

Effect of Working Capital Management and Financial Leverage on Financial Performance of Philippine Firms

Corazon L. Magpayo

This paper aims to determine the effect of working capital management policy and financial leverage on financial performance of Philippine firms measured in terms of net income, return on equity (ROE) and return on asset (ROA). Pearson's rank correlation test, ANOVA F-test, and multiple regression analysis were used on 110 randomly selected firms included in the Business World's Top 1000 corporations in the Philippines ranked in terms of gross revenue. Results of the study indicated that firm's working capital management policy, financial leverage, and firm size have significant relation to net income. However working capital management policy has no significant effect on return on equity (ROE) and return on assets (ROA).

Field of research: management accounting

1. INTRODUCTION

In the world of business, the ability to seize every opportunity and to seek practical business tools and techniques to improve the financial performance are of paramount importance for success. Accounting reports provide different measures of a firm's financial performance like net income, return on asset (ROA), or return on equity (ROE), to name a few. Although not all business activities are for profit, business needs resources to support all its activities. Good business acumen dictates that business resources should be managed efficiently. Money tied up in working capital is one area worth looking into. Working capital, for most firms, constitutes a big chunk of their investment. "Tying up cash in working capital is as much as an investment as is tying up cash in plant and equipment." (Louderback, et.al. 2000). It is therefore expected that "a restricted lean-and-mean current asset investment policy generally provides the highest expected return" (Brigham E. and Gapenski,L., 1997). On this note, business leaders cannot overlook working capital management and its effect on profitability of the firm.

Garcia-Teruel and Marinez-Solano (2007) affirmed in their study the importance of working capital management to corporate profitability especially among small and medium enterprises by providing empirical evidence on the effects of working capital management on the profitability of 8,872 small and medium-sized Spanish firms. They demonstrated in their study how managers can improve profitability by shortening the cash conversion cycle through inventory reduction and reduction in the outstanding number of days receivables.

Magpayo, Corazon L., Accountancy Department, College of Business, De La Salle University, 2401 Taft Avenue, 1004 Manila, Philippines email: corazon.magpayo@dlsu.edu.ph

“Working capital management involves the administration, within policy guidelines, of current assets and current liabilities.” (Brigham, E. and Gapenski, L. (1997). The term “working capital” may refer to the gross working capital, meaning the total current assets. It may also refer to the net working capital, which is total current asset minus total current liabilities. The context used in this study is the former definition of working capital.

Corollary to working capital management is the financial leverage management. According to Brigham and Gapenski (1997) “The extent to which a firm uses debt financing, or financial leverage, has three important implications: (1) By raising funds through debt, stockholders can control a firm with a limited investment. (2) Creditors look to the equity or owner-supplied funds, to provide a margin of safety, so if the stockholders have provided only a small proportion of the total financing, the risks of the enterprise are borne mainly by its creditors. (3) If the firm earns more on investments financed with borrowed funds than it pays in interest, the rate of return on owners’ capital is magnified, or leveraged.”

Ideally, firms’ fund requirements should be internally generated. The result of business operation should provide the resources it needs to continue in business. However, opportunities for growth require more resources than what a firm can currently provide. In most instances, firms resort to financial leverage. Undeniably, the extent firms make use of financial leverage is another aspect that may improve financial performance.

In this light, this research was undertaken to determine the effect of working capital management policy, and financial leverage on financial performance of Philippine firms.

2. LITERATURE REVIEW

One of the most common measure of working capital is the current ratio. “Current ratio is a measure of relative liquidity that takes into account differences in absolute size. It is used to compare companies with different total current assets and liabilities”. (Louderback, et. al., 2000). Current ratio is computed by dividing current assets by current liabilities. It gives a measure of the available current assets for every peso of current liability.

Binti Mohamad and Binti Mohd Saad (2010) found that current ratio is negatively significant to financial performance of 172 listed Malaysian firms. Their study emphasized the importance of proper management of working capital as it affects firm’s market value and profitability. They also suggested that working capital management should be part of the company’s strategic and operational processes in order to be effective. Eljely, A. (2004) empirically examined the relationship of liquidity and profitability as measured by current ratio and cash gap on a sample of 29 joint stock companies in Saudi Arabia and found significant negative relation between the firm’s profitability and its liquidity level, as measured by current ratio using correlation and regression analysis. He presented evidence of negative relation between current ratio and profitability. His study pointed to reduction in profitability due to lost profits and

unnecessary costs resulting from excessive liquidity. Based on these past studies, current ratio seemed to be a good proxy variable for working capital management. However, no data transformation technique can correct the current ratio's normality distribution in this study.

Afza, T. and MS Nasir (2007) found no significant relationship between working capital management policy and financial performance among the 208 public limited companies listed in the Karachi Stock Exchange. They measured aggressive working capital investment policy in terms of low level of investment in current assets as percentage of total assets. On the other side of the spectrum are companies with high investments in current assets vis-à-vis total assets, which they classified as advocating conservative working capital management policy. Similarly, Wajahat Ali and Syed Hammad Ul Hassan (2010) study of 37 listed companies in the OMX Stockholm Stock Exchange showed no significant relationship between profitability and working capital management policy when grouped as aggressive, defensive or conservative based on cash conversion cycle. The ratio of current asset to total assets of the observations in this study was another possible proxy variable for working capital management, but the data failed the tests of normality. Because of this limitation, dummy variables were used instead to capture the effect of working capital management policy on profitability.

There were also studies prepared to determine effect of financial leverage on profitability. Aquino, R. (2010) studied the capital structure of listed and unlisted Philippine firms. Results indicated that higher debt is associated with high growth rates and profitability in unlisted firms. His study showed that high debt ratio is positively associated with the firm's growth rate and profitability, although he observed the opposite among the listed firms, which he attributed to the cautiousness of large listed firms on the effect of reliance on debt financing on their share prices. Joshua Abor's (2005) research paper revealed significant relationship between financial leverage and profitability. His study demonstrated that the use of short-term debt improved the companies' profitability. Results of the study showed a significantly positive relation between the ratio of short-term debt to total assets and return on equity (ROE), as well as a significantly positive association between the ratio of total debt to total assets and ROE.

Past studies have also shown that firm size is one of the factors to be considered when interpreting financial ratios. Lee Huff, et. al. (1999) found that systematic differences exist among liquidity and solvency measures for small companies versus large companies listed in the Disclosure, Inc. database for December 31, 1996. Wajahat Ali and Syed Hammad Ul Hassan (2010) study revealed that the size of the firm has inverse relationship with profitability. On the other hand, Amarjit, G., et.al (2010) found no significant relationship between firm size and gross operating profit ratio. The study of Falope and Ajilore (2009) also found no significant variations in the effects of working capital management between large and small firms in Nigeria using a sample of 50 quoted companies. With these conflicting results on firm size and profitability, this study examined the effect of firm size on profitability of Philippine corporations.

The measure of financial performance used in the aforementioned studies varied. Garcia-Teruel and Marinez-Solano (2007), Falope and Ajilore (2009) used return on assets (ROA). Binti Mohamad and Binti Mohd Saad (2010) and Afza, T. and MS Nasir (2007) used ROA, Tobin Q. Mohamad and Binti Mohd Saad (2010) also included return on invested capital (ROIC) while Afza, T. and MS Nasir (2007) also measured return on equity (ROE). Eljely, A. (2004) used net operating income plus depreciation divided by net sales. Wajahat Ali and Syed Hammad UI Hassan (2010) and Amarjit, G., et.al (2010) used gross profit divided by total assets less financial assets. Aquino (2010) used the ratio of net income after taxes to stockholders' equity (ROE). This study used net income, ROA, and ROE to measure financial performance of Philippine firms.

Below is the theoretical framework of the study.

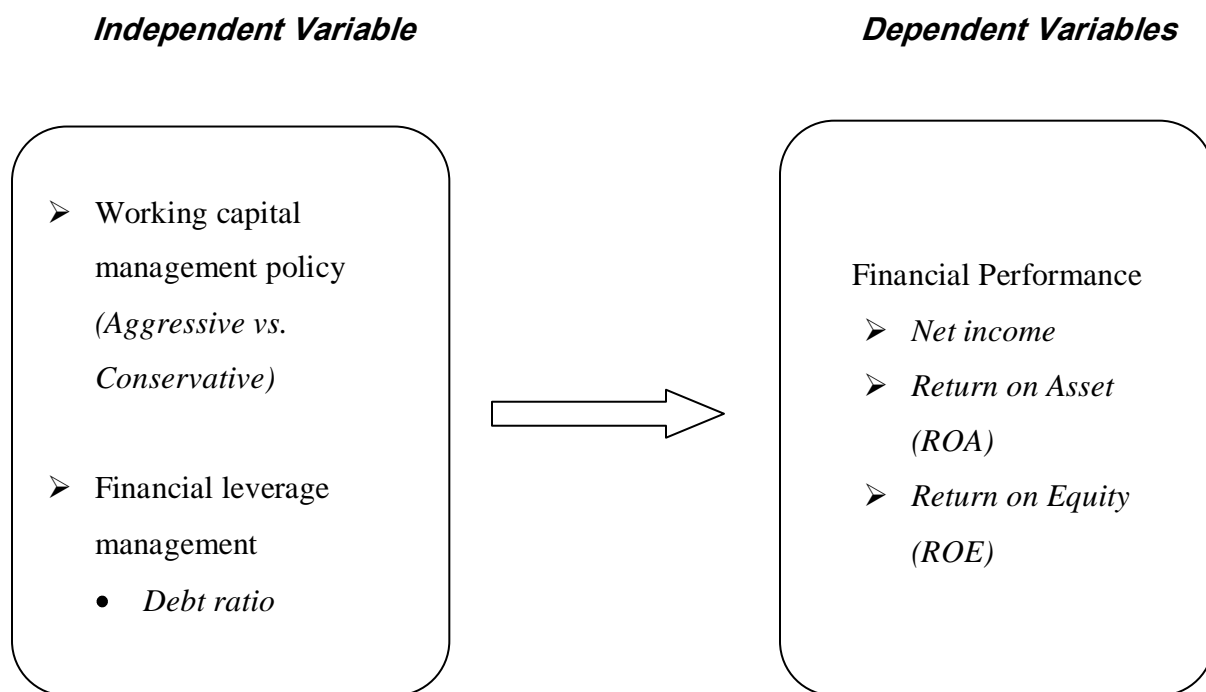


Figure 1
Theoretical Framework

3. DATA AND METHODOLOGY

This study is descriptive in nature. Data were collected from the 2009 list of Business World's Top 1000 Philippine Corporations. A total of 110 firms were included in the study, which were chosen using the random numbers calculator from <http://www.calculatorlive.com/Generate-Random-Number-calculator.aspx/>.

The sample size used in this study was in accordance with the empirical study undertaken by Green, S. (1991), as cited in the article of VanVoorhis, C. and Morgan, B. (2001), that "as a rule of thumb, sample size $N > 50 + 8m$ (where m is the number of

independent variables) for testing the multiple correlation and $N > 104 + m$ for testing individual predictors (assuming a medium-sized relationship). If testing both, use the larger sample size”.

Financial performance was measured using the following variables: net income, ROA, and ROE. Debt ratio was used as proxy variable of financial leverage. Different data transformation techniques were performed on all variables that are not normally distributed. Natural logarithm appeared to be the most suitable data transformation. However, current ratio and ratio of current asset to total asset were not included as predictor variables because no transformation technique can correct the normality of these data. Instead, dummy variables were used to classify the firms’ working capital management policy as aggressive or conservative based on ratio of current asset to total assets as used in the work of Afza, T and MS Nasir (2007).

The median of gross revenue was used to categorize companies as large or small. Abdul Malek Bin Zakaria Zaidi Bin Isa (1997) used the same measure on the justification that “total sales have the advantage of reducing the effect of inflation and difference in accounting methods especially in situations that involve valuation of assets”.

The SPSS statistics was used to determine significant relation among the variables. Tests of correlation, ANOVA, and multiple regression analysis were performed. The following null hypotheses were developed.

- Null Hypothesis 1: There is no significant relationship between working capital management policy and the firms’ 2009 financial performance
- Null Hypothesis 2: There is no significant relationship between financial leverage and firms’ 2009 financial performance
- Null Hypothesis 3: There is no significant relationship between firm size and firms’ 2009 financial performance.

Three regression models were estimated to test these hypotheses.

- (1) $NI(\ln) = \beta_0 + \beta_1DR + \beta_2WCP + \beta_3SIZE + \epsilon$
- (2) $ROE(\ln) = \beta_0 + \beta_1DR + \beta_2WCP + \beta_3SIZE + \epsilon$
- (3) $ROA(\ln) = \beta_0 + \beta_1DR + \beta_2WCP + \beta_3SIZE + \epsilon$

where:

$NI(\ln)$ = natural logarithm of net income; $ROE(\ln)$ = natural logarithm of return on equity
 $ROA(\ln)$ = natural logarithm of return on asset DR = debt ratio
 WCP = working capital management policy; $SIZE$ = firm size

4. FINDINGS/DISCUSSION

Table 1 shows the descriptive statistics of the 110 companies included in the study. Net income and ROA are positively skewed while ROE is negatively skewed. All three variables have peaked distribution. After data transformation using natural logarithm, the log-transformed data appeared normal when examined visually using histogram and normal Q-Q plots. Furthermore, the Kolmogorov-Smirnov test of normality for large samples ($N > 30$) affirmed normality of distribution at $p > 0.05$.

Table 1: Descriptive statistics for dependent variables

	N	Mean	Median	SD	Min	Max	K-S	S-W
NI	110	472.04	76.50	1140.672	1	7504	.340 (p=.000)	.448 (p=.000)
ROE	110	.4731	12.3663	242.58712	-2385.35	652.33	.338 (p=.000)	.307 (p=.000)
ROA	110	9.3074	5.0188	11.34252	.13	61.24	.209 (p=.000)	.701 (p=.000)
NI(ln)	110	4.3770	4.3356	1.95538	.00	8.92	.053 (p=.200)*	.989 (p=.491)
ROE(ln)	105	2.6644	2.6345	1.09311	-.62	6.48	.060 (p=.200)*	.979 (p=.091)
ROA(ln)	110	1.5829	1.6132	1.27249	-2.07	4.11	.077 (p=.122)	.973 (p=.025)

a. Lilliefors Significance Correction

*. This is a lower bound of the true significance.

Tests of correlation using the scatter graph and Pearson's rank correlation test were performed to determine linearity of relationship among the dependent and independent variables. Table 2 presents the correlation matrix of the variables. Based on the results, the correlation tests detected no multi-collinearity among the independent variables ($r < .80$). Tests on debt ratio indicated moderate negative linear relationship to net income and ROA but a weak positive linear relationship with ROE. Working capital management policy test result indicated a moderate positive linear relationship to net income. There is a weak positive linear relationship between working capital management policy and ROA. However, it appears that there is no linear relationship between working capital management policy and ROE. Firm size showed a moderate positive linear relationship with net income but only a weak positive linear relationship with ROE and ROA.

Table 2: Pearson's rank correlation coefficients between independent and dependent variables

	NI(ln)	ROE(ln)	ROA(ln)	DR	WCP	SIZE
NI(ln)	1					
ROE(ln)	.473**	1				
ROA(ln)	.758**	.708**	1			
DR	-.364**	.217*	-.344**	1		
WCP	.425**	.002	.200*	-.313**	1	
SIZE	.531**	.271**	.279**	.014	.127	1

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed).

Shown on Table 3 is the summary of the multiple regression analysis. All VIF statistics results were less than 10 suggesting the absence of multi-collinearity among the independent variables. The Durbin-Watson test statistics yielded values not less than 1 or greater than 3 indicating that the residuals are not auto-correlated. The computed r^2 was highest in the model for estimating net income.

Table 3: Multiple regression analysis

Model		Durbin-Watson	R^2	β_0	β_1 DR	B_2 WCP	B_3 SIZE
(1)	NI(ln) ($F=33.243$ $p=.000$)	1.944	.485	4.075 ($t=9.844$, $p=.000$)	-.020 ($t=-3.887$ $p=.000$ VIF=1.113)	1.057 ($t=3.664$ $p=.000$ VIF=1.131)	1.947 ($t=7.104$ $p=.000$ VIF=1.020)
(2)	ROE(ln) ($F=4.780$ $p=.004$)	2.127	.124	1.747 ($t=5.465$, $p=.000$)	.010 ($t=2.409$ $p=.018$ VIF=1.124)	.114 ($t=.527$ $p=.600$ VIF=1.136)	.583 ($t=2.861$ $p=.005$ VIF=1.012)
(3)	ROA(ln) ($F=8.986$ $p=.000$)	2.096	.203	2.054 ($t=6.130$, $p=.000$)	-.015 ($t=-3.597$ $p=.000$ VIF=1.113)	.156 ($t=.668$ $p=.505$ VIF=1.131)	.700 ($t=3.154$ $p=.002$ VIF=1.020)

5. CONCLUSION/LIMITATIONS

Results of the study indicated that the firm's working capital management policy, financial leverage and size have significant relationship to the net income, ROE, and ROA. The ANOVA F test and the t -test statistics showed significant results ($p<.05$).

However, based on computed r^2 , the net income model showed the best model fit compared to the results of the ROE and ROA regression models. Both working capital

management policy and firm size have positive effect on the firms' 2009 net income while financial leverage showed negative relation.

Aggressive working capital management policy reflected in low investments in current asset influences net income positively. This is consistent with the theory that "a restricted lean-and-mean current asset investment policy generally provides the highest expected return" (Brigham E. and Gapenski, L., 1997). Likewise, this is consistent with the Eljely's (2004) study that pointed out that excessive liquidity results to reduction in profitability due to lost profits and unnecessary costs. However, this finding is not consistent with the studies of Afza, T. and MS Nasir (2007) and Wajahat Ali and Syed Hammad UI Hassan (2010), which found no significant relationship between working capital management policy and profitability.

On the other hand, financial leverage has a negative effect on net income inasmuch as the cost of borrowing money decreases net income. But the effect on return on equity is positive, supporting the theory according to Brigham, E and Gapenski, L. (1997) that "if the firm earns more on investments financed with borrowed funds than it pays in interest, the rate of return on owners' capital is magnified, or leveraged." However, this finding is not consistent with the study of Joshua Abor (2005), which found significantly positive relation between the ratio of short-term debt to total assets and return on equity (ROE), as well as a significantly positive association between the ratio of total debt to total assets and ROE.

Result of the study also showed that firm size has a significant positive relationship with financial performance. This is not consistent with the study of Wajahat Ali and Syed Hammad UI Hassan (2010), which found inverse relationship and the study of Amarjit, G., et.al (2010), which found no significant relationship. In this study, large firms are identified with high gross revenues, which under normal circumstances would translate to higher profit.

The importance of working capital management and financial leverage on the firms' financial performance is emphasized in this study to bring attention of business leaders to the obvious but is often neglected. The next step is to look into the best practices of top performing companies. What working capital management strategies may be implemented to minimize investment in current assets, at the same time maximize use of financial leverage at the firm's acceptable financial risk appetite?

REFERENCES

- Abdul Malek Bin Zakaria Zaidi Bin Isa. 1997. Statistical Properties of financial ratios. *Malaysian Management Review*, Retrieved from <http://mgv.mim.edu.my/MMR/9712/971206.html>
- Abuzar M.A. Eljelly. 2004. Liquidity - profitability tradeoff: An empirical investigation in an emerging market, *International Journal of Commerce and Management*, Vol. 14 Iss: 2, pp.48 – 61

- Afza, T. and MS Nasir. 2007. Is it better to be aggressive or conservative in managing working capital?. *Journal of Quality and Technology Management*,. Vol 3, No. 2, pp 11-21 (ISSN: 1011-002x)
- Amarjit, G., et.al. 2010.The relationship between working capital management and profitability: Evidence from the United States. *Business and Economics Journal*, Vol 2010:BEJ-10
- Aquino, R. 2010. Capital structure of Philippine listed and unlisted firms: 1997-2008. University of the Philippines, College of Business Administration, Discussion paper 1005
- Binti Mohamad and Binti Mohd Saad. 2010. Working capital management: The effect of market valuation and profitability in Malaysia. *International Journal of Business and Management*,Vol 5, No 11, pp 140-147 (ISSN:1833-/8119 online)
- Brigham, E. and Gapenski, L. 1997. Financial Management Theory and Practice, 8th ed. The Dryden Press, Fort Worth TX p. 48, 856-857
- Business World Top 1000 Corporations in the Philippines. 2009. Vol 24, Business World Publishing Corporation, Quezon City, Philippines.
- Falope O. and Ajilore O. 2009. Working capital management and corporate profitability: Evidence from panel data analysis of selected quoted companies in Nigeria. *Research Journal of Business Management*, Vol3 No 3, pp.73-84 (ISSN: 1819-1932)
- Joshua Abor. 2005. The effect of capital structure on profitability: an empirical analysis of listed firms in the Ghana. *Journal of Risk Finance*, Vol 6 Iss 5, pp. 438-445
- Louderback, et.al. 2000. Managerial Accounting 9th ed. South-western College Publishing Thomson Learning Asia Singapore p.365
- Patricia Lee Huff, Robert M Harper Jr, & A Elaine Eikner. 1999. Are there differences in liquidity and solvency measures based on company size? *American Business Review*, 17(2), 96-106. Retrieved February 15, 2010, from ABI/INFORM Global. (Document ID: 42519804).
- Pedro Juan García-Teruel, Pedro Martínez-Solano. 2007. "Effects of working capital management on SME profitability", *International Journal of Managerial Finance*, Vol. 3 Iss: 2, pp.164 – 177
- VanVoorhis, C. and Morgan, B. 2001. Statistical rules of thumb: What we don't want to forget about sample sizes. www.psichi.org/pubs/articles/article_182.asp
- Wajahat Ali and Syed Hammad UI Hassan. 2010. Relationship between profitability and working capital policy of Swedish companies. *Essays.se*, Retrieved from Swedish University Essays.