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Depositor Response to Risk of Local Development Banks: A Case of Indonesia

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Abstract

There have been some studies carried out to empirically show how depositor respond the magnitude of risk in various types of banks, in different economies. Some studies have also checked the issue when banks are protected by Deposit Insurance. Nevertheless, the aforementioned studies have never adequately covered the issue on local development banks. These financial institutions may not fulfill the necessary conditions of effective Discipline of the market, due to a high degree back up provided by the associated local government. This article is to cover the literature gap, i.e., by studying how depositors reply to risk magnitude of local development banks (known as BPD) in Indonesia. This research employs monthly data of ten BPDs with the largest asset operational in Indonesia, which is attained from the country's Authority of Financial Service. We run analysis employing Reduced Form Formula. In this approach, the first model is to measure the risk of each bank employing Probit formula and data from 2014.1 to 2015.12. The results of this model are then employed as exogenous element in the second phase model, Multiple Regression Formula. The second model utilizes data from 2016.1 to 2017.3 to show the response of bank customers to the risk of the observed financial institutions.

Key words: Discipline of market, Deposit Insurance, Local Development Bank

Respon Deposan terhadap Risiko Bank Pembangunan Daerah: Kasus Indonesia

Abstrak

Ada beberapa studi empiris yang telah dilakukan untuk menginvestigasi bagaimana deposan merespons level risiko di berbagai jenis bank di beberapa negara di dunia. Beberapa studi juga telah membahas masalah ini ketika bank diproteksi oleh Asuransi Deposito. Meskipun demikian, penelitian-penelitian tersebut tidak pernah membahas masalah ini pada bank pembangunan daerah. Lembaga keuangan semacam ini mungkin tidak memenuhi persyaratan Disiplin pasar yang efektif karena adanya dukungan yang tinggi dari pemerintah daerah terkait. Artikel ini bertujuan untuk menutupi kesenjangan literatur yaitu dengan mempelajari bagaimana deposan merespon level risiko bank pembangunan daerah (dikenal sebagai BPD) di Indonesia. Penelitian ini menggunakan data bulanan dari sepuluh BPD dengan aset operasional terbesar di Indonesia. Data tersebut diperoleh dari Otoritas Jasa Keuangan (OJK). Penulis menjalankan analisis dengan menggunakan Reduced Equation Form*. Dalam pendekatan ini, model pertama mengukur risiko masing-masing bank dengan menggunakan formula Probit dan data mulai 2014.1 sampai 2015.12. Hasil dari model ini kemudian digunakan sebagai elemen eksogen pada model tahap kedua yaitu Formula Regresi Berganda. Model kedua menggunakan data dari 2016.1 sampai 2017.3 untuk menunjukkan respon nasabah bank terhadap risiko lembaga keuangan yang diamati.*

Kata kunci: *Disiplin pasar, Asuransi Deposito, Bank Pembangunan Daerah.*

INTRODUCTION

The discipline of the market has been popular means for bank risk control among policy-makers and practitioners. The mechanism works through depositors, bondholders, and shareholders, who will withdraw their invested money, or will ask for higher return from risky banks (Hosono, 2005). This method becomes more and more significant in some economies since it can help prevent excessive risk taking in banks.

However, there are some factors determining the effectiveness of the instrument. Deposit insurance has been proven to improve risk sharing and prevent massive withdrawals from the bank (Diamond and Dybvig, 1983), and demotivate banks to take prudential business decisions and makes depositors less sensitive to bank risk (Merton, 1977; and England, 1991). Similarly, investigating the issue employing data of Islamic and conventional banks, Febrian and Herwany (2011) find that any sort of government protection leads to depositor's insensitivity to bank risk.

Through some studies, Demirguc-Kunt (1998a, 1998b, and 2000a) finds that when government guarantees deposits, depositors would pay less attention to the bank's vital factors and any risk related to their deposits. Some previous works (Grossman, 1992; Wheelock, 1992; Thies and Gerlowski, 1989; and Demirguc-Kunt and Detragiache, 2002) have proved that such insensitivity induces banks to be more risk taker, and consequently increases the chance of default.

However, it is still interesting to test whether depositors reply to the risk of local development Banks that belong to local governments. Despite the implicit insurance from local governments as the bank owner, depositors should be aware of the governments' capability for ensuring liquidity of the respective bank. In this paper, we run an empirical investigation on whether bank customers in Indonesia are sensitive to the risk of the Local government-owned financial institutions, while their deposits have been insured.

LITERATURE REVIEW

This investigation examines effectiveness of depositor discipline with reduced-form formulas expanded from the previous works carried out by Wheelock and Kumbhakar (1994), Park (1995), Honohan (1997), Khorassani (2000), Ahumada and Budnevich (2001), and Febrian and Herwany (2011), among others. In particular, in the second formula, this research will run a regression of some factors considered by the depositors in their deposit decision on the respective bank's total deposit.

The independent variables in the first model are to assess the influence of internal and external factors of a bank to its risk. In this case, most of the similar studies assess risk employing ratio of capital-per-asset. If the ratio is low, then the bank is in higher leverage situation, which may lead to an increased bank risk.

We then measure the asset qual¬ity employing parameter of some sorts of loan, including agricultural loans, trade loans, manufacturing loans, and construction loans, per total assets. The riskiness of the observed type of financing is anticipated to fluctuate time to time, in spite of the fact that such assets may generally bear higher failure risk than many other current assets. Meanwhile, the percentage of total stock market instrument investment per total asset is an ex-ante indicator of the quality of the asset. Another indicator of the quality of asset is the ratio of loan income per total income. The impact of this indicator to risk is still unclear. Higher loan revenue is positive to a bank standing, but it comes from the higher loan. While, the higher a loan is, the higher percentage of risky assets to relatively-safe assets becomes, which may induce higher chance of bank problem. Furthermore, this may suggest that high credit may prove a positive effect on the bank risk.

The profitability of bank is guaged employing the ratio of net income to total assets, while the bank's ability to cover short-term liabilities to its depositors is guaged employing the ratio of liquid assets per total assets. These ratios are to show negative influence on bank risk.

The influence of the deposit-per-asset ratio on the risk of bank seems unclear. Khorassani (2000) states that when depositors are indifferent to bank risk, the

larger is the total deposit, the riskier is the chosen portfolio of assets, thus the higher is the bank risk. Nevertheless, this does not necessarily mean that a lower deposit level results in lower bank risk. Deposits seem the cheapest fund source for banks. When such a source of funds cannot sufficiently meet the banks' fund need, the banks have to seek other sources of funds that charge the higher cost of capital. This lowers profitability of the bank and increases its risk.

This research measures size of a bank and the associated management's capacity to diversify the bank's portfolio of asset employing the logarithm of assets and quantity of office, respectively. Some studies, like Demsetz and Strahan (1995) argue that large financial institutions may not be failed. They perceive size indicate greater liquidity as they see larger financial institutions hold a larger capacity to use the fund in order to minimize unanticipated liquidity issues.

The model includes the charter of a bank to measure the impact of the banking regulation on bank risk. Meanwhile, this empirical investigation examines the management quality as well as the reliability of a bank from its age. Managers of old banks may have gained more lessons learned from their longtime daily operation than their counterparts in new banks. Thus, it is expected that the longer is the age of a bank, the less is the risk of a bank.

This research includes the rate of growth of provincial individual income as well as the change in the provincial rate of unemployment in the model to measure the impact of the economic atmosphere of the province in which certain bank is located on the associated bank risk. A less favorable economy may put more pressure on the operation of a bank. Therefore, the negative growth rate of provincial individual income and positive growth in the provincial rate of unemployment may increase the risk of a bank.

Finally, this research also includes the percentage of the quantity of banks to the population of every province to show the impact of compe¬tition on the risk of the observed financial institution. The higher is this percentage, the riskier is a financial institution. In this research, a financial institution is defined as a highly risky financial institution when it requires fund injection in any form from the central financial institution or the associated local government or at least it experiences downgraded good-corporate-governance (GCG) index. It is supposed the effect of financial institution's aspects employed in the first formula on the risk of financial institution could be observed in t+20. It indicates that the depositors, who are intending to deposit their fund in an institution, could utilize the projected coefficients from the first model to foresee the possibility of financial institution experiencing at least one of the risk criteria for periods t+20. This change is the result of the multiplication of the coefficients of regression of Formula 1 with the val¬ues from t+20. In the subsequent stage, a cross-sectional data set on variable Risk is developed in monthly during the study periods.

The risk in the second formula shows the reaction of depositors to the risk of the financial institution. It is expected that the more sensitive is the depositor, the higher is the quantity of deposits.

To assess the impact of the risk competition effect on deposit, the average risk of a financial institution in the particular province is included in the Second regression equation. According to economic theory, a rise in the mean risk of other financial institutions in the particular territory will escalate the source of deposits to financial institution i, assuming the risk of financial institution i is constant.

To test the impact of individual income on the deposit level, this research includes logarithm of area individual income per bank in the Second regression equation. The variable is projected to be positive. This research also includes the logarithm of the quantity of service office and the logarithm of the age of each bank in the second formula to examine how the bank size and its reachability to depositors influence the quantity of deposit. Banks with more service offices and long experience are believed to be able to stimulate more deposits. This research measures the impact of the predetermined interest in the banks on the deposits by including the rate of return on deposits {Rdp) in the Second regression equation. Finally, to see how other banks' deposit return rate in particular area influence supply of deposit in bank i, the average rate of return across banks in the province (Meanrdp) is included in the second formula.

RESEARCH MRTHODS

This study utilizes monthly financial data of ten provincial development banks, which is attained from Indonesia's Authority of Financial Service. We run analysis employing Reduced Form Formula. In this approach, the first model is to measure the risk of each bank employing Probit formula and 24-month data in the period of 2014.1 to 2015.12, ending up with 24 estimated risks. The results of the first model are then utilized as an exogenous variable in the second formula, Multiple Regression Formulas. The Second regression equation utilizes data from 2016.1 to 2017.3 to show the response of depositors to risk of the observed financial institutions through 15 formulas.

In the first phase of the process of statistic, i.e. firsthand investigation of the response of deposit investors to the risk of financial institution, the risk has to be well set, before the regression proceeds. Khorassani (2000) asserts that most of the studies examining financial institution problem use widely-accepted definition and/or economic definition of a problem financial institution. For the objective of this research, the widely-accepted definition of a problem financial institution in Indonesia may not be suitable, because it is biased in showing the chance of depositors losing their fund. Indonesian financial institutions authority has been proven less consistent in determining whether a financial institution should be saved or closed. For example, in November 2008, the central financial institution decreased the lower limit of capital adequacy ratio (CAR) requirement from 8% to 0%, only to help a small financial institution last, while a year before a slightly larger financial institution was shut under the minimum CAR requirement of 8%. In this research we define a financial institution is at risk if the financial institution i) receives one of the three central financial institution's financial support arrangements, i.e., Intraday Liquidity Loan (FPI), Short-term Loan (FPJP), and Emergency Loan (FPD); ii) receives additional capital from the local government to satisfy the minimum CAR; and iii) experiences decline in GCG index.

In the formula I, we carry out a statistical procedure of some variables on the binary numeral (0 or 1) that shows that the observed financial institution is at risk based on the abovementioned criteria. The variables include capital per total asset ratio (Capast), percentages of agriculture loan ratio (Aggast), trading loan ratio (Tradast), manufacture loan ratio (Manast), and construction loan per total asset ratio (Consast), percentage of security per total asset (Secast), placement in Central Bank of Indonesia (Plcbi), placement in other domestic financial institutions (Plcob), the percentage of total loan of each financial institution per its total revenue (Invrev), logarithm of pertal asset (Logast), financial institution age (Age), quantity of financial institution office (Off), income per capita (Perinc), unemployment rate (Unem), the percentage of the quantity of financial institutions to total population in an area (Financial institution), charter of a financial institution (Char), percentage of deposit to total asset (Depast), percentage of net income to total asset (Incast), and percentage of liquid asset to total asset (Liqast).

From the first regression, we get values of Risk (estimated risk) that are then employed in the second regression. In the second phase, we regress the estimated risk, logarithm of the percentage of national income per capita to the quantity of financial institutions nationwide (Lincprbk), rate of return on financial institution deposits (Rdp), logarithm of quantity of financial institution offices (Lnum), logarithm of age of the financial institution (Lage), on the logarithm of total financial institution deposit (Ldp), to assess the depositor response.

We run the above process employing rolling regressions to cope with the short period of data, for the first formula. The variable Risk is attained by multiplying the regression coefficients by the latest available values of the right-hand side variables—namely val¬ues from t+12. The series of Risk values along with other endogenous variables in the Second regression equation are then regressed to the endogenous variable, i.e., the logarithm of total financial institution deposit (Ldp). The outputs of Second regression equation end up with series of multiple regression formulas.

RESULTS AND DISCUSSION

Table 1 exhibits the estimated coefficients of the probit model for the observed periods. The attained

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formulas are suitable during the rolling periods, as indicated by the mean Pseudo R2 that ranges from 0.348 - 0.592. Almost all of the endogenous variables have an important impact on risk of financial institution, minimum in one-third of the observed periods, and are in line with the theory.

The table demonstrates that capast, char, age, incast, and liqast are risk factors important in more than 25% of the total period of observations. This suggests that capital adequacy, financial institution's operational exposure, management capability, profitability, and competence of liquid asset significantly determine the risk of the local financial institutions. It is interesting to note that the percentage of the quantity of financial institution to the population in a certain area have no effect on the risk of financial institution. This might show the observed local development financial institutions have captive markets that have placed them out of the regular competition in almost all provinces in Jawa. This nature may lead the observed local financial institutions to run less aggressive operation, but not necessarily less risky financial institutions activities.

Table 2 reveals the output of regressions done through the second formula for the financial institutions. The output of 15 equations discloses that variables rdp, meanrdp, lincprbk and lnum that are important in more than 1/3 of the monitored periods. Astonishingly, both rd and meanrdp reveal the negative impact on the deposit. The return rate of regular financial institutions might indicate the real level of risk during the implementation of deposit insurance. Meanwhile, the negative impact of average return rate in an area on deposit might reflect that the monitored financial institution bore the same risk magnitude as did the other financial institutions in the area. Therefore, in this period, deposit investors tended to monitor the risk of each financial institution through its return rate offer and evade putting their fund in financial institutions offering high return rate. On the positive side, an upsurge in personal income might lead to more deposit.

Table 1 Description of First Equation Period of 2014.1 - 2015.12

Endogenous Variable	No of Roll Periods	No of Roll Periods With Insig Neg Coeff (Prob >0.05)		No of Roll Periods With Sigt Neg Coeff (Prob <0.05)		No of Roll Periods With Insig Pos Coeff (Prob >0.05)		No of Roll Periods With Sign Pos Coeff (Prob <0.05)	
		Q	P	Q	P	Q	P	Q	P
C	24	6	0.25	0	0.00	12	0.50	6	0.25
CAP/AST	24	7	0.29	13	0.54	3	0.13	1	0.04
AGG/AST	24	12	0.50	6	0.25	6	0.25	0	0.00
TR/AST	24	15	0.63	0	0.00	5	0.21	4	0.17
MAN/AST	24	9	0.38	3	0.13	8	0.33	4	0.17
CONS/AST	24	8	0.33	0	0.00	13	0.54	3	0.13
SEC/AST	24	6	0.25	7	0.29	8	0.33	3	0.13
PLCBI	24	8	0.33	3	0.13	9	0.38	4	0.17
PLCOB	24	7	0.29	3	0.13	12	0.50	2	0.08
INV/REV	24	7	0.29	0	0.00	13	0.54	4	0.17
LOG/AST	24	5	0.21	7	0.29	12	0.50	0	0.00
OFF	24	10	0.42	5	0.21	9	0.38	0	0.00
FINANCIAL INSTITUTION	24	9	0.38	5	0.21	7	0.29	3	0.13
CHAR	24	6	0.25	12	0.50	6	0.25	0	0.00
PERINC	24	13	0.54	6	0.25	5	0.21	0	0.00
UNEM		6	0.4	5	0.1	4	0.29	0	0
AGE		1	0.07	10	0.67	4	0.27	0	0
INC/AST		3	0.2	8	0.53	4	0.27	0	0
LIQ/AST		5	0.33	6	0.4	4	0.27	0	0
DEP/AST		9	0.6	2	0.13	4	0.27	0	0
Pseudo R-square (Average)				0.428					
Pseu R-sq (Range)				0.348 - 0.592					

The Formula 1 is utilized to estimate variable Risk for t+12 (e.g, 2014.1-2014.12 for risk at 2015.1). The attained risk is then utilized as an endogenous variable in the second formula. The outputs are as shown on Table 1 and Table 2.

Table 2 Second Equation, Periods of 2016.1-2017.3

Inendogenous Variable	No Periods With Inimportant Coefficient < 0 (Prob >0.05)	No of Periods With Important Coefficient < 0 (Prob <0.05)	No of Periods With Inimportant Coefficient > 0 (Prob >0.05)	No of Periods With Coefficient > 0 (Prob <0.05)	Average Coefficients Across Periods
C	0	4	3	8	2.21
RDP	2	10	1	2	-5.02
MEAN-RDP	2	9	3	0	-1.45
RISK	6	1	8	0	-0.02
MEAN-RISK	5	7	1	2	0.03
LINC-PRBK	2	2	4	7	0.01
LNUM	5	3	4	3	-1.97
LAGE	4	2	7	2	0.05

Source: processed data

CONCLUSION AND RECOMMENDATION

This research aims to investigate the impact of risk of the bank on the amount of deposit employing data of local development financial institutions in Indonesia during the period of 2014.1 to 2017.3.

The empirical study on the depositor response to the risk of local development banks showed that the depositors were less sensitive to the risk of the bank. However, aggregate risk of banks in the region influenced the depositor's deposit decision. They may see the aggregate risk of the bank as an indicator of macroeconomic performance.

The depositors also considered the rate of interest offered by the intended bank and other banks (competitors) in the zone in their decision. This indicates that despite that most of depositors are from the bank's captive market, they are still much interested in potential return from their deposits.

As deposits are insured, both implicitly and explicitly, depositors have been proven to be indifferent to the risk of the observed local development banks. The traditionally close relationship between the local development banks and their captive market has effectively made the market indifferent to the risk of the bank. However, as some of the observed local banks are entering the larger national market, the strong reliance on the limited captive market will be diminished and the management should pay more attention to other deposit motives.

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