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Building a Model to Assess Signaling Theory in Its Correlation between Capital Structure and Firm Value

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Abstract
This research aims to assess empirical models developed from signaling theory, where Debt Equity Ratio will improve Firm Value through the mediation of Total Asset Turnover and Earnings Growth as intervening variables. The samples were firms that belonged to the LQ-45 index during 2005-2018. It was because the stocks incorporated in the LQ-45 have a good growth prospect, therefore, the firms used debts because they fund their business development. 2018 was the limit of the research period to eliminate abnormal data potential because of covid-19. A partial Least Square was used for data analysis. The interesting research finding was based on mediation examination and it was proven that Earnings Growth mediated Total Asset Turnover on the Firm Value. However, Debt Equity Ratio was not proven to significantly improve the Firm's Value through the mediation of Total Asset Turnover and Earnings Growth. The research finding even strengthened the theory that Earnings Growth has a negative effect on Firm Value..
Keywords: Firm Value; Total Asset Turnover; Earnings Growth; Debt Equity Ratio; Signaling Theory.
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I. Introduction

The go-public firms will keep improving their value to attract their investor's interest. The firm value of the go-public firms is easier to be taken into account compared to the non-go-public ones. The firm value can be measured in some measurement ways, one of them being by using Price to Book Value (PBV). PBV is a financial ratio that compares the stock price and the book value of each piece of stock. PBV shows the firm ability to create a relative corporate value on the amount of the invested capital. The above PBV shows that the firm is in a good condition, which means that the market value or the stock price is bigger than the firm book value. The higher the amount of PBV, the higher the market trust level of the firm prospect.

According to the signaling theory, the use of debts in this research was proxied by Debt to Equity Ratio (DER). It is one of the factors that influence firm value which the research was proxied by the Price to Book Value (PBV). Signaling theory explains that debts are signals that can improve the firm value. Some previous research showed a positive influence of DER on PBV since the increase in debts indicates that the firm has good prospects, consequently, it improves the firm value. Some research that has proven the positive correlation was the research of (Kontesa, 2015), (Trafalgar & Africa, 2019), and (Putri, 2020). However, other research showed that DER had a negative influence on the Price Book Value because the increase in debts was considered as a risk that will decline the firm value. They were the research of (Hamam et al., 2020), (Widyantari & Yadnya, 2017), (Rohman Taufiq & Trianti, 2021) and (Paminto et al., 2016).

In accordance with the gap research phenomenon, the purpose of this research is to build an empirical model to overcome the gap of the DER effect on PBV, so that the signaling theory can be proven. It refers to the Signaling Theory that debts are used by companies to develop their businesses. A developed company needs a big fund to maximize its firm earnings. The source is not only from internal funding, a developing company needs a huge amount of capital, where one of them is the source of external funding to maximize its firm value. The intended external funding source is the use of debts. The company can use debts as its capital source to improve its business activities, therefore, higher earnings growth can be achieved. Earnings growth, generated from a fast asset turnover, will improve firm value. Asset turnover is the ability of the firm assets in generating income. The more the firm's assets improve, the bigger the earnings growth. Consequently, in the context of the theory, if the use of debts runs according to the mechanism, the debts can have a positive effect on the firm value. In consequence, the signaling theory can be proven. Asset turnover can also directly influence the firm value if it is considered a good signal without passing through the impact of the asset turnover toward the earnings growth.

2. Literature and Empirical Review

Signalling theory explains that management, as the owner of the information, gives signals to the information receivers, the investors, who will influence their response to the company. The delivered information is the current condition of a company. It can also be information that explains policies that will be performed by the management. Investors will analyse the delivered information, whether it is positive or negative signals. When it is considered as a positive signal, it will be responded positively by the investors, consequently, it improves the

firm value, and the other way around will occur if the information is considered as a negative one.

The debt policy performed by the company is one of the information for the investors. (Owolabi & Inyang, 2013) stated that when the company uses debts, it considers its ability to return them. A company that has a low ability to pay will not be able to pay its debts, consequently, it has the potential to cause bankruptcy. On the other hand, a company that has a high ability to pay will be able to fulfil its debt obligation. A company that dares to use a funding source from a big amount of debt shows its belief that it has a potential business prospect, consequently, the debt-sourced funding can not only fulfill its obligation but also be able to give profits for the company. In accordance with the signaling theory approach, a company with a profitable prospect tends to avoid stock marketing and puts an effort into each required new capital with other alternatives, including the use of capital exceeding the normal capital structure target.

In accordance with the signalling theory, the use of debts can be considered a positive signal. The idea is that, when a company uses funding from a big amount of debt, in its activities, it can improve its business performance indicated by the improvement of asset turnover. Asset turnover improvement can be considered a positive signal that can improve firm value. The other idea is that the occurrence of asset turnover improvement, will cause the improvement of company productivity to improve earnings growth, and the growth of the increased earnings will be considered as a positive signal that will increase firm value.

2.1. The Effect of Capital Structure on Firm Value

Signalling theory shows an action taken by the company management to show the investors how the management values company prospects as viewed from the debt management of the company. Debts considered one of the supporting factors in developing the company, are important capital sources to develop the company. The research of (Hirdinis, 2019), (Kontesa, 2015), and (Trafalgar & Africa, 2019) is the previous research stating that debts have a positive effect on firm value.

2.2. The Effect of Capital Structure on Total Asset Turnover

In the signalling theory, it is explained that a company that has courage in using debts as its capital source means that it can optimally use the funding, consequently, the gained earnings will be able to cover the expenses of the use of the debts. The use of funding sources from debts can improve R&D activities (Fryges et al., 2015). The use of debts disciplines the company management and directs it to behave in line with the purpose of the company. Debt funding can support company innovation. By making debt funding a source, the improvement of a company's operational activities occurs, as shown by the improvement of firm asset turnover (Mahendra, 2015).

2.3. The Effect of Total Asset Turnover on Earnings Growth

Asset turnover is a measurement of how big the asset's role is in generating sales. This ratio shows the effectiveness of the company in managing its assets. The ratio of asset turnover is also a ratio to measure asset activities that are used in the company activities. The improvement in asset turnover means that the company is more efficient in using its assets in generating sales. Therefore, the higher the asset turnover, the more maximal the use of assets in generating sales. The more maximal the sales, the bigger the earnings gained by the company. Some researchers who performed research on asset turnover's positive influence on earnings growth are (Yahya & Hidayat, 2020), (RK et al., 2021), and (Rafidah Saleh, Arifuddin, 2018).

2.4. The Effect of Total Asset Turnover on Firm Value

It continues hypothesis 3 within the perspective of signalling theory. The improvement of asset turnover as an effect of the use of debts can have a direct effect on the investor's perception, as they will see that the improvement of asset turnover is information that gives a positive signal towards them on the company's prospect in the future. In consequence, it will improve their interest which will finally improve the firm value. The research of (Hasangapon et al., 2021), (Bambang Widagdo, 2021) and (Colline, 2022) are several previous studies showing that asset turnover has a positive effect on firm value.

2.5. The Effect of Earnings Growth on Firm Value

Still, in a series of model assessments proposed within the signaling theory framework, earnings growth is generated from asset turnover as an impact of the use of debts. Earnings growth is representative of a company's performance. The improvement in earnings growth shows that the company is in a condition to experience performance improvement. This is a positive signal, consequently, it improves the firm value. The previous research of (Suak et al., 2021) and (Arhayu Lik, 2022) showed that earnings growth has a positive effect on firm value. More specifically explained that earnings improvement, which is used as a way to transfer welfare potential from the company to the shareholders, investors, and prospective investors, consequently, it is a positive signal that will strengthen the firm value.

2.6. The Mediating Effect of Total asset Turn Over and Earnings Growth on Firm Value

Asset turnover and earnings growth will mediate debts on firm value. This model is established to see how signaling theory is implemented. By using debts that can improve asset turnover, which furthermore increases earnings growth, it can affect firm value. When a firm prospect is profitable, the company will use the use of debt policy because it has a belief in its ability to pay. This is a positive signal that will be responded to by the investors, consequently, the firm value will improve. On the other hand, when business prospects are not prospective, the company does not have a belief in using debts and it will be considered as a negative signal, which will be responded to negatively, and it will decline firm value.

3. Data and Research Method

3.1 Conceptual Framework of Research

In accordance with the performed literature and empirical study, the proposed research model is:

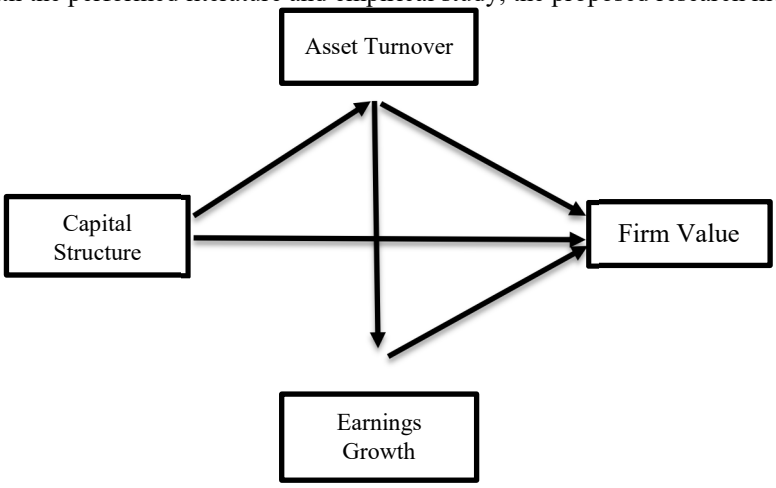

Figure 1. Conceptual Framework

3.2 Research Hypotheses

Based on the previous explanations, this study aims to test the following hypotheses:

The more improved the capital structure, the higher the firm value.

1. The higher the capital structure, the higher the asset turnover.
2. The higher the asset turnover, the higher the earnings growth.
3. The higher the asset turnover, the higher the firm value.
4. The higher the earnings growth, the higher the firm value
5. Asset turnover and earnings growth mediates capital structure effect on firm value.

3.3 Research Method

This research used a variance-based approach model with Partial Least Square (PLS) method because the variables used are manifest variables, only the inner model is tested. Inner model assessment is an assessment for structural models which is carried out to assess the correlation between latent constructs. Inner model assessment in this study was carried out by showing R2 value of endogenous latent constructs. Furthermore, the structural model in the inner model was assessed by using predictive relevance (Q2) value. The predictive Relevance (Q2) of a model is considered to have a relevant prediction value if the Q-square value is more than 0 (> 0). Predictive relevance value was gained with a formula of Q2 = 1 - (1 - R12) (1 - R22) .... (1 - Rn2). Hypothesis testing was performed through t-statistic and probability values. For alpha 5%, 1, 96 t-statistic value was used. In consequence, the criterion of hypothesis acceptance and rejection was Ha was accepted and H0 was rejected when t-statistic was > 1, 96. To reject and accept the Hypothesis, it used probability, thus Ha was accepted when the p value was < 0, 05.

3.4 Population and Sample

This study was carried out to prove the signaling theory about how the use of debts can have a positive effect on firm value. The samples were the firms that were included in the LQ-45 index during 2005-2018 which were consistently listed in the LQ-45. The reason why choosing the firms included in LQ-45 index was that the stocks in LQ-45 index are those having a financial condition, growth prospect, and high transactional value. Therefore, if those firms used debts, it was not caused by the financial condition, but because they were in a condition of having growth prospects, thus the sample sorting was precisely suitable with the objective of the study; to assess

signaling theory. Moreover, the sorting of the research period was in 2015-2018 because since 2019, covid-19 occurred, consequently, the financial performance turned abnormal, and to avoid bias, data during covid-19 period was not used..

4. Analysis Results

4.1. Measurement of the Structural Model (Inner Model).

Inner model was assessed using predictive relevance (Q2) value. R^2 value of PLS assessment result is presented on Table 2. Coefficient of Determinant(R-Square) of FV showed that firm value was influenced by 26,8 percent of DER,TATO, and EG, the remaining 73,2 percent was influenced by other factors that did not exist in the model. R-Square value of EG was 89,7 percent, meaning that EG is an adequately strong mediation variable because it is influenced by TATO, the exogenous variable. On the other hand, the R-Square value of TATO was 0,1 percent, meaning that the DER variable did not barely have an effect on TATO

Table 2. Coefficient of Determinant (R-Square)

Construct	R Square Value
EG	0.897
FV	0.268
TATO	0.001

Source: Secondary data processed

Predictive Relevance (Q2) of a model was considered to have a relevant predictive value if Q-square is bigger than 0 (> 0). Predictive relevance value was gained with the formula of:

Q2 = 1 - (1 - R12) (1 - R22) .... (1 - Rn2)

Q2 = 1 - (1 - 0,897) (1 - 0,268) (1 - 0,001)

Q2 = 0,9246

The Q-square calculation result of this research was 0,9246. It means that the 92,46 percent of exogenous variables, DER, TATO, and EG, in this research was suitable to explain FV (endogenous variable). Therefore, it can be concluded that this research model has a relevant prediction value.

4.2. Hypothesis Testing

The hypothesis testing was carried out by using a bootstrap sampling method. The result of data processing is presented at figure 1 and table 3.

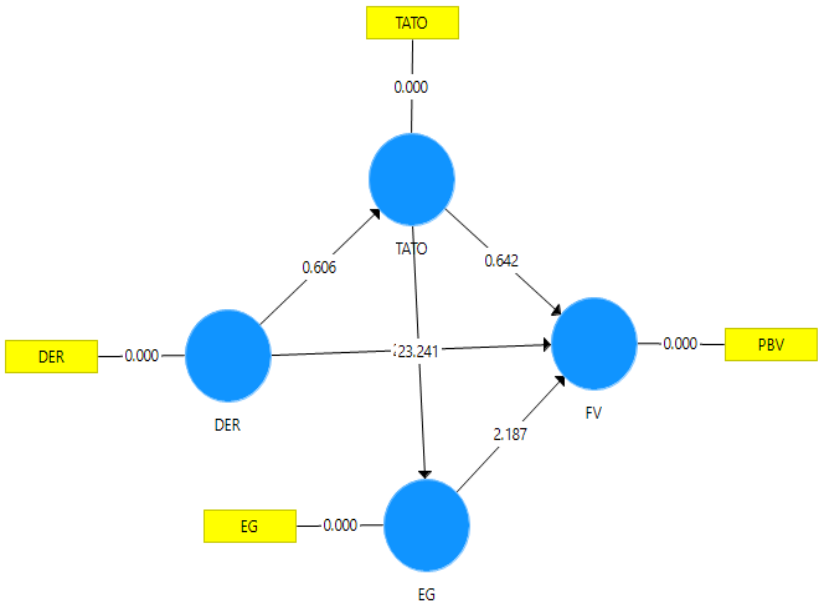

Figure 2. Hypothesis Testing bootstrap

Table 2. Path Coefficients

	Original Sample	Deviation Standard	T Statistics	P Values
DER-→FV	-0.108	0.053	2.014	0.045
DER-→TATO	0.028	0.044	0.619	0.536
EG-→FV	0.686	0.295	2.239	0.021
TATO-→EG	0.947	0.041	23.212	0.001
TATO-→FV	-0.194	-0.284	0.684	0.495

Hypothesis 1: DER has a significant negative effect on FV
Testing results in the significance level according to table 3 was gained that the p-value variable of DER on FV was 0.045. This value was smaller than 0.05, consequently, it can be concluded that H0 was rejected. DER has a significant negative effect on FV.
Hypothesis 2: DER does not have any effects on TATO
Testing result in the significance level according to table 3 was gained that the p-value variable of DER on TATO was 0.536. This value was bigger than 0.05 and 0.10, consequently, it can be concluded that H0 was accepted. DER does not have any significant effects on TATO.
Hypothesis 3: TATO has a significant positive effect on EG
In accordance with the PLS assessment, TATO Algorithm had a positive-direction coefficient on EG. According to table 3, the p-value of TATO variable on EG was 0.001, smaller than 0.05. H0 was rejected. In consequence, it can be concluded that TATO has a significant positive effect on EG.
Hypothesis 4: EG has a significant positive effect on FV
According to table 3, the p-value of the EG variable on FV was gained at 0.021, smaller than 0.05. H0 was rejected. In consequence, it can be concluded that EG has a significant effect on FV.
Hypothesis 5: TATO does not have any effects on FV
According to table 3, the p-value of the TATO variable on FV was gained at 0.495. This value was bigger than 0.05 and 0.10. In consequence, it can be concluded that TATO has a significant effect on FV.
Hypothesis 6: TATO and EG do not mediate DER effect on FV
According to table 4, the p-value of TATO variable on FV with EG mediation was gained at 0.021. This value was smaller than 0.05. H0 was rejected. In consequence, it can be concluded that EG mediated TATO effect on FV. However, asset turnover and earnings growth could not mediate the leverage effect on firm value. It was proven by 0.617 p-value, which was bigger than 0.05 and 0.10.

Table 4. Specific Indirect Effect

	Original Sample	Deviation Standard	T Statistics	P Values
DER-→TATO→EG	0.026	0.041	0.632	0.528
TATO→EG→FV	0.649	0.229	2.170	0.030
DER→TATO→EG-→FV	0.018	0.036	2.239	0.021
DER→TATO-→FV	-0.005	-0.009	0.275	0.784

5. Conclusion and Recommendation

Referring to the description in the previous analyses, the research conclusions can be drawn as follows:
DER has a negative and significant effect on firm value. This result showed that DER value improvement can decline firm value. This analysis finding was not in line with the signaling theory stating that DER has a positive effect on firm value. DER negative effect on firm value was in line with the research carried out by (Hamam et al., 2020), (Widyantari & Yadnya, 2017) (Hasan et al., 2014), (Rohman Taufiq & Trianti, 2021), and (Paminto et al., 2016).

Although statistically insignificant, according to the PLS assessment, DER Algorithm had a positive-direction coefficient on TATO. It means that DER value improvement can improve TATO. This analysis finding was in line with the signaling theory stating that the improvement of DER improved firm activities proxied by the improvement of TATO. Therefore, statistically, DER does not have a significant effect on TATO. This study was not in line with the findings of (Fryges et al., 2015), and (Mahendra, 2015) which stated that the use of funding sources from debts can improve firm activities through the improvement of R&D and firm innovation.

In accordance with PLS assessment, TATO Algorithm had a positive-direction coefficient on EG, meaning that TATO improvement can improve EG. In this research model, the improvement of earnings power was caused by asset turnover as a result of firm activity improvement, because it was funded by the use of debts. This was in accordance with the signalling theory. That Asset turnover had a positive effect on earnings growth was in line with the research carried out by (Yahya & Hidayat, 2020), (RK et al., 2021), and(Arhayu Lik, 2022)

In accordance with the PLS assessment, the EG Algorithm had a positive-direction coefficient on FV, meaning that EG improvement can significantly improve FV. This analysis finding was in line with the signaling theory developed in this research, where EG, influenced by asset turnover, can improve firm value. The EG positive effect on FV was in line with the research performed by (Suak et al., 2021), (Arhayu Lik, 2022) was more specific.

Statistically, TATO did not have a significant effect on PV, it even had a negative coefficient direction. This analysis finding was not in line with the signaling theory and some research carried out by (Hasangapon et al., 2021), (Arhayu Lik, 2022) and (Colline, 2022).

In accordance with the assessment result, it was proven that DER could not improve TATO, however, TATO could significantly improve EG and EG improvement could influence FV improvement. It means that,

according to the signaling theory, the improvement of earnings growth will be responded to by the improvement of firm value through earnings growth. However, the proposed signaling theory in this model was not proven, where the profitable firm prospect caused the increase of the debt-using policy and firm value.

Conclusion

By proposing a model that is based on the signaling theory, the result of this study could not prove that capital structure can improve asset turnover resulting in earnings growth to improve firm value. It was because asset turnover and earnings growth could not mediate the capital structure effect on firm value. However, although it was not proven on the whole, partially, it was proven that the improvement of asset turnover significantly improved earnings growth, and it significantly influenced firm value. The interesting findings of this study were in accordance with a mediation assessment, where it was proven that earnings growth mediated asset growth on firm value.

For the management, it is crucial to consistently maintain earnings growth, because this will become a positive signal that is taken into account by the investors in making their investment decision. Earnings growth can be generated through the productivity of the use of firm assets reflected by the improvement of asset turnover. it has not been considered a positive signal if it does not affect earnings growth.

For investors, a capital structure dominated by debts is a risk that needs to be considered in making an investment decision. The use of debts by the company that became the sample of this study was proven to not have any effects on asset productivity improvement, meaning that the use of debts was not used to improve asset productivity which was the reflection of asset turnover.

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