Working Capital Management of Dutch Private Firms

Author: Lars Goossen
University of Twente
P.O. Box 217, 7500AE Enschede
The Netherlands

ABSTRACT
This thesis investigates the determinants of working capital management (measured by the cash conversion cycle) of Dutch private firms for a period of 2008-2017. Using multiple regression methods and controlling for specific factors, the results show that Dutch private firms pursue a target level of the CCC. In contrast to previous studies in the determinants of working capital management, Dutch private firms try to adjust their CCC to their target level less quickly. It is found that larger firms maintain a longer CCC, whereas firms with a higher leverage, maturity and investment in fixed assets maintain a shorter CCC.

Graduation Committee members:
Dr. S. Zubair
Dr. X. Huang
Prof. Dr. M.R. Kabir
Dr. Henry van Beusichem

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1. INTRODUCTION

Although existing literature in the field of corporate finance primarily focus on long-term financial decisions like capital structure, dividends and the evaluation of a firm, the importance of working capital management is very significant because of its effect on the performance of a firm (Smith, 1980). The importance of working capital management is shown by its effect on the profitability and the risk, and so the value, of a firm. Despite the importance of working capital management, not much attention is paid to the determinants of working capital management on Dutch private firms while it is done for firms from Spain, Mauritian, United Kingdom and Belgium (Banos-Caballero et al., 2010; Padachi, 2006; Cunat, 2007; Banos-et al., 2014; Deloof, 2003).

The working capital of an firm is very significant since its effect on the performance of a firm and in order to survive as a business entity. Vahid et al. (2012) describes working capital management and cash as; 'the blood current in the vessels of a business entity in order to save the survival of a business entity'. One of the main reasons for bankruptcy and financial disruption was mismanagement of working capital (Setayesh, 2009; Banos-Caballero et al., 2014). Besides, maximizing the wealth of owners is in a capitalistically economy the objective of a firm which could be achieved by adding equity capital value to the firm whereby working capital plays an important role (Stubelj I. & Laporsek S., 2016). Padachi (2006) statet that; 'a well-designed implemented working capital management is expected to contribute positively to the creation of a firm's value'. On the one side, larger inventories and generous trade credit policy could increase the amount of sales. Because of larger inventories the risk of being out of stock decreases and trade credit stimulates sales because it enables customers to assess the quality of the product before paying for it (Long, Milatz and Ravid, 1993; Deloof and Jegers, 1996). Besides, it could be a low-cost source of credit since suppliers could have cost advantages over financial institutions in providing credit to their customers (Petersen and Rajan, 1997). On the other hand, money is locked up in working capital and not usable for long-term financial decisions by providing trade credit and keeping a large inventory (Deloof, 2003). Furthermore, several papers about working capital management found a relationship between working capital management of a firm and its profitability which confirms the significance of working capital management (Shin and Soenen, 1998; Deloof, 2003, Padachi, 2006).

Recent studies like Soenen (1993), Deloof (2003), Padachi (2006) and Garcia-Teruel & Martinez-Solano (2007) used measurement methods based on the Cash Conversion Cycle (CCC) to measure working capital management. Deloof (2003) describes the Cash Conversion Cycle as the time lag between the expenditure for the purchases of raw materials and the collection of sales of finished goods'. A high and longer cash conversion cycle has a positive influence on the amount of sales, and therefore the profitability, because of a higher investment in the inventory and trade credit conceived. Besides, firms could receive tremendous discounts for early payments by reducing their supplier financing, and a longer CCC is a primary reason for bankruptcy (Banos-Caballero et al, 2010; Soenen, 1993).

Although much research is done in the field of working capital management, much less attention is given to working capital management for private firms. Previous studies investigated the practices of small and medium sized enterprises in Spain and Mauritian (Banos-Caballero et al., 2010; Padachi, 2006) or firms based in the united kingdom and Belgium (Cunat, 2007; Banos-et al., 2014; Deloof, 2003). In the Netherlands there is a bank-oriented financial system whereby banks are the main source of finance (Schmidt and Tyrell, 1997). According to Demigurc-Kunt and Maksimovic (2012) firms in countries with a bank based financial systems offer and receive a higher amount of trade credit because it is the main source of financing, which shows the significance of working capital management of Dutch firms. Since not much attention is paid to Dutch private firms, this thesis will contribute to the existing empirical literature by analyzing Dutch private firms from 2008-2017.

Research question: which factors determinize the Cash Conversion Cycle of Dutch private firms?

The results show that the analyzed firms pursue a target level of the CCC. In contrast to previous studies in the determinants of working capital management, Dutch private firms try to adjust their CCC to their target level less quickly. The results are only partially equal to previous studies, this due to the fact that not all of the results are significant. It is found that larger firms maintain a longer CCC, whereas firms with a higher leverage, maturity and investment in fixed assets maintain a shorter CCC.

This paper is organized as follow. First, previous studies in the field of working capital management will be reviewed an linked to the research question and existing literature in Section 2. Thereafter I will formulate the hypothesis in Section 3. In Section 4 the methodology is outlined and the sample used for this research is described. The results will be presented in Section 5 and the main conclusions are presented in Section 6.

2. THEORATICAL FRAMEWORK

In a perfect capital market, an investment decision is only based on the availability of investment opportunities and its net present rather than how the investment is financed (Modigliani and Miller, 1958). This due to the fact that in a perfect capital market companies has unlimited access to external funds which is a perfect substitute for internal resources. This means that a longer Cash Conversion Cycle has no opportunity costs because firms are able to obtain external funds easily against a reasonable price. Since internal and external resources are not perfect substitutes, external finance like issuing new shares or debt could be more expensive than internal finance because of the imperfection of the market. This means that in an imperfect market, investment and financing decisions are interdependent and there might be an optimum level of the length of the CCC which balances the costs and benefits and maximizes the firms net value (Banos-Caballero et al., 2010)

A large CCC could increase the amount of sales and therefore its profitability because of different reasons. Blinder and Maccini (1991) state that larger inventories results in less interruptions in the production process and loss of sales because of the scarcity of products and that larger inventories prevents to price fluctuation and reduces supply costs. Furthermore, providing greater trade credit will enable customers to assess the quality of the product before paying for it which increases the amount of sales (Petersen and Rajan, 1997; Deloof and Jegers, 1996). Besides, providing greater trade credit stimulates long-term relationship with customers (Ng et al., 1999) and firms could get tremendous discount for early payments by reducing the financing of their suppliers (Ng et al., 1999; Wilner, 2000). On the other hand, high investments in working capital could have an opportunity cost if a firm lacks to see

more profitable investments and according to Soenen (1993), a primary reason for bankruptcy is a long CCC.

Taking the theories and previous studies in the field of working capital management into consideration, I explain the characteristics of a firm that could determine the Cash Conversion Cycle and how it influences the length. Recent studies like Soenen (1993), Deloof (2003), Padachi (2006) and Garcia-Teruel & Martinez-Solano (2007) used measurement methods based on the CCC to measure working capital management. The dependent variable is calculated as:

$$\left(\frac{Accounts\ receivables}{Sales} * 365\right) + \left(\frac{Inventories}{Purchases} * 365\right) - \left(\frac{Accounts\ Payable}{Purchases} * 365\right)$$

A longer CCC cycle indicates a higher investment in working capital which leads to a need for additional capital.

2.1 Cashflow

The cash flow of a firm is an important variable for showing a firm's capabilities for generating internal resource. Asymmetric information increases the costs for capital because it leads to a conflict of interest between insiders of the firm and creditors (Myers, 1997) which could lead to underinvestment. Because of asymmetric information between insiders of the firm and potential outside investors, the risk for outside investors increases which does increase the costs for external resources as well. Asymmetric information results therefore into higher costs of external resources, so it makes firms give their priorities to internal generated resources instead of debt and new equity according to the pecking order theory (Myers, 1984). Besides, Fazzari and Petersen (1993) suggest that firms which have larger capacities to generate internal resources do have a higher level of current assets because the costs of funds in working capital of those firms. Later, Chiou et al. (2006) did research on the influence on cash flow on working capital management and concluded that cash flow is positively related to the net liquid balance, but negatively related to working capital requirements. Furthermore, Chiou et al. (2006) suggest that companies with greater cash flows do have better working capital management.

According to previous studies, cashflow is the most appropriate variable for describing the capabilities of a company to generate internal resources. Therefore I will use the variable CFLOW to describe the capacity to generate internal resources and it is calculated as the ratio of net profit plus depreciation to total assets. Since previous studies suggest different indications, the direction of the variable cash flow is unclear.

2.2 Leverage

The leverage of a firm indicates the amount of debt that has been used to finance their assets. Hence, it indicates a firm's ability to pay back its borrowing. According to previous mentioned theories, firms which have a higher leverage pays a higher risk premium which means that the cost of funds invested in the cash conversion cycle are higher as well. Chiou et al. (2006) shows that measures of working capital management decreases when the leverage of a firm increases. Therefore, it is possible to assume that there is a negative relation between the leverage ratio and the CCC. Leverage will be measured as the ratio of debt to total assets.

2.3 Growth opportunities

A firm's working capital management is also influenced by the growth opportunities of the firm according to several previous empirical studies (Nunn, 1981; Kieschnich et al., 2006). The variable growth opportunities could influence the trade credit provided to and received from firms besides the investments in the inventory.

Kieschnich et al. (2006) shows that the growth opportunity of future sales is positive related to the CCC of a firm and they state that firms with higher growth opportunities increase inventories to anticipate on future sales. Besides, Blazenko and Vandezande (2003) showed that the amount of expected sales has a positive relationship with the inventory.

However, according to Cunat (2007) and Emery (1987) companies with higher growth opportunities do have a smaller CCC. Cunat (2007) states that firms with high potential and high growth opportunities uses trade credit as an important source of finance their growth since they face difficulties in accessing sources of finance. Nearby, Emery (1987) shows that companies provide higher trade credit to increase the amount of sales in period of low demand.

Because of the different considerations that leads to a different expected direction of the relationship between the growth opportunities and the CCC, the direction of the variable growth opportunities is unclear. The variable growth opportunity will be measured by the ratio (sales1-sales0)/sales0. This due to the fact that not all private firms do have market prices. This ratio is used because, according to Scherr and Hulburt (2001), firms that have grown in the past are better able to extend their growth in the future.

2.4 Size

Due to previous studies, the variable size influences the working capital management of a firm as well. The cost of capital increases if the size of a firm decreases because larger firms have higher transparency of information (Berger and Udell, 1998), less information asymmetries (Jordan et al., 1998; Berger et al., 2001) and larger firms are more followed by analyst. This relationship between size and CCC is confirmed by Kieschnich et al. (2006) which states that there is a positive relationship between size and the CCC for US corporations and Chiou et al. (2006) who shows that working capital requirements increases as size increases.

Furthermore, Petersen and Rajan (1997) and Niskanen and Niskanen (2006) both states that firms provide a higher trade credit to customers if capital markets are more accessible. Since larger companies are more diversified and fail less often, larger companies are seen as more stable than smaller firms and face a lower likelihood of bankruptcy. Therefore, larger firms are better able to obtain finance and, hence, also provide a higher amount of trade credit.

Since the cost of funds invested in current assets is lower for larger firms because they face a lower likelihood of bankruptcy and are seen as more stable, and because larger firms has les information asymmetry, it is expected that size is positively related to the CCC. The variable SIZE will be defined by the natural logarithm of assets.

2.5 Age

The variable age has been associated with the ability of a firm to obtain financing and trade credit more easily if a firms become more mature. The age of a firm indicates the time a firm is known by its customers and the quality and reputation of a firm (Petersen and Rajan, 1997), as well as the creditworthiness of a firm (Niskanen and Niskanen, 2006) and the relationship between customers and suppliers (Cunat, 2007). Chinou et al. (2006) states that age positively influences the working capital requirement as well. This could be because cost of capital is lower for more mature firms and because capital is obtained more easily and against better conditions according to Berger and Udell (1998). Since the cost of funds are lower for

more mature firms, it is assumed that there is a positive relationship between age and the CCC. The variable AGE is calculated as the natural logarithm of age.

2.6 Tangible fixed assets

According to empirical evidence, the working capital management of a firm is influenced by the investments in tangible fixed assets. This due to the following reasons. Both Fazzari and Petersen (1993) and Kieschnich et al. (2006) states that fixed assets are negatively related to the CCC of a firm because when firms do face financial constraints fixed investments competes for funds with levels of working capital. On the other hand, firms with a higher amount of intangible assets could have higher costs of finance due to the fact that intangible assets creates more asymmetric information than tangible assets. This could therefore increases the CCC of a firm. Since the different opinions of the direction of the variable, the expected relationship between the Cash Conversion Cycle and the investment in fixed assets is unclear. The investment in tangible fixed assets (FA) is measured by the ratio (tangible fixed assets/total assets).

2.7 Return

Return of assets (ROA) has an important influence on the measures of working capital management since it shows mutual effects on working capital management (Wu, 2001). The return of assets of a company has a negative influence on the working capital management since firms who perform better do have better access to outside investors which could be invested in more profitable investments and the height of the return of assets could be based on the market dominance because of high bargaining power with suppliers and customers (Shiou et al., 2006; Shin and Soenen, 1998). Besides, Petersen and Rajan (1997) states that firms with a higher profit receive more credit from the suppliers than firms with lower profits. Therefore, the variable return on assets (ROA) is added to the analysis and it is expected that the return on assets has a negative relationship with the CCC. The return on investment is measured by the ratio of Earnings Before Interest and Taxes over total assets.

2.8 Industry

Several previous studies showed that there is a difference in working capital management between industries (Weinraub and Visscher, 1998; Kieschnich et al., 2006; Filbeck and Krueger, 2005; Hawawini et al., 1986;). The difference of working capital policies among industries could be explained by a different trade credit received and granted and different investments in inventories among industries. Besides, a high variety in credit terms are mentioned between industries and not within industries according to Smith (1987) and Ng et al. (1999). Moreover, a difference in the levels of accounts receivable and accounts payable among industries are shown by Niskanen and Niskanen (2006).

3. HYPOTHESIS

Since the cash flow indicates the capabilities of a firm to generate internal resources it is an important variable to add in this research. According to the pecking order theory (Myers, 1984) because of asymmetric information the cost for external resources causes a priority for internally generated resources. On the other hand, according to Chiou et al. (2006) cash flow has a negative influence on working capital requirements. Since the direction of the variable cash flow is unclear, I will hypothesizes:

H1a: Cash flow has a positive influence on a firm's CCC
H1b: Cash flow has a negative influence on a firm's CCC

Because firms with a higher leverage has to pay a higher risk premium. Chiou et al. (2006) also mentions that measures of working capital management decreases when leverage increase. Therefore I hypothesize:

H2: Leverage has a negative influence on a firm's CCC

According to Kieschnich et al. (2006), the future sales of an company has a positive influence on the CCC of a firm. However, Cunat (2007) states that because a high potential firm uses trade credit as a source of financing which influence influences the CCC of a firm negatively. Besides, to increase sales companies with high growth opportunities uses trade credit to attract customers (Petersen and Rajan, 1997). Since the direction of the variable is unclear, I hypothesize:

H3a: The growth opportunity of a firm has a positive influence on a firm's CCC
H3b: The growth opportunity of a firm has a negative influence on a firm's CCC

The variable size also influences the working capital management of a firm due to previous studies. The cost of capital for larger firms decreases since larger firms provide greater transparency (Berger and Udell, 1998), there is less information asymmetries (Jordan et al., 1998; Berger et al., 2001) and larger firms are more followed by analysts. The positive relationship between size and CCC is also confirmed by Kieschnich et al. (2006) and Chiou et al. (2006). Besides, according to Petersen and Rajan (1997) and Niskanen and Niskanen (2006) larger firms are seen as more stable and fail less often causing that they are better able to obtain finance and, hence, provide a higher amount of trade credit. Therefore, I hypothesize:

H4: *Size has a positive influence on a firm's CCC*

Age also influences the working capital management of a firm. Chinou et al. (2006) states that age positively influences the working capital requirement. This could be because the cost of capital is lower for more mature firms and because capital is obtained more easily and against better conditions according to Berger and Udell (1998) if a firm becomes more mature. Since the cost of funds are lower for more mature firms, it is assumed that there is a positive relationship between age and the CCC. Therefore, I hypothesize:

H5: *Age has a positive influence on a firm's CCC*

According to empirical evidence, the working capital management of a firm is influenced by the investments in tangible fixed assets. Both Fazzari and Petersen (1993) and Kieschnich et al. (2006) states that fixed assets are negatively related to the CCC of a firm because when firms do face financial constraints fixed investments competes for funds with levels of working capital. On the other hand, firms with a higher amount of intangible assets could have higher costs of finance due to the fact that intangible assets creates more asymmetric information than tangible assets. Because of the different opinions of the direction of the variable, I hypothesize:

H6a: *The investment in tangible fixed assets has a positive influence on a firm's CCC*
H6b: *The investment in tangible fixed assets has a negative influence on a firm's CCC*

Finally, the return of assets influences the measures of working capital management. Firms who perform better do have better access to outside investors which could be invested in more profitable investments (Shiou et al., 2006) and firms with higher profits receive more trade credit from suppliers (Petersen and Rajan, 1997). Therefore I hypothesize:

H7: *The return on assets has a negative influence on a firm's CCC*

4. METHODOLGY

4.1 Empirical Technique

Theories and previous studies in the field of working capital management described in Section 2 form the basis for the further course of this research. The factors that determinize the CCC of Dutch private firms will be tested using a panel data methodology. This due to the advantages a panel data entails. First, unobservable heterogeneity can be controlled because of a panel data study. Besides, biases deriving from the presence of individual effects could be removed (Hsiao, 1985). Second, a target adjustment model could be developed. This enables it to describe the CCC of a firm by an analyzing the CCC in previous periods and the target CCC.

Companies are pursuing a target level by making decisions in the field of working capital management decisions which is a linear function of the explanatory factors (Banos-Caballero et al., 2010). The explanatory factors are described in section 2. Therefore, I will use the following equation (Banos-Caballero et al., 2010) (1):

$$CCC_{it}^{*} = \beta_0 + \beta_1 CFLOW_{it} + \beta_2 LEV_{it} + \beta_3 GROWTH_{it} + \beta_4 SIZE_{it} + \beta_5 AGE_{it} + \beta_6 FA_{it} + \beta_7 ROA_{it} + \varepsilon_{it}$$

In this equation ε_{it} is the random disturbance. β_k are the unknown parameters that has to be estimated. Firms are facing costs to adjust their CCC to the target level, CCC^{*}. Therefore, I will use the following equation (Banos-Caballero et al., 2010)(2):

$$CCC_{it} - CCC_{i,t-1} = y\left(CCC_{it}^{*} - CCC_{i,t-1}\right);\ 0 < y < 1$$

In this equation is $\left(CCC_{it}^{*} - CCC_{i,t-1}\right)$ the modification that is required to meet the target level of the firm. Y is the coefficient that measures the speed of the modification which varies between 0 and 1. If a firm modifies the CCC to the target level (CCC^{*}) directly, Y will be 1 and $CCC_{it} = CCC_{it}^{*}$. If a firm does not modify the current CCC to the target level, because the modification costs are too high for instance, and remains equal to previous periods, then Y will be 0 and $CCC_{it} = CCC_{i,t-1}$.

By substituting equation (1) into equation (2), and by adding unobservable heterogeneity along with the time variable, the present determination of the CCC will be (Banos-Caballero et al., 2010) (3):

$$CCC_{it} = y\beta_0 + (1-y)CCC_{i,t-1} + y\beta_1 CFLOW_{it} + y\beta_2 LEV_{it} + y\beta_3 GROWTH_{it} + y\beta_4 SIZE_{it} + y\beta_5 AGE_{it} + y\beta_6 FA_{it} + y\beta_7 ROA_{it} + \lambda_t + y\varepsilon_{it},$$

This could also be written as (4):

$$CCC_{it} = \alpha + pCCC_{i,t-1} + \delta_1 CFLOW_{it} + \delta_2 LEV_{it} + \delta_3 GROWTH_{it} + \delta_4 SIZE_{it} + \delta_5 AGE_{it} + \delta_6 FA_{it} + \delta_7 ROA_{it} + \lambda_t + \upsilon_{it}$$

Whereby, $\alpha = y\beta_0$; $p = (1-y)$; $\delta_k = y\beta_k$; and $\upsilon_{it} = y\varepsilon_{it}$.

4.2 Measurement

The equation for private firms is estimated in Section 5 whereby CCC_{it} shows the level of the CCC for firm *i* at time *t*. The variable of $CFLOW_{it}$represents the capability of a firm to generate internal resources which is calculated as the ratio of net profit plus depreciation to total assets. The variable LEV_{it}, the leverage of a firm, is calculated as the ratio of debt to total assets. Furthermore, $GROWTH_{it}$ indicates the future sales of a firm and is calculated by the ratio (sales1 – sales0)/sales 1, because not all firms do have market prices. The variable $SIZE_{it}$ is determined by the natural logarithm of assets and the variable AGE_{it} is determined by the natural logarithm of age. moreover, the variable tangible fixed assets (FA_{it}) is measured by the ratio of tangible fixed assets to total assets. The variable ROA_{it} (return on assets) is measured by the ratio of Earning Before Interest and Taxes to Total Assets. The λ_t variable is a time variable which will control for the economic variables that might affect the CCC of a firm. Ultimately, the parameters υ_{it} is a random disturbance.

4.3 Data

A panel data from the Orbis database will be used for this paper whereby exclusively is focused on Dutch private firms. Dutch private firms with data for a period of 2008-2017 are selected whereby firms of which the data was not available for less than two of the ten years are removed. This leads to a panel of 2926 Dutch Private firms.

Table 1

Sample structure

Industry	N	%	Mean CCC	Median CCC
Banks	61	2,1%	789,6337	129,6084
Chemicals, non-metallic products	82	2,8%	162,5115	127,4580
Construction	49	1,7%	144,9576	84,1370
Education, Health	36	1,2%	83,9770	53,9220
Food, beverages, tobacco	62	2,1%	151,1509	85,2026
Gas, Water, Electricity	27	0,9%	165,3894	115,7550
Hotels & restaurants	30	1,0%	80,0291	52,5094
Insurance companies	1	0,0%	35,3068	35,3068
Machinery, equipment, furniture, recycling	103	3,5%	6,5156	126,8577
Metals & metal products	26	0,9%	106,2168	96,5454
Other services	1643	56,3%	199,5797	91,0036
Post & telecommunications	16	0,5%	80,5776	64,8898
Primary sector	39	1,3%	192,0305	119,8469
Publishing, printing	24	0,8%	95,0770	75,0433
Textiles, wearing apparel, leather	14	0,5%	134,3790	130,7458
Transport	117	4,0%	127,4414	57,8017
Wholesale & retail trade	573	19,6%	119,7223	101,2539
Wood, cork, paper	15	0,5%	98,4885	88,8973

The structure of the sample is represented in table 1 whereby the distribution, along with the mean CCC and the median CCC, are given. The differences in the mean CCC between industries supports several previous studies who stated that there is an industry effect on the working capital management of a firm which could be explained by a different amount of trade credit and investment in inventories among industries (Weinraub and Visscher, 1998; Kieschnich et al., 2006; Filbeck and Krueger, 2005; Hawawini et al., 1986;). The banking industry has with a mean CCC of 789,63 by far the highest CCC in this sample. The Machinery, Equipments, Furniture and

Recycling industry has the lowest CCC with a mean CCC of 6,5.

Table 2

Descriptive statistics Control Variable

Year	N	Mean CCC	Median CCC	Std. Deviation
2008	427	152,30	93,53	317,42
2009	1206	107,73	65,19	339,39
2010	1123	153,91	98,54	443,72
2011	1457	101,21	70,57	246,40
2012	1598	134,51	91,49	197,76
2013	1701	123,16	79,12	355,73
2014	1839	146,02	91,39	408,56
2015	1788	113,20	91,52	417,62
2016	1740	138,96	98,85	230,26
2017	206	75,74	45,92	108,13
Total	13085	127,48	87,01	337,02

Table 2 presents the descriptive statistics of the control variable of time.

Table 3

Industry characteristics

	WCR	CL/TA
Industry	Mean	Mean
Banks	0.32	0.33
Chemicals, non-metallic products	0.40	0.41
Construction	0.34	0.46
Education, Health	0.27	0.52
Food, beverages, tobacco	0.40	0.53
Gas, Water, Electricity	0.10	0.23
Hotels & restaurants	0.09	0.12
Insurance companies	0.06	0.31
Machinery, equipment, furniture, recycling	0.43	0.48
Metals & metal products	0.44	0.45
Other services	0.30	0.45
Post & telecommunications	0.22	0.82
Primary sector	0.32	0.39
Publishing, printing	0.24	0.44
Textiles, wearing apparel, leather	0.49	0.41
Transport	0.31	0.51
Wholesale & retail trade	0.47	0.83
Wood, cork, paper	0.37	0.45

Table 3 represents the current liabilities and working capital management requirements which shows the importance of it by industry. CL/TA is calculated as the ratio of current liabilities to total assets. WCR is calculated as the ratio of days of inventory outstanding plus days of sales outstanding minus days payables outstanding to total assets.

The Variance Inflation Factor has been calculated to exclude multicollinearity. In this calculation each independent variable was included as a dependent variable. Since the Variance Inflation Factor was less than 3.0 in all of the cases, it is assumed that collinearity is not a serious problem in this sample. Additional, the correlation among the independent variables, as represented in table 4, shows that collinearity is not a concern since all the values are less than 0.30.

Table 4

Correlation

	CCC_{t-1}	CFLOW	LEV	GROWTH	SIZE	AGE	FA	ROA
CCC_{t-1}	1							
CFLOW	-.006	1						
LEV	-.005	-.002	1					
GROWTH	.000	-.001	.000	1				
SIZE	.066	-.040	-.055	.014	1			
AGE	-.002	-.003	.002	-.019	-.012	1		
FA	-.004	.008	-.038	-.006	.124	.014	1	
ROA	-.004	.778	-1.05	-.004	-.029	.010	.037	1

5. RESULTS

The results of the empirical analysis are presented in table 5 whereby column (1) shows the results for the static model of the Pooled Regression and column (2) presents the results whereby the lagged depended variable is used as an independent variable, which has also been done in preceding working capital management studies (Kieschnisch et al., 2006; Banos-Caballero et al., 2010; Chiou et al., 2006). Since the lagged dependent variable used as an independent variable is significant, it indicates that the CCC of a firm depends on its CCC in the previous period and the firm's CCC target level. The results of this study are partially equal to previous studies, this due to the fact that not all of the results are significant. The difference in findings between working capital management studies might indicate the cruciality of the endogeneity problems and unobservable heterogeneity of firms by analyzing the cash conversion cycle of firms.

Table 5

Determinants of the Cash Conversion Cycle

	(1)	(2)
CCC_{it-1}		0.557* (55,532)
CFLOW	-36.222**** (-1.309)	-18.691**** (-1.166)
LEV	-36.601* (-3.276)	-11.954*** (-1.758
GROWTH	0.046**** (0.218)	-0.096**** (-0.666)
SIZE	10.936* (4.639)	4.892* (3.347)
AGE	-7.390*** (-1.667)	-1.889****(-0.693)
FA	-36.898* (-2.908)	-19.022** (-2.419)
ROA	-12.420**** (-.0376)	18.881**** (0.956)
Observations	29260	29260
Adj. R2	0.004	0.302
F	6.667	394.819

******Not significant; ***significant at a level 10 percent; **significant at a level of 5 percent; *Significant at a 1 percent level. The cash conversion cycle (CCC) is the dependent variable; CFLOW, the capability of a firm to generate internal resources; LEV, the leverage ratio of a firm; GROWTH, a firm's future sales; SIZE, the size; AGE, the age; FA, the investment in fixed assets; ROA, the return on assets. The value in brackets represents the T-score. The null hypothesis indicates no correlation.**

The results show that Dutch private firms pursue a target level of the CCC since the lagged depended variable is significant. In contrast to previous studies in the determinants of working capital management, Dutch private firms try to adjust their CCC to their target level less quickly. The adjustment coefficient of Dutch private firms γ is 0.27 which is less than previous studies (Banos-Caballero et al., 2010). This could be explained by different domestic factors like the financial system that influences the ability to obtain external funds.

Previous studies argued that because firms with a higher leverage pay a higher risk premium, cost of funds invested in the cash conversion cycle are higher as well which means that leverage has a negative influence on the height of the CCC (Chiou et al., 2006; Banos-Caballero et al., 2010). In line with this, the results suggest that leverage has indeed a negative influence on the CCC which confirms the expectations. Furthermore, because the funds for more mature firms are lower, it is assumed that age is positively related to the CCC. However, in contrast to the results of (Banos-Caballero et al., 2010 and Chiou et al., 2006) the results indicates that age is negatively related to the CCC of a firm. Since les mature firms face difficulties in obtaining finance, trade credit could be used as an important source of finance which could explain the negative relationship between age and the CCC. With regard to the effect of the fixed assets of a firm, it is found that fixed assets have an negative influence on the CCC. Because firms with a higher amount of intangible assets also have a higher cost of finance, due to the fact that intangible assets creates more asymmetric information than tangible assets, the results are in line with previous studies (Fazzari and Petersen, 1993; Banos-Caballero et al., 2010). Finally, according to Kieschnich et al. (2006) and Chiou et al. (2006) there is a positive relationship between size and the CCC because larger firms are better able to obtain finance and, hence, also provide a higher amount of trade credit. The results do confirm those findings and show that there is a positive relationship between the size and the CCC of a firm.

Additional, another variable which explains the CCC of a firm is the ROA. Firms who perform better do have better access to outside investments (Shiou et al., 2006) and firms with higher profits receive more trade credit from suppliers (Petersen and Rajan, 1997). Those findings are in line with the results since there is a positive relationship between the ROA and the CCC. On the other hand, in contrast to previous studies the results suggest that there is negative relationship between the cash flow and the CCC, and there is a positive relationship between the growth opportunities and the CCC of a firm. However, the results of the variables return on assets, cashflow and growth opportunities are not significant.

To test the robustness of the study, an subsample analysis is conducted whereby less and more mature firms are divided into two subsamples. The results are presented in table 6. Since the median of the sample is 21, less mature firms will have an age of less or equal to 21 which you can see in column (1) and more mature firms have an age of higher than 21 which you can see in column (2). The results show no much difference between the two subsamples. The main difference lies in the leverage, whereby leverage has an higher influence on the CCC of more mature firms than for less mature firms.

Table 6

Subsample Analysis

	(1)	(2)
CCC_{it-1}	.598(40.327)	0.445* (32.130)
CFLOW	-17.224 **** (-0.463)	-22.538**** (-1.648)
LEV	-.901* (-0.077)	-27.046*** (-3.759)
GROWTH	-.159**** (0.431)	-0.065**** (-.547)
SIZE	4.370* (1.651)	6.027* (4.118)
FA	-13.435* (0.940)	-22.516** (-2.872)
ROA	22.111**** (-.553)	15.761**** (0.820)

6. CONCLUSION

In this paper, the target adjustment model of Banos-Caballero et al. (2010) has been used to determine which factors influence the length of the CCC of Dutch private firms. A panel data from

the Orbis database has been used which led to a sample of 2926 Dutch private firms. The results show that the analyzed firms pursue a target level of the CCC. In contrast to previous studies in the determinants of working capital management, Dutch private firms try to adjust their CCC to their target level less quickly. The results are only partially equal to previous studies, this due to the fact that not all of the results are significant. It is found that larger firms maintain a longer CCC, whereas firms with a higher leverage, maturity and investment in fixed assets maintain a shorter CCC. In conclusion, this paper presents the influence of market imperfections for the CCC management in Dutch private firms which affects the degree invested in working capital.

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8. REFERENCES

Banos-Caballero S., Garcia-Teruel P. J., Martinez-Solano P., 2010, working capital management in SMEs, *Accounting and Finance* 50, 511-527

Banos-Caballero S., Garcia-Teruel P. J., Martinez-Solano P., 2014, working capital management, corporate performance and financial constraints, *journal of business research*, 332-338

Berger A., Klapper F., and Udell G., 2001, The ability of bank to lend to informationally opaque small business, *Journal of Banking and Finance* 55, 2127-2167

Berger A.N., and Udell G.F., 1998, The economies of small business: the roles of private equity and debt markets in the financial growth cycle, *Journal of Banking and Finance 22*, 613-673

Berger, A. N., and G. F. Udell, 1998, The economics of small business: the roles of private equity and debt markets in the financial growth cycle, *Journal of Banking and Finance* 22, 613–673.

Blazenko G., and Vandezande K., 2003, Corporate holdings of finished goods inventories, *Journal of Economics and Business* 55, 255-266

Blinder A. S., and Maccini L. J., 1991, The resurgence of inventory research: what have we learned?, *Journal of Economic Survey* 5, 291-328

Chiou J., Cheng L., Wu H., 2006, The determinants of working capital management, *the journal of American Academy of Business* 10, 149 - 155

Cunat, V., 2007, Trade credit: suppliers as debt collectors and insurance providers, *Review of Financial Studies* 20, 491–527.

Deloof, M. and M. Jeger, 1996, Trade Credit, Product Quality, and Intragroup Trade: Some European Evidence, *Financial Management*, Vol. 25, No. 3, 945-968

Deloof, M., 2003, Does working capital management affect profitability of Belgian firms?, *Journal of Business, Finance and Accounting* 30, 573–587.

Demigurc-Kunt, A., and V. Maksimovic, 2002, Firms as financial intermediaries: evidence from trade credit data, working paper (World Bank, Washington, DC)

Emery G.W., 1987, An optimal financial response to variable demand, *Journal of Financial and Quantitative Analysis* 22, 209-225

Fazzari, S. M., and B. Petersen, 1993, Working capital and fixed investment: new evidence on financing constraints, *Rand Journal of Economics* 24, 328–342.

Filbeck G., and Krueger T.M., 2005, An analysis of working capital management results across industries, *Mid-American Journal of Business* 20, 11-18

Garcia-Teruel, P. J., and P. Martinez-Solano, 2007a, Effects of working capital management on SME profitability, *International Journal of Managerial Finance* 3, 164–177

Hawawini G., Viallet C., and Vora A., 1986, Industry influence on corporate working capital decisions, *Sloan Management Review* 27, 15-24

Hsiao C., 1985, Benefits and limitations of panel data, *Econometrics Review* 4, 121-174

Jordan J., Lowe J., Taylor P., 1998, Strategy and financial policy in UK small firms, *Journal of Business Finance and Accounting* 25, 1-27

Kieschnich, R., M. LaPlante, and R. Moussawi, 2006, Corporate working capital management: determinants and consequences, *working paper (University of Texas, Dallas).*

Long, M.S., I.B. Malitz and S.A. Ravid, 1993, Trade Credit, Quality Guarantees, and Product Marketability, *Financial Management*, Vol. 22, No. 4, 117-127

Modigliani F., Miller M. H., 1958, The cost of capital, corporation finance and the theory of investment, *American Economic Review* 48, 261-297

Myers, S. C., 1984, The capital structure puzzle, *Journal of Finance* 39, 575–592

Ng C. K., Smith J. K., and Smith R. L., 1999, Evidence on the determinants of credit terms used in interfirm trade, *Journal of Finance* 54, 1109-1129

Niskanen, J., and M. Niskanen, 2006, The determinants of corporate trade credit polices in a bank-dominated financial environment: the case of Finnish small firms, *European Financial Management* 12, 81–102.

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, 45–58.

Peel, M. J., N. Wilson, and C. Howorth, 2000, Late payment and credit management in the small firm sector: some empirical evidence, *International Small Business Journal* 18, 17–37.

Peel, M., and N. Wilson, 1996, Working capital and financial management practices in the small firm sector, *International Small Business Journal* 14, 52–68.

Petersen, M., and R. Rajan, 1997, Trade credit: theories and evidence, *Review of Financial Studies* 10, 661–691.

Scherr F.C., and Hulburt H. M., 2001, The debt maturity structure of small firms, *Financial Management* 30, 85-111

Schmidt, R., and M. Tyrell, 1997, Financial systems, corporate finance and corporate governance, *European Financial Management* 3, 333-361

Setayesh M.H., 2009, Determining the optimum capital structure at a industrial lever by using data envelopment analysis (DEA) case study: lister companies in Tehran stock, *Journal of Financial Accounting Research* 1, 52 - 66

Shin, H. H., and L. Soenen, 1998, Efficiency of working capital and corporate profitability, *Financial Practice and Education* 8, 37–45

Smith, K., 1980, Profitability versus liquidity tradeoffs in working capital management, in: K. V. Smith, ed., *Readings on the Management of Working Capital* (West Publishing Company, St Paul, MN), 549–62.

Soenen, L., 1993, Cash conversion cycle and corporate profitability, *Journal of Cash Management* 13, 53–57

Stubelj I. and Laporsek S., 2016, The Impact of Working Capital Policy on Firms Performance and Capital Requirements, *management international conference*

Vahid, K. T., Elham, G., Mohsen, A. K., Mohammadreza, E., 2012, working capital management and corporate performance: evidence from Iranian companies, *Prodecia – Social and Behavioural Sciences* 65, 1313-1318

Weinraub H.J., and Visscher S., 1998, Industry practice relating to aggressive conservative working capital policies, *Journal of Financial and Strategic Decision* 11, 11-18

Wilner B. S., 2000, The exploitation of relationships in financial distress: the case of trade credit, *Journal of Finance* 55, 153-178

Wu, Q. S., 2001, The determinant of working capital management policy and its impact on performance, *National Science Council Project*, Project No. NSC 89-2416-H-224- 028.