

Effects of Internal Factors on Financial Performance of Listed Construction-Material Companies: The Case of Vietnam

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Abstract

The research aims to assess internal factors affecting to financial performance so that feasible suggestions could be provided for construction-material firms which are currently listing in the stock market of Vietnam. The authors applied regression for panel data which collected from 30 listed construction-material firms. The findings show that firms' financial performance are positively affected by the firms' size, capital structure, capitalization expenditure, and accounts receivable management. The research results also reflect positive relation between firms' financial performance and business risk. Upon the research results we recommend that the changes should be focus on improving policies about capitalization expenditure; reasonable capital structure and management of inventories.

Keywords: financial performance, construction-material, listed firms, Vietnam

1. Introduction

The financial performance of enterprises is a research areas which has attracted various attentions and interested from not only financial analysts, researchers, general public and managers of firms. The financial performance of one specific firm can be evaluated in terms of profitability, liquidity, solvency, dividend growth, sales turnover, asset base, capital employed, etc. However, there still exist arguments regarding how the financial performance of firms could be measured and the factors that affect financial performance of companies (Liargovas & Skandalis, 2008).

Factors those have important effects on determination of firm performance encompasses micro and macro factors. Micro factors include the internal factors, whereas macro factors include the elements from external environment. Any change in the macro factors will affect, positively or negatively, to the firms' performance, depending on the change in the macro environment and structure of the firm. Even the same change in the macro environment may not has the same impact on the two firms which belongs to the same industry. There could be number of reasons for this difference in response of the firms to the same macro changes but all of these reasons are related to the micro factors of the firm (Demirhan & Anwar, 2014).

A number of studies (for instance, Almajali et al, 2012) have been done with the same research direction, especially in developed economies. Can the findings of these studies be replicated in emerging economies or infant capital markets? In Vietnam, a few studies about factors affecting firms performance have been done and show the dispersed results. In addition, those studies did not try to trace the effects from internal or external factors. Moreover, previous studies were cross-sectional or time series and there is no study focusing on firms in one specific industry. Therefore it is imperative for us to conduct this research aiming to find out the factors that affect the financial performance of construction-material companies listing in Vietnam Securities Exchange.

2. Theoretical framework and literature review

Up to date, there have been theories about factors affecting financial performance such as economic theory by Hawley (1893) who documented that the business risk arises from outdated products, sudden price cuts, alternative products, natural disasters, or the scarcity of materials. And those are inevitable factors facing to any business. When a business accepts a high level of risk, then the business is entitled to a bonus called "profit". It is acceptable to state that the firm's profit is the price paid by the society to the business risk.

Hawley (1893) argues that profit consists of two parts: one that represents compensation for losses due to external factors of risk, and the rest is from internal factors. The author concluded that the business risk and profitability are closely related to one another.

The capital structure theory by Modigliani and Miller (1958) indicates that capital structure is related to the value of firm. The higher debt the firm has, the higher the value will be. In other words, the choice and use of funds will impact on the financial performance. This theory is now considered one of the fundamental theories that researchers around the world can rely on, including accounting, such as Zeitun and Tian (2007), and Onaolapo et al. (2010).

Master & Yong (2014) studied the relationship between capital structure and financial performance by examining 1,130 non-financial enterprises listed on the Shanghai Stock Exchange. The authors construct a

regression with dependent variable is ROE and independent variables encompasses debt-to-equity ratio, growth rate of total assets, and firm's size. The results show that financial performance is significantly affected by debt-to-equity ratio and firm's size. However, the growth rate of total assets has no significant impact on the financial performance.

Zeitun and Tian (2007) have inherited the Master & Yong (2014) by not only studied at the factors that affect financial performance in terms of book value, but also of market value (Tobin's Q). The research data was collected from 167 companies listed on the Jordanian stock market between 1989 and 2003. In terms of book value, return on asset (ROA) was chosen as dependent variable, and for market value the Tobin's Q and P/E were used. Independent variables include: Short-term debt to total assets, growth rate, enterprise size, business risk, business area, financial crisis, fixed assets, income tax, and standard deviation of cash flow in the last 3 years. The results show that factors that have the positive impact on firms' performance are short-term debt on total assets, growth rate, size of enterprises, and taxation. Among those factors, the short-term debts on total assets have the strongest impact on financial performance in terms of market value. The negative effect is the proportion of fixed assets on total assets. The results also show that business sector, like real estate, education services, chemical and petroleum, and tobacco, has a strong impact on financial performance.

In another vein of study, Nagy (2009) conducted a study to determine the factors that influence the profitability. Research data collects from 500 US enterprises listing in stock market from 2003-2007 and from various business sectors. The author's model provides that the dependent variable is the ROA, while the independent variables include: sales, R & D costs, capital cost, market segment, reinvestment ratio, debt to equity ratio, current ratio, stock rating, share price for 3 years, acquisition cost, age of firm, and business sector. Research shows that taxes, advertising costs, inventory and cash flow do not seem to have a significant impact on the profitability of assets. As for tax factors, this study is in contrast to the study by Zeitun and Tian (2007), who arguably have a positive impact on financial performance. Sales, profit margin, price of stocks over the past 3 years, reinvestment rate have a positive impact on ROA. Variables like liquidity, stock repurchases of other companies, cost of capital, debt to equity ratios, market segments have opposite effects on profitability asset.

Siminica et al. (2011) conducted a study to determine the factors influencing the return on total assets of firms by collecting data from 40 companies listed on the Bucharest Stock Exchange in Romania for four years from 2007 to 2010. The study included two years of economic growth (2007 and 2008) and two years of recession (2009 and 2010) of Romania. Dependent variable is return on total assets (ROA) and independent variables include proportion of fixed assets, financial stability ratio, debt ratio, financial leverage, employment rate, current ratio, quick ratio, working capital, financing rate for fixed assets, range of investment, working capital requirements, net working capital turnover, average collection period, asset efficiency. For each of the four years of analysis, the author has come up with a statistical model that links the dependent variable and the independent variables. The results show that financial performance of Romanian companies is down due to the impact of the economic crisis. However, before the crisis, financial performance was significantly affected by financial structure. This is similar to the results of previous researchers such as Master & Yong (2014), Zeitun and Tian (2007), Nagy (2009).

Bashir et al. (2013) investigated factors influencing the performance of Pakistani food processing firms. The study used data from 411 firms in the period 2005-2010. The authors have used the ROI as dependent variable and independent variables including leverage, growth rate, firm size, business risk, tax, liquidity, and non-debt tax shield. The results show that the financial performance of Pakistani food businesses is significantly affected by long-term leverage, enterprise size, fixed asset weight, and non-debt tax shield.

Nguyen (2013) conducted a study on the factors influencing the financial performance of food processing companies listed in the Vietnam stock market. The survey data was collected from the audited financial statements of 45 food manufacturing companies listed on the Vietnam stock market for three years from 2010-2012. The dependent variable is ROA and the independent variables are: enterprise size, growth rate, accounts receivable days, fixed asset investment, capital structure, business risk and operating time of the business. The research results show that there are five factors affecting the financial performance of the business, including: growth rate, accounts receivable days, fixed asset investment, capital structure and business risk. In particular, the growth rate has the positive effect on firm's performance, while the accounts receivable days, the proportion of fixed assets, the debt ratio and the standard deviation of the cash flow have negative impacts to the firms' performance. And, the firm's size variable does not affect to the financial performance.

In another vein of study, Doan & Dinh (2014) studied the structure of capital and profitability of enterprises listed on the stock market of Vietnam. The sample of 235 companies listed on the Ho Chi Minh City Stock Exchange (HOSE) for the period 2011 - 2013, using regression model for panel data (POOL) and evaluating Fixed Effects Model (FEM). The dependent variable used for the model is Return on Equity (ROE) and earning per share (EPS). Independent variables include: Long-term debt-to-equity ratio, debt to equity ratio, depreciation on total assets, market value of shares on the book value (P/E), the yearly total assets, and proportion of state ownership in total capital. The results document that the long-term debt-to-equity ratio and the debt-to-equity

ratio have the opposite effect on profitability, while the capital structure has negative impact on profitability. The depreciation of total asset and enterprise size do not relate to ROE and EPS. In addition, growth do not have a significant impact on profitability.

Through the review of domestic and foreign studies mentioned above, it can be observable that there are many factors affecting the financial performance of enterprises, many results are consistent but many ones have different results, even opposite to each others. Meanwhile, in Vietnam, over the period of study, the author has not found any specific research on the financial performance of construction-material enterprises and the factors that affect firms' financial performance. Therefore, the study of the impact of internal factors on the performance of construction material firms in Vietnam is necessary to supplement empirical evidence, thereby making reference material useful for the stakeholders such as investors, business managers, state management agencies and other subjects in the context of Vietnamese firms.

3. Research model and hypothesis

Based on the empirical studies mentioned above, the author proposes a research model with ROA and ROE dependent variables representing the financial performance of an enterprise and the following six independent variables: (2) Growth rate, (3) Capital structure, (4) Business risk, (5) Fixed asset investment and (6) Management of accounts receivable. The proposed model is shown in Figure 1 below.

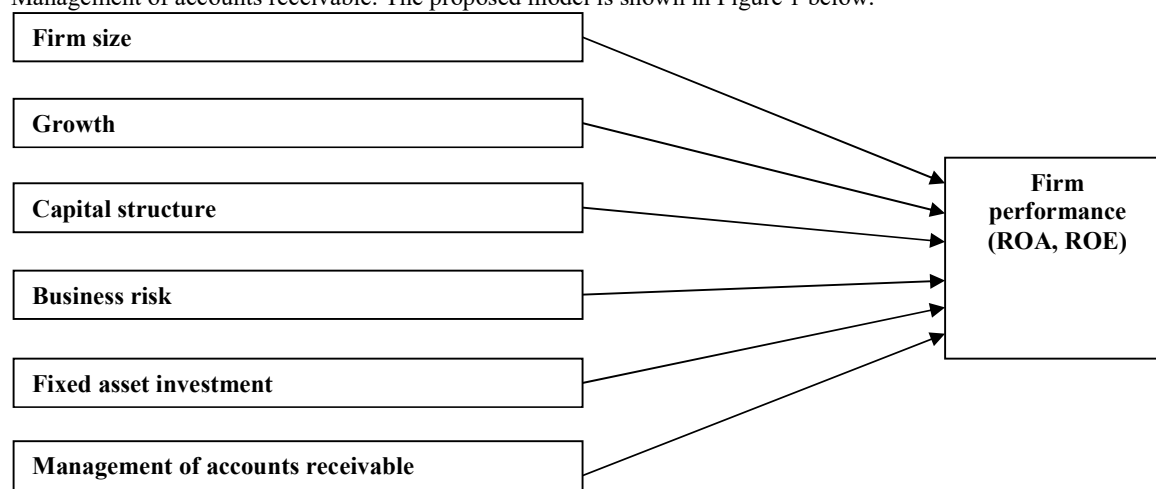


Figure 1. Proposed research model

$$ROA_{it} = \beta_0 + \beta_1 \log(SIZE)_{it} + \beta_2 GROWTH_{it} + \beta_3 DR_{it} + \beta_4 \log(RISK)_{it} + \beta_5 FAR_{it} + \beta_6 \log(TC)_{it} + \varepsilon_{it} (*)$$

$$ROE_{it} = \alpha_0 + \alpha_1 \log(SIZE)_{it} + \alpha_2 GROWTH_{it} + \alpha_3 DR_{it} + \alpha_4 \log(RISK)_{it} + \alpha_5 FAR_{it} + \alpha_6 \log(TC)_{it} + \varepsilon_{it} (**)$$

In the following table 1, the summary of variables and expectations for the relationship between independent and dependent variables are presented.

Table 1: Variable definition and proposed relation to dependent variables

Factors	Variables	Measured by	Relation
Firm performance	ROA	Net income/Total assets	
	ROE	Net income/Owners' equity	
Firm size	SIZE	Total assets	+
Growth rate	GROWTH	$= (DT_n - DT_{n-1}) \times 100\% / DT_{n-1}$	+
Capital structure	DR	$= Debt \times 100\% / Total\ assets$	+/-
Business risk	RISK	$= EBIDA$	+/-
Fixed asset investment	FAR	$= Fixed\ asset \times 100\% / Total\ assets$	+/-
Accounts receivable days	TC	$= Average\ accounts\ receivable \times 365 / Sales$	-

4. Data and method of collection

To assess the internal factors affecting firms' performance of enterprises, the article uses secondary data collected from the audited financial statements of total 30 construction companies listing on the Vietnam stock market from 2011 to 2015. These financial reports are then used to calculate yearly ROA, ROE, and independent variables introduced in the research model.

Data for independent and dependent variables collected are then organized into table organizing by

company, and year-by-year. Table data is the combination of both cross-section and time-series.

5. Methods applied for processing data

In the article, descriptive statistics techniques are used to describe the basic characteristics of collected data, encompassing indicators like mean value, maximum value, minimum value, and standard deviation for each independent and dependent variable. In the study, the author uses design data in tabular form, so the author uses the pooled OLS method. With table data, it is assumed that each entity has its own characteristics that may affect the explanatory variable but these factors are not observable. And whether or not these factors will be implemented with the two models is the Fixed Effects Model (FEM) and the Random Effects Model (REM).

After selecting the appropriate model from either FEM or REM, the selected model will be used to run the regression model for the research data and to check for the defects of the model (i.e. Heteroscedasticity and Multicollinearity). In case of model defects we will apply Generalized Least Squares (GLS).

6. Research results and discussions

Descriptive statistics show that the total number of 150 observations for the sample of 30 firms in the 5-year research period. For return on equity (ROE) the max and min value of the sample are 60.74% and -158.44% respectively. The mean value is 6.3% with a standard deviation of 1.83%. For return on assets (ROA), the max and min value are 46.1% and -16.99% respectively. The average value was 4.89%, and standard deviation is 0.75%. These show that construction material enterprises has a relatively small difference in profitability, in term of ROE and ROA.

Regarding the independent variables, table 2 shows that the size of construction-material enterprises (denoted by SIZE) is not much different, however, there are some enterprises, such as Ha Tien 1 Cement Joint Stock Company (HT1), having much higher value of total assets than others. For sale growth (GROWTH), the statistics show that the average annual growth rate is 8.09%, and the standard deviation is 2.33% representing that there is no significant difference between enterprises.

Capital structure, representing by total debt over total assets (DR) has an average value of 56.24% and standard deviation of 1.8%. These show that, on average, enterprises in the industry have funded their asset by more debt than equity. In addition, the level of standard deviation is relatively low representing low difference between enterprises in terms of capital structure, except for some individual cases such as Dong Nai Roofing Sheet and Roofing Material JSC. (DCT) which are having the highest debt ratio of more than 98%.

For variables of cash flow (RISK) and proportion of fixed assets (FAR), there are no significant difference between firms representing by low standard deviations. For variable measuring working capital efficiency, the average collection period (TC) is 67.4 days and standard deviation is 10.85 days.

Table 2: Results of regression modeled by Pooled OLS, FEM and REM

Model	ROA			ROE		
	Pooled OLS	FEM	REM	Pooled OLS	FEM	REM
Log(SIZE)	-5.652** (0.003)	9.17* (0.037)	-2.094 (0.33)	-3.636 (0.548)	63.94*** (0.0000)	8.216 (0.266)
GROWTH	0.0186 (0.28)	0.0189 (0.113)	0.0225 (0.072)	0.0838 (0.133)	0.0584 (0.152)	0.0805 (0.077)
DR	-0.15*** (0.000)	-0.257*** (0.000)	-0.17*** (0.000)	-0.33** (0.002)	-1.616*** (0.000)	-0.619*** (0.000)
Log(RISK)	9.453*** (0.000)	4.348** (0.002)	5.059*** (0.000)	13.79** (0.005)	3.764 (0.416)	3.956 (0.418)
FAR	-0.128*** (0.000)	0.0144 (0.739)	-0.0545 (0.104)	-0.282** (0.001)	0.43** (0.004)	-0.087 (0.452)
Log(TC)	-3.133* (0.02)	-2.464 (0.281)	-3.067 (0.076)	-5.277 (0.222)	-14.12 (0.072)	-8.438 (0.156)
Observations (N)	150	150	150	150	150	150
R-squared	63.15%	32.76%	25.49%	36.15%	45.53%	26.44%
F(Wald-Chi ²)	40.84 (0.000)	9.26 (0.000)	91.62 (0.000)	13.5 (0.000)	15.88 (0.000)	49.02 (0.000)

, ** and * are statistically significant at 5%, 1% and 0.1% respectively. P-value are in bracket ()*

Consistent with the research objectives, to determine the factors affecting firm performance (ROA, ROE), the authors conducted the test with all three models Pooled OLS, FEM and REM. Then select the most suitable model based on the F-test and Hausman test.

Table 3. A summary of selected tests between the three models Pooled OLS, FEM and REM models for ROA and ROE

Statistic test	Model ROA			Model ROE		
	Pooled OLS and FEM	FEM and REM	Pooled OLS and REM	Pooled OLS and FEM	FEM and REM	Pooled OLS and REM
F-test	F(29, 114) = 9.14 Prob > F = 0.0000			F(29, 114) = 7.71 Prob > F = 0.0000		
Hausman-test		Chi2(6) = 9.21 Prob>chi2 = 0.1622			Chi2(6) = 53.27 Prob>chi2 = 0.0000	
LM-test			No need			No need
Selection	FEM	REM		FEM	FEM	

The test results for selecting the appropriate model show that for the ROA regression model, the REM model is more appropriate. And for the ROE regression model, FEM is more appropriate. Next, the authors examined the Heteroscedasticity by the `xttest0` command for the REM model, `xttest3` for the FEM model, and Multicollinearity with the `xtserial` command for both the ROA and ROE regression.

Table 4. Test for Heteroscedasticity and Multicollinearity for ROA and ROE regression

Test	ROA regression	ROE regression
Heteroscedasticity	Chibar2 (01) = 58.07 Prob>chibar2 = 0.000 < 0.05	Chi2 (30) = 29732.82 Prob>chi2 = 0.000 < 0.05
Multicollinearity	F(1, 29) = 20.813 P-value = 0.001 < 0.05	F(1,29) = 7.856 P-value = 0.009 < 0.05

From Table 4, it was found that both (*) and (**) models exhibited Heteroscedasticity and Multicollinearity. To overcome the Heteroscedasticity, the study used the least squares estimation method (GLS). Results summarize the impact of the factors to two models as follows:

Table 5: Summary for regression results according to the GLS model

	ROA		ROE	
	Beta	P-value	Beta	P-value
Log(SIZE)	-7.146	0.000	-16.925	0.000
GROWTH	0.008	0.317	0.016	0.543
DR	-0.1	0.000	-0.036	0.506
Log(RISK)	8.502	0.000	19.923	0.000
FAR	-0.071	0.000	-0.165	0.000
Log(TC)	-1.945	0.016	-4.181	0.019

In all six variables included in the model, five variables explain the dependent variables ROA and four variables explain the dependent variable ROE with the highest significant level at 1%, more specifically:

Impact of the size of firm (SIZE): The hypothesis indicate the positive impacts of firms' size on ROA and ROE. However, the regression coefficient of SIZE has an adverse effect on ROA and ROE. In other words, the larger of the business, the lower the profitability of the business. This finding is not consistent with Zeitun and Tian (2007) and Onaolapo et al. (2010). This difference can be attributed to the fact that enterprises are strongly influenced by the real estate market crisis in 2011 - 2013, causing the consumption of construction materials to be severely reduced. In that circumstances, the larger the business, the more expenses firms need to spend for maintaining inefficient operating activities.

Impact of the GROWTH variable (revenue growth): The hypothesis expects that Growth has a positive impact on ROA and ROE. However, the result shows that growth does not affect the financial performance of enterprises. This finding is not consistent with studies by Zeitun and Tian (2007), Onaolapo et al. (2010) but is consistent with Master & Yong (2014), Bashir et al. (2013). In fact, in Vietnam, from 2011 to 2013, constructors were directly affected by the crisis in the real estate market, interest rate was over 20% per year, and as the result, the demand for building materials decreased. Therefore, businesses that have high growth rate is not necessarily more effective than enterprises with low revenue growth.

Impact of the DR variable (Capital structure): The hypothesis expect that DR has an impact on ROA and ROE. Results show that DR has a negative impact on ROA and that effect is at highest magnitude. It can be explain that the debt to equity ratio increased 1% will lead to reduction in the ROA by 0.1%. This result is consistent with Meil Nagy's (2009), but is not consistent with Modigliani and Miller's capital structure theory (1958) or Siminica et al. (2011). It can be infer that from 2011 to 2013, due to the impact of the real estate

market crisis, high interest rates, and declining consumption, high debt proportion will be more disadvantageous.

Impact of RISK (Business Risk): The hypothesis assumes that the RISK has an effect on ROA and ROE. The results show that RISK has a positive impact on both ROA and ROE, and prominent impact on ROE. It indicates that when the RISK increases by 1%, ROE increases by 0.1992%. This finding is not consistent with that of Zeitun and Tian (2007) but is consistent with Hawley's empirical hypotheses and empirical studies by Bashir et al. (2013). Explanation for that, in the period 2011-2013, the Vietnamese economy as well as the world had many fluctuations that bring risks to Vietnamese construction materials. Theoretically, high risk may lead to high return but it may adversely lead to failures in depressed period. However, in the period of 2014-2015 the real estate market as well as the construction materials industry recovered from crisis. As a result, taking risks will result in an increase of profitability.

Impact of FAR (fixed asset investment): The hypothesis on FAR expects the interaction between this variable and ROA and ROE. The results show that FAR has a negative impact on both ROA and ROE variables. This finding is consistent with that of Zeitun and Tian (2007), Onaolapo and Kajola (2010), Siminica et al. (2011) but is inconsistent with the empirical studies of Nosa and Ose (2010), Bashir et al. (2013). The consequence may result from that during the crisis period 2011 - 2013, the higher the proportion of fixed assets, the greater the depreciation costs and inventory costs. This will negatively affect the financial performance of the business.

Impact of variable TC (Account receivable days). Consistent with the hypothesis, the results from the model show that TC has a negative impact on both ROA and ROE. In other words, when one business better manage its receivables, the business will improve its performance. This finding is consistent with study conducted by Siminica et al. (2011). Enterprises which have good management of the customers' debts and reasonable sale policies will reduce the average collection period. As a result, firms will not fall into capital shortage for their operations.

7. Recommendations and suggestions

From the research results, in order to improve business efficiency, we suggest some following instructive recommendations:

First, firms should try to increase efficient investment in fixed assets: Regression results show that the proportion of fixed assets and financial performance is reversed. Therefore, in order to increase business profitability, construction-material companies must clearly define the market demand, assess the level of labor, production situation, financial position and market demand, etc before deciding on investment in of new equipment or expansion of fixed assets. In addition, firms should focus on various approaches for cheap sources of fixed assets, bidding for fixed assets, etc.

Second, research firms should focus on managing accounts receivable by making changes in credit policies to customers, in methods of debt collection, and in storage of customers' profile. The firms also need to evaluate periodically the performance of each customer so that the bad debts could be discovered correctly and timely. In addition, the research firms should apply advanced technology in managing and controlling customers' debts. By doing this, customers debts are updated more frequently, precisely, efficiently and the firms also could reduce the employee in this task.

Third, the research firms should build more rational capital structure. Based on the model, the capital structure has a great impact on the enterprises profitability. According to descriptive statistics the debt ratio of research firms in 2015 were 69% and are on the decline. As a result, construction materials companies need to reduce their debt to lower level to maintain reasonable level of payment. In order to do that, the businesses need to: (1) use assets more effectively; (2) finding more rational funding sources. It is accepted that stock market is a very effective way for mobilizing capital for development and expansion.

And last, research firms should focus on preventing business risks. It is widely accepted that, in order to reduce risk, they need to: (1) reduce inventory level; (2) improve product competitiveness by many other strategies; (3) more emphasis on domestic market and promote export to some key markets. Domestic enterprises need to compete fairly by quality of product, costs reduction by advanced process and technology, improvement of the level of labor resources, using high quality labor forces, and usage of renewable resources.

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