An Empirical Study on the Effect of Investments on the Firm Value and Financial Ratios Under the Industrial Sector of PSE-listed Companies as Moderated by Industry Type Using Multivariate Regression

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Abstract: Investment research provides the market with timely information, as analysts use their expertise to give investors data driven advice. This eliminates information gaps and many potential issues and dangers associated with investing, like the risk of buying into an overvalued stock and losing greatly when it goes down. This study determines the effect of short term investments, long term investments, and outstanding shares on the firm value, financial ratios, and gross revenue under the industrial sector of PSE-listed companies as moderated by industry type with the support of the different theories of investment using secondary data collection, deductive approach using Multivariate regression analysis. This study indicated significant effect of outstanding shares on the net profit margin as confirmed by the profits theory of investment stating that the optimal capital stock varies directly with the level of profits. The industry type strengthens the effect of the previously mentioned variable. Outstanding shares also have a significant effect on gross revenue. Short term investment shows adverse significant effect on the net profit margin and gross revenue. The same can be said on the effect of long term investments on gross revenue. Even in non-significant results like the effect of short term, long term and outstanding on the debt-to-equity ratio, return on equity and firm value may matter because a firm do not invest if they cannot cover their short term debt. The results provided cannot be generalized or applied to non-listed companies.

Key Words: Investment; Firm Value; Financial Ratios; Revenue; Philippine Stock Exchange (PSE)

1. INTRODUCTION

Generating income and potentially increasing the firm's net worth can be done by investing a portion of the company's money in high-yield securities, including speculative stocks. Taking a defensive stance and protect your firm's assets can also be done by investing in safer funds (Ciaran, n.d.). Investors feel frustrated by the performance of their investments. They expect growth, and don't get it, or they think the value of their investment won't fluctuate much, but it does. These kinds frustration can be alleviated if investors were more familiar with the effect of investments on the firm. It is imperative to use information from the company's financial statement in order to understand what ratios tell you, as well as where to find all the information you need to calculate them, can give you greater confidence in your investment and potentially help you avoid large losses and improve the company's financial performance. Investment is an essential ingredient of better financial performance. (ICAEW, 2016). This study aimed to determine effect of short term, long term investments and outstanding shares on the firm value, financial ratios and gross revenue under the industrial sector of PSE listed Companies. And determine the moderating effect of the industry type to the relationship between short term, long term investments, outstanding shares and firm value, financial ratios, and gross revenue

1.1 Review of Related Literature

A research conducted on the indicators effect on a company's investment like stocks, bonds, real estate investment trusts (REITs), mutual funds, treasury bills and other financial assets (Beyer, David , & Brian, 2014). The analysis of the ratio can be used as a basis to assess whether management's performance has reached a predetermined goal or not, and early knowing on trends or trends that management performance can be anticipated earlier (Bernhardt, 2017).

1.1.1 Investments and Outstanding Shares

Studying investments helps in future prediction of share prices and the investment cycle, as a whole in the economy too. Benjamin Graham, one of the leading world investors and financial educator, believed that any investment should be worth substantially more than an investor pays for it. (Egithua, 2018). A study concluded that when short-term investors subsequently leave, the reductions in research and development, higher earnings, and the increase in firm valuations are reversed (Cremers, Pareek, & Sautner, 2017). A study by Brio, Miguel, & Pindado, 2010 developed a model in order to study in depth the relationship between investment and firm value. The results corroborate the free cash flow theory, since there is a decrease in value for investing firms with a high level of free cash flow. (Brio, Miguel, & Pindado, 2010). For the outstanding shares, the intention of the issuance of shares will be held true, a change may have an effect on the financial performance and status of the company as reflected in their financial ratios and firm value (Kenton, 2019). A working paper by Warren, 2014 presented an overview of the debate on the relative incidence and efficacy of short-term versus long-term investing, which stipulated that a balance between the two is the optimal conclusion (Warren, 2014).

1.1.2 Financial ratios and Firm Value

The study by Brio, Miguel, and Pindado conducted in Spain indicate a direct but inversely proportional relationship between the volume of investment and firm value (Brio, Miguel, & Pindado, 2010). Therefore, it may be assumed that the effects on firm value may also include such risks and may significantly affect the said firm value and financial ratios. A study also determined that if having a different demographic profile (industry type), it diversifies the type of investment and the effects on the financial ratios and firm value (Lucas, 2017). Other Research and study focus more on the reverse effects like the effect financial ratios to the firm value

(Cam, Tosunglu, & Gurtay, 2015). An article by Elearnmarkets, 2019 stated when outstanding shares are reduced (buy back of shares), this increases the debt to equity ratio of the firm (Elearnmarkets, 2019).

2. METHODOLOGY

2.1 Operational Framework

Figure 1 shows the schematic diagram of the independent variables such as short term, long term investments and outstanding shares and the dependent variables such as the financial ratios and business value, and the industry type as the moderating variable.

Short term and long term investments came from the company's statement of cash flows under its investing activities and/or trading securities, available-for-sale securities, and held-to maturity securities under the statement of financial position. The key financial ratios readily available are based on what best identifies the firm's financial position (Obero, 2014). Exclusion were inevitable due to time constraints and non-availability of data. The population from which the sample is drawn was all the listed companies under the industrial sector, therefore, the results of this study may not be generalized to other sectors and non- listed companies.
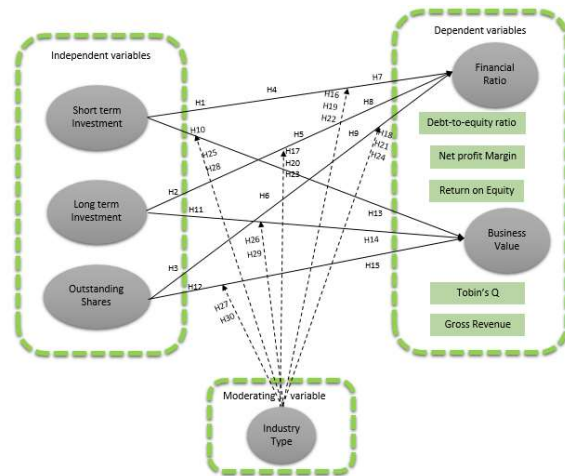

Figure 1: Operational Framework

2.2 Research Procedures

Figure 2 shows the following steps conducted in this study.

Step 1: Gather the selected sample's demographic profile

Step 2: *Obtain 2013-2017 financial statements and extract relevant data for the study*

Step 3: Compute for the firm value of the selected companies listed in the Philippine Stock Exchange
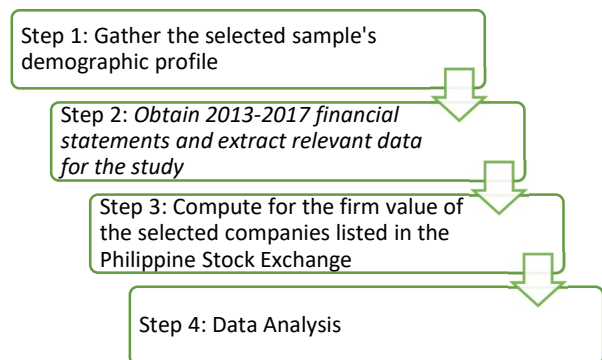
Step 4: Data Analysis

Figure 2: Research Procedures

2.3 Research Design

This study used Multivariate regression in which multiple measurements are made on each experimental unit and for which the relationship among multivariate measurements and their

structure are important to the experiment's understanding (Olkin & Sampson, 2001). The Stepwise Regression for multiple independent variables was conducted in STATA Software, along with secondary datasets obtained from the financial statements of the samples, and from the PSE. This study employed the 0.05 significance level. Any effect that has p-value below 0.05 is considered statistically significant.

2.4 Data Analysis

The total number of observations is 64 companies listed at the PSE under the industrial sector. Multivariate analysis is conceptualized by tradition as the statistical study of experiments in which multiple measurements are made on each experimental unit and for which the effect among multivariate measurements and their structure are important to the experiment's understanding. In analyzing financial instruments, the relationships among the various characteristics of the instrument are critical. The industry type will be analyzed through nominal dummy variable per type.

2.5 Econometric Model

The empirical regression models to be estimated are as follows:

$DE = \beta_0 + \beta_1 SI + \varepsilon$
$DE = \beta_0 + \beta_1 LI + \varepsilon$
$DE = \beta_0 + \beta_1 OS + \varepsilon$
$NPM = \beta_0 + \beta_1 SI + \varepsilon$
$NPM = \beta_0 + \beta_1 LI + \varepsilon$
$NPM = \beta_0 + \beta_1 OS + \varepsilon$
$RE = \beta_0 + \beta_1 SI + \varepsilon$
$RE = \beta_0 + \beta_1 LI + \varepsilon$
$RE = \beta_0 + \beta_1 OS + \varepsilon$
$FV = \beta_0 + \beta_1 SI + \varepsilon$
$FV = \beta_0 + \beta_1 LI + \varepsilon$
$FV = \beta_0 + \beta_1 OS + \varepsilon$
$GR = \beta_0 + \beta_1 SI + \varepsilon$

$GR = \beta_0 + \beta_1 LI + \varepsilon$
$GR = \beta_0 + \beta_1 OS + \varepsilon$
$DE = \beta_0 + \beta_1 SI + \beta_2 IT + \beta_3 SI*IT + \varepsilon$
$DE = \beta_0 + \beta_1 LI + \beta_2 IT + \beta_3 LI*IT + \varepsilon$
$DE = \beta_0 + \beta_1 OS + \beta_2 IT + \beta_3 OS*IT + \varepsilon$
$NPM = \beta_0 + \beta_1 SI + \beta_2 IT + \beta_3 SI*IT + \varepsilon$
$NPM = \beta_0 + \beta_1 LI + \beta_2 IT + \beta_3 LI*IT + \varepsilon$
$NPM = \beta_0 + \beta_1 OS + \beta_2 IT + \beta_3 OS*IT + \varepsilon$
$RE = \beta_0 + \beta_1 SI + \beta_2 IT + \beta_3 SI*IT + \varepsilon$
$RE = \beta_0 + \beta_1 LI + \beta_2 IT + \beta_3 LI*IT + \varepsilon$
$RE = \beta_0 + \beta_1 OS + \beta_2 IT + \beta_3 OS*IT + \varepsilon$
$FV = \beta_0 + \beta_1 SI + \beta_2 IT + \beta_3 SI*IT + \varepsilon$
$FV = \beta_0 + \beta_1 LI + \beta_2 IT + \beta_3 LI*IT + \varepsilon$
$FV = \beta_0 + \beta_1 OS + \beta_2 IT + \beta_3 OS*IT + \varepsilon$
$GR = \beta_0 + \beta_1 SI + \beta_2 IT + \beta_3 SI*IT + \varepsilon$
$GR = \beta_0 + \beta_1 LI + \beta_2 IT + \beta_3 LI*IT + \varepsilon$
$GR = \beta_0 + \beta_1 OS + \beta_2 IT + \beta_3 OS*IT + \varepsilon$

Where
β_0 = Intercept of the regression model,
β_1, β_2, β_3 = Partial Regression / Path coefficient
SI = Short-term Investments
LI = Long-term Investments
OS = Outstanding Shares
DE = Debt-to-Equity Ratio
NPM = Net Profit Margin
RE = Return on Equity
FV = Firm Value
GR = Gross Revenue
IT = Industry Type
ε = Error terms of the regression model

3. RESULTS AND DISCUSSION

This section presents the results of the primary research question. The multivariate regressions are run under STATA software. The assumption of Pearson Correlation showed, that among all independent variables the magnitude of less than .80 correlation coefficients, therefore is acceptable for multivariate regression.

The Profits Theory of Investment identifies profits as a source of internal funds for financing investment. This held true for H^4 under Table 1: Direct effects of short term investments, long term investments and outstanding shares on the net profit margin. That an increase in investment by PHP1 short term investment, decreases net profit margin by .0015 percent.

The theory by Edward Shapiro states that the optimal capital stock varies directly with the level of profits. This is held true for H^6 that an increase of 1 outstanding share increases the net profit margin by .00079 percent. If you increase the capital stock, there is always a corresponding increase in profit.

Table 1: Direct effects of short term investments, long term investments and outstanding shares on the net profit margin

Net profit margin		Coef.	Std. Err.	t	P>|t|
H_4	Short term investment	-0.0015	0.000697	-2.25	.025
H_5	Long term investment	-6.9E-05	0.000121	-0.57	.570
H_6	Outstanding shares	0.00079	0.000245	3.23	.001

The effect of short and long term investments and outstanding shares are all significant as presented in table 2. H^{13} and H^{14} is held true by the Financial Theory of Investment saying that funds for investment decreases firm's revenue. The flow of funds theory can confirm the H^{15} stating that money flows in the form of an increase in outstanding shares are one basis of revenue (Diksha, n.d.).

Table 2: Direct effects of short term investments, long term investments and outstanding shares on the gross revenue

Gross Revenue		Coef.	Std. Err.	t	P>|t|
H^{13}	Short term investment	-32.6156	7.036503	-4.64	.000
H^{14}	Long term investment	-3.53965	1.218193	-2.91	.004

H^{15}	Outstanding shares	22.69602	2.47561	9.17	.000

The moderating effect of industry type strengthens the relationship of outstanding shares on the net profit margin such as Food, Beverage & Tobacco and Electrical Components & Equipment as shown in Table 3: The effect of outstanding shares on net profit margin as moderated by industry type.

Table 3: The effect of outstanding shares on the net profit margin moderated by industry type

Industry type	Coef.	Std. Err.	t	P>|t|
Food, Beverage & Tobacco	-0.00079	0.000245	-3.23	.001
Construction, Infrastructure & Allied Services	-0.00055	0.000449	-1.22	.224
Chemicals	-0.00108	0.000739	-1.46	.145
Electrical Components & Equipment	-0.00084	0.000254	-3.31	.001
Other Industrials	-0.00012	0.004369	-0.03	.978

Table 4: The effect of short term investments on the gross revenue as moderated by industry type showed significant moderating effect on the relationship between short term investments and gross revenue.

Table 4: The effect of short term investments on the gross revenue as moderated by industry type

Industry type	Coef.	Std. Err.	t	P>|t|
Food, Beverage & Tobacco	-22.6961	2.475654	-9.17	.000
Construction, Infrastructure & Allied Services	-17.5637	4.530503	-3.88	.000
Chemicals	-22.1729	7.461063	-2.97	.003
Electrical Components & Equipment	-22.7968	2.560034	-8.9	.000
Other Industrials	-22.4009	44.09523	-0.51	.612

4. CONCLUSIONS

Investing activities play a key part in the financial planning and analysis of a company's operations and future expenditures. A high level of profit with manageable risks is expected to increase the firm value. If the firm's investments are able to maximize its profits by using own assets efficiently, it will increase investor trust, which will have a good impact on increasing the value and performance of the firm. The direct effect of short term investment adversely affect net profit margin and gross revenue. Long term investments also adversely affect gross revenue. This is similar to the study of Likitwongkajon and Vithessonthi, 2019 that states that foreign investments are negatively associated with revenue growth. This is attributable to the fact that firms use revenue/ income to fund investments.

Understanding how short term and long term investments affect financial ratios and firm value is crucial for designing and implementing a firm's strategy that is expected to help establish competitive advantages. This study highlights the importance of the channels through which investments might enhance the performance of a firm. In theory, any investment should result in (1) an increase in revenue, (2) a decrease in costs or (3) both. However, in practice, the investment's outcomes might be affected by several expected and unexpected factors, thereby creating a major challenge for an empirical analysis of the effect of investments on financial ratios and firm value. Our findings suggest that managers may find it useful to take into account the fact that an investment may not necessarily have an effect on the financial ratios and firm value. However, it is difficult to predict what might have happened had if such investments not been initially deployed. Perhaps, by not making an investment, a firm might potentially have experienced a decline in financial ratios and performance.

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