia Banking Architecture (IBA) in 2004. This research is undertake base on the curiosity of whether the implementation of IBA was succeed in increasing the performance of nine biggest bank currently operates in Indonesia. Because these nine banks have dominated banking industry, there was a strong indication that Bank Indonesia attempts to maintain a competitive environment has resulted in a non-competitive environment. Furthermore, in his recent research, Budiwiyono (2011: 292) has concluded that the performance of banking industry in Indonesia was not influenced by IBA. The average performance of 121 banks was not different between the period of 2000-2004 and 2005-2009. However, he mentioned that there was a great possibility for the improvement of individual bank's performance after the implementation of IBA.

Understanding the transmission mechanism is crucial for monetary policy. The special role of banking institutions in this mechanism has been studied extensively both at theoretical and empirical level. The existing evidence shows that banks alter their lending behavior in specific ways following a change in monetary policy. But does this reaction involve only changes, as studied in the bulk of the literature? And do all banks in the market respond uniformly to monetary policy changes? This research tries to answer these questions by analyzing empirically the response of nine biggest banks in Indonesia over the period 2000-2009 in terms of their performance following a strategic and fundamental monetary policy.

2.   LITERATURE REVIEW AND HYPOTHESES

The relationship among monetary policy, inflation, and productivity remains unsolved although many researchers have conducted empirical researches on it. This issue is not only interesting empirically, but it also has profound policy implications. Hence, it is important to examine how central bank's policies that maintain monetary

stability over a certain period have influenced the performance of the commercial banking industry. Different to the previous research, this research has used six different indicators to identify the performance difference in nine biggest banks in Indonesia before and after the implementation of IBA.

The primary reason the banking system is regulated is to preserve its safety and soundness and ensure the fair and efficient delivery of banking services to the public. From the regulator's perspective, continuous oversight is needed to ensure that banks are operated prudently and in accordance with standing statutes and regulations. Regulation involves the formulation and issuance of specific rules to govern the structure and conduct of banks.

In establishing the statutes and regulations that have contributed to the evolution of the structure of the banking system, the regulatory agencies in a country, including Bank Indonesia, were guided by several considerations. It was assumed that a large number of small banks would encourage competition and efficiency, which would result in conduct or behavior by banks that was beneficial to the public and society at large. According to Burton and Lombra (2006: 235), the more competitive the market, the greater the risk of failure of an individual bank from the presure of intense competition. Although the public would be provided with the largest quantity of financial services at the lowest prices, more banks could fail in a highly competitive environment.

On the reverse, a structure characterized by a few large banks would result in limited competition, inefficiencies, and fewer benefits for the public in the form of lower prices and improved quality and quantity of financial services. Fewer banks would fail in a non-competitive market because banks could charge higher prices for their services and earn higher profits. Nevertheless, with only a few large banks, the failure of just one bank could have major ramifications throughout the economy. With many small banks, the failure of one bank would not be catastrophic. In short, regulators attempt to balance all of these considerations by encouraging bank behavior that is beneficial to society while ensuring the safety and soundness of the financial system.

It is rational that regulators were interested in monitoring and influencing, if not controlling, the structure of the market of banking services. Regulators, in particular, used their powers to control entry into the market, mergers among existing banks, and branching in an effort to maintain many small banks and so-called competitive environment while protecting small banks from excessive competition. Unfortunately, regulator's attempts to maintain a competitive environment often resulted in a non-competitive environment. Even though there were many banks, each bank was shielded from competition.

The bank's management decisions involve what kinds of loans to make, what the prime rate should be, what interest rate to be offer on one-year time deposits, and so forth. These decisions reflect an interaction between the bank's liquidity, safety, and earnings objectives and the economic and financial environment within which the bank operates. It is useful to visualize bank management as having to face and deal with several types of risks and uncertainties including credit or default risk, interest rate risk, liquidity risk, and exchange rate risk.

A primary function of a bank loan officer is to evaluate or assess the default risk associated with lending to particular borrowers, such as firms, individuals, and domestic and foreign governments. The loan officer gathers all of the relevant information about potential borrowers including balance sheets, income statements, credit checks, and how the funds are to be used. As consequence, the loan officers must also be aware that they are making decisions about whether to fund a loan under conditions of asymmetric information. If the bank funds less-desirable loans, the result is an adverse selection problem, which increases the risk of default.

After the loan is made, it may be difficult to guarantee that the loan is used only for the stated purpose, not for a more risky venture. This so-called moral hazard problem results from the fact that once borrowers get the funds, they may have an incentive to engage in a riskier venture. This incentive occurs because higher-risk ventures pay a higher return. The borrowers are now risking the bank's funds. The asymmetric information, adverse selection, and the incentive to engage in riskier ventures are usually facts of life.

Bank managers must also manage interest rate risk. A positive spread today can turn into a negative spread later when the cost of liabilities exceeds the return on assets. Banks can use financial futures, options, and swaps

to manage interest rate risk. Adjustable (variable) rate loans can also be used to hedge interest rate risk. The aim, of course, is to preserve a profitable spread and to shift the interest rate risk onto the borrower.

The cost of bank loans varies for different types of borrowers at any given point in time and for all borrowers over time. Interest rate is higher for riskier borrowers, and rates are also higher on smaller loans because of the fixed costs involved in making and servicing loans. If a firm can qualify as a prime credit because of its size and financial strength, it can borrow at the prime rate, which at one time was the lowest rate banks charged. Rates on other loans are generally scaled up from the prime rate, but loans to very large, strong customers are made at rates below prime.

Bank rates vary widely over time depending on economic conditions and central bank's policy. When the economy is weak, then loan demand is usually slack, inflation is low, and the central bank makes plenty of money available to the system. As a result, rates on all types of loans are relatively low. Conversely, when the economy is booming, loan demand is typically strong, the central bank restricts the money supply, and the result is high interest rates.

Brigham and Houston (2004: 625) mentioned that the terms on a short-term bank loan to a business are spelled out in the promissory note. The key elements contained in most promissory notes are (1) interest only versus amortized; (2) collateral; (3) loan guarantees; (4) nominal, or stated, interest rate; (5) frequency of interest payments; (6) maturity; (7) discount interest; (8) add-on basis installment loans; and (9) other cost elements.

Like other intermediaries, banks need to manage liquidity risk. A fairly large p proportion of bank liabilities are payable on demand. Checkable deposits and savings deposits are two prominent examples. Banks must be prepared to meet unexpected withdrawals by depositors and to accommodate unexpected loan demands by valued customers. The resulting need for liquidity can be satisfied by holding some highly liquid assets or by expanding particular types of liabilities.

Some banks maintain stocks of foreign exchange that are used in international transactions and to service customers who need to buy or sell foreign currencies. This phenomenon are undertaken more often, because banking has become more international in scope. If the exchange rate between two currencies changes, the value of the stocks of foreign exchange will also change. A bank, like any holder of foreign exchange, is subject to an exchange risk. Banks and other holders of foreign exchange now use exchange rate forward, futures, option, and swap agreements to hedge this risk.

The business of banking, perhaps, is beginning to sound somewhat more complex and challenging than you originally envisioned. Banks are facing increasing competition from other financial institutions and other non-financial corporations in a global environment. They have confronted a volatile economic and regulatory environment. Most analysts ascribed the better performance by banks to their more diversified portfolios and to their environment. Banks have shored up capital due to new regulations. These factors led to record profit levels and high bank stock valuations.

The major challenge facing banks in this new millennium is competition from other intermediaries and other non-financial companies that have taken in increasing share of intermediation. These non-banks face less regulation and often lower costs. Costs may be lower because non-banks are less regulated than banks with regard to what they can do and where they can locate. In addition, non-banks do not face reserve requirements, nor do they have to maintain full-service branches. Banks must increasingly adapt to a changing industry to maintain profits as well as to maintain market share. It is not surprise that banks are merging with other financial services firms including savings and loans, securities firms, and insurance companies, as well as expanding into areas previously prohibited to banks.

The aims of this research are related to a long tradition in the literature of the transmission mechanism that accords banks a special role. Many proponents suggest that the effect of monetary policy on aggregate demand through interest rates may be enhanced by financial market imperfections and the existence of imperfect substitutability between loans and securities in bank portfolios and also as a means of borrowing for firms. The corresponding impact on performance of banks is less investigated. This seems odd since changes in policy rates

can affect bank profitability, given that banks can borrow short at lower rates and use these funds to invest in longer-term projects at higher rates. A decrease in interest rates reduces agency costs or may cause banks to relax their lending standards, raising credit risk, and thus non-performing loans.
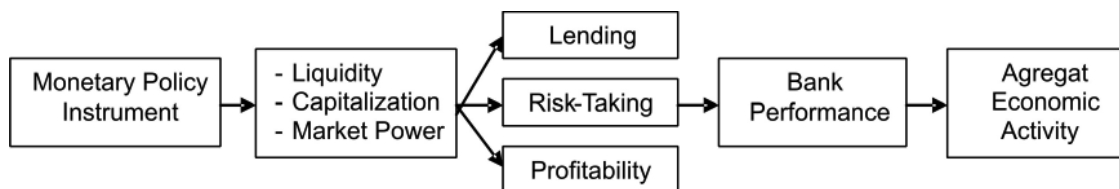

Figure 1. Transmission of Monetary Policy through Banks

Therefore, central banks are increasingly considered with avoiding price bubbles and minimizing incentives for banks to take on very high risks. However, in a low interest rate environment, banks have incentives to take on higher risks in search for yield. A major concern for the empirical analysis is the fact that banks respond quite heterogeneously to monetary policy changes and this may also have implications for their risk-taking and performance.

The common assumption which underpins much of the bank financial performance research and discussion is that increasing financial performance will lead to improved functions and activities of the banks. It can be argued that there are three principal factors to improve financial performance for financial institutions including banks. They are the institution size, its asset management, and the operational efficiency. In general, the financial performance of banks and other financial institutions has been measured using a combination of financial ratios analysis, benchmarking, measuring performance against budget or a mix of these methodologies (Avkiran, 1995 in Tarawneh, 2006: 102). As it known in accounting literature, there are limitations associated with use of some financial ratios. However, Tarawneh (2006) has used return on assets (ROA) ratio with interest rate income size to measure the performance of Omani commercial banks. He also used together asset management, the bank size, and operational efficiency to investigate the relationships among them and the financial performance.

In addition, much of the current bank performance literature describes the objective of financial organizations as that of earning acceptable returns and minimizing the risk taken to earn this return. There is a generally accepted relationship between risk and return, that is, the higher the risk the higher the expected return (Brigham and Houston, 2004: 170). Therefore, traditional measures of bank performance have measured both risks and returns.

The increasing competition in the national and international banking markets, the change towards monetary unions, and the new technological innovations herald major changes in banking environment. These phenomenons also challenge all banks to make timely preparations in order to enter into new competitive financial environment. The concept of efficiency can be regarded as the relationship between bank's outputs and the corresponding inputs used in their operation. In the financial management literature, efficiency is treated as a relative measure which reflects the deviations from maximum attainable output for a given level of input.

Many researchers have been too much focus on asset and liability management in the banking sector. They are strongly suggests that risk management issues and its implications must be concentrated by the banking industry. There is a need for a greater risk management in relation to more effective portfolio management, and this requires a greater emphasis upon the nature of risk and return in bank asset structure, and greater diversification of assets in order to spread and reduce the bank's risks.

According to Kosmidou and Zopoundis (2008: 80), the efficiency of the banking system has been one of the major issues in the new monetary and financial environment. The efficiency and competitiveness of financial institutions cannot easily be measured, since their products and services are of an intangible nature. Many researchers have attempted to measure the productivity and efficiency of the banking industry using outputs, costs, and performance.

There are variations of bank performance measurement. Many banks experience dramatic changes in profits from one period to the next or relative to what stock analysts expect (MacDonald and Koch: 2006: 52). United States of America commercial banks reported record aggregate profits every year throughout the 1990s and early 2000s. The same situation also happened in banking industry in many developing countries. The 1990s evidenced improved asset quality with fewer loan defaults, higher interest income on assets relative to interest expense on liabilities, and significantly greater non-interest income relative to non-interest expense. In 2000s, there have been largely earnings events rather than solvency events.

Commercial banks, like other financial intermediaries, facilitate the flow of funds from surplus spending units (savers) to deficit spending units (borrowers). Their financial characteristics largely reflect government-imposed operating restrictions and peculiar features of the specific markets served. Because their function is primarily financial, most banks own few fixed assets and thus exhibit low operating leverage. Most bank liabilities are payable on demand or carry short-term maturities so depositors can renegotiate deposit rates as market interest rates change. As a result, interest expense changes coincidentally with short-run changes in market interest rates creating significant asset allocation and pricing problems. Banks operate with less equity capital than non-financial companies, which increases financial leverage and the volatility of earnings.

Analyzing commercial bank performance should started from the financial statements (MacDonald and Koch, 2006: 54). These include the bank's balance sheet and income statement. A bank's balance sheet presents financial information comparing what a bank owns with what it owes and the ownership interest of stockholders. Balance sheet figures are stock values calculated for a particular day or point in time. As such, values on the balance sheet represent the balance of cash, loans, investments, and premises owned by the bank on a particular day.

Meanwhile, a bank's income statement reflects the financial nature of banking, as interest on loans and investments represents the bulk of revenue. The income statement starts with interest income, and then subtracts interest expense to produce net interest income. The other major source of bank revenue is non-interest income. After adding non-interest income, banks subtract non-interest expense, or overhead costs. Although banks constantly try to increase their non-interest income and reduce non-interest expense, the non-interest expense usually exceeds non-interest income such that the difference is labeled the bank's burden. The next step is to subtract provisions for loan and lease losses. The resulting figure essentially represents operating income before securities transactions and taxes. Next, realized gains or losses from the sale of securities are added to produce pretax net operating income. Subtracting applicable income taxes, tax-equivalent adjustments, and any extraordinary items yields net income.

For the past year, most of bank's top manager would quote either their bank's return on equity (ROE) or return on assets (ROA) as the performance indicators. If these measures were higher than peers, they would drop phrase "high-performance bank" in their conversation. But, of course, for a bank to report higher returns, it must either take on more risk, price assets and liabilities better, or realize cost advantages compared with peers. By definition ((MacDonald and Koch, 2006: 69):

$$ROE = \frac{Net\ income}{Average\ total\ equity} \tag{2.1}$$

ROE model above simply relates ROE to ROA and financial leverage then decomposes ROA into its contributing elements. ROE equals net income divided by average total equity and, thus, measures the percentage return on each dollar of stockholder's equity. It is the aggregate return to stockholders before dividends. The higher the return the better, as banks can add more to retained earnings and pay more in cash dividends when profits are higher.

$$ROA = \frac{Net\ income}{Average\ total\ assets} \tag{2.2}$$

ROA equals net income divided by average total assets and, thus, measures net income per dollar of average assets owned during the period. ROE linked to ROA by the equity multiplier (EM), which equals average total assets divided by total equity. A bank's EM compares assets with equity such that large values indicate a large amount of debt financing relative to stockholder's equity. EM thus measures financial leverage and represents both a profit and risk measure.

$$ROE = \frac{Net\ income}{Average\ total\ assets} \ x \ \frac{Average\ total\ assets}{Average\ total\ equity} = ROA\ x\ EM \qquad (2.3)$$

The fundamental objective of bank management is to maximize shareholder's wealth. This goal is interpreted to mean maximizing the market value of a bank's common stock. Wealth maximization, in turn, requires that managers evaluate the present value of cash flows under uncertainty with larger, near-term cash flows preferred when evaluated on a risk-adjusted basis. Profit maximization appears to suggest that the bank manager simply invest in assets that generate the highest gross yields and keep costs down. But, profit maximization differs from wealth maximization. To obtain higher yields, a bank must either take on increased risk or lower operating costs. Greater risk manifests itself in greater volatility of net income and market value of stockholder's equity. Wealth maximization requires the manager to evaluate and balance the trade-offs between the opportunity for higher returns, the probability of not realizing those returns, and the possibility that the bank might fail.

A bank's profitability will generally vary directly with the riskiness of its portfolio and operations. Although some risks can be sought out or avoided, others are inherent in the prevailing economic environment and specific markets served. Even though management can control the credit evaluation procedure, returns to the bank vary with returns to its customers, and these returns are heavily dependent on local economic condition. Interest rate is one of the important factor in influencing a bank's risk in term of credit quality. Net interest margin (NIM) is a ratio of net interest income (NII) to total earning assets. NII itself is the interest income minus interest expense.

$$NIM = \frac{Net\ interest\ income}{Average\ earning\ assets} \qquad (2.4)$$

The Federal Reserve Board has identified six types of risk. They are credit risk, liquidity risk, market risk, operational risk, reputation risk, and legal risk (MacDonald and Koch, 2006: 74-75). Credit risk is associated with the quality of individual assets and the likelihood of default. It is the potential variation in net income and market value of equity resulting from non-payment or delayed payment by borrowers to the bank. Liquidity risk is the current and potential risk to earnings and the market value of stockholder's equity that results from a bank's inability to meet payments or clearing obligations in a timely and cost-effective manner. Market risk is resulting from adverse movements in market rates or prices. Operational risk refers to the possibility that operating expenses might vary significantly from what is expected, producing a decline in net income and bank value. Legal risk is the risk that unenforceable contracts, lawsuits, or adverse judgments could disrupts or negatively affect the operations, profitability, condition, or solvency of the bank. Reputation risk is the risk that negative publicity, either true or untrue, can adversely affect a bank's customer base or bring forth costly litigation.

In the context of credit risk, loans are designated as non-performing when they are placed on non-accrual status or when the terms are substantially altered in a restructuring. Non-accrual means that banks deduct all interest on the loans that was recorded but not actually collected. Banks have traditionally stopped accruing interest when debt payments were more than 90 days past due. However, the interpretation of when loans qualified as past due varies widely. Non-performing loan (NPL) is loan for which an obligated interest payment is past due. Many banks did not place loans on non-accrual if they were brought under 90 days past due by the end of the reporting period. This permitted borrowers to make late partial payments and the banks to report all interest as accrued, even

when it was not collected. On occasion, banks would lend the borrower the funds that were used to make the late payment.

The impact of this practice on financial statements is twofold. First, NPLs are understated on the balance sheet, so that credit risk is actually higher than it appears. Second, interest accrued but not collected increases net interest income (NII), thus overstating NIM, ROA, and ROE.

The other important risk to recognize by a bank's manager is capital or solvency risk. Capital risk is not considered as a separate risk because all of the risks mentioned previously will, in one form or another, affect a bank's capital and hence solvency. It dose, however, represents the risk that a bank may become insolvent and fail. Thus, capital risk refers to the potential decrease in the market value of assets below the market value of liabilities, indicating economic net worth is zero or less. If such a bank were to liquidate its assets, it would not be able to pay all creditors, and would be bankrupt. In many cases, the capital risk is influence by an aggresive loan expansion by banks as showed by the high loan to deposit ratio (LDR). LDR is a commonly used statistic for assessing a bank's liquidity by dividing the banks total loans by its total deposits and expressed as a percentage. If the ratio is too high, it means that banks might not have enough liquidity to cover any unforeseen fund requirements. On the reverse, if the ratio is too low, banks may not be earning as much as they could be.

$$LDR = \frac{Total\ loans}{Total\ deposits} \qquad (2.5)$$

The adequacy of bank capital levels is constantly debated. The issue of bank capital adequacy has long pitted regulators against bank management. Regulators, concerned mainly with the safety of banks, the viability of the insurance fund, and the stability of financial markets, prefer more capital. Bankers, on the other hand, generally prefer to operate with less capital. Capital is defined as funds subscribed and paid by stockholders representing ownership in a bank. Regulatory capital also includes debt components and lost reserves.

The common method used to measure the adequacy level of a bank's capital is the capital adequacy ratio (CAR). CAR measures the amount of a bank's core capital expressed as a percentage of its assets weighted credit exposures. CAR determines the bank's capacity to meet the time liabilities and other risks such as credit risk, operational risk, etc. In the simplest formulation, a bank's capital is the "cushion" for potential losses, and protects the bank's depositors and other lenders. Banking regulators in most countries define and monitor CAR to protect depositors, thereby maintaining confidence in the banking system. CAR is similar to leverage and in the most basic formulation it is comparable to the inverse of debt-to-equity leverage formulations. Unlike traditional leverage, however, CAR recognizes that assets can have different levels of risk.

$$CAR = \frac{Tier\ 1\ capital + Tier\ 2\ capital}{Risk\ weighted\ assets} \qquad (2.6)$$

This research is aimed to test the six hyphotesis as follows:
1. ROA
   H_{01}: mean of ROA in the period of 2000-2004 is equal to the mean of ROA in the period of 2005-2009. $(H_{01}: \mu_{2000-2004} = \mu_{2005-2009})$
   H_{11}: mean of ROA in the period of 2000-2004 is not equal to the mean of ROA in the period of 2005-2009. $(H_{11}: \mu_{2000-2004} \neq \mu_{2005-2009})$
2. ROE
   H_{02}: mean of ROE in the period of 2000-2004 is equal to the mean of ROE in the period of 2005-2009.
   H_{12}: mean of ROE in the period of 2000-2004 is not equal to the mean of ROE in the period of 2005-2009.
3. NIM
   H_{03}: mean of NIM in the period of 2000-2004 is equal to the mean of NIM in the period of 2005-2009.
   H_{13}: mean of NIM in the period of 2000-2004 is not equal to the mean of NIM in the period of 2005-2009.

4. CAR
    H_{04}: mean of CAR in the period of 2000-2004 is equal to the mean of CAR in the period of 2005-2009.
    H_{14}: mean of CAR in the period of 2000-2004 is not equal to the mean of CAR in the period of 2005-2009.
5. LDR
    H_{05}: mean of LDR in the period of 2000-2004 is equal to the mean of LDR in the period of 2005-2009.
    H_{15}: mean of LDR in the period of 2000-2004 is not equal to the mean of LDR in the period of 2005-2009.
6. NPL
    H_{06}: mean of NPL in the period of 2000-2004 is equal to the mean of NPL in the period of 2005-2009.
    H_{16}: mean of NPL in the period of 2000-2004 is not equal to the mean of NPL in the period of 2005-2009.

3.   RESEARCH METHOD

The main data used in this research is the performance of nine biggest banks in Indonesia. They are Bank Mandiri, Bank Rakyat Indonesia (BRI), Bank Negara Indonesia (BNI), Bank Tabungan Negara (BTN), Bank Central Asia (BCA), Bank CIMB Niaga, Bank Danamon Indonesia, Bank Panin, and Bank Internasional Indonesia (BII). The first four banks are categorized as the state-owned enterprise banks, while the other five banks are the private banks.

Six performance indicators which are identified from these nine banks include ROA, ROE, NIM, CAR, LDR, and NPL. The CAR used is credit and market risk CAR, while the net NPL is used to represents NPL. All data are collected in the period of 2000-2009 from Bank Indonesia and InfoBank magazine. In addition, the data on total assets of the nine banks in 2010 is also gathered from banking statistics.

This research utilizes test for descriptive statistics to analyze the secondary data. Type of descriptive statistics used is a mean equality test. This test is based on a single-factor, between-subjects, analysis of variance (ANOVA). The basic idea is that if the subgroups have the same mean, then the variability between the sample means (between groups) should be the same as the variability within any subgroup (within group).

Denote the i-th observation in group g as x_g, where i = 1, 2, ..., n_g for groups g = 1, 2, ... G. The between and within sums of squares are defined as

$$SS_B = \sum_{g=1}^{G} n_g \left(\bar{x}_g - \bar{x} \right)^2 \tag{3.1}$$

$$SS_W = \sum_{g=1}^{G} \sum_{i=1}^{n_g} \left(x_{i,g} - \bar{x}_g \right)^2 \tag{3.2}$$

where $\bar{x}_g$ is the sample mean within group g and $\bar{x}$ is the overall sample mean. The F-statistic for the equality of means is computed as

$$F = \frac{SS_B (G - 1)}{SS_W (N - G)} \tag{3.3}$$

Where N is the total number of observations. The F-statistic has a F-distribution with G-1 numerator degrees of freedom and N-G denominator degrees of freedom under the null hypothesis of independent and identical normal distribution, with equal means and variances in each subgroup.

For tests with only two subgroups (G=2), like in this research, the t-statistic is also reported, which is simply the square root of the F-statistic with one numerator degree of freedom. The analysis of variance table shows the decomposition of the total sum of squares into the between and within sum of squares, where

$$Mean\ Sq. = \frac{Sum\ of\ Sq.}{df} \tag{3.4}$$

The F-statistic is the ratio

$$NIM = \frac{Net\ interest\ income}{Average\ earning\ assets}$$ (3.5)

4. RESULTS AND DISCUSSION

Every year, Bank Indonesia launches the list of ten biggest banks in Indonesia based on total assets. In 2010, total assets of the ten banks were Rp 1,948.23 trillion or equal to USD 207.26 billion. This amount is about 64.75 percent of total assets of banking industry in Indonesia. The total assets owned by each bank are presented in Table 1 below. By considering data inconsistency, Bank Permata is not involved further in analyzing the impact of IBA implementation on bank performance.

Table 1. Ten Biggest Banks in Indonesia in 2010

Name of Bank	Rank	Total Assets (Rp Trillion)	Percentage of Banking Industry (%)
Bank Mandiri	1	410.619	13.65
Bank Rakyat Indonesia	2	395.396	13.14
Bank Central Asia	3	323.345	10.75
Bank Negara Indonesia	4	241.169	8.02
Bank CIMB Niaga	5	142.932	4.75
Bank Danamon Indonesia	6	113.861	3.78
Pan Indonesia Bank	7	106.508	3.54
Bank Permata	8	74.040	2.46
Bank Internasional Indonesia	9	72.030	2.39
Bank Tabungan Negara	10	68.334	2.27
	Total	1,948.23	64.75

Source: Bank Indonesia.

In 2000-2004, the average ROA of Bank Mandiri was 2.12 percent and decreased to 1.96 percent in the period of 2005-2009. Meanwhile, in the same period, the average ROE was declined from 23.19 percent to 17.15 percent. The average CAR and NPL were also decreased from 26.66 percent to 19.93 percent and from 6.79 percent to 4.97 percent, respectively. The other two indicators had different results. The average NIM have improved from 3.25 percent in 2000-2004 to 4.82 in 2005-2009 and the average LDR have increased from 35.91 percent to 55.52 percent. The complete average performance of the nine biggest banks in Indonesia is presented in Table 2.

Table 2. The Average Performance of 9 Biggest Banks in Indonesia in 2000-2004 and 2005-2009

No.	Name of Bank	Average (Year)	ROA (%)	ROE (%)	NIM (%)	CAR (%)	LDR (%)	NPL (%)
1.	Bank Mandiri	2000-2004	2.12	23.19	3.25	26.66	35.91	6.79
		2005-2009	1.96	17.15	4.82	19.93	55.52	4.97
2.	Bank Rakyat Indonesia	2000-2004	2.75	32.74	8.33	15.47	60.86	3.62
		2005-2009	4.38	34.62	10.70	15.27	75.99	1.20
3.	Bank Negara Indonesia	2000-2004	1.37	24.39	3.32	15.74	41.93	10.21
		2005-2009	1.43	13.73	5.61	14.86	59.30	4.30
4.	Bank Tabungan Negara	2000-2004	-0.32	-18.22	2.06	11.80	54.23	2.72
		2005-2009	1.73	23.11	5.12	18.82	91.64	2.23
5.	Bank Central Asia	2000-2004	2.80	35.80	4.80	30.11	20.43	2.32
		2005-2009	3.48	29.19	6.45	18.79	46.03	0.30
6.	Bank CIMB Niaga	2000-2004	1.24	24.27	2.52	14.50	63.50	9.23
		2005-2009	2.02	16.55	5.80	16.02	86.85	2.24
7.	Bank Danamon Indonesia	2000-2004	2.31	23.81	4.54	34.25	45.39	4.96
		2005-2009	2.56	17.12	7.82	18.65	84.38	1.46
8.	Pan Bank Indonesia	2000-2004	1.91	9.98	5.34	38.49	80.24	12.36
		2005-2009	2.34	12.59	4.89	24.37	77.25	2.25
9.	Bank Internasional Indonesia	2000-2004	-1.05	-146.70	2.02	7.40	39.55	18.89
		2005-2009	1.12	12.63	5.23	19.88	70.04	2.30

According to the test for equality of means between two series, the increased of Bank Mandiri's average NIM between 2000-2004 and 2005-2009 was significant. The similar result also found for the average LDR as showed in Appendix 1 and Appendix 3. This means that the implementation of API was only able to improve two of six performance indicators of Bank Mandiri.

The different results were found in the case of Bank Rakyat Indonesia. Five of six average performance indicators have improved in the period of 2005-2009 if compared to the period of 2000-2004. CAR and LDR was the two indicators which were decreased in the similar period. However, from the test for equality of means between series (Appendix 3 and Appendix 4), it was found that LDR and NPL were the two indicators which have significant improvement. Thus, the implementation of API has only limited positive impact to the performance of Bank Rakyat Indonesia also.

As for Bank Negara Indonesia, three average performances have improved. They were ROA, NIM, and LDR. On the reverse, ROE, CAR, and NPL have decreased. From the three improved indicators, only two of them were found significant (Appendix 5 and Appendix 6), i.e. NIM and LDR. BNI's average NIM was increased from 3.32 percent in 2000-2004 to 5.61 percent in 2005-2009 and the average LDR was increased from 41.93 percent to 59.30 percent.

All of Bank Tabungan Negara's average performance indicators were improved in the period of 2005-2009 compared to 2000-2004. ROA, ROE, NIM, CAR, and LDR were increased, while NPL was decreased. But, as presented in Appendix 7, Appendix 8, and Appendix 9, only three average performance indicators were significant. They were NIM, CAR, and LDR. These empirical results revealed that the contribution of API implementation was also limited to the performance improvement of Bank Negara Indonesia and Bank Tabungan Negara.

As a private bank, four of six performance indicators of Bank Central Asia have improved after the implementation of API. They were ROA, NIM, LDR, and NPL. On the contrary, the average ROE and CAR were decreased in 2005-2009 compared to the period of 2000-2004. The test for equality of means between series in Appendix 10, Appendix 11, Appendix 12, and Appendix 13 shows that the improvement of four average performance indicators were statistically significant although relatively weak for ROA. These findings indicated that the implementation of API has had better impact on the private bank compared to the state-owned banks.

Table 3. Recapitulation of Test for Equality of Means Between Series

No.	Name of Bank	Test Results					
		ROA	ROE	NIM	CAR	LDR	NPL
1.	Bank Mandiri	ns	ns	***	**	***	ns
2.	Bank Rakyat Indonesia	ns	ns	ns	ns	**	***
3.	Bank Negara Indonesia	ns	ns	**	ns	***	ns
4.	Bank Tabungan Negara	ns	ns	**	***	***	ns
5.	Bank Central Asia	*	ns	**	***	***	**
6.	Bank CIMB Niaga	ns	ns	**	ns	**	ns
7.	Bank Danamon Indonesia	ns	ns	***	**	***	**
8.	Pan Indonesia Bank	ns	ns	ns	***	ns	ns
9.	Bank Internasional Indonesia	ns	ns	**	ns	**	ns

Notes:

ns = not significant: probability value > 0.1
*** = significant at 1% level: probability value < 0.01
** = significant at 5% level: 0.01 < probability value < 0.05
* = significant at 10% level: 0.05 < probability value < 0.1

In the period of 2000-2004, the average ROA of Bank CIMB Niaga was 1.24 percent. This indicator has improved into 2.02 percent in 2005-2009 although this improvement was not significant statistically. The other performance indicators which were also improved include NIM, CAR, LDR, and NPL. However, only NIM (Appendix 14) and LDR (Appendix 15) were found significant.

Four of six performance indicators were improved in the case of Bank Danamon Indonesia, i.e. ROA, NIM, LDR, and NPL. Unfortunately, not all of them were statistically significant. For instance, the average NPL has decreased from 4.96 percent in 2000-2004 to only 1.46 percent in the period of 2005-2009. As showed in the Appendix 18, this decreased was statistically significant. On the reverse, the increased of average ROA was not significant statistically.

The last two private banks involved in this research were Pan Indonesia Bank and Bank Internasional Indonesia. Three performance indicators of Pan Indonesia Bank were improved in the period of 2005-2009

compared to 2000-2004. They were ROA, ROE, and LDR. Meanwhile, NIM, CAR, and LDR were declined in the similar period. However, all improved indicators were found not significant. This means that the implementation of API has no impact on the performance improvement of Pan Indonesia Bank.

In the case of Bank Internasional Indonesia, all performance indicators were improved after the implementation of API. For example, the average NIM has increased from 2.02 percent in 2000-2004 to 5.23 percent in the period of 2005-2009. However, only the improvement of NIM and LDR which found significant statistically as presented in Appendix 19 and Appendix 20.

5. CONCLUSION

This research found that, in general, the implementation of API was not optimum in improving the performance of nine biggest banks in Indonesia neither state-owned banks nor private banks. The average ROA of all banks was not improved in the period of 2005-2009 compared to 2000-2004, except for Bank Central Asia with only weak significant statistically. The worst case was found in the performance of ROE. None of bank's ROE were improved after the implementation of API.

There were various influenced of API implementation on the improvement of NIM, CAR, LDR, and NPL. The best impact of API was found on the improvement of LDR. Except for Pan Indonesia Bank, the average LDR of eight banks was increased significantly in the period of 2005-2009 compared to 2000-2004. Meanwhile, the improvement of NIM was not significant only for Bank Rakyat Indonesia and Pan Indonesia Bank. As for CAR, there were four banks without significant improvement of CAR. They were Bank Rakyat Indonesia, Bank Negara Indonesia, Bank CIMB Niaga, and Bank Internasional Indonesia. Finally, there were only three banks with the significant improvement of NPL after the implementation of API, i.e. Bank Rakyat Indonesia, Bank Central Asia, and Bank Danamon Indonesia.

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