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Research paper

The role of investment opportunity set on financially distressed firm's value

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Abstract

Sustainability of a company is one of them determined by financial performance that is perceived by firm value. Thus it is important to increase firm value as it can be used as signal to investors that the company is worthy. Investment opportunity set and financial distress are one of among factors that affect firm value. This study examines: (1) the influence of investment opportunity set on firm value, 2) the influence of financial distress on firm value and, 3) the role of investment opportunity set as a mediating variable on the relationship between financial distress and firm value. Using PLS Program Warp PLS 5.0., financial data gathered from 33 listing companies of real estate and property sector in Indonesia were analyzed. The results show that Investment opportunity set and financial distress affect firm value. Further analysis found that investment opportunity set play as a mediating variable that mediate the relationship between financial distress and firm value.

Keywords: *Financial Distress; Firm Value; Investment Opportunity Set; Mediating; Warp PLS.*

1. Introduction

The property and real estate industry growth in developing country like Indonesia is relatively easy to increase. According to data from the Badan Pusat Statistik (BPS) (2017) in 2013 the number of households in Indonesia is 64,041.20. In 2014 that number rises to 64,771.60, and in 2015 again rises to 65,588.40. With the sustained growth number of families in Indonesia, the property and real estate sector is expected to yield prosperity to investors. Nevertheless, the development of real estate business in Indonesia is not corresponding with the population growth in Indonesia. The trend of stock prices of companies in the real estate sector listing on the Indonesia Stock Exchange shows fluctuating stock price movements.

Table 1 shows fluctuating moves of a number of companies in the real estate industry in Indonesia, some of which show significant downward trend, such as BKSL, SMDM, and SCBD. Although there are many potential factors that may cause instability or even declining of property and real estate performance, based on theoretical studies and empirical studies of previous studies, the decline in real estate firms' value is due to several factors including financial distress and investment opportunity set.

Tabel 1: Summary of Stock Prices of Property and Real Estate Companies Jan 2014 – May 2015

	Stock Price (Rp)								
Code of Firm	Jan 2014	Mar 2014	May 2014	Jul 2014	Sept 2014	Nov 2014	Jan 2015	Mar 2015	May 2015
BKSL	155	181	147	119	101	115	115	121	99
EMDE	112	114	143	144	134	132	122	121	107
MTLA	400	490	408	403	440	470	445	434	415
MTSM	690	690	700	690	690	690	690	700	600
NIRO	260	265	263	265	225	191	213	228	223
PUDP	495	479	490	480	490	439	420	405	411
RBMS	89	89	83	97	85	86	93	87	81
RODA	444	395	390	370	398	350	463	354	465
SCBD	3000	3000	3600	3750	3795	2075	2495	2580	1700
SMDM	194	179	160	215	155	143	131	150	129

Resources: Indonesian Capital Market Directory 2015

From the phenomenon that occurs in the real estate sector that occurred above, it can be concluded that the value of real estate companies on average is declining. There are several factors that cause the declining of firm value, including economic conditions and inflation of a country. In addition to the inflation occurring in Indonesia, financial distress conditions predicted to affect the value of companies in real estate. Financial distress can be experienced by all companies, especially if the economic conditions in the country where the company is operating experienced economic crisis (Ramadhani and Lukviarman, 2009).

Study conducted by Bhattacharjee & Han (2014) shows that impact of corporate characteristics, macroeconomic instability and institutional aspects of the company is aggravated by financial distress. However, contrarily Liu, et.al., (2012) found that poorly performing state companies before the global financial crisis,

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showed good performance in times of crisis, especially companies that depend on bank debt. This suggests that financial distress does not affect the firm value.
Furthermore, other variable that are considered to affect the firm value is Investments Set Opportunity (IOS). Myers (1977) reveals the value of a company is a combination of assets owned by the company with investment options in the future. Additionally IOS submission is defined by Smith and Watts (1986) as a combination proxy of firm growth described as market value. Furthermore, the notion of IOS is provided by Rokhayati (2005) who argues that investment choice is an opportunity to develop, but often companies can not always carry out all investment opportunities in the future. Several studies have also examined the relationship between IOS and firm value.
Gutierrez, et.al., (2015) found that a financially distressed company will have a lower level investment opportunity, and tends to reduce investment. Moreover, Giriati (2016) found that the opportunity to invest (IOS) affects the firm value.
The aim of this study is to investigate the effect of financial distresses and investment opportunity set (IOS) on firm value. Due to the inconsistency of prior result studies we expected that investment opportunity set (IOS) might be play as mediator variable and thus we also investigate the role of IOS on the relationship between financial distress and firm value.

2. Literature review and hypotheses development

2.1. The relationship between financial distress and firm value

As an investor, shareholders expect the value of investments invested in the company will increase the value of their wealth constantly. The value of shareholder value is reflected by the value of the company. The higher the value of a company, the higher the shareholder value will be, and the lower the value of the company, the lower the shareholder value will be. Therefore, according to the theory of maximization value the main purpose of the establishment of the company is to increase the value for shareholders.
However, economic downturn, poor management or declining industry performance might cause the company to experience financial distress (Wruck, 1990). Financial distress is a situation where the company is unable to pay off its contractual obligations (Elloumi and Gueyie, 2001). The state of financial distress forces the company to make efficiency (Jensen, 1989) and thereby prioritizes the available cash to pay liabilities to creditors. This situation has harmed shareholders.
DeAngelo and DeAngelo (1990) found that companies experiencing financial distress will exercise dividend deductions. This shows that there has been a transfer of wealth from shareholders to creditors. Furthermore, financial distress causes companies to pay cost. These costs include ex ante costs and post ante costs (Altman (1984); Opler and Titman (1994); Andrade and Kaplan (1998); Maksimovic and Phillips (1998)).
Costs incurred by financial distress might undermine firm value. The ex post costs incurred by financial distress are known to have eroded 10 to 20 percent of the firm's value (Almeida and Philippon, 2007). This proves that financial distress has a negative effect on firm value. Furthermore Whittaker (1999) found that financial distress affect firm value and firm performance. From the above description the following hypothesis is proposed:
H1: There is a negative relationship between financial distress and firm value

2.2. The relationship between investment opportunity set (IOS) and firm value

The Maximization value theory explains that one of the purposes of a company is to increase shareholder value. Increasing shareholder value is indicated by an increase in corporate value. Therefore it is important for the company to increase its value constantly. One of the ways to increase firm value that can be done is by making an investment that produces positive NPV in the future. According to Myers (1977), a valued company is a company that reflects a continuous future investment. Future investment or opportunities that generate growth if exercised is reflected by the Investment Opportunity Set (IOS).
Companies with high IOS will have a higher and greater opportunity to issue new products, expansion opportunities and the ability to maintain or replace existing assets (Mason and Merton, 1985). Therefore, high IOS is considered to reflect the company's high growth opportunities in the future. Future business growth opportunities are considered important by investors and therefore will increase the value of the company.
Mcconnell and Muscarella (1985) found that firms that have the opportunity to invest in projects that are expected to produce positive NPVs will have a positive effect on firm value. Martani (2008) found that government owned enterprises with high IOS also have high corporate value. Similarly, Giriarti (2016) found that IOS, dividend policy, management opportunistic behavior and free cash flow affect firm value.
Based on the above description the following hypothesis is proposed:

2.3. The Relationship between financial distress and investment opportunity set

According to Baldwin and Scott (1983), financial distress is a condition where the condition of the company getting worse so unable to pay off its obligations. The state of financial distress should be wary of the company because financial distress can be a sign of the beginning of bankruptcy. Therefore, companies experiencing financial distress need to make the right decision to save the company from bankruptcy.
Andrade and Kaplan (1998) suggested companies that are in financial difficulty are forced to reduce the cost of capital or sell assets below the market price. This is done in order to reduce cash expenses and receive cash inflows used to pay off obligations. Companies experiencing financial distress tend to allocate cash to pay off obligations, and postpone expenditures related to capital and investment costs.
Bhagat et al (2005) found that investment decisions for companies experiencing financial distress will be different from those in healthy conditions. The results of Bhagat et al (2005) showed that firms with financial distress will have fewer investments, have low free cash flow rates, high leverage and lower sales growth rates.
Similar results were also obtained by Gutierrez et.al (2015). They found that companies experiencing financial distress will have low investment opportunities (IOS). Based on the above argument the following hypothesis can be submitted:
H3: There is a significant negative relationship between Financial Distress and Investment Opportunity Set

2.4. The relationship between financial distress, IOS, and firm value

A financially distressed company will perform efficiency and restructuring in an effort to pay off its obligations and avoid bankruptcy. One of the efficiency efforts undertaken by companies is to delay or reduce capital expenditure on investment (Asquith et al., 1994). Cutting capital costs on investment reflects a decrease in the chances of investment (IOS).
Companies that experience financial distress will also cost more. These costs arise as a result of the financial distress experienced by the company. Some forms of costs due to financial distress such as litigation costs, loss of customers and other maintenance costs (Andrade and Kaplan (1998), Elkamhi et.al (2012)) make the company change its spending priorities and lower the opportunity to invest (IOS). Therefore it can be concluded that companies experiencing financial distress will reduce the opportunity to invest (IOS). This is corresponding with Gutierrez et al (2015) who

found that companies experiencing financial distress will have a low investment opportunity (IOS).
When a financially distressed company posses low IOS, the value of this company will also decrease as well. Low IOS indicates that the company is delaying an investment project that has a positive NPV score. The non-performance of an investment project that has a positive NPV value is a loss to shareholders, since shareholders should be rewarded from the investment project.
Additionally, low IOS indicates a decrease in the company's future growth possibilities. This can be a signal that the company will not be able to add value to shareholders and therefore lower the firm value. Based on the above description the following hypothesis is proposed:
H4: IOS mediates the relationship between financial distress and firm value

3. Research design and methodology

3.1. Sample

This study uses secondary data obtained from the financial statements of property and real estate companies listed on the Indonesia Stock Exchange from 2012 to 2014. Property and real estate sector is selected since it is very vulnerable to economic fluctuations that resulted in financial distress. From 49 of property and real estate company listed in 2014, only 33 companies data were used, the other 16 companies data were not used due to incompleteness.

3.2. Operationalization of variables

3.3. Financial distress

Financial distress is defined as a condition in which the company's condition deteriorates and is unable to pay off its obligations. Financial distress is measured using Z Score (Altman, 1968) calculated in the following way:

$$Z = 0.012X1 + 0.014\ X2 + 0.033\ X3 + 0.006\ X4 +).010\ X5$$

Z: Z-Score Index
X1: Working Capital / Total Asset
X2: Retained Earning / Total Asset
X3: Earnings Before Interest and Tax / Total Asset
X4: Market Value of Equity / Book Value of Total Debt.
X5: Sales / Total Asset
Investment Opportunity Set (IOS)
Investment Opportunity Set (IOS) is defined as the current expenditure that will resulted in future returns where the growth in value of the investment can increase the value of the firm.
To properly measure IOS information such as cash flow for investment and potential cash distribution received by investors are required. However, since this information is not available, IOS should be measured using proxies (Kallapur and Trombley, 2001). The present study using asset growth ratio and asset to sales ratio to measure IOS.

3.4. Firm value

Firm value is defined as the fair value of the firm that describes the investor's perception of the issuer. This study uses Tobin's Q to measure corporate value variables. Tobin's Q can be calculated as follows:
Tobin's Q = [(Outstanding Shares X closing price) + (Liabilities – current asset)]
Total Asset Book Value

3.5. Data analysis

Data analysis used in this study is Partial Least Square Structural Equation Modeling (PLS-SEM). PLS analysis was used because one of the latent variables in this study was measured using formative indicators (Chin, 2010; Hair et al., 2014). Stages in the PLS analysis are done in two stages. First, the measurement model analysis is performed to assess the validity of the variables. Second, structural model analysis is used to test the hypothesis.

4. Result and discussion

Measurement Model evaluation for measurement of latent formative variables using two criteria. First, the weight must be significant, in other words, the p-value must be less than 0.05 or 0.01. Second, the VIF value is less than 3.3 (Kock, 2014; Solihin and Ratmono, 2013). The result of measurement model analysis can be seen in table 1.

Table 1: Output Indicator Weight, Full Collinearity VIF, R Square

Variable	Indicator weight-loading	Standard Errors	Sig.	VIF	Full Collin VIF	R Square
Financial Distress	1.000	0.076	p<0.01	0.000	1.017	
Investment Opportunity Set	0.581	0.086	p <0.01	1.298	1.114	0.173
	0.581	0.086	p <0.01	1.298		
Firm Value	1.000	0.076	p <0.01	0.000	1.103	0.389

Table 1 shows the weight indicator on the calculation of latent variable investment opportunity set is significant (p <0.01). It can also be seen that the VIF value is less than 3.3. This explains that the indicators used in this study have a good level of accuracy.

4.1. Structural model analysis

The result of structural model analysis can be seen in table 2. In table 2 (panel A) it can be seen that there is a negative relationship between financial distress and firm value. These results statistically support H1. This explains that the higher the level of financial distress of a company the lower firm value will be. This result is consistent with Almeida dan Philippon, (2007) who found that costs that incurred from financial distress eroded firm value. Furthermore in the table (panel B) it can be seen that the investment opportunity set is positively affect firm value. The results statistically support H2. This explains that the higher IOS level in company is, the higher firm value will be. This result conformed Martani (2007) and Giriarti (2016) study who found that IOS affect firm value.
This study further analyzes the relationship between financial distress and IOS. Table 2 (panel B) shows that financial distress negatively affects investment opportunity set. The results statistically support H3. This explains that company that financially distress will have a lower level of IOS. This result is consistent with Gutierrez et.al (2015) who found that financial distress affect investment opportunity.
Furthermore, in Table 3 it can be seen that the investment opportunity set mediates the influence of financial distress on firm value. The results statistically support H4. This explains that the financial distress affect firm value through IOS and thus the relationship between financial distress and firm value become indirect.

Table 2: PLS Results (Path Coefficient, P-Value, and R^2)

Panel A. Direct Effect Without Mediation	
Variable	Path to Firm Value
Financial Distress	-0,529*
R^2	0.279

Panel B. Full Model		
Variable	Path to Investment Opportunity Set	Firm Value
Financial Distress	-0.416*	-0.257*
Investment Opportunity Set		0.428*
R^2	0.173	0.389

* P < 0.01

Table 3: Indirect Effects for Paths with 3 Segments

Indirect effects	Path coefficient	Standard errors	p-value
Financial distress → firm value	-0.178	0.068	p<0.01

5. Conclusions

The purpose of this study is to investigate the relationship between financial distress, investment opportunity set (IOS) and firm value. A total number of 33 real estate and property companies financial data listed in Indonesia Stock Exchange in 2012 to 2014 were analyzed using PLS. The study findings suggest that there is a negative significant relationship between financial distress and firm value. The finding is correspondent with Almeida dan Philippon, (2007) who found that costs that incurred from financial distress eroded firm value. Moreover the study findings also devote that there is a negative significant relationship between investment opportunity set and firm value. The study finding shows that there is a negative relationship between financial distress and IOS. The mediation hypothesis testing result also confirm that IOS is a partial mediator variable that makes the relationship between financial distress and firm value become indirect.

This study finding implies that financial distress condition should be avoided by companies since it may reduce its firm value. Furthermore, the findings also suggest IOS is positively related to firm value and thus, companies should increase IOS to increase firm value. The mediation hypothesis testing result imply that companies that suffer from financial distress will have a lower investment opportunity set and thus will lower firm value. Therefore it is important to the company to avoid being financial distressed, increase IOS and this will resulted in increasing firm value.

This study has several limitations. First, the financial data that were analyzed in this study was from 33 property and real estate companies only, future study is expected to add more financial data from other industry sector. Second, there are two types of financial distress according to Whittaker (1999) namely financial distress that caused by poor management and financial distress that caused by declining industry performance. This study did not analyse this two types of financial distress thus, future research may develop the analysis by divide financial distress based on types.

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