

The relationship between aggressive and conservative working capital management policies and profitability: An empirical investigation

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Abstract

The on-going global financial crisis brought to the forefront of the capital markets research the efficient utilization of firm's resources as a tool for value creation purposes. The present study investigates the relative relationship between the firm's aggressive/conservative working capital policies and profitability. Using a dataset of industrial firms listed in an emerging European market, namely, Cyprus Stock Exchange, we hypothesize that effective working capital management policies do play an important role in value creation via increases in firm's profitability. Our results indicate that there exists a relationship between aggressive/conservative working capital management policies and profitability in an emerging market, which has been suffering substantially in the past few years.

Keywords: degree of aggressiveness/conservativeness, working capital policies, profitability, emerging markets

JEL No: G11, G30, G31, G32.

1. Introduction

Efficient and effective ways to manage firm's resources has been the center of attention during the recent global economic crisis with giant firms, such as Lehman Brothers, GM, Kodak, filed for bankruptcy and many other firms are in the verge of bankruptcy or financial distress. The main objective of working capital management is to manage firm's current assets and current liabilities, in such a way, that working capital is maintained at a satisfactory level in order to satisfy clients, suppliers as well as shareholders. Efficient management of working capital plays an important role in value creation via increases in firm's profitability and controlling of firm's liquidity and riskiness. Needless to say, firms must maintain an optimum capital structure and the right liquidity in order to increase firm's profitability and thus increase market value. Working capital management involves planning and controlling of the firm's current assets and current liabilities in a manner that reduces the risk of inability to meet short term obligations on the one hand and avoid excessive investment in its assets on the other hand. Organizations may reduce risk and improve

overall performance if they understand the role and determinants of working capital. Firms may choose either aggressive or conservative working capital management policies to create value. Aggressive working capital management policies are those policies where the firm chooses a) to maintain low level of current assets as percentage of total assets, or b) high level of current liabilities as percentage of total liabilities (Afza and Nazir, 2009). Extreme levels of current assets may have a negative effect on the firm's profitability but a low level of current assets may lead to lower level of liquidity and stock outs resulting in difficulties in maintaining smooth operations.

Firms may decrease their financing costs and raise funds available for expansion projects by minimizing the amount of investment tied up in current assets. A popular measure of working capital management is the cash conversion cycle, which is defined as the sum of days of sales outstanding (average collection period) and days of sales in inventory less days of payables outstanding. The longer this time lag, the larger the investment in working capital. A longer cash conversion cycle might increase profitability because it leads to higher sales. However, corporate profitability might also decrease with the cash conversion cycle, if the costs of higher investment in working capital is higher and rises faster than the benefits of holding more inventories and granting more inventories and trade credit to customers.

The objective of an effective working capital management is to ensure that the firm is able to operate by having sufficient cash flow to service long term obligations. Management will use a combination of policies and techniques for the management of working capital. These policies aim at managing current assets and the short term financing, such that cash flows and returns are acceptable. The management of working capital involves managing inventories, accounts receivables-payables and cash.

The high level of current assets may reduce the risk of liquidity associated with the opportunity cost of funds that may have been invested in fixed assets. The impact of working capital policies on profitability is highly important, however, a little empirical research has been carried out to examine this relationship. In this paper we investigate the relationship between aggressive/conservative policies with the accounting measures of profitability of listed firms in an emerging European country, namely Cyprus. Our dataset consists of firms listed in the Cyprus Stock Exchange over the period 2005-2007. The purpose of this study is to establish a relationship between aggressive/conservative working capital management and value creation via increases in firm's profitability. Our empirical results do support our expectations, that is, efficient working capital management leads to increases in firm's profitability.

2. Literature Review

Various researchers examined the relationship between working capital management and firm profitability. Studies employed datasets from both developed and emerging countries, by industry and whether firms employ more aggressive/conservative working capital management policies.

As far as studies from developed countries is concerned, Soenen (1993) investigated the relationship between net trade cycle and return on investment for a sample of U.S firms. Results indicated that a) there exists an inverse relationship between the length of net trade cycle and return on assets and b) that this relationship is industry specific. Furthermore, Lamberson (1995) examined how small firms respond to changes in economic activities by changing their working capital positions. Current ratio, current assets as a percentage of total assets and inventory to total assets were employed as measures of working capital management. Their results showed that there is a small relationship between changes in economic conditions and changes in working capital management. Moreover, Deloof (2003) examined the association between working capital management and firm profitability for another developed country, namely Belgium. Deloof used a dataset of 1,009 industrial Belgian firms over the period 1992-1996. He tested the cash conversion cycle as a proxy for working capital management as well as the components of working capital, namely,

trade credit policy and inventory policy, measured as the number of days of accounts receivable, accounts payable and inventories. Results of this study indicated that a) managers may increase profitability by reducing the number of days in accounts receivable and inventory levels and b) less profitable firms, on average, have longer days in payables, meaning that less profitable firms do not have the ability to pay their suppliers on time. Also, Lazaridis and Tryfonidis (2006) investigated the relationship between working capital management and corporate profitability of another developed country that has been the center of global attention in the past few years, namely Greece. They examined a dataset of 131 firms listed in the Athens Stock Exchange over the period of 2001-2004. Their results indicated that there exists an association between working capital management and firm profitability. These researchers concluded that managers could create value by managing well the cash conversion cycle and by keeping each of its components to an optimum level.

As far as studies from emerging markets is concerned, researchers examined the role of working capital management and firm profitability in various countries, among those Vietnam, Sri Lanka, India, Turkey, among others. Specifically, Dong and Su (2010) investigated the relationship between profitability, cash conversion cycle and its components for listed firms in the Vietnam stock market. Using a dataset based on secondary data collected from listed firms in Vietnam stock market for the period of 2006-2008, their results showed that there is a strong negative relationship between profitability, measured through gross operating profit, and cash conversion cycle. These results indicate that as the cash conversion cycle increases, firm's profitability declines, thus leading to the conclusion that managers may create shareholder value by controlling the cash conversion cycle and by keeping each of its components at an optimum level. In addition, Rehman (2006), using a dataset of 94 Pakistani firms listed at Islamabad Stock Exchange (ISE) for the period 1999-2004, investigated the impact of working capital management on firm's profitability. Rehman studied the impact of various working capital management variables, among those average collection period, inventory turnover in days, Average Payment Period and Cash Conversion Cycle on the firm's net operating profitability. Results of this study indicated that there is a strong negative relationship between working capital management and firm profitability. The cash conversion cycle examined by Rehman was also examined by Charitou et al (2010) for a dataset of Cyprus Stock Exchange firms, where the researchers showed that there exists an association between cash conversion cycle and firm's profitability. Moreover, Pandey and Parera (1997) examined working capital management policies for private manufacturing firms listed in Colombo Stock Exchange in Sri Lanka. Using questionnaires and interviews with chief financial officers, their results indicated that a) most firms in Sri Lanka have informal working capital policies, b) firm size has an influence on both working capital policies and on approach (conservative, moderate or aggressive) and c) firm profitability is an important factor in the selection of their working capital planning and control methods. Sen and Oruh (2009) examined whether the efficient utilization of firms working capital affects firm's return on assets, for a sample of firms listed in the Istanbul Stock Exchange. Their results indicated that firm's return on assets is inversely related to the firm's cash conversion cycle, net working capital level, current ratio, accounts receivable period and inventory period. Furthermore, researchers examined the role of working capital management in emerging countries using industry specific data. For example, Talha et al (2009) examined the impact of working capital management on firm profitability for a sample of Indian hospitals over the period 1996-2006. The results of this study indicate that a) firm's profitability is negatively related to the firm's working capital management policies, especially by the firm's current ratio, cash turnover ratio, proportion of current assets to operating income and leverage and b) the acid test ratio has the highest direct effect on profitability, while the current ratio has the least direct effect.

Furthermore, beyond the aforementioned studies, researchers went a step further to examine the role of aggressive and conservative working capital policies in both developed and emerging markets. Specifically, in developed countries, Weinraub and Visscher (1998) examined the association between aggressive and conservative working capital management policies and firm performance by using a dataset from various US industrial groups over the period 1984-1993. Their results indicated a) working capital management policies are industry specific, b) there exists an inverse relation between industry asset management and liability policies, and c) aggressive working capital asset policies are followed by conservative working capital financing policies. As far as emerging markets is concerned, Rafiu (2007), using a dataset of fifteen diverse industrial groups for Nigerian firms, examined the relationship between aggressive/conservative working capital practices and firm's performance. Results indicated a) that working capital management policies differ, depending on the industry that the firm belongs to, b) industry ranking of the aggressive/conservative working capital management policies exhibit stability over time, c) there exists negative relation between industry asset and liability policies. Relatively aggressive working capital asset management seem to be balanced by relatively conservative working capital financing policy. The study recommends that, a firm in deciding its working capital management policies should take seriously into consideration industry policies. A firm pursuing aggressive working capital investment policy should match it with a conservative working capital financing policy. Moreover, Afza and Nazir (2009), using a dataset of 263 firms in several industrial groups listed in Karachi Stock Exchange for the period 1998-2003, investigated the relationship between aggressive/conservative working capital policies and firm performance. Results indicated that a) there exist significant working capital investment and financing policy differences within different industries, b) these significant differences were stable over time, and c) there exists a negative relationship between firm profitability and the degree of aggressiveness of working capital investment and financing policies.

3. Methodology

3.1 Dataset and measurement of variables

In order to examine the relationship between working capital management and firm profitability we use a sample of industrial firms listed in the Cyprus stock exchange (CSE) over the period 2005-2007. Our final dataset consists of 63 firm-year observations for 21 listed firms. Our data include yearly Current Assets, Current Liabilities, Total Assets, Equity, Total long term liabilities, Profit after Tax and Profit before Interest and Tax. We used the above data to calculate Current Assets over Total Assets, Current Liabilities over total assets, Return On Assets (ROA) and Return on Capital Employed (ROCE). ROA indicates how profitable a company is relative to its total assets. It shows how efficiently the management is using its assets to generate earnings. ROA is measured by profit after tax/total assets. Return on capital employed (ROCE) is measured by profit/capital employed. ROCE indicates the efficiency and profitability of a firm's capital investments.

In this study we use aggressive investment policy (AIP) and aggressive financing policy (AFP) in order to measure the relationship between working capital management and profitability. Aggressive Investment Policy (AIP) results in low levels of investment in current assets versus fixed assets. In contrast, a conservative investment policy places a greater proportion of capital in liquid assets. If the level of current assets increases in proportion to the total assets of the firm, the management is said to be more conservative in managing the working capital. A lower ratio of AIP means a relatively aggressive policy. Aggressive Financing Policy (AFP) utilizes higher levels of current liabilities and less long-term debt. In contrast, a conservative financing policy uses more long-term debt and capital. A higher ratio means a relatively aggressive policy (Afza and Nazir, 2009).

3.2. Empirical Models

The impact of aggressive and conservative working capital policies on firm profitability will be examined via a panel data regression analysis. Our dependent variables are Return on Assets (ROA) and Return on capital employed (ROCE) and our independent variables are the current assets to total assets (CA/TA), and current liabilities to total assets (CL/TA). As already mentioned, CA/TA is a proxy for Aggressive Investment Policy (AIP) and CL/TA is a proxy for aggressive financing policy (AFP).

Our empirical models are:

$$\text{ROA} = a + b_1 \text{AIP} + b_2 \text{AFP} \quad (1)$$

$$\text{ROCE} = a + b_1 \text{AIP} + b_2 \text{AFP} \quad (2)$$

4. Empirical results

In order to test whether aggressive/conservative working capital management affects firm's profitability, we tested two models, using ROA and ROCE as dependent variables, respectively. Results in model 1 were estimated using a dataset of 63 firm year observations for firms listed in the Cyprus stock exchange over the period 2005-2007. Results presented in table 1 show the following: a) the model's F-value statistic indicate overall best fit for the model. The F-value is 3.7 and statistically significant at the 3% level, b) the model's R-square adjusted is 8%, indicating that the degree of aggressiveness/conservatism of working capital management, as measured by current assets/total assets and current liabilities/total assets, explains about 8% of the variation in the Return on Assets (ROA) of all firms listed in the Cyprus Stock Exchange (CSE), c) the more conservative the firm is in its investment policy, as illustrated by the coefficient b_1 (0.08), the greater the profitability. These results indicate that firms with more current assets compared to fixed assets, have greater profitability, e.g., aggressiveness is inversely related to firm's profitability. The coefficient of this variable is statistically significant at 1%. The positive coefficient of this variable also indicates that there exists a negative relationship between the degree of aggressiveness of the firm's investment policy and return on assets, i.e., as CA/TA increases, the degree of aggressiveness decreases, and return on assets goes up, d) the coefficient of current liabilities/total assets (CL/TA) is negative (-0.45) and statistically insignificant (p-value =0.21), indicating that the degree of aggressiveness of the firm's financing policies does not affect profitability. This negative coefficient shows the same negative relationship between the aggressiveness of working capital financing policy and return on assets, i.e., the greater the CL/TA, the more aggressive the firm's financing policy, thus leading to lower profitability.

In addition to the return on assets (ROA), we also examined the association between aggressive/conservative working capital management and firm profitability, as measured by the investments made by shareholders, using return on capital employed (ROCE) as the dependent variable. Results in model 2 were again estimated using a dataset of 63 firm year observations for firms listed in the Cyprus stock exchange over the period 2005-2007. Results presented in table 2 show the following: a) the model's F-value statistic indicate overall best fit for the model. The F-value is 5.5 and highly statistically significant at the 1% level, b) the model's R-square adjusted is 13%, indicating that the degree of aggressiveness/conservatism of working capital management, as measured by current assets/total assets and current liabilities/total assets, explains about 13% of the variation in the ROCE of all firms listed in the Cyprus Stock Exchange (CSE), c) the more conservative the firm is in its investment policy, as illustrated by the coefficient b_1 (0.36), the greater the ROCE. These results indicate that firms with more current assets compared to fixed assets, have greater ROCE, e.g., aggressiveness is inversely related to firm's ROCE. The coefficient of this variable is statistically significant at 1%. The positive coefficient of this variable also indicates that there exists a negative relationship between the degree of aggressiveness of the firm's

investment policy and ROCE, i.e., as CA/TA increases, the degree of aggressiveness decreases, and return on assets goes up, d) the coefficient of current liabilities/total assets (CL/TA) is negative (-0.29) and statistically significant at the 2% level (p-value =0.02), indicating that the degree of aggressiveness of the firm's financing policies affects firm's profitability. This negative coefficient shows the same negative relationship between the aggressiveness of working capital financing policy and ROCE, i.e., the greater the CL/TA, the more aggressive the firm's financing policy, thus leading to lower ROCE.

TABLE 1

In this table we present results for model 1, where the dependent variable is return on assets (ROA) and the independent variables are CA/TA as a proxy for Aggressive Investment Policy (AIP) and CL/TA as a proxy for aggressive financing policy (AFP). Our dataset consists of 63 firm year observations for 21 firms listed on the Cyprus stock exchange over the period 2005-2007. ***, **, * indicate statistical significance at 1%, 5% and 10%, respectively.

$$\text{Model 1: ROA} = a + b_1 \text{ AIP} + b_2 \text{ AFP}$$

	Coefficient	t-value	p-value
Constant	0.02	1.00	0.32
b1	0.08	2.67	***0.01
b2	-0.45	-1.27	0.21
R-sq adj	8%		
F-value	3.7		**0.03
N	63		

TABLE 2

In this table we present results for model 2, where the dependent variable is return on capital employed (ROCE) and the independent variables are CA/TA as a proxy for Aggressive Investment Policy (AIP) and CL/TA as a proxy for aggressive financing policy (AFP). Our dataset consists of 63 firm year observations for 21 firms listed on the Cyprus stock exchange over the period 2005-2007. ***, **, * indicate statistical significance at 1%, 5% and 10%, respectively.

$$\text{Model 2: ROCE} = a + b_1 \text{ AIP} + b_2 \text{ AFP}$$

	Coefficient	t-value	p-value
Constant	0.03	0.84	0.32
b1	0.36	2.93	***0.01
b2	-0.29	-2.3	**0.02
R-sq adj	13%		
F-value	5.5		***0.01
N	63		

5. Conclusions

In this study we investigated the relationship between aggressive/conservative working capital policies and firm's profitability as measured by return on assets (ROA) and return on capital employed (ROCE). Our dataset consisted of 63 firm year observations for 21 industrial firms listed in the Cyprus Stock Exchange over the period 2005-2007. The impact of aggressive/conservative working capital investment and financing policies on firm profitability has been examined by employing regression analysis. Our results indicate the following: a) the more conservative the firm is in its investment policy, the greater the return on assets (ROA), i.e., that firms with more current assets compared to fixed assets, have greater profitability, e.g., aggressiveness is inversely related to firm's profitability, b) the more conservative the firm is in its investment policy, the greater the return on capital employed (ROCE), i.e., there exists a negative relationship between the degree of aggressiveness of the firm's investment policy and return on equity, since as CA/TA increases, the degree of aggressiveness decreases, and ROCE goes up, c) the degree of aggressiveness of the firm's financing policies affects firm's ROCE., i.e., the negative relationship between the aggressiveness of working capital financing policy and return on assets, (the greater the CL/TA, the more aggressive the firm's financing policy, thus leading to lower ROCE).

In summary, during the ongoing global economic crisis, the results of this study should be of great importance to executives and rest stakeholders since the results of this study show that the firm's aggressive/conservative working capital management policies do affect firm's profitability and thus lead to value creation.

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