

# Determinants of capital structure: What can be the Determinants of Capital Structure of regional development banks in Indonesia?

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## **Determinants of capital structure: What can be the Determinants of Capital Structure of regional development banks in Indonesia?**

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### **Abstract**

*One of the unique banking in Indonesia is that there are regional development banks (BPD), which is a government-owned bank districts. regional development banks categorized as focused bank, ie the bank with regional focus. The objectives of this research is determinants of capital structure in region development bank (Bank Pembangunan Daerah). This research is to test the impact of different explanatory variables of capital structure internal and external factors. The external variables of the economy of a country in Indonesia are regional autonomy, economic crisis and bank policy of government. The internal factor or characteristics of an individual bank are profitability, loans and size. The population consists of 26 community development banks. The study 14 regional development banks because of difficulty in getting the data. The period under study is from 1995 to 2010. The results showed the variable regional autonomy negative impact on leverage because obtain additional funds from the local government. Dummy equity positive impact on leverage the show that equity have more than 100 billion would increase the amount of debt and the crisis negative impact on leverage because BPD reduces the amount of debt for avoiding from bankruptcy. Internal variables showed loans negative impact on leverage, assets positive impact on leverage, while profitability has not impact different from previous studies.*

**Keywords** : *Regional development bank, Leverage and Regional autonomy.*

## 1. INTRODUCTION

One of the unique banking in Indonesia is that there are regional development banks (BPD), which is a government-owned bank districts. BPD categorized as focused bank, ie the bank with regional focus. At present, the BPD has a core capital of 100 billion rupiah to 10 trillion rupiah. Even all BPD was able to have a minimum capital adequacy ratio above 10%, so it belongs to the bank performs well. BPD thus able to create a healthy banking structure in the country and able to meet the needs of the community and to promote the ongoing economic development of Indonesia.

The advantages BPD is a market that is very dominant and profitable local government. One of the reasons there are to be BPD bank cash account to the district collector. Even local government can make rules that put BPD as the only bank that can handle the affairs of the banking community. With the market, then the excellent products BPD is working capital products and services to the business. In addition, the BPD also deal with the other markets in the same district as dealing with the cooperation of local government, particularly in terms of suppliers and contractors. In terms of the consumer market, BPD clients consist of local government staff and other institutions in the region.. In addition, a proportion of the capital BPD comes from each local government that is stored either in the form of a deposit or deposited placement or shape demand. Operations and responsibilities survival BPD are at their respective local governments.

Given the importance of capital banks need to determine the optimal capital structure in order to survive well, which <sup>6</sup> determining an optimal capital structure is very hot issue in the literature of finance (Amjad et al., 2012). Among the issue in the district is the first multilateral development banks, regional autonomy laws that govern the financial district balance will lead to a rise in the influence of local government funds placed in BPD. Second, this study also supports the Indonesian Financial Sector Masterplan (Indonesian bank architecture), where in 2011, all Indonesian bank ownership must have a minimum capital of 100 billion rupiah. Bank Indonesia introduced regulations to allow banks face crucial moments such as the current financial crisis. Third, Indonesia's financial and political crisis that occurred in mid-1997 until 1999. These crises resulted in decreased performance of most banks. Banks are also experiencing problems with financial difficulties and bankruptcy threats.

<sup>6</sup> In previous literature, a lot of work is done on determining the factors which influence the capital structure of non-financial sectors. A number of factors were studied in this regard which would have impact on the capital structure of any organization. These factors may include profitability, size, assets' tangibility, growth opportunities, debt tax shield, earning volatility, liquidity, age and non-debt tax shield. But a little work is done on determining the capital structure of financial sectors, especially for banking sectors in Indonesia. <sup>5</sup> The main purpose of this study is to fill this gap by determining which factors have significant impact on capital structure decision of banking sector of Indonesia especially regional development banks during the period of 1995 to 2010. Moreover this

study is aimed at determining the influence of these determinants without the application of capital regulatory requirements.

The <sup>1</sup> objectives of this research is determinants of capital structure in region development bank (Bank Pembangunan Daerah) context are examined with reference to capital structure theories. Although the determination of factors that affect the capital structure will typically be an interesting debate (Titman & Wessels, 1988; Haris & Raviv, 1991). <sup>2</sup> This research is to test the effect of different explanatory variables of capital structure internal and external factors. The external variables of the economy of a country in Indonesia are regional autonomy, economic crisis and bank policy of government (Regional autonomy and Indonesia bank architecture) are factors that affect the capital structure. The <sup>2</sup> internal factor or characteristics of an individual bank are profitability, loans and size, <sup>4</sup> which are termed here as internal factors also affect the capital structure of enterprises..

## 2. LITERATURE REVIEW

<sup>1</sup> Based on MM theory was developed three theories. There are the trade-off theory (Bradley et al., 1984). Second pecking order theory (Myers & Majluf, 1984) and third, agency theory (Jensen & Meckling, 1976). <sup>4</sup> The pecking-order theory (Myers, 1984 and Myers and Majluf, 1984) suggests that capital structure choice is driven by the magnitude of information asymmetry present between the firm insiders and the outside investors. The more severe the information asymmetry, the more risk the

outside investors are facing and hence the more discount they demand on the price of issued securities. Consequently, firms will prefer financing through internal funds and if they do need to raise outside capital, they will firstly issue risk-free debt then followed by low-risk debt. Equity is only issued as a last resort.

As stated in Myers (1984), the static trade-off theory assumes that firms set an optimal debt ratio and they move gradually towards it. The theory proposes that the optimal debt ratio is set by balancing the tradeoff between the benefit and cost of debt. The benefit of debt arises from the tax deductibility of interest payments on debt and the cost of debt comes in the form of higher probability of bankruptcy and the loss suffered.

Agency theory (Jensen and Meckling, 1976), predicts capital structure choice based on the existence of agency costs, i.e. costs due to conflicts of interest. According to there are essentially two sources of conflicts. Conflicts between shareholders and managers arise since managers have an incentive to consume on perquisites while putting less effort on maximising profit for the firm. This is because managers bear the entire costs of pursuing profit maximisation while they do not receive the entire gain. By increasing the level of debt, this agency cost of managerial discretion can be mitigated.in the event of bankruptcy.

<sup>3</sup> This section debates the factors that determine a firm's capital structure. The underlying theories and previous empirical evidence are also reviewed. First, The



external variables<sup>2</sup> are regional autonomy, economic crisis and bank policy of government are factors that affect the capital structure. Second we present the internal factors firm-level variables are profitability, loans and size.

## **2.1. External variables**

### **2.1.1 Regional autonomy**

Regional autonomy by Act No. 22 of 1999 on Regional Government and Law No. 25 of 1999 on Financial Balance between Central and Local Government has provided greater opportunities for areas to optimize the management of the potential in the region. Regional development bank as the holder of the financial district, which has been set in the No.13 Act of 1962 concerning the principles Conditions Regional Development Bank, working as regional economic development and mobilize local economic development to improve and provide financing development in the region, to raise funds and to implement and save the cash area in addition to running the activities of the banking business. With the capital of deposits in particular the government, which placed a burden on the regional development bank as well as revenue. A burden because the bank is obliged to pay the interest placed in current accounts Local Government. Third party funds into income for regional development bank, when placed in the form of interbank assets or credit to the debtor. If the difference between the expenses and the income generated is greater than the income, the benefits to be derived, and vice versa. Therefore, this study will look at the effect of Regional autonomy on bank capital structure.

### 2.1.2 Equity

<sup>3</sup> Financial economists have recently placed more emphasis on the role of a legal system in the domain of financial decisions (Demirgüç, -Kunt and Maksimovic, 1996, 1998; La Porta et al., 1997, 1998). Recently, a variety of papers have examined the adoption of different legal systems and their impact on corporate finance. La Porta et al. (1997, 1998) find that the legal environment plays a decisive role in the development of capital markets, because it impacts accounting standards, shareholders' rights, and creditors' rights. They indicate that Common law countries benefit from having both good accounting standards and strong investor protection.

In Indonesia had the Banking Master Plan Indonesia (Indonesia bank architecture, API), where in the year 2011, all acquisitions of banks in Indonesia must have a minimum equity of 100 billion rupiah. Bank Indonesia introduced rules to allow banks face crucial moments like the current financial crisis. Therefore, this study will look at the effect of minimum capital requirements on bank capital structure. This study will test the appropriateness of this decision. If smaller banks are less likely to withstand severe economic downturn, then the coefficient of equity, which will be proxy by Dummy equity should be impact on leverage. However, it could also be argued that smaller banks will be more responsible in their lending activities since they know that imprudent lending decision would more likely to lead to bankruptcy as compared to larger banks. banks can increase the amount of bank equity can increase the amount of debt.



### **2.1.3 Banking Crisis**

Indonesian banking crisis began when the "net open position" increases, the value of capital ratio becomes negative and bad debt ratio to 50%. It is then followed by a negative bank earnings as a result of the sharp rise in interest rates since the middle of the second half of 1997. The financial crisis has led to the banking system has experienced financial difficulties and banking structure changed very significantly. This is due to the various weaknesses in banking and is exacerbated by the financial crisis, liquidity crisis and bankrupt crises experienced by the conglomerate in Indonesia. This resulted in many banks experiencing financial difficulties and the banking sector is a threat of bankruptcy. Therefore, this study will look at the effect of economic crisis on bank capital structure. Hasil penelitian Fosberg (2012) menunjukkan bahwa terdapat pengaruh negatif masa krisis terhadap Leverage. The results Fosberg (2012) showed that there are significant negative crisis on Leverage.

## **2.2 Internal Variables**

### **2.2.1 Profitability**

The trade-off hypothesis pleads for the low level of debt capital of risky firms (Myers 1984). The higher profitability of firms implies higher debt capacity and less risky to the debt holders. So, as per this theory, capital structure and profitability are positively associated. But pecking order theory suggests that this relation is negative. Since, as stated earlier, firm prefers internal financing and follows the sticky dividend

policy. If the internal funds are not enough to finance financial requirements of the firm, it prefers debt financing to equity financing (Myers 1984). Thus, the higher profitability of the enterprise implies the internal financing of investment and less reliance on debt financing. Most of the empirical studies support the pecking order theory. The studies of Titman and Wessels (1988), Friend and Lang (1988), Fama and French (1998), Hammes (1998), Gleason et al. (2000), Hovakimian et al. (2001), Deesomsel et al. (2004), Cheng and Shiu (2007), Shah and Khan (2007), Gill et al. (2009), Céspedes et al. (2010) Gropp and Heider (2010), Khrawish and Khraiwesh (2010), Ellili and Farouk (2011), Afza and Hussain (2011), Alves and Ferreira (2011), Siringoringo (2012), Sanistyaningrum and Gandakusuma (2012), Amjad et al. (2012) and Sharif et al. (2012) show the negative relation between profitability and the level of debt in capital structure. While, DeAngelo and Masulis (1980), Aggarwal (1994) and Burgman (1996) are finding a positive profitability on leverage.

### 2.2.2 Loans

Loans are part of the current assets, current assets of the banking sector is more important than fixed bank assets because they can manage the funds rapidly. By the bank because they prefer to have current assets greater than total assets. <sup>5</sup> Many researchers used liquidity as an independent variable to measure its impact on leverage of the firm. Basically liquidity is the ability of any firm to meet its short term obligation when they become due. Ozkan (2001) reported that higher liquidity ratio implies that a firm has more power to pay its debt as they become due, hence,

the firm can structure its financing pattern by taking more debt rather than issuing equity. This research shows that liquidity has direct relationship with leverage ratio. Yu (2000) also observed that banks with more liquidity have positive impact on leverage. On the other hand, Tong and Green (2005) observed an inverse relationship of liquidity with leverage. Childs et al. (2005) concluded that firms avoid interest rate and liquidity risk and have negative relation of long term debt ratio with liquidity. Similarly Guney et al. (2011), Mishra and Tannous (2010), Amjad et al. (2012) and Sharif et al. (2012) reported a negative relation of liquidity with financial leverage.

The results are a negative influence on leverage liquidity are Deesomsak et al. (2004), Tong and Green (2005), Viviani (2008), Afza & Hussain, (2011), Guney et al. (2011), Mishra and Tannous (2010) and Sharif et al. (2012). While liquidity has a positive effect on research Leverage Yu (2000). Ozkan (2001) and Fama and French (2002).

### <sup>3</sup> 2.2.3 Size

Leverage is expected to be positively influenced by size. The most plausible reason to explain such relationship is bankruptcy costs (Warner, 1977; Marsh, 1982; Rajan and Zingales, 1995). That is: first, large firms have, on average, lower bankruptcy costs – this type of costs are in, general, more fixed – than small firms; second, large firms have in principle more diversified portfolios, with less probability of bankruptcy; third, financial institutions, because they have less information about a small firm, need to allocate more resources concerning the firm's monitoring, and penalise it by

asking for higher interest rates. Although the vast majority of research shows a positive relationship between size and leverage, such as Rajan and Zingales (1995) and Shenoy and Koch (1996), there is also some research that reveals the opposite results, namely those obtained by Titman and Wessels (1988). The bankruptcy cost theory explains the positive relation between the capital structure and size of a firm. The large firms are more diversified, have easy access to the capital market, receive higher credit ratings for debt issues, and pay lower interest rate on debt capital. Further, larger firms are less prone to bankruptcy (Titman and Wessels 1988) and this implies the less probability of bankruptcy and lower bankruptcy costs. The bankruptcy cost theory suggests the lower bankruptcy costs, the higher debt level.

Wald (1999), Fama and French (2002), Baral (2004), Deesomsak et al. (2004), Istaitieh and Rodríguez-Fernández (2006), Cheng and Shiu (2007), De Jong et al. (2008), Serrasqueiro and Rogão (2009), Lin et al. (2009), Céspedes et al. (2010), Gropp and Heider (2010), Khrawish and Khraiwesh (2010), Ellili dan Farouk (2011), Siringoringo (2012), Sanistyaningrum dan Gandakusuma (2012), Guney et al. (2011), Amjad et al. (2012) and Sharif et al. (2012) size shows a positive effect on leverage. While, Shah and Khan (2007) and Mishra and Tannous (2010) results size the negative effect on leverage.

### **3. DATA AND METHODS**

<sup>2</sup> The population consists of 26 community development banks. The study 14 regional development banks because of difficulty in getting the data. <sup>1</sup> The period under study is from 1995 to 2010. The data are taken from banks' annual reports. In this study using panel data and analysis using pooled ordinary least square (OLS) and random effect while fixed effect is not used in the analysis because the number of banks has not changed to any bank during the study period and there were three dummy variables. <sup>1</sup> To test capital structure of community development banks, the following model is estimated:

$$LEV_{it} = \beta_0 + \beta_1 * DRA_{it} + \beta_2 * DEQUITY_{it} + \beta_3 * DCRISIS_{it} + \mathbf{Z}^T \alpha + e_{it}$$

where

$LEV_{it}$  : Leverage that total debt to total assets of bank  $i$  in period  $t$ ,

$DRA_{it}$  : A dummy regional autonomy that takes on a value of one if  $t$  is from 2000 to 2006, zero otherwise,

$DEQUITY_{it}$  : A dummy equity variable that takes on a value of one if bank  $i$  has equity in excess of 100 million rupiah in period  $t$ , zero otherwise.

$DCRISIS_{it}$  : A dummy crisis variable that takes on a value of one if  $t$  is from 1997 to 1999, zero otherwise,

$\mathbf{Z}$  : A matrix of control variables, which included <sup>1</sup> net income to total assets (ROA), loans to assets (LOANS) and natural logarithm of total assets (ASSETS).

$e_{it}$  : error term of bank  $i$  in period  $t$ .

#### 4. FINDING AND DISCUSSION

Table 1  
*Correlation Matrix*

	LEV	DRA	DEQUITY	DCRISIS	ROA	LOANS	ASSETS
LEV	1.000						
DRA	0.163	1.000					
DEQUITY	0.124	0.800	1.000				

DCRISIS	-0.248	-0.712	-0.570	1.000			
ROA	-0.085	-0.139	-0.106	0.204	1.000		
LOANS	-0.819	-0.135	-0.039	0.164	0.055	1.000	
ASSETS	0.096	0.484	0.527	-0.349	-0.074	-0.007	1.000

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LEV is total debt to total assets; RA is A dummy regional autonomy that takes on a value of one from 2000 to 2006, zero otherwise; DEQUITY is A dummy equity variable that takes on a value of one bank has equity in excess of 100 million rupiah, zero otherwise; DCRISIS is A dummy crisis variable that takes on a value of one if from 1997 to 1999, zero otherwise; ROA is net income to total assets; LOANS is loans to total assets and ASSETS is natural logarithm of total assets

Table 1 provides information on the degree of correlation between the explanatory variables used in the multivariate regression analysis. The matrix shows that in general the correlation between the variable that are used in the analysis is not strong suggesting that multicollinearity problem are either not severe or non-existent. Kennedy (2008) and Gujarati (2009) points out that multicollinearity is a problem when the correlation is above 0.8, which is not the case here. To ensure that there is no problem of multicollinearity, variance inflation factor (VIF) are estimated and since the results show that the VIF are below 10.

Table 2 presents the pooled regression results without adjusting standard errors and with robust standard errors for heteroscedasticity. When we test for heteroscedasticity using Breusch-Pagan test, we find that we can reject the null hypothesis of equal variances. Thus, a better estimation model should account for heteroscedasticity Table 2 reports the results based on adjusted standard errors using heteroscedasticity-adjusted standard error. We find that all coefficients are significant for LEV except ROA variable. The result regression with random effects show that DCRISIS and LOANS are significant on LEV (Table 3).



Table 2  
*Regression Without Adjusting And With Robust Standard Errors*  
*Dependent Variable : LEV*

Variable	OLS without standard errors		OLS with robust standard errors	
	Coef.	p-value	Coef.	p-value
Constan	1.0144	0.000***	1.0144	0.000***
DRA	-.0537	0.017**	-.0537	0.003***
DEQUITY	.0327	0.079*	.0327	0.006***
DCRISIS	-.0539	0.006***	-.0539	0.016**
ROA	-.0098	0.633	-.0098	0.742
LOANS	-.2820	0.000***	-.2820	0.000***
ASSETS	.0033	0.165	.0033	0.099*
R-squared	0.6947		0.6947	
Adjusted R-squared	0.6863			
Prob > F	0.0000		0.0002	
Number observation	224		224	

LEV is total debt to total assets; RA is A dummy regional autonomy that takes on a value of one from 2000 to 2006, zero otherwise; DEQUITY is A dummy equity variable that takes on a value of one bank has equity in excess of 100 million rupiah, zero otherwise; DCRISIS is A dummy crisis variable that takes on a value of one if from 1997 to 1999, zero otherwise; ROA is net income to total assets; LOANS is loans to total assets and ASSETS is natural logarithm of total assets. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% level, respectively, p-value in parentheses

Table 3  
*Regression With Random Effects*  
*Dependent Variable : LEV*

Variable	Coef.	p-value
Constan	1.0099	0.000***
DRA	-.0341	0.108
DEQUITY	.0082	0.653
DCRISIS	-.0525	0.003***
ROA	-.0189	0.324

LOANS	-2823	0.000***
ASSETS	.0037	0.106
R-squared	0.6919	
Prob > chi2	0.0000	
Number observation	224	

LEV is total debt to total assets; RA is A dummy regional autonomy that takes on a value of one from 2000 to 2006, zero otherwise; DEQUITY is A dummy equity variable that takes on a value of one bank has equity in excess of 100 million rupiah, zero otherwise; DCRISIS is A dummy crisis variable that takes on a value of one if from 1997 to 1999, zero otherwise; ROA is net income to total assets; LOANS is loans to total assets and ASSETS is natural logarithm of total assets. \*, \*\* and \*\*\* denote significance at the 10%, 5% and 1% level, respectively, p-value in parentheses

DRA (regional autonomy) has a negative impact on LEV and the coefficient of 5.37%. This suggests that regional autonomy with effect from the year 2000, Region development bank can lower the amount of debt may have received additional funding from the local government of the increase revenue and expenditure (budget) and kept in current accounts deposited with the local government or serve as additional equity the BPD. The funds from the local government can reduce BPD to increased hunting effort that comes from deposit funds so that the composition of debt can be reduced. In addition, funding of local governments can be used to be placed in Bank Indonesia Certificates (BIC) which at the beginning of the second quarter of 2007, total deposits of all positions in the region development bank placed around 96 trillion rupiah or 24, 35% of the total Bank Indonesia Certificates by all banks.

DEQUITY has a positive impact on LEV and the coefficient of 3.27%. This suggests that the BPD has equity greater than 100 billion rupiah more to add to the amount of debt due to BPD can increase the amount debt by an increase in equity. This condition is to maintain the bank's financial risk in the amount of the debt to equity

ratio. In these circumstances the local government will assist BPD when adding equity if deposit funding has increased. BPD will be able to increase the amount of debt to be distributed on loan.

DCRISIS has a negative impact on LEV and the coefficient of 5.39%. This indicates that financial crisis in Indonesia, BPD reduce the amount of debt due to deduct interest payments on debt are high and keep the bank from bankruptcy. This finding is consistent with Fosberg (2012) who find a negative relationship of crisis on leverage.

The relationship between LEV and profitability (ROA), while a negative expected, is not statistically significant. This may be due to the advantage of BPD handed over to local government funding sources that are not used as an internal bank to reduce the amount of bank debt. The result is contrast with most previous such as Gropp and Heider (2010), Khrawish and Khraiwesh (2010), Ellili and Farouk (2011), Afza and Hussain (2011), Alves and Ferreira (2011), Siringoringo (2012), Sanistyaningrum and Gandakusuma (2012) and Sharif et al. (2012) there are a negative impact of ROA on leverage.

The finding showed that LOANS negative impact on LEV and the coefficient of 28.20%. This suggests that the level of loans has a significant influence on the ability of banks to provide funds. Loans is high as seen from the level of non-performing loans from a bank, it can reduce the level of public confidence, which led to banks having difficulty in raising funds from third parties, thus reducing the sources of debt

**financing**. Penelitian ini mendukung hasil penelitian Guney et al. (2011), Mishra and Tannous (2010) and Sharif et al. (2012) reported a negative relation of liquidity to financial leverage.

The finding showed that ASSETS positive impact on LEV and the coefficient of 0.33%. <sup>1</sup> These results are consistent with the trade-off theory in which the ASSETS of large banks tend to use more debt in comparison small bank. Bank with large size bank indicates that the bank has a large asset such as this tend to use bank debt in the capital structure have greater access easier to obtain bank loans because these are considered to have a smaller risk of bankruptcy than small banks. The result is consistent with previous research study conducted by Wald (1999), Fama and French (2002), Baral (2004), Deesomsak at al. (2004), Istaitieh and Rodríguez-Fernández (2006), <sup>6</sup> Cheng and Shiu (2007), De Jong at al. (2008), Serrasqueiro and Rogão (2009), Lin et al. (2009), Céspedes et al. (2010), Gropp and Heider (2010), Khrawish and Khraiwesh (2010), Ellili and Farouk (2011), Siringoringo (2012), Sanistyaningrum and Gandakusuma (2012), Guney et al. (2011), Sharif et al. (2012) showed ASSETS positive impact on leverage.

## 5. CONCLUSION

In this paper, we examine the <sup>2</sup> determinants of capital structure of regional development banks in Indonesia. The period under study is from 1995 to 2010. Our study uncovers interesting results. We find that regional autonomy and economic

crisis have a negative impact on leverage and dummy equity has a positive impact on leverage. In addition our result showed that LOANS negative and <sup>2</sup> ASSETS positive impact on leverage. while the ROA a negative expected, is not statistically significant. In future research to obtain better results expected in order to addition the variable and comparing with private and government banks.

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