Analysis of the Effect of Company Fundamental Factors on Capital Structure Optimization (Case Study of Electricity Companies in Indonesia)

[1]Saufi,   [2]Dr. Fajri Adrianto, SE, M.Bus
[1] Master Student,   [2]Head (Dr). Fajri Adrianto, SE, M.Bus
Master Department of Management, Faculty of Economics, Andalas University,
Padang City, Indonesia
Email: saufi.st@gmail.com

Abstract: *This research was conducted to determine the effect of several fundamental factors such as: profitability, fixed assets ratio, growth and exchange rate risk to leverage (capital structure) in the company PT XYZ (The Electricity Company in Indonesia). Secondary data sourced from financial reports and other sources in time-series are processed by statistical methods and analyzed in such a way as to produce several important things as follows. Profitability and growth have a negative but not significant effect on leverage. Fixed asset ratio has a negative influence and is significant to leverage. However, it is different from the variable exchange rate risk which gives a positive and significant effect on leverage.*

Key Words: *Profitability, Fixed Assets Ratio, Growth, Exchange Rate Risk, Leverage.*

1.   INTRODUCTION:

Today's capital structure is increasingly important related to determine the optimal funding combination for investment needs that can increase firm value. This investment funding source can come from debt, equity and its combination known as capital structure. The selection of a good capital structure will affect financial performance and company value, whereas an inappropriate decision can bring the potential for financial distress and bankruptcy (Eriotis et al., 2007; Tifow & Sayilir, 2015; Rehman, 2016; Kumar et al., 2017). Generally, existing theories emphasize the importance of maintaining a balance between debt and equity, which is then known as the optimal capital structure. Graham (2001) in Rehman's study (2016) suggested that optimal capital structure is obtained by balancing the marginal cost and marginal benefits. However, there is no universal consensus regarding perfect debt and equity ratios so that it can be used as a corporate capital structure (Al-Najjar & Hussainey, 2011; Haron, 2014).

Haron (2016) stated Indonesian companies practice target capital structures that are influenced by specific factors such as: profitability, business risk, firm size, liquidity and share price performance. The behavior of the company's capital structure in Indonesia is quite unique because it is an emerging market, with the largest national economy in the Southeast Asia region (Baker & Powell, 2012 in the Haron study, 2016).

The demand for electricity in the future is projected to increase, as shown in figure 1. To accommodate the electricity demand, a new infrastructure investment is needed. This certainly requires large funding so that the decision to optimize the capital structure of the electricity company will be a key factor in the success of the investment project.
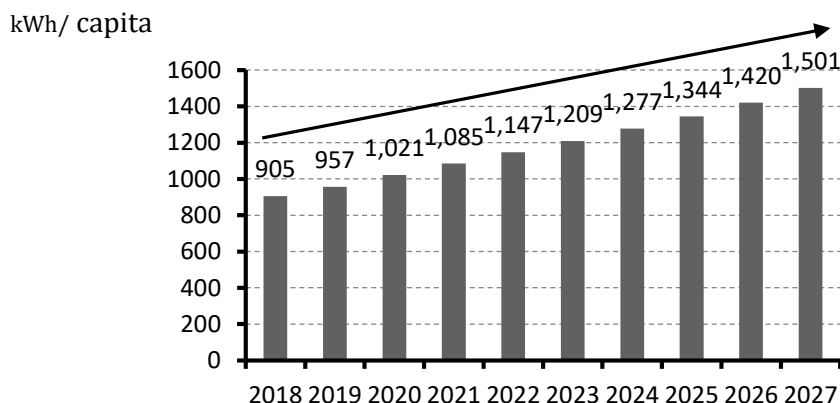

Figure 1 Projections of Indonesian Electricity Per Capita Consumption

In this paper, the influence of fundamental factors: profitability, fixed assets ratio, growth, and exchange rate risk on leverage is studied.

2. LITERATURE REVIEW:

Capital structure theory was first put forward by Modigliani & Miller (1958). Their first theory publication is known "irrelevance theory". MM proved by using several assumptions, that the value of a company is not influenced by its capital structure. The statement means how the company funds its operations has no influence, so the capital structure is irrelevant (Brigham, 2007).

- **Trade-off theory**

In the study of Kythreotis et al (2018), it was found the statement Kraus & Litzenberger (1973) which presents static trade-off theory, namely the increase in debt weight in the capital structure can increase the risk of bankruptcy resulting from the inability to pay the annual principal and interest from the debt. In other words, companies that use this trade-off theory model will consider or impose target leverage, which creates a balance between debt tax shield benefits and bankruptcy costs that might be caused.

It is different from static trade off theory which states that each company has one optimal leverage, dynamic trade-off theory proposed by Fischer, et al. (1989), states that companies consider a range of target leverage and allow the debt ratio to change in this optimal range (Ehrhardt & Brigham, 2017 in Kythreotis et al, 2018). Thus, companies that are in imperfect markets tend to have a target leverage that changes temporarily.

- **Pecking Order Theory**

MM assumes that investors and managers have the same information about company prospects, where such conditions are called symmetric information. But in reality, managers often have better information than outside investors. This condition is called asymmetric information so that managers have an important influence on optimal capital structure. As a consequence of this, Pecking Order Theory (POT) appears, which emphasizes that there is no optimal capital structure but companies tend to have a financial hierarchy. In POT proposed by Myer and Majluf (1984), stated that corporate funding requires a decision on the level of leverage (Rehman, 2016).

The research by M'ng et al (2017) contains Frank & Goyal's (2003) statement that POT is more relevant for large companies because small companies experience a high problem of information asymmetry. Byoun & Rhim (2005) stated that POT is relevant to small companies and those who do not pay dividends because of the difficulty of the company in accessing external financing. However, the results of these studies can be concluded that POT appears as a result of asymmetric information problems.

- **Agency Theory**

Agency theory is a theory that explains other problems due to non-symmetrical information, namely agency problems (Haron, 2014). In the publication of Eriotis et al. (2007), Jensen & Meckling (1976) identified agency problems that arise due to conflicts between managers and shareholders and between shareholders and debtholders.

- **Market Timing Theory**

This theory is presented by Baker & Wurgler (2002) explaining that capital structure is a cumulative result of efforts to regulate time in equity markets, where companies will issue shares at high prices and buy back when stock prices are low. The goal is to benefit from the temporary fluctuations in the cost of equity relative to other capital costs.

Exchange Rate Risk

Exchange rate is a measure of the value of a currency from another currency perspective. Changes in economic conditions can lead to substantial changes in exchange rates. The currency may experience depreciation or appreciation (Madura, 2008).

When the spot rate of two time points is compared, the percentage change in the value of a currency can be formulated as follows.

$$\text{Percentage Change in Value of Currency} = \frac{S - S_{t-1}}{S_{t-1}} \times 100\%$$

with S is the spot rate and St-1 spot rate at the previous time.

According to Madura (2008) there are three forms of exposure to exchange rates that can be experienced by companies, namely: transaction exposure, economic exposure and translation exposure. Estimated exchange rates are needed in terms of hedging decisions, short-term financing, short-term investments, capital budgeting, long-term financing and profit valuation. So, in determining the level of leverage of the company it is believed that it is important to consider this exchange rate risk.

Review of Previous Empirical Research

Alzomaia (2014) conducted a study of the influence of determinant on leverage in 93 companies listing the Saudi Arabia Stock in the period 1999-2010. In its publication stated size and growth opportunities have a positive relationship to leverage. Tangibility, profitability and risk have a negative influence on leverage. The findings in this study support POT.

Tandya (2015) studied the determinant influence of capital structure on capital structure decisions in 138 companies listed on the IDX for the period 2009-2013. The study found that profitability and firm size have a significant negative effect on leverage. Tangibility does not have a significant effect on leverage. Meanwhile, the negative relationship between growth opportunity and corporate leverage is in accordance with static TOT and the Agency Cost Theory.

In addition, Haron (2016) also examined the dynamic aspects of capital structure, especially in the target capital structure, speed of adjustment, and factors that affect 365 non-financial companies listed on the Indonesia Stock Exchange. The study revealed that Indonesian companies practice target capital structures, which are influenced by profitability, business risk, firm size, liquidity and share price performance.

M'ng, et al (2017) examined the determinant of capital structure in public companies listing on the Bursa Malaysia, Singapore Stock Exchange & Thailand Stock Exchange to investigate leverage relationships with profitability, firm size, tangibility, depreciation to total assets and inflation. The results show that profitability has a negative influence on leverage in Malaysia and Singapore and is not significant in Thailand. Firm size has a significant positive relationship to leverage in all three countries. Whereas tangibility has a significant positive influence in Malaysia and Singapore but not in Thailand. Depreciation to total assets has a negative relationship with leverage for all three countries. Inflation has a significant positive impact in Malaysia and Thailand but is not valid in Singapore.

Hypothesis and Conceptual Framework

Hypothesis 1: Profitability has a negative influence and is significant to leverage.
Hypothesis 2: Fixed Asset Ratio has a positive and significant effect on leverage.
Hypothesis 3: Growth has a negative influence and is significant towards leverage.
Hypothesis 4: Exchange Rate Risk has a positive and significant effect on leverage

The four hypotheses above form the conceptual framework in this study, as shown in the following figure 2
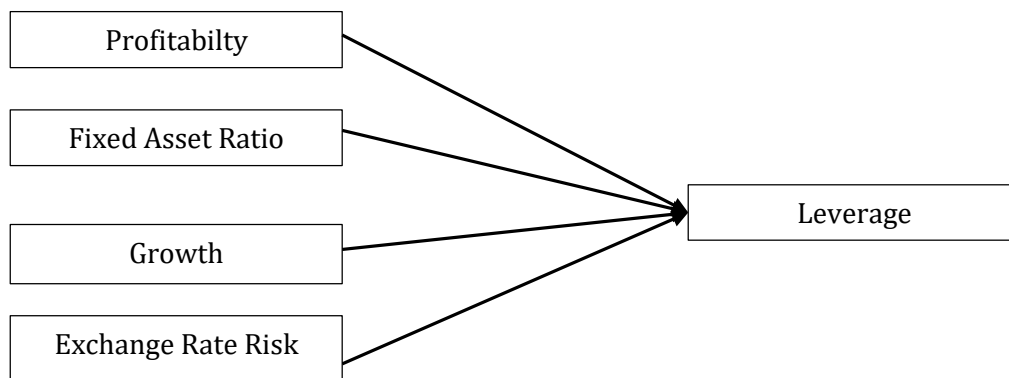

Figure 2 Conceptual Framework

3.   RESEARCH METHODS:

This research is carried out using a quantitative approach. Quantitative methods are used to analyze the relationship between fundamental factors: profitability, FAR, growth and exchange rate risk to leverage (capital structure). The secondary data was collected and then processed using SPSS, to estimate the regression model between leverage as the dependent variable and profitability, FAR, growth and exchange rate risk as independent variables.

This research was conducted at the electricity company in Indonesia (PT XYZ). In this study, The 35 time series data of quarterly financial reports for the period 2009-2017 was collected and analyzed.

The variables in this study can be defined in the following table 1.

Table 1 Definition of research variables

Variabel	Measurement
Leverage	Total Liabilities/ Total Assets
Profitability	EBIT/ Total Assets
Fixed Asset Ratio (FAR)	Fixed Assets/ Total Assets

Growth	$\dfrac{Sales_t - Sales_{t-1}}{Sales_{t-1}}$
Exchange Rate Risk (ExRisk)	Percentage change in value of currency $= \dfrac{S_t - S_{t-1}}{S_{t-1}}$

4.   RESULTS AND DISCUSSION:

Descriptive Data Statistics

Table 2 provides the descriptive statistics of the dependent and independent variables. The amount of data used for each variable is 35 data.

Table 2 Statistics of Descriptive Data

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Leverage	35	,305	,822	,59529	,180013
Profitability	35	,001	,024	,01229	,006819
Fixed Asset Ratio	35	,512	,909	,74360	,134813
Growth	35	-,079	,159	,03454	,057164
Exchange Rate Risk	35	-,117	,170	,00571	,049098
Leverage(t-1)	35	,305	,822	,60200	,174866
Valid N (listwise)	35				

The table above shows that the standard deviation for the largest statistical data is in the variable leverage, which is 18%. This shows greater leverage fluctuations. Meanwhile, the smallest standard deviation value is the profitability 0.68%, which means that the fluctuation of profitability data is the smallest than the other variable data. For the largest data average (mean) is owned by FAR of 0.7436, where this variable has a maximum value of 0.909 and a minimum of 0.512. While the smallest mean is owned by profitability which is 0.0123, with a maximum value of data 2.4% and a minimum value of 0.1% per quarter. In addition, in table 2 also shows that the standard deviation of the exchange rate risk is 0.0491. This value is still greater than the standard deviation of profitability and is almost the same as the standard deviation of the growth variable. It can be concluded that Indonesia has the same characteristics as other countries which generally fall into the category of emerging markets, that exchange rate fluctuations or in other words exchange rate risk is quite significant and something that is relevant to be considered in the company's operations.

The leverage mean is around 60% where the maximum leverage is 82% and the minimum value is 30%. These results reinforce Haron's research (2016) that generally companies in Indonesia (which are listed on the Indonesia Stock Exchange) apply the practice of target capital structures that are within a certain range.

Correlation Analysis Results

The dependent variable correlation test results and individual independent variables used can be seen in table 3 below.

Table 3 Correlation Analysis Results

Correlations

		Leverage	Profitability	Fixed Asset Ratio	Growth	Exchange Rate Risk	Leverage(t-1)
Pearson Correlation	Leverage	1,000	,599	-,424	,114	,415	,872
	Profitability	,599	1,000	-,183	,167	,217	,687
	Fixed Asset Ratio	-,424	-,183	1,000	-,004	,202	-,324
	Growth	,114	,167	-,004	1,000	,013	,171
	Exchange Rate Risk	,415	,217	,202	,013	1,000	,246
	Leverage(t-1)	,872	,687	-,324	,171	,246	1,000

Hypothesis Testing Results
a.   Coefficient of Determination (R Square)

The regression model used has a coefficient of determination as shown in table 4 below.

Table 4 Determination Coefficients of the Regression Model

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,924[a]	,853	,828	,074764

 a. Predictors: (Constant), Leverage(t-1), Growth, Exchange Rate Risk, Fixed Asset Ratio, Profitability

The statistical results shown in table 4 above can be interpreted that the independent variables: profitability, Fixed Asset Ratio, Growth, Exchange Rate Risk and Lagged Leverage can explain the simultaneous leverage variation of 85.3%. Thus, the regression model used is quite representative in explaining the variation of leverage in this study.

b. F-Statistics Test

The results of the F test on the model using SPSS software provide the following output.

Table 5 F Test Output

ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	,940	5	,188	33,622	,000[b]
Residual	,162	29	,006		
Total	1,102	34			

c. Statistic t-Test

The results of the Statistical t-test provide output as shown in table 8 below

Table 6 Statistical t-test results

Coefficients[a]

	Profitability	Fixed Asset Ratio	Growth	Exchange Rate Risk	Leverage(t-1)
t	-,061	-3,115	-,195	3,713	6,913
Significance	,951	,004	,846	,001	,000

Results of Multiple Linear Regression Analysis

  Regression models that meet a series of classic assumption tests in the previous section can be rewritten as follows.

Leverage = β0 + β1.Profitability + β2.FAR + β3.Growth + β4.ExRisk + β5.Leverage (t-1) + ε
The test results can be seen in table 7 below.

Table 7 Results of Multiple Linear Regression Analysis

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	,387	,109		3,548	,001
Profitability	-,160	2,603	-,006	-,061	,951
Fixed Asset Ratio	-,330	,106	-,247	-3,115	,004
Growth	-,045	,229	-,014	-,195	,846
Exchange Rate Risk	1,054	,284	,288	3,713	,001
Leverage(t-1)	,749	,108	,727	6,913	,000

 Referring to the table above, the regression equation is produced as follows.

Leverage = 0.387 - 0.160. Profitability -0.330. FAR - 0.045. Growth + 1.054. ExRisk + 0.749. Leverage (t-1) + ε

- **Analysis of the Effect of Profitability on Leverage**

The profitability variable has a coefficient of -0.160. Polarity or coefficient sign is negative, means that profitability will tend to decrease if leverage increases. But statistically the significance value is 0.951 ($p > 0.05$) which results in the above conclusion being rejected. In addition, other information is related to the correlation coefficient between these two variables. The correlation coefficient between the variable profitability and leverage is 0.599 (positive). The meaning is the value of leverage tends to rise if profitability increases or vice versa. So, the opposite effect (negative) as indicated by the regression coefficient between profitability and leverage cannot be considered statistically significant from the results of processing research data.

Pecking Order Theory (POT) proposed by Myer & Majluf (1984) predicts that the resulting profitability will reduce debt. Referring to the regression coefficient of the research results for profitability variables is also negative for leverage. However, the relationship is not significant.

The results of the study on the model used are slightly different from the previous empirical research conducted by Haron (2016) and M'ng et al. (2017) where profitability has a negative and significant effect on leverage. Meanwhile, Munandar's (2014) research found that profitability actually had a positive effect on leverage.

- **Analysis of the Effect of Fixed Assets Ratio on Leverage**

The results of the regression analysis show that the variable FAR has a coefficient of -0.330 and with a significance value of 0.004 ($p < 0.05$). So it can be concluded that FAR has a negative influence and significant effect to leverage. This result makes the original hypothesis rejected.

The findings in this study are in accordance with the publications of Sheikh & Wang (2011), Alzomaia (2014) and Li & Stathis (2017). However, Bunkanwanicha (2008), De Jong (2008) and Moosa & Li (2012) as quoted by Haron (2016) found that tangibility or fixed assets ratio and leverage have a positive and significant correlation.

- **Analysis of Growth Effect on Leverage**

The regression equation shows the growth variable has a coefficient of -0.045 with a significance value of 0.846 ($p > 0.05$). So, the polarity of the regression coefficient shows a negative influence between the variables growth and leverage, but the statistical value is not significant.

Table 3 appears that the correlation coefficient between the growth and leverage is 0.114. This means that the correlation between the two variables is positive but with a low degree of relationship.

- **Analysis of the Effect of Exchange Rate Risk (ExRisk) on leverage**

The exchange rate risk coefficient in the regression equation is 1.054 with a significance of 0.001 ($p < 0.001$). The conclusion is that the exchange rate risk has a positive and significant effect on leverage. The strength of the relationship between the two variables above can be seen from the results of the correlation test which produced a correlation coefficient of 0.415. So, there is a positive correlation between the exchange rate risk and leverage with the moderate degree of relationship. This finding supports the results of the Panda & Nanda (2015) study which states that companies can be exposed to negative or positive exchange rate risk. An increase in the amount of debt can result in the company more likely to be exposed to exchange rate risk.

- **Research Implications**

Some implications of this study can be explained as follows. Profitability has a negative influence on leverage but it does not significantly, give managerial consequences for optimizing capital structure and profitability. Some suggested alternatives are as follows. First, formulate sales tariffs in accordance with profitable economic value. Second, reduce the operating expenses by making efficiency in all business processes. Third, hedging against company activities that have a high level of exchange rate exposure to minimize the risk of losses that probably reduce the profit significantly. The hedging strategy needs to be implemented as evidenced by the results of the research stating that the exchange rate risk has a positive and significant effect on leverage. This means that exchange rate risk increase if company leverage do.

Fixed assets ratio has a negative influence and significant effect to leverage. This finding means that the predicted fixed asset proportion (property, plant & equipment) of total assets tends to increase if leverage can be reduced to the limit of the target capital structure. The amount of debt is limited in target capital structure range so that the company is not over burdened and prevents financial distress. Thus, in a stable financial condition, it allows sales to generate profit, then management can control the optimal level of leverage.

5. CONCLUSIONS AND SUGGESTIONS:

Conclusion

Referring to the research results of the influence of fundamental factors: profitability, fixed assets ratio, growth and exchange rate risk to capital structure in the electricity company PT XYZ, conclusions can be drawn as follows. Profitability has a negative but not significant effect on leverage. Fixed asset ratio has a negative influence and is significant to leverage. The effect of growth on leverage is similar to profitability, which shows a negative but not significant effect. However, it is different from the variable exchange rate risk which gives a positive and significant effect on leverage.

Suggestion

To generalize the results of the study it is suggested to take more and more sample companies believed to represent the population in this electricity industry. However, the availability of research data is an important prerequisite needed so that research can be carried out. In addition, the coefficient of determination of the model in this study is 85.3%. This means that it is still possible to create a regression model with a higher coefficient of determination by adding other independent variables that correlate with leverage (dependent variable) so that a better research model is produced.

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