

Working capital management and performance: Evidence from Italian SME's

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Abstract

WCM represents an important aspect of financial management policies and it requires the ability to monitor a firm's current assets and liabilities to meet short-term obligations while avoiding excessive investments in short-term assets. In firms of all sizes, by managing working capital efficiently, companies can reduce their dependence on external capital and use the released resources for other investments, improving the firm financial flexibility. The management of working capital for SMEs, where financial constraints often adversely affect their prospects, is crucial for the survival and success of the company. In this perspective, the aim of this study is to examine the relationship between working capital efficiency and profitability, focusing on SMEs operating in the agri-food sector. To achieve this purpose, it was carried out a dataset of 112 Italian SMEs (784 firms/year observations), according to the requirements established under European Commission recommendation 2003/361/EC of 6 May, 2003. To evaluate the working capital management practices of the sample firms, this study uses quantitative analysis. Descriptive statistics, Pearson correlation, and regression analyses were used. The findings highlighted that the working capital cycle is statistically significant but negatively associated with firm profitability.

Keywords: working capital, management, performance, SMEs, profitability

1. INTRODUCTION

Working capital management (WCM) regards all operations that have an impact on current assets and liabilities and so on liquidity. Efficient WCM represents an important aspect of financial management policies and it requires the ability to monitor a firm's current assets and liabilities to meet short-term obligations while avoiding excessive investments in short-term assets. Starting from the seminal paper of Smith (1980), which have suggested that managing short-term assets and liabilities is essential since it has an impact on companies' profitability, risk, and the value, there have been many other contributions in this field and a large amount of the literature reiterated the relevance that WCM the importance that WCM has on economic and financial viability and corporate survival (Shin & Soenen L., 1998; Afza, & Nazir, 2009; Baños-Caballero et al., 2012; Chen et al., 2014).

In this perspective, keeping an optimal balance among each element of the working capital influences the financial performance and, consequently, the business success (Filbeck and Krueger, 2005; Haq et al., 2011). Conversely, failing to manage working capital efficiently may lead to a decrease in profitability and a liquidity crisis, hence affecting business continuity (Chen and Sensini, 2014; Ukaegbu, 2014).

Previous literature has mainly focused on long-term financial decisions, paying less attention to short-term financing decisions. However, the attention for working capital, as a fundamental part of the company's overall assets, has gained incremental interest in the last years. In this regard, the literature on working capital management can be summarized in two different points of view.

On one hand, some researchers have found that high investment in working capital has a positive impact on profitability, identifying specific benefits (sales increase, improved customer relationship, reduces supply cost, reduces information asymmetry, among others) associated with working capital growth (Smith, 1987; Lazaridis & Tryfonidis, 2006; Baños-Caballero et al., 2012).

On the other hand, several studies have highlighted a negative impact on profitability, identifying specific disadvantages (additional financing, increases financing expenses, locks funds in working capital, among others) that can negatively affect the company (Kim & Chung, 1990; Deloof, 2003; Ek, & Guerin, 2011,), leading to an increase in financial distress and the probability of bankruptcy (Kieschnick, 2013; Campos et. al., 2014).

Consistent with these two views, identifying and maintaining optimal working capital levels is not easy because the level of working capital needs also to consider the features of the company, of business, of sectors, and other economic variables.

Strategies and policies for the management of working capital are highly crucial to any firm, especially for SMEs which are characterized by limited capital market access and by a high dependence on the banking system (Chen et al., 2014).

Thus, these operational and financial constraints may lead SMEs to not pursue an optimum level of working

capital. In this regard, these firms suffering intense competition from larger players in the market which have easier access to financial resources. For that reason, SMEs should adopt adequate strategies to manage working capital efficiently (Howorth and Westhead, 2003).

In the context delineated, this paper attempt to analyze the relationship between working capital management and corporate performance for agri-food small and medium-sized enterprises (SMEs), focusing on the Campania region, in South Italy. To achieve this purpose, a sample of 112 Italian SMEs are used for the period 2010-2016 (784 firms/year observations).

All the firms included in the sample have the characteristics required by European Commission recommendation 2003/361/EC of 6 May 2003.

This topic deserves attention for several reasons. Firstly, the agro-industrial sector represents around 12% of Italian GDP and, in the Campania region, it represents one of the leading sectors for the economy and employment. Secondly, although there are also many large enterprises in this sector, the large prevalence of enterprises is represented by small and medium-sized enterprises. Therefore, the survival of the agro-industrial SME is relevant to the economy, and, in this perspective, it's important to analyze the efficiency of working capital management to verify the state of health and competitiveness of SMEs.

Furthermore, given by SMEs financial constraints mentioned above, the empirical findings can help SMEs owners and managers to make better decisions regarding the consistency and adequacy of their working capital decisions.

Secondly, the Italian financial system is strongly bank oriented, and then SMEs have few alternatives to obtain external financing. In addition, market-based instruments, such as equity, debt securities, and other financial instruments are instead used in a residual way from SME (ECB, 2019).

Furthermore, given by SME's financial constraints mentioned above, the empirical findings can help SMEs owners and managers to make better decisions regarding the consistency and adequacy of their working capital decisions.

The structure of the paper is as follows. The next section presents a theoretical framework and the aim of this research. Section 3 presents the research design and methodology. The results are outlined in section 4. The final section will give some concluding remarks.

2. LITERATURE REVIEW

As noted, WCM regards all operations that have an impact on current assets and liabilities and so on liquidity. In the literature research, many studies are previously done on the relationship between WCM and profitability focusing on larger firms or important industries (Deloof 2003; Filbeck and Krueger, 2005; Raheman and Nasr, 2007; Sen and Oruc 2009; Gill, Biger and Mathur 2010; Ching et al., 2011; Ribeiro de Almeida, 2014; Aktas et al., 2015; Dhole et al., 2019, Boisjoly et al. 2020). However, in the last years, some scholars have also focus on small and medium-sized enterprises (Garcia-Teruel and Martinez-Solano, 2007; Afrifa, 2013; Tauringana and Afrifa, 2013; Javid, 2014; among others). The literature research on this topic has developed different theoretical models to explain the relation between working capital and firm performance: conservative, aggressive, and moderate (Afza & Nazir, 2009; Ukaegbu, 2014; Aktas et al. 2015).

In this regard, some authors suggested that each policy involves risk-return trade-offs. In this perspective, the choice of WCM policy should take into account the optimal trade-off between expected return and risk, verifying and monitoring the level in whole components of working capital (cash receivables, inventory, and payables, etc).

However, the empirical literature does not always agree with this hypothesis about the trade-off between profitability and risk (Jose et al., 1996; Shin & Soenen, 1998; Garcia-Teruel & Martinez-Solano, 2007; Deloof et al., 2003). Identifying and maintaining optimal working capital levels is difficult because the level of working capital needs to consider the features of the company and other specific conditions.

Any choice must take into account that different sectors, different firms, different market policies, and different capital structures must be taken into consideration, as it will influence working capital requirements (Chen et al., 2014).

Moreover, in firms of all sizes, the relationship between WCM and performance is also conditioned by the bargaining strength of a firm and by the availability of resources. In this regard, as suggested by the literature, larger firms have easier access to capital markets than SMEs (Whited, 1992). In this line, the last ECB report (ECB, 2019) highlights that large firms registered a continued increase in external financing, while SMEs indicated an increasing lack of financial funds.

In particular, among the largest European economies, Italian SMEs reported increasing needs for bank loans and credit lines. These data confirm that larger size favors access to financial resources and then facilitates efficient working capital management. The financing problems of SMEs are often attributed to information asymmetries (Stiglitz & Weiss A., 1981), to fixed transaction costs (Beck & de la Torre, 2007), to non-regular credit histories, to limited collateral (OECD, 2018), and other reasons (Nayak and Greenfield, 1994; Khoury et al., 1999). Moreover, other authors suggested that SMEs are often characterized by volatile cash flows and by

high short-term debt (Peel et al., 2000). Also due to financial constraints, all these elements can significantly influence the scope of action of the financial policies that SMEs can implement (Sensini, 2017). Precisely because of the limitations just highlighted, SME's need to pay further attention to manage and control their working capital (Howorth & Westhead, 2003), in order to improve their financial flexibility and then reduce their dependence on external funds.

In the context outlined, the WCM is crucial for the survival and success prospects of SMEs (Jose et al., 1996). As noted, the literature on the relationship between working capital management and profitability has highlighted discordant results.

On one hand, several studies have highlighted a positive relationship between investment in working capital and profitability. In this regard, additional investment in working capital is associated with an increase in profitability and it is also associated with other benefits for the competitiveness of the company (Brennan et al., 1988; Blinder and Maccini, 1991; Fazzari & Petersen, 1993; Wilner, 2000; Corsten and Gruen, 2004; Lazaridis and Tryfonidis, 2006; Ramachandran and Janakiraman, 2009; Gill et al., 2010, Aktas et al., 2015; among others).

On the other hand, several studies have found a negative relationship between investment in working capital and profitability. In this regard, additional investment in working capital is usually associated with a decrease in profitability and other disadvantages that can negatively affect the company and it may lead to an increase in financial distress (Kim & Chung, 1990; Deloof, 2003; Ek and Guerin, 2011; among others).

As many authors have highlighted, the analysis of a specific sector of activity leads to better results compared to those obtained from different sectors. Therefore, in order to achieve a homogenous sample, we restrict our analysis to the agro-industrial sector, focusing on SMEs. In this perspective, the aim of this study is to add value to the existing literature on working capital management and firm profitability, focusing on a specific sector of interest.

3. METHODOLOGY RESEARCH

The financial information for the analysis conducted in this paper has been extracted from the AIDA database of Bureau Van Dijk (BVD) and from the Infocamere database.

The sample includes Italian SMEs operating in the agro-industrial sector for the period 2010–2016. Three criteria were used to justify the inclusion of a company into the sample. Firstly, firms had to meet the definition of SMEs given in European Commission recommendation 2003/361/EC of 6 May 2003. Secondly, we excluded firms that are part of holding companies, and that had inconsistent requirements with the EU definition of SMEs. Thirdly, financial statements are available for the full period under consideration, from 2010 to 2016 inclusive. Therefore, the dataset is composed by 112 (784 firms/year observations).

To evaluate the working capital management practices of the sample firms, this study uses quantitative analysis.

In this perspective, we computed and analyzed the mean, standard deviation, minimum, median and maximum values of inventory turnover period (ITP), account receivables collection period (ARCP), account payables payment period (APPP), gross operating profit margin (GOPM), working capital cycle (WCC), current assets to total assets (CATA), interest cover (ICO) and leverage (LEV).

Where each variable is computed as follows:

ITP = (inventory*365)/cost of sales;

ARCP = (account receivable * 365)/turnover;

APPP = (accounts payable x 365)/cost of sales;

GOPM = Gross operating profit margin (excess of turnover over the cost of sales/total assets less non-current financial assets);

WCC = Working capital cycle (accounts receivable collection period + inventory turnover period – accounts payable payment period);

LEV = Leverage, representing the ratio of total debt to total assets;

ICO = Interest cover measured as the fraction of earnings before interest and tax to finance cost.

CATA = The ratio of current assets to total assets.

Furthermore, to investigate the presence of a relationship between GOPM on one hand and each of the covariates ITP, ARCP, APPP, CATA, ICO and LEV, we refer to the correlation coefficients that measure the strength of the linear dependences among the considered variables.

Namely, we compute the Pearson Correlation coefficient (r) given by:

$$r = \frac{\sum_{i=1}^n (x_i - \bar{X})(y_i - \bar{Y})}{\sqrt{\sum_{i=1}^n (x_i - \bar{X})^2} * \sqrt{\sum_{i=1}^n (y_i - \bar{Y})^2}} \quad (1)$$

where X and Y are the variables on which bivariate correlation is determined. The correlation coefficient assumes values on a scale of -1 to +1, where a near to one r coefficient, in absolute value, indicate a strong relationship that can be positive (+) or negative (-). A significative negative coefficient indicates an inverse

association between one variable and the other.

In order to explain the relationship among the gross operating profit margin (GOPM) and the set of covariates, we make use of linear regression models estimated on the sample data set.

The specific regression equation used for the study is as follows:

$$GOPM_i = \alpha + \beta_1 WCC_i + \beta_2 LEV_i + \beta_3 ICO_i + \beta_4 CATA_i + e_i \quad (2)$$

Where, subscript $i=1, \dots, n$ represents the cross-sectional dimension of the data, while α and β also connote constant and regression coefficients respectively, the error term e_i is an i.i.d. random variable zero mean and constant variance. The primary method of estimation is the ordinary least squares, OLS (Verbeck, 2004).

GOPM represents the dependent variable and it is used to measure firm profitability. In order to avoid underestimation, this analysis excludes non-current financial assets from total assets in the computation of GOPM (Bagchi and Khamrui, 2012).

This choice is justifiable by the fact that WCC includes ARCP, ITP, and APPP, ICO; instead, LEV, and CATA they are used as the control variables.

4. RESEARCH RESULTS AND DISCUSSION

Descriptive statistical analysis is used to present quantitative data that can provide an overview of the main characteristics of the sample firms. Descriptive summary statistics consist of the mean, maximum, minimum, and standard deviation of the variables analysed are shown in Table 1.

Table 1 – Descriptive statistics

	Mean	Std Dev	Minimum	Median	Maximum
GOPM	0.2812	0.1914	-0.0613	0.3256	0.7345
WCC	53.3759	139.4063	-179.5843	69.9356	921.4572
ARCP	82.1603	123.3857	0.0000	53.2419	879.5472
APPP	116.3282	109.0328	8.0543	131.0138	623.8470
ITP	141.5742	92.8427	22.3851	105.7281	358.8140
ICO	9.1343	28.2196	-4.1253	2.9207	86.1452
LEV	0.5899	0.4285	0.2312	0.4732	2.8923
CATA	0.4435	0.2394	0.0591	0.3812	0.8211

Throughout the period examined (2010–2016), the mean gross operating profit margin was 28%. The minimum and maximum have been -6% and 73% respectively.

The deviation from the average profitability was 19%. The average period it took the firms to collect account receivables was two months 22 days (ARCP), while the average payables payment period was three months 26 days (APPP). This circumstance indicates that the difference between accounts receivable and accounts payable is about one month and it represents a source of free finance.

However, it may also give an indicator that the sample firms have liquidity constraints and then they pay suppliers late or in any case not regularly.

The results also show that SMEs are highly leveraged, indeed, 59% of the firms' activities are financed by debt.

Despite the high level of indebtedness, the economic analysis indicates that EBIT is able to remunerate interest expense on debt about 9 times. As the WCC increases the working capital requirement also increases. Finally, the average proportion of current assets to total assets is about 44% and it represents the size of short-term resources available for the sample firms for financing operational activities.

The results of the Pearson correlation are shown in table 2 below.

Table 2 - Correlation Matrix I

	GOPM	WCC	ARCP	APPP	ITP	ICO	LEV	CATA
GOPM	1							
WCC	-0.37627	1						
ARCP	-0.43846	0.59016	1					
APPP	-0.42966	-0.34547	0.34196	1				
ITP	-0.27532	0.37865	0.02869	0.24108	1			
ICO	0.71993	-0.11212	-0.06102	0.01475	-0.08771	1		
LEV	-0.45055	-0.02343	0.04611	0.14067	0.08922	-0.20130	1	
CATA	0.69992	0.28402	-0.00456	-0.32561	0.05978	0.43526	-0.28369	1

As is evident from Table 2, the variables WCC, APPP, ARCP, and ITP are negatively correlated with GOPM. In fact, as each of these variables increases, the profitability of the sample firm decreases. Otherwise, as each of working capital cycle decreases, the profitability of the sample firm's increases.

The negative correlation between APPP and GOPM could be attributed to the fact that less profitable companies pay suppliers late (Deloof, 2003). However, this behavior can also have negative effects, leading to the loss of cash discounts and a worsening of relations with suppliers. LEV is correlated negatively with GOPM, CATA; while, ICO correlates positively with GOPM. None of the variables have a nonlinear relationship with profitability.

As shown in Table 3, the low correlation values between the explanatory variables indicate the absence of multicollinearity.

Table 3 - Correlation Matrix II

	GOPM	WCC	ICO	LEV	CATA
GOPM	1				
WCC	-0.37627	1			
ICO	0.71993	-0.11212	1		
LEV	-0.45055	-0.02343	-0.20130	1	
CATA	0.69992	0.28402	0.43526	-0.28369	1

The following Table 4 reports the OLS estimation results of the linear regression model presented before, highlighting that the overall regression model is significant at the 99% level, as shown by the F-statistic.

Table 4 Regression results. Profitability: Gross Operating Profit Margin

	Coefficient	T - statistics	p-value
Constant	0.09823	1.2634	0.2064
WCC	-0.0032	-1.8622	0.0626
LEV	-0.2015	-2.3210	0.0203
ICO	0.1263	2.9278	0.0034
CATA	0.5142	3.4320	0.0006
Adjusted R squared	0.656		
F	12.614		
Prob. (F statistic)	4.23E-06		

The coefficient of determination shows that about 65% of the variability in profitability (GOPM) can be explained by the exogenous variables. Apart from the constant term the regression coefficients result to be statistically significant.

The working capital management (WCC) is statistically significant at the 90% level. The beta coefficient of WCC shows a negative association between it and GOPM. This circumstance indicates that the profitability of the sample SME in Italy increases as WCC decreases. Therefore, less profitable SME firms keep longer working capital cycle. The results highlighted in this research are in line with other previous studies (Bagchi and Khamrui, 2012; Raheman and Nasr, 2007; Lazaridis and Tryfonidis, 2006; Falope and Ajilore, 2009).

Leverage is significant at the 95% level and it is negatively related to GOPM. Therefore, since high leverage negatively influences profitability, as highlighted in table 3, profitable SMEs in Italy mainly use internal sources to finance their working capital. The explanation for this could also be linked to the financial constraints of SMEs and it is consistent with other empirical findings (Bagchi and Khamrui (2012) and Raheman and Nasr (2007). In addition, ICO and CATA are all positively significant at the 99% level. This circumstance implies that the ratios of EBIT to financial charges and current assets to total assets are directly proportional to profitability.

5. CONCLUDING REMARKS

This paper investigates the determinants of working capital management and its impact on firm profitability. The analysis refers to a sample of Italian firms over a seven-year period.

In order to have a panel of full information, three criteria were used to decide the inclusion of a company into the sample. Firstly, firms had to meet the definition of SMEs given in European Commission recommendation 2003/361/EC of 6 May 2003. Secondly, we excluded firms that are part of holding companies, and that had inconsistent requirements with the EU definition of SMEs. Thirdly, financial statements are available for the full period under consideration, from 2010 to 2016 inclusive.

Therefore, it was carried out a dataset of 112 Italian SMEs (784 firms/year observations). Once the sample is defined, preliminary statistical analysis, correlation, and OLS regression models were used in addressing the aims of this study.

The empirical findings suggested that the working capital cycle, used as a proxy for working capital management, is statistically significant but negatively associated with firm profitability.

Moreover, the analysis shows that the inventory turnover period, account receivables collection period, and account payables payment period negatively correlates with profitability. Finally, leverage is significantly related to profitability but negatively influences it. Therefore, profitable sample SMEs use less debt in financing their activities.

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