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ANALYSIS OF MARKET DISCIPLINE MECHANISM IN INDONESIA BANKING INDUSTRIES

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ABSTRACT

The market discipline is considered an important element for creating a sound and efficient operation of the banking industry. It can be shown by the response of investors and depositors of the business operations and management in relation to the risk of a bank. Theoretically, there are hypotheses must be accomplished in order to effectively market discipline occurs. The first hypothesis, whether the market discipline provides a signal for of banks regarding the existence of a certain conditions which is inconsistent with sound and efficient bank and business operation (Disciplining Signal Hypotheses; DSH). The second, bank management will respond to the signal by making efforts towards the implementation for correction on the business in line with expectations (Corrective Response Hypotheses; CRH). The verification used the empirical accounting data and market commercial banks with a total of 110 frequency of semester 2000-2010 (panel data, 1843 observations). Empirical analysis model used regression panel data. The estimation results indicate that DSH gained strong empirical support. On the other hand, the result of estimation involved in CRH is still significantly weak. This indicates that the market discipline mechanism has not operated optimally in Indonesian banking industries. Therefore, correction is required especially on regulatory mechanisms to improve the quality of banking.

Key words: *Market Discipline, Banking, Disciplining Signal Hypotheses, Corrective Response Hypotheses.*

ANALISIS MEKANISME DISPLIN PASAR PADA INDUSTRI PERBANKAN INDONESIA

ABSTRAK

Disiplin pasar adalah suatu elemen penting dalam mewujudkan operasional industri perbankan yang sehat dan efisien. Disiplin pasar ditunjukkan dengan respon para investor dan deposan terhadap penyelenggaraan bisnis dan pengelolaan risiko suatu bank. Secara teoritis terdapat dua hipotesis yang harus terpenuhi agar disiplin pasar terjadi secara efektif. Hipotesis pertama, adalah disiplin pasar memberikan sinyal kepada bank akan adanya suatu sistuasi/kondisi yang tidak sesuai dengan pelaksanaan bisnis bank yang sehat dan efisien (Disciplining Signal Hypotheses; DSH). Kedua, manajemen bank akan merespon sinyal dengan melakukan upaya korektif terhadap pelaksanaan bisnis agar kembali sesuai dengan harapan (Corrective Response Hypotheses; CRH). Desain verifikasi empiris menggunakan data akuntansi dan pasar bank umum sebanyak 110 frekuensi semester pada periode 2000-2010 (data panel, 1843 observasi). Model analisis empiris adalah regresi panel data. Hasil estimasi menunjukkan bahwa DSH memperoleh dukungan empiris yang cukup kuat. Di sisi lain hasil estimasi pada CRH terlibat lebih lemah secara signifikan. Kondisi ini menunjukkan bahwa mekanisme disiplin pasar belum bekerja secara optimal pada industri perbankan Indonesia. Perbaikan terutama mekanisme regulasi perlu dilakukan untuk meningkatkan kualitas perbankan.

Kata Kunci: *Market Discipline, Banking, Disciplining Signal Hypotheses, Corrective Response Hypotheses.*

INTRODUCTION

The economic performance and fiscal costs which are weakening are identified by the costs incurred by the failure of the banking system crisis. Dell Arricia et al. (2004), Kliengebiel et al. (2005) and Laeven and Valencia (2008) conducted a study on the documentation and some of banking crises that occurred in different parts of the world. They found that the cost of the banking crisis might reach 40% of the Gross Domestic Product (GDP) and economic contraction that occurs could reach 15% around the peak of the crisis.

For that reason, it is thus not surprising that the authorities in various parts of the world are working to develop regulations to address this issue. One of the major advances is the Basel II framework. Such framework is designed in order to build a sound and prudent banking industry. This was initiated by the Bank for International Settlements (BIS) in 2006. Actually, Basel II has three pillars principles of bank supervision and regulation effective. These three pillars are (1) capital requirements, (2) the effective supervision, and (3) market discipline.

In this study, the researcher will conduct a disciplinary investigation into the implementation of market mechanisms especially in the context of the banking industries in Indonesia. In line with the spirit of Basel II, the researcher believes that investors and the public have a vital role in maintaining the continuity of banking that is based on sound commercial principles. The existence of inherent and responsive control that is market discipline is essential for the implementation of prudent bank business (Lane 1993).

In addition, market discipline works primarily through signaling (Flannery 2001). In this case, there are two canals in which the public and investors can respond to policies that is deviated by a bank. The canal is the stock price and interest rates on deposits (deposits, savings and current accounts). Later on, the researcher investigates the mechanism of implementation of market discipline by the bank. Analysis is performed in two stages. In the first stage the authors propose proposition that stock prices and interest rates contain information about aspects of the discipline by the market. Community and investors will be to sell and/ or reduce placements in bank deposits that are perceived as risky. In line with Flannery (2001), the researcher refers to this as the preposition market discipline hypothesis signal (signal disciplining hypotheses).

In the second stage, the researcher attempts to reveal the hypothesis that there is information related discipline on stocks and interest rates will encourage bank management to take remedial action. In other words, after experiencing pressure from the public and investors (through the fall of stock prices and/or interest rate spike), the management of the bank will attempt to improve financial performance. The researcher calls this proposition as a corrective response hypothesis.

The researcher uses a proxy variable of market discipline and control variables. The empirical acceptance of the existence of market discipline and the signal hypothesis corrective response will be interpreted as an endorsement of the existence of market discipline mechanism. The market gave a negative signal in response to the actions or policies that deviate from bank management. Bank management will pay attention to this signal and implement actions or policies necessary to restore market perception.

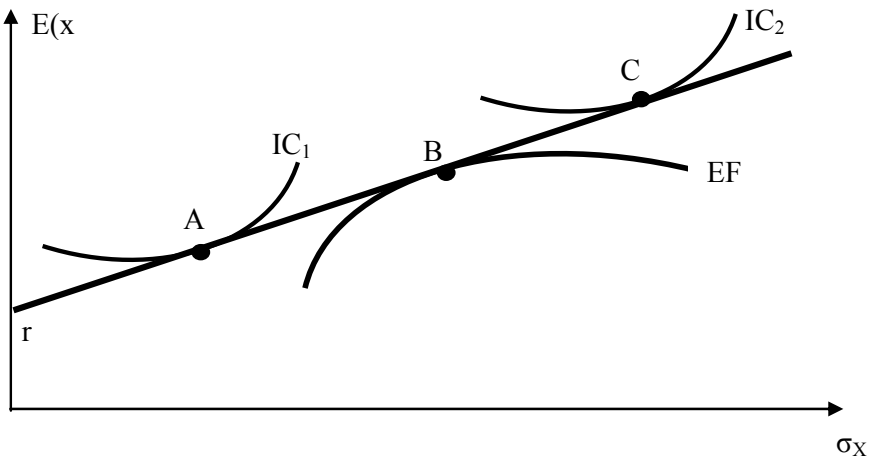
In reference to the various aspects above, the problems can be formulated in two research questions as the following.

1. Whether public and investors can identify the position of a bank risk reasonably risk and provide adequate signal.
2. Whether bank management pays attention to the signals and provides a response in the form of policies to improve public perceptions of risk and investors.

Based on such research question, the objectives to be achieved are as follows:

1. To see how the public and investors can identify the position of a bank's risk appropriately and provide adequate signal;

Figure 1
Optimization of the Bank Portfolio



2. To provide a discourse in policy making for improving the public perception of risk and investors in banking industries in Indonesia.

THEORETICAL FRAMEWORK

It is noted that there are various conceptions and definitions of a bank. A bank is described as an institution consisting of current operations in granting loans and receiving deposits from the public (Freixas and Rochet 2008, p. 1). In carrying out the functions mentioned above, the bank can not be separated from the potential risks. There are many potential risks that are relevant in bank operations. However, with the Basel II framework, this focuses on credit risk, market risk, and operational risk (Apostolic 2009).

The exposure to risk is inevitable in banking business. Like other business, the main issue here is the trade off of risk versus yield and positioning on the risk efficient frontier (Sinkey 2002, p. 78). With a certain degree of risk preferences, the bank's management seeks to achieve maximum benefit and most efficient risk mitigation obtained through: prevention and resolution (Sinkey 2002, p 79). How business process optimization with the bank's risk preference constraints is the topic to be discussed in the next section.

Bank Risk Taking Behavior

The analysis is based on bank risk-taking behavior on Capital Asset Pricing Model (CAPM), which is standard equipment commonly used in the discipline of investment allocation theory. Assumptions used are as follows:

1. The Bank has conservative risk preferences (risk averse);
2. There is a universe of investment options with relationship and positive risk yields a positive (not necessarily linear);
3. The correlation between investment options is not perfect (-1 <r <1; r is the correlation coefficient) and thus can be used to create a diversified portfolio with less risk of lower than individual assets;
4. The bank managers have rational characteristics, seeking to maximize profit based on resource constraints and risk preferences they have.

Figure 1 reflects a conceptual overview of the process optimization portfolio mix that will maximize returns for a given level of risk. Some conventions regarding notation can be described as the following.

1. There are two investment options such as Deposits (D) and loans (L), with a numerical notation of each number xD and xL as well and for yields.
2. There is a risk-free asset yield of r.
3. Bank has a number of W initial resources to be allocated in D and L.
4. The yield of each asset is determined in a competitive market.

Pyle (1971) and Hart and Jaffe (1974) show the returns on risk-free assets is be-

tween yields on deposits and loans as well as the correlation between the yields on deposits and loans is positive then the bank will perform optimization at point C. Here the ank will mobilize savings for investment to rC and rB loan and the risk-free asset for BC.

Conversely, if the risk-free asset yields bring about savings and loan, the bank will do the optimization at level A. Here the bank will sell the risk-free asset. Or, in other words, the bank will borrow funds and invest it in the savings and loan. Bank will sell the risk-free asset for rB and rA invest the loan and deposits AB.

Analytically, this condition can be shown as follows:

a. Bank maximizes the objective function

$$\Phi(x) = U(E(\tilde{\pi}), \text{var}(\tilde{\pi})) \quad (1)$$

in which:

$$\tilde{\pi} = \tilde{r}_L x_L + \tilde{r}_D x_D + r(W - x_L - x_D) \quad (2)$$

b. In the first condition, Maximization order condition is given as

$$x^* = \lambda V^{-1} \rho \quad (3)$$

in which:

$$V = \begin{bmatrix} \text{var}(\tilde{r}_L) & \text{cov}(\tilde{r}_L, \tilde{r}_D) \\ \text{cov}(\tilde{r}_L, \tilde{r}_D) & \text{var}(\tilde{r}_D) \end{bmatrix} \quad (4)$$

$$\lambda = -\frac{\partial U / \partial \mu}{\partial U / \partial \sigma^2}; \rho = \begin{bmatrix} \tilde{r}_L - r \\ \tilde{r}_D - r \end{bmatrix} \quad (5)$$

From the first order condition, by the equation 4 and 5, it can be derived the prepositions as the following:

Preposition 1

If and then x $\tilde{r}_D < r < \tilde{r}$ and $\text{cov}(\tilde{r}_D, \tilde{r}_L) > 0$ then $x^*_L > 0$ and $x^*_D > 0$.

Preposition 2

x^*_L is the function increased towards the variable $(\tilde{r}_L - r)$ and function which is decreased towards $(\tilde{r}_D - r)$ and $\text{var}(\tilde{r}_L)$.

x^*_D is function decreased towards the variable $(\tilde{r}_L - r)$ and function which is decreased towards $(\tilde{r}_D - r)$ and $\text{var}(\tilde{r}_D)$.

Evidence:

See Freixas and Rochet (2008).

Preposition 2 shows the behavior of credit and savings mobilization as a function of the risk of investment returns and risk-free asset. Further development can be done by incorporating various risk variables such as credit recovery rate, exchange rate fluctuations, system failure and fraud.

Mechanism of the Banking Market Discipline

The concept of market discipline mechanism is viewed from the model Landskroner and Paroush (2008). Assumptions used in the model can be given as follows:

1. Bank with an initial capital (E) is paid by the shareholders in exchange for the right management and appoints managers.
2. Equity is the last holder of the claim; he obtained a residual value of the company only after all obligations to depositors and debt holders met.
3. Constellation of interest rates is normal, in the sense that yields smaller savings than the risk-free interest rate is smaller than the yield loans or
4. Market discipline occurs through the existence of the risk premium arising from the structure of bank funding, the Deposit (D) and equity (E).
5. Static Analysis is the one period optimization.
6. Bank has the possibility of going bankrupt when the bank's equity at end of period (N) is negative (<0).
7. Possibility of bankruptcy is demonstrated by a probability function as follows:

$$y = \Pr(N < 0) = f(E, \theta); y \in [0,1] \quad (6)$$

In which θ is the parameter of risk and governance of assets while y is assumed to be monotonically increasing with property y '> 0 and y" <0.

By assuming as given above, the bank's optimization objective function can now be formulated as follows:

$$\text{Max} \quad N = \Gamma(E, r, \theta, W) \quad (7)$$

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$$N = E + \tilde{\pi}$$

$$\tilde{\pi} = g(\theta)\tilde{r}_L(\theta)x_L - \tilde{r}_D(k)x_D + r(x_D - x_L) - kE - C(x_L, \theta, W)$$

The bank profit is a function of the risk (and corporate governance) investment assets through a probability function g (θ), which indicates the probability of obtaining any level of return that is a function of the level of risk taken. Probability function g (θ) is monotonically increasing with the property g '> 0, g" <0 and. Market discipline seen from the magnitude of the risk components: k. Component k is assumed to have a direct impact on stock prices and have a positive functional form to yield savings.

$$\partial \tilde{r}_D / \partial k > 0 \quad (8)$$

Variable θ, E, W and r is the exogenous variable whose value is determined by 7 out system optimization. On the other hand, it is $\tilde{r}_D, \tilde{r}_L, k, x_D$ and xL an endogenous variable. The solution to the system of equations and analysis of comparative static will show sensitivity to changes in endogenous variable exogenous variables. Landskroner and Paroush (2008) provide some guidance or preposition associated with the comparative static analysis using the 7 models, namely

Preposition 3
If the mechanism of transmission of market information (shares and deposits) to the market discipline is effective, the impact of changes in exogenous variables on the risk premium is expected to have the algebraic sign as follows:

$$\frac{\partial k}{\partial \theta} > 0; \frac{\partial k}{\partial E} < 0; \frac{\partial k}{\partial W} < 0; \frac{\partial k}{\partial r} < 0 \quad (9)$$

Evidence:
See Landskroner and Paroush (2008).

Empirical Study
The empirical studies on the effectiveness of market discipline modern countries have been long done. Gilbert (1990), for example obtained empirical evidence of the existence of the signal discipline in the banking sector in the United States through the deposit interest rate. Further, a similar study was carried out in several developed countries with promising results. There is a possibility of market discipline to complement formal regulatory functions performed authorities or even replace it (Flannery 2001).

Flannery et al. (2004) also conducted a study of a number of the World Bank holding company's stock price. He found that the investors can also provide a signal to the market discipline though with a slightly different pattern of non-bank firms. Distinguin et al. (2006) found the market variables (market-based indicators) such as market value of equity has significant explanatory ability of the bank probability of having problems (distressed banks). Meanwhile, Morgan and Stiroh (2001) through a study of 500 commercial paper interest rate spread subordinate find a significant negative response from investors over excessive risk-taking behavior.

Another research path associated with market discipline is to measure the information contained in the instrument of securities than information from the regulator (in the form of announcements or rating of the bank). For example, Berger et al. (2001) from an analysis of U.S. banks found that the indicator stocks and bonds have higher information content than the regulator reports. Similar findings were obtained by Iannotta (2006) from a study of 100 European banks in the period 1999 to 2007 indicating that the bond spreads contain a hidden information in the report that there is no authority. However, the information from market instrument is still lower than the regulator information obtained from the inspection: on-site examination (Berger et al. 2000).

Like the above researchers, Levy-Yeyati et al. (2004) conducted a study of the banking crisis in Argentina in 2000. They found that the financial markets are less developed, the dominant government ownership in the banking system and lack of transparency in financial reporting has become a major factor in the ineffectiveness of market discipline. However, investors and the public can provide a very substantial response when banks indicated experiencing systematic

risk. In other words, market discipline to work in the conditions of systematic risk.

Another study conducted by Ghosh & Dash (2004) found support for the effectiveness of market discipline. Using data from 72 banks in India in the period 1996-2002, they found that depositors "punish" banks that invest the assets that are too risky (excessive risk taking). Similar findings were obtained by Vives (2006) from the results of his study of banking in Latin America and East Asia. However, he also argued that the implementation of market discipline has a trade off for the reduced role of bank intermediation. Berger and Turk Ariss (2010) find empirical support for the role of market discipline in the context of developed countries: the European Union and the United States.

Demirguc-Kunt and Huizunga (2004) conducted a study on the impact of the implementation of cross-country deposit guarantee (deposit insurance) to market discipline. By using a panel data of banks in 51 countries in the period 1990-1997, they find that deposit insurance has reduced the cost of bank interest (this will undermine the influence of market discipline). Thus, there is an increasingly broad scope of the guarantee scheme the greater which has negative impact on the implementation market discipline.

A variant of the empirical literature related to market discipline is done by looking at the impact on the stability industry. Such an approach was done by Nier (2005). Using data from 550 banks in 32 countries opened in the period 1994-2000 and the panel logit analysis techniques he found that effective market discipline gained through increased transparency. The better the financial performance of the transparency rules that applied then the higher the stability of the banking industry.

Laeven and Levine (2009) conducted a study of the effect of ownership on risk-taking behavior of banks as well as financial reporting. Regression across units (cross section) of the 279 largest banks in 48 countries showed that risk-taking behavior (which is proxied by the z score return of assets and capital asset ratio) has a positive relationship with ownership concentration. The more shares concentrated on a number of shareholders, the level of risk taking will become higher. There has been a dynamic interaction with the regulatory concentration stake to risk taking behavior through disclosure of financial information.

Hypothesis

There are two hypotheses proposed in this study as the following.

a. Public and investors can identify the value of a bank (profitability and risk) reasonably and provide the relevant signal on factual conditions which are owned by the bank (disciplining Signal Hypotheses: DSH).

b. Bank management pays attention to this signal and will pursue policies to improve public perception and investor (Corrective Response Hypotheses: CRH).

When these two hypotheses are accepted, it indicates empirical support for the influence of market discipline on the formation of a bank's risk-taking behavior.

RESEARCH METHOD

To achieve the research objectives, this study used a two-stage empirical design. First, this study verified the signal hypothesis empirically by market discipline (Disciplining Signal Hypotheses). This study Here the researcher perform regression on two proxy variables for market discipline and control a variety of explanatory variables.

Two proxy variables are as follows:

a. Implied Cost of Fund (ICOF),

b. Changes in stock prices in one semester (Market Price Change, MPC),

c. ICOF proxy is used to verify the DSH in regarding that only about 29 of the 120 banks in Indonesia have an open status.

After doing an empirical test on DSH, the verification of CRH is done. Then it verify to see whether the proxy value of DSH (ICOF and MPC) in the previous period (T-1) affect bank policies related to one of the risk variable during this period (T) as the proxies used as risk variables.

a. Credit risk, proxied by the ratio of non-performing loans to total loans (gross non-performing loans, NPL)
b. Liquidity risk, proxied by the ratio of loans to total deposits (Loan to Deposit Ratio, LDR)
c. Operational risk, proxied by the ratio of operating expenses to total assets (Operational Cost to Total Assets, OCTA).

The second stage of the above estimation is done by a variety of variables which control the expected impact as business prospects, sustainability and macro economic conditions. Various empirical schemes were also carried out with respect to the operation of the Deposit Insurance Agency (LPS) starting from the second half II of 2005.

Data, Variables, and Econometric Model

Thirteen variables are used in this study. Two variables are used to measure market discipline (dependent variable). Four variables are used to measure risk-taking behavior. Three variables measure aspects of business prospects (sustainability) and three variables were used as controls macroeconomic conditions.

The empirical analysis is conducted by using data semiannual frequency in the period June 2000 to December 2010. There are 110 banks as the object of study, thus the 2420 observation. The data related to the bank's financial position were obtained from a third party (consultant) of Ekofin and Bank Indonesia (BI). Macroeconomic data and stock prices were obtained through the Central Statistics Agency (BPS), BI and Bloomberg.

Definition and calculation of proxies for variables can be given as shown in Table 1.

The empirical test of hypotheses on disciplinary signal is done through the following regression model:

$$MD_{it} = \gamma + \delta RT_{ij} + \mu PS_{ij} + \eta ME + \nu \qquad (10)$$

In which , MDit is the vector of market discipline variable, while RT is the matrix of risk behavior variables, PS the matrix variable and sustainability prospects and CV, the matrix of control variables. Vector γ, δ, μ and η are the coefficients of the relevant variable effect.

When the signal hypothesis of disciplines is in effect, the pattern of relationship can be expected that is between the dependent variable (MD) and independent variables as described in Table 2.

The empirical test of corrective response signal Hypothesis is done by the following regression model:

$$RT_{it} = \phi + \lambda MD_{ij}^{-1} + \psi PS + \mu ME + \omega \qquad (11)$$

In which, MD_{it} is the indicator of risk-taking behavior that is the loan (NPL), liquidity (LDR), and operation (OCTA) of the bank in period j. It also converts it into a form MD variable to be relative: comparison to the industry. Thus, when the bank manager found the cost of funds and/or share price moving dramatically (negatively) than the industry, it can be viewed as a pressure to make corrections.

When the hypothesis is true, the corrective response to CRH equation is expected to provide an indication of algebra as in Table 3.

Each hypothesis was tested using panels 5 regression techniques that are the Pooled Panel Data, Fixed Effect, Random Effect, Instrumental Variable, and Dynamic Panel Data. The above use of estimation techniques is intended to be a robustness test.

DATA ANALYSIS AND DISCUSSION

Part of the analysis consists of two parts. Firstly, the study discusses the descriptive statistics of the variables such as the variable of cost of funds and market discipline and stock prices. Secondly, it describes the results obtained from the results of the empirical estimation. Disciplinary signal hypothesis is presented first, followed by a corrective response.

Descriptive Statistics

The data has some unusual values or logics. This number of the data (degree of freedom) is owned by the researcher carried out for

Table 1
Definition of Research Variables

No.	Variable Name	Description (Proxy and Notation)
Market Discipline (MD)		
1	Implied Cost of Fund	Ratio between realized cost of interest towards total DPK (ICOF)
2	Market Price Change	Stock Price changes of the bank in a semester (MPC)
Risk Taking Behavior (RT)		
3	Asset Size	Ability to take risk measured through asset value proxy (ASSET)
4	Credit Risk	Credit risk proxied from non performing loan category loan up to the total bad debt (*Non Performing Loan*). Notation: **NPL**
5	Interest rate Risk	Interest rate risk movement proxied through ratio of total loan towards savings (*Loan To Deposit Ratio*). Notation: **LDR**
6	Operational ratio	Other risks proxied by operational cost ratio towards total asset (Operation Cost To Total Asset). Notation: **OCTA**.
Prospect and Sustainability of a Business (PS)		
7	Net Interest Margin	Spread between loan interest rate and savings, counted as the ratio of Interest Income – Interest Cost To Total Productive Assets. Notation: **NIM**
8	Market Share	Market share proxied as the ratio of bank asset towards total industry. Notation: **SHARE**
9	Capital ratio	Level of capitalization of the bank proxied by the capital ration towards asset according to the risk of (ATMR, Capital Adequacy Ratio (CAR). Notation: **CAR**
Macro Economy (ME)		
10	Economic Growth	General economic condition proxied by Gross Domestic product (GDP, percentage, Year on Year:YoY). Notation **GROWTH**
11	Inflation Level	Level of Price Changes proxied by the change percentage (YoY) Index of consumer price (IHK) . Notation **INFLATION**.
12	Balance Payment Pressure	General condition of foreign fund in and out the country proxied by percentage of yearly depreciation or appreciation Notation: **DEPR**.
Others		
13	Establishment of Saving Guarantee Institution	V Category Variables showing the SGI operation, 1 for period of semester 2005 above, and 0 for other condition

screening. The screening is done by applying a set of criteria of variable values that are considered plausible. The criteria used are as follows:

1. ICOF is between 0 and 50;
2. NPL is between 0 and 40;
3. LDR is between 0 and 150;
4. OCTA is between 0 and 30;
5. NIM is under 20;
6. CAR is between -10 and 50.

By applying such criteria, the number of samples can be reduced from 2420 observations to 1843 observations. Thus, the descriptive statistics after screening can be shown in Table A.1 in Appendices.

When the analysis used the instrument's stock price, the researcher used the data from 18 banks that had been opened in the period 2000 semester and 2010 second semester. Again, the researcher also applies the criteria screening criteria by the previous ICOF scheme in which the results can be

Table 2
Estimated Signs of Algebra Disciplinary Signal Hypothesis

Dependent Variables	Independent Variables			
	RT	**PS**	**ME**	**Others**
ICOF	Positive: All	Negative: All	Positive: GRW Negative: INF, EXT	Undefined
MPC	Negative: All	Positive: All	Positive: GRW Negative: INF, EXT	Undefined.

Table 3
Estimated Signs of Algebra Corrective Response Hypothesis

Dependent variables	Independent Variables			
	MD^{-1}(ICOF)	**PS**	**ME**	**Others**
NPL	Negative	Negative: All	Positive: GRW Negative: INF, EXT	Undefined
LDR	Negative	Positive: All	Positive: GRW Negative: INF, EXT	Undefined
OCTA	Negative	Undefined	Undefined	Undefined
	MD^{-1} (MPC)	**PS**	**ME**	**Others**
NPL	Positive	Negative: All	Positive: GRW Negative: INF, EXT	Undefined
LDR	Positive	Positive: All	Positive: GRW Negative: INF, EXT	Undefined
OCTA	Positive	Undefined	Undefined	Undefined

seen in Table A.2 in Appendices.

The researcher estimates the market discipline mechanism through DSH and CRH using the scheme which is taken into account for the effects of LPS. In this section, the study discusses some interesting empirical findings, which can provide an idea of how the market discipline mechanism works.

First, the researcher obtained a fairly strong empirical support for the existence of disciplinary signal hypothesis (DSH), funding costs either through instruments and stock prices (see Table 3 and 4 in Appendices). The increase of NPLs risk variable, LDR, and OCTA has led to a negative perception on the part of the customers' deposits which also lead to the need for an additional premium (increase in cost of funds) for the bank is in question. This finding is consistent with studies conducted by Gilbert (1990) and Flannery (2001) on the U.S. banking industries.

The following empirical finding concerns the exogenous control variables; the effect is the strongest signal on the NPL Disciplinary followed by LDR, and finally OCTA. Depositors and investors are very sensitive to the position of bank credit risk than if the bank is exposed to interest rate risk or operational. This finding is in line with the results of studies by Ghosh and Dash (2004) on 72 commercial banks in India.

The response variable of share price performance relative to market index appears to show the mechanism of market discipline through disciplinary signals. The banks have credit risk positions, interest rate, and operational higher than its peers that tend to experience selling pressure and it is higher than the market index. This empirical finding is consistent with results of studies by Flannery et al. (2004) on which banks operate globally and Distinguin et al. (2006) on the banks in the United States.

The second, as found in the hypothesis of empirical findings, it indicates LPS implementation generally undermines the im-

plementation of market discipline (see Table A.3 and A.4). The algebra sign of the interaction variable towards the application of LPS with variable risk on scheme funding cost is negative and significant. The presence of LPS has reduced the risk premium demanded by the customers and investors against the risk which is taken by a bank. The empirical result is consistent with the findings by Demirguc-Kunt and Huizunga (2005) that did a cross-country study.

The presence of LPS also has an impact on the risk compensation for investors. The coefficient of the interaction and share price performance relative to market with LPS marker is negative (see Table A.3 and A.4 in Appendices). In other words, the presence of LPS reduces the incentive to sell the bank's stock price (relative to the market) if the bank detected an increase in positions of risk: credit, interest rate and operational.

In this case, the researcher relates these empirical findings with those by Berger and Davies (2000) and De Young et al. (1998). They conducted a study of banks in developed countries and found that the content of the information held by regulators is considered more valuable than market information.

For that reason, the presence of LPS (which is considered as an additional regulator against Bank of Indonesia) provides better signals of the presence of extraction and processing information.

Third, the general hypothesis of corrective responses empirically supports but it is weaker than the signal hypothesis discipline. Thus, this is in line with that obtained either by using the instrument cost of funds (ICOF) and stock prices (MPC), see Table A.5 to A.10 in Appendices.

LDR risk variable is in response to the development of the individual bank's cost of funds (relative to industry) that is positive. This is on the contrary to the hypothesis that is in negative direction: when the bank finds itself paying a higher cost of funds relative (to industry), the bank attempt to reduce such risk by reducing position LDR. With a positive coefficient, it means that the banks increase the LDR position if the cost of funds increases.

In general, the arguments can be put forward that this phenomenon is related to the business motivation: profit maximization. To cover the increased cost of funds, the banks should undertake income generation. This is achieved primarily through the expansion of credit, as loans to borrowers are one of the bank's main sources of income. It is, therefore, not surprising that the increase in cost of funds led to the LDR. The importance of business motivation is also indicated by the magnitude and significance level of the variable coefficient of NIM is higher.

A better support for CRH can be seen through NPL response. In the majority of the estimator, the coefficient is negative in line with the hypothesis and very significant. Nevertheless the invisible LPS scheme implementation affects the market discipline mechanism. The algebra sign and significance levels obtained were not conclusive.

The empirical support for the risk variable response to the movement of funds OCTA does not look strong. The majority of the coefficient has a positive algebraic sign which is not in line with the hypothesis. Besides that, the significance obtained is also very low. The empirical conclusion is not changed by including the effects of LPS.

Yet, it is slightly different result as obtained from the estimation of the instrument's stock price. The relative share price performance is worse than the index which is considered as a negative signal by the bank management related to interest rate risk position. Every decrease of 1% the stock price is more drastic than the market index will be accompanied with a decrease of 0.012% s LDR/d 0.036%. The LPS scheme implementation does not give results as expected. The obtained algebraic sign is negative, which is not consistent with the hypothesis and the significance level is very low.

Next is the cost of funds scheme, CRH using the relative share price movements that are not all to have too strong empirical support for a particular risk variable OCTA. Coefficient values obtained with or without ignoring the influence of LPS generally not convergent and have a low level of significance.

Fourth, there are several interesting empirical findings related to the use of control variables. In the scheme of using instruments DSH funding costs, bank size variable seems to have a negative algebraic sign (with various estimators) as well as a high level of significance. The algebraic signs do not undergo significant change when variables are taken into account in the estimation of the effects of LPS. In other words, the impact of bank size is empirically robust.

The above findings indicate that banks with larger size have advantages in terms of fund pricing (cheaper). It can be derived from the influence of the scope of services and products (such as ATM, hospitality, comfort, and so on), the benefits for the customers gained dealing with the big banks. However, especially for the banking industries, this effect is very likely due to the safety of funds. If the bank is bigger, then the probability of the bank to fail will be smaller. This phenomenon is known as too big too fail.

Other interesting findings were from the algebraic sign and significance of macroeconomic variables: economic growth and exchange rate depreciation. Both of these variables have a negative sign and highly significant. This is in contrast with the hypothesis arguing that are when prepared at the beginning of algebraic sign for the two variables, it will be positive.

An argument that can be put forward explaining this empirical finding is the environment and the dynamics of macroeconomic management, the better. The macroeconomic theory (Phillips curve) states the irreversibility is between growth and inflation rate (which means also to the impact of interest rate). The higher the economic growth rate will be higher inflation, with the assumption that real interest rates will encourage certain high interest rate (nominal).

The data period of 2000-2010 shows the improvement in macroeconomic management. Band of Indonesia (BI) managed to build credibility so that from year to year the inflation can be maintained at a low level. Beside, the historical performance affects expectations so the rate of inflation in the next period can also be maintained low. Thus, the Indonesian economic environment is characterized by high economic growth with the rate of inflation (equilibrium which is diminishing.

The interest rate which is declined also increases the prospects of interest payments and repayments of customer loans. Consequently, the prospects of credit risk and depositors request for risk premium also decline.

CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

The estimation results provide some findings as follows:

1. DSH has a fairly strong empirical support either by using instruments scheme funding costs and stock price. In other words, depositors and investors monitoring the bank's risk position and provides a signal on the development of which is considered negative.
2. CRH gained empirical support is weaker. In the empirical scheme using ICOF, bank manager looks observe discipline with correction signals via LDR. Yet, the empirical scheme using stock prices, bank managers appears more to have used the NPL correction tool.
3. The LPS (Saving Guarantee Institution/Underwriters) undermines market discipline mechanism as seen in DSH. The customer and investors response to the growing intensity can decrease the bank's risk position after application of the LPS.
4. However, the impact of LPS cannot be identified as a significant influence on CRH. The response of bank managers be-

fore and after the application of LPS even did not have a statistically significant difference.

Some additional interesting findings are found especially for those which are related to the behavior of the main control variable, bank size and macroeconomic variables. Therefore, the banks with large scale have added value in pricing funds and they are very likely due to the influence of too big to fail.

This study has revealed some interesting evidences such as in the mechanism of market discipline in the banking industries. There are policy implications that can be followed up as follows:

1. It is requested that the ability of holders of bank claims be maintained in which they are the customers and investors in the signaling discipline. The implementation is that the LPS have a negative impact on the existing process. Thus, it needs a review of the business and operational aspects of LPS-expected to be have a negative impact on the implementation of market discipline.
2. The estimation results show a weak support for CRH. The authorities can improve the response function by supporting corrective disciplinary signals. The increase in cost of funds and/or abnormal stock price decline and it may be early signs for the problem at a bank. Bank supervisors could verify that the credibility of the signal discipline, which was originally given by the market, can increase.
3. Supervision and management of the condition of a healthy industry need to be maintained not only for the sake of stability but also the effectiveness of monetary policy. The study also shows that the cost of funds is one of the canals that are used in the implementation of market discipline. On the other hand the cost of funds is also a channel of monetary policy. Thus, the implementation of monetary policy should be conducted with respect to a condition which is mainly related to the implementation of market discipline.

This study provides some open similar research direction for future development. Some suggestions are as the following:

1. It deals with the use of an integrated bank risk indicators. The study uses separate indicators: credit, interest rate and operational. Such an approach raises particular problems associated with the estimation of: identification and possible simultaneity.
2. Empirical research design is static and one-way. Strategic paradigm can be done for example by using game theory can be used to construct the research framework and empirical design better.
3. The indicators are used as LDR, NPL, CAR these are such sufficient statistic commonly used. Probably, there are many other indicators that are not included but highly influential on the study results. Indicators such as franchise value, the soundness of bank regulators and market valuations version will give you a deeper insight to the process of market discipline mechanisms in Indonesia.

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Appendices A
Descriptive Statistics

Table A.1
Descriptive Statistics of Variables Used After *Screening*: Instrument of ICOF

	ICOF	NPL	LDR	OCTA	NIM	SHARE	CAR	ASSETL	GROWTH	DEPR	Inflation
Mean	7.253398	3.670799	70.19586	4.240109	6.765956	0.999150	20.34268	14.91517	5.331555	2.389739	8.485108
Median	6.719034	2.660000	70.52531	3.956246	6.010000	0.164714	18.05000	14.71780	5.224372	1.888668	6.955000
Maximum	36.80313	19.88769	149.7000	21.52302	19.19000	26.49100	49.90747	19.82635	7.158433	35.14085	17.79305
Minimum	0.879483	0.010000	5.755532	0.672135	-6.250000	0.006973	-1.010000	11.25644	1.643278	-23.68881	2.040000
Std. Dev.	3.251385	3.501352	26.32548	1.967561	3.362008	2.663705	8.588303	1.804453	1.181537	13.78490	3.864388
Skewness	1.522947	1.997025	0.243391	2.121575	0.642215	5.008637	1.070909	0.367872	-1.017541	0.548912	0.729396
Kurtosis	9.769028	7.494726	2.979170	14.11153	3.549516	33.30541	4.085475	2.569257	4.760452	3.115595	2.938918
Jarque-Bera	4231.006	2776.402	18.22956	10863.76	149.8763	78232.55	442.7529	55.81677	556.0294	93.57684	163.7048
Probability	0.000000	0.000000	0.000110	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Sum	13368.01	6765.283	129371.0	7814.521	12469.66	1841.434	37491.55	27488.67	9826.055	4404.289	15638.05
Sum Sq.	19472.71	22581.94	1276563.	7130.928	20820.30	13069.59	135864.0	5997.646	2571.487	350023.1	27507.50
Observations	1843	1843	1843	1843	1843	1843	1843	1843	1843	1843	1843

Table A.2.
Descriptive Statistics of variables used for The Bank Tbk After Screening: Instrument of Stock Price

	SPRICE	SHP_CHG	NPL	LDR	OCTA	NIM	SHARE	CAR	ASSETL	GROWTH	DEPR	Inflation
Mean	1054.809	15.28090	4.439321	64.24089	3.406764	4.968421	3.886081	17.85088	16.81896	5.335769	2.087159	8.365246
Median	558.0000	7.692308	3.610000	66.97270	3.247361	5.075000	1.683260	15.65000	17.04874	5.224372	1.888668	6.955000
Maximum	6400.000	500.0000	19.54000	118.5745	10.34496	12.25000	26.49100	44.62000	19.82635	7.158433	35.14085	17.79305
Minimum	24.00000	-66.66667	0.170000	5.755532	0.776904	-5.010000	0.063114	7.060000	13.24966	1.643278	-23.68881	2.040000
Std. Dev.	1321.487	51.54645	3.594507	21.10115	1.359099	2.256456	5.150772	7.147054	1.718675	1.173569	13.51666	3.806524
Skewness	2.021203	3.975832	1.665282	-0.454604	0.880134	0.086486	1.857817	1.339552	-0.131648	-0.999122	0.557175	0.761503
Kurtosis	6.928074	32.17083	6.362113	2.600722	4.937152	5.516693	6.584117	4.472820	1.814630	4.747527	3.155116	3.031856
Jarque-Bera	423.6109	11769.89	322.8823	14.21600	98.77007	91.74284	384.2307	134.7496	21.25630	101.5918	18.24918	33.45474
Probability	0.000000	0.000000	0.000000	0.000819	0.000000	0.000000	0.000000	0.000000	0.000024	0.000000	0.000109	0.000000
Sum	337539.0	4721.799	1536.005	22227.35	1178.740	1719.074	1344.584	6176.406	5819.361	1846.176	722.1569	2894.375
Sum Sq.	5.57E+0	818367.1	4457.566	153614.2	637.2665	1756.599	9153.005	17622.73	1019.076	475.1561	63031.55	4998.922
Observations	320	309	346	346	346	346	346	346	346	346	346	346

Table A.3
Results of Estimation of Disciplining Signal Hypotheses and the Variables of Market Discipline: ICOF

Variables	Methods									
	Pooled		FE		RE		IV		DPD	
	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value
C	19.06520	0.0000	26.16665	0.0000	23.28097	0.0000	36.23498	0.0000	-	-
ASSETL	-0.580791	0.0000	-1.078959	0.0000	-0.862049	0.0000	-1.496060	0.0000	-2.858547	0.0000
NPL	0.072618	0.0007	0.033661	0.1180	0.031706	0.1166	0.217108	0.2178	0.043146	0.0000
LDR	0.021405	0.0000	0.015524	0.0002	0.012092	0.0704	0.007690	0.4947	-0.025028	0.0000
OCTA	-0.050515	0.4689	-0.130443	0.0195	-0.097888	0.2087	-0.809271	0.0046	-0.246040	0.0000
NIM	-0.338588	0.0000	-0.322914	0.0000	-0.317042	0.0000	-0.363574	0.0415	-0.268385	0.0000
SHARE	0.185509	0.0000	0.432348	0.0000	0.345602	0.0000	0.386311	0.0045	1.079037	0.0000
CAR	-0.031785	0.0001	0.008308	0.3072	-0.003128	0.6927	-0.048864	0.0015	-0.012233	0.0075
GROWTH	-0.420031	0.0020	-0.445327	0.0000	-0.454901	0.0015	-0.390191	0.0000	-0.288008	0.0000
INFLATION	0.085401	0.1264	0.077127	0.0000	0.081730	0.2267	0.024622	0.2964	0.045941	0.0000
DEPR	-0.044769	0.0019	-0.044834	0.0000	-0.042928	0.0178	-0.049551	0.0000	-0.053948	0.0000
IDIC	-1.662970	0.0039	-1.799838	0.0000	-1.891726	0.0094	-3.359481	0.0027	-4.541427	0.0000
IDIC*NPL	-0.070050	0.0547	0.000863	0.9808	0.003169	0.9319	-0.101379	0.4454	-0.184014	0.0000
IDIC*LDR	0.007188	0.2060	0.013196	0.0020	0.012754	0.0044	0.019301	0.0049	0.072697	0.0000
IDIC*OCTA	0.130172	0.1347	0.148599	0.0121	0.141544	0.1146	0.707825	0.0026	0.346133	0.0000
Goodness of Fit										
R^2	**0.470**		0.606		**0.280**		**0.568**			
F Stat	**115.97 ***		**22.72 ***		**71.34 ***		**20.64 ***			

* Significance at **α=5%.**

Table A.4
Results of Estimation of Disciplining Signal Hypotheses and the Variables of Market Disciplines

Variables	Methods							
	Pooled		FE		RE		IV	
	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value
C	-2.327524	0.0248	-0.617698	0.7251	-3.079202	0.2688	-2.652828	0.0156
ASSETL	0.378245	0.0000	0.127041	0.2733	0.355401	0.0679	0.356004	0.0000
NPL	-0.021686	0.1224	0.009093	0.5082	0.013133	0.3402	-0.135257	0.0072
LDR	-0.004278	0.1059	0.002999	0.2404	0.006434	0.1030	-0.005195	0.1541
OCTA	-0.026114	0.6624	0.085821	0.0883	0.140206	0.0232	0.052231	0.6609
NIM	0.046848	0.0541	-0.002260	0.9116	0.010822	0.6695	0.034453	0.3780
SHARE	0.041055	0.0019	0.068845	0.0809	0.053122	0.3229	0.060161	0.0001
CAR	-0.014973	0.0566	0.008269	0.0674	0.008188	0.1446	0.006751	0.6322
GROWTH	0.037014	0.0934	0.048450	0.0066	0.056791	0.0155	-0.004466	0.8778
INFLATION	0.003818	0.5638	0.002700	0.6106	0.003399	0.5958	0.011068	0.2042
DEPR	-0.004815	0.0004	-0.001190	0.1843	-0.002138	0.1370	-0.001969	0.2982
JCIL	0.309207	0.0005	0.485736	0.0000	0.226023	0.0170	0.428606	0.0026
IDIC	1.061346	0.0000	0.902872	0.0004	1.046432	0.0001	0.484876	0.2653
IDIC*NPL	-0.065581	0.0051	-0.057958	0.0026	-0.055757	0.0025	0.037123	0.4856
IDIC*LDR	-0.010699	0.0039	-0.008532	0.0032	-0.010106	0.0010	-0.006553	0.0541
IDIC*OCTA	0.034323	0.5286	-0.014310	0.7473	-0.034789	0.5227	-0.041886	0.6030
Goodness of Fit								
R^2	**0.737**		0.93		**0.515**		**0.717**	
F Stat	**56.866 ***		**119.30 ***		**21.523 ***		**58.37 ***	

* Significance at **α=5%**.

Table A.5
Results of Estimation Corrective Response Hypotheses, Variables of Market Disciplines ICOF, Instrument LDR

Variables	Methods									
	Pooled		FE		RE		IV		DPD	
	Coefficiant	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value
C	59.94620	0.0000	23.58080	0.1752	43.11489	0.0010	-176.1220	0.2414	0.529805	0.0000
ICOF(-1)-ICOF_IND(-1)	1.205748	0.0001	0.617432	0.0001	0.636944	0.0000	-12.16226	0.4723	-0.158254	0.0000
ASSETL	0.072542	0.8127	2.545575	0.0323	1.400650	0.1061	11.47879	0.3750	3.146549	0.0000
NIM	1.320063	0.0000	1.886116	0.0000	1.793049	0.0000	12.41127	0.0488	0.182847	0.1254
SHARE	-1.166240	0.0000	-2.360725	0.0000	-2.237109	0.0000	2.666226	0.4652	-3.403836	0.1294
CAR	-0.307685	0.0002	-0.292042	0.0000	-0.246870	0.0000	-0.047023	0.8980	-0.482510	0.0000
GROWTH	0.651750	0.3352	0.482959	0.1212	0.526961	0.0899	-2.028979	0.4543	0.224389	0.0001
INFLATION	-0.387702	0.0053	-0.470653	0.0000	-0.511454	0.0000	1.293295	0.5828	-0.300328	0.0000
DEPR	0.074285	0.2327	0.053092	0.0820	0.049287	0.0694	-0.613145	0.5449	-0.035604	0.0000
IDIC	14.57609	0.0000	10.54544	0.0000	11.56308	0.0000	0.939291	0.9393	1.445809	0.0000
IDIC*(ICOF(-1)-ICOF_IND(-1))	1.049027	0.1073	0.271684	0.3710	0.291550	0.1384	30.63400	0.4068	-0.023301	0.8230
Goodness of Fit										
R^2	**0.366**		0.74		**0.238**		**-3.65**			
F Stat	**103.43**		**42.48**		**55.99**		**74.38**			

Table A.6
Results of estimation of Corrective Response Hypotheses, Variable of Market Discipline ICOf, instrument NPL

Variables	Methods									
	Pooled		FE		RE		IV		DPD	
	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value
C	3.378870	0.0004	23.19109	0.0000	10.77160	0.0000	34.42615	0.0000	0.141367	0.0000
ICOF(-1)-ICOF_IND(-1)	0.037474	0.5277	-1.215333	0.0000	-0.370101	0.0012	0.237446	0.7472	0.057704	0.0000
ASSETL	0.022133	0.0988	-0.053201	0.0456	-0.067150	0.0096	-1.420110	0.0186	-1.222097	0.0000
NIM	-0.176978	0.0000	-0.228467	0.0000	-0.234648	0.0000	-1.402471	0.0002	-0.177557	0.0000
SHARE	0.198588	0.0000	0.338209	0.0021	0.303126	0.0000	0.034488	0.8604	2.625054	0.0000
CAR	0.023742	0.0000	0.024816	0.0114	0.027794	0.0024	0.001300	0.9541	-0.098026	0.0000
GROWTH	-0.045977	0.4539	-0.141065	0.0113	-0.141430	0.0109	-0.045354	0.7282	-0.318521	0.0000
INFLATION	0.061247	0.0024	0.014629	0.4323	0.051794	0.0031	-0.028102	0.7879	0.035312	0.0000
DEPR	0.017961	0.0055	0.017722	0.0003	0.019287	0.0001	0.026254	0.5570	0.003302	0.0000
IDIC	-1.180685	0.0000	-0.270012	0.2208	-1.048444	0.0000	0.067637	0.9086	-1.825801	0.0000
IDIC*(ICOF(-1)-ICOF_IND(-1))	-0.042268	0.0134	0.023217	0.5106	0.033003	0.3463	-0.821838	0.6073	-0.109648	0.0000
Goodness of Fit										
R^2	**0.235**		*0.488*		**0.156**		**-0.135**			
F Stat	**54.875**		**14.246**		**32.982**		**15.05**			

Table A.7
Results of estimation of Corrective Response Hypotheses, Variable of Market Discipline ICOF, Instrument OCTA

Variables	Methods									
	Pooled		FE		RE		IV		DPD	
	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value
C	6.530571	0.0000	9.452399	0.0000	7.666693	0.0000	-12.40096	0.3082	0.146329	0.0000
ICOF(-1)-ICOF_IND(-1)	0.012817	0.2831	0.008583	0.5773	0.010264	0.4936	-1.660795	0.1176	-0.032118	0.0000
ASSETL	-0.220509	0.0000	-0.344714	0.0020	-0.232794	0.0004	0.799635	0.3958	0.390123	0.0000
NIM	0.242130	0.0000	0.130222	0.0000	0.155284	0.0000	0.976727	0.1690	0.110169	0.0000
SHARE	0.035292	0.0001	-0.055510	0.3826	0.007281	0.8580	0.502645	0.1694	-0.139534	0.0000
CAR	-0.029775	0.0000	-0.004287	0.4498	-0.008663	0.1020	0.010384	0.8082	-0.007732	0.0000
GROWTH	-0.015432	0.7498	-0.065043	0.0436	-0.069918	0.0297	-0.370485	0.0880	-0.090888	0.0000
INFLATION	-0.053878	0.0002	-0.103292	0.0000	-0.099707	0.0000	0.124266	0.4207	-0.048866	0.0000
DEPR	0.002687	0.3834	-0.000694	0.8052	-9.26E-05	0.9736	-0.091099	0.1609	-0.005159	0.0000
IDIC	0.609463	0.0000	0.836898	0.0000	0.748801	0.0000	-0.318598	0.7372	-0.120897	0.0000
IDIC*(ICOF(-1)-ICOF_IND(-1))	0.047296	0.0255	0.027880	0.1724	0.026044	0.1992	3.907454	0.0899	0.065120	0.0000
Goodness of Fit										
R^2	**0.423**		*0.511*		**0.125**		**-10.929**			
F Stat	**131.28**		**15.602**		**25.65**		**20.07**			

Table A.8
Results of Estimation of Corrective Response Hypothesis, Variable of Market Discipline MPC and Instrument LDR

Variable	Methods									
	Pooled		FE		RE		IV		DPD	
	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value
C	-49.91651	0.0000	68.73938	0.1463	58.32202	0.0705	31.78843	0.3374	0.527485	0.0094
SHP_CHG(-1)-JCI_CHG(-1)	0.051785	0.0001	0.037715	0.0009	0.029801	0.0045	0.275122	0.1838	0.016952	0.3083
ASSETL	6.936393	0.0000	-0.799826	0.7864	-0.078907	0.9682	2.753388	0.1865	-0.899635	0.9200
NIM	3.521771	0.0000	2.620765	0.0000	2.903640	0.0000	4.570503	0.0000	-0.171414	0.7910
SHARE	-3.852388	0.0000	-0.786475	0.3549	-1.468060	0.0715	-2.441585	0.0000	-4.536471	0.1735
CAR	-0.771658	0.0000	-0.792601	0.0000	-0.756472	0.0000	-1.180177	0.0102	-0.058397	0.2370
GROWTH	1.027723	0.0112	1.898163	0.0000	1.466589	0.0026	-1.704393	0.1113	2.462141	0.0040
INFLATION	-0.116423	0.1792	-0.333710	0.0399	-0.274504	0.0959	-0.507068	0.2361	-0.221491	0.3380
DEPR	0.112432	0.0066	0.134360	0.0060	0.096262	0.0844	0.306278	0.1387	0.094565	0.1948
IDIC	6.103101	0.0000	11.27205	0.0001	11.45701	0.0000	9.508073	0.0025	47.29299	0.7106
IDIC*(SHP_CHG(-1)-JCI_CHG(-1))	-0.051636	0.0073	-0.024910	0.1600	-0.001652	0.9372	-0.836855	0.0584	2.462524	0.8491
Goodness of Fit										
R^2	**0.705**		*0.894*		**0.61**		**-0.332**			
F Stat	**68.161**		**83.468**		**44.651**		**42.567**			

Table A.9
Results of Estimation of Corrective Response Hypotheses, Variable of Market Discipline MPC, Instrument NPL

Variables	Methods									
	Pooled		FE		RE		IV		DPD	
	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value
C	3.049195	0.2083	24.72626	0.0004	17.76874	0.0390	14.14800	0.0241	0.310258	0.0001
SHP_CHG(-1)-JCI_CHG(-1)	-0.000859	0.7347	-0.000103	0.9658	0.001303	0.7541	0.024164	0.2871	0.001507	0.7715
ASSETL	0.182412	0.2250	-1.076483	0.0141	-0.866889	0.1243	-0.380791	0.3053	-13.76214	0.0797
NIM	-0.105707	0.1303	-0.268985	0.0004	-0.050007	0.5802	-0.262949	0.1646	0.597795	0.2818
SHARE	0.047176	0.4745	-0.361676	0.0023	0.360484	0.1445	0.283840	0.0565	2.269332	0.2398
CAR	0.010166	0.6889	0.080494	0.0000	0.102333	0.0002	0.009343	0.8885	-0.294468	0.0000
GROWTH	-0.356994	0.0010	-0.210627	0.0008	-0.411053	0.0008	-0.815237	0.0229	-0.652764	0.3686
INFLATION	0.072895	0.0061	-0.001368	0.9516	0.092180	0.0033	0.023182	0.7591	0.225286	0.3164
DEPR	-0.001347	0.9161	0.011147	0.1834	-0.006605	0.7030	0.033459	0.1976	-0.042006	0.1791
IDIC	-1.343772	0.0000	0.119108	0.7526	-0.562609	0.2632	1.172128	0.4857	7.419466	0.5189
IDIC*(SHP_CHG(-1)-JCI_CHG(-1))	-0.003806	0.4155	-0.002769	0.5304	-0.005230	0.4441	-0.082289	0.1727	-0.037209	0.8531
Goodness of Fit										
R^2	**0.198**		*0.631*		**0.203**		**-0.163**			
F Stat	**7.03**		**16.97**		**7.246**		**3.285**			

Table A.10
Results of estimation of Corrective Response Hypotheses, Variable of Market Discipline MPC, Instrument OCTA

Variables	Methods									
	Pooled		FE		RE		IV		DPD	
	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value	Coefficient	P Value
C	-2.004466	0.0074	-14.46740	0.0019	-5.810743	0.0476	-1.750543	0.3346	0.025422	0.9655
SHP_CHG(-1)-JCI_CHG(-1)	0.000829	0.2692	0.000784	0.2811	0.000663	0.4216	-0.004012	0.4564	-0.006235	0.7168
ASSETL	0.348230	0.0000	1.138270	0.0002	0.605887	0.0046	0.360875	0.0042	-2.391985	0.5423
NIM	0.327836	0.0000	0.203629	0.0001	0.262467	0.0000	0.343840	0.0000	0.155860	0.4550
SHARE	-0.117696	0.0000	-0.294377	0.0013	-0.201889	0.0011	-0.125691	0.0007	0.833929	0.6557
CAR	-0.053697	0.0000	-0.017936	0.0846	-0.029027	0.0068	-0.075661	0.0000	-0.015406	0.6577
GROWTH	-0.125871	0.0918	-0.131943	0.1025	-0.153797	0.1343	-0.154126	0.0965	0.255644	0.5034
INFLATION	-0.049637	0.0132	-0.030936	0.1941	-0.053485	0.0224	-0.054654	0.0031	0.003069	0.9830
DEPR	-0.003831	0.5904	-0.003658	0.5820	-0.003550	0.6701	-0.010830	0.2292	0.016043	0.0106
IDIC	0.406446	0.0079	-0.059586	0.8148	0.336616	0.1016	0.645325	0.1725	10.15313	0.3139
IDIC*(SHP_CHG(-1)-JCI_CHG(-1))	-1.24E-06	0.9994	0.000620	0.6643	0.000867	0.5617	0.015827	0.3136	0.004263	0.9615
Goodness of Fit										
R^2	**0.616**		*0.747*		**0.470**		**0.434**			
F Stat	**45.673**		**29.326**		**25.331**		**27.755**			