

“Working capital management in liquidity-constrained economy: a case of Zimbabwe stock exchange – listed firms in the multiple currency era”

AUTHORS

Farai Kwenda  <https://orcid.org/0000-0002-8241-4148>
Ephraim Matanda

ARTICLE INFO

Farai Kwenda and Ephraim Matanda (2015). Working capital management in liquidity-constrained economy: a case of Zimbabwe stock exchange – listed firms in the multiple currency era. *Public and Municipal Finance*, 4(1), 55-64

RELEASED ON

Thursday, 30 July 2015

JOURNAL

"Public and Municipal Finance"

FOUNDER

LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

0



NUMBER OF FIGURES

0



NUMBER OF TABLES

0

© The author(s) 2026. This publication is an open access article.

Farai Kwenda (South Africa), Ephraim Matanda (Zimbabwe)

Working capital management in liquidity-constrained economy: a case of Zimbabwe stock exchange – listed firms in the multiple currency era

Abstract

This study explores working capital management practices of Zimbabwe's listed non-financial firms since the adoption of the multiple currency regime in 2009 that helped the country's economy recover from a decade of long political, social and economic crises. The adoption of the multi-currency system in Zimbabwe coincided with the global economy's recovery from one of the worst economic recessions in human history and this compounded Zimbabwean firms' liquidity challenges. Data were collected from 55 companies listed on the Zimbabwe Stock Exchange for the period 2009-2014 and analyzed using descriptive statistics and trend analysis techniques. The study reveals that the Zimbabwean listed companies heavily depend on trade credit as the major source of short-term finance while trade receivables and inventory are their main working capital investment. The study also finds out that firms employ aggressive working capital management practices such as financing long-term projects with short-term funds. It is concluded that trade credit plays an indispensable role in countries where firms have difficulties in accessing finance from the formal capital markets. The authors recommended further investigation into this subject through the building of an econometric model to analyze the working capital financing and investment strategies of listed firms in Zimbabwe.

Keywords: multiple currency, dollarization, liquidity, trend, working capital, trade credit.

JEL Classification: G30, G32.

Introduction

Working capital management has grown in significance from being a survival issue to a strategic and competitive business tool. Working capital management entails the financing and composition of current assets and these two-fold strategies determine the liquidity position of the firm and its ultimate financial success or failure. Working capital investment and financing decisions play important roles in the realization of the shareholder's wealth maximization goal, yet they have been largely ignored in both the theoretical and empirical literature. In academic research there is a consensus on the paucity of theory on working capital management. Sartoris and Hill (1982) postulate that academic attention on the efficient market theory contributed to the neglect of the subject of working capital in both research and practice. In perfectly efficient capital and product markets, there is very little room for short-term financing decisions to make any difference. Firms operating in efficient financial markets can adjust digressions from target working capital policies with relative ease (Etiennot, Preve, & Sarria-Allende, 2012). Without sound and proper working capital management procedures in place, firms will find it difficult to remain solvent and are likely to be bankrupt in spite of their sales growth and profitability potential (Jose, Lancaster, & Stevens, 1996; Kargar & Blumental, 1994). According to Watson and Head (2004, p. 278) without the "oil" of working capital, the "engine" of fixed assets will not function because li-

quidity problems may cause severe challenges and losses due to adverse short-run developments.

Research into the area of working capital management in Zimbabwe is very limited. A search of the literature found two studies on Zimbabwe that focused on working capital management and profitability (Gachira, Chiwanza, Nkomo, & Chikore, 2014; Zawaira & Mutenheri, 2014). Our study differs from existing studies on working capital in Zimbabwe in that it tries to unpack how working capital has been managed in the multiple currency era. Working capital management has inflamed importance to Zimbabwean firms because the multiple currency regime has been characterized by severe liquidity challenges. This means that working capital management would play a key role in the survival and growth of Zimbabwean firms. The objective of this study paper was to explore how non-financial firms in Zimbabwe have managed listed their working capital given the well-documented funding challenges the economy has been facing since dollarization in 2009. The rest of the paper is organized as follows; Section 1 provides a brief background on the Zimbabwean economy since the dollarization of the economy in 2009. Literature on the working capital management is briefly reviewed in Section 2. Section 3 presents the research method employed, describes data sources and the research sample used. The data collected from the field are presented, analyzed and discussed in Section 4 and the conclusions and recommendation drawn are presented in the final section of research paper.

1. Background to the study

The formation of the Government of National Unity (GNU) by the country's major political parties and

© Farai Kwenda, Ephraim Matanda, 2015.

Farai Kwenda, Lecturer, School of Economics and Finance, University of KwaZulu-Natal, South Africa.

Ephraim Matanda, Lecturer, Department of Banking & Finance, Great Zimbabwe University, Zimbabwe.

the adoption of the multiple currency system¹ in 2009 ushered Zimbabwe into a new political, social and economic dispensation (Kwenda, 2014). Prior to the dollarization of the economy the country's real Gross Domestic Product (RGDP) had declined cumulatively by about 47.26 percent from 1999 to 2007 (International Monetary Fund, 2008). Table 1 shows that the country managed to tame the inflation dragon² and register positive economic growth. Capacity utilization in the manufacturing sector increased in the first three years of the multi-currency regime. From 2012 to 2014 the economy stagnated though inflation has remained under control. Capacity utilisation has declined from 57% in 2011 to 36% in 2014. The slowdown of the economy has been attributed to several structural challenges prevalent in the economy. Appendix, table A1, presents the Confederation of Zimbabwe Industries (CZI) surveys results of the main challenges faced by the manufacturing sector since 2009. The table shows that top three challenges that were consistently cited by the respondents were lack of working capital, low product demand and obsolete equipment and machinery breakdown.

Although the dollarization of the economy helped in achieving economic stability, it also came at cost. The Reserve Bank of Zimbabwe (RBZ) lost its monetary policy function of issuing notes and coins; hence its ability to contribute the creation of liquidity in the Zimbabwean economy. The issuing notes and coins is a key function of the monetary authority of any country because it helps in creating liquidity in the economy. After the ditching of the defenseless Zimbabwean dollar in 2009, all Zimbabwean economic agents had to cross over to using stable currencies. For corporate sector, the cross over meant recapitalization exercises in order to finance their capital expenditures and day-to-day operations in the newly adopted currencies. The recapitalization has been hampered by poor liquidity in the country. The Zimbabwean financial sector has not been able to ease these liquidity challenges through its intermediation role because of its failure to attract savings due to low deposit rates (Reserve Bank of Zimbabwe, 2010). Liquidity challenges for the private sector have been exacerbated by the absence of short term financial instruments which the private sector normally uses to finance their working capital needs.

Table 1. Real GDP growth and capacity utilisation of Zimbabwe's manufacturing firms

Year	2009	2010	2011	2012	2013	2014
RGDP growth rate	5.4%	9.6%	10%	4.4%	4.5%	3.1%
Capacity utilization	32.3%	43.7%	57.2%	44.9%	39.6%	36.3%
Annual inflation rate	-	3.1%	3.5%	3.7%	1.6%	-0.2%
Average lending rates	30.62%	30.6%	20.50%	15.20%	16.28%	17.89%
Average deposit rates	1.15%	1.95%	0.15-4%	0.05-10%	0.15-8%	0.15-8%

Source: Ministry of Finance, 2010, 2011, 2012, 2013, 2014, 2015, Confederation of Zimbabwe Industries (2010, 2011, 2012, 2013, 2014, 2015).

The liquidity challenges bedeviling the country have resulted in increasing number of firms closing down and some going into liquidation. Mangudhla and Mambo (2013) state that over the period between June 2011 and July 2013, over 700 companies in Harare (Zimbabwe's political and commercial capital city) closed down, rendering over 8 300 individuals jobless. In addition, other companies in different sectors of economy downsized and retrenched citing the difficulties in the operating environment. This makes this study an important one as it tries to unravel how firms in Zimbabwe have managed and were managing their working capital because it is the "oil" of working capital that keeps the "engine" of business running. The next section briefly reviews working capital management literature.

2. Literature review

The following concepts are pertinent to the research study and are discussed in detail as demonstrated below.

2.1. Working capital management. Working capital management can be defined as the administration of current assets and current liabilities ensuring that the firm has sufficient resources to continue its operations and avoid costly interruptions (Firer, Ross, Westerfield, & Jordan, 2012). Current assets include cash and marketable securities, trade receivable, prepaid expenses and inventory/stock (raw materials + work-in-progress + finished goods) and current liabilities include accounts payable, short-term bank loans, other payables and accruals becoming due within a year.

2.2. Current assets. Cash grants a firm the essential liquidity that is required to satisfy its day-to-day obligations owed to creditors and suppliers. It enhances the firm's flexibility in taking advantage of new opportunities that may emerge. Accounts

¹ Zimbabwe adopted the multiple currency system in February 2009. We will use the term multiple currency, hard currency and dollarization interchangeably.

² The inflation rate was 231 150 888.87 percent in July 2008 (Central Statistical Office, 2008; Hanke and Kwok, 2009) estimated the rate of inflation for October 2008 at 89.7 sextillion percent. Though this figure appears exaggerated, it serves to point to the seriousness of the problem that the country was experiencing

receivable management entails determining and implementing a firm's credit policy such as the length of time customers are permitted to pay for goods or services and cash discounts for immediate rather than late payment. The financial manager needs to consider answers to questions that involve the parties the firm should extend credit to, and the amount and the length of the credit period. A strict credit policy may lead to a missed sale opportunity, as less potential customers will meet the requirements for credit sales. On the other hand, liberal credit terms may lead to longer average collection periods and an accumulation of uncollected accounts. There are real costs associated with these issues, and managers must work to find appropriate trade-offs that result not only in higher sales, but also in the greatest profitability (Chandra, 2008). Another important issue involves the management of inventories. For a typical manufacturing firm, inventory is usually the form of firm raw materials, work in progress and finished goods. There is trade-off between having excess and shortage of inventory for a firm. Uninterrupted production schedules and the ability to meet an unanticipated sales demand can be met when the firm has sufficient inventory levels. On the other hand, the downside of accumulating excess inventory is that the firm's funds are tied up in assets that do not earn interest and could be allocated to more profitable investments instead (Baños-Caballero, García-Teruel, & Martínez-Solano, 2010). Managers must decide whether to attempt to synchronize production with sales patterns, or preserve level production irrespective of current demand (Watson & Head, 2004).

2.3. Current liabilities. The management of current liabilities involves accounts payable, short-term bank loans, lines of credit, and, for larger corporations, commercial paper. When a firm defers payment to its creditors for a long period, it has a greater amount of time to the use and access of these funds. Therefore, managers have incentives to defer payments as long as possible. The disadvantage of deferring payment leads to suppliers declining to offer the firm credit in the future. Small firms rely on trade credit offered by suppliers as a source of short-term financing as they have limited access to other capital market sources making which makes prompt payment to suppliers especially important for these firms (García-Teruel & Martínez-Solano, 2007). Managers have the

role and responsibility to look for and negotiate the most favorable credit terms possible because longer payment periods decrease potential cash flow problems and provide greater financial flexibility. It is the finance manager's role to ensure an optimal working capital level that is not too high or too low. High levels of working capital indicate that a firm has unused funds and might also mean the firm has to pay high interest on these funds as these funds carry a cost. There will be under-capitalization if the firm has inadequate working capital. On the other hand low levels of working capital might be a reflection of liquidity challenges and firms in such a position have an increased risk of becoming insolvent due to its inability to meet its liabilities because of the deficiency of working capital (Chakraborty, 2008).

2.4. The cash conversion cycle (CCC). There are several measures of working capital efficiency. The CCC combines information from the balance sheet and income statement to produce a measure that focuses on the net time interval between payment and receipt of cash flows (Richards & Laughlin, 1980; Uyar, 2009). It is considered an ongoing liquidity measure because it gives the time interval between payment for raw materials and collections from customers (Deloof, 2003; Emery, 1987; Padachi, 2006). The CCC recognizes that the main operations of the firm relating to liquidity management; procuring goods for production/sale, paying suppliers for those goods, selling the goods and collecting from customers are not fulfilled instantaneously and synchronically (Wang, 2002). Another advantage of the CCC in liquidity analysis is that it enables the firm to segregate working capital management efficiency into three distinct areas, payable period, inventory period and receivables period. The disaggregation of working capital management efficiency into these three key areas makes it easy for the firm to identify problematic areas when analyzing liquidity management problems.

The payables period and the receivables period, respectively measure the firm's efficiency in upstream and downstream supply chain management, while the inventory period measures its production/sales efficiency. The cash conversion cycle is illustrated diagrammatically in Figure 1 (see Appendix).

The cash conversion cycle is calculated as follows:

$$\text{Cash conversion cycle} = \text{receivables period} + \text{inventory period} - \text{payables period}$$

$$\text{Receivables period} = (\text{accounts receivables period} / \text{sales}) \times 365$$

$$\text{Inventory period} = (\text{inventories} / \text{cost of sales}) \times 365$$

$$\text{Payable period} = (\text{accounts payable} / \text{purchases}) \times 365.$$

$$\text{Cash conversion cycle} = \left(\frac{\text{accounts receivable}}{\text{sales}} \times 365 \right) + \left(\frac{\text{inventory}}{\text{cost of sales}} \times 365 \right) - \left(\frac{\text{accounts payable}}{\text{purchases}} \times 365 \right).$$

2.5. The net trade cycle. Shin and Soenen (1998) questioned the suitability of the CCC to measure corporate efficiency in managing a firm's working capital on the grounds that its calculation involves the addition of ratios with different denominations.

The net trade cycle (NTC) is similar to the CCC except that the three elements are all expressed as a percentage of sales.

The net trade cycle is calculated as follows:

$$\text{Net trade cycle} = \left(\frac{\text{accounts receivable}}{\text{sales}} \times 365 \right) + \left(\frac{\text{inventory}}{\text{sales}} \times 365 \right) - \left(\frac{\text{account payable}}{\text{sales}} \times 365 \right).$$

The net trade cycle measures the number of "days' sales" the firm has to pay for its working capital. It is an easy method of calculating additional financial resources with regard to working capital expressed as a percentage of the forecast sales growth (Shin & Soenen, 1998). The net trade cycle is closely linked with the shareholder value creation objective of the firm. A shorter net trade cycle is an indication of efficiency in managing working capital, reduces the need for external funding and generates improved financial performance, which leads to a higher present value of net cash flows and higher shareholder's value creation.

2.6. Working capital requirements and net liquid balance. Working capital efficiency can also be measured by working capital requirements (WCR) and the net liquid balance (NLB). The WCR and NLB were developed by Shulman and Cox (1985) and Shulman and Cox (1985) in an attempt to address the shortcomings of the traditional measures of liquidity analysis. This approach to liquidity divides the total working capital into the resources required to sustain the firm's operations and its

surplus cash resources. WCR is the difference between current operational requirements (trade debtors and stocks), and current operational resources (trade creditors and net accruals). This approach to liquidity analysis is also known as the Net Operating Working Capital approach (Viskari, Lukkari, & Karri, 2011). Both requirements and resources are spontaneous items associated exclusively with the procurement, production and selling of goods and services (Shulman & Cox, 1985). The NLB is the difference between all liquid financial assets and all liquid financial obligations, thus an absolute dollar NLB may be used as an indicator of the liquidity of a firm. A positive NLB value indicates that the firm has ample cash resources to pay its short-term obligations without reducing the resources allocated to its operating cycle. A negative NLB value indicates reliance on outside financing and that the firm will have to acquire additional working capital or reduce the resources committed to its operating cycle to meet short-term obligations. The calculation of the WCR and NLB is shown below:

$$\text{WCR} = (\text{accounts receivables} + \text{inventories} + \text{prepayments}) - (\text{accounts payables} + \text{other payables})$$

$$\text{NLB} = (\text{cash} + \text{cash equivalents} + \text{short-term investment}) - (\text{short-term debt} + \text{current portion of long-term debt payable within a year}).$$

This approach to liquidity is superior to traditional measures because it separates financial and non-financial aspects of the firm's working capital, and recognizes that working capital components have varying degrees of liquidity; and recognize that the WCR and NLB of a firm are interdependent (Appuhami, 2009). For example, accelerating the collection of receivables increases the cash available; reduces working capital requirements and improves the firm's net liquidity position. The WCR is a better accounting measure of a business entity's resources tied-up in its operating cycle and is an

important element in calculating firm liquidity. The superiority of the NLB in liquidity analysis stems from the fact that it can be used to estimate financing requirements and that it recognizes that a business' liquidity is not a function of its investments in current assets or its total working capital. The firm's ability to meet its maturing obligations is reflected by the amount of financial resources remaining once its operating cycle requirements have been met. Thus the NLB is the difference between the firm's readily available cash resources and its non-operating, or negotiated, short-term debt.

$$\text{Net working capital} - \text{working capital requirements} = \text{net liquid balance}$$

$$\text{Net liquid balance} = \text{permanent capital} - \text{working capital requirements}.$$

The main limitation of the NLB model is that the NLB is the balance after the working capital required to maintain the firm's operating cycle subtracted from total working capital and affected by changes in net working capital and WCR. Therefore, a way of estimating the amount of working capital required to sustain the operating cycle is needed to make liquidity analysis using NLB operational.

3. Research method and data sources

The empirical study is based on a sample of 55 non-financial firms listed on the ZSE. Data of these firms which mainly comprised financial statements for the accounting period 2009 to 2014 are obtained from the INET BFA Library online database, company websites and annual reports. Sample selection was guided by data availability on the field of study. The sample was made up of firms that generated periodic financial statements with a minimum of three years of financial reporting. Firms with missing data were removed as part of the data cleaning process. Consistent with previous studies on working capital management, and financial services sector firms were excluded because their working capital was different from the context of this study (Kwenda & Holden, 2013; Padachi, 2006). The components of gross working capital were then analyzed using trend analysis in order to ascertain whether there were any structural changes over the period of study. The means of each year were computed and then put together in order to establish the trend in the period under consideration. The study also attempted to assess the liquidity of the sample over the six-year period, using a comprehensive test, based on liquidity ranks (LR). This was calculated first by assigning an individual ranking to each of the three main components of current assets and then summed over the individual scores to arrive at an ultimate rank.

4. Research results, analysis and discussion

The major findings of the study in question are as illustrated below.

4.1. Sources of working capital finance. Finance managers continuously face the challenge of deciding the size and means of financing the current assets. Table 2 below shows the trends and composition of current liabilities over the six year period under review. The results in Table 2 reveal that trade credit to current liabilities (TCCL) trended downwards from 73% in 2009 to 58% 2013 and increased to 64% in 2014. The average TCCL (63%) is almost twice the contributions of short-term borrowings debt to current liabilities (STBCL). Bank credit availability is limited and this means that trade credit becomes a relatively more important source of finance. Trade credit can play an important role by compensating for unavail-

ability of bank credit (Fisman & Love, 2003; Love, Preve, & Sarria-Allende, 2007).

The results in Table 2 reflect that short-term financial borrowings to current liabilities (STBCL); trended upwards from 23% in 2009 to 37% in 2013 and then decreased to 32% in 2014. The average TCCL (33%) is almost eleven times the contributions of accruals debt to current liabilities (STBCL). Inferences can be made from the TCCL and STBCL trends exhibited in Table 3. We infer that as sample firms accessed more short-term financial debt they relied less on trade credit or vice-versa. Over the six year period, the contribution of accruals to current liabilities (ACCL) went on downward trend, from 4.5% in 2009 to 2.06% in 2011 and then trended upwards during the last three years to 3.4% in 2014.

Table 2. Composition of current liabilities for the period 2009-2014

Year	TCCL	STBCL	ACCL
2009	0.7265	0.2280	0.0454
2010	0.6582	0.3001	0.0417
2011	0.6089	0.3705	0.0206
2012	0.6045	0.3716	0.0255
2013	0.5785	0.3741	0.0263
2014	0.6403	0.3171	0.0335
overall	0.6330	0.3307	0.0317

Source: authors' calculations using an unbalanced panel over the period 2009 to 2014. Data obtained from the INET BFA online database.

4.2. Percentage composition of working capital finance. Table 3 shows the financing composition of working capital investments; trade credit to current assets (TCCA), short-term borrowings to current assets (STBCA), accruals to current assets (ACCA) and long term funds to current assets (LTFCFA). CLCA is a sum of TCCA, STBCA and ACCA and shows the extent to which firms used short-term funds to finance current assets. The results presented in Table 3 show that all current assets were funded by short-term finance during the six year period funds with the exception of 2009. These forms of short-term finance, on average trade credit financed 68% of the current assets with the lowest of 62% in 2011 and the highest of 90% in 2014. Short-term borrowings financing current assets trended upwards from 22% in 2009 to 58% providing some indication that listed firms were probably more able to access finance from banks to finance their operations. Lending rates in Table 2A (Appendix) trended downwards from 31% in 2009 to 15% in 2012. This provides an indication that as lending rates declined firms borrowed more, employing more short-term debt to finance current assets. We tested the relationship between short-term borrowings financing current assets and lending rates using corre-

lation analysis and found a strong statistically significant negative relationship. The results of the correlation are presented in Appendix A2. The low contribution of STBCA can be explained by the absence of short term financing instruments such as Bankers' Acceptance (BAs) and commercial papers that are normally used by corporates to finance their working in a well-functioning financial system. Such short-term financing instruments have not been in the Zimbabwean financial market since the adoption of the multiple currency system.

The difference between current assets and current liabilities (net working capital (NWC)) represents a proportion of working capital investment financed by long term funds. The trend exhibited in Table 3 shows that these firms only financed 9% and 1% of their current assets using long term funds respectively in 2009 and 2010. The negative LTFCA increased from 3.4% in 2011 to 51% suggesting that these firms employed short-term finance to support long-term projects. This also attests to the short-term nature of lending prevailing in the country and the lack of access long-term funds for Zimbabwean firms. Such practices are risky and expose the liquidity mismatch and may lead to insolvency due to mismatches between long-term assets and short-term liabilities. This probably explains why a number of firms have been liquidated or placed under judicial management due to their failure to pay creditors.

Table 3. Percentage composition of working capital finance

Year	TCCA	STBCA	ACCA	CLCA	LTFCA
2009	0.6663	0.2216	0.0259	0.9284	0.0862
2010	0.6156	0.3523	0.0211	0.9900	0.0110
2011	0.6124	0.4076	0.0139	1.0626	-0.0339
2012	0.6704	0.4197	0.0182	1.1069	-0.1083

Table 4. Distribution of current asset values and liquidity rankings

Year	Distribution of current asset values			Liquidity rankings				
	INVCA	TDCA	CMSCA	INVCALR	TDCALR	CMSCALR	Total rank	Final rank
2009	0.4261	0.4839	0.0899	5	3	6	14	6
2010	0.4300	0.4975	0.1440	6	1	2	9	2
2011	0.3964	0.4896	0.1138	2	2	4	8	1
2012	0.3929	0.4690	0.1330	1	4	5	10	3
2013	0.4012	0.4377	0.1368	3	6	3	12	5
2014	0.4135	0.4400	0.1463	4				5
Overall	0.4083	0.4699	0.1277					

Source: authors' calculations using an unbalanced panel over the period 2009 to 2014. Data obtained from the INET BFA online database

The proportion of cash and marketable securities to current assets (CMSCA) did not follow a well-defined pattern and was consistently below 15% throughout the period under review. The low levels

2013	0.6598	0.4660	0.0246	1.2019	-0.1505
2014	0.8981	0.5812	0.0299	1.5127	-0.5091
overall	0.6814	0.4089	0.0220	1.1273	-0.1122

Source: authors' calculations using an unbalanced panel over the period 2009 to 2014. Data obtained from the INET BFA online database.

4.3. Distribution of current asset values and liquidity rankings. Working capital investment structure refers to the distribution of the working capital and shows the current asset that constituted the largest proportion of the working capital. The study examined the distribution of the working capital over the six-year period to establish whether the level of investment in the four components exhibited any pattern or and whether there have been any structural changes. Results of the distribution in working capital investment are shown in Table 4. The average investment in working capital was distributed as follows; inventory 34%, trade receivables 39%, cash holdings 21% and other current assets 7%.

Inventory and trade receivables constituted nearly three quarters of the total working capital investment which clearly manifested that on average these firms maintained much of their working capital stocks and receivables in the period under review. The proportion of inventory to total current assets (INVCA) did not follow a well-defined pattern but fluctuated between 39% (the lowest proportion in 2012) and 43% (the highest proportion in 2010). Likewise, the proportion of trade debtors to current assets (TDCA) did not follow a well-defined pattern but fluctuated between 44% (the lowest proportion in 2013) and 50% (the highest proportion in 2010). Over the six year period, TDCA consistently exceeded INVCA, indicating these firms held more receivables than inventories. In addition, this trend might also indicate the difficulties these firms experienced in collecting from their customers.

of cash holdings are not surprising because most firms were facing liquidity challenges, hence they had little of funds to invest in marketable securities. Alternatively the low cash holdings can also be at-

tributed to the low rates prevailing in the Zimbabwean economy. Bank deposit rates on savings averaged fewer than 10% over the six year period. Investments in the different components of working capital impacted on the liquidity of a company because these components had varying degrees of liquidity positions. An attempt was made to assess overall liquidity of each firm by using a comprehensive test based on the sum of scores (Liquidity ranks) of separate individual rankings under the three criteria; TDCA, CMSCA and INVCA.

The category of current assets that constituted the largest portion in total current assets inevitably affected the short-term solvency position of the company in a significant way. Rankings were done in the following order; a high value of TDCA, and CMSCA indicates greater liquidity while a high value of INVCA shows a less favorable position (because inventory is the least liquid current asset). Table 4 shows the final liquidity rank for the six years and the results show that the most favorable and least favorable years were 2011 and 2009 respectively. The liquidity ranking of 2009 is not surprising as this was Zimbabwe's cross over year from the Zimbabwe dollar to the multi-currency regime. The liquidity rankings of 2010 and 2011 can be attributed to the full adjustment and adoption of the multi-currency system by economic agents. 2012 liquidity rankings can be attributed to uncertainty that gripped the country (due to elections, the dissolution of the GNU and the probable return of the defenceless Zimbabwean dollar after elections). Low economic activity was recorded in 2013 (the year in which the election was eventually held and the GNU was dissolved) and this probably explains 2013's liquidity. The post-election has been generally characterized by low economic activity and could be the main reason for the 2014 liquidity ranking. Economic slowdown negatively impacts on the firms' ability to turn over their stock, grant/access credit, collect receivables and settle their payables.

4.4. Firms' working capital efficiency in the period.

An attempt was made to assess the level of working capital efficiency of the sample firms over the period under review using different measures. We measured the Net trade cycle¹. Table 5 shows negative NTC of 84 days and 57 days in 2012 and 2013. The negative NTC is probably the results holding inventory on hand for short periods, strict credit policy² and delaying payments to suppliers. The stretching of payments to creditors has had its causalities among the listed firms

because trade credit is double edged sword; it provides cost free finance but it is also cited as the main reason why firms go into bankruptcy (Bradelly & Rubach, 2002). Since 2009 8 listed firms were delisted from the ZSE after becoming insolvent (The Financial Gazette, 2015).

Table 5. Measures of working capital efficiency

Year	Net trade cycle (days)	Average collection period (days)	Working capital requirements (\$ 000)	Net liquid balance (\$ 000)
2009	64	103	23 423	-17 365
2010	67	64	23 384	-19 884
2011	27	65	25 817	-20 454
2012	-84	75	30 608	-23 203
2013	-57	89	30 152	-12 712
2014	42	78	22 618	-5 462

Source: authors' calculations using an unbalanced panel over the period 2009 to 2014. Data obtained from the INET BFA online database.

The average college collection was massively improved from 103 days in 2009 to 64 days in 2010 then increasing to 89 days in 2013. The positive working capital requirements exhibited over the six year period reflects these firms' need for funding because a positive WCR has to be financed (Hill, Kelly, & Highfield, 2010). Over the six year period the Net Liquid Balance was negative probable as a result of these firms having more borrowings than cash holdings and short-term investments. The negative NLB is not surprising and reflects the need for funding than the need to hold short-term investments.

Conclusions and recommendations

The aim of this study was to review how working capital was being managed by listed firms in Zimbabwe since the dollarization of the economy in 2009. Using a sample of 55 ZSE-listed non-financial firms and employing trend analysis and descriptive statistics for the period 2009-2014, the study found that trade credit was the dominant financing short-term instrument and played an important role in financing working capital investments. The research study revealed that firms in Zimbabwe were employing aggressive working capital management strategies and employing short-term funds to finance their operations owing to difficulties in accessing long-term funds or capital from the formal sector. We therefore concluded that trade credit plays an indispensable role in countries where firms have difficulties in accessing finance due to underdeveloped, undeveloped and poorly capitalized financial markets. The main recommendation of the study though tentative, however; was that all Zimbabwean listed firms' working capital management needed to be investigated more deeply by building an econometric model to further understand these working capital financing and investment strategies in the light of the country's level of growth and development.

¹ Some firms did not report their cost of sales; therefore we could not calculate other measures such as the inventory period and the payables period which use cost of sales as one of their variables.

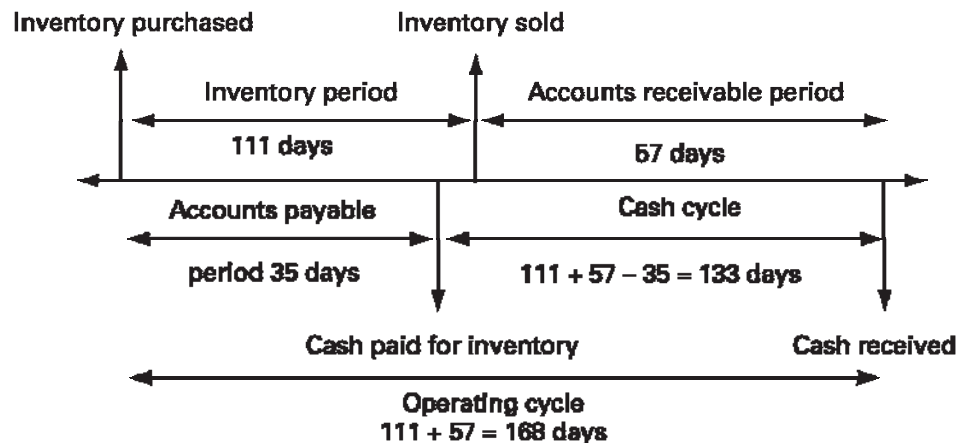
² Some firms in the sample such as Turnall switched from credit sales to cash sales as a way of managing their liquidity.

References

1. Appuhami, B.R. (2009). Corporate investments and the dual-role of working capital: Evidence from Thailand. *JAMAR*, 7 (1), pp. 53-62.
2. Baños-Caballero, S., García-Teruel, P. J., & Martínez-Solano, P. (2010). Working capital management in SMEs. *Accounting & Finance*, 50 (3), pp. 511-527.
3. Bradelly, D.B., & Rubach, M.J. (2002). Trade credit and small business: A cause of business failures. Retrieved from: <http://www.sbaer.uca.edu/research/asbe/2002/papers/02asbe055.pdf>.
4. Central Statistical Office, C. (2008). Monthly updates. Harare: Central Statistical Office.
5. Chakraborty, S.K. (2008). Working Capital and Profitability: An Empirical Analysis of Their Relationship with Reference to Selected Companies in the Indian Pharmaceutical Industry, *The Icfaian Journal of Management Research*, VII (12), pp. 41-59.
6. Chandra, P. (2008). *Financial Management* (8th ed.). New Delhi: Tata McGraw Hill.
7. Confederation of Zimbabwe Industries, C. (2010). Manufacturing Sector Survey. Harare Confederation of Zimbabwe Industries.
8. Confederation of Zimbabwe Industries , C. (2011). Manufacturing Sector Survey. Harare Confederation of Zimbabwe Industries.
9. Confederation of Zimbabwe Industries , C. (2012). Manufacturing Sector Survey. Harare Confederation of Zimbabwe Industries.
10. Confederation of Zimbabwe Industries , C. (2013). Manufacturing Sector Survey. Harare Confederation of Zimbabwe Industries.
11. Confederation of Zimbabwe Industries , C. (2014). Manufacturing Sector Survey. Harare Confederation of Zimbabwe Industries.
12. DeLoof, M. (2003). Does working capital management affect profitability of Belgian firms? *Journal of Business Finance & Accounting*, 30 (3-4), pp. 573-588.
13. Emery, G.W. (1987). An optimal financial response to variable demand, *Journal of Financial and Quantitative Analysis*, 22, pp. 209-225.
14. Etiennot, H., Preve, L., & Sarria-Allende, V. (2012). Working Capital Management: An Exploratory Study. *Journal of Applied Finance*, 22 (1), pp. 161-174.
15. Firer, C., Ross, S.A., Westerfield, R.W., & Jordan, B.D. (2012). *Fundamentals of Corporate Finance* (5th ed.). Berkshire McGraw-Hill Education.
16. Fisman, R. & Love, I. (2003). Trade credit, financial intermediary development, and industry growth, *The Journal of Finance*, 58 (1), pp. 353-374.
17. Gachira, W., Chiwanza, W., Nkomo, D.J., & Chikore, R. (2014). Working capital management and profitability of non-financial firms listed on the Zimbabwe Stock Exchange (ZSE), *European Journal of Business and Economics*, 9 (2), pp. 12-15.
18. García-Teruel, P.J., & Martínez-Solano, P. (2007). Effects of working capital management on SME profitability, *International Journal of Managerial Finance*, 3 (2), pp. 164-177.
19. Hanke, S.H., & Kwok, A.K.F. (2009). On the measurement of Zimbabwe's hyperinflation. *Cato Journal*, 29 (2).
20. Hill, M.D., Kelly, G.W., & Highfield, M.J. (2010). Net operating working capital behavior: a first look, *Financial management*, 39 (2), pp. 783-805.
21. International Monetary Fund, I. (2008). World Economic Outlook Database, October 2008. Washington, D.C.: United States of America: International Monetary Fund.
22. Jose, M.L., Lancaster, C., & Stevens, J.L. (1996). Corporate returns and cash conversion cycles, *Journal of Economics and Finance*, 20 (1), pp. 33-46.
23. Kargar, J. & Blumental, R.A. (1994). Leverage impact on Working Capital in Small Business, *TMA journal*, 14, pp. 46-53.
24. Kwenda, F. (2014). Trade Credit In Zimbabwe's Economic Recovery, *Mediterranean Journal of Social Sciences*, 5 (2), pp. 431-439.
25. Kwenda, F. & Holden, M. (2013). Working capital structure and financing pattern of Selected JSE-listed firms, *Mediterranean Journal of Social Sciences.*, 4(13), pp. 531-540.
26. Love, I., Preve, L.A., & Sarria-Allende, V. (2007). Trade credit and bank credit: Evidence from recent financial crises, *Journal of Financial Economics*, 83 (2), pp. 453-469.
27. Mangudhla, T. & Mambo, E. (2013). Zimbabwe: 700 Harare firms close, *Zimbabwe Independent*. Retrieved from: <http://www.trademarksa.org/news/zimbabwe-700-harare-firms-close>.
28. Ministry of Finance, M. (2010). *Budget Statement*. Harare: Government Printers.
29. Ministry of Finance, M. (2011). *Budget Statement*. Harare: Government Printers.
30. Ministry of Finance, M. (2012). *Budget Statement*. Harare: Government Printers.
31. Ministry of Finance, M. (2013). *Budget Statement*. Harare: Government Printers.
32. Ministry of Finance, M. (2014). *Budget Statement*. Harare: Government Printers.
33. Ministry of Finance, M. (2015). *Budget Statement*. Harare: Government Printers.
34. Padachi, K. (2006). Trends in Working Capital Management and its Impact on Firms' Performance: An Analysis of Mauritian Small Manufacturing Firms, *International Review of Business Research Papers*, 2, pp. 45-58.

35. Reserve Bank of Zimbabwe, R. (2010). *Monetary Policy Statement*. Harare: Reserve Bank of Zimbabwe.
36. Richards, V.D., & Laughlin, E.J. (1980). A cash conversion cycle approach to liquidity analysis, *Financial management*, pp. 32-38.
37. Sartoris, W.L., & Hill, N.C. (1982). A generalised cash flow approach to short-term financial decisions, *Journal of Finance*, 38 (2), pp. 349-360.
38. Shin, H.H., & Soenen, L. (1998). Efficiency of working capital management and corporate profitability, *Financial Practice and Education*, 8, pp. 37-45.
39. Shulman, J.M., & Cox, R.A.K. (1985). An Integrative Approach to Working Capital Management, *Journal of Cash Management*, 5 (6), pp. 64-68.
40. The Financial Gazette, T. (2015). Zimbabwe: Demise of the Stock Exchange, *The Financial Gazette*. Retrieved from: <http://www.african-markets.com/en/stock-markets/zse/news/zimbabwe-demise-of-the-stock-exchange>.
41. Uyar, A. (2009). The Relationship of Cash Conversion Cycle with Firm Size and Profitability: An Empirical Investigation in Turkey, *International Research Journal of Finance and Economics*, 24, pp. 186-193.
42. Viskari, S., Lukkari, E. & Karri, T. (2011). State of working capital management research: Bibliometric study., *Middle Eastern Finance and Economics*, 14.
43. Wang, Y.-J. (2002). Liquidity management, operating performance, and corporate value: evidence from Japan and Taiwan. *Journal of Multinational Financial Management*, 12 (2), pp. 159-169.
44. Watson, D. & Head, A. (2004). *Corporate Finance: Principles and Practice* (3rd ed.). Harlow/England Financial Times Pearson Education.
45. Zawaira, T. & Mutenheri, E. (2014). The association between working capital management and profitability of non-financial companies listed on Zimbabwe Stock Exchange, *International Journal of Research in Social Sciences*, 3 (8), pp. 114-120.

Appendix



Source: Firer et al. (2012), p. 555.

Note: the operating time is the time period from inventory purchase until the receipt of cash. The cash cycle is the period from when cash is paid out to when is received.

Fig. 1. The operating and cash cycle

Table 1A. Major capacity constraints 2009-2014

Challenge	2010	2011	2012	2013	2014
Lack of working capital	18.2%	17%	32.4%	40.2%	26.5%
Low product demand	15.8%	18%	13.3%	17.6%	28.8%
Antiquated machinery & machine breakdown ¹	18.1%	26%	11.4%	9.8%	7.3%
Raw materials	10.3%	13%	5.3%	5.9%	6.2%
Competition from imports	4.2%	0%	9.5%	12.5%	14.2%
Power outages	11.5%	7%	9.9%	8.8%	3.8%
Labor costs	0%	3%	0%	0%	0%
High cost of doing business	0%	0%	8.0%	5.2%	6.2%
Drawbacks from the current economic environment	0%	0%	8.4%	0%	7.3%
Other	21.9%	16%	1.9%	0%	0%
Total	100%	100%	100%	100%	100%

Source: Confederation of Zimbabwe Industries, 2010; Confederation of Zimbabwe Industries 2011, 2012, 2013, 2014.

¹In 2010 and 2011 the results of these challenges were presented separately. Antiquated machinery results were 4.8% and 8% for 2010 and 2011 respectively while machine breakdown results were 15.8% and 18% for 2010 and 2011 respectively.

Table 2A. Correlation matrix of working capital finance and lending rates

	TCCA	TCCL	STDCA	STDCL	Lending rates
TCCA	1.0000				
TCCL	0.0558	1.0000			
STDCA	0.6708	-0.6726	1.0000		
STDCL	-0.1100	-0.9826	0.6217	1.0000	
Lending rates	-0.3426	0.8359	-0.7655	-0.8289	1.0000

Source: authors' calculations using an unbalanced panel over the period from 2009 to 2014. Data obtained from the INET BFA online database.