Manajemen & Bisnis Berkala Ilmiah
Volume 14.1 No.7 (Maret 2015) : 85-94

THE EFFECT OF CAPITAL STRUCTURE ON THE VALUE OF A BUSINESS ENTITY WITH QUADRATIC MODEL TESTING IN PROPEERTY, REAL ESTATE AND BUILDING CONSTRUCTION SECTORS

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Abstract

The purpose of this study was to find empirical evidence on the effect of capital structure on the value of a business entity in accordance with the static trade-off theory. This study used a sample of enterprises in the property, real estate and building construction sector that are listed in the Indonesian Stock Exchange during the period of 2009-2012. The selection of the sample in this study using a non-probability sampling technique with the type of purposive judgment sampling. The samples used in this study are 160 during the years of observation. The method of analysis in this study is using quadratic regression. The findings in this study indicate that capital structure significantly influence the value of a business entity in accordance with the static trade-off theory.

Keywords: Capital structure, Firm value, Static trade-off theory, Quadratic

Abstrak

Tujuan dari penelitian ini adalah untuk menemukan bukti empiris mengenai pengaruh struktur modal terhadap nilai badan usaha sesuai dengan static trade-off theory. Penelitian ini menggunakan sampel dari badan usaha dalam sektor property, real estate & building construction yang tercatat di Bursa Efek Indonesia selama periode 2009-2012. Pemilihan sampel dalam penelitian ini menggunakan teknik non-probability sampling dengan jenis purposive judgement sampling. Jumlah sampel yang digunakan dalam penelitian ini adalah sebanyak 160 selama tahun observasi. Metode analisis dalam penelitian ini menggunakan regresi kuadratik. Temuan dalam penelitian ini menunjukkan bahwa struktur modal berpengaruh signifikan terhadap nilai badan usaha sesuai dengan static trade-off theory.

Kata kunci: Struktur modal, Nilai badan usaha, Static trade-off theory, Kuadratik

JEL: M31, M21, G3

1. Research Background

Business competition in Indonesia seemed to be getting tougher; this is due to be implemented free trade between ASEAN Country or the ASEAN Economic Community (AEC) in 2015. To survive the arrival of other ASEAN business entities, the entity in Indonesia must be prepared as best as possible and also at enhancing the competitive ability both in products, services and other things. So that corporation require substantial funding source to have competitiveness. The funding source can come from both internal and external business entities. Mix of funding sources is called the capital structure.

Main purpose of business entities is to maximize shareholder value through the increase in value of the business entity. One way to increase the value enterprises review is with optimal capital structure or the best capital structure. It is in accordance with the statement of Husnan and

Pudjiastuti (2002) in Hardiningsih (2009) said that the best capital structure is the one that can maximize the business entities value.

The increasing of business entities value can be seen from the stock price in stock market, because every change that happens in business entities will affect in market perception. Markets will response to every positive or negative change of the company because it will be used to determine the recent and future value of business entities. If the market perception is good, then the stock price will go up, but if the market perception is bad, then the business entities stock price will go down.

Arifin (2005:89) said that the cost of bankcruptcy and financial distress or financial difficulties can be a stumbling block for business entities to always add more debt, because the more burden to be paid, the more business entities having financial difficulties that lead to bankcruptcy. This thing shows if business entities are having financial difficulties, then the market will judge that it is a bad thing so that the business entities value will go down.

Table 1. Previous Studies about the Influence of Capital Structure to Business Entities Value

Researchers	Influence
Bukit (2012)	(+) significant
Pancawati Hardiningsih (2009)	(+) significant
Wijaya, Bandi and Wibawa (2010)	(+) significant
Sari, Djazuli and Aisjah (2013)	(-) significant
Sujoko and Soebiantoro (2007)	(-) significant
Babalola (2012)	significant
Manurung (2012)	significant

In Table 1 we can see that there is difference of result between some previous researches. Research of Hardiningsih (2009), then Wijaya *et al.,* (2010) and also Bukit (2012) found that there is positive effect from capital structure on business entities. The positive effect of capital structure on business entities shows that if there is change in capital structure then there will be followed by the increasing of business entities and if there is decreasing in capital structure it will be followed by decreasing of business entities value. Meanwhile research from Sari *et al.,* (2013) also Sujoko and Soebiantoro (2007) found that there is negative effect from capital structure on business entities value. The negative effect of capital structure on business entities value show that if there is increasing on capital structure, it will be followed by decreasing of business entities value, an dif dcreasing of capital structure happens it will be followed by increasing of business entities value.

Babalola (2012) conducted a study about influence of curvilinear of capital structure on business entities value. Independent variable used in the study of Babalola (2012) is DTA (Devt to Total Assests), meanwhile the dependent variable is ROE (Return On Equity). Babalola (2012) found that there is a significant curvilinear influence between capital structure on business entity valuein food and beverages sectors in Nigeria. Capital structure can affect business entity value because capital structure can cause tax benefit and also financial distress that affect in business entity value. If the debt increasing increases the profit of business entity tax, so market perception will be good. If increasing of debt makes business entity having financial difficulty, then the market will judge that things as bad thing so that it will decrease the business entity value. Beside that, study of Babablola (2012) also found that there is optimal capital structure for business entity in food ans beverages structure in Nigeria. In his study, Babalola (2012) said that there is proof of a significant quadratic relationship, but it gets less attention in financial literature yet.

Manurung (2012) conducted a research about optimal capital structure with DER (Debt to Equity Ratio) and DTA (Debt to Total Asset) independent variable. Meanwhile dpendent

variable used is stock price and total asset. The result of Manurung (2012) study is, if total asset is considered as company value, then DER, DTA, and dummy are significantly affected it. Then, only DER and Dummy that significantly affect business entity value if the proxy is stock price. Manurung (2012) used dummy on his study because he was conducted his study during crisis periode, Manurung (2012) said that crisis periode influenced company value.

This research uses property, real estate & building construction sector objects which are listed in Indonesia Stock Exchange becaue of some reasons, which is the existence of consistent change in this sector indicated by the large number of people that invest their fund in property, real etstate & building construction sectors.

Building investment constribution on PDB always show positive growth. This thing caused by supply for building that remains the same, meanwhile demand always increase along with population's growth. Beside that, every economic activity whether in service or production, basically need products from property, rela etstate & building construction sectors as one of the production factors. This thing is supported by statement from Minister of Industry, Hidayat (2013) which said that "the moment property sector grows, it will be more thann 150 supporting insdustries will grow." property, real etstate, & building construction sectors can push another sector's growth.

The purpose of this research is to find empirical evidcence about influence of capital structure on business entity in Indonesia Stock Exchange during 2009-2012 periode as in statistic trade-off theory. Therefore, it is defined hypothesis as follows: 'It is estimated that capital structure has influence on business entity value in accordance with the statistic trade off-theory in property, real estate & building sectors that are listed in Indonesia Stock Exchange during 2009-2012 periode."

The result of this study is expected to be able to give benefit for management to make it as consideration in determining mixture between use of debt and equity in reaching optimal capital structure so that it can maximize business entity value. Meanwhile for investor it can be used as consideration to determine investmen decision on best business entity in property, real estate &building construction sectors.

2. Research Methods

This study is included to applied research, which is study that developed from previous study and application of knowledge and theories that are existed. Based on study technique, this study is included into experimental study with quantitative approach that uses quantitative data to proof theory. From study approach classification, thi study has causal characteristic which is study that aims to find out the influence of independent variable on dependent variable. Variable used in this study is capital structure with proxy Debt to Equity Ration (DER), meanwhile dependent variable used is business entity value with proxy Price Book Value (PBV)

In order to make the understanding easier and so that there will be perception mistake from each variable, below is the definition and also measurement method of variables used

1. Capital Structure (Debt to Equity Ratio)

   Capital structure is mixture of use of capital own and debt to fulfill the company Capital need, so that capital structure proxy used in the study is Debt to Equity Ratio.

   The counting of Debt to Equity Ratio uses the comparison between total liabilities with total equity every year. Mathematically it can be formulated as follow:

$$DER = \frac{TL}{TE} \quad \text{..... (1)}$$

Explanation:

DER : *Debt to Equity Ratio*of*property, real estate &building construction*sectors
TE : *Total Equity* of business entity property*, real estate &building construction sectors*

TL : *Total Liabilities*business entity *property, real estate &building construction sectors*

2. Business Entity Value (PBV)

Business entity value proxy uses Price to Book Value (PBV) because PBV shows the comparison between company stock market and business entity book values. PBV obtained by counting market value divided by business entity book value every year. PBV counting uses this equation:

$$PBV = \frac{MV}{BV} \quad \text{.....(2)}$$

Explanation:

BV : business entity book value of *property, real estate & building construction sectors*
MV : business entity market value of *property, real estate &building construction sectors*
PBV : *Price to Book Value*of business entity of *property, real estate & building construction sectors*

Population used in this study is all business entities which are listed in property, real estate & building construction sectors. Characteristics of the sample used in this study are:

1. Listed in *property, real estate & building construction sectors* in Indonesia Stock Exchange during 209-2012 periode nad did not delisting.
2. The business entity must have complete data in form of financial report and published it every year during 2009-2012 periode.

This sample taking of this study used Non-Probability Sampling with the kind of Purposive Judgement Sampling because researcher determine subject form the sample chosen just only based on the study (judgement) of the researcher (Efferin *et al.,* 2008).

Next, Classic Asumption test used in this study is as follows:

1. Normality Test

Normality test used to find out whether data population normaly distribute or no (Priyatno, 2010). Testing criteria is by looking at significance value (Sig) > 0,05, then the data normally distribute.

Uji normalitas digunakan untuk mengetahui apakah populasi data berdistribusi normal atau tidak (Priyatno, 2010). Kriteria pengujian adalah dengan melihat nilai signifikasi (Sig) > 0,05, maka data berdistibusi normal.

2. Autocorrelation Test

Autocorrelation test has function to know whether there is correlation between residual in t periode with the residual from previous periode (t-1) in regression model (Priyatno, 2011). The detection whether there is autocorrelation or no is by using Durbin-Watson test (DW test) (Priyatno, 2011). Regression model is free from autocorrelation if Durbin Watson (DW) value which is resulted is qualify DU<DW< 4-DU.

3. Heterokedastisitas Test

Heterokedastisitas Test has function to see whether there is different in residual variant of model regression in one observation to another by using correlation coefficient test of Spearman (Priyatno, 2011). Regression model said to be free for heterokedastisitas if the significance level from each independent variable >0,05.

This study uses quadratic regression which is by using quadrat equation. Quadrat equation used in this study is as follow:

$$PBV = \alpha + \beta_1.DER + \beta_2.DER^2 + U \quad \text{..... (3)}$$

Explanation:

DER = *Debt to Equity Ratio*
PBV = *Price Book Value*

α = Constants
β_1 = DER Coefficient Regression
β_2 = DER^2Coefficient Regression
U = Residual

Then hypothesis testing by quadratic regression is as follows:

1. Stimulant Test (F Test)
   F test is uded for testomg whether independent variables are simultaneously having significant positive influence on dependent variables (Priyatno, 2011). If the significance level < 0.05, then there is significant influence from independent variables on dependent variables.
2. Partial Test (t Test)
   T test function is to know the significant influence between dependent variables with independent variables (Priyatno, 2011). If the significance level is < 0.05, then there is significant influence from independent variables on dependent variables.
3. Determination Coefficient
   Determination coefficient used to know how big the ability of independent variables in influencing dependent variables (Priyatno, 2011).

3. Result and Discusion

This study uses secondary data from yearly financial report and also factbook during 2009, 2010, 2011, and 2012 periode. Sample that used must qualify in characteristics which already determined. Based on those criterias, sample that qualify characteristics determined in his study are 40 business entities in 4 years, and then it is obtained data of 160 samples. Further data processing uses quadratic regression with the support of SPSS 20 software.

Table 2. Descriptive Statistic

Variabel	N	Minimum	Maximum	Mean	Std. Dev
PBV	160	0,13	6,32	1,448	1,117
DER	160	0,00131	6,5984	1,009	1,0001
DER2	160	0,00000	43,5389	2,0122	5,2085
Valid N (listwise)	160				

From Table 2, it appears that the number of samples used is 160 samples. PBV variable has the lowest value of 0.13, the highest score of 6.32, and the average value of 1.4483 and dissemination of data values from the average value of 1.11694. Variable DER has the lowest value of 0.00131, the highest value of 6.59841, and the average value of 1.0090873 and dissemination of data values from the average value of 1.00011772. Variable DER2 has the lowest value of 0.00000, the highest score of 43.53897, and the average value of 2.0122400 and dissemination of data values from the average value of 5.20852262.

Table 3. Normality Test Result

One-Sample Kolmogorov-Smirnov Test

		Un. Residual	DER	DER2
N		152	152	152
Normal Parameters	Mean	0,0000023	0,9998	2.0297
	Std. Deviation	0,8066	1,0182	5.3378
Most Extreme Differences	Absolute	0,127	0,183	0.352
	Positive	0,127	0,183	0.309
	Negative	-0,094	-0,168	-0.352
Kolmogorov-Smirnov Z		1.562	2,259	4,338
Asymp. Sig. (2-tailed)		0.015	0,000	0,000

In Table 3 it can be seen that the value Asymp. Sig (2-tailed) of DER and DER2 are 0.000 and 0.015 unstandardized Residual which indicates that the study variables are not normally distributed, because the value Asymp. Sig (2-tailed) <0,05. These results are the result of normality test after the reduction to 8 samples or 5% of the total sample used by using SPSS software boxplot at 20, but the data are not normally distributed.

Central Limit Theorem (Gujarati, 1988: 66) states that if there are a large number of random variables are independent and identically distributed, then with a few exceptions, these data tend to be normally distributed. Gujarati (1995: 782) states that the variable with n> 25 is larger sample. Thus, 152 samples used in this study can be said to be normally distributed.

Table 4. Heteroskedastisitas Test Result

Correlation					
			DER	**DER2**	**Un.Residual**
Spearman's rho	DER	Correlation Coefficient	1,000	1,000**	-0,013
		Sig. (2-tailed)	,	,	0,872
		N	152	152	152
	DER2	Correlation Coefficient	1,000**	1,000	-0,013
		Sig. (2-tailed)	,	,	0,872
		N	152	152	152
	Un. Residual	Correlation Coefficient	-0,013	-0,013	1,000
		Sig. (2-tailed)	0,872	0,872	,
		N	152	152	152

Table 4 shows that the variable DER and DER2 have exceeded the 0.05 level. DER and DER2 variables have a significance value of 0.872 respectively. This indicates that the data used in the study can be said to be free from heteroscedasticity.

Table 5. Autocorrelation and Determination Coefficient Test Result

Model Summary[b]					
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Durbin-Watson**
1	0,293[a]	0,086	0,074	0,81195	2,160

a. Predictors: (Constant), DER2, DER
b. Dependent Variable: PBV

Table 5 shows that the value of Durbin Watson (DW) amounted to 2,160, while the value for k = 2 at 152 samples, Watson Durbin table shows the value of 1.7616. In accordance with the requirement for free autocorrelation that DU <DW <4-DU, then the value for autocorrelation is 1.7616 <2.160 <2.2384 stating that model no correlation between variables.

The results of data processing in table 5 shows adj R2 value are equal to 0.074 or 7.4%. R2 adj value indicates that the variable DER and DER2 able to contribute by 7.4% in explaining the variation changes that occur in PBV variable, while 92.6% is explained by other variables outside variables in this study. Small coefficient determination is due to many factors that affect the value of the enterprise.

Sudjoko and Soebiantoro (2007) conducted tests on 10 factors that could affect the value of the enterprise and get the result that 8 of the 10 factors tested significantly influence the value

of the enterprise. Eight factors that significantly influence the value of the enterprise in research Sudjoko and Soebiantoro (2007), among others: institutional ownership, interest rates, market growth, profitability, dividends, the size of the enterprise, the relative market share and leverage. So, it can be said that the value of the coefficient of determination of 7.4% in this study are relevant.

Table 6. Simultant Test Result (*F-test*)

ANOVA[a]						
Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	9,218	2	4,609	6,991	0,001[b]
	Residual	98,230	149	0,659		
	Total	107,449	151			

a. Dependent Variable: PBV
b. Predictors: (Constant), DER2, DER

Based on the data processing results using SPSS 20 software, the result of Fcount value is 6.991 with a significance level of 0.001. The significance level was below 0.05, thus indicating that the DER and DER2 has significant effect simultaneously on the PBV.

Research from Hill (2012) found a significant positive effect on the capital structure of the business entity value. Positive influence of capital structure on business entity value shows that if there is an increase in the capital structure will be followed by an increase in the business entity value, as well as if there is a decrease in capital structure will be followed by a decrease in the business entity value.

In research of Sari *et al.,* (2013) and Sudjoko and Soebiantoro (2007) found negative effect on the capital structure of the business entity value. Negative influence of capital structure on the business entities value shows that if there is an increase in the capital structure, there will be a decline in the business entity value, whereas if there is a decrease in capital structure will be an increase in the business entity value.

Table 7. Tartial Test Result (*t-test*)

Coefficient[a]						
Model		**Un. Coefficient**		**Std.Coefficient**	**t**	**Sig.**
		B	**Std. Error**	**Beta**		
1	Constant	0,885	0,125		7,063	0,000
	DER	0,553	0,161	0,668	3,446	0,001
	DER2	-0,079	0,031	-0,497	-2,566	0,011

a. Dependent Variable: PBV

Testing for DER against PBV variable has a value of β of 0.553 with a significance level of 0.001. The significance level was below 5%, so it can be said that DER has positive and significant effect on the PBV.

Testing for DER2 against PBV variable has a value of β of -0.079 with a significance level of 0.011. The significance level was below 5%, so it can be said that DER2 has significant negative effect on the PBV.

The results of this study were consistent with the static trade-off theory and consistent with the hypothesis that designed. This is due to the effect of curvilinear between capital structure of the business entity value as indicated by the value of β1 in DER showed a positive value and the value of the β2 on DER2 which shows a negative value. This shows that the capital structure will enhance the business entity value at first, and then at a certain point will cause a decrease in the business entity value. Things to cause increases and decreases in the value of this

business entity is initially business entity will benefit or tax saving benefits of an increase in the debt, then the market will judge both these things, so that the business entity value will increase. However, the increase in debt that constantly can cause business entity experiencing financial difficulties because of the burden of business entities which are also on the increase, the market would assess it as something not good, could result in impairment of the enterprise.

The results of this study are also consistent with the results Babalola (2012), which conducts research on business entity of food and beverages that are listed on the stock exchange Nigeria and found that the capital structure significantly influence the business entityvalue, because the results of the regression shows the effect of curvilinear between capital structure to business entity caused by the costs and benefits of the use of debt. Babalola (2012) also found that there is an optimal capital structure for a business entity sector.

The results of this study are also consistent with research Manurung (2012) who did research on the manufacturing sector enterprises listed on the Indonesia Stock Exchange. Manurung (2012) in his research found that the capital structure significantly influences a business entity value if the proxy is using the capital structure of DER and dummy, and the value of a business entity to use a proxy stock prices.

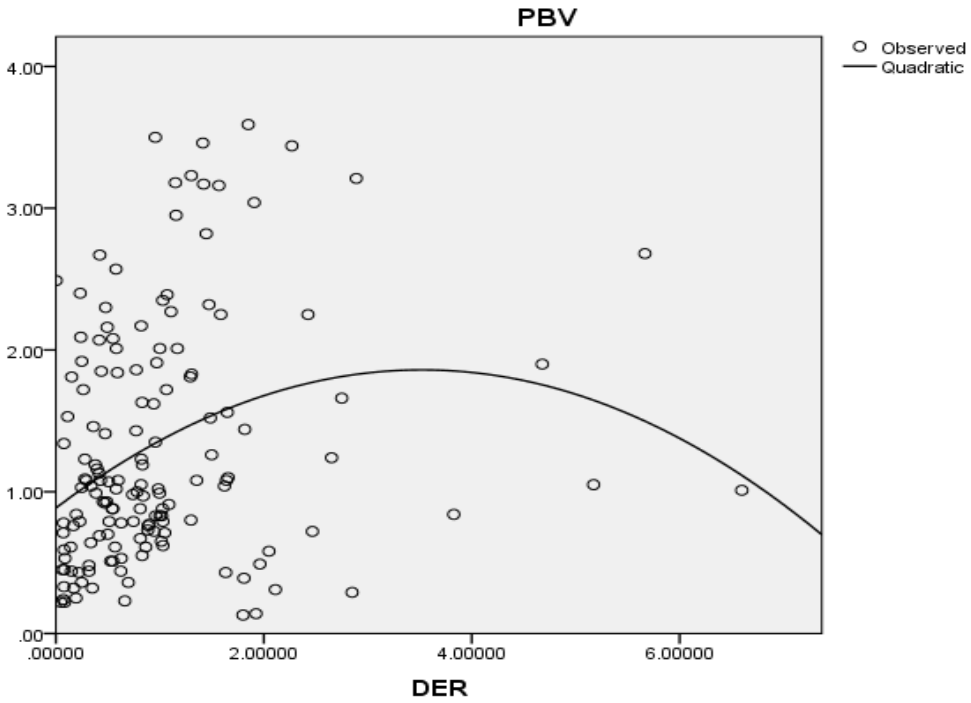

Figure 2. Curve Estimation

In Figure 2 it can be seen that the regression results using curve estimation on software SPSS 20 shows a picture of the curve U-shape upside which suggests that there is influence of curvilinear of capital structure on the value of the body, which can indicate the optimal capital structure for the business enterprise sector property, real estate and building construction listed in Indonesia Stock Exchange during the period 2009 - 2012. The optimal capital structure calculation results obtained from the PBV highest expected value using a regression equation in the formula 3, which will produce the following equation:

$PBV = 0{,}885 + 0{,}553.\ DER - 0{,}079.\ DER^2$

From the results of these calculations, the highest PBV expected value obtained with a value of 1.844 with DER value of 3,828. This indicates that there is an optimal capital structure to increase the business entity value, the total liabilities amounted to 3,828 times of total equity

for the property sector enterprises, real estate and building construction listed in Indonesia Stock Exchange during the 2009-2012 periode.

Implications for management is that if the management will increase the debt, then it should consider the extent to which the increase in the debt could raise the business entity value, because according to the trade-off theory, the use of debt could increase the business entity value due to the benefits of tax savings, but at a certain point that is too high debt utilization can lower the business entity value that caused enterprises experiencing financial difficulties due to the use of debt is too high.

Implications for investors are business entities that use the debt which is too high can lead to the risk of financial difficultie. Risk seekers investor will dare to invest in enterprises that have DER which is too high, while the risk-averse investor will tend to avoid investing in entities that have DER that is too high and dare to invest in enterprises that have a low DER.

4. Conclusion

Based on simultaneously test results (F test) showed a significant result of the effect of capital structure on the value of Nadan effort, because it has a significance level of 0.001 (less than 5%).

Based on the results of the partial test (t test) for DER variable has a value of β of 0.553 with a significance level of 0001. While DER2 has a β value of -0497 with significance level of 0.011. The level of significance of these two variables is below 5%, so it can be said that DER has positive and significant effect on the PBV, while DER2 has significant negative effect on the PBV.

Data processing equation model in this study is quadratic regression method. The results of data processing showed the coefficient of determination (R2) obtained amounted to 0.074 or 7.4%. This indicates that the capital structure variable could play a role by 7.4% in explaining the variation changes that occur in the business entities value variable, while 92.6% is explained by other variables outside variables in this study.

Recommendations are given by researchers to the management is preferably increase the debt capacity to be able to increase the business entity value, as long as the business entity still benefiting from the use of such debt and are not experiencing financial difficulties due to the use of debt which is too high.

Recommendations are given by researchers for investors should consider the level of debt using an entity prior to making a decision to invest, because the use of debt that is too low or too high is not too good for an enterprise.

For further study, the researcher recommends using different variables for different sectors and doing more research on other sectors that rarely get attention for examination. Then add the observation time period, for example using observation period of 8 years or replace the observation period into the semester or quarterly. So, expect a long period to be able to demonstrate results more clearly.

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