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Factors Affecting the Profitability of Indonesian Real Estate Publicly-listed Companies

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Abstract

The research studies the relationship between eight firm-specific factors on the profitability of large-, medium-, and small-scale real estate Indonesian companies. The data uses forty-seven real estate companies listed in the Indonesian Stock Exchange from 2010 to 2014. The study utilized multiple linear panel regression models, namely, ordinary least squares (OLS), fixed effects (FE) and random effects (RE) in examining the effect on the return on asset of firm-specific factors, which include: number of days account receivables, number of days inventory, number of days of account payable, size of the company, current ratio, debt ratio, sales growth, and tangibility. Empirical findings show that the number of days account receivable has negative relationship with profitability, but it has no effect on medium-size Indonesian real estate companies. The factor number of days inventories has negative relationship in small-size companies, but the inverse is true for large companies, because large real estate firms have more liquid assets that covers maintenance costs related to real estate inventories. Size and sales growth have positive relationship on profitability for both large and small Indonesian real estate firms. On one hand, current ratio has positive relationship in large companies, while a negative relationship was found in small companies, because of the lower current asset base usually being experienced by smaller real estate firms.

Lastly, tangibility has negative relationship with profitability for large companies, while the opposite is true for medium-sized real estate firms. Findings of this research are strong in using two panel regression models, and can help real estate managers have a general perspective regarding determinants of profitability in the expanding Indonesian market. This study also provides fresh perspectives in creating suitable strategies to controlling factors that maximizes profitability.

Keywords: Profitability, Real estate Indonesia, Return on asset

1. Introduction

The recovering global economy, particularly of the US has been setting an uptrend for the real estate industry where prices are seen to be reaching equilibrium levels. Indeed, the Subprime mortgage crisis of 2008 became the biggest blow to the seem-to-be-invincible real estate industry in recent years. However, investors, traders, speculators and even scholars are keeping an eye on the industry's current profitability because of the returning prospect that real estate industry still has a greater and more solid value compared to other investments in the long-term. The industry is experiencing renewed liquidity, because of the growing optimism in the future prospects of the industry. According to an online survey of 4,555 real estate executives conducted by the National Association of Realtors Profile of Real Estate Firms of 2015, 69% of residential real estate firms are very positive of the industry, and are expecting an increase in their net income next year. However, 46% still cited that keeping liquidity and profitability may still be the big challenges in the next two years, because of the shock caused by the recent crisis. The subprime meltdown made industry players very cautious in maintaining sufficient inventories, and in monitoring local and regional economic conditions.

Liquidity and profitability as the major concerns nowadays have been studied by Gitman (1974), and introduced the model to measure liquidity with its study of the cash conversion cycle (CCC), which offers a potential gauge for businesses with longer cycles. CCC measures the number of days accounts receivable, the number of days inventories, and the number of days accounts payable, and the study of Deloof (2003) has proven that CCC influences the profitability of a company. In terms of real estate and construction industries, Mehta (2014) examined publicly-listed companies in the Abu Dhabi stock exchange and showed that with longer CCC, the lesser the profitability of the companies. Moreover, Hammes and Chen (2005) earlier noticed that the determinants of firm's profitability in one country compare to the others could be the same, but the result in the different aspects like liquidity and leverage depend on the general economic conditions of a country. This was supported by their study regarding private property companies in 13 European countries.

Companies with businesses related to the real estate and property sectors in Indonesia are still expected to be promising and profitable for two main reasons: a) property prices in Indonesia are still among the cheapest in the Southeast Asian region; and b) a high demand for property is still present due to the large and young Indonesian population. These mean that properties are still affordable, and many more first house buyers are yet to be expected.

In the beginning of 2012 and the first half of 2013, Indonesian property developers experienced a rapid growth. Twenty-six out of the forty-five real estate companies experienced more than 50% growth on profit. Accordingly, property prices rose nearly 30% per year between 2011 and 2013. This property boom was attributed with the strong demand, and increased demographic income. Middle class consumers are the biggest drivers in the residential segment, and became the largest contributor to Indonesia's property growth; about 60% of the total property sector.

The expansion of population complementing with increasing urbanization create more

demands in the future, especially that 50% of Indonesia's population is below the age of 30, which is the future consumers of real estate. The United Nations (UN) predicted that by 2050, two-thirds of Indonesia's population is expected to live in urban areas (Schaar, 2015). This trend, coupled with limited land in urban areas will tend to make prices to increase rapidly making developers to focus on vertical residential development, such as apartments and condominiums.

The other factor causing the property boom was the Bank Indonesia (BI), the country's central bank's easy credit policy. From February 2012 until the middle of 2013, the central bank's rate was 5.75%, which is considered a low-policy rate for the country as the Southeast Asia's largest economy. This condition also pushed commercial banks rose their mortgage loans. According to Schaar (2015), about 46% of banks' total credit was allocated to consumers' mortgage loans since May of 2013. However, BI became more cautious about the rapid increase in mortgage loans, because the general economy experiences a slow growth in the second half of 2013. BI decided to be stricter with their low-rate policy, and implemented the following measures: a) raised the minimum down payment requirement for property purchases, b) restricted mortgages for second home ownership to prevent excessive increase of housing debt, and c) banks were prohibited to provide loans for purchasing property that was still under construction. Moreover, BI raised its rate between June 2013 and November 2013 to 7.50%, in order to resist the high inflation, to lessen the country's wide current account deficit, and to manage the uncertain international climate. Furthermore, BI's survey showed a sharp drop in residential property sales, from 40.1% in the fourth quarter of 2014 to 26.6% in the first quarter of 2015.

Given all these trends in the Indonesian real estate and property sectors, companies control their leverage due to the high interest rate to avoid negatively affecting firm performance. According to Mayasari (2012), leverage has adverse effects on the firm's profitability, because it may control a firm's liquidity due to interest and principal obligations. The study also found that liquidity has positive relationship with the profitability, which means that the more cash or cash-related assets the company own, the higher the profit they could generate.

The study is motivated by the projected boom of the Indonesian real estate industry in the future. Indonesia's high demographic growth, increasing income levels, and relatively cheaper real estate properties provide great opportunities for real estate companies to gain higher liquidity and profitability in the future. The lack of empirical literature in determining the factors that affecting profitability of Indonesia's real estate is also one of the main motivations of the study, thus, this paper contributes to the literature by identifying these factors using Ordinary Least Squares (OLS) model.

The broader objective of this research is to identify significant factors affecting profitability of Indonesia's real estate industry; and the three specific objectives are:

- to identify significant positive and negative relationships between real estate company's profitability and related factors;
- to determine which firm-specific factors have stronger influence on profitability based

on the coefficients' outcome; and

- to examine if there are differences on the significant factors determining the profitability of large-, medium-, and small- companies based on market capitalization.

This study's objectives will provide more empirical evidence in determining financial factors that management can utilize to better understand changes in company profitability. Also, the more recent data range, extended variables considered (i.e., three components of CCC, current ratio, and tangibility), and dividing real estate firms into three major categories make-up the distinction of this paper from the previous studies of Azlina (2009), Apriliyani (2011), and Karina and Khafid (2015), in Indonesia. Findings can also benefit managers of real estate companies in controlling certain financial variables that will help corporate strategies in order to minimize losses and maximize gains.

The paper is organized as follows. This section discussed the background of the study; Section 2 reviews the related literature; Section 3 defines the variables and related hypotheses; Section 4 presents the data and explains the methodologies of the research; Section 5 explains the empirical result; and Section 6 provides the conclusions, and limitations of this study.

2. Literature Review

Previous studies provide empirical evidences revealing the relationship between profitability and its different factors in several types of industries including the real estate industry. These researches will be discussed in the following sections: first, reviews literature that discusses factors affecting profitability; second, covers studies on factors affecting profitability of real estate firms in other countries; and lastly, features profitability of various industries in Indonesia.

2.1 Proxy Variables Affecting Profitability

A set of literature has examined the effect of CCC as a proxy for firm profitability. Shin and Soenen (1998) examined the relationship of net trade cycle (NTC) with profitability, and showed strong negative relation between the length of NTC and profitability. Same results were shown in Deloof (2003), and Lazaridis and Tryfonidis (2006), wherein they used CCC and its components to be tested toward gross operating income (GOI) as a proxy for profitability. On one hand, Garcia-Teruel and Martinez-Solano (2007) investigated return on asset (ROA) to stand for profitability, and revealed the same results, negative relationship between the number of days accounts receivable and inventories. In addition, Enqvist et al. (2014) investigated the role of business cycles on the working capital–profitability relationship, and showed that the negative impact of business cycle is more obvious in economic downturns relative to economic booms. The significance of efficient inventory management and accounts receivables conversion periods is negatively related to corporate profitability, and also is also magnified during periods of economic downturns.

Obert and Olawale (2010) investigated the impact of the use of debt on the profitability of small manufacturing firms, and found that there was a negative relationship between debt usage and the value of the firm. Similar research about the impact of debt level on

profitability in three classes (i.e., small, medium and large capitalization) of company size, conducted by Kebewar (2013), found that the debt negatively affects profitability. This finding corresponds to Shin and Soenen (1998), Deloof (2003), Lazaridis and Tryfonidis (2006), Garcia-Teruel and Martinez-Solano (2007), and Pervan and Višić (2012). However, Burja (2011) found the opposite, wherein debt ratio is positively related to profitability because of properly managing the advantage of leverage.

Pervan and Višić (2012) on the other hand, focused on firm size, and found that size has a significant positive influence on firm's profitability. In addition, asset turnover has positive significant influence and debt ratio has negative significant influence on firms' performance while current ratio doesn't prove to be an important explanatory variable of firms' profitability. Burja (2011) also analyzed profitability, and found negative relationship between the variable and fixed asset and expense ratios. However, the efficiency of managing inventories, debt levels, and efficiency of managing capital have positive effect on profitability. In an earlier study, Zubairi (2010) research results showed a positive relationship between profitability and average share price, liquidity, growth of revenue, and economic factor, GDP growth. But the relationship between profitability and financial leverage is negative.

2.2 Factors Affecting Profitability of Real Estate Firms Globally

Hammes and Chen (2005) conducted research to discover factors that influence profitability of real estate firms in European countries. Generally, the study found that borrowing has a negative effect, while firm size firm has a weak positive effect on performance except for Austria, which has a negative effect. Also, in most European countries tangibility factor was positively related to borrowing, but not to profitability. In an earlier study of the same authors, Hammes and Chen (2004) analyzed the performance of the Swedish real estate industry, and showed that firm performance could be explained by capital structure, size, age, tangibility and debt ratio. In addition, tangible assets (i.e., plant and equipment) contribute to the profitability of a firm serving as collateral for bank loans. However, excessive tangible assets were negatively related to profitability in the short-term, because of the expensive maintenance inherent with these assets.

Studies in the Middle East and Africa were also present. For example, Mehta (2014) investigated the relationship of working capital management and the profitability in the real estate and construction sectors of the United Arab Emirates (UAE). The results showed a significant negative relationship between profitability and the length of the firm's cash conversion cycle. This means that the longer the cash conversion cycle, the lesser will be the profitability. In Jordan, Dahmash (2014) studied about the effect of size on the profitability of listed companies in the Amman Stock Exchange. The results indicated that total assets has an insignificant coefficient values in relation to company size for real estate companies. In Africa, the study of Emoh and Uzuanje (2015) research about the influence of increasing cost of capital on the profitability of real estate developments in a particular locale in Nigeria, Benin City. The study showed that cost of capital negatively affects rate of returns, which implied that increasing cost of capital reduced profit levels of real estate developers.

In Asia, Malaysia's real estate industry has been highlighted in two studies. A unique relationship was established by Jarad and Sulaiman (2011) who investigated the connection between design as strategy of real estate firms and its relation to their profitability. The results showed that design innovativeness was positively correlated with profitability. On one hand, Mahmood and Zakaria (2007) also studied Malaysian property developers and constructors with regards to profitability and capital structure. The findings indicated that financial leverage was negatively related with net profit margins and price earning ratio for both property and construction sectors.

The Greater China Region also had its shares of studies about factors affecting the profitability of real estate firms. Feng and Guo (2015) analyzed the relationship between capital structure and financial performance of real estate listed companies in Shanghai, and showed that the high debt ratio is negatively related to its financial performance. Wu and Hsieh (2006) analyzed the correlation between debt ratios and corporate performance of Taiwanese property development firms during economic contractions. The study found that industry profits decline during periods of contraction. Moreover, industry characteristics and short-term debt ratio has positive correlation, however a negative correlation exists between stock dividend policy and operating risk in terms of total debt and short-term debt ratios.

In addition, Lee (2009) investigated the factors that influence the profitability of construction companies in Hong Kong. The results indicated negative relationship between the company size and profit margin. Also, the degree of sub-contracting and the level of material content have significant negative impact on profitability.

2.3 Determinants of Profitability in Various Indonesian Industries

Empirical studies that examined firms of various industries in Indonesia showed various results about factors that influence firm's profitability. In the financial industry, Martani and Munaiseche (2010) examined the determinants of profitability of Indonesian financial companies, which considered both internal and external factors. The study showed that operation expense, company size and inflation have negative effects on profitability, while credit risk has positive effect. Another study of Maberya and Suaryana (2009) investigated publicly-listed banks about the effects of company size, and debt to equity ratio on profitability, and included the moderating variable, earnings growth. Results showed that with the moderating variable, company size did not influence the profitability, while debt to equity ratio negatively affected profitability. However, Kusumajaya (2011) examined manufacturing companies, and showed that capital structure, which was represented by debt equity ratio, positively affected profitability and corporate value. The other empirical study on the manufacturing industry was provided by Ismiati et al. (2013), which showed a negative relationship between working capital turnover and profitability of Indonesian manufacturing companies. In other types of businesses, Margaretha and Supartika (2015) conducted research on the profitability of small to medium enterprises (SMEs) and found that firm size, growth opportunities, and lagged profitability have negative effects on profitability, while firm productivity and industry affiliations have positive impacts on profitability.

Studies on property and real estate industry in Indonesia are also present. For example, Azlina

(2009) revealed that working capital turnover and debt to equity ratio positively influenced the profitability of real estate companies. Also, Apriliyani (2011) showed a decreased condition for profitability in relation to asset structure, and the size of the company in 2004 and 2008 because of the financial crisis. Moreover, profitability, asset structure, and company size positive significantly influence the capital structure. Limbago and Juniarti (2014) showed that size, sales growth and proxy variable for family control have positive significant effects on profitability, but not on the firm's value of family-controlled companies. On the other hand, leverage had no effect on profitability, but had significant positive effect on the firm's value. Karina and Khafid (2015) showed that the size of real estate companies and receivable turnover ratio has positive relationship. Another study of Mayasari (2012) found that has negative significant relationship with profitability. However, leverage and liquidity have positive significant effects.

3. Variable Description and Hypotheses

From the various empirical studies investigating factors influencing profitability of several industries, this research considers eight factors that may influence profitability of Indonesian real estate companies. The definitions and hypotheses of each variable are discussed below, while formulas, and expected relationship are summarized in Table 1.

a) Return on Asset (ROA)

ROA is a measure of profitability per unit of assets (net income / total assets). It reflects financial performance of a firm by measuring how efficiently a firm creates profits using its assets during a year. It shows the ability of the firm's management to produce profit from the company's assets (Aissa and Goaied, 2016). In the previous studies, Garcia-Teruel and Martinez-Solano (2007), Zubairi (2010), and Enqvist et al. (2014) used ROA as a proxy for company profitability. Since ROA gauge in total assets, which includes the operating assets, it can be used to measure the overall profitability of a company. For the purposes of this research, ROA will be designated as the dependent variable, and will have the following as the eight independent variables:

b) Cash Conversion Cycle (CCC)

CCC is a measure of ongoing liquidity, as introduced by Gitman (1974). It quantifies the days between the expenditure of raw material procurement and the collection of finished goods' sales. Enqvist et al. (2014) explained that the shorter time of CCC, the higher the profitability, since short CCC indicates quick collection of receivables and delays in payments to suppliers, thus, increases efficiency of working capital management. The CCC aims to shorten the a) number of days account receivable, the b) number of days inventory; and the c) number of days account payable. Deloof (2003), Lazaridis and Tryfonidis (2006), and Enqvist et al. (2014) all claim a negative relationship between the length of CCC, and corporate profitability. Thus, this study formulates the following hypotheses:

H_{01}: CCC components (number of days accounts receivable, number of days in inventory, and number of days accounts payable) have no effect on profitability.

H_1: CCC components (number of days accounts receivable, number of days in inventory, and number of days accounts payable) have negative relationship with the profitability.

c) Size

Size will be measured by the company's total asset. It is assumed that huge companies with bigger assets optimize operations to create more profit. According to the studies of Deloof (2003), Lazaridis and Tryfonidis (2006), and Garcia-Teruel and Martinez-Solano (2007), the relationship between company size and profitability is positive, which means that the bigger the company, the higher profitability the company has than smaller firms. However, Enqvist et al. (2014) showed a result of negative relationship between the size and profitability. For the purposes of this study, we'll be going with the following hypotheses:

H_{02} : Size of the company has no effect on profitability.

H_2 : Size of the company has positive relationship with profitability.

d) Current Ratio

Current Ratio is an indicator of a company's short-term liquidity, and is measured by: current asset / current liabilities. The higher the ratio, the more capable the company is to pay back its current liabilities and continue its daily operations. Previous studies, such as Zubairi (2010) and Enqvist et al. (2014) proposed positive relationship between current ratio and profitability, because of maintained liquidity in the short-run. Thus, this paper suggests the following hypotheses:

H_{03} : Current ratio has no effect on profitability.

H_3 : Current ratio has positive relationship with profitability.

e) Debt Ratio

Debt ratio indicates the percentage of company's assets that are supported by external financing (short- and long-term debt). The higher the ratio, the greater the amount of debt used to operate and generate profits. A firm needs to maintain a manageable optimal debt ratio to reduce the cost of capital, which also means maximizing firm's profitability (Modigliani and Miller, 1963). Several previous studies like Deloof (2003), Kebewar (2013), and Enqvist et al. (2014) showed a negative relationship between higher debt ratio and profitability. Therefore, this study creates the following hypotheses:

H_{04}: Debt ratio has no effect on the profitability.

H_4: Debt ratio has negative relationship with the profitability.

f) Sales Growth

Sales growth is the primary factor that improves profitability. Firms with high sales growth opportunities are expected to have a high performance ratio, as growth firms are able to generate profit from investment. Previous studies, such as Shin and Soenen (1998), Garcia-Teruel and Martinez-Solano (2007), and Zubairi (2010), showed a positive

relationship between sales growth and profitability. Thus, this paper suggests the following hypotheses:

H_{05} : Sales growth has no effect on profitability.

H_5 : Sales growth has positive relationship with profitability.

g) Tangibility

Tangibility of real estate firms refers to the tangible assets or the fixed and current assets that they have in a particular accounting year. Fixed assets include property, plant and equipment, while current assets include real estate assets as inventory. Firms with high levels of tangible assets tend to be less profitable, because according to Kebewar (2013), these firms have less sales innovation, low research and development, and lower investment opportunities in the long term. The papers of Hammes and Chen (2004) and Kebewar (2013) proposed that there is negative relationship between tangibility and profitability. Therefore, this study suggests the following hypotheses:

H_{06}: Tangibility has no effect on profitability.

H_6: Tangibility has negative relationship with profitability.

Table 1. Summary of Variables Description

Independent Variables	Abbreviation	Description	Formula	Expected relationship with
Return on asset	ROA	Proxy for profitability	Net income / total assets	Dependent variable
No. of days account receivable	AR	Amount of days to collect payments	(Account receivable / Sales) x 365	Negative (-)
No. of days inventory	IN	Amount of days to hold the inventory	(Inventory / Cost of good sold) x 365	Negative (-)
No. of days account payable	AP	Amount of days to pay the supplier	(Account payables / Cost of good sold) x 365	Negative (-)
Size	SIZE	Natural logarithm of sales	Ln (Sales)	Positive (+)
Current Ratio	CR	Indicator of a company's liquidity	Current asset / Current liabilities	Positive (+)
Debt ratio	DR	Percentage of external financing	Total debt / Total Asset	Negative (-)
Sales growth	SG	Company's growth opportunities	$(Sales_1 – Sales_0)/ Sales_0$	Positive (+)
Tangibility	TANG	Fixed and current tangible assets	Net tangible asset/ total asset	Negative (-)

4. Data and Methodology

4.1 Data and Sample Selection

This study collects yearly financial statement, includes balance sheet, income statement, and cash flow of listed property and real estate companies in Indonesia Stock Exchange (IDX) from 2010 to 2014. The financial report was obtained from the website of IDX (*http://www.idx.co.id*). There are 60 listed companies, but the companies with unavailable data of the year financial report are excluded. This study examined 47 real estate companies with 5-year dataset of financial statements and was categorized into large, medium, and small groups of companies. The size is classified by the companies' total market capitalization as of December 2014. This paper follows the classification set by Ardiyan (2011) of Indonesian firms. Large-scale companies have more than IDR 5 trillion (about USD 0.4 billion) of market capitalization; medium companies have IDR 1-5 trillion (about USD 0.08 - 0.4

billion), and small companies have less than IDR 1 trillion (about USD 0.08 billion). The complete list of companies under study can be found on Appendix Tables A to C.

Table 2 presents the descriptive statistics for the variables used in this study. In general, the average ROA of Indonesian real estate companies is 6% with data variations of 5%. The average accounts receivables, inventory, and account payables conversion periods are 80.36 days, 777.54 days, and 73.71 days, respectively. For company sizes, the average of the total asset is IDR 5.23 trillion (USD 396.89 million) with dispersion of around IDR 6.12 trillion (USD 464.26 million). On average, current ratio of all companies is 2.61 with data variations of 4.65, and 42% of the company's assets are financed with debt with a disparity of around 19%. For sales growth and tangibility, the average values are 38% and 31%, respectively.

4.2 Methodology

This study examines 8 firm-specific factors that determine the profitability of real estate companies. Those factors are: number of days account receivable (AR), number of days inventories (IN), number of days account payable (AP) or collectively known as the CCC; size (SIZE), current ratio (CR), debt ratio (DR), sales growth (SG), and tangibility (TANG). These variables are tested against return on asset (ROA) as a proxy for profitability, and the general null and alternative hypotheses are:

- H_0: Independent variables have no explanatory power on profitability of Indonesian real estate companies ($\beta_i = 0$)
- H_1: Independent variables have explanatory power on profitability of Indonesian real estate companies ($\beta_i \neq 0$)

The hypotheses testing use multiple regression, and the estimation of regression model is as follows:

$$ROA_{i,t} = \beta_0 + \beta_1 AR_{i,t} + \beta_2 IN_{i,t} + \beta_3 AP_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 CR_{i,t} + \beta_6 DR_{i,t} + \beta_7 SG_{i,t} + \beta_8 TANG_{i,t} + \varepsilon_{i,t}$$

The results on the coefficients from the regression are expected to show whether a positive or negative relationship exist between the independent and dependent variables. Furthermore, the significance of the coefficients will be analyzed by comparing the p values with $\alpha = 10\%$, 5%, and 1% levels of significance.

Table 2. Summary Statistics

Category		ROA	AR	IN	AP	SIZE*	CR	DR	SG	TANG
All-size	Mean	0.06	80.36	777.54	73.71	5,230.96	2.61	0.42	0.38	0.31
	Median	0.05	38.60	498.89	43.35	3,250.72	1.56	0.43	0.21	0.26
	Std. Dev.	0.05	175.17	1,052.49	96.05	6,118.93	4.65	0.19	1.06	0.19
	Min	-0.10	0.00	0.00	0.00	2.23	0.19	0.02	-1.00	0.03
	Max	0.32	1,544.44	6,799.66	816.78	37,761.22	59.71	0.85	11.97	0.85
Large-size	Mean	0.07	42.83	596.38	69.24	8,339.83	1.92	0.48	0.37	0.29
	Median	0.06	31.36	406.12	41.27	6,102.35	1.40	0.50	0.26	0.24
	Std. Dev.	0.05	49.35	789.50	79.65	6,546.34	1.43	0.19	0.55	0.16
	Min	0.00	2.11	0.00	0.00	1,187.41	0.39	0.07	-0.65	0.04
	Max	0.32	420.31	6,499.60	524.59	37,761.22	9.14	0.85	4.05	0.72
Medium-size	Mean	0.05	82.18	1,072.48	76.64	3,263.30	3.99	0.36	0.45	0.35
	Median	0.04	53.38	499.84	54.56	1,589.35	1.58	0.37	0.14	0.26
	Std. Dev.	0.05	76.20	1,473.08	71.00	4,481.64	8.71	0.17	1.65	0.23
	Min	-0.08	0.00	0.00	8.25	2.23	0.24	0.02	-1.00	0.03
	Max	0.20	311.85	6,799.66	294.56	17,707.95	59.71	0.71	11.97	0.85
Small-size	Mean	0.03	153.75	869.50	79.95	816.91	2.72	0.36	0.31	0.32
	Median	0.03	38.68	657.88	37.11	612.94	1.76	0.33	0.05	0.28
	Std. Dev.	0.06	321.13	996.82	138.15	772.43	3.07	0.16	1.15	0.19
	Min	-0.10	0.00	0.00	0.00	92.33	0.19	0.07	-0.60	0.03
	Max	0.19	1,544.44	4,695.53	816.78	3,156.29	18.99	0.74	8.43	0.76

*Size is in billion of rupiah

Variables used will be initially checked using the multicollinearity test to check whether two or more explanatory variables are highly linearly related. Multicollinearity problem exist if the coefficient from the Pearson correlation matrix is higher than 0.8. In addition, heteroscedasticity test is important to check possible disturbance in the variance. To detect heteroscedasticity, White's general test will be applied. If the *p* value of the computed chi-square value is low, it means that there is heteroscedasticity. On the other hand, if the *p* value is large (i.e., above 10%), it means that heteroscedasticity does not exist.

This research will then run two classes of estimator approaches to determine which model fits the panel data. First, the correlation between error term and variables is assumed with the fixed effects model and then terminates the specific effect of time-invariant features. It aims to assign the net effect of the explanatory variables, and also to discover the uniqueness of these features without correlating them with other individual characteristics. The equation for the fixed effect model is:

$$Y_{it} = \alpha_i + \beta_1 AR_{i,t} + \beta_2 IN_{i,t} + \beta_3 AP_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 CR_{i,t} + \beta_6 DR_{i,t} + \beta_7 SG_{i,t} + \beta_8 TANG_{i,t} + u_{it}$$

As α_i is the unknown intercept for each entity and u_{it} is the error term.

Second, the random effects model assumes that the variations across the entities are random and uncorrelated with the explanatory variables. This model also considers the inclusion of the time-invariant variables. The equation for the random effect model is:

$$Y_{i,t} = \alpha_i + \beta_1 AR_{i,t} + \beta_2 IN_{i,t} + \beta_3 AP_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 CR_{i,t} + \beta_6 DR_{i,t} + \beta_7 SG_{i,t} + \beta_8 TANG_{i,t} + u_{i,t} + \varepsilon_{i,t}$$

As α_i is the unknown intercept for each entity, u_{it} is the error term between entity, and $\varepsilon_{i,t}$ is the error term within entity.

This research continued to the Hausman test to investigate whether fixed effect model or the random effects model is suitable. The proposed hypotheses from Hausman test are:

- H_0: The random effects are uncorrelated with the explanatory variables (i.e., random effects model is preferred)
- H_1: The random effects are correlated with the explanatory variables (i.e., fixed effects model is preferred).

Following the test above, this study will analyze the final results of the regression based on the consistency of the panel data with the previous findings of the related literature.

5. Empirical Result

5.1 Initial screenings and findings summary

Multicollinearity test was used to examine whether two or more explanatory variables are hlinearly related by observing the Pearson correlation coefficient matrix. Multicollinearity exists if the coefficient exceeds 0.8. Table 3 shows the correlation matrix between variables in the four groups of data analyses. The study found that there is no relationship coefficient exceeding 0.8, which means that multicollinearity problem does not exist and all variables are reliable as explanatory factors of profitability.

Table 3. Correlation Matrix of the Eight Firm-specific Independent Variables

Category	Variables	AR	IN	AP	SIZE	CR	DR	SG	TANG
All-size	AR	1.000	0.344	0.641	-0.291	0.025	-0.106	-0.083	0.204
	IN		1.000	0.513	-0.284	0.321	-0.190	-0.070	0.410
	AP			1.000	-0.066	0.137	0.072	-0.048	0.120
	SIZE				1.000	-0.271	0.514	0.009	-0.156
	CR					1.000	-0.312	0.085	-0.037
	DR						1.000	-0.141	-0.140
	SG							1.000	-0.126
	TANG								1.000
Large-size	AR	1.000	0.063	0.511	-0.121	-0.006	0.037	-0.018	-0.194
	IN		1.000	0.301	-0.136	0.047	-0.128	-0.089	0.292
	AP			1.000	0.221	-0.134	0.388	-0.101	-0.214
	SIZE				1.000	-0.134	0.680	-0.106	-0.217
	CR					1.000	-0.412	0.034	0.173
	DR						1.000	-0.119	-0.175
	SG							1.000	-0.076
	TANG								1.000
Medium-size	AR	1.000	0.492	0.640	0.229	-0.031	-0.131	-0.131	0.319
	IN		1.000	0.804	-0.263	0.458	-0.411	-0.072	0.266
	AP			1.000	-0.051	0.411	-0.278	-0.125	0.226
	SIZE				1.000	-0.287	0.241	0.023	0.120
	CR					1.000	-0.296	0.123	-0.148
	DR						1.000	-0.258	-0.316
	SG							1.000	-0.163
	TANG								1.000
Small-size	**AR**	1.000	0.545	0.782	-0.400	0.039	-0.080	-0.111	0.361
	IN		1.000	0.635	-0.367	0.031	0.175	-0.075	0.759
	AP			1.000	-0.290	0.069	-0.109	0.019	0.390
	SIZE				1.000	-0.410	0.366	0.062	-0.383
	CR					1.000	-0.555	-0.031	-0.017
	DR						1.000	-0.096	0.237
	SG							1.000	-0.141
	TANG								1.000

Heteroskedasticity was conducted to check the disturbance in variance. If the p-value of computed chi-square value is low (less than 10%), it means that heteroskedasticity exists. Table 4 shows the p-values of computed chi-square value obtained from White's general test. In all size and large companies group, heteroskedasticity exist because the p-value is very low, but in medium and small companies groups, heteroskedasticity does not exist because the p-value exceeds 10%. For all size and large companies groups, heteroskedasticity corrected model was applied.

Table 4. White's General Test Result

Category	p-value	Null Hypothesis (No Heteroskedasticity)
All-size	P(Chi-square(44) > 104.373828) = 0.000001	Reject
Large-size	P(Chi-square(44) > 92.304009) = 0.000028	Reject
Medium-size	P(Chi-square(44) > 43.635248) = 0.487156	Accept
Small-size	P(Chi-square(44) > 49.728857) = 0.255769	Accept

The study used three multiple linear panel regression models, namely, OLS, FE and RE models, and the Hausman test was utilized to examine whether the FE model or the RE model is suitable. The null hypothesis (random effects model is preferred) is rejected when the p-value is greater than 10%. The log-likelihood value will be also utilized to determine the best fitting models based on the applications of Chen and Diaz (2014). Table 5 provides the summary of the main findings of the relationship (i.e., positive and negative) found in this study.

5.2 Result of All-size Market Capitalization Companies

Table 6 presents comparison results of the OLS, FE, and RE models in determining the significant factors that affect the ROA of Indonesian real estate companies. Based on Hausman Test, the p-value is smaller than 5%, which indicates that the null hypothesis is rejected, and the FE model is preferred.

The significant result from OLS model indicates negative relationship between the number of days account receivable and profitability of Indonesian real estate companies. This is in-line with the alternative hypothesis, and the previous studies of Shin and Soenen (1998), Deloof (2003) and Enqvist et al. (2014) stating that a long account receivable negatively affects liquidity because of the firm's slow collection. Hence, this study suggests that Indonesian real estate companies shorten their number of days account receivable by offering early payment discounts to customers to streamline the CCC and create more liquidity.

The variable number of days inventories has positive significant relationship with profitability based on the OLS model, which means that higher inventories help companies generate better profit. This finding is not consistent with the previous studies of Shin and Soenen (1998) and Enqvist et al. (2014), and also contradicts with the alternative hypothesis. However, Deloof (2003) argued that larger inventories can prevent stock-outs that results to additional sales. Hence, this study argues that Indonesian real estate companies in general can still maintain a healthy higher level of inventories to serve higher unexpected demand, but this should be compensated by higher liquid assets like cash or near cash securities to support the maintenance of real estate properties.

Size has significant positive relationship with profitability as per the results of both the OLS and the FE models, and is consistent with the alternative hypothesis of the study and supports the previous findings of Deloof (2003), Garcia-Teruel and Martinez-Solano (2007), and

Pervan and Višić (2012). These papers claimed that large companies can benefit from its size because of bigger asset base that transforms to more productivity. They also have larger network that reaches more clients, and higher market power that allows them to charge premium prices, thus higher profits.

Table 5. Summary of the Relationship between the Dependent and Independent Variables

		AR	IN	AP	SIZE	CR	DR	SG	TANG
Expectation		-	-	-	+	+	-	+	-
All-size	OLS	-*	+*	-	+*	-*	-	+	+*
	Fixed	-	+	+*	+*	-	-*	+*	-*
	Random	-*	+	+	+*	-	-*	+	+
Large-size	OLS	-*	+*	-*	+*	-	-	+*	-*
	Fixed	+	+*	+*	+*	+*	-*	+*	-*
	Random	-*	+*	+	+*	+	-*	+*	-*
Medium-size	OLS	-	-	-	+	+	-	-	+*
	Fixed	-	-	+*	-	-	-	+	+
	Random	-	-	-	+	+	-	-	+*
Small-size	OLS	-*	+	-	+*	-	-*	+	+
	Fixed	+	-*	+*	+	-*	-*	+*	+
	Random	+	-	+	+*	-*	-*	+	+

*Note: * means significant results*

Current ratio has a negative significant relationship based on the OLS model alone. This is beyond the expectations of the study and inconsistent with the alternative hypotheses. However, this result finds support from the previous studies of Vieira (2010), who argued that high current ratio is undesirable due to the additional cost of maintaining what's being generated by the current asset, which lead to decreased profitability. A later study of Pervan and Višić (2012) supported this claim, who explained that liquidity and profitability compliment each other up to a certain level, then profitability will remain constant even when liquidity improves and exceeds a certain level. These explanations are all related with piling inventories, which is a huge part of real estate companies' current assets, and the culprit in increasing maintenance costs. Thus, this paper suggests to pull down the cost of inventories for all Indonesian real estate firms by making routine demand forecast to reduce overstocks of real estate properties, but should still maintain a reasonable amount of cash to support a smooth-running of day-to-day operations.

Table 6. Multiple Regression Results for All Indonesian Real Estate Companies Group

(All Sizes)	OLS (Heteroskedasticity corrected)	FE	RE
AR	***−0.000*** *** ***(0.000)***	−0.000 (0.449)	***−0.000***** ***(0.001)***
IN	***0.000*** * ***(0.050)***	0.000 (0.147)	0.000 (0.401)
AP	−0.000 (0.817)	***0.000*** *** ***(0.008)***	0.000 (0.346)
SIZE	***0.004*** ** ***(0.033)***	***0.012*** *** ***(0.004)***	***0.011*** *** ***(0.000)***
CR	***−0.002*** *** ***(0.000)***	−0.000 (0.590)	−0.001 (0.173)
DR	−0.014 (0.396)	***−0.140*** *** ***(0.000)***	***−0.077*** *** ***(0.0024)***
SG	0.004 (0.249)	***0.009*** ** ***(0.013)***	0.003 (0.377)
TANG	***0.0221136*** * ***(0.0857)***	***−0.062*** ** ***(0.044)***	0.004 (0.873)
Constant	−0.056 (0.276)	***−0.206*** * ***(0.066)***	***−0.201*** *** ***(0.005)***
R-squared	0.441	0.233	
Log-likelihood	−483.817	462.284	375.919
Hausman Test (p-value)			***44.713***** ***(0.000)***

Note: *, ** and *** are significance at the 10, 5 and 1% levels, respectively; p-values are in parentheses

Based on the OLS model, tangibility positively affects profitability for all Indonesian real estate companies. Tangibility has positive significant relationship with ROA, which is the proxy for profitability. This means that higher tangible assets can result in higher profitability, which is not actually consistent with the initial findings of Kebewar (2013), and also not in-line with the alternative hypothesis of the study. A plausible reason is that tangible asset benefits the company as collateral of bank loan which can help the company borrow funds to expand and create more profits based on Hammes and Chen (2004). On one hand, tangibility based on the FE model shows a negatively relationship with profitability, which means that high tangible assets lead to declining profitability. This result conforms to the alternative hypothesis of the study, and the previous paper of Hammes and Chen (2004). The study explained that profitability decreases when a company puts too much investment in fixed asset, because of the higher maintenance cost that reduces profitability. Therefore, this study suggests that Indonesian real estate companies should minimize the acquisition unproductive property, plant and equipment, because these lead to more costs instead of revenues in the

future.

Based on the FE model, days account payable has positive significant relationship with profitability. This result does not correspond to the alternative hypothesis of the study, but is consistent with previous findings of Deloof (2003). Having longer periods to pay suppliers can make Indonesian real estate companies more liquid, and may increase profitability. In-line with this result, the paper suggests that companies should better build good business relationships with suppliers to bargain for longer payment terms, because constantly extending days account payable may lead to bad relationships with suppliers that may negatively affect firms in the long-run.

Debt ratio on the other hand has significant negative relationship with profitability based on both the FE model. This again corresponds to the alternative hypothesis and previous researches of Deloof (2003), Kebewar (2013), and Enqvist et al (2014). Modigliani and Miller (1963) earlier explained that the optimal debt ratio should reduce the total cost of capital to the point of maximizing profitability. This paper suggests that Indonesian real estate companies should reduce the amount of debt, because of the debilitating consequence of paying interest and principal when the firm is not doing well. Loans also carry conditions that limit the flexibility of real estate companies in running the firm.

Sales growth of all Indonesian real estate companies has positive significant relationship with profitability based on the FE model. This again corresponds to the alternative hypothesis and supports the findings of Garcia-Teruel and Martinez-Solano (2007), and Limbago and Juniarti (2014). This paper suggests that real estate companies, can better boost sales by offering discounts and more flexible payment terms to attract more customers.

In comparing the results of the OLS and FE models, this research favors the results of the FE model as the better fitting model for all Indonesian real estate companies group, because of the higher log-likelihood value.

5.3 Result of Large-size Market Capitalization Companies

Table 7 illustrates the comparison of findings for the OLS, FE, and RE models in determining the significant variables factors that affect the profitability of large Indonesian real estate companies. Based on Hausman Test, the p-value is again smaller than 5%, which indicates that the null hypothesis is rejected, and the FE model is preferred.

The significant result from OLS model indicates negative relationship between number of days AR and profitability of large Indonesian real estate companies. This is similar with the results with the studies of Shin and Soenen (1998), Deloof (2003) and Enqvist et al. (2014), and the findings for all Indonesian real estate companies. The paper believes that flexible payments terms and discounts to customer as earlier suggested are better handled by larger firms because of larger current asset base like cash and near-cash assets like short-term marketable securities.

Table 7. Multiple Regression Result for Large Indonesian Real Estate Companies

Firm-specific variables	**OLS (Heteroskedasticity corrected)**	**FE**	**RE**
AR	***−0.000*** *** ***(0.002)***	0.000 (0.990)	***−0.000*** * ***(0.091)***
IN	***0.000*** * ***(0.079)***	***0.000*** ** ***(0.0157)***	***0.000*** ** ***(0.012)***
AP	***−0.000*** ** ***(0.013)***	***0.000*** ** ***(0.027)***	0.000 (0.164)
SIZE	***0.006*** * ***(0.094)***	***0.039*** *** ***(0.000)***	***0.023*** *** ***(0.0003)***
CR	−0.001 (0.687)	***0.012*** *** ***(0.001)***	0.003 (0.288)
DR	−0.030 (0.252)	***−0.123*** *** ***(0.004)***	***−0.136*** *** ***(0.001)***
SG	***0.015*** ** ***(0.022)***	***0.033*** *** ***(0.000)***	***0.029*** *** ***(0.000)***
TANG	***−0.065*** ** ***(0.017)***	***−0.074*** ** ***(0.044)***	***−0.058*** * ***(0.081)***
Constant	−0.058 (0.516)	***−1.01446*** *** ***(0.000)***	***−0.520*** *** ***(0.003)***
R-squared	0.348	0.618	
Log-likelihood	−228.964	273.640	194.490
Hausman Test (p-value)			***62.016**** ***(0.000)***

Note: *, ** and *** are significance at the 10, 5 and 1% levels, respectively; p-values are in parentheses

The number of days inventories also has positive significant relationship with profitability in both the OLS and the FE models and also conforms with the previous studies of Shin and Soenen (1998) and Enqvist et al. (2014), and the results for all real estate companies. The initial suggestion of this paper again favors large companies, because of their ability to maintain higher liquid assets that supports maintenance costs related to real estate inventories.

The number of days account payable has negative relationship with ROA based on the OLS model, which means that the longer days of account payable, the lesser company produces profits. This corresponds to the alternative hypotheses, and also confirms the study of Enqvist et al. (2014), which explained that huge cash discounts being availed by large real estate companies on the early settlement of payables can be source of financing that increases cash holdings. Accordingly, this study suggests that large Indonesian companies to avail of cash discount deals from suppliers, and maintain closer business relationship that may increase

positive goodwill in the future.

On the other hand, based on the FE model, days account payable has positive significant relationship with profitability, which is also consistent with previous findings of Deloof (2003), and similar with the findings for all real estate companies. This paper believes that large companies have better bargaining power over with suppliers over other companies because of their larger network and better reputation in the industry.

Size has significant positive relationship with profitability as per the results of both the OLS and the FE models, supports the previous findings of Deloof (2003), Garcia-Teruel and Martinez-Solano (2007), and Pervan and Višić (2012); and is consistent with the findings for all Indonesian real estate firms. This paper favors larger firms because of their bigger business network, and higher market power that allows them to be more flexible in operating their business over its smaller competitors.

Sales growth for large Indonesian real estate companies also has positive significant relationship with profitability for both the OLS and the FE models, which is consistent to the FE model findings for all real estate company group. This again corresponds to the alternative hypothesis and supports the findings of Garcia-Teruel and Martinez-Solano (2007), and Limbago and Juniarti (2014). This study suggests that large companies, given their more liquid and established situation, can better boost sales by offering discounts and more flexible payment terms to attract more customers.

Tangibility findings of both the OLS and the FE models show that the variable is negatively related to the profitability of large Indonesian real estate companies, which means that high tangible assets lead to declining profitability. This conforms to the alternative hypothesis of the study, and the previous paper of Hammes and Chen (2004). The study explained that profitability decreases when a company puts too much investment in fixed asset, because of the higher maintenance cost that reduces profitability. Therefore, this study suggests that large Indonesian real estate companies should minimize the acquisition unproductive property, plant and equipment, because these lead to more costs instead of revenues in the future.

The FE model alone finds Current ratio to be positively related with the ROA, which means that the more liquid the company is, the higher profit the company can create. This is not consistent with the OLS model findings for all real estate group, but corresponds to the alternative hypothesis of the study and to the paper of Enqvist et al. (2014). The research explained that the larger the ratio means the more capable the company is liquid and can cover current liabilities, which is necessary for the smoother running of daily operations without pressure from lenders. Higher current assets will benefit the company in being more flexible and in getting more investments in the future, which increases the profitability. It is suggested that large Indonesian real estate companies maintain a higher ratio by keeping current assets revolving, particularly account receivables and inventories and paying off liabilities, especially those with higher interest rates whenever necessary.

Debt ratio has a negative significant relationship with profitability based on the results of the FE model. This finding supports the alternative hypothesis and the conclusions of Deloof

(2003), Kebewar (2013), and Enqvist et al. (2014). It is explained that high debt ratio decreases profitability, because of the high cost of capital and the restrictions being set by lending institutions with regards to the use of money. The study advises that large real estate companies can restructure their debts by replacing existing loans with lower interest rate borrowings, or find an investor and finance operations by using equity.

In comparing the findings of the OLS and FE models, this study prefers the results of the FE model as the better fitting model for large Indonesian real estate companies group, because of the higher log-likelihood value.

5.4 Result of Medium-size Market Capitalization Companies

Table 8 illustrates the comparison of findings for the OLS, FE, and RE models in determining the significant variables factors that affect the ROA medium-size Indonesian real estate companies. Based on Hausman Test, the p-value is again smaller than 5%, which indicates that the null hypothesis is rejected, and the FE model is preferred.

Table 8. Multiple Regression Result for Medium Indonesian Real Estate Companies

Firm-specific variables	**OLS**	**FE**	**RE**
AR	−0.000	−0.000	−0.000
	(0.286)	(0.756)	(0.270)
IN	−0.000	−0.000	−0.000
	(0.219)	(0.334)	(0.1321)
AP	−0.000	***0.000 ****	−0.000
	(0.632)	***(0.059)***	(0.979)
SIZE	0.000	−0.000	0.000
	(0.883)	(0.929)	(0.938)
CR	0.000	−0.000	0.000
	(0.810)	(0.527)	(0.885)
DR	−0.000	−0.022	−0.001
	(0.993)	(0.688)	(0.979)
SG	−0.003	0.002	−0.003
	(0.411)	(0.620)	(0.466)
TANG	***0.097 ******	0.019	***0.094 ******
	(0.002)	(0.738)	***(0.004)***
Constant	0.024	0.050	0.030
	(0.800)	(0.638)	(0.755)
R-squared	0.342	0.112	
Log-likelihood	101.609	127.324	101.439
Hausman Test (p-value)			***63.303****** ***(0.000)***

*Note: *, ** and *** are significance at the 10, 5 and 1% levels, respectively; p-values are in parentheses*

Based on the OLS model, tangibility is the only significant variable that affects profitability for medium-scale Indonesian real estate companies. Tangibility has positive significant relationship with ROA, which is not consistent with the findings for large Indonesian real estate companies. This means that higher tangible assets can result in higher profitability, which is not actually consistent with the initial findings of Kebewar (2013), and with the alternative hypothesis of this study. A plausible reason is that tangible asset benefits the company as collateral of bank loan which can help the company borrow funds to expand and create more profits based on Hammes and Chen (2004). Thus, this study encourages medium-size companies to raise their fixed asset, such as purchasing more equipment or building for office, as a support for getting more cash in the form of bank loans.

On the other hand, based on the FE model, the number of days account payable is also the only significant variable that positively affects profitability for medium-scale Indonesian real estate companies. This finding is similar to the result of the FE model in the large companies group; and is consistent with the previous study of Lazaridis and Tryfonidis (2006), however goes against the alternative hypotheses of decreasing days in account payable. The paper similarly suggests that medium-scale Indonesian real estate companies should have better business relationships with the supplier for better negotiations in having longer payment terms.

In comparing the results of the OLS and FE models, this paper favors the findings of the FE model as the better fitting model for medium-size Indonesian real estate companies group, because of the higher log-likelihood value.

5.5 Result of Small-size Market Capitalization Companies

Table 9 shows the comparison of findings for the OLS, FE, and RE models in determining the significant variables factors that affect the profitability of small Indonesian real estate companies. Based on Hausman Test, the p-value is again smaller than 5%, which indicates that the null hypothesis is rejected, and the FE model is again preferred.

In OLS model, the number of days account receivable variable has negative significant relationship with the profitability of small Indonesian real estate companies, and this is similar with the findings for large real estate firms. This result is consistent with the alternative hypotheses, and previous studies of Shin and Soenen (1998), Deloof (2003) and Enqvist et al. (2014). These previous literature stated that long account receivable cycles, increase the CCC, which leads to decreased efficiency and profitability. Hence, this study suggests that small Indonesian real estate companies reduce the number of days account receivable to a reasonable minimum that won't sacrifice customer relations. These companies should encourage customers to pay early by offering payment discounts. Sending notices and invoices immediately upon the completion of construction projects also is a prerogative, because customers pay bills sooner after they have received invoices closer to the performance of services rendered.

Table 9. Multiple Regression Results for Small Indonesian Real Estate Companies

Firm-specific variables	OLS	FE	RE
AR	***-0.000 **** ***(0.056)***	0.000 (0.113)	0.000 (0.224)
IN	0.000 (0.717)	***−0.000 ***** ***(0.029)***	−0.000 (0.591)
AP	−0.000 (0.666)	***0.000***** ***(0.017)***	0.000 (0.843)
SIZE	***0.012 **** ***(0.084)***	0.028 (0.170)	***0.018 **** ***(0.083)***
CR	−0.004 (0.157)	***−0.005 **** ***(0.078)***	***−0.005 **** ***(0.077)***
DR	***−0.102 **** ***(0.080)***	***−0.318 ****** ***(0.0003)***	***−0.197 ****** ***(0.006)***
SG	0.002 (0.771)	***0.023 **** ***(0.052)***	0.002 (0.744)
TANG	0.088 (0.123)	0.073 (0.270)	0.094 (0.122)
Constant	−0.254 (0.170)	−0.597 (0.253)	−0.356 (0.177)
R-squared	0.302	0.476	
Log-likelihood	98.664	119.843	93.830
Hausman Test (p-value)			***26.026****** ***(0.001)***

*Note: *, ** and *** are significance at the 10, 5 and 1% levels, respectively; p-values are in parentheses*

The size variable has significant positive relationship, and is also consistent with the alternative hypotheses, with all of the previous results for large and all real estate groups, and the findings of Lazaridis and Tryfonidis (2006), and Pervan and Višić (2012). These studies stated that growing asset base of small Indonesian real estate companies, will lead to higher profitability because the total asset owned can optimize operations, which increases the bottom line. The paper urges small real estate companies to purchase more equipment to accelerate company operations, or sell equipment that are no longer productive in order to save and gain more cash.

Debt ratio on the other hand has significant negative relationship with profitability based on both the OLS and FE models, and similar with the results for large real estate companies. This again corresponds to the alternative hypotheses and previous researches of Deloof (2003), Kebewar (2013), and Enqvist et al (2014). Modigliani and Miller (1963) earlier explained that the optimal debt ratio should reduce the total cost of capital to the point of maximizing profitability. This paper suggests that small real estate companies should reduce

the amount of debt. Small companies planning to expand their asset base can reduce the cost of capital by raising funds through increasing sales, and efficiently use retained earning; selling stocks, or setting up investment funds to avoid acquiring more debt. This paper additionally suggests that small real estate companies should restructure their trade credits and loans, by bargaining for longer payment terms with suppliers, and replace existing loans with the loans that has lower interest rate, respectively.

The number of days inventories has negative significant relationship with profitability based on the FE model alone. The finding is consistent with the alternative hypothesis and previous studies of Shin and Soenen (1998), Deloof (2003), and Enqvist et al. (2014). These studies stated that excess inventories indicate decrease profitability, and a sign of efficiency. This paper suggests that small Indonesian real estate companies to shorten the period of keeping inventories. These companies should study the average inventory conversion period to predict better time in selling up inventories with respect to seasonal demands, or to improve commission rates and benefits for their real estate brokers.

Moreover, the number of days accounts payable has a positive significant relationship with profitability, and similar with the results for all and large real estate companies groups. This is also consistent with the previous study of Lazaridis and Tryfonidis (2006), however goes against the alternative hypotheses of decreasing days in account payable. This finding agrees with the explanation of Enqvist et al. (2014) that by extending period of time in settling payables to suppliers, the company can increase its liquidity that may be channeled to more profitable ventures. The paper suggests that small Indonesian real estate companies should have better understanding of the supplier's business to enable bargaining for longer payment terms without hurting the relationship and transactions.

The FE model shows that current ratio has a negative relationship with profitability, which is similar with the OLS findings for the all companies group. This is again beyond the expectations of the study and inconsistent with the alternative hypothesis. However, this result finds support from the previous studies of Vieira (2010), and Pervan and Višić (2012) explaining that this can be related with piling inventories, and the reason for increasing maintenance costs especially for small scale realtors. Hence, this paper suggests that small Indonesian real estate companies make better and more efficient demand forecast to reduce overstocks of real estate inventories.

Sales growth has positive significant relationship with profitability based on the FE model, and similar with the results for large real estate group. This finding also corresponds to the alternative hypothesis and supports the findings of Garcia-Teruel and Martinez-Solano (2007), and Limbago and Juniarti (2014). The literature explains that higher sales are expected to generate higher profit. The study suggests that small real estate companies should be more aggressive in tapping new markets and in increasing the sales through innovative marketing strategy, such as special offers and discounts.

In comparing the findings of the OLS and FE models, this study prefers the results of the FE model as the better fitting model for small Indonesian real estate companies group, because of the higher log-likelihood value.

6. Conclusions and Limitations

The paper determines the effects of eight firm-specific factors on the profitability of large-, medium-, and small-scale real estate Indonesian companies. The study used forty-seven real estate companies listed in the Indonesian Stock Exchange, using three multiple linear panel regression models (i.e, OLS, FE and RE models) in examining the effect on the ROA. This study found that the number of days account receivable has negative relationship to profitability; and it is advised that real estate companies shorten their number of days account receivable by encouraging customers to pay early through payment discounts. The number of days inventories has positive relationship, and it is suggested that real estate companies can have a healthier level of inventories to prevent stock-out, especially for large companies that are more capable of covering maintenance costs. On the contrary, small Indonesian real estate companies are suggested to shorten the period of keeping inventories by calculating the average inventory conversion period to forecast the most suitable time in selling up inventories with respect to seasonal demands.

Indonesian real estate companies are recommended to have a better understanding of the supplier's business cycle to have better negotiations for longer payment terms, because the number of days account payable has positive relationship to profitability. Size and sales growth have consistent positive relationship to profitability, which means that larger asset base is beneficial because it can optimize operations, and benefits from having larger network and higher market power. In line with this, this paper earlier suggested that Indonesian real estate companies should efficiently acquire for more productive equipment or sell equipment that is no longer productive. This is consistent to the tangibility factor having a negative relationship to profitability. Minimizing the procurement of unproductive property, plant and equipment leads to lower costs and savings in the future. However, for medium-size Indonesian real estate companies, it suggested to raise their fixed assets that are valuable as loan collateral, because the results show tangibility having a positive relationship with profitability.

Current ratio having a negative relationship with profitability for all and small real estate companies groups is beyond the expectations of this research. However, this study posits that this relationship is inventory-based, and it is advised that Indonesian real estate companies should to pull down the cost of inventories by making routine demand forecasting to reduce overstock or backorders, but should still maintain a reasonable amount of cash to support a smooth-running of day-to-day operations. However, a positive relationship prevailed for large companies, and the paper suggested to maintain a higher ratio by keeping current assets revolving, particularly ARs and inventories and paying off liabilities, especially those with higher interest rates whenever necessary. In line with this, the paper also recommended that Indonesian real estate companies maintain lower amount of debt, because debt ratio has negative relationship to profitability. This suggestion also increases the flexibility of real estate companies in running the firm.

The above findings provide a considerable perspective in examining internal factors that affect profitability of Indonesian real estate companies, even though some results are quite

limiting like having only two variables significant for the medium-size real estate firms. Further studies are suggested to examine similar variables using other quantitative methods (e.g., Grey Relational Analysis) to determine factors based on company size. Qualitative type of research can also be considered for future studies to personally better know how managers observe and control particular variables (e.g., number of days account payable and tangibility) in increasing profit and adding value of the firm.

Another limitation of this study is that it did not consider external or macroeconomic factors (i.e., economic status, interest rates, government regulations and stock market conditions) that are also important in determining profitability of companies. Future studies can further consider these factors, and can also extend the data to cover private companies, because the study is only limited to publicly-listed companies. Future research can also extend the data to cover other publicly-listed companies (e.g., banking, mining and transportation companies), and even compare these data with other developing countries' findings.

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Appendix A. List of Large Real Estate Companies Selected

In million USD (2014/31/12)

No	Company Name	Code	Total Asset	Market Cap	Listed Date
1	Surya Semesta Internusa	SSIA	479.37	402.70	1997 Mar 27
2	Ciputra Property	CTRP	708.79	415.67	2007 Nov 07
3	Ciputra Surya	CTRS	489.62	468.52	1999 Jan 15
4	Kawasan Industri Jababeka	KIJA	680.31	477.48	1995 Jan 10
5	Adhi Karya	ADHI	836.58	501.41	2004 Mar 18
6	Modernland Realty	MDLN	835.62	521.29	1993 Jan 18
7	Danayasa Arthatama	SCBD	0.45	531.45	2002 Apr 19
8	Intiland Development	DILD	720.28	538.94	1991 Sep 04
9	Agung Podomoro Land	APLN	1.89	549.34	2010 Nov 11
10	Bekasi Fajar Industrial Estate	BEST	292.19	563.20	2012 Apr 10
11	Lippo Cikarang	LPCK	344.73	578.98	1997 Jul 24
12	MNC Land	KPIG	797.04	667.71	2000 Mar 30
13	Duta Pertiwi	DUTI	641.84	722.12	1994 Nov 02
14	Alam Sutera Realty	ASRI	1.35	880.15	2007 Dec 18
15	Plaza Indonesia Realty	PLIN	0.36	1064.83	1992 Jun 15
16	Jaya Real Property	JRPT	0.53	1143.82	1994 Jun 29
17	Metropolitan Kentjana	MKPI	345.24	1160.40	2009 Jul 10
18	Pembangunan Perumahan	PTPP	1,168.76	1384.72	2010 Feb 09
19	Ciputra Development	CTRA	1,862.38	1516.34	2994 Mar 28
20	Summarecon Agung	SMRA	1.23	1754.02	1990 May 07
21	Wijaya Karya	WIKA	1.27	1810.04	2007 Oct 29
22	Lippo Karawaci	LPKR	3,020.41	1882.84	1996 Jun 28
23	Pakuwon Jati	PWON	1.34	1983.86	1989 Oct 19
24	Bumi Serpong Damai	BSDE	2,250.42	2652.47	2008 Jun 06

Appendix Table B. List of Medium Real Estate Companies Selected

In million USD (2014/31/12)

No	Company Name	Code	Total Asset	Market Cap	Listed Date
1.	Bumi Citra Permai	BCIP	47.22	88.07	2009 Dec 11
2.	Fortune Mate Indonesia	FMII	36.75	97.72	2000 Jun 30
3.	Perdana Gapuraprima	GPRA	121.39	102.28	2007 Oct 10
4.	Roda Vivatex	RDTX	131.45	112.88	1990 May 14
5.	Duta Anggada Realty	DART	0.41	170.86	1990 May 08
6.	Bakrieland Development	ELTY	1,160.30	174.06	1995 Oct 30
7.	Cowell Development	COWL	294.54	243.52	2007 Dec 19
8.	Sentul City	BKSL	783.56	261.18	1997 Jul 28
9.	Metropolitan Land	MTLA	0.26	269.78	2011 Jun 20
10	Eureka Prima Jakarta	LCGP	138.85	270.20	2007 Jul 13
11	Total Bangun Persada	TOTL	0.20	305.49	2006 Jul 15

Appendix Table C. List of Small Real Estate Companies Selected

In million USD (2014/31/12)

No	Company Name	Code	Total Asset	Market Cap	Listed Date
1.	Ristia Bintang Mahkotasejati	RBMS	0.01	2.30	1997 Dec 19
2.	Bekasi Asri Pemula	BAPA	14.09	2.65	2008 Jan 14
3.	Pudjiadi Prestige	PUDP	32.14	11.63	1994 Nov 18
4.	Metro Realty	MTSM	7.38	12.85	1992 Jan 08
5.	Bhuwanatala Indah Permai	BIPP	49.10	23.04	1995 Oct 23
6.	Lamicitra Nusantara	LAMI	0.05	25.54	2001 Jul 18
7.	Megapolitan Developments	EMDE	94.31	36.71	2011 Jan 12
8.	Suryamas Dutamakmur	SMDM	0.25	47.33	1995 Oct 12
9.	Indonesia Prima Property	OMRE	65.22	47.46	1994 Aug 22
10	Gowa Makassar Tourism Development	GMTD	121.93	49.54	2000 Dec 11
11	Bukit Darmo Property	BKDP	66.32	57.34	2007 Jun 15
12	Nusa Konstruksi Enjiniring	DGIK	163.60	79.34	2007 Dec 19