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BANKING MARKET DISCIPLINE IN INDONESIA AN EMPIRICAL TEST ON CONVENTIONAL AND ISLAMIC BANK

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ABSTRACT

A sound banking system is vital in supporting a sound and strong economy. One of the important pillars of a sound banking system is market discipline, which is the reaction of the market makers on the risks taken by banks as a form of supervision and discipline. The objectives of this paper are to examine: (i) the existence of market discipline by depositors in the deposit insurance era by the Indonesia Deposit Insurance Corporation (LPS); (ii) the difference in market discipline by depositors before and after the policy of increasing the value of deposit covered; (iii) the difference between market discipline by depositors of Islamic banks with conventional banks. The data used are annually individual bank data from the Indonesian Banking Directory (DPI) in 2005-2009. The dependent variable is the change in deposits, which is used as proxy for market discipline in t period. The independent variables used are CAR, APB, NIM, and LDR as proxy of financial risk/fundamental condition of the bank in t-1 period. The result indicates the existence of market discipline in Indonesia and also shows that market discipline is detected stronger in the period 2005-2007 than the period 2008-2009. This study also indicates that market discipline by depositors of Islamic banks are stronger than those of conventional.

Keywords: *market discipline, deposit insurance, Islamic and conventional banks.*

INTRODUCTION

A sound banking is vital to supporting the development and sound economic system. The failure and collapse of banking as a dominant financial institution in Indonesia will give impact on other economic makers. Therefore, it necessitates surveillance of other related parties and regulations of financial authority.

Bank Indonesia (BI) as the authority of monetary and banking in Indonesia has arranged *blueprint*, which is called Indonesian Banking Architecture (API). The development vision of API is "*achieving a sound, strong and efficient banking system on behalf of creating stability of financial system in the frame work of helping to urge the national economic growth".* To achieve this, BI has arranged the six-pillar based target and program. The sixth pillar is "creating the empowerment and protection of banking service customers". One of its activities is arranging product information transparency by facilitating the arrangement of

minimum standard transparency for bank's product information. It is expected to be able to encourage the society's surveillance and customers' empowerment to do supervision on banking in Indonesia.

Surveillance by market makers (including customers) towards banking is called market discipline. Market discipline becomes one of important pillars of a sound banking, because market makers do surveillance and react against the risks taken by bank, so that bank is expected to be more disciplined in managing its risks. This action form of surveillance can be interest rise request or fund withdrawal/reduction from the bank by customers. With the presence of market discipline, it is expected to encourage bank management to manage its risks and to work more efficiently.

Basel Committee on Banking Supervision (BCBS) has adopted market discipline as one of many pillars to promote the security and soundness of the financial system. Market discipline becomes the third pillar in an effort of enhancing banking soundness, strength and efficiency, and at once is potential to encourage the minimal adequacy of bank (first pillar) and surveillance by banking authority (the second pillar).

This disciplinary process cannot be separated from deposit insurance. The existence of deposit insurance will reduce market discipline. This is what was revealed by Demirgüç-Kunt & Huizinga (2000) in Laeven (2002), stating that the application of deposit insurance will bring about tradeoff between the enhancement of security of the deposit and the decline of market discipline by bank creditors.

Deposit insurance in Indonesia is currently done by Indonesia Deposit Insurance Corporation (LPS). The establishment of LPS is at once a starting point of insurance policy reform, from overall loan (blanket guarantee) or as widely known as implicit insurance into partial deposit insurance (explicit). This policy reform should promote depositor's responsiveness to do surveillance on the risks faced by the bank, for not all deposits are insured by LPS. Only deposit of small customers is insured by LPS because big customers are expected to do surveillance on bank.

Upon the global crisis of 2008, Indonesian government has passed down policy of deposit augmentation, which is insured, from Rp100 millions into Rp2 billions. This decision was taken through the Government Regulation of the Republic of Indonesia No. 66 Year 2008, which was officially passed down on October 13, 2008, or in the fourth quarter of 2008. This policy, on the one hand is expected to reduce customers' panics, but on the other hand will reduce market discipline by customers.

The awareness of the importance of market discipline also emerges on *sharia* banks. *Islamic Financial Services Board* (IFSB) has arranged the principles of exposure to elevate transparency and market discipline especially for *sharia* bank. The principles, which were issued in the late 2007, are expected to encourage *sharia* banks to be more transparent to their customers. Furthermore, *sharia* banks do not give steady income like conventional banks do, which apply interest, but they give income in accordance with share agreement (*nisbah*) between customers and deposits customers. Deposits customers, in this principle, are even called *Investment Account Holders* (IAH). Theoretically, *sharia* banks deposits customers are faced with the uncertainty of income that will be earned. Therefore, *sharia* bank customers are in bad need of the profit and the performance of *sharia* banks, and should have done surveillance or stronger discipline compared to the conventional banks.

The research of banking market discipline in Indonesia and its publication has been still limited to the quantity and has not yet shown a conclusive result (Harsono *et al.* 2005; Jatna, 2007; Valensi, 2005; Taswan, 2011). The previous research has not observed the impact of the policy reform for the deposit value augmentation that is insured by LPS in 2008.

Meanwhile empirical test of market discipline that sets a dichotomy between *sharia* banks and conventional banks also has not been found.

Based on the explanation above, this study is aimed at:

1. Examining the existence of market discipline by banking depositors in Indonesia
2. Examining the difference of market discipline by depositors resulting from the augmentation of deposit value insured.
3. Examining the difference of market discipline by depositors in conventional banks and *sharia* banks.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Market Discipline

Lane (1993) defines market discipline as "financial market provides signals that lead the creditors to behave along with its condition of solvability". This financial market signal can be done by the depositors, debt-holders and equity holders. Stephanou (2010) defines market discipline as a mechanism of the market participants in monitoring and disciplining actions of taking risks too much by the banks. Berger (1991) in Levy–Yeyati *et al.* (2004) explains that market discipline in the banking world is a situation where private sector participants (obligation owners, shareholders, accrediting institutions and depositor customers) do surveillance of the bank risks and react against risks taken by the bank.

Market discipline can also be understood in context of the general problem of principal-agent. Depositors (as principal) want to ensure that bank (as agent) keeps its asset, that is, their deposits. Depositors do surveillance and respond to the bank risks increase. The response to the increase of risks can be done through the approach of price by increasing the interest rate and or through the approach of quantity by withdrawing their fund (Levy-Yeyati *et al.* 2004).

Market discipline can also be understood from signaling theory that observe when bank (as company) has good performance, bank will signal by giving qualified information that shows their high performance to the market. This information exposure that is passed to the market is expected to stimulate market to discipline its management (Ariffin *et al.* 2005).

Hamalainen *et al.* (2003) arranged theoretical frame that explains market discipline effectively. Market discipline is divided into two major stages: introductory stage and controlling stage. Introductory stage consists of two sub-stages, namely: (i) the awareness of investors to face the risk of bank failure (default) and (ii) investors can observe the risks of failure more effectively. This way, market makers/investors will signal to the creditors of the bank. This introductory stage requires some conditions, such as: capital market must be transparent; there must be a public exposure to the structure of bank capital and the risks that should be faced, and the appropriate market participants. Appropriate market participant depends on the characteristic of the investors, and the available instruments, and the absence of trust that bank as the fund user will bail-out, when a failure occurs. The trust of existence of bail-out will result in moral hazard[1] and reduce the market discipline. The general phenomena that result in the presence of moral hazard are "too-big-to-fail "and the deposit insurance. These two phenomena will encourage the reduction of market discipline because investors feel safe about their deposit, and big bank feel safe as it is considered to have systemic impact toward the economy so that its existence is supported by the government. The controlling stage focuses on the importance of a good corporate governance

[1] Moral Hazard, according to Saunders & Cornett (2008), is exposure of loss, which is faced by insurance when insurance is given to encourage the insured party to take higher risks.

structure. A strong corporate governance environment will urge a bank management to operate the bank well, through such an accountable control and organizational structure that restricts potential of *excessive risk-taking behavior* or actions that do not suit the investors' goals. With its controlling mechanism, bank (as deposit insurance) will behave along with the risks that it will face.

Stephanou (2010) develops another simpler theoretical framework to understand and analyze market discipline, by dividing the stages into four correlating sections: (1) information and exposure, in a sense that it requires the provision of information for public, which cover consistency, punctuality and performance and finance reliability and exposure of bank risks; (2) market participant, in a sense that it requires the existence of independent market participants and incentives to do surveillance on the bank, and the ability to process information exposed accurately; disciplining mechanism in a sense that it requires the presence various instruments, such as financial instrument, legality, or market supervision (indirect market discipline), which can be utilized by market participants in enforcing discipline; (4) internal governance in a sense that it requires the presence of organizational structure and compensation that can determine whether *insiders* (senior management and directing boards) to comprehend and control the risks taken by the bank, and there is an incentive to change its behavior in response to market signal.

Previous Studies

Levy-Yevati *et al.* (2004) has identified some empirical research on market discipline. Market discipline takes place in either advanced or developing countries. From their study, which is supported by other literature, they also conclude that market discipline upon crisis period is prone to be unexplainable by the fundamental condition of bank. It is found different upon a stable economic condition, which even shows the influence of the fundamental condition of bank toward the depositor's behavior.

The experimentation of market discipline in Indonesian banking has been done by Hosono *et al.* (2005), Jatna, (2007), Valensi (2005), and Taswan (2011). Hosono *et al.* (2005) observed the effectiveness of market discipline by depositors for the period of 1992-2002 in the four financial-crisis hampered Asian countries, namely: Indonesia, Korea, Malaysia, and Thailand. The result of his research shows that upon the period of financial crisis in Indonesia, market discipline, at the beginning, weakened and then strengthened, while in other three countries (Korea, Malaysia and Thailand) market discipline by depositors was not found.

Jatna (2007) observed the market discipline in 5 public bank groups (state/government bank, national private bank (BSN), local development bank (BPD), mixed bank, and foreign bank) with monthly data of 2002.1 until 2005.12 period. Using quantitative approach (deposit change) and price approach (interest rate), this research concludes that the existing market discipline does not work effectively yet. Such condition is assumed to result from the society's low comprehension in interpreting the terms used in the bank financial report and from the lack of access to the bank individual working performance. This research also concludes that the society also makes good use of the provision of information on the amount of the total asset and insolvent credit ratio (NPL) as the basis on which a bank performance can be evaluated. Besides, the insurance interest rate indicator is also used by depositors as one of their considerations in saving their money in bank.

Valensi (2005) examined the existence of market discipline by depositors and *peer banks* in Indonesia in the period January 1980 until December 1999. This research classified banks based on whether there is correlation of ownership with *Commercial Power Centers*-

CPC)[2]. The result showed that market discipline does not really take place in Indonesia. Market discipline by depositors is prone to take place on *non-CPC* banks. This research, generally suggests that for developing countries like Indonesia, the mechanism of market discipline is inclined to be ineffective. From its result, Valensi (2005) suggested that monetary authority in developing countries focus on the first pillar (capital adequacy) and the second pillar (bank surveillance), rather than the third pillar (market discipline).

Taswan (2011) observed market discipline as banking risk control and *moral hazard* in association with charter value position in the period of the explicit and implicit deposit insurance. The sample used is all non-state public domestic banks in Indonesia in the period of 2001-2008. One of its findings is the presence of market discipline in Indonesia, where depositors give penalty to banks that take high risk by withdrawing their fund. Market discipline upon implicit and deposit insurance period is not clearly different statistically, which means it shows that market discipline in these two periods prevails regardless of the deposit insurance scheme, and was solely carried out by depositors because the bank took a high risk.

The market discipline research on *sharia* banks has been conducted by Ariffin *et al.* (2005). Their research observed transparency issue and market discipline on *sharia* banks using questionnaire survey on 28 *sharia* banks, in 14 countries on bank surveillance boards, accrediting boards, external auditor, and the representative of IFSB and AAOIFI. The result shows that *sharia* banks lack of exposure of the risks faced. However, it is found out that transparency in *sharia* banks is given more stress than conventional banks in term of the profit share in *sharia* banks.

Hypothesis Development

Market discipline by depositors is marked with the reaction of depositors against the risks taken by the bank. In this research, market discipline will only employ quantitative approach. It measures market discipline using the growth and the change of the deposit amount[3]. The increase of risk or higher risk on one bank than other banks will encourage the depositors to withdraw their fund from the bank. Fund withdrawal means the decrease of deposits, or the negative deposit growth, as the depositors' reaction against the high risks faced by the bank. This reaction is one form of customers disciplining to the bank management.

Like the previous researches on market discipline, financial ratios are used as proxy of bank risk information, used by depositors to measure the bank risk. The financial ratios are commonly used are those that reflect factors of the bank soundness and financial performance, that is *Capital adequacy*, *Asset quality*, *Management*, *Earning* and *Liquidity* (CAMEL). The high soundness of bank in a certain bank reflects the low financial risk of the bank. This financial performance signal is expected to respond to depositors. The lower, the financial performance of a bank is (which means the higher level of risk of the bank), the more expectation for the depositors to respond it by withdrawing their fund. In other words, if there were a market discipline, there would be significant negative relation between the bank financial risks and the growth of customers' deposit amount. Therefore, the hypothesis can be formulated as follows:

[2] The correlation of ownership with the Commercial Power Centers (CPC) consists of 200 business groups classified as the most prominent, the government's ownership (BUMN), the foreign capital investments and Suharto's family.

[3] The use of term "deposit change" or "deposit growth" in this research will be used alternately referring to the same meaning, that is, the change of yearly deposit with percentage unit

Hypothesis 1: There is market discipline in Indonesian banking, or in other words, the bank financial risk has negative influence on the deposit growth.

The global crisis that took place in 2008 and its impact was felt in Indonesia, was presumed to influence the market discipline by depositors. This matter, as stated by Levy-Yevati *et al.* (2004), reveals that market discipline, upon the crisis period tends to be unexplained by the fundamental condition of bank. On the contrary, upon the stable economic condition, it is even detected that there is influence of bank fundamental condition toward the depositors' behavior. Through this argument, it can be drawn a hypothesis that upon the period 2005-2007, which is a stable economic condition, it tends to have a stronger market discipline than upon the period of global crisis (2008-2009).

The deposit insurance theoretically can result in the decline of market discipline by bank depositors. It is caused by the moral hazard of the insured party. In this case, depositors who are insured by the government will feel safe, so that they do not consider it necessary to do surveillance on the bank risk.

Since 2005, the deposit insurance has been done by LPS entirely, of which then has been reduced to only Rp5 billion, and continued to reduce until Rp100 million only. However, in October 2008, a policy of augmentation of the insured-amount of deposit into Rp2 billions was enacted. This policy is contradictory to that on the enhancement of market discipline as done previously. This policy is potential to weaken the market discipline by promoting moral hazard for the depositors whom the government insures more through LPS. Therefore, the following hypothesis can be proposed:

Hypothesis 2: The market discipline after the policy on the augmentation of insured deposit value will weaken more than the previous period of the explicit insurance, or in other words, the negative influence of the bank financial risks on the deposit growth will weaken more after the policy of augmentation of the insured deposit value.

Sharia banks have different system from that of conventional banks. *Sharia* banks rely on the transaction on equity-contract and not on the debt-contract as done by conventional banks. Consequently, deposits in *sharia* banks face higher risk than those of conventional bank. It corresponds with what was stated by Ariffin *et al.* (2005), in his research that stresses the importance of transparency in *sharia* banks than that of conventional banks because of the profit share scheme of *sharia* banks. The profit share scheme should have encouraged the Investment account holders (IAH) in *sharia* banks to do stronger surveillance on *sharia* bank performance than that of conventional bank. From the explanation above, a hypothesis can formulated as follows:

Hypothesis 3: Market discipline of *sharia* bank is stronger than that of conventional bank, or in other words, the negative influence of the financial risks toward the deposit change should be stronger than that of conventional bank.

RESEARCH METHOD

Data and Sample

This research uses yearly data from public banks in Indonesia in year 2005-2009. The choice of year 2005 as the start of observation is due to the start of new era of deposit insurance by Deposit Insurance Corporation (LPS), which took place in 2005.

The data was taken from Indonesian Banking Directory, which is issued by Bank Indonesia. By giving attention to the comprehensiveness of data, the chosen banks are public banks that remained to exist during the observation period, so that out of the existing 132 banks in 2004/2005, 120 banks were used.

Operational Definition and Variable Characteristic

The experimentation of market discipline by depositors in this research only uses quantitative approach, namely the change of deposit amount. The deposit change as the dependent variable and proxy of market discipline is measured with the percentage of growth level of a time-deposit, which is formulated with the amount of a time-deposit at the time of observation (t) subtracted by the amount of a time-deposit in the previous period (t-1), divided by the amount of deposit in the previous period (t-1). The deposit used is a time-deposit, which usually has large value and has investment motives.

The approach of price (the interest rate) is not employed in this research under the consideration: (1) the interest rate of the insured deposit is limited by the Deposit Insurance Corporation (LPS), while in this research, it cannot be differentiated between the insured deposit and uninsured deposit. (2) This research also employs *sharia* bank sample, so that the use of interest rate as the price approach is not relevant to employ.

The independent variables as proxy of the risk or bank condition is:

1. The ratio of the Provision of Minimum Capital (KPMM) or known as *Capital Adequacy Ratio* (CAR) serves as proxy of capital. CAR ratio is a comparison between bank capital and Risk-weighted Assets (ATMR). The higher value of CAR indicates the better power of capital, which means the lower bank risk.
2. Insolvent Productive Asset (APB) serves as proxy for asset quality. APB is a comparison between insolvent productive assets and less flowing, doubted, and stuck quality. The higher the APB is, the lower the quality of asset will be, which means the higher bank risk.
3. *Net Interest Margin* (NIM) in public conventional banks or *Net Operating Margin* (NOM) for public *sharia* bank serves as proxy of profitability (Earning). NIM is a comparison between the net interest incomes with the average of productive asset. The higher NIM shows that the ability of bank to gain incomes is higher, which means the lower bank financial risk. Based on the early experimentation (not exposed in this article), this NIM is able to explain the change of deposit than other profitability ration, namely, *return on equity* (ROE) and *return on asset* (ROA) that have no significant influence.
4. *Loan to Deposit Ratio* (LDR) or *Financing to Debt Ratio* (FDR) serves as proxy of liquidity. LDR (FDR) is a comparison between the given credit (the given fund) and the third party's fund. The higher LDR (FDR) shows that the credit proportion (the given funding) is higher compared to third party. This can elevate the financial risks related to the ability of paying obligation to the third party. In other words, the higher the LDR, the higher the banks' liquidity risk will be elevated. On the other side, LDR reflects the function of the bank intermediary. The higher LDR shows the higher level of the bank intermediary function, because of its ability to distribute funds collected (from surplus unit) to the society (deficit unit/fund user).

Data Analysis Method

The experimentation of the existence of market discipline by bank depositors is observed from the reaction of depositors toward the information of fundamental factor/bank risk. The bank's fundamental factor/bank risks in the previous period are used as information for depositors to impose discipline through the deposit change of the period, after the reception of such information. The experimentation of the existence of market discipline as the first hypothesis is done with this model:

$$\Delta Simp_{i,t} = \alpha_i + \beta_1 CAR_{i,t-1} + \beta_2 APB_{i,t-1} + \beta_3 NIM_{i,t-1} + \beta_3 LDR_{i,t-1} + \varepsilon_{i,t}$$

In which β is coefficient of each independent variables; I refers to general bank that becomes the sample (cross-section); t refers to the time of observation of each bank at t. The presence of break (lag) on independent variable (t-1) is used as a lag process between information obtained by depositors with reaction time; ε is a prediction mistake (error-term) on each observation.

This first hypothesis will be supported based on the influence of each independent variable toward the change of deposit. Coefficient CAR (β_1) is expected to have positive value. Coefficient APB (β_2) is expected to have negative value. Coefficient NIM (β_3) is expected to have positive value. While coefficient LDR (β_4) is expected to have negative value.

The experimentation of hypothesis two and three will utilize two methods:

1. The first experimentation will use dummy variable that will be interacted with each variable of the financial ratio reflecting the bank fundamental/risk (CAR, APB, NIM, LDR). Dummy variable 1 (D1) will differentiate the period of insurance before and after the increase of deposit value to Rp2 billion. D_1 is valued 0 for observation before the policy of deposit insurance value augmentation to Rp2 billion (2005-2007) and is valued 1 for observation after the policy of deposit insurance value augmentation to 2 billion was issued (2008-2009). The difference between *sharia* banks and conventional banks is that it uses Dummy 2 (D2) variable, in which D2 will be valued 0 for conventional bank and 1 for *sharia* bank. The test regression model can be described below:

$$\Delta Simp_{i,t} = \alpha_i + \beta_1 CAR_{i,t-1} + \beta_2 APB_{i,t-1} + \beta_3 NIM_{i,t-1} + \beta_3 LDR_{i,t-1} + \beta_4 D1*CAR_{i,t-1} + \beta_5 D1*APB_{i,t-1} + \beta_6 D1*NIM_{i,t-1} + \beta_7 D1*LDR_{i,t-1} + \beta_8 D2*CAR_{i,t-1} + \beta_9 D2*APB_{i,t-1} + \beta_{10} D2*NIM_{i,t-1} + \beta_{11} D2*LDR_{i,t-1} + \varepsilon_{i,t}$$

2. The second experimentation is used as conclusion sturdiness test (robustness test) of the first method. This second method is carried out by comparing two observation groups, using the first experimentation's model and variable. The second hypothesis is tested by dividing them into two groups: the first observation group is observation in 2005-2007 (before the augmentation of deposit insurance value or upon the stable economic condition); while the second group uses the period of 2008-2009 (after the augmentation of deposit insurance value or upon the global crisis).

3. The third hypothesis is re-experimented by comparing the two equations between equation model of *sharia* bank and conventional bank. The experimentation of *sharia* bank will employ three *sharia* banks that have existed since 2004, by neglecting *sharia* banks were established after 2004. The third hypothesis experimentation, this way uses 5 *sharia* banks because the two *sharia* banks employed in the second model were established in 2005. Both two equations of each hypothesis experimentation will be valued on its stability using *Chow-test* as the tester of the existence of structural change between the two equations tested. If there had not been any structural change between the two equations, the following ratio shouldn't have been significant (Gujarati and Porter, 2009):

$$F = \frac{\frac{RSSr - RSSur}{k}}{\frac{RSSur}{n1 + n2 - 2k}}$$

In which RSSr is *restricted residual sum of square* or RSS of combined equation; RSSur is *unrestricted residual sum of*

square, which is the addition of equation RSS 1 and equation RSS 2 compared; k is the estimated parameter, and n1+n2-2k is degree of freedom (df). This F value will be compared with the table F value, in which if F value is given more value than the table F, the hypothesis that there is not a structural change on the two equations is rejected.

RESULT AND DISCUSSION

The summary of data processing on each model can be seen in table 1. "Common model" column shows the result of hypothesis 1 experimentation. Hypothesis 1 experimentation indicates the presence o market discipline by bank depositors in Indonesia. It can be seen the presence of significance on the three variables out of the four variables experimented, and a significant F-test, although one variable (LDR)'s influence is contradictory to the expected one (expected to be negative, but turns out positive). NIM and APB, which serves as a proxy of earning ability and asset quality, it proves the significant influence on the deposit change with the direction hypothesized, in which NIM has a significant positive influence toward the deposit change and APB has significant negative influence toward the deposit change. In the perspective of market discipline, this indicates that depositor responds positively to the information of the high APB.

LDR with contradictory influence to the expected one, possibly results from the fact that LDR is not seen as the liquidity risk, but even is valued as the level of effectiveness of the bank intermediary function. The higher ratio of loan than deposit shows the high ability of the bank intermediary function. Bank that is able to distribute its fund has positive response by depositors as the market maker.

Taswan (2010) explains that liquidity is indeed dilemmatic factor. High liquidity has implication to the profitability of bank that tends to be low. When a bank gives a little credit, its fund is prone to be idle, and does not give any benefit, so does it the other way around. The dilemmatic problem between the liquidity and the profitability of distributing credit necessarily needs an optimal management.

The necessity of managing to maintain the optimization between fund distribution as banking intermediary function and liquidity risk is on the other hand, seemingly responded by the regulators and the market makers all at once. The regulator, in this case, is Bank Indonesia (BI), which has issued an exclusive policy of Minimum Compulsory Clearing Account (GWM) implemented in 2011 to encourage the bank to maintain its LDR on a range of 75-100%. It is expected to enhance the bank intermediary function, but on the other hand, to maintain the bank liquidity. Interestingly, the importance of this intermediary function seemed to have been responded positively by depositors as one of the market makers. It can be seen that LDR is responded positively by depositors in the period of observation of this research (2005-2009) or prior to the exclusive GWM policy.

The bank capital, which in this research is proxy with CAR, turns out to have a significant positive influence toward the deposit change and even has a significant negative influence as can be seen in interactive model. In the perspective of market discipline, this inconsistency can be an indicator that depositors do not do surveillance exclusively toward the capital indicator, which is given bigger emphasis by the regulator (BI). CAR's not being positively responded is possibly because depositors consider BI has done surveillance toward this capital, so they do not find it necessary to discipline this CAR. Furthermore, banking CAR in Indonesia has been inclined to meet the regulation, so it is not considered to have risk any longer. The role domination of this regulator can be in accordance with the interpretation of Hosono *et al.* (2004) in his research stating that a strict regulation for bank activities results in the weakness of mar-

ket discipline and a fragile bank system. When BI gives stronger emphasis on the importance of CAR, and then the banks CAR tend to be stronger, CAR is not considered as important factor that needs surveillance.

The next purpose of this research is proving the existence of the structural pattern change of market discipline between the period of 2005-2007 and the period of 2008-2009, as the second hypothesis. The outcome of the data processing shown in table 1 in the interactive model section shows that the result of interaction between dummy variable1 and independent variable used is not significant. It means that in the period of 2008-2009, the influence of each independent variable toward the deposit change does not prove different compared with the influence of each independent variable toward the deposit change of 2005-2007. However, the market discipline remains to exist in the period of 2005-2007. This is also strengthened by the second experimentation that compares regression mode of 2005-2007 to that of 2008-2009. In the period of 2005-2007, NIM variable remains to have positive and significant values as expected, although APB turns insignificant (though remain to have negative influence), CAR has a significant negative influence (not as expected), and LDR has significant positive influence, while the three other variables (CAR, NIM, and LDR) do not have significant influence. The difference between these two period is also experimented with chow-test that shows F-test > F- table (the calculation is given below), so it can be concluded that in these two periods structural change is found. With this result, it can come to conclusion that the influence of the bank risk toward the deposit change is better in the period of 2005-2007 than that in 2008-2009. This at once indicates the empirical favorability of the second hypothesis, that is, the market discipline in the period after the policy of deposit insurance value augmentation is weaker than in the previous period.

$$F = \frac{\dfrac{3179225 - 2133746}{5}}{\dfrac{2133746}{360 + 240 - 2(5)}}$$

$$= 57{,}82 > \text{F tabel } (5;590;1\%) = 3{,}05$$

The weaker market discipline in the period of 2008-2009 than that of 2005-2007 is probably because of the augmentation of deposit insurance value from Rp.100 million to Rp2 billion as a result of global crisis. This is in accordance with the theoretical frame of market discipline of Hamalainen *et al.* (2003) and the result of research by Demirgüç-Kunt & Huizinga (2000) in Laeven (2002) stating that the policy of deposit insurance will lower the market discipline because the depositors shift the risk to Deposit Insurance Corporation. This indicates moral hazard by depositors by decreasing surveillance and handing it to LPS or to Bank Indonesia as regulator. The other explanation of the weakening market discipline upon the crisis period can be referred to Levy-Yevati *et al.* (2004) stating that that the weakening market discipline tend to be unexplainable by the bank fundamental condition, while upon the stable economic condition it shows the influence of bank fundamental condition toward the depositor's behavior. The period of 2008-2009 was a global economic crisis so that possibly, under such condition, the depositors' behavior cannot be explained by the bank fundamental condition. Under crisis condition, the customers' behavior is frequently more sensitive to the growing issues than imposing discipline by doing surveillance to the bank fundamental condition. Therefore, the policy of deposit insurance value augmentation is expected to calm down the depositors, especially the small depositors who do not have the ability and access of information to impose discipline.

The policy of deposit insurance should be designed well and planned adequately. Demirgüç-Kunt & Kane (2003) explain that market discipline will remain to exist in countries that

carry out the explicit deposit insurance with well-managed institution. Unless it is well designed, the market discipline tends to disappear. Pribadi (2011) in his research records indicates that a poor design of deposit insurance upon the augmentation of deposit value into Rp2 billion, in which the augmentation policy was taken because of the" bravery and decisiveness" of Indonesian vice president (HM Yusuf Kalla) to augment it to 2 billion without prior adequate study.

The third focus of this research is examining the difference of market discipline by depositors in *sharia* banks from that of conventional bank as the third hypothesis. Table 1 on the comparison section conventional and *sharia* model looks different: coefficient of influence in *sharia* banks is not significant, while in conventional bank, there are two variables with significant influence; somehow, statistical experimentation model with *Chow-Test* cannot prove the structural difference between the two bank groups. It can be seen through the F-test value of chi-square chow-test, which is smaller than F-table (the calculation below). This problem of proof seems that due to the limited numbers of *sharia* banks observed (only three banks) the coefficient value becomes insignificant. While in the interactive model the dummy variable is 2 with research variable, does not show significant value. Along with the increasing numbers of *sharia* banks in the future, it is expected to strengthen the experimentation of market discipline in *sharia* banks empirically and statistically.

$$F = \frac{\frac{2795952 - 2780066{,}03}{5}}{\frac{2780066{,}03}{15 + 570 - 2(5)}}$$

$$= 0{,}65 < \text{F tabel}(5;575;1\%) = 2{,}8$$

This research model is not yet able to estimate accurately the reactions of depositors measured by the deposit change. It can be seen from value R^2 and the low *adjusted* R^2. It shows that variables used in this research, only has a little ability to explain the change of dependent variables used, namely the deposit change. To enhance its estimation ability, the addition of other variables is required. However, variables used in this research simultaneously are influential significantly to the deposit change. It can be seen from the outcome of F-test, which is significant at 1% except for *sharia* model that is not significant.

As explained above, this *sharia* model does not have adequate amount of samples, so it is not able to prove empirically the influence of bank financial ratio with deposit change to detect the market discipline by depositors.

CONCLUSION AND IMPLICATION

Some conclusions of this research result are as follows:

1. There is an indication that market discipline by depositors of public banks in Indonesia exists. It can be seen from the reactions of depositors toward the bank fundamental performance.
2. There is an indication of the difference between market discipline in the period of 2008-2009 and in that of 2008-2009. Market discipline in the period of 2005-2007 seems stronger than that of 2008-2009. This weakening market discipline is possibly because of the policy of deposit insurance value augmentation and is at once indicating a tendency of weakening market discipline upon the crisis period.
3. Although not yet being proved strongly, there is indication of the difference between market discipline by depositors of *sharia* bank and conventional bank. This indication is seen along with the increasing numbers of *sharia* banks observed.

The next research is expected to add other variables, which can explain better the phenomena of market discipline, including con-

Table 1. Summary of Regression Test Outcome

Experimentation of all regression model uses constant effect mode. Dependent variable is the deposit change as proxy of depositors' reaction in imposing discipline at period t. independent variable is the bank fundamental risk, which consists of CAR, APB, NIM and LDR at period t. The data used is a yearly pool data in the period of observation 2005-2009, for each bank. Common model is used to examine hypothesis 1, namely the influence of the bank fundamental risk in the previous period (t-1 : 2004-2008) toward the change of deposit in the period of observation (t : 2005-2009). Interactive Model and Comparison Model of Bank Groups/Period is used to examine hypothesis 2 and 3, and both of them are used at once as the model robustness test alternatively. Interactive model is done by interacting each independent variable with dummy variable 1 as the different observation period (D1: with value 1 for period 2008-2009; and value 0 for the other, namely period 2005-2007), and dummy variable 2 as the differentiator of *Sharia* bank and Conventional bank (D2: with value 1 for *sharia* banks; and 0 for the other, or conventional bank). Period comparison is used for hypothesis 2, while comparison of *sharia* and conventional bank group is used to examine hypothesis 3. The writing of coefficient is rounded off to two digits behind comma.

Variable	Common Model	Interactive Model	Period Comparison		Comparison between *Sharia* dan Conventional	
	2005-2009	2005-2009	2005-2007	2008-2009	Konvensional (2005-2009)	*Sharia*h (2005-2009)
CAR	0,02	-0,06	-0,60*	0,28	0,01	7,15
APB	-1,67*	-1,96	-1,54	0,40	-0,19	2,08
NIM	6,03***	4,89**	4,73**	7,94	6,78***	-11,31
LDR	0,75***	0,72***	0,54**	1,44***	0,60***	-0,46
D1*CAR		0,07				
D1*APB		1,50				
D1*NIM		-0,48				
D1*LDR		-0,14				
D2*CAR		-0,27				
D2*APB		4,39				
D2*NIM		14,68				
D2*LDR		2,37***				
R^2	0,30	0,36	0,46	0,65	0,30	0,41
Adjusted R^2	0,12	0,176	0,17	0,28	0,12	-0,03
F-test	1,66***	1,97***	1,60***	1,76***	1,65***	0,93
Bank teramati	120	120	120	120	114	3

* significant at level 10% ; ** significant at level 5%; *** significant at level 1%

trolling variables to enhance the ability of model estimation. It is also suggested to observe market discipline of other market makers, like the shareholders/stock exchange makers, beer-bank, credit issuer, like subordinating loan in bank. The research subsequently is recommended to use other method in explaining phenomena of market discipline, like survey method, experiment method, or other methods using primary data in order to explain the behavior of market discipline of the customers to the bank. The research of market discipline with quantitative approach (the deposit change) is then expected to differentiate the research observation between the insured and non-insured deposit. The experimentation on the comparison between market discipline of *sharia* banks and conventional bank requires a more balanced proportion and more *sharia* banks. This can be more possibly done in the future, along with the increasing numbers of *sharia* banks. The effort of comparing

it should give attention on the similarities/ differences of the conditions in *sharia* and conventional banks, which is observed as controlling variable. The next research can use different observation period, like quarterly or semester data.

On the perspective of policy, it is necessary for Bank Indonesia as regulator to encourage market to impose disciplining process to banks. As the requirement, market should get precise, rapid, and accurate information so that transparent information on the bank condition to the society, as well as transparency of the level of bank soundness, which so far has not been done transparently. It is also necessary to do evaluation on the method of the qualification of the bank soundness level, especially on the LDR measurement, which so far has been seen in the perspective of liquidity that tends to be negative, while in the other perspective, a high LDR reflects the effectiveness of the bank intermediary function. Therefore, it is necessary to make span of optimal LDR level that accommodate soundness of liquidity or that of the bank intermediary function.

It is necessary to do education and effort in enhancing the competence of market makers and common society, so that they can use the information of the bank condition and impose discipline on bank. The efforts done by Bank Indonesia need to continue, and even to be expanded by involving the role of other stakeholders in this program. It should also exclusively give emphasis on *sharia* banks that have different characteristic of financial product and that is relatively not socialized well compared to the conventional banks.

In the perspective of deposit insurance, the determination of deposit value insured should be done with a more thorough study so the ideal deposit value insured can be obtained. The deposit value insured should be evaluated periodically with better planning, measurable and through an adequate study. The settlement of the deposit value insured should optimally protect smaller customers, but should not decrease market discipline by bigger depositors who should impose discipline. Government and Deposit Insurance Corporation (LPS) should give incentives exclusively to good banks, and disincentive to banks with high risk, among others, but not limited to the level of premium of the insurance that is adjusted to the risk. The higher the risk is, the higher premium should be paid to the LPS. Besides that, it requires the transparency of information and policy taken so that it will not bring about long-lasting polemics as found in policies taken upon the global crisis.

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