THE EFFECTS OF OWNERSHIP STRUCTURES AND SPECIFIC CHARACTERISTICS ON THE CAPITAL STRUCTURES OF IDX-LISTED BANKS

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Abstract
The present study observes the effects of ownership structures and specific characteristics on the capital structures of banks listed in Indonesia Stock Exchange (IDX). The author finds that the ownership structures and bank-specific characteristics (e.g., profitability, size and credit risk) do not have significant partial effect on the capital structures, while expense management does. This is consistent with a strand of previous studies including Haruman (2008), Yuke and Hudri (2005), Rista and Bambang (2011), Siringoringo (2012) and (Imas, et al., 2015).

Keywords: ownership structures, specific characteristics and capital structures

1. INTRODUCTION
Taswan (2010) lays out banking-control perspective to classify bank ownership in Indonesia, which includes concentrated ownership, government ownership, private domestic ownership and foreign ownership. Large individual ownership indicates that bank ownership in Indonesia is concentrated into a number of owners. Managers, as a result, are simply subordinates to controller stakeholders. The major differences between government-controlled banks, domestic banks, mixed banks and foreign banks lie in the capitals and legal forms (Siringoringo, 2012).
Capital structure policy deals with an optimal combination of using different sources of funds to finance an investment and a firm’s overall operations to meet substantial financial goals and, in turn, to gain significant profits and values from the emerging market (Gitman, 2009).
In addition to bank ownership, bank-specific characteristics, or internal factors, are taken into consideration to examine the capital structure decisions of the banks listed on IDX. Prominent bodies of literature have shed light on the relationship among the three domains with a wide variety of research findings. In the present study, the author breaks down the variables of bank-specific characteristics into profitability, size, credit risk and management expense.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT
Ownership Structure
1.1. Agency Cost Theory
Jensen & Meckling (1976) establish the relationship between ownership structures and capital structures in terms of the percentage of share ownership by insiders (stakeholders) and outsiders (shareholders), in addition to debt and equity, when it comes to the most important factors in capital structures. As insider ownership rises, managerial ownership serves to align the interests of outside shareholders and managers (who act as agents as well as principals), and agency cost will decline. Hence, agency cost will rise with a reduction in managerial ownership. Bathala, et al. (1994) find the comparison regarding capital structure policy that the higher the insiders’ proportions, the greater the desires to reduce the firm’s cost of capital. In other words, firms no longer need to take on debts because the agency costs of debt will reduce as insiders own more shares.
Furthermore, in the presence of large-block shareholders who buy stocks with a large amount of institutional ownership, firms exercise more control and external monitoring, which in turn leads to agency cost-reducing mechanism. One might expect that debt policy and institutional ownership can be a substitution-monitoring effect mechanism. Bathala, et al. (1994) explore this effect and find that institutional investors can encourage more effective monitoring services and mitigate the extent of opportunistic behaviors by managers. The monitoring of managerial activities may help reduce agency conflicts and become a substitute for debts.
Banking institutions involve a very complex set of agency relationship. Common examples of this relationship include principals (shareholders) and agents (management), bank and debtors, and bank and regulators (Taswan, 2010).
1.2. Asymmetric Information Theory
Myers (1984) suggests that funding needs are based on a certain hierarchy in choosing how a firm funds its growth projects as to minimize the likelihood of information asymmetry. Basically, a firm will prioritize internal, when available, over external financing. When external financing is required, a firm will prefer debt to equity owing to lower information costs resulting from debt issues. A firm will finally finance itself by issuing new equity shares as a last resort.
1.3. Types of Bank Ownerships in Indonesia

The ownership structure of commercial banks in Indonesia, according to Bank Indonesia, is categorized into 6 groups, i.e., Bank Persero (BUMN), Bank Umum Swasta Nasional Devisa (BUSN Devisa), Bank Swasta Nasional Non Devisa (BUSN Non Devisa), Bank Pembangunan Daerah (BPD), mixed banks and foreign banks.

2. Bank-Specific Characteristics

2.1. Profitability

Profitability is the degree that a bank is able to generate earnings (expressed as a percentage) over a specified time period compared to its underlying expenses and other related costs incurred during or subsequent to its efforts to generate earnings. The financial ratio that measures the percentage of profit a firm earns is calculated by ROA (Return on Assets), which compares returns on equity (net income) with total assets. This calculation allows bank management to utilize its financial resources to generate profits (Athanasoglou et al., 2005).

2.2. Size

Bank size also provides a description as to how a bank is able, upon expansion, to stay competitive in an oversaturated marketplace. There is a strong likelihood that a larger bank can perform its portfolio strategies across all lines of operation. As such, the size of a bank positively affects leverage ratio and tends to increase the level of debt financing (Darwanto, 2008).

2.3. Credit Risk

Credit risk, or default risk, refers to the risk that customers fail, are unable or are unwilling to meet their commitments in terms of return of capital and payment of interest within the specified period of time (Dahlan Siamat, 1999). The magnitude of default risk can be indicated by the level of bad debt. A number of factors responsible for bad debt include the quality of credit appraisal, macroeconomic factor and moral hazard, both debtors’ and creditors’.

2.4. Management Expense

Management expense describes the total expense associated with doing business on a day-to-day basis which includes operating costs and other relevant expenses incurred. The increase in management expenses proxied by the relative proportion between the ratio of operating costs and that of total assets indicates a linear relationship with bank leverage. This means bank leverage increases as high operating costs continue to rise (Darwanto, 2008).

3. Capital Structure

3.1 Modigliani-Miller (MM) Theory

MM argue that, based on the proposition with taxes, a greater proportion of debt equity ratio benefits the value of a company owing to corporate tax shield. They propose that, in a perfect capital market with taxes, the interest payment that results from debt, in most cases, can be used to reduce the amount of taxable income and, thus, are tax-deductible interest. With the advantage of tax shield benefits, the levered company will enjoy a higher market value than the unlevered company. There are, however, a number of authorities who are not in favor of the so-called corporate tax shield. Such is criticized in terms of the capital market, which is perfectly competitive and frictionless, while in an imperfect capital market, costs associated with bankruptcy and agency problems, and asymmetric information are very likely to occur, and an ample sum of debt can distress the company value, accordingly (Brigham, 2005 and Peirson, 2006).

3.2 Trade-Off Theory

Trade-off theory, similar to balancing theory, advocates the idea that a company can capitalize on an optimal capital structure by trading off the benefits and the costs of debt, as described by Peirson (2006:394):

*Trade-off theory proposes that companies have an optimal capital structure based on a trade off between the benefits and costs of using debt.*

3.3 Pecking Order Theory

In most cases, a firm will prefer debts, if external funding is required, to new equities or shares, given that the cost of bond issuance is cheaper than that of new shares. When new shares are issued, the price of old shares lowers, which, in turn, can be a bad signal for investors. Asymmetric information between managers (insiders) and shareholders (outsiders) may result in the decline of share prices. In this sense, the managers are more aware of the prospects of the firm than the shareholders.

Funding Sources for Banks

Taswan (2010:174) suggests that banks must pay close attention to the composition of funds, interest rates and overhead costs to capitalize on cash flow opportunities by considering the following principles:
1. Cost of funds is minimized to the least possible level by setting up a certain composition.
2. Funds with low volatility and high stability are the bedrock of liquidity management.
3. The composition of funding sources holds the implementation of credit commitments and placement of other productive assets to the largest extent possible.

**Hypothesis**

Following the arguments above, the author tests potential explanation for the effect of ownership structures and bank-specific characteristics on capital structures through the following hypotheses:

Hypothesis 1: The ownership structure of banks significantly affect their capital structure.
Hypothesis 2: The bank-specific characteristics significantly affect their capital structure.

**3. RESEARCH METHOD**

**Operational Variables**

The following table presents the variables observed in the present study:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Indicator</th>
<th>Formula</th>
<th>Scale</th>
<th>Type of Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Structure (Y)</td>
<td>- Total Debt (Deposit, Subordinated Debt) - Equity</td>
<td>DER = Debt/Equity</td>
<td>Ratio</td>
<td>Secondary</td>
</tr>
<tr>
<td>Ownership Structure Government Ownership (X₁)</td>
<td>Number of Shares</td>
<td>% Government Share</td>
<td>Ratio</td>
<td>Secondary</td>
</tr>
<tr>
<td>Domestic Ownership (X₂)</td>
<td>Number of Shares</td>
<td>% Domestic Share</td>
<td>Ratio</td>
<td>Secondary</td>
</tr>
<tr>
<td>Mixed Ownership (X₃)</td>
<td>Number of Shares</td>
<td>% Mixed Share</td>
<td>Ratio</td>
<td>Secondary</td>
</tr>
<tr>
<td>Foreign Ownership (X₄)</td>
<td>Number of Shares</td>
<td>% Foreign Share</td>
<td>Ratio</td>
<td>Secondary</td>
</tr>
<tr>
<td>Bank-Specific Traits</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Profitability (X₅)</td>
<td>- Net Income - Total Assets</td>
<td>Net Income/Total Assets</td>
<td>Ratio</td>
<td>Secondary</td>
</tr>
<tr>
<td>Size (X₆)</td>
<td>Total Assets</td>
<td>Size = Ln Assets</td>
<td>Ratio</td>
<td>Secondary</td>
</tr>
<tr>
<td>Credit Risk (X₇)</td>
<td>- Amount of Bad Debts - Total Credit</td>
<td>Amount of Bad Debts/Total Credit</td>
<td>Ratio</td>
<td>Secondary</td>
</tr>
<tr>
<td>Management Expense (X₈)</td>
<td>- Total Costs - Total Assets</td>
<td>Total Costs/Total Assets</td>
<td>Ratio</td>
<td>Secondary</td>
</tr>
</tbody>
</table>

**Data Sources and Types**

The present study relies on quantitative research, which includes secondary data. In secondary data analysis, the author analyzes the pre-existing data available from other sources and may have been used and published in previous researches, e.g., the balance sheets and income statements of publicly-traded banks from 2013 to 2016 and the proportions of bank stock ownerships. The population empirically selected for the study is the entire conventional commercial banks listed on IDX. Purposive sampling is applied based on the purpose of the study and the following characteristics of the population:

1. The conventional commercial banks operate from 2013 to 2016 and present their financial statements during the same period.
2. The banks have periodically released and consolidated the fully audited financial statements during the period.

**Data Collection**

The author gathers data to inform the research questions using library research, a disciplinary resource featuring a diverse array of scholarly journals, publications and the likes across the areas in need of investigation that highlight the subject of interest.
Data Analysis and Hypothesis Test

a. Data Analysis

In statistical modeling, multiple linear regression analysis enables the author to assess the effect of more than one predictor variable on a criterion or response variable. The simple form of regression equation to assess the association between these two types of variables is defined by:

$$ Y = a + b_1X_1 + b_2X_2 + b_3X_3 + \cdots + b_kX_k + \epsilon $$

Where

- $Y$ = Capital Structure
- $b_1, b_2, b_3, \ldots, b_k$ = Regression Coefficient $X_1, X_2, X_3, \ldots, X_k$
- $X_1$ = Government Ownership Structure
- $X_2$ = Domestic Ownership Structure
- $X_3$ = Foreign Ownership Structure
- $X_4$ = Mixed Ownership Structure
- $X_5$ = Profitability
- $X_6$ = Size
- $X_7$ = Credit Risk
- $X_8$ = Management Expense
- $a$ = Constant
- $E$ = Residual

The calculation and interpretation of the correlation coefficient between the independent variables, e.g., ownership structures and bank-specific characteristics ($r_{xy}$), are given by the following formula:

$$ r_{xy} = \frac{n\sum x_i x_j - \left(\sum x_i\right)\left(\sum x_j\right)}{\sqrt{n\sum x_i^2 - \left(\sum x_i\right)^2}\sqrt{n\sum x_j^2 - \left(\sum x_j\right)^2}} $$

b. Hypothesis Test

The given model or equation considers a set of statistical inferences, both partially (individually) and simultaneously, across the variables with the testing criteria at a significance level of 5% ($\alpha = 0.05$).

Overall Test (F-Test)

The statistic outcome of the simultaneous association between independent and dependent variables is defined by the following hypothesis formula:

$$ Y = a + b_1X_1 + b_2X_2 + b_3X_3 + \cdots + b_kX_k + \epsilon $$

$H_0 : \rho_{xy_1} = \rho_{xy_2} = \ldots = \rho_{xy_k} = 0$

$H_1 : \text{at least one } \rho_{xy_i} \neq 0 ; i = 1, 2, \ldots, k$

The F-test for the overall or simultaneous significance is as follows:

$$ F = \frac{(n - k - 1)\sum r_{x_i y}^2}{k\left(1 - \sum r_{x_i y}^2\right)} $$

Source: Gujarati (2006)

The above statistical test follows Snedecor’s F-distribution with degrees of freedom $v_1 = k$ and $v_2 = n-k-1$, where $k$ is the number of independent variables.

The F-test recognizes the following criteria:

- If $F_{calc} \geq F_{table}$ with $\alpha = 0.05$, $H_0$ is rejected—there is a simultaneous effect of the independent variables on the dependent variable.
- If $F_{calc} \leq F_{table}$ with $\alpha = 0.05$, $H_0$ is accepted—there is no simultaneous effect of the independent variables on the dependent variable.

Individual Test (T-Test)

When the test of the overall hypothesis formulation rejects the null hypothesis ($H_0$), at least one path coefficient is not equal to zero ($\rho_{xy_i} \neq 0$). Under such circumstance, partial (individual) test is required to determine whether each independent variable, individually, is enough to create a significant relationship with the dependent variable. The hypothesis formula where partial path coefficient is assumed is defined by:

$$ H_0 : \rho_{xy_i} = 0 $$
H$_i$: $\rho_{yx_i} \neq 0$, where $i = 1,2,3...k$

The statistical test is defined by:

$$
\tau = \frac{\rho_{yx_i}}{\sqrt{(1 - R^2_{yx_i} \times \infty)CR_{y_i}}}\\
\sigma - k - 1
$$

Source: Gujarati (2006)

Partial test between X variables ($X_1$-$X_8$) and Y variable includes a two-tailed significance, given that the present study does not hypothesize a specific directional correlation (i.e., positive and negative correlation) between the two variables of interest. The criteria are as follows:

If $|t_{cal}| > t_{table}(\alpha, n-k-l)$, $H_0$ is rejected—there is a significant partial effect of independent variable ($X_i$) on dependent variable (Y).

If $|t_{cal}| < t_{table}(\alpha, n-k-l)$, $H_0$ is accepted—there is no significant partial effect of independent variable ($X_i$) on dependent variable (Y).

4. RESULT AND DISCUSSION

Multiple Linear Regression Analysis

Prior to the procedure of regression model, we need to tap into a set of assumptions regarding linear regression that, in Gauss-Markov’s term, fits into BLUE (Best Linear Unbiased Estimator) (Gujarati, 2011).

a. Essentially, “best” is defined in a sense that regression line is the “best guess” at using a set of data to make a prediction. Regression line is necessary to express the pattern of relationship that relates two or more series of data. A line that fits the data well will be the one that minimizes the sum of errors. An error results from the observed value of a response variable that differs from the value predicted by the regression line. An efficient estimator, in addition to the “best” property, is unbiased.

b. Statistical inferences in linear regression focus on $\beta$ with the assumption that the relationship between the predictor X and the response Y is linear.

On average, $\bar{X} = \frac{1}{n} \sum X = \frac{1}{n} (x_1 + x_2 + \ldots + x_n)$ is a linear estimator that expresses linear function that fits a predictive model to an observed data set of X values. OLS (Ordinary Least Square) estimates also minimize the squared residuals, thus creating linear estimates.

c. An estimator is said to be unbiased if the estimator’s expected value of $\beta$ is not different from the true parameter value of $\beta$ ($\beta = \beta$).

Four principal assumptions, including normality test, multicollinearity test, heteroscedasticity test and autocorrelation test, are used to justify the linear regression models for the purpose of inferences or predictions.

4.1.1 The Effect of Government Ownership ($X_1$), Profitability ($X_5$), Size ($X_6$), Credit Risk (Non-Performing Loan) ($X_7$) and Management Expense ($X_8$) on Debt to Equity Ratio (Y)

a. Normality Test

The following figure shows a graphical method to decide whether the data come from a normal distribution.

Figure 4.1 P-P Plot of Normality Test
The graphical assessment of normality above shows the points track closely to the diagonal line, indicating that the data set is well modeled by a normal distribution.

**b. Heteroscedasticity Test**

The following figure also uses a graph for the examination of heteroscedasticity.

*Figure 4.2 Scatterplot of Heteroscedasticity*

The scatterplot graph presented in Figure 4.2 shows that there is no obvious patterns in distribution, and the plots spread above and below zero on Y axis, thus indicating the absence of heteroscedasticity. In other words, the regression model conforms to the assumption of homoscedasticity.

**c. Multicollinearity Test**

To indicate the extent to which multicollinearity is present, VIF is calculated for each predictor using SPSS with the following output:

<table>
<thead>
<tr>
<th>Model</th>
<th>Government Ownership (X1)</th>
<th>Profitability (X5)</th>
<th>Size (X6)</th>
<th>Credit Risk (NPL) (X7)</th>
<th>Management Expense (X8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.602</td>
<td>.663</td>
<td>.122</td>
<td>.221</td>
<td>.219</td>
</tr>
</tbody>
</table>

a. Dependent Variable: DER (Y)

The VIF value for each predictor is seen to be far less than 10, i.e., X1 = 1.662, X5 = 1.509, X6 = 8.227, X7 = 4.521, and X8 = 4.570. Thus, multicollinearity is not present as two or more predictors included in the model are not significantly correlated so that the value of one cannot linearly be predicted by that of the other with a substantial degree of accuracy.

**d. Autocorrelation Test**

Linear regression model is tested for autocorrelation. The resulting statistical value d = 1.117 in SPSS (14.0 for Windows).

*Table 4.2 Zero-Order Autocorrelation Test*

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.884*</td>
<td>.782</td>
<td>.723</td>
<td>.86324</td>
<td>1.970</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Management Expense (X8), Government Ownership (X1), Profitability (X5), Credit Risk (NPL) (X7), Size (X6)

b. Dependent Variable: DER (Y)

The test statistic is d = 1.970. This value is computed and compared with the tabulated values of dL and dU in Durbin-Watson table. Critical values of d at α = 0.05 for k = 5 and n = 28 are dL =1.05 and dU = 1.84. Given that the d value lies between the two critical values—dL (1.84) and 4-dU (2.15)—the model does not indicate positive autocorrelation.
Figure 4.3 Zero-Order Autocorrelation Test

Positive Autocorrelation 
Zone of Indecision 
Negative Autocorrelation

Zone of Indecision

\[ d_u = 1.05 \]

\[ 4-d_u = 2.97 \]

\[ d = 1.97 \]

\[ d = 1.84 \]

\[ 4-d = 2.15 \]

e. Analysis of Multiple Linear Regression Equation

After examining that the model assumptions are not violated, multiple linear regression analysis is run to measure the effect of Government Ownership \((X_1)\), Profitability \((X_5)\), Size \((X_6)\), Credit Risk \((X_7)\) and Management Expense \((X_8)\) on DER \((Y)\). The aim is to identify the relationship among the variables and use this relationship to make predictions about the dependent variable based on the observed values of the independent variable in a causal inference.

The multiple regression model is:

\[
Y = \alpha + b_1X_1 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + e
\]

Where

- \(Y\) = DER
- \(X_1\) = Government Ownership
- \(X_5\) = Profitability
- \(X_6\) = Size
- \(X_7\) = Credit Risk (NPL)
- \(X_8\) = Management Expense
- \(\alpha\) = Constant/Intercept
- \(b_{1,5,6,7,8}\) = Regression Coefficient
- \(e\) = Residual Variable

Based on SPSS, the calculation of multiple linear regression yields the following output:

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandard Coefficients</th>
<th>Standard Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>31.125</td>
<td>10.044</td>
<td>3.099</td>
</tr>
<tr>
<td></td>
<td>Government Ownership ((X_1))</td>
<td>1.204</td>
<td>.770</td>
<td>.200</td>
</tr>
<tr>
<td></td>
<td>Profitability ((X_5))</td>
<td>9.210</td>
<td>9.735</td>
<td>.116</td>
</tr>
<tr>
<td></td>
<td>Size ((X_6))</td>
<td>-1.564</td>
<td>.518</td>
<td>-.862</td>
</tr>
<tr>
<td></td>
<td>Credit Risk (NPL) ((X_7))</td>
<td>-.349</td>
<td>.301</td>
<td>-.245</td>
</tr>
<tr>
<td></td>
<td>Management Expense ((X_8))</td>
<td>55.740</td>
<td>10.020</td>
<td>1.184</td>
</tr>
</tbody>
</table>

a. Dependent Variable: DER \((Y)\)

Following the above output, the resulting constant and regression coefficient can be used in multiple linear regression analysis to build a regression equation:

\[
Y = 31.125 + 1.204 X_1 + 9.210 X_5 - 1.564 X_6 - 0.349 X_7 + 55.740 X_8
\]

The interpretations are as follows:

- \(\alpha = 31.125\) If Government Ownership \((X_1)\), Profitability \((X_5)\), Size \((X_6)\), Credit Risk (NPL) \((X_7)\), and Management Expense \((X_8)\) take on zero \((0)\), DER \((Y)\) ends up in 31,125 units.
- \(b_1= 1.204\) If Government Ownership \((X_1)\) increases by one unit, DER \((Y)\) will increase by 1,204 units.
b₁ = 9.210  If Profitability (X₅) increases by one unit and the other variables are held constant, DER (Y) will increase by 9,210 units.

b₂ = -1.564  If Size (X₆) increases one unit and the others are held constant, DER (Y) will decrease by 1,564 units.

b₃ = -0.349  If Credit Risk (NPL) (X₇) increases by one unit and the others are held constant, DER (Y) will decrease 0.349 unit.

b₄ = 55.740  If Management Expense (X₈) increases by one unit and the others are held constant, DER (Y) will increase 55,740 units.

f. Analysis of Coefficient of Correlation and Coefficient of Determination

The calculation and the estimation output of Pearson’s product-moment correlation coefficient are illustrated and discussed below:

Table 4.5 The Value of Product-Moment Correlation Coefficient

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.884</td>
<td>.782</td>
<td>.733</td>
<td>.8624</td>
<td>1.970</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Management Expense (X₈), Government Ownership (X₁), Profitability (X₅), Credit Risk (NPL) (X₇), Size (X₆)

b. Dependent Variable: DER (Y)

The value of correlation coefficient (r) is 0.884, which is interpreted based on the following objective criteria:

Table 4.6 Correlation Coefficient and Its Interpretations

<table>
<thead>
<tr>
<th>Confidence Interval</th>
<th>Relationship Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 - 0.199</td>
<td>Very low</td>
</tr>
<tr>
<td>0.20 - 0.399</td>
<td>Low</td>
</tr>
<tr>
<td>0.40 - 0.599</td>
<td>Moderate</td>
</tr>
<tr>
<td>0.60 - 0.799</td>
<td>High</td>
</tr>
<tr>
<td>0.80 - 1.000</td>
<td>Very High</td>
</tr>
</tbody>
</table>

Source: Sugiyono (2002: 183)

The selection of confidence level for an interval can range in value from -1 to +1; the larger the value, the higher the relationship between variables. In Pearson’s correlation, a value of 0.884 indicates an almost perfect linear relationship between the free variables and the bound variable, simultaneously.

The value of r represents the percentage of variation that can be explained by the formula of determination coefficient:

\[ DC = R^2 \times 100\% \]
\[ DC = (0.884)^2 \times 100\% \]
\[ DC = 78.2\% \]

The resulting value of determination coefficient is 78.2%, indicating an almost perfect degree of linear correlation between the X variables and Y variable. 78.2% of the variance in Y can be explained by the changes in Xs, simultaneously. The remaining 21.8% of the variation in Y is presumed to be due to random variability.

The percentage of partial effect can be obtained by multiplying the value of beta coefficient by that of zero-order coefficient.

Table 4.7 The Value of Beta Coefficient and Zero-Order Coefficient

<table>
<thead>
<tr>
<th>Model</th>
<th>Standardized Coefficients</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td>Zero-Order</td>
</tr>
<tr>
<td>1</td>
<td>Government Ownership (X₁)</td>
<td>.200</td>
</tr>
<tr>
<td></td>
<td>Profitability (X₅)</td>
<td>.116</td>
</tr>
<tr>
<td></td>
<td>Size (X₆)</td>
<td>-.862</td>
</tr>
<tr>
<td></td>
<td>Credit Risk (NPL) (X₇)</td>
<td>-.245</td>
</tr>
<tr>
<td></td>
<td>Management Expense (X₈)</td>
<td>1.184</td>
</tr>
</tbody>
</table>

a. Dependent Variable: DER (Y)
The statistical test is $F$-test. The $F$ statistical value using SPSS is presented below:

**Table 4.8 Estimation Result of Simultaneous Hypothesis Test**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>d.f.</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>58.847</td>
<td>5</td>
<td>11.769</td>
<td>15.794</td>
<td>.000a</td>
</tr>
<tr>
<td>Residual</td>
<td>16.394</td>
<td>22</td>
<td>.745</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>75.241</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Management Expense ($X_9$), Government Ownership ($X_1$), Profitability ($X_5$), Credit Risk (NPL) ($X_7$), Size ($X_6$)

b. Dependent Variable: DER (Y)

In the ANOVA output, the author uses the $F_{cal}$ which is 15.794, and compares it to the probability distribution of $F$-value. For $\alpha=5\%$, $db_1$ (degree of freedom) = $k = 5$, and $db_2 = n - k - 1 = 28 - 5 - 1 = 23$, the resulting $F_{tabl}$ is 2.640.

The simultaneous hypothesis testing is based on these underlying criteria:

- Reject $H_0$ in favor of $H_1$ if $F_{cal} \geq F_{tabl}$; or
- Accept $H_0$ and reject $H_1$ if, otherwise, $F_{cal} \geq F_{tabl}$.

Figure 4.5 Curve of Simultaneous Hypothesis Test

The $F_{cal}$, as it appears in the curve, is greater than $F_{tabl}$ ($2.640 > 2.640$). $H_0$ is therefore accepted, indicating that the group of X variables (Government Ownership, Profitability, Size, Credit Risk, and Management Expense) is jointly significant in DER (Y).

**h. Partial Hypothesis Test (T-Test)**

A T-test, unlike F-test, determines whether a single variable is significant.

1) $H_0 \rightarrow b_{YX1} = 0$ Government Ownership ($X_1$) does not significantly affect DER (Y).
2) $H_0 \rightarrow b_{YX5} = 0$ Profitability ($X_5$) does not significantly affect DER (Y).
3) $H_0 \rightarrow b_{YX6} = 0$ Size ($X_6$) does not significantly affect DER (Y).
4) $H_0 \rightarrow b_{YX7} = 0$ Credit Risk (NPL) ($X_7$) does not significantly affect DER (Y).
5) $H_0 \rightarrow b_{YX8} = 0$ Management Expense ($X_8$) does not significantly affect DER (Y).

$H_1 \rightarrow b_{YX1} \neq 0$ Government Ownership ($X_1$) significantly affects DER (Y).

$H_1 \rightarrow b_{YX5} \neq 0$ Profitability ($X_5$) significantly affects DER (Y).

$H_1 \rightarrow b_{YX6} \neq 0$ Size ($X_6$) significantly affects DER (Y).

$H_1 \rightarrow b_{YX7} \neq 0$ Credit Risk (NPL) ($X_7$) significantly affects DER (Y).

$H_1 \rightarrow b_{YX8} \neq 0$ Management Expense ($X_8$) significantly affects DER (Y).
Significance level $\alpha = 5\%$.

The statistical test is T-test. The T statistical value using SPSS is presented below:

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandard Coefficients</th>
<th>Standard Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>31.125</td>
<td>10.044</td>
<td>3.099</td>
</tr>
<tr>
<td></td>
<td>Government Ownership ($X_1$)</td>
<td>1.204</td>
<td>.770</td>
<td>.200</td>
</tr>
<tr>
<td></td>
<td>Profitability ($X_5$)</td>
<td>9.210</td>
<td>9.735</td>
<td>.116</td>
</tr>
<tr>
<td></td>
<td>Size ($X_6$)</td>
<td>-1.564</td>
<td>.518</td>
<td>-.862</td>
</tr>
<tr>
<td></td>
<td>Credit Risk (NPL) ($X_7$)</td>
<td>-3.49</td>
<td>.301</td>
<td>-.245</td>
</tr>
<tr>
<td></td>
<td>Management Expense ($X_8$)</td>
<td>55.740</td>
<td>10.020</td>
<td>5.563</td>
</tr>
</tbody>
</table>

In the Anova output, $t_{cal}$ of $X_1 = 1.562$, $X_5 = 0.946$, $X_6 = -3.020$, $X_7 = -1.157$ and $X_8 = 5.563$. These values are compared to the probability distribution of the $t$ value. For $\alpha = 5\%$, df (degree of freedom) = $n - k - 1 = 28 - 5 - 1 = 23$ in a two-tailed test, the resulting $t_{table}$ is 2.069 and -2.069.

The partial hypothesis testing is based on these underlying criteria:

- Reject $H_0$ in favor of $H_1$ if $-t_{table} \geq t_{cal} \geq t_{table}$; or
- Accept $H_0$ and reject $H_1$ if $-t_{table} < t_{cal} < t_{table}$.

Unlike the previous finding that the multiple X variables have a significant effect on Y variable, testing only one variable at a time enables the author to analyze the experiment to see how much a single change affects the result; Government Ownership ($X_1$) does not significantly affect DER (Y) ($1.562 < 2.069$); Profitability ($X_5$) does not significantly affect DER (Y) ($0.946 < 2.069$); Size ($X_6$) significantly affects DER (Y) ($-3.020 < -2.069$); Credit Risk (NPL) ($X_7$) does not significantly affect DER (Y) ($-1.157 > -2.069$); and Management Expense ($X_8$) significantly affects DER (Y) ($5.563 > 2.069$).

4.1.1.2 The Effect of Domestic Ownership ($X_2$), Profitability ($X_5$), Size ($X_6$), Credit Risk (NPL) ($X_7$) dan Management Expense ($X_8$) on DER (Y)

a. Normality Test

A graphical display is used to summarize whether the data follow a normal distribution.

![P-P Plot of Normality Test](image)

The distribution of data points follows the normal reference line along the diagonal. This data distribution looks fairly normal, accordingly.

b. Heteroscedasticity Test

Figure 4.7 tests a regression model for heteroscedasticity by a graphical examination of the residuals.

![Scatterplot of Heteroscedasticity](image)
The residual scatterplot provides a visual examination of heteroscedasticity assumption and exhibits a random displacement of points with no clustering or systematic patterns. The points are also seen to be distributed above and below 0 (zero coordinate) on Y axis, indicating no signs of heteroscedasticity. This distribution satisfies the homoscedasticity assumption.

c. Multicollinearity Test
To indicate the extent to which multicollinearity is present, VIF is calculated for each predictor using SPSS with the following output:

Table 4.10 VIF Value of Multicollinearity Test

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficients</th>
<th>Tolerance</th>
<th>VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Domestic Ownership (X2)</td>
<td>.853</td>
<td>1.172</td>
</tr>
<tr>
<td></td>
<td>Profitability (X3)</td>
<td>.925</td>
<td>1.081</td>
</tr>
<tr>
<td></td>
<td>Size (X6)</td>
<td>.852</td>
<td>1.174</td>
</tr>
<tr>
<td></td>
<td>Credit Risk (NPL) (X7)</td>
<td>.944</td>
<td>1.059</td>
</tr>
<tr>
<td></td>
<td>Management Expense (X8)</td>
<td>.909</td>
<td>1.100</td>
</tr>
</tbody>
</table>

*Dependent Variable: DER (Y)

The VIF value for each predictor, as it appears in the table, is far below 10, i.e., X2 = 1,172, X3 = 1,081, X6 = 1,174, X7 = 1,059, and X8 = 1,100. This suggests no multicollinearity is present as these predictors included in the model are not significantly correlated and, thus, are independent predictors.

d. Autocorrelation Test
Linear regression model is tested for autocorrelation that yields statistical value d = 0,784 in SPSS (14.0 for Windows).

Table 4.11 Zero-Order Autocorrelation Test

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.574*</td>
<td>.330</td>
<td>.305</td>
<td>2.30618</td>
<td>732</td>
</tr>
</tbody>
</table>

*Predictors: (Constant), Management Expense (X8), Size (X6), Credit Risk (NPL) (X7), Profitability (X3), Domestic Ownership (X2)

*Dependent Variable: DER (Y)

The test statistic is d = 0.732. This value is computed and compared with the tabulated values of dL and dU in Durbin-Watson table. At α = 0.05, the d value is no greater than dL (1.66). This indicates that the model is positively autocorrelated.
One of the approaches to dealing with an estimation in an autocorrelated linear model is transformation of variables using the estimate of $\rho$ (rho) based on the $d$ value in Durbin-Watson statistic (Gujarati, N. Damodar, Essentials of Econometrics, Second Edition, 1998: 394).

Subsequent to the variable transformation (one-time transformation), the transformed samples are retested for autocorrelation using SPSS (13.0 for Windows) with the following output:

### Table 4.12 Last-Order Autocorrelation Test

<table>
<thead>
<tr>
<th>Model</th>
<th>$R$</th>
<th>$R^2$</th>
<th>Adjusted $R^2$</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.410</td>
<td>.168</td>
<td>.137</td>
<td>1.56189</td>
<td>1.881</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Management Expense ($X_8$), Size ($X_6$), Credit Risk (NPL) ($X_7$), Profitability ($X_5$), Domestic Ownership ($X_2$)

b. Dependent Variable: DER ($Y$)

The test statistic is $d = 1.881$. This value is computed and compared with the tabulated values of $d_L$ and $d_U$ in Durbin-Watson table. Critical values of $d$ at $\alpha = 0.05$ for $k = 5$ and $n = 140$ are $d_L = 1.66$ and $d_U = 1.80$. Given that $d$ value lies between the two critical values—$d_L (1.80)$ and $4-d_U (2.2)$—the model is no longer autocorrelated.

**Figure 4.9 Last-Order Autocorrelation Test**

---

### e. Analysis of Multiple Linear Regression Equation

After all of the assumptions are checked, multiple linear regression analysis is run to examine the effect of the multiple $X$ variables—Domestic Ownership ($X_2$), Profitability ($X_5$), Size ($X_6$), Credit Risk (NPL) ($X_7$), and Management Expense ($X_8$) on $Y$ variable—DER. This identifies a formula to make a prediction about the dependent variable based on the observed values of the independent variables in a causal relationship, i.e.:

$$Y = \alpha + b_2X_2 + b_5X_5 + + b_6X_6 + b_7X_7 + b_8X_8 + e$$

Where:
- $Y$ = DER
- $X_2$ = Domestic Ownership
- $X_5$ = Profitability
- $X_6$ = Size
- $X_7$ = Credit Risk (NPL)
- $X_8$ = Management Expense
- $\alpha$ = Constant/Intercept
- $b_{2,5,6,7,8}$ = Regression Coefficient
- $e$ = Residual Variable

Table 4.13 presents the output of the calculation of multiple linear regression using SPSS statistics.
### Analysis of Correlation Coefficient and Determination Coefficient

Table 4.13: The Output of Regression Coefficient

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandard Coefficients</th>
<th>Standard Coefficients</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
</tr>
<tr>
<td>1</td>
<td>Domestic Ownership (X2)</td>
<td>3.485</td>
</tr>
<tr>
<td></td>
<td>Profitability (X5)</td>
<td>.030</td>
</tr>
<tr>
<td></td>
<td>Size (X6)</td>
<td>1.124</td>
</tr>
<tr>
<td></td>
<td>Credit Risk (NPL) (X7)</td>
<td>1.444</td>
</tr>
<tr>
<td></td>
<td>Management Expense (X8)</td>
<td>.812</td>
</tr>
</tbody>
</table>

The resulting constant and regression coefficient can be used to formulate a linear regression equation:

\[ Y = 0.554 + 3.485 X_2 + 0.030 X_5 + 1.124 X_6 + 1.444 X_7 + 0.812 X_8 \]

The equation is interpreted as follows:

- If Domestic Ownership (X2) increases by one unit, and the others are held constant, DER (Y) will increase by 3.485 units.
- If Profitability (X5) increases by one unit, and the others are held constant, DER (Y) will increase by 0.030 units.
- If Size (X6) increases by one unit, and the others are held constant, DER (Y) will increase by 1.124 units.
- If Credit Risk (NPL) (X7) increases by one unit, and the others are held constant, DER (Y) will increase by 1.444 units.
- If Management Expense (X8) increases by one unit, and the others are held constant, DER (Y) will increase by 0.812 unit.

### Analysis of Correlation Coefficient and Determination Coefficient

Table 4.14 presents the output of correlation coefficient estimation using SPSS statistics.

The resulting value of correlation coefficient \( r \) is 0.410, which is interpreted based on the following objective criteria:

<table>
<thead>
<tr>
<th>Confidence Interval</th>
<th>Correlation Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 - 0.199</td>
<td>Very Low</td>
</tr>
<tr>
<td>0.20 - 0.399</td>
<td>Low</td>
</tr>
<tr>
<td>0.40 - 0.599</td>
<td>Moderate</td>
</tr>
<tr>
<td>0.60 - 0.799</td>
<td>High</td>
</tr>
<tr>
<td>0.80 - 1.000</td>
<td>Very High</td>
</tr>
</tbody>
</table>

Source: Sugiyono (2002: 183)

Pearson \( r = 0.410 \) indicates only a moderate simultaneous correlation between the free variables and the bound variable.

More specifically, the resulting \( r \) value describes the variation percentage in \( Y \) explained by \( X \)s in a determination coefficient formula:

\[
DC = R^2 \times 100% \\
= (0.410)^2 \times 100% \\
= 16.8% \\
\]

The resulting value of determination coefficient is 16.8%, indicating a moderate degree of linear correlation between the \( X \)s and \( Y \). In other words, 16.8% of the variance in \( Y \) can be explained by the
changes in Xs, simultaneously. The remaining 83.2% of the variation in Y is presumed to be due to random variability, not to the regression of X on Y. The coefficient can represent the percentage of partial effect by multiplying the value of beta coefficient by that of zero-order coefficient.

Table 4.16 The Value of Beta Coefficient and Zero-Order Coefficient

<table>
<thead>
<tr>
<th>Model</th>
<th>Standardized Coefficients</th>
<th>Correlations</th>
<th>Beta</th>
<th>Zero-Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Domestic Ownership (X2)</td>
<td>.328</td>
<td>.385</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Profitability (X3)</td>
<td>.037</td>
<td>.033</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Size (X6)</td>
<td>.109</td>
<td>.278</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Credit Risk (NPL) (X7)</td>
<td>.085</td>
<td>.044</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Management Expense (X8)</td>
<td>.044</td>
<td>.146</td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: DER (Y)

1. Variable X2 = 0.328 × 0.385 = 0.126 = 12.6%
2. Variable X3 = 0.037 × 0.033 = 0.001 = 0.1%
3. Variable X6 = 0.109 × 0.278 = 0.030 = 3.0%
4. Variable X7 = 0.085 × 0.044 = 0.004 = 0.4%
5. Variable X8 = 0.044 × 0.146 = 0.006 = 0.6%

g. Simultaneous Hypothesis Test (F-Test)

Below is a set of simultaneously tested hypotheses.

H0 → b_{XYi} = 0 There is no significant effect of Domestic Ownership (X2), Profitability (X3), Size (X6), Credit Risk (NPL) (X7), and Management Expense (X8) on DER (Y).

H1 → b_{XYi} ≠ 0 There is a significant effect of Domestic Ownership (X2), Profitability (X3), Size (X6), Credit Risk (NPL) (X7), and Management Expense (X8) on DER (Y).

Significance level α = 5%.

The statistical test is F-Test. The F statistical value using SPSS is presented below:

Table 4.17 Estimation Result of Simultaneous Hypothesis Test

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>66.031</td>
<td>5</td>
<td>13.206</td>
<td>5.413</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>326.892</td>
<td>134</td>
<td>2.439</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>392.923</td>
<td>139</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Management Expense (X8), Size (X6), Credit Risk (NPL) (X7), Profitability (X3), Domestic Ownership (X2)

b. Dependent Variable: DER (Y)

In the Anova output, the resulting F_{cal} is 5.413, which is compared to the probability distribution of F-value. For α=5%, db1 (degree of freedom) = k = 5, and db2 = n – k – 1 = 140 – 5 – 1 = 134, the resulting F_{table} is 2.282.

The simultaneous test meets these underlying criteria:

Reject H0 in favor of H1 if F_{cal} ≥ F_{table}; or

Accept H0 and, hence, reject H1 if F_{cal} < F_{table}.

Figure 4.10 Curve of Simultaneous Hypothesis Test
The $F_{cal}$ as it appears in the curve, is greater than the $F_{cal} (5,413 > 2,282)$. $H_0$ is therefore accepted, indicating that the group of $X$s (Domestic Ownership, Profitability, Size, Credit Risk, and Management Expense) is jointly significant in DER (Y).

### h. Partial Hypothesis Test (T-Test)

T-test assesses a single regression coefficient at a time based on the hypotheses:

1) $H_0 \rightarrow b_{\chi_2} = 0$ Domestic Ownership ($X_2$) does not significantly affect DER (Y).
2) $H_1 \rightarrow b_{\chi_2} \neq 0$ Domestic Ownership ($X_2$) significantly affects DER (Y).
3) $H_0 \rightarrow b_{\chi_6} = 0$ Size ($X_6$) does not significantly affect DER (Y).
4) $H_1 \rightarrow b_{\chi_6} \neq 0$ Size ($X_6$) significantly affects DER (Y).
5) $H_0 \rightarrow b_{\chi_7} = 0$ Credit Risk (NPL) ($X_7$) does not significantly affect DER (Y).
6) $H_1 \rightarrow b_{\chi_7} \neq 0$ Credit Risk (NPL) ($X_7$) significantly affects DER (Y).
7) $H_0 \rightarrow b_{\chi_8} = 0$ Management Expense ($X_8$) does not significantly affect DER (Y).
8) $H_1 \rightarrow b_{\chi_8} \neq 0$ Management Expense ($X_8$) significantly affects DER (Y).

Level significance $\alpha = 5\%$.

The statistical test is T-test.

The T statistical value using SPSS is presented below:

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandard Coefficients</th>
<th>Standard Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td>1.778</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>.544</td>
<td>.311</td>
<td>3.372</td>
</tr>
<tr>
<td></td>
<td>Domestic Ownership ($X_2$)</td>
<td>3.485</td>
<td>1.033</td>
<td>.328</td>
</tr>
<tr>
<td></td>
<td>Profitability ($X_3$)</td>
<td>.030</td>
<td>.069</td>
<td>.037</td>
</tr>
<tr>
<td></td>
<td>Size ($X_6$)</td>
<td>1.124</td>
<td>.986</td>
<td>.109</td>
</tr>
<tr>
<td></td>
<td>Credit Risk (NPL) ($X_7$)</td>
<td>1.444</td>
<td>1.385</td>
<td>.085</td>
</tr>
<tr>
<td></td>
<td>Management Expense ($X_8$)</td>
<td>.812</td>
<td>1.624</td>
<td>.044</td>
</tr>
</tbody>
</table>

a. Dependent Variable: DER (Y)

In the Anova output, $t_{cal}$ of $X_2 = 3.372, X_3 = 0.431, X_6 = 1.140, X_7 = 1.043$ and $X_8 = 0.500$. These values are compared to the probability distribution of the t value. For $\alpha = 5\%$, df (degree of freedom) = $n - k - 1 = 140 - 5 - 1 = 134$ in a two-tailed test, the resulting $t_{table}$ is 1.978 and -1.978.

The partial test meets these underlying criteria:

Reject $H_0$ in favor of $H_1$ if $-t_{table} \leq t_{cal} \leq t_{table}$; or

Accept $H_0$ and, hence, reject $H_1$ if $-t_{table} < t_{cal} < t_{table}$.

Testing one variable at a time helps pinpoint which changes of $X$s have an effect on Y based on those criteria with the following results: Domestic Ownership ($X_2$) significantly affects DER (Y) ($3.372 > 11.978$); Profitability ($X_3$) does not significantly affect DER (Y) ($0.431 < 1.978$); Size ($X_6$) does not significantly affect DER (Y) ($1.140 < 1.978$); Credit Risk (NPL) ($X_7$) does not significantly affect DER (Y) ($1.043 < 1.978$); and Management Expense ($X_8$) does not significantly affect DER (Y) ($0.500 < 1.978$).

### 4.1.1.3 The Effect of Mixed Ownership ($X_4$), Profitability ($X_3$), Size ($X_6$), Credit Risk (NPL) ($X_7$) and Management Expense ($X_8$) on DER (Y)

#### a. Normality Test

Figure 4.12 presents a graphical method to compute the likelihood that the data come from a normal distribution.
A plot of points that lie approximately on a straight line or scatter around the reference (regional) line indicates a normally-distributed set of data.

b. **Heteroscedasticity Test**
The nature of heteroscedasticity is examined using a graphical method below:

![Figure 4.13 Scatterplot of Heteroscedasticity](image)

The scatterplot exhibits no established patterns, and the data points lie above and below zero coordinate on Y axis. This indicates no heteroscedasticity of residuals, thus yielding homoscedastic data.

c. **Multicollinearity Test**
The following output indicates the VIF value for each free variable using SPSS statistics:

![Table 4.19 VIF Value of Multicollinearity Test](image)

The resulting VIF value for each free variable goes below 10, i.e., X3 = 1.058, X5 = 3.347, X6 = 1.377, X7 = 1.374, and X8 = 4.536. A VIF below 10 does not indicate high correlation among these free variables in the regression model, representing a linear combination of the independent variables.

d. **Autocorrelation Test**
The linear regression model is tested for autocorrelation that yields statistical value d = 0.999 in SPSS (14.0 for Windows).

![Table 4.20 Zero-Order Autocorrelation Test](image)
The test statistic is \( d = 1.279 \). This value is computed and compared with the tabulated values of \( d_L \) and \( d_U \) in Durbin-Watson table. The critical values at \( \alpha = 0.05 \) for \( k = 5 \) and \( n = 44 \) are \( d_L = 1.29 \) and \( d_U = 1.78 \). Given that the \( d \) value does not exceed \( d_L \) ((1.29), the model is assumed to be positively autocorrelated.

**Figure 4.14 Zero-Order Autocorrelation Test**

When autocorrelation is problematic, the predictor variables are transformed (one time) using the estimate of \( \rho \) (rho) based on the \( d \) value in Durbin-Watson statistic (Gujarati, N. Damodar, *Essentials of Econometrics, Second Edition*, 1998: 394).

Following the one-time variable transformation, autocorrelation test is rerun using SPSS (13.0 for Windows).

**Table 4.21 Last-Order Autocorrelation Test**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.604</td>
<td>.365</td>
<td>.281</td>
<td>1.56770</td>
<td>1.893</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Management Expense (X8), Mixed Ownership (X3), Credit Risk (NPL) (X7), Size (X6), Profitability (X5)

b. Dependent Variable: DER (Y)

The test statistic is \( d = 1.893 \). This value is computed and compared with the tabulated values of \( d_L \) and \( d_U \) in Durbin-Watson table. Critical values of \( d \) at \( \alpha = 0.05 \) for \( k = 5 \) and \( n = 44 \) are \( d_L = 1.29 \) and \( d_U = 1.78 \). Given that \( d \) value lies in the range of the two critical values—\( d_u (1.78) \) and \( 4-d_u (2.22) \)—the model is no longer autocorrelated.

**Figure 4.15 Last-Order Autocorrelation Test**

e. Analysis of Multiple Linear Regression Equation

Multiple Linear Regression attempts to model the causal relationship between the group of Xs—Mixed Ownership (X3), Profitability (X5), Size (X6), Credit Risk (NPL) (X7) and Management Expense (X8)—and Y (DER) by fitting a linear equation to the observed data, i.e.: 

\[ Y = \alpha + b_3X_3 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + e \]

Where
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p-ISSN: 1978-2241 e-ISSN:2541-1047

Maesaroh

Y = DER
X₃ = Mixed Ownership
X₅ = Profitability
X₆ = Size
X₇ = Credit Risk (NPL)
X₈ = Management Expenses
α = Constant/Intercept
β = Regression Coefficient
e = Residual Variable

Y = 0,778 + 0,203 X₃ + 0,819 X₅ – 13,783 X₆ + 0,661 X₇ + 1,048 X₈

The equation is interpreted as follows:

α = 0,778  If Mixed Ownership (X₃), Profitability (X₅), Size (X₆), Credit Risk (NPL) (X₇) and Management Expense (X₈) take on zero (0), DER (Y) will end up in 0,778 unit.

b₃ = 0,203  If Mixed Ownership (X₃) increases by one unit and the others are held constant, DER (Y) will increase by 0,203 unit.

b₅ = 0,819  If Profitability (X₅) increases by one unit and the others are held constant, DER (Y) will increase by 0,819 unit.

b₆ = –13,783  If Size (X₆) increases by one unit and the others are held constant, DER (Y) will decrease by 13,783 units.

b₇ = 0,661  If Credit Risk (NPL) (X₇) increases by one unit and the others are held constant, DER (Y) will increase by 0,661 unit.

b₈ = 1,048  If Management Expense (X₈) increases by one unit and the others are held constant, DER (Y) will increase by 1,048 units.

f. Analysis of Correlation Coefficient and Determination Coefficient

The resulting constant and regression coefficient can be used to formulate a linear regression equation:

Y = 0.778 + 0.203 X₃ + 0.819 X₅ – 13.783 X₆ + 0.661 X₇ + 1.048 X₈

The resulting value of correlation coefficient (r) is 0.604, which is interpreted based on the following objective criteria:

Table 4.24 Correlation Coefficient and Its Interpretation

<table>
<thead>
<tr>
<th>Confidence Interval</th>
<th>Correlation Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 - 0.199</td>
<td>Very Low</td>
</tr>
<tr>
<td>0.20 - 0.399</td>
<td>Low</td>
</tr>
<tr>
<td>0.40 - 0.599</td>
<td>Moderate</td>
</tr>
<tr>
<td>0.60 - 0.799</td>
<td>High</td>
</tr>
<tr>
<td>0.80 - 1.000</td>
<td>Very High</td>
</tr>
</tbody>
</table>

Source: Sugiyono (2002:183)
Pearson $r = 0.604$ suggests a high linear simultaneous correlation between the free variables and the bound variable.

The resulting $r$ value corresponds to the percentage of the variation that measures how well the variation of $Xs$ explains that of $Y$ defined in the determination coefficient formula below:

$$ CD = R^2 \times 100
given by

$$ CD = (0.604)^2 \times 100
resulting in $36.5\%$.

The resulting value of determination coefficient of $36.5\%$ implies that $36.5\%$ of the variance in $Y$ can be simultaneously explained by the changes in $Xs$. The remaining $63.5\%$ of the variation in $Y$ is presumed to be subject to random variability, not to the regression of $X$ on $Y$.

The percentage of partial effect resulting from the multiplication of the value of beta coefficient by that of zero-order coefficient is shown in Table 4.25.

**Table 4.25 Value of Beta Coefficient and Zero-Order Coefficient**

<table>
<thead>
<tr>
<th>Model</th>
<th>Standardized Coefficients</th>
<th>Correlations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beta</td>
<td>Zero-Order</td>
</tr>
<tr>
<td>1</td>
<td>Mixed Ownership ($X_3$)</td>
<td>.009</td>
</tr>
<tr>
<td></td>
<td>Profitability ($X_3$)</td>
<td>.338</td>
</tr>
<tr>
<td></td>
<td>Size ($X_6$)</td>
<td>-.362</td>
</tr>
<tr>
<td></td>
<td>Credit Risk (NPL) ($X_7$)</td>
<td>.124</td>
</tr>
<tr>
<td></td>
<td>Management Expense ($X_8$)</td>
<td>.740</td>
</tr>
</tbody>
</table>

a. Dependent Variable: DER (Y)

1. Variable $X_3 = 0.009 \times 0.250 = 0.002 = 0.2\%$
2. Variable $X_3 = 0.338 \times -0.108 = -0.037 = -3.7\%$
3. Variable $X_6 = -0.362 \times -0.221 = 0.080 = 8.0\%$
4. Variable $X_7 = 0.124 \times 0.227 = 0.028 = 2.8\%$
5. Variable $X_8 = 0.740 \times 0.393 = 0.291 = 29.1\%$

**g. Simultaneous Hypothesis Test (F-Test)**

Below is a set of simultaneously-tested hypotheses:

$H_0 \rightarrow b_{YX} = 0$  There is no significant effect of Mixed Ownership ($X_3$), Profitability ($X_3$), Size ($X_6$), Credit Risk (NPL) ($X_7$), and Management Expense ($X_8$) on DER (Y).

$H_a \rightarrow b_{YX} \neq 0$  There is a significant effect of Mixed Ownership ($X_3$), Profitability ($X_3$), Size ($X_6$), Credit Risk (NPL) ($X_7$), and Management Expense ($X_8$) on DER (Y).

Significance level is $\alpha = 5\%$.

The statistical test is F-test.

The $F$ statistical value using SPSS is presented below:

**Table 4.26 Estimation Result of Simultaneous Hypothesis Test**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>53.569</td>
<td>5</td>
<td>10.718</td>
<td>4.361</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>93.392</td>
<td>38</td>
<td>2.458</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>146.960</td>
<td>43</td>
<td>38</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Management Expense ($X_3$), Mixed Ownership ($X_3$), Credit Risk (NPL) ($X_7$), Size ($X_6$), Profitability ($X_3$)

b. Dependent Variable: DER (Y)

In the Anova output, the resulting $F_{cal}$ is 4.361, which is compared to the probability distribution of $F$-value. At $\alpha=5\%$, $db_1$ (degree of freedom) $= k = 5$, and $db_2 = n – k – 1 = 44 – 5 – 1 = 38$, the resulting $F_{table}$ is 2.463.

The simultaneous test meets these underlying criteria:

Reject $H_0$ in favor of $H_1$ if $F_{cal} \geq F_{table}$, or

Accept $H_0$ and, hence, reject $H_1$ if $F_{cal} < F_{table}$.
The $F_{cal}$, as it appears in the curve, is greater than the $F_{table}$ (4.361 > 2.463). $H_0$ is therefore accepted, indicating that the group of Xs (Mixed Ownership, Profitability, Size, Credit Risk, and Management Expenses) is jointly significant in DER (Y).

**h. Partial Hypothesis Test (T-Test)**

T-test examines the significance of a single regression coefficient at a time.

1) $H_0 \rightarrow b_{X_2} = 0$ Mixed Ownership ($X_2$) does not significantly affect DER (Y);

   $H_1 \rightarrow b_{X_2} \neq 0$ Mixed Ownership ($X_2$) significantly affects DER (Y).

2) $H_0 \rightarrow b_{X_3} = 0$ Profitability ($X_3$) does not significantly affect DER (Y);

   $H_1 \rightarrow b_{X_3} \neq 0$ Profitability ($X_3$) significantly affects DER (Y).

3) $H_0 \rightarrow b_{X_4} = 0$ Size ($X_4$) does not significantly affect (Y);

   $H_1 \rightarrow b_{X_4} \neq 0$ Size ($X_4$) significantly affects DER (Y).

4) $H_0 \rightarrow b_{X_5} = 0$ Credit Risk (NPL) ($X_5$) does not significantly affect DER (Y);

   $H_1 \rightarrow b_{X_5} \neq 0$ Credit Risk (NPL) ($X_5$) significantly affects DER (Y).

5) $H_0 \rightarrow b_{X_6} = 0$ Management Expense ($X_6$) does not significantly affect DER (Y);

   $H_1 \rightarrow b_{X_6} \neq 0$ Management Expense ($X_6$) significantly affects DER (Y).

Significance level is $\alpha = 5\%$.

The statistical test is T-test.

The t statistical value using SPSS is presented below:

<table>
<thead>
<tr>
<th>Coefficient</th>
<th>Unstandard Coefficients</th>
<th>Standard Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4.27 Estimation Result of Partial Hypothesis Test

In the anova output, the resulting $t_{cal}$ of $X_3 = 0.061$, $X_4 = 1.446$, $X_5 = -2.128$, $X_6 = 0.834$ and $X_7 = 3.207$. These values are compared to the probability distribution of the T-value. At $\alpha = 5\%$, db (degree of freedom) = $n - k - 1 = 44 - 5 - 1 = 38$ in a two-tailed test, the resulting $t_{table}$ is 2.024 and -2.024.

The partial test meets these underlying criteria:

Reject $H_0$ if $-t_{table} \leq t_{cal} \leq t_{table}$; or

Accept $H_0$ and, hence, reject $H_1$ if $-t_{table} < t_{cal} < t_{table}$.

The partial t-test assesses, as Xs are not highly correlated, which X actually creates the effect on Y based on those criteria with the following results: Mixed Ownership ($X_2$) does not significantly affect DER (Y) ($0.061 < 2.024$); Profitability ($X_3$) does not significantly affect DER (Y) ($1.446 < 2.024$), Size ($X_4$) does
not significantly affect DER (Y) (-2.128 > -2.024); Credit Risk (NPL) (X7) does not significantly affect DER (Y) (0.834 < 2.024); and Management Expense (X8) significantly affects DER (Y) (3.207 > 2.024).

4.1.1.4 The Effect of Foreign Ownership (X4), Profitability (X5), Size (X6), Credit Risk (NPL) (X7) and Management Expenses (X8) on DER (Y)

a. Normality Test
The graphical method below provides the examination of the data normality.

Figure 4.17 P-P Plot of Normality Test

The points on the plot align with the diagonal line, and, thus, the data set conforms to the normal distribution.

b. Heteroscedasticity Test
Figure 4.18 presents a graphical procedure to check for the potential heteroscedasticity in the application of regression analysis.

Figure 4.18 Scatterplot of Heteroscedasticity

The data points stray from the line in a non obvious fashion, with the distribution of points scattering randomly around zero on Y axis, thus no signs of heteroscedasticity. The homoscedasticity assumption of the regression model is therefore thoroughly verified for the predictive purposes.

c. Multicollinearity Test
Multicollinearity is tested by examining the VIF output for each free variable using SPSS statistics.

Tabel 4.28 VIF Value of Multicollinearity Test

<table>
<thead>
<tr>
<th>Coefficients</th>
<th>Model</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Tolerance</td>
</tr>
<tr>
<td>1</td>
<td>Foreign Ownership (X4)</td>
<td>.762</td>
</tr>
<tr>
<td></td>
<td>Profitability (X5)</td>
<td>.869</td>
</tr>
<tr>
<td></td>
<td>Size (X6)</td>
<td>.875</td>
</tr>
<tr>
<td></td>
<td>Credit Risk (NPL) (X7)</td>
<td>.827</td>
</tr>
<tr>
<td></td>
<td>Management Expense (X8)</td>
<td>.904</td>
</tr>
</tbody>
</table>

a. Dependent Variable: DER (Y)
The resulting VIF for each free variable stays below 10, i.e., X4 = 1.312, X5 = 1.151, X6 = 1.143, X7 = 1.209, and X8 = 1.106. A VIF below 10 indicates insignificant correlation among these variables, thus making them independent of each other.

d. Autocorrelation Test
The regression model is tested for autocorrelation in Durbin-Watson test. The resulting d statistic value is 1.615 in SPSS (14.0 for Windows).
Table 4.29 Zero-Order Autocorrelation

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.591*</td>
<td>.349</td>
<td>.305</td>
<td>2.54306</td>
<td>.735</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Management Expense (X8), Size (X6), Profitability (X5), Credit Risk (NPL) (X7), Foreign Ownership (X4)

b. Dependent Variable: DER (Y)

The table results in a value of 0.735. This value is compared with the lower and upper bounds in the Durbin-Watson table. At $\alpha = 0.05$ for $k = 5$ and $n = 80$, the resulting $d_L = 1.51$ and $d_U = 1.77$. This model runs into positive autocorrelation.

Figure 4.19 Zero-Order Autocorrelation

To remove autocorrelation, the variables are transformed (two times) using the estimate of $\rho$ (rho) based on the $d$ statistic in the Durbin-Watson test (Gujarati, N. Damodar, Essentials of Econometrics, Second Edition, 1998: 394).

Following the two-time transformation, autocorrelation test is rerun using SPSS (13.0 for Windows) with the following output:

Table 4.30 Last-Order Autocorrelation

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.475*</td>
<td>.226</td>
<td>.174</td>
<td>1.71175</td>
<td>1.861</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Management Expense (X8), Profitability (X5), Foreign Ownership (X4), Credit Risk (NPL) (X7), Size (X6)

b. Dependent Variable: DER (Y)

The $d$ value in the SPSS output is 1.861, which is compared to $d_L$ and $d_U$ in the Durbin-Watson table. At $\alpha = 0.05$, for $k = 5$ and $n = 80$, the resulting $d_L = 1.51$ and $d_U = 1.77$. Given that the $d$ value stands in the range of $d_L (1.77)$ and $4-d_U (2.23)$, the model no longer remains autocorrelated.

Figure 4.20 Last-Order Autocorrelation
e. Analysis of Multiple Linear Regression Equation

Multiple linear regression requires the relationship between the independent and dependent variables to be linear. The four principal assumptions of linearity have been verified where the regression model does not violate each of the aforementioned assumptions. These assumptions justify the use of multiple linear regression model for purposes of inference or prediction about the effect of Foreign Ownership (X4), Profitability (X5), Size (X6), Credit Risk (NPL) (X7) and Management Expense (X8) on DER (Y).

The model for multiple linear regression is defined by:

\[ Y = \alpha + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + b_8 X_8 + e \]

Where

- \( Y = \) DER
- \( X_4 = \) Foreign Ownership
- \( X_5 = \) Profitability
- \( X_6 = \) Size
- \( X_7 = \) Credit Risk (NPL)
- \( X_8 = \) Management Expense
- \( \alpha = \) Constant/Intercept
- \( b_4, b_5, b_6, b_7, b_8 = \) Regression Coefficient
- \( e = \) Residual Variable

The calculation output of multiple linear regression in SPSS statistics is presented below:

Table 4.31 The Output of Regression Coefficient

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandard Coefficients</th>
<th>Standard Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1.096</td>
<td>.479</td>
<td>-.010</td>
<td>2.287</td>
</tr>
<tr>
<td>Foreign Ownership (X4)</td>
<td>-0.75</td>
<td>.772</td>
<td>0.477</td>
<td>0.479</td>
</tr>
<tr>
<td>Profitability (X5)</td>
<td>2.139</td>
<td>.605</td>
<td>.495</td>
<td>3.533</td>
</tr>
<tr>
<td>Size (X6)</td>
<td>-0.477</td>
<td>1.330</td>
<td>1.096</td>
<td>1.470</td>
</tr>
<tr>
<td>Credit Risk (NPL) (X7)</td>
<td>1.867</td>
<td>2.569</td>
<td>0.727</td>
<td>.772</td>
</tr>
<tr>
<td>Management Expense (X8)</td>
<td>-3.204</td>
<td>6.381</td>
<td>-0.502</td>
<td>.502</td>
</tr>
</tbody>
</table>

The resulting constant and regression coefficient can be used to formulate a linear regression equation:

\[ Y = 1.096 - 0.075 X_4 + 2.139 X_5 - 0.477 X_6 + 1.867 X_7 - 3.204 X_8 \]

The equation is interpreted as follows:

- \( \alpha = 1.096 \) If Foreign Ownership (X4), Profitability (X5), Size (X6), Credit Risk (NPL) (X7) and Management Expense (X8) take on zero (0), DER (Y) will end up in 1.096 units.
- \( b_4 = -0.075 \) If Foreign Ownership (X4) increases by one unit and the others are held constant, DER (Y) will decrease by 0.075 unit.
- \( b_5 = 2.139 \) If Profitability (X5) increases by one unit and the others are held constant, DER (Y) will increase by 2.139 units.
- \( b_6 = -0.477 \) If Size (X6) increases by one unit and the others are held constant, DER (Y) will decrease by 0.477 unit.
- \( b_7 = 1.867 \) If Credit Risk (NPL) (X7) increases by one unit and the others are held constant, DER (Y) will increase by 1.867 units.
- \( b_8 = -3.204 \) If Management Expense (X8) increases by one unit and the others are held constant, DER (Y) will decrease by 3.204 units.

f. Analysis of Correlation Coefficient and Determination Coefficient

Table 4.32 presents the output of correlation coefficient estimation using SPSS statistics.

Table 4.32 The Value of Product-Moment Correlation Coefficient

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.475*</td>
<td>.226</td>
<td>.174</td>
<td>1.71745</td>
<td>1.861</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Management Expense (X8), Profitability (X5), Foreign Ownership (X4), Credit Risk (NPL) (X7), Size (X6)
b. Dependent Variable: DER (Y)
The resulting value of correlation coefficient \( r \) is 0.475, which is interpreted based on the following objective criteria:

<table>
<thead>
<tr>
<th>Confidence Interval</th>
<th>Correlation Degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 - 0.199</td>
<td>Very Low</td>
</tr>
<tr>
<td>0.20 - 0.399</td>
<td>Low</td>
</tr>
<tr>
<td>0.40 - 0.599</td>
<td>Moderate</td>
</tr>
<tr>
<td>0.60 - 0.799</td>
<td>High</td>
</tr>
<tr>
<td>0.80 - 1.000</td>
<td>Very High</td>
</tr>
</tbody>
</table>

Source: Sugiyono (2002: 183)

Pearson \( r = 0.475 \) indicates only a moderate simultaneous correlation between the free variables and the bound variable.

The \( r \) value shows the variation percentage in \( Y \) which is explained by all of the \( X \)s altogether in a determination coefficient formula:

\[
CD = R^2 \times 100\% = (0.475)^2 \times 100\% = 22.6\% 
\]

The resulting value of determination coefficient of 22.6% indicates that 22.6% of the variation in \( Y \) can be simultaneously explained by the changes in \( X \)s. The remaining 77.4% of the variation in \( Y \) accounts for random variability, not for the regression of \( X \) on \( Y \).

The coefficient corresponds with the percentage of partial effect by multiplying the value of beta coefficient by that of zero-order coefficient.

<table>
<thead>
<tr>
<th>Model</th>
<th>Foreign Ownership (( X_4 ))</th>
<th>Profitability (( X_5 ))</th>
<th>Size (( X_6 ))</th>
<th>Credit Risk (NPL) (( X_7 ))</th>
<th>Management Expense (( X_8 ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>-.010</td>
<td>.495</td>
<td>-.050</td>
<td>.079</td>
<td>-.055</td>
</tr>
</tbody>
</table>

\[ a. \text{Dependent Variable: DER (Y)} \]

1. Variable \( X_3 = -0.010 \times -0.056 = 0.001 = 0.1 \% \)
2. Variable \( X_5 = 0.495 \times 0.461 = 0.228 = 28.8 \% \)
3. Variable \( X_6 = -0.050 \times 0.290 = -0.015 = -1.5 \% \)
4. Variable \( X_7 = 0.079 \times 0.085 = 0.007 = 0.7 \% \)
5. Variable \( X_8 = -0.055 \times -0.091 = 0.005 = 0.5 \% \)

g. **Simultaneous Hypothesis Test (F-Test)**

The simultaneously-tested hypotheses are as follows:

\[ H_0 \rightarrow b_{YX_i} = 0 \quad \text{There is no significant effect of Foreign Ownership (}\( X_4 \text{), Profitability (}\( X_5 \text{), Size (}\( X_6 \text{), Credit Risk (NPL) (}\( X_7 \text{), and Management Expense (}\( X_8 \text{) on DER (Y).)}\]

\[ H_a \rightarrow b_{YX_i} \neq 0 \quad \text{There is a significant effect of Foreign Ownership (}\( X_4 \text{), Profitability (}\( X_5 \text{), Size (}\( X_6 \text{), Credit Risk (NPL) (}\( X_7 \text{), and Management Expense (}\( X_8 \text{) on DER (Y).)}\]

The significance level is \( \alpha = 5\% \).

The statistical test is F-test.

The F statistical value using SPSS is presented below:

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>63.307</td>
<td>5</td>
<td>12.661</td>
<td>4.321</td>
<td>.002*</td>
</tr>
<tr>
<td>Residual</td>
<td>216.626</td>
<td>74</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>280.133</td>
<td>79</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[ * \text{Dependent Variable: DER (Y)} \]
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a. Predictors: (Constant), Management Expense (X₈), Profitability (X₅), Foreign Ownership (X₄), Credit Risk (NPL) (X₇), Size (X₆)

b. Dependent Variable: DER (Y)

In the Anova output, the resulting F_cal is 4,321, which is compared to the probability distribution of F-value. At α=5%, df₁ (degree of freedom) = k = 5, and df₂ = n – k – 1 = 80 – 5 – 1 = 74, the resulting F_table is 2,338.

The simultaneous test meets these underlying criteria:
Reject H₀ in favor of H₁ if F_cal ≥ F_table; or
Accept H₀ and, hence, reject H₁ if F_cal < F_table.

Figure 4.21 Curve of Simultaneous Hypothesis Test

The F_cal, as it appears in the curve, is greater than the F_table (4,321 > 2,338). H₀ is therefore accepted, indicating that the group of Xs (Foreign Ownership, Profitability, Size, Credit Risk, and Management Expenses) is jointly significant in DER (Y).

h. Partial Hypothesis Test (T-Test)

T-test assesses a single regression coefficient at a time based on the hypotheses:

1) H₀ → bₘ₄ = 0  Foreign Ownership (X₄) does not significantly affect DER (Y);
   H₁ → bₘ₄ ≠ 0  Foreign Ownership (X₄) significantly affects DER (Y).
2) H₀ → bₘ₅ = 0  Profitability (X₅) does not significantly affect DER (Y);
   H₁ → bₘ₅ ≠ 0  Profitability (X₅) significantly affects DER (Y).
3) H₀ → bₘ₆ = 0  Size (X₆) does not significantly affect DER (Y);
   H₁ → bₘ₆ ≠ 0  Size (X₆) significantly affects DER (Y).
4) H₀ → bₘ₇ = 0  Credit Risk (NPL) (X₇) does not significantly affect DER (Y);
   H₁ → bₘ₇ ≠ 0  Credit Risk (NPL) (X₇) significantly affects DER (Y).
5) H₀ → bₘ₈ = 0  Management Expense (X₈) does not significantly affect DER (Y);
   H₁ → bₘ₈ ≠ 0  Management Expense (X₈) significantly affects DER (Y).

The significance level is α = 5%.

The statistical test is T-test.

The T statistical value using SPSS is presented below:

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficient*</th>
<th>Standard Error</th>
<th>Beta</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Constant)</td>
<td>1.096</td>
<td>.479</td>
<td></td>
<td>2.287</td>
<td>.025</td>
</tr>
<tr>
<td>Foreign Ownership (X₄)</td>
<td>-.075</td>
<td>.772</td>
<td>-.010</td>
<td>-0.973</td>
<td>.923</td>
</tr>
<tr>
<td>Profitability (X₅)</td>
<td>2.139</td>
<td>.605</td>
<td>.495</td>
<td>3.533</td>
<td>.001</td>
</tr>
<tr>
<td>Size (X₆)</td>
<td>-.477</td>
<td>1.330</td>
<td>-.050</td>
<td>-0.359</td>
<td>.721</td>
</tr>
<tr>
<td>Credit Risk (NPL) (X₇)</td>
<td>1.867</td>
<td>2.569</td>
<td>.079</td>
<td>.727</td>
<td>.470</td>
</tr>
<tr>
<td>Management Expense (X₈)</td>
<td>-3.204</td>
<td>6.381</td>
<td>-.055</td>
<td>-0.502</td>
<td>.617</td>
</tr>
</tbody>
</table>

a. Dependent Variable: DER (Y)
In the Anova output, $t_{cul} = -0.097$, $X_{6} = 3.533$, $X_{7} = -0.359$, $X_{8} = 0.727$ and $X_{9} = -0.502$. These values are compared to the probability distribution of the $T$-value. At $\alpha = 5\%$, $db$ (degree of freedom) = n $– k - 1 = 80 – 5 – 1 = 74$ in a two-tailed test, the resulting $t_{val}$ is $1.993$ and $-1.993$.

The partial test meets these underlying criteria:

Reject $H_{0}$ in favor of $H_{1}$ if $t_{cul} \geq t_{\alpha/2}$ or $t_{cul} \leq -t_{\alpha/2}$.

Accept $H_{0}$ if $t_{cul} < t_{\alpha/2} < t_{cul} < -t_{\alpha/2}$.

The criteria predict $Y$ on the basis of $X$s with the following outcomes; Foreign Ownership ($X_{7}$) does not significantly affect DER ($Y$) ($-0.097 > -1.993$); Profitability ($X_{6}$) significantly affects DER ($Y$) ($3.533 > 1.993$); Size ($X_{8}$) does not significantly affect DER ($Y$) ($-0.359 > -1.993$); Credit Risk (NPL) ($X_{7}$) does not significantly affect DER ($Y$) ($0.727 < 1.993$); and Management Expense ($X_{9}$) significantly affects DER ($Y$) ($-0.502 > -1.993$).

The result of hypothesis test confirms the insignificant partial effect of ownership structure on capital structure. The proportion of firm ownership does not measure the extent of debt instrument that allows financial latitude. Prior data reflect that firms take on debt financing more heavily over the years, and the ownership structure is bound to remain stable (Haruman, 2008) and (Imas, et al., 2015).

Profitability has a weak effect on capital structure decision. Krishnan (1996), Badhuri (2002), Moh’d (1998), Majumdar (1999) (in Yuke and Hadri, 2005) and Imas, et al. (2015) point out that a firm which earns higher return on equity when its needs for external funding or debt decreases to fund new investment is able to earn at a higher rate than it pays for borrowed funds. A high-performance firm is expected to use its internal funds (retained earnings) and, thus, relies less on debt financing in its capital structure.

The partial effect of firm size on capital structure also shows insignificant result. Rista and Bambang (2011), Heruman (2008) and Imas, et al. (2015) assert that a managerial decision that affects the financial condition of a firm is not greatly influenced by how much of total assets have been allocated among current and fixed assets.

Consistent with Haruman (2008) and Imas, et al. (2015), the present study finds measuring and managing credit risk is of central importance for financial institutions and has no significant effect on the dynamic capital structure adjustment, notwithstanding. Exposure to credit risk across different firms varies widely. However, the tendency to take on a great deal of high-yield debt remains high.

Management expense, as opposed to other previous variables, has major potential effect on the factors that influence the decisions concerning the capital structure. In accordance with Siringoringo (2012) and Imas, et al. (2015), the present study finds that relatively high management expenses commonly indicate an aggressive total cost associated with the increase in assets, thus exceeding the marginal costs of imposing a leverage ratio increase.

5. CONCLUSION

By considering the data of the entire conventional banks listed on IDX from 2013-2016, this present study empirically examines the effects of ownership structures and bank-specific characteristics on the capital structures. It has provided an in-depth understanding of firms’ capital structure needs in a qualitative manner, highlighting the importance of evaluating how the capital structures help finance their assets, day-to-day operations and future growth. To this end, multiple linear regression is performed to gather and represent the predictive results concerning the correlation of capital structures and a number of variables. All hypotheses are confirmed insignificant, except one. The findings are statistically insignificant with respect to the relationship between ownership structure and capital structure; the relationship between profitability and capital structure; the relationship between firm size and capital structure; and the relationship between credit risk and capital structure. When it comes to management expenses, however, it can be ascertained that there is a significant relationship in the framework for evaluating the dynamic capital structure adjustment. These relationships can potentially affect a firm’s financial decision and its adjustment and how firms are relying more heavily on the banking sector for their debt financing needs.

6. SUGGESTION

This study contributes to the extant literature on capital structures in banking institutions and fills the gap in the wide strand of literature by providing empirical evidence of the relationship between ownership structures and bank-specific characteristics in terms of how the observed firms manage their capital structures. There are different subjects of analysis in order to extrapolate key themes and results that help predict future trends, shed light on previously hidden disciplinary pathways that can be applied to practice and provide means for understanding relevant pivotal research issues based on research approaches appropriate for the development of knowledge in a given study. In addition, the author suggests these specific aspects be observed in more depth.
other variables useful for the description of the sample clusters to emphasize large-scale and representative sets of data and to provide a solid foundation for future research efforts;

2. the policy of each bank ownership to address key elements incorporated into the internal loan guidelines, standards and procedures in all geographic areas where the banks are active.

REFERENCES


Gujarati, Damodar N. 2006, Dasar-dasar Ekonometrika, edisi Ketiga, Penerbit Erlangga, Jakarta

Imas, Maesaroh et al., 2016, Struktur Kepemilikan dan Karakteristik specific Bank terhadap Struktur Modal Pada Bank Umum di Indonesia, Hasil Penelitian yang belum dipublikasikan (proses publish AFEBI ECONOMIC Review).


Mian, Atif., Foreign, Private Domestic, And Goverments Banks : New Evidence from Emerging Markets, Graduate School of Business, University of Chicago, Chicago.


www.bi.go.id/direktoriperbankanindonesia
www.bi.go.id/statistikperbankanindonesia