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WORKING CAPITAL MANAGEMENT AND THE PROFITABILITY OF NON- FINANCIAL FIRMS LISTED ON THE ZIMBABWE STOCK EXCHANGE (ZSE)

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ABSTRACT

Working capital is essential for the day-to-day operations of a firm. The study examines the impact of working capital management on the profitability of non-financial firms listed on the Zimbabwe Stock Exchange (ZSE). Using panel data methodology, the direction and extent of the impact of working capital management on profitability is scrutinised. The regression analysis is based on a panel sample of 39 non-financial firms listed on the ZSE from 2009 to 2013, the period under which the Zimbabwean economy has been operating under the multicurrency system. It was found that there is a positive relationship between debtors' days and firm's profitability, a negative relationship between creditors' days and profitability and a positive relationship between firm's cash conversion cycle and its profitability. There is some negative relationship between current ratio and profitability, while inventory turnover days and profitability are positively related. Debt to asset ratio as a control variable has a significant negative relationship with firm value and profitability. The results of the study show that for the companies included in the sample, there are mixed effects of the components of working capital on firm performance. Managers can thus create value for shareholders by taking note of the existence of such relationships and take measures that enhance firm profitability.

JEL CLASSIFICATION & KEYWORDS

■ G3 ■ WORKING CAPITAL ■ PROFITABILITY ■ LIQUIDITY ■ MULTICURRENCY SYSTEM

INTRODUCTION

Working capital is the amount by which total current assets exceed current liabilities and it is affected by current assets such as stock, cash, the bank balance and prepayments as well as current liabilities that include creditors and accruals depending on the type of business. Akinsulire (2008) refers to working capital as the items that are required for the day-to-day production of goods to be sold by a company. (Reddy and Patkar, 2004) equate working capital in businesses to blood in the human body as it is an essential part in firm financial management decision.

According to Harris (2005) working capital management is a simple and straightforward concept of ensuring the ability of the firm to fund the difference between the short term assets and short term liabilities. Thus, firms need to manage this working capital efficiently so as to ensure that they cater for their day to day expenses. Good working capital management will ensure that the business is able to meet its financial obligations. Working capital management is a very important component of corporate finance because it directly affects the liquidity and profitability of the firm (Rehman and Nasr, 2007). Poor management of assets and liabilities may lead the firm into many problems such as bad debts, increased finance costs due to interest charged on overdue accounts, excess funds tied up in stock thereby reducing profits, among other problems. Poor management of assets and liabilities may also portray a bad image of the company if the company fails to pay its debts on time. This may also reduce its sources of funds for borrowing since a record of being a bad debtor tarnishes one's image. Working capital management is therefore expected to have an effect on the firm's performance measured by the firm's profitability and its value on the stock exchange. According to the theory of risk and return, risky investments are normally associated with higher returns. Thus, firms with high liquidity of working capital may have low risk and resultantly low profitability. Conversely, firms that have low liquidity of working capital, facing high risk may earn high profits.

In managing working capital, firms must take into consideration all the current assets and current liability components and try to balance their risk and return. Even if there is room for growth, poor management or inadequate working capital levels might hinder the growth or profitability of the firm. There might be greater demand for a firm's products but if the firm has inadequate working capital it may not be able to produce enough products to meet the demand. Since introduction of the multicurrency system in February 2009, many firms have been facing working capital challenges. Despite the fact that the problem is becoming more and more pronounced under the multicurrency system, only a few empirical studies have sought to investigate the nature and extent of the relationship between working capital management and profitability in Zimbabwe.

Review of literature

According to the trade credit theory, trade credit can be viewed as a cheaper substitute to bank credit. By delaying payments to suppliers, the firm benefits from a flexible source of financing. On the contrary, trade credit deprives the company of discounts for prompt or early payment which deprives the company a possible cost saving. Regarding accounts receivables, it is argued that a flexible trade credit policy with an interest on receivables may increase sales (Long et al., 1993; Deloof and Jegers, 1996). Such a practice can however be expensive due to the lock up of money in working capital (Guariglia and Mateut, 2006). As far as inventory management is concerned, the company should ideally hold an economic order quantity of inventory that balances the trade off between liquidity and profitability. Maintaining a large inventory implies using capital to finance it and to cover different costs such as transport, insurance, storage, and spoilage (Long and al., 1993; Deloof and Jegers, 1996). Keeping a low inventory level on the other hand may lead to loss of sales and stock-out (Deloof, 2003), thereby having an impact on profitability.

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Lazaridis and Tryfonidis (2006) conducted a cross sectional study using a sample of 131 firms listed on the Athens Stock Exchange for the period of 2001-2004 and found a statistically significant relationship between profitability, measured through gross operating profit and cash conversion cycle and its components. Based on the results, they suggested that managers could create profits for their companies by correctly handling the cash conversion cycle and by keeping each component of the cash conversion cycle at an optimum level. To extend Lazaridis and Tryfonidis findings, Gill et al.,(2010) used a sample of 88 American firms listed on the New York Stock Exchange (NYSE) for a period of 3 years from 2005 to 2007. They found statistically significant relationship between cash conversion cycle and profitability, measured by gross operating profit.

Ghosh and Maji (2003) attempted to examine the efficiency of working capital management of Indian cement companies between 1993 and 2002. They calculated three index values which are the performance index, utilization index and overall efficiency index to measure the efficiency of working capital management, instead of using working capital management ratios. By using regression analysis, they tested the speed of achieving target level of efficiency by individual firms during the period of study and found that some of the sample firms successfully improved efficiency during these years. Garcia-Terual et al (2007) collected a panel of 8872 enterprises from Spain covering the period 1996 to 2002. They tested the effects of working capital management on profitability using panel data methodology. The results, which are robust to the presence of endogeneity, demonstrated that managers could create value by reducing their inventories and the number of days for which their accounts are outstanding. Moreover, shortening the cash conversion cycle was also found to improve the firm's profitability.

Olufemi Falope and Olubanio (2009) explained the empirical evidence about the effect of working capital management on profitability and the study showed that there is a significance relationship between net operating profitability and average collection period, inventory turnover in days. According to the study, firms become more profitable if they manage their working capital in more efficient ways by reducing the debtors days and inventory turnover days to a reasonable minimum.

However, Danuletiu, A.E (2010) analysed the efficiency of working capital management of companies from Alba. They studied the relationship between the efficiency of working capital management and profitability. It was discovered that there is a negative relationship between working capital management and profitability and concluded that working capital management does not affect the profitability of firms.

Raheman and Nasr (2004) studied the effect of different variables of working capital management including average collection period, inventory turnover in days, average payment period, cash conversion cycle, and current ratio on the net operating profitability of Pakistan firms. They selected a sample of 94 Pakistan firms listed on Karachi Stock Exchange for a period of six years from 1999 to 2004 and found a strong negative relationship between variables of working capital management and profitability of the firm. They found that as the cash conversion cycle increases, it leads to decreasing profitability of the firm and managers can create positive value for the shareholders by reducing the cash conversion cycle to a possible minimum level.

In Nigeria, Falope and Ajilore (2003) used a sample of 50 Nigerian quoted non-financial firms for the period 1996 to 2005. Their study utilized panel data econometrics in a pooled regression, where time-series and cross-sectional observations were combined and estimated. They found a significant negative relationship between net operating profitability and the average collection period, inventory turnover in days, average payment period and cash conversion cycle for the considered sample of Nigerian firms listed on the Nigerian Stock Exchange. Furthermore, they found no significant variations in the effects of working capital management between large and small firms. Afz and Nazir (2008) investigated the relationship between the aggressive and conservative working capital policies for seventeen industrial groups and a large sample of 263 public limited companies listed at Karachi Stock Exchange. Using ANOVA and LSD test, the study found significant differences among their working capital investment and financing policies across different industries. Moreover, rank order correlation confirmed that these significant differences were remarkably stable over the period of six years of the study. Finally, ordinary least regression analysis found a negative relationship between the profitability measures of firms and degree of aggressiveness of working capital investment and financing policies.

In another study, Mathuva (2009) examined the influence of working capital management components on corporate profitability by using a sample of 30 firms listed on Nairobi Stock Exchange for the period 1993 to 2008. He used Pearson and Spearman's correlations, the pooled ordinary least squares and the fixed effects regression models to conduct data analysis. The key findings of his study were that there exists a highly significant negative relationship between the time it takes for firms to collect cash from their customers and profitability, a highly significant positive relationship between the period taken to convert inventories to sales and profitability and a highly significant positive relationship between the time it takes for firms to pay their creditors and profitability. Eljelly (2004) empirically examined the relationship between profitability and liquidity, as measured by current ratio and cash gap (cash conversion cycle) on a sample of 929 joint stock companies in Saudi Arabia. Using correlation and regression analysis, a significant negative relationship between the firm's profitability and its liquidity level, as measured by current ratio was found. This relationship was more pronounced for firms with high current ratios and long cash conversion cycles. At the industry level, however, he found that the cash conversion cycle or the cash gap is of more importance as a measure of liquidity than current ratio that affects profitability. The firm size variable was also found to have significant effect on profitability at the industry level.

Data and methodology

Data for the study

Pooled data for the study was from a sample of 39 non-financial firms listed on the Zimbabwe Stock Exchange. Firms considered were drawn from eighteen sectors and excluded those firms that were suspended on the ZSE and those firms that are currently active on the stock exchange but were once suspended during the period 2009 to 2013.

Much of our dataset comes from the ZSE website, IMARA financial statements handbook and companies' websites. Both the dependant and explanatory variables were transformed to ratios as they enable us to understand the financial and operational characteristics of the organizations.

Table 1: Data for the Study	
Industry/Sector	**Number of Companies included in the sample**
Paper and Packaging	2
Industrial Holdings	4
Beverages	3
Mining	4
Agricultural	4
Agro-Industrial	2
Engineering	3
Food	2
Telecommunication	1
Clothing Retail	2
Conglomerate	2
Media	1
Retail	2
Tourism	2
Transport	1
Manufacturing	1
Building & Associated Industries	2
Pharmaceuticals And Chemicals	1
Total Included	39
Source: Zimbabwe Stock Exchange Market Data (2013)	

Methodology

In order to examine the impact of working capital management on the profitability of the selected non-financial firms in the sample over the period 2009 to 2013, we proceed by combining time series of cross section observations so as to obtain a balanced panel data set, which gives "more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency."

We base our econometric estimation on the following model (equation 1):

$$ROA_{it} = B_1 + B_2 DD_{it} + B_3 CD_{it} + B_4 ST_{it} + B_5 CCC_{it} + B_6 CR_{it} + B_7 DAR_{it} + B_8 LS_{it} + \mu_{it}$$

where *i* is the cross section identifier i.e. standing for the *i*th firm for *i* = 1, 2,...., 39 and *t* is the time period identifier for *t* =1, 2,3,4,5

ROA = Return on Assets

DD = Debtors Days

CD = Creditors Days

ST = Stock Turnover

CCC = Cash Conversion Cycle

CR = Current Ratio

DAR= Debt to Asset Ratio

LS = Natural Logarithm of Sales

In order to estimate equation 1, a choice had to be made between use of the Fixed Effects Approach and the Random Effects Approach. We follow observations made by (Gujarati, 2004) that when *N* is large and *T* is small estimates obtained by the two methods can differ significantly. If cross sectional units are not random drawings from a larger sample, then the Fixed Effects Approach is appropriate. The Hausman specification test was also used to substantiate or invalidate observations made by Gujarati for our data set. Other diagnostic tests on the data were also carried out.

We take into account the specific nature of each of the firms by making an assumption that the slope coefficients are constant but the intercept varies across individual firms. This then modifies equation 1 to equation 2 as follows:

$$ROA_{it} = B_{1i} + B_2 DD_{it} + B_3 CD_{it} + B_4 ST_{it} + B_5 CCC_{it} + B_6 CR_{it} + B_7 DAR_{it} + B_8 LS_{it} + \mu_{it}$$

We further employ the dummy variable technique, that is the differential intercept dummies and apply them to equation 2 so as to come up with the Least Squares Dummy Variable (LSDV) Regression Model, commonly referred to as the Covariance Model as shown in equation 3 below:

$$ROA_{it} = \alpha_1 + \alpha_2 D_{2i} + \alpha_3 D_{3i} + ... + \alpha_{39} D_{39i} + B_2 DD_{it} + B_3 CD_{it} + \\ + B_4 ST_{it} + B_5 CCC_{it} + B_6 CR_{it} + B_7 DAR_{it} + B_8 LS_{it} + \mu_{it}$$

In the LSDV Regression Model, since there are 39 firms in the sample, only 38 dummies are included so as to avoid falling into the dummy variable trap, which is a situation of perfect collinearity. The alternative to use of 38 dummies is the use of 39 dummy variables, which gives explicit intercept values by running the regression through the origin. This however entails that the common intercept (α_1) in equation 3 above would have to be dropped. For purposes of presenting our results, the former approach was taken, thus the common intercept was maintained.

Results and discussions

A summary of the results (excluding dummy variable coefficients) based on equation 3 are presented in the table below:

Table 2: Results of the Study				
Variable	**Coefficient**	**Std Error**	**t-statistic**	**Probability**
C	-0.72474	0.223971	-3.25889	0.0015
DD	0.000365	0.000400	0.914035	0.3623
CD	-0.000135	2.760000	-4.883436	0.0033
ST	3.400000	1.820000	1.869856	0.0437
CCC	4.190000	3.920000	1.274568	0.2046
CR	-0.001089	0.002857	-0.381014	0.7038
DAR	-0.264347	0.047799	-5.530453	0.0000
LS	0.050663	0.012341	4.105135	0.0001
Source: Author				

Table 3: Model Summary				
Model	**R- squared**	**Adjusted R-squared**	**SE**	**Durbin Watson**
	0.602323	0.576708	0.154727	1.605623
Source: Author				

Interpretation of our empirical results is mainly based on the nature and extent of the influence of our covariates (independent variables in our covariance model) on return on assets. The regression results show that the larger the firm as measured by the natural logarithm of sales, the larger the return on assets, with a very high level of significance. In our study, the natural logarithm of sales was used as a proxy for firm size. Since firms included in the sample were all publicly listed companies, our finding can be supported by the school of thought that existence of such a relationship was primarily due to conventional scale economies. Return on assets was statistically found to decrease as the debt to assets ratio increases because a unit change in debt to assets ratio reduces return on asset by 0.264347. Such a finding could have been due to fixed interest costs raising companies' break-even point or raising the risk of insolvency for firms, especially given that the economy has generally been through difficult financial periods. A unit change in the rate of stock turnover causes a positive change to return on assets by 3.4 units. Among other things, the stock turnover ratio is regarded as a measure of efficiency.

A higher rate was thus truly and logically found to be associated with increased profitability. A negative relationship was found between creditors' days and return on assets. As far as debtors' days are concerned, our regression results provide evidence of a positive relationship with return on assets, though statistically insignificant. Firms' profitability proved to have positive relationship with the cash conversion cycle. Our panel data set also provides an indication that there is some positive relationship between current ratio and profitability, as well as inventory turnover and profitability.

Our estimation results show an R-squared and adjusted R-squared of 0.602323 and 0.576708, respectively. With an adjusted R-squared of about 58%, this means that the fit quality of the model is good enough. The other 42% could thus be attributable to other factors that explain profitability but that were not of interest in this study because there were not necessarily components of working capital.

Conclusion

Working capital management is of importance in corporate financial management. It is therefore vital to manage the trade- off between profitability and working capital management. The purpose of this study was to investigate the impact of working capital management efficiency on profitability. This would assist firms to understand the nature and extent of the impact of working capital components on firm profitability. Such an understanding is essential for managers as they try to enhance firm profitability and ultimately its value.

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