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Research Article

The Determinantand Speed Adjustment of Bank Capital Structure in Indonesia

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ABSTRACT

This study examine variables determinant of banks' capital structure based on predictions of the trade-off theory and the pecking order theory. Using a dynamic model estimated the average speed of adjustment towards the target leverage approximately 46 percent per year. Variables that generally tested as determinants of the capital structure of non-financial corporations are also significantly explained the bank's capital structure, ie growth opportunities, firm size, and collateral value of assets. In general, the trade-off theory is more powerful in explaining the bank's capital structure than the pecking order theory.

INTRODUCTION

Most of the capital structure research sampled non-financial companies such as Fama and French (2000), Frank and Goyal (2009), Chen et al. (2014), because the financial sector is a highly regulated industry in many ways, including capitalization. Banking is one of the sub sectors of the financial sector that is subject to many regulations from the government because it involves large amounts of public funds. Mishkin (2000) in Gropp and Heider (2010) says that because of the high cost of managing capital, bank managers often determine capital structure based on capital requirements set by regulatory authorities. The Bank serves as a financial intermediary, so that the bank's largest funding source is a Third Party Fund, in contrast to non-financial companies whose main source of funds is debt or equity.

Several studies on the determinants of bank capital structure using explanatory variables are also used in examining the capital structure of non-bank companies such as Amidu (2007), Heider and Gropp (2010), Octavia and Brown (2010). Gropp and Heider (2010) found similarities between the bank's capital structure and non-financial firms in terms of determinant variables and the presence of capital structure targets. In Indonesia, the study of bank capital structure has been done although most do not use dynamic model, such as by Sofilda and Maryani (2007), Siringoringo (2012), Sriwahyuni and DwiHartomo (2015). In addition to using the commonly used proxies in capital structure research of non-financial companies, this study will also use some banking ratios as proxy for profitability, liquidity, and risk. According to Booth et al. (2001) the relevant variables explain the capital structure in the US and Europe, it is also relevant to explain the capital structure in the developing world despite the large institutional differences among developing countries, so that in some countries the impacts of the different directions variables. Based on this, the research of bank capital structure is still feasible to be re-examined.

THEORY AND HYPOTHESES DEVELOPMENT

1.1 Dynamic Capital Structure

Elsas and Florsyak (2011) argue that dynamic capital structure theory predicts that corporate leverage can systematically deviate from the target, although the choice of capital structure follows the trade-off theory. Adjustment costs include transaction costs for securities issuance, and opportunity costs because they deviate from the target. In a no-friction environment, companies can instantly adjust capital structure to the target. Given the information asymmetry, transaction costs and other transaction costs, the company can not fully adjust its actual debt ratio from the previous period to the target debt ratio.

According to Frank and Goyal (2008: 183) the target capital structure can not be observed (not observable) so that this target must be estimated. In previous empirical studies, company-specific factors were used to estimate the target capital structure. Heshmati (2001) argues that capital structuretheory can not account for the observed debt ratio, but rather explains the optimal leverage differences between firms.

In a no-friction environment, companies can instantly adjust capital structure to the target. In such an environment the

observational capital structure (Lev_{it}) is expected to be equal to the target capital structure (Lev^*_{it}). In other words, in a perfect environment, the difference between the observed capital structure of the current period and the previous period would be the same as the difference between the capital structure target and the previous period's capital structure

$$Lev_{it} – Lev_{it-1} = Lev^*_{it} – Lev_{it-1} .....(1)$$

Given the information asymmetry, transaction costs and other transaction costs / benefits, the company can not fully adjust its actual debt ratio from the previous period to the current debt ratio target period. Companies can make partial adjustment of capital structure.

$$(Lev_{it} – Lev_{it-1}) = \delta\ (Lev^*_{it} – Lev_{it-1})..(2)$$

Parameter δ represents the speed of adjustment to the target leverage, where | δ | <1. Lev_{it-1} is moved to the right of equation, so equation (2) can be reconstituted as follows:

$$Lev_{it} = (1 - \delta)\ Lev_{it-1} + \delta(Lev^*_{it}) \ ....(3)$$

The optimal or targeted debt level of firm i in period t, marked as Lev^*_{it}, is a linear function of a set of X_{jit} explanatory variable L (where j = 1, 2, ... L)

$$Lev^*_{it} = \sum_{j=1}^{L} \propto_j X_{jit} \dots\dots\dots\dots (4)$$

Lev^*_{it}, is a linear function of a set of X_{jit} explanatory variable L (where j = 1, 2, ... L). Equation (4) is substituted into equation (3) so that it becomes:

$$Lev_{it} = (1-\delta)Lev_{it-1} + \delta \sum_{j=1}^{L} \alpha_j X_{jit} \ldots (5)$$

1.2 Determinantof Target Capital Structure

The determinant variable of the target capital structure (X_j) in equation (4) and simultaneously estimated in equation (5) is as follows.

1. Profitability

According to static trade-off theory more profitable companies use higher leverage due to greater tax protection and because profitable firms have lower bankruptcy risk. According to pecking order theory, companies prefer internal financing rather than debt and new equity issuance, so according to this theory more profitable firms will use lower leverage (Frank and Goyal, 2009).

In this study, profitability is measured by Return on Assets (ROA) and Operational Cost to Operating Income (BiayaOperasionaldibagiPendapatanOperasional/BOPO).

ROA generallyused to measure profitability, while BOPO is the financial ratios used in banking. ROA is expected to have a positive effect on leverage, while BOPO is expected to negatively affect leverage.

2. Growth Opportunities

Static trade off theory predicts a negative relationship between growth opportunities and capital structure. Companies with high growth opportunities lose more value when experiencing financial distress. Pecking order theory, in turn, predicts a positive influence between growth opportunities and capital structure, as growing firms require more external sources of funds (Frank and Goyal, 2009). Sriwahyuni and DwiHartomo (2015) found that growth negatively affects the capital structure of banks in Indonesia. Banks whose business is more productive can be seen from the increasing credit distribution. So the bank to expand its business can be financed from retained earnings. These results are consistent with the findings of Eriotis et al. (2007) and Sheikh and Wang (2011) show that opportunities negatively affect the capital structure.

Growth opportunities are measured by market to book ratio equity (Kouki and Said, 2012). The growth opportunity is predicted to negatively affect the bank's capital structure.

3. Firm Size

Static trade-off theory predicts positive influence between firm size and leverage, large firms generally tend to be less likely to bankrupt. Pecking order theory predicts the negative effect of firm size on capital structure. information on large companies is more transparent or more accessible to outsiders, so companies tend to finance their finances from sources sensitive to internal information, ie with equity through the capital market (Frank and Goyal, 2009). Findings Eriotis et al. (2007) and Sheikh and Wang (2011) show that firm size has a significant positive effect on capital structure.

Size is measured by the logarithm of total assets (Chang et al., 2014). Firm size is predicted to have a positive effect on bank capital structure.

4. Collateral Value of Assets

In a non-financial company, the nature of the asset associated with the capital structure is the tangiability of the assets held. According to Frank and Goyal (2009) for outsiders, tangiable assets are more valuable than intangiable assets. Darminto and Manurung (2008) stated that the large amount of tangible fixed assets in the company is defined as the higher the ability of companies to provide collateral in obtaining loans, the greater the proportion of loans in the capital structure, because the easier the company obtains credit.

Financial companies generally have smaller fixed assets than non-financial companies. Gropp and Heider (2010) in examining the capital structure of the Bank not only include tangiable assets as guaranteed assets, but also include other assets that can be guaranteed to borrow to the central bank. Based on this matter, in this study the value of collateral value of Assets (CVAS) is defined as fixed assets plus securities and loans granted divided by total assets. CVAS is expected to have a positive effect on capital structure.

5. Likuidity

From a trade-off theory perspective, a liquid company will use more debt because it has more ability to fulfill its obligations. From the pecking order theory view, liquid companies actually use less debt because liquid companies can use internal resources for new investment fields (Sheikh and Wang, 2011).

One measure of bank liquidity is the Loan to Deposit Ratio (LDR) (Sriwahyuni and DwiHartomo, 2015). The higher the LDR ratio the lower the liquidity of a bank, so the LDR coefficient is predicted to be negative.

6. Risk

Under trade-off theory, risk may limit firms to use more debt. There are several types of risks faced by the company, such as business risk, financial risk, market risk. Gropp and Heider (2010) find that the risk of assets and market risk will negatively affect the bank's capital structure. Banks face risks when lending. According to the Indonesian Financial Services Authority Regulation Number 18 /POJK.03/2016 Concerning the Implementation of Risk Management for Commercial Banks, Credit Risk is Risk due to the failure of other parties in fulfilling the obligations to the Bank, including Credit Risk due to debtor's failure, Credit concentration risk, counterparty credit risk, and settlement risk. Siringoringo (2012) found that credit risk as measured by Non Performing Loan (NPL) had a significant negative effect on bank capital structure.

In this study, risk is measured by Gross NPL. NPLs are expected to negatively affect the bank's capital structure.

RESEARCH METHOD

The study was conducted at a banking sector company listed on the Indonesian Stock Exchange (IDX). 23 banks were observed during the period 2013-206.

Data analysis with Generalized Method of Moments (GMM) regression method. GMM is used because there is a correlation between the residue with the dependent variable lag so that the OLS estimator is inconsistent. In this study the lag of the dependent variable is lag leverage (Lev_{t-1})

RESULTS AND DISCUSSION

Table 1 shows the descriptive statistics of the variables studied. It is seen that the debt ratio of the studied banks averaged 88%. Debt ratio of banks is higher than non-financial companies, because it includes third party funds.

Table 1. Descriptive statistics

	LEV	ROA	BOPO	GROWTH	SIZE	CVAS	LDR	NPL
Mean	0.88	1.60	79.12	1.67	7.72	0.74	82.57	1.86
Median	0.88	1.37	81.58	1.33	7.83	0.75	84.24	1.94
Maximum	0.94	3.41	93.55	5.70	8.93	0.98	108.86	4.15
Minimum	0.78	0.31	53	0.38	6.32	0.57	44.24	0.21
Std. Dev.	0.03	0.79	10.29	1.07	0.69	0.08	11.81	0.97
Observations	92	92	92	92	92	92	92	92

The results of data analysis are shown in table 2 taken from the Eviews output. Based on R-squared, it is known that all the variables studied explain about 56% of the overall effect. As stated in equation (5), the regression coefficient of lagged leverage (Lev_{t-1}) is equals to 1 - δ, where δ represents the rate of adjustment to the target leverage. From the estimation result obtained Lev_{t-1} coefficient is 0.532078 which is statistically significant, so it can be calculated that δ = 1 - 0.532078,so the rate of adjustment speed is 0.467922. This means that the average speed of capital structure adjustment of banks studied amounted to 46.792% per year. To adjust the capital structure to the target takes more than two yearsfor the banks in Indonesia. Research in the real sector in Indonesia by Darminto and Manurung (2008) obtained an adjustment rate of about 44%. These results indicate that the adjustment rate toward target leverage in the banking sector is slightly faster than in the real sector.

Significant variables affecting leverage are, lagged leverage, growth opportunities, firm size, and Collateral Value of Assets. Significant constants indicate the presence of other variables outside the model that significantly affect leverage and this is not in line with pecking order theory predictions, which should be close to zero (Darminto and Manurung, 2008).

Table 2. Estimation Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.332218	0.125147	2.654627	0.0102
LEV(-1)	0.532078	0.133572	3.983448	0.0002
ROA	-0.008601	0.013092	-0.657021	0.5137
BOPO	0.000157	0.001068	0.146766	0.8838
GROWTH	0.004488	0.001799	2.494356	0.0154
SIZE	0.004220	0.001619	2.607127	0.0115
CVAS	0.067457	0.019858	3.396975	0.0012
LDR	-0.000101	0.000109	-0.928370	0.3569
NPL	-0.001914	0.003984	-0.480548	0.6326
R-squared	0.560350	Mean dependent var		0.880290
Adjusted R-squared	0.501730	S.D. dependent var		0.028179
S.E. of regression	0.019891	Sum squared resid		0.023739
Durbin-Watson stat	2.096488	J-statistic		11.20388
Instrument rank	15	Prob(J-statistic)		0.082276

The Effect of Lagged Leverage, Company Size, and Collateral Value of Assets in accordance with trade-off theory. While only the effect of growth opportunities in accordance with the prediction of pecking order theory. Profitability is both measured by ROA and BOPO, as well as its liquidity and credit risk effects are not statistically significant to leverage. According to Sriwahyuni and DwiHartomo (2015) if the bank increases lending, the bank must increase its own capital to maintain the capital adequacy ratio. This causes the LDR has no effect on the capital structure. With the same rationale, then if the risk of assets in the form of credit increases then the bank also needs to increase its own capital. This causes the coefficient mark and NPL significance in line with the LDR. Amidu (2007) also found that the risk of negatively significant effect on leverage, the difference Amidu (2007) using profit variability as a measure of risk. In general, the results of this study in accordance with the findings Darminto and Manurung (2008) that the trade-off theory has a more dominant explanatory power than pecking order theory.

CONCLUSION

The study of capital structure in banking sector in Indonesia shows that several variables which are often tested for influence on capital structure of non-financial companies also significantly affect bank capital structure, among others growth opportunities, firm size, and Collateral Value of Assets. The banking company also has a capital structure target and adjusts the current capital structure toward that target. Trade-off theory has more dominant explanatory power than pecking order theory.

Profitability, liquidity and risk do not significantly affect leverage. This needs to be examined further considering that managing liquidity and risk is an important aspect in banking.

Subsequent research can also use other variables to increase the explanatory power of the model.

Funding decisions and capital structure are very broad and most interesting topics in corporate financial management. More capital structure research is conducted on non-financial companies, so the results of this study are expected to contribute to further research.

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