

**THE INFLUENCE OF WORKING CAPITAL MANAGEMENT
ON PROFITABILITY OF LISTED COMPANIES IN THE
NETHERLANDS**

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ABSTRACT

Shin and Soenen (1998) cited that the efficiency of working capital management has a significant influence on both the liquidity and profitability of a company. Financial managers all over the world have been long searching for the way on how to identify the important drivers of working capital which can help buffer the profitability of their companies. There are loads of researches done across countries regarding the influence of working capital management on corporate profitability. Within the same context, this research aims at providing empirical evidences to examine such influence for Dutch non-financial listed companies, particularly for the two major sectors including manufacturing and service sectors. 62 listed companies across two sectors were examined for the period 2006-2010. Pearson Correlation Analysis was employed to indentify the association between the determinants of working capital management and the company profitability. In addition, Fixed Effects Models and Ordinary Least Squares were chosen to conduct regression analyses for examining how working capital management affects profitability of companies dedicated to two different sectors. Fixed Effect regressions indicate that company profitability in both sectors is all negatively influenced by number of days accounts receivable. In the mean time, Ordinary Least Square regressions result in positive impacts of firm size and sales growth on company profitability. In addition, some other results are found specifically to each sector. Number of days inventory and cash conversion cycle are shown to negatively affect the profitability of companies operating in manufacturing area whereas they have positive influences on profitability of service companies. In addition, manufacturing and service sectors respectively witness negative influences of number of days accounts payable and aggressive financing policy on their company profitability.

ABBREVIATIONS

WCM	Working Capital Management
IV	Number of days inventories or Inventory Period
AR	Number of days Accounts Receivable
AP	Number of days Accounts Payable
CCC	Cash Conversion Cycle
LN	Logarithm of Sales
SG	Sales Growth
AG	Aggressive Financing Policy
ROA	Return on Assets
COSG	Costs of Goods Sold
FEM	Fixed Effects Model
OLS	Ordinary Least Square

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1. INTRODUCTION

This chapter provides a general introduction to the research project. The purpose is to provide readers with an overview on the research topic. Structurally, the chapter comprises of four sections. Section 1.1 examines the research background, explaining the scope on which the research is identified. Section 1.2 addresses the need for conducting the research project, in which the hypothesis statement or problem statement will be included. Section 1.3 identifies the research objective. Finally, section 1.4 draws an outline structuring the whole research body.

After reading this chapter, viewers can expect to earn a general idea on why I choose the research topic and at which targets I aim to achieve when conducting the research. In addition, they can also expect to see how my research is structured so that they can easily follow and select which contents they would like to mostly focus on.

1.1 Research background

Working capital is a financial metric which represents the operating liquidity available to a business. Along with fixed assets such as plants and equipments, working capital is considered as a part of a company's operating capital, referring to current assets such as cash at hand, cash on bank account, raw materials, work-in-progress, finished goods, accounts receivable, and etc. To measure the efficiency of a company's working capital, people often use net working capital which is defined as difference between current assets and current liabilities. If current assets are higher than current liabilities, this company has working capital efficiency, explaining the company's ability to continue its operations and to have sufficient funds to satisfy both maturing short-term debt and upcoming operational expenses.

Working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet due short-term obligations on one hand and avoid excessive investment in these assets on the other hand (Eljelly,2004). There is a combination of policies and techniques for the management of a company's working capital. These policies involve inventory management, debtors' management (credit policy) and short-term financing management, and etc. A popular measure of working capital management is the cash conversion cycle, which tells us how cash is moving through a company in terms of duration. Given the definitions, this research shall examine working

capital management issues, specifically how a company manages its working capital by shortening or lengthening its cash conversion cycle in order to contribute for a superior operating profitability.

1.2 Problem statement

The effectiveness of working capital management can have a significant impact on both the liquidity and profitability of a company (Shin & Soenen, 1998). For the liquidity, lacking working capital can account for inefficiencies in a company's operation when it is not able to pay off its due obligations. On the other hand, without sufficient working capital, the company will not either be able to provide goods or services required to customers due to lack of money to buy materials for producing goods. The company's profitability can be jeopardized as a result.

In addition, Lamberson (1995) showed that working capital management is of importance in managing financial aspect of a company. Many financial managers are finding it difficult to identify the important drivers of working capital management that can enhance their company profitability. Most of researchers find a strong negative cause-and-effect relationship between number of days inventories, number of days accounts receivable and cash conversion cycle with and the corporate profitability (Shin and Soenen, 1998; Deloof, 2003; Raheman & Nars 2007); and a positive relationship between number of days accounts payable with the corporate profitability (Lazaridis & Tryfonidis, 2006). In contrast, there are few researchers provided different results. For example, Nobanee (2009) concludes a positive relationship between cash conversion cycle, number of days accounts receivable and number of days inventory with the firm's operating income to sales whereas number of days accounts payable has significant negative impact on the firm's performance

However, such relationships have not been identified for Dutch companies. In other words, there has been no research done regarding the influence of working capital management on profitability of companies in the Netherlands. Accordingly, my problem statement is **“WHAT IS THE INFLUENCE OF WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF DUTCH NON-FINANCIAL LISTED COMPANIES DURING THE PERIOD 2006-2010?”**

1.3 Research objective

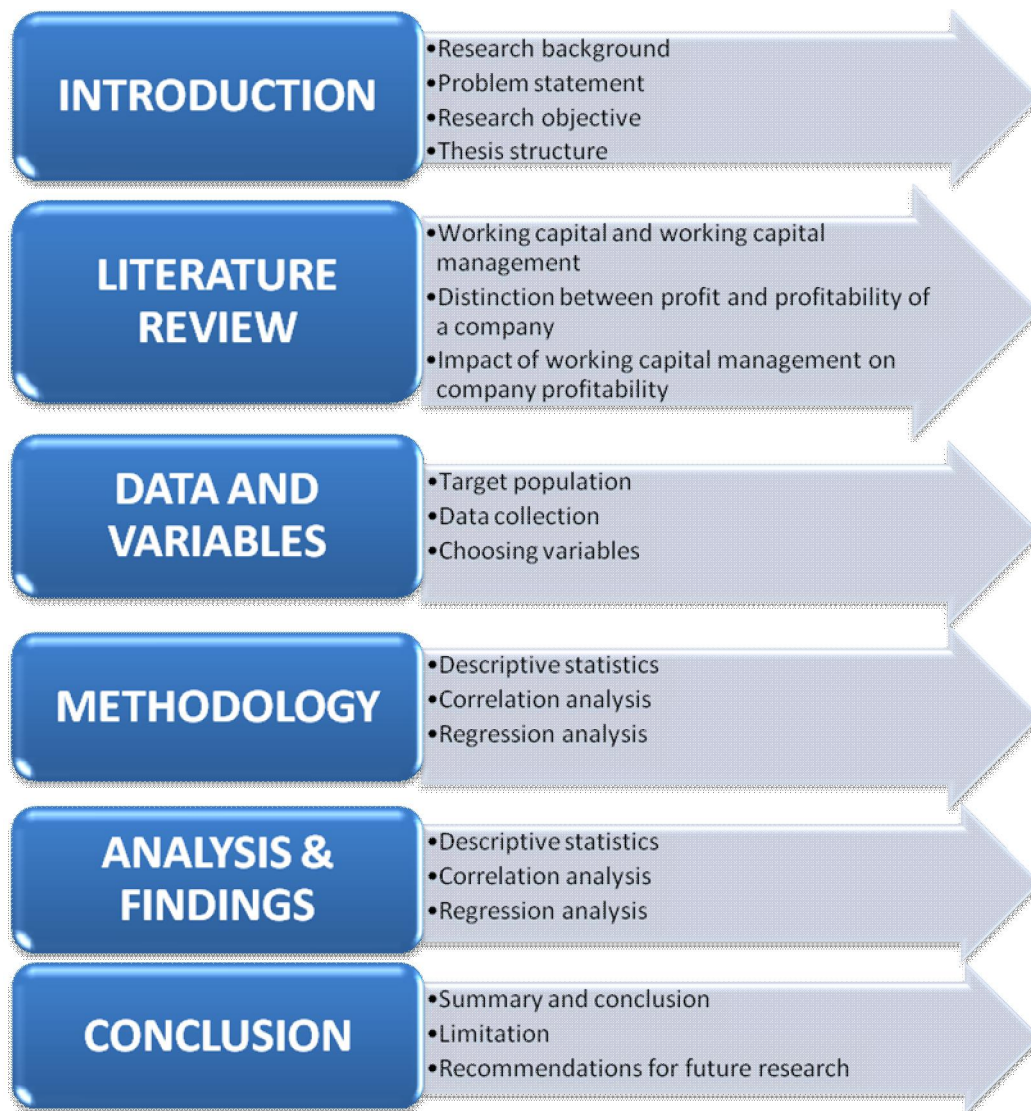
The research objective aims at finding out whether working capital management can impact Dutch companies' profitability and if so, whether it is positively or negative affected. It

provides insights to Dutch companies, particularly Dutch non-financial listed companies, about the influences of working capital management on organizational profitability. However, not all companies are the same. Such difference may be due to inherent characteristics of sectors in which each company is currently working or even due to certain company's characteristics. Therefore, companies can take my research as a reference then apply it into specific cases.

This thesis focuses on analyzing two main sectors - manufacturing and service - which have major proportions of Dutch listed non-financial companies. As almost researches done for other context, the study expects negative effects of cash conversion cycle, number of days inventory and number of days accounts receivable and a positive effect of number of days account payable on firm's return on assets. The rationale for this expectation is that cash flow could be returned to the company faster when having these periods change in the ways discussed above. In this case, companies can sell their goods and receive money back from customers more quickly. In the mean time, they can also more delay paying back to their suppliers. As a result, companies have more free cash available to make other investments related to daily operations such as innovating their manufacturing or selling processes in order to enhance their operating profitability.

1.4 Thesis structure

The thesis is structured as presented in figure 1.1 below. The first chapter has been presented above. Chapter 2 deals with literature review providing general overview on working capital, working capital management; distinction between profit and profitability of a company and the impact of working capital management on the company profitability in terms of discussing theoretical understandings and empirical results found by other researchers. Chapter 3 describes techniques used for targeting the study population, collecting data and choosing variables. Chapter 4 discusses the methodology being employed to describe and analyze data. Chapter 5 provides empirical results found for two main sectors including manufacturing and service sectors together with the whole sample. Finally, chapter 6 consists of summary and conclusions for the findings, limitations of the study and recommendations for future research.

Figure 1.1 Research Structure

To conclude, all of my expectations for composing this chapter are now said to be met. My rationale for choosing that kind of research topic was depicted in my “Problem Statement” part. The “Research Objective” explained what I would like to get from that research. And finally, the “Thesis structure” drew a quite clear picture on which kinds of things I am going to discuss on my remaining chapters.

2. LITERATURE REVIEW

This chapter deals with the literature regarding working capital management. Structurally, section 2.1 provides general ideas on working capital and working capital management issues, including how to define them; how to measure them and how they play in the business context. The next section 2.2 explains how to distinguish between profit and profitability of a company. The final section 2.3 acknowledges the impact of working capital management on the company profitability on both theoretical and empirical bases. The empirical evidence comes from seven main studies, which are seen as the most relevant for this research, including Deloof (2003), Huynh & Su (2010), Padachi (2006), Garcia & Martinez (2007), Nobanee (2009), Gril, Biger & Mathur (2010) and Hayajneh & Yassine (2011). In each study, I shall summarize the context in which each scholar takes to conduct their own study and what are their results regarding the influence of working capital management on company profitability.

By presenting this chapter, I expect to brief readers, especially those who are not very familiar with financial field, certain academic understandings surrounding working capital management and its vital role in enhancing company profitability.

2.1 Working capital and working capital management

2.1.1 Working capital

a. Definition of working capital

The term “working capital” is the money required for maintaining daily operation activities in a business, such as for purchasing raw material, for paying salaries, wages, rents or any day-to-day expenditures. Net working capital, which measures the working capital’s efficiency, represents the excess of current assets over current liabilities. This indicator explains the firm’s ability to meet its short-term financial obligations (Brealey & Myers, 2002). Current assets and current liabilities include three accounts which are of special importance, say, inventories (current assets), accounts receivable (current assets) and accounts payable (current liabilities). These accounts represent the business areas on which managers have the most direct impact. Positive working capital is required to ensure that a firm is able to continue its operations and that it has sufficient funds to satisfy both due short-term debts and upcoming operational expenses.

b. Role of working capital

Working capital is seen as the lifeblood for feeding up daily operations of a company. The company uses it for four main business purposes (Seidman, 2004, p.92-93).

The first and also the most critical usage of working capital is to provide an ongoing investment in current assets for serving daily expenditures such as payroll, vendor invoices, and inventory purchases. The business also needs working capital for prepaid business costs such as licenses, insurance policies or security deposits.

Secondly, working capital helps address seasonal or cyclical financing needs. Since most businesses do not receive prepayment for selling their goods or services, they need to finance their purchase of raw materials, production and sales of goods prior to receiving payment from their customers.

Thirdly, working capital is needed to sustain firm's growth. The firm is expanded not only by investing in new plants or machinery, working capital is also required to facilitate sales growth. It is because as the business grows, it requires larger investments in inventories, accounts receivable, personnel and other items to increase their sales.

Finally, working capital is used to undertake activities to improve business operations and to remain competitive, such as activities for product development or exploring new markets. In the time of high competition, firms are in need of integrating those activities into operations on a continuous basis. Consequently, those expenses are more likely to be incurred as small repeated costs rather than as large infrequent investments. Those ongoing investments, accordingly, must be addressed through working capital financing (Seidman, 2004, p.92-93).

2.1.2 Working capital management**a. Definition of working capital management**

Working capital management (WCM) is one of those aspects related to financial management, which is concerned with all management areas regarding finance – not only sources and uses of finance in the company, but also the financial implications of investment, production, marketing or personnel decisions and the total performance of the company (Meredith, 1986). From another point of view, financial management is concerned with raising funds needed to finance the company's assets and activities, allocating these scarce funds between competing uses, and ensuring that those funds are used effectively and efficiently in achieving the company's targets (McMahon, Holmes, Hutchinson &

Forsait, 1993). Next to WCM, financial management also includes some other management aspects such as accounting information system, financial reporting and analysis, fixed asset management, capital structure management, etc.

WCM involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet due short-term obligations on the one hand; and avoid excessive investment in these assets on the other hand (Eljelly,2004).

b. Role of working capital management

Lamberson (1995) showed that WCM has become one of the most important issues in an organization. Many financial managers are finding it difficult to identify the important drivers of working capital devoting for a superior organizational performance. WCM is additionally important because of its effects on the firm's profitability and risk, and consequently its value.

Firstly, maintaining high inventory levels can reduce the cost of possible interruptions occurred during the production process or the cost of business loss due to the product scarcity. It can also help reduce supply costs and protect against price fluctuations (Blinder & Manccini, 1991).

Secondly, granting trade credit to customers favors the firm's sales in various ways. Trade credit can incentivize customers to acquire merchandise at times of low demand (Emery, 1987), and help firms to strengthen long-term relationships with their customers (Ng, Smith & Smith, 1999).

Finally, trade credit received from suppliers is considered as an internal source of financing that compensates the money tied up in the company inventories and customer receivables. But there is another opportunity cost associated with early payment discounts if available. In fact this cost may exceed 20 percent, depending on the discount percentage and the discount period granted (Wilner, 2000; Ng, Smith & Smith, 1999). In this respect, previous studies have analyzed the high cost of supplier trade credit, finding that firms finance themselves with supplier credit when they cannot find alternative economic sources of external financing (Petersen & Rajan, 1994 and 1997).

From another aspect, the way WCM acts can have a significant impact on both the liquidity and profitability of a company (Shin & Soenen, 1998). Companies should make a good balance between those two targets in order to achieve them all. Any trade-off made could

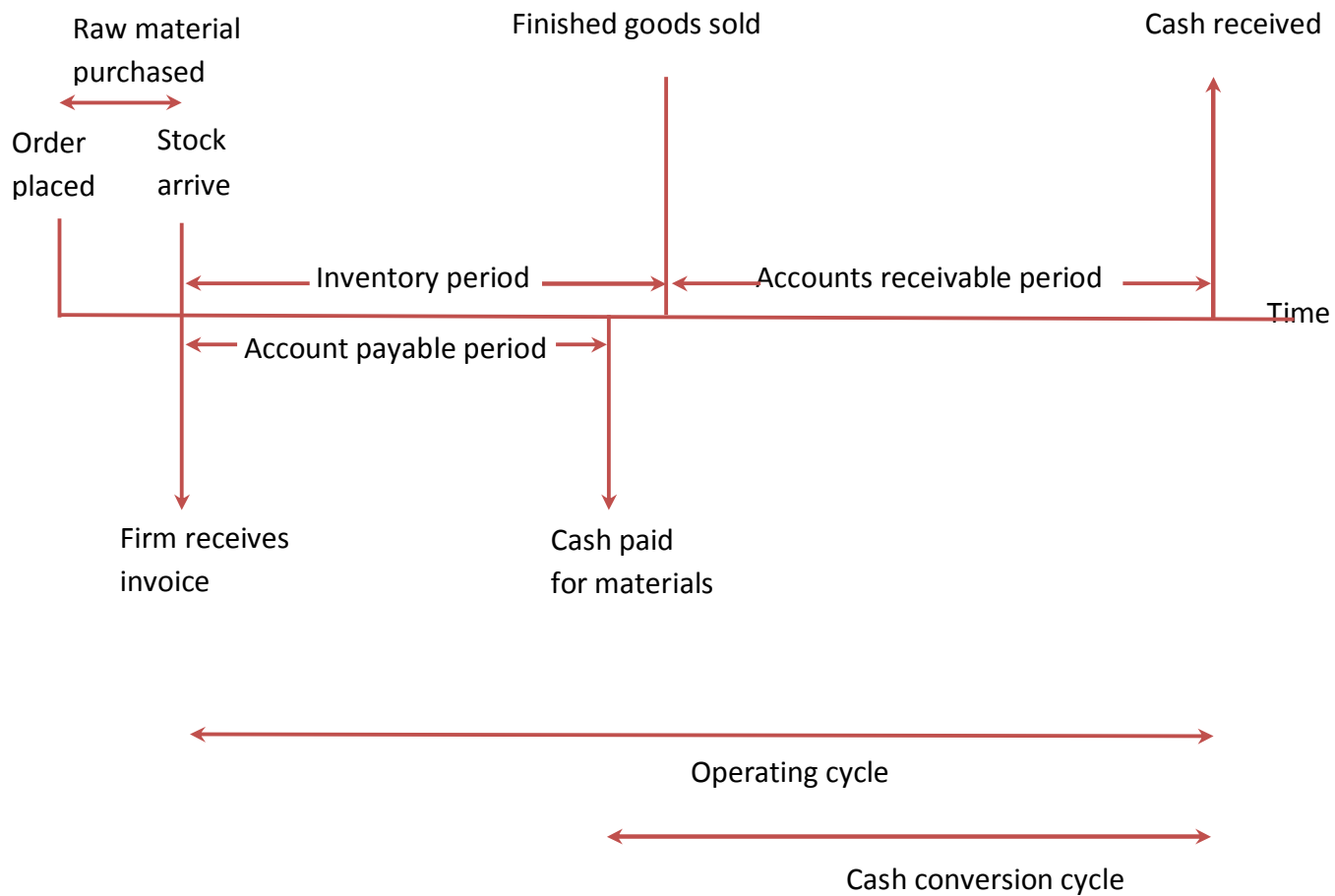
endanger certain operating aspects of the company. On one hand, if the company neglects the profit, it may not survive in the long run. On the other hand, if the liquidity is ignored, the company may face the problem of insolvency.

Additionally, WCM is particularly important to the small business. With limited access to long-term capital markets, those firms tend to rely more heavily on owner financing, trade credit and short-term bank loans to finance their needed investment in cash, accounts receivable and inventory (Chittenden et al, 1998; Sacurato, 1994).

c. Measuring working capital management - A distinction between operating cycle and cash conversion cycle

Short-term finance is concerned with short-term operating activities such as buying materials, paying cash for purchases, manufacturing the product, selling the product or collecting cash. These activities create patterns of cash inflows and cash outflows that are both unsynchronized and uncertain. They are unsynchronized because the payment of cash for raw materials does not happen at the same time as the receipt of cash from selling the product. Additionally, those activities are uncertain since future sales and costs are both known with uncertainty. Figure 2.1 depicts the cash flow time line for a typical manufacturing company (Hillier et al, 2010, p.724).

Figure 2.1 Cash flow time line and the short-term operating activities of a typical manufacturing firm



Source: Hillier et al, 2010, p.724

The cash flow time line depicts an operating cycle and a cash conversion cycle. Operating cycle is the interval between the order of inventory stock and the date when cash is collected from receivables. In the mean time, cash conversion cycle begins when the company pays cash to suppliers for the materials purchased and ends when cash is collected from customers for credit sales. (Hillier et al, 2010, p.724). In general, cash conversion cycle is computed as operating cycle minus accounts payable period. Alternatively, cash conversion cycle is the sum of inventory period and accounts receivable period less accounts payable period.

$$\begin{aligned}\text{Cash Conversion Cycle} &= \text{Operating Cycle} - \text{Accounts Payable Period} \\ &= (\text{Inventory Period} + \text{Accounts Receivable Period}) - \text{Accounts} \\ &\quad \text{Payable Period.}\end{aligned}$$

Cash conversion cycle tells us how cash is moving through a company in terms of duration. The cycle starts with a cash outflow by which the company pays back to suppliers for obtaining raw materials then ends with a cash inflow when receiving money back from its customers for selling its goods or services. In other words, the cycle indicates the number of days it takes the company to convert its operating activities requiring cash into cash returns. Therefore, a downward trend in this cycle is a positive signal whereas a negative signal is blamed for the upward one. When the cash conversion cycle shortens, cash becomes free for other usages such as investing on equipment and infrastructure or innovating manufacturing and selling processes. In contrast, when the cash conversion cycle lengthens, cash tied up in the firm's operation activities, leaving little chance for other investments of this cash flow. In an ideal case, a company should attempt to keep its cash conversion cycle as close to zero as well. In other words, the company is trying to maintain its production to be internally financed. However, the cash tied up in inventory and receivables will be almost practically exceed the cash supplied by creditors and accrued liabilities (Melicher & Leach, 2009, p.184).

Inventory Period

Inventory Period or Number of Days Inventory is the length of time required to order raw materials, produce and sell a product (Hillier et al, 2010, p.725). Accordingly, the number of days inventory depends upon the production as well as the sales process. Production time shall be subject to the nature of the product, the automation level as well as the technology used in the manufacturing process. Each venture must make a trade-off between faster production, the product quality and the amount of money spent to innovate the manufacturing technology. Sales usually depend on having the product ready to provide to customers upon their needs.

There are certain merits on the company earnings if reducing inventories such as decreasing warehouse space, reducing obsolete inventory, lowering depreciation, etc. In addition, there is always a deadweight cost of doing business associated with keeping inventories. Because

such cash is tied up in raw materials or work-in-progress and accordingly could not be employed elsewhere such as paying back to creditors or investors. Nevertheless, those costs are seen inevitable for companies to continue production.

The inventory period is computed by dividing inventories by the company's average daily cost of goods sold. The rationale for this formula is that when raw materials and labors are bought, they are correspondently booked into the account of costs for inventories. When the products are finished and sold, those costs are transferred into the account of cost of goods sold (Melicher & Leach, 2009, p.182).

$$\text{Inventory Period} = \frac{\text{Inventories}}{\text{Cost of Goods Sold} / 365}$$

Accounts Receivable Period

Accounts Receivable Period or Number of Days Accounts Receivable is the length of time required to collect cash receipts (Hillier et al, 2010, p.725). That measure is also preferred as "days of sales outstanding" or "average collection period". In an ideal case, all the venture's sales will be paid in cash. The immediate receipt accordingly can minimize the time gap between the sales inflow and the outflow for product materials and labor paid out previously. However, it is practically difficult for the venture to have all sales paid in cash due to its trade credit policy or pressures from competitors. Almost ventures shall keep a certain level of accounts receivable in their daily operating, except for some businesses such as restaurants. There are some earning impacts of reducing accounts receivable such as reducing bad debt through accelerated collections.

The accounts receivable period is calculated by dividing the receivables by the net sales per day. The rationale for this measure is that the company's revenue account will be booked at sales price including cost plus a profit when a sale occurs. Correspondently, if sales are made on credit, the accounts receivable account shall be recorded with the sales price. As a result, such formula can provide us an idea on how many days of sales are being supported by trade credit (Melicher & Leach, 2009, p.183).

$$\text{Accounts Receivable Period} = \frac{\text{Receivable}}{\text{Net Sales} / 365}$$

Accounts Payable Period

Accounts Payable Period or Number of Days Accounts Payable is the length of time for which the firm is able to delay payment on the purchase of raw materials to its suppliers. It measures the average time from a purchase of materials until making actual cash payment to suppliers. Such payment delay is seen as an internal financing that helps a company to save expensive costs occurred by reaching external financing such as bank loans. However, there is a trade-off that companies should take into account in terms of damaging long-term relationships with suppliers in case of continuing payment delays.

The accounts payable period is formulated by dividing the sum of trade payables by the company's cost of goods sold per day

$$\text{Accounts Payable Period} = \frac{\text{Trade Payables}}{\text{Cost of Goods Sold} / 365}$$

d. Conservative or aggressive working capital policy

Being aggressive in using short-term financing is a measurement to evaluate working capital management policy of a company. It measures the level of current liabilities or short-term financing at which a company uses to finance their total assets. Short-term financing is cheap but not significant for making huge investments on achieving superior operating profitability. Contradictorily, long-term financing such as long-term bank loans or share issues can significantly buffer the company profitability, especially during the time of crisis. As a result, companies tend to lean more on long-term financing to achieve their superior profitability.

Afza & Nazir (2007) investigated the relationship between the aggressiveness levels of working capital policy in term of financing policy with the profitability for 263 public limited companies, which are listed at Karachi Stock Exchange, for the period of 1998-2005. The study found a negative relationship between the aggressiveness of financing policy and the company profitability.

According to Afza & Nazir (2007), aggressive financing policy supports for the utilization of high levels of current liabilities versus long-term liabilities. At another way around, conservative financing policy accounts for a low level of current liabilities while getting more

financing from long-term debts or long-term capital (Afza & Nazir, 2007). The aggressiveness of financing policy can be depicted through the formula

$$\text{Financing Policy} = \frac{\text{Current Liabilities}^1}{\text{Total Liabilities}}$$

2.2 Distinction between profit and profitability of a company

In general, profit refers to the gain in business activity, which is served for the benefit of business owners. It is usually measured for a given period of time such as a financial year, and calculated by the revenues obtained from business activities minus the expenses used to achieve those revenues (Ildikó and Tamás, 2009).

$$\text{Profit} = \text{Revenues} - \text{Expenses}$$

There is several important profit measures in common use. Bodie, Kane and Marcus (2004) mention some of them as below:

- Gross Profit is calculated by Operating Revenue (Sales) minus Cost of Goods Sold;
- Operating Profit is remained with the company after the subtraction of total Operating Expenses (including Cost of Goods Sold, Selling, General and Administrative Expenses, Depreciation and Amortization and Other Expenses) from Operating Revenue;
- Earnings before Interest and Taxes (EBIT) are equal to Operating Profit plus Non-operating Profit. When a firm has zero Non-operating Profit, then Operating Profit is sometimes used as a synonym for EBIT. People usually miss-distinguish between those two types of profit;
- Net Profit is equal to EBIT minus Interest Expense and Income Tax Expense.

¹ A higher ratio accounts for a relatively aggressive financing policy (Afza & Nazir, 2007).

Table 2.1 Example of Statement of Income

STATEMENT OF INCOME	
Revenue	A
Sale Revenue	A
Operating Expenses	F = B + C + D + E
Cost of Goods Sold	B
Selling, General and Administrative Expenses	C
Depreciation and Amortization	D
Other Expenses	E
Operating Profit	G = A – F
Non-operating Profit	H
Earnings before Interest and Taxes (EBIT)	I = G + H
Interest Expense	J
Income Tax Expense	K
Net Profit	L = I – J – K

Source: Bodie, Kane and Marcus, 2004, p.452

Different from profit, profitability is interpreted as a ratio explaining the rate of some profit amount which is benchmarked against some point of reference such as Assets, Investment or Equity of the company. Percentage (%) is used as the unit measure of those ratios. As decision tools, profitability ratios can be used to assess the financial health of a business (Ildikó and Tamás, 2009).

$$\text{Profitability} = \frac{\text{Profit}}{\text{Base measurement}}$$

A business without profitability cannot survive whereas a business which is highly profitable is fully capable to reward its owners with a large investment return. Increasing profitability is one of the most important tasks of the business managers. They have been constantly looking for ways to improve their business profitability (Ildikó and Tamás, 2009).

2.3 Impact of working capital management on company profitability

2.3.1 Theoretical base

When the cash conversion cycle shortens, cash becomes free for other usages such as investing on equipment and infrastructure or innovating manufacturing and selling processes or lowering the total investments in current assets. It accordingly brings back

company with higher operating profitability. In contrast, when the cash conversion cycle lengthens, cash tied up in the firm's operation activities, leaving little chance for other investments of this cash flow. Company profitability is decreased as a result. In those cases, cash conversion cycle is said to have a negative relationship with company profitability.

On the other hand, cash conversion cycle can also have positive influence on company profitability. It could be interpreted through a chain of positive impacts of inventory period and accounts receivable period with a negative impact of accounts payable period on company profitability. The longer the inventory period, the lower the cost involved in procrastinating of goods and/or service supply. In the mean time, the longer the accounts receivable period, the higher credit sales earned. And the lower the accounts payable period, the higher reputation earned for borrowing opportunities. Converge the three effects into one place, we can explain for an increase in company profitability due to the long cash conversion cycle. In contrast, shortening the cash conversion cycle could harm the company profitability. The company could face inventory shortages as reducing inventory conversion period, lose good credit customers as reducing accounts receivable period, and hamper the its credit reputation as lengthening the accounts payable period. In those cases, cash conversion cycle is said to have a positive relationship with company profitability.

2.3.2 Empirical evidence

The results are quite mixed among researches. However, major studies conclude strong negative effects of inventory period (Hayajneh & Yassine, 2011; Garcia & Martinez, 2007; Padachi, 2006; Huynh & Su, 2010; Deloof, 2003); accounts receivable period (Gril, Biger & Mathur, 2010; Hayajneh & Yassine, 2011; Garcia & Martinez, 2007; Padachi, 2006; Huynh & Su, 2010; Deloof, 2003) and cash conversion cycle (Huynh & Su, 2010 ; Hayajneh & Yassine, 2011; Garcia & Martinez, 2007) whereas a positive effect of accounts payable period (Huynh & Su, 2010) on company profitability. In contrast, there are other few studies provided totally different results, including positive influences of inventory period (Nobanee, 2009); accounts receivable period (Nobanee, 2009) and cash conversion cycle (Nobanee, 2009; Gril, Biger & Mathur, 2010) whereas a negative effect of accounts payable period (Nobanee, 2009; Hayajneh & Yassine, 2011) on company profitability.

In addition, firm size (Deloof, 2003; Huynh & Su, 2010; Padachi, 2006; Garcia & Martinez, 2007; Hayajneh & Yassine, 2011) and sales growth (Deloof, 2003; Garcia & Martinez, 2007;

Nobanee, 2009; Hayajneh & Yassine, 2011) were all concluded to have positive influence on company profitability.

Due to the results for WCM's influence on company profitability are mixed across countries, we need to empirically investigate this influence specifically to the Netherlands in order to provide reference for Dutch companies on how to effectively manage their working capital for their profitability's enhancement.

To conclude, as finishing this chapter, I have equipped readers with a general background in order to further investigate my research. They can now understand what working capital management is about by the section 2.1; how profitability of a company can be identified in different aspects by the section 2.2; and how working capital management can influence company profitability in both theoretical and empirical basis by last section 2.3.

3. DATA AND VARIABLES

This chapter describes rationales and techniques used for targeting the study population, collecting data and choosing variables. It aims at identifying most of important terminologies including in the problem statement as discussed in the section 1.2: “WHAT IS THE INFLUENCE OF **WORKING CAPITAL MANAGEMENT ON PROFITABILITY OF DUTCH NON-FINANCIAL LISTED COMPANIES** DURING THE PERIOD 2006-2010?” Section 3.1 and 3.2 identifies what are “Dutch Non-financial Listed Companies”; how to filter those types of company and how to collect their financial data. The last section 3.3 presents its choice of “Profitability” in term of dependent variable and “Working Capital Management” in term of independent variables of the study. Say differently, problem statement describes the rationales behind my choice of data population and variables in the context of this chapter.

3.1 Target population

This section shall explicitly define the target population being studied. The study targets on analyzing Dutch companies listed on Euronext Amsterdam. However, the study limits itself within Dutch non-financial firms. We need to provide a precise definition for those types of firms. It is because a good operational definition is critical in choosing the relevant population (Cooper & Schindler, 2011, p370). Defined by the Business Dictionary, non-financial industry relates firms which do not deal with financial or investment-related goods or services. Accordingly, credit unions, banks, credit card companies, insurance companies, consumer finance companies, stock brokerages, investment funds or government-sponsored enterprises shall be also excluded from the target study population because of their exceptional operating characteristics. In addition, firms dedicated to hotel, restaurant, telecommunication, education and health activities are eliminated from the study also because of their abnormal operating activities. As a result, the research categorizes itself into five main sectors including manufacturing, service, transport, trading and construction. However, the number of companies included in the later three sectors is all insignificant (i.e. lower than 10 companies for each sector). Therefore the study decides to focus on two main sectors including manufacturing and service. After filtering out those firms which do not have financial reports for fully five research years and those which do not have sales and/or cost of sales, the study finally comes up with complete data of 62 among more than 100

Dutch listed firms. The table 3.1 depicts number of companies by sector included in the study.

Table 3.1 Number of Companies by Major Sector

SECTOR	NUMBER OF COMPANIES
Manufacturing	39
Service	23
TOTAL	62

3.2 Data collection

According to Hussey & Hussey (1997), data refers to known facts or things used as a basic for inference or reckoning. Data can be described as either qualitative or quantitative. In the context of this thesis, I shall use quantitative data involved in quantitative research explaining phenomena by analyzing numerical data, using mathematically-based methods (in particular statistics) (Creswell, 1994). In addition, the quantitative data used in this thesis shall be also a source of secondary data collected from annual financial reports of the target companies depicted in section 3.1 above. Zikmund (2003) defined secondary data as data gathered and recorded by someone else prior to the current needs of the researchers. Secondary data are usually historical, already assembled, and do not require access to respondents or subjects. Financial reports of the research companies have been prepared annually and been all publicized. Therefore, I can collect companies' financial figures following a procedure depicted as follows:

Firstly, I collect a list of all Dutch listed companies through the website <http://jaarverslag.info> which provides annual financial reports mostly in 2010 and links to individual company websites.

Secondly, I shall focus on collecting financial reports of the target population by jumping into each company website.

Finally, financial figures for the period 2006-2010 which are used for the research purpose shall be gathered through individual company reports by manually. There are few companies of which financial statements are reported in currency units different from Euro.

Accordingly, those figures shall be converted into Euro currency by using exchange rates listed on the date of fiscal years ended per companies. Please see appendix 2 for the name of those companies.

The most difficulty I have met during the course of collecting data is that I have to collect all data by manual, which takes me around one hour per one company's data completion. In addition, another obstacle is there are some companies not providing financial reports in English. Then it also takes me time to convert the relevant data from Dutch into English.

3.3 Choosing variables

In order to analyze the effects of WCM on company profitability, I select independent variables, dependent variable and control variables as depicted on the following sub-sections. Table 3.2 summarizes which variables are chosen for the study.

3.3.1 Independent variables

To measure the WCM's efficiency of a company, the research chooses Cash Conversion Cycle (CCC), Number of Days Inventory (IV), Number of Days Accounts Receivables (AR) and Number of Days Accounts Payables (AP) as independent variables. Please refer the definition and calculation of those variables mentioned in sub-section 2.1.2/c. Those variables are seen as the most suitable proxies measuring the WCM's efficiency. Cash conversion cycle is vital because it tells us how cash is moving through a company in terms of duration. The cycle starts with a cash outflow by which the company pays back to suppliers for obtaining raw materials then ends with a cash inflow when receiving money back from its customers for selling its goods or services. In other words, the cycle indicates the number of days it takes the company to convert its operating activities requiring cash into cash returns. If this number of days can be reduced to an optimal level which is specific to every company, then cash is returned faster to the company, increasing its liquidity and profitability as a result. To have an optimal cash conversion cycle, companies should pay attention to managing each individual processing period effectively, say, number of days inventory, number of days accounts receivable and number of days accounts payable. Therefore, this research studies how managing those periods can influence the company's profitability. Additionally, that choice is of consistence with a majority of researches found in previous literature (DeLoof, 2003; Huynh & Su, 2010; Padachi, 2006; Garcia-Teruel & Martinez-Solano, 2007; Sharma & Kumar, 2011; Gril, Biger & Mathur, 2010; Hayajneh & Yassine 2011).

3.3.2 Dependent variable

To measure the firm profitability, return on assets (ROA) is chosen as a dependent variable. It equals to sales minus operating expenses, divided by total assets minus financial assets. In other words, it is calculated as operating income divided by non-financial assets. The rationale for that choice will be discussed in terms of why choosing the denominator as the operating income and choosing the nominator as non-financial assets. Regarding calculating the numerator of ROA, I do not either use EBIT (as chosen by Padachi, 2006; Sharma & Kumar, 2011 and Garcia-Teruel & Martinez- Solano 2007) or net operating income (Hayajneh & Yassine, 2011) because my main research purpose is to merely measure the impact of WCM on firm's operating profitability. Thus, I try to exclude all non-operating incomes, which would be counted in case of using net income or even EBIT. Huynh & Su (2010); Gril, Biger & Mathur (2010) and Lazaridis & Tryfonidis (2006) used sales minus costs of goods sold (COGS), different from operating expenses which also include general & administration (G&A), selling, depreciation/amortization and other operating expenses. Deloof (2003) used sales minus cash COGS, say sales minus COGS plus depreciation/amortization expenses. Different from all others mentioned, the numerator for my dependent variable shall be sales minus all operating expenses including COGS, G&A, selling, depreciation/amortization and other operating expenses. It is because working capital of a company is not only used for manufacturing or selling products, but also for undertaking activities to improve business operations and to remain competitive, such as activities for product development or exploring new markets, etc. (mentioned in section 2.1.1/b). As a result, all related operating expenses should be mentioned as a part of company profitability which may be influenced by WCM practices. To calculate the denominator of ROA, I exclude financial assets in order to mitigate the participation of any financial activity from operating activity that might affect overall rate of returns (Gril, Biger & Mathur, 2010). This choice is consistent with Gril, Biger & Mathur (2010); Deloof (2003) and Huynh & Su (2010).

3.3.3 Control variables

Based on previous researches, firm size (Deloof, 2003; Huynh & Su, 2010; Padachi, 2006; Garcia & Martinez, 2007; Sharma & Kumar, 2011), sales growth (Deloof, 2003; Padachi, 2006; Garcia-Teruel & Martinez- Solano, 2007; Nobanee, 2009), and the ratio of current liabilities to total assets (Afza & Nazir, 2007) are considered as control variables. Those

proxies are chosen as control variables for this research because they are inherent firm's characteristics which can also affect company profitability in addition to the effect of independent variables as mentioned above. Accordingly, they shall be held constant across regressions to more empower the regression results regarding the effect of independent variables on dependent variable. And it is also because those control variables are mostly chosen by other researches. Therefore we could rely on their validity.

Firm size is measured by the logarithm of sales (LN); sales growth is defined as sales of current year minus previous year and divided by previous year (SG); the ratio of current liabilities to total assets measures the degree of aggressive financing policy, with a high ratio being relatively more aggressive (AG).

Table 3.2 Variables Chosen for the Study

TYPE OF VARIABLE	NAME OF VARIABLE	HOW TO MEASURE
Dependent variable	Return on Assets (ROA)	$\frac{\text{Sales} - \text{Total Operating Expenses}}{\text{Total Assets} - \text{Financial Assests}}$
Independent variables	Number of Days Inventory (IV)	$\frac{\text{Inventories}}{\text{Costs of Good Sold}/365}$
	Number of Days Accounts Receivable (AR)	$\frac{\text{Receivables}}{\text{Net Sales}/365}$
	Number of Days Accounts Payable (AP)	$\frac{\text{Trade Payables}}{\text{Costs of Good Sold}/365}$
	Cash Conversion Cycle (CCC)	Number of Days Inventory + Number of Days Accounts Receivable - Number of Days Accounts Payable
Control variables	Firm Size (LN)	Logarithm of sales
	Sales Growth (SG)	$\frac{\text{Sales of Current Year} - \text{Sales of Previous Year}}{\text{Sales of Previous Year}}$
	Ratio of current liabilities to total assets (AG)	$\frac{\text{Current Liabilities}}{\text{Total Assets}}$

To conclude, as finishing this chapter, most of important terminologies included in my problem statement were respectively clarified. Initially, the two terminologies of “Working Capital Management” and “Company Profitability” were identified through the way on how I chose my independent and dependent variables in section 3.3. Finally, “Dutch Non-financial Listed Companies” was clearly defined by the way on how I filtered manufacturing and service companies among the whole population in section 3.1 and 3.2.

4. METHODOLOGY

This chapter is going to explain which techniques and procedures that the study uses to describe the sample and to examine the data. There are three main data analyses shall be employed. Firstly, the study uses descriptive statistics to describe the sample collected for all two sectors. This statistics technique is necessary for equipping researchers with a general overview on their sample's characteristics before conducting their main analyses. Secondly, it uses Pearson correlation analysis to define whether working capital management is associated with company profitability. Next, the study shall further analyze the impact of working capital management on company profitability by using multivariate models, using Fixed Effects framework and pooled Ordinary Least Square for panel data of 62 companies across five years of research. Those two models are kinds of regression analysis which I use to answer my problem statement. It is because in order to determine whether working capital management can influence company profitability, the regression analysis must be used to identify that cause-and-effect relationship. Finally, there are other diagnostic tests to determine the problems of multicollinearity, outliers and heterosdasticity in regression analyses shall be employed. It is for strengthening the regression outcomes. The rationale for applying those all kinds of analysis or test together with the way to construct them shall be clearly discussed in the subsections below.

After reading this chapter, readers are expected to see the reasons why I choose those types of data analysis to answer my problem statement and to obtain a general awareness on those statistical techniques.

4.1 Descriptive statistics

Descriptive statistics are used to describe and discuss characteristics of a data set more generally and orderly than using raw data alone. They are routinely used in reports containing a significant amount of qualitative or quantitative data. These statistics are essential for using all normative and cause-and-effect statistical techniques effectively, including hypothesis testing, correlation, and regression analysis. Unless those techniques are fully grasped, data can be easily misunderstood and consequentially misrepresented (Texas State Auditor's Office, rev. 5/95). Within the context of data description, I choose mean and median to measure the central tendency whereas choosing standard deviation to measure dispersion of the studied sample. Measures of central tendency indicate the middle

and commonly occurring points in a data set, in which mean is the average value of a data set whereas median is middle value(s) standing in this data set. Dispersion measures indicate how spread out the data is around the mean, in which standard deviation is the average difference between observed values and the mean (Texas State Auditor's Office, rev. 5/95).

4.2 Correlation analysis

The study uses Pearson correlation analysis to define the association between firm profitability and working capital management. There is a majority of previous researches have chosen to employ Pearson correlation analysis to first see the correlation between variables before conducting regression analysis(es) (Deloof, 2003; Huynh & Su, 2010; Padachi 2006; Zariyawati, Annuar & Abdul Rahim, 2009; Grill, Biger & Mathur, 2010; Hayajneh, & Yassine, 2011). However, one of the shortcomings of correlation analysis is that it cannot identify a cause-and-effect relationship. In addition, examining simple bivariate correlation in a conventional matrix does not take into account each variable's correlation with all other explanatory variables (Padachi, 2006). It is accordingly the consequence for employing regression analyses as the next step.

4.3 Regression analysis

4.3.1 Literature review on regression models employed by other scholars

To investigate the influence of working capital management on company profitability, other researchers have employed different regression analyses with different models. Huynh & Su (2010) only chose Fixed Effects Model (FEM) to conduct regression analysis for investigating the impact of WCM on corporate profitability. According to them, FEM assumes firm specific intercepts which capture the effects of variables that are particular to each firm and constant over time. Different from Huynh & Su (2010), Sharma & Kumar (2011) selected Ordinary Least Square (OLS) as their choice for conducting regression analysis. As a combination, Deloof (2003); Garcia-Teruel & Martinez- Solano (2007) and Padachi (2006) used both FEM and OLS to investigate the impact of WCM on corporate profitability.

The literature review shows that pooled OLS and FEM are mostly chosen to examine the impact of WCM on company profit. In the context of this thesis, I shall also choose those two types of analyses together with explaining the rationale behind my choice.

4.3.2 Pooled Ordinary Least Square regression

Pooled OLS regression is simply a linear regression applied to the whole data set. One of the biggest advantages of pooled OLS method is that it relaxes the restriction of an enough large data set (Schmidt 1997, 156). Therefore, with an average data set compared to other relevant studies, this regression method appears to be suitable for mine. However, this regression is not considering different individuals across time periods. In other words, it is not considering the panel nature of the dataset (Thierry, 2006-2007). Panel data, also called longitudinal data or cross-sectional time series data, are data where multiple cases (people, firms, countries, etc) are observed at different periods of time. Accordingly, data obtained in this study are classified as panel data where we observe 62 different companies across five years of research. Accordingly, another regression is additionally chosen to strengthen the research for that panel data. There are several techniques to analyze panel data, in which Fixed Effects Model or Random Effects Model (REM) are usually chosen because of their advantages.

4.3.3 Fixed Effects Model regression

Use FEM whenever you are only interested in analyzing the impact of variables that vary over time. FEM explore the relationship between predictor (independent) and outcome (dependent) variables within an entity (country, person, company and so forth). When using FEM, we assume that something which is time-invariant characteristics within the entity may impact or bias the predictor or outcome variables and we need to control for this. FEM remove the effect of those time-invariant characteristics from the predictor variables then we can assess the net effect of predictor variables on the outcome variable. Another important assumption of the FEM is that those characteristics are unique to the entity and should be correlated with other individual characteristics. If they are not correlated then FEM is not suitable since inferences may not be correct and you need to model that relationship by probably using REM. This is the main rationale for the Hausman (1978) test being employed (Kohler & Frauke, 2009).

4.3.4 Why Fixed Effects instead of Random Effects? - Rationale for employing a Hausman test

Hausman test examines whether the unique errors (η_i) are correlated with the regressors (independent variables). The null hypothesis for this test is they are not correlated to each

other $E(\eta_i/x_{it}) = 0$. If the test rejects this null hypothesis then the decision is taken to employ a FEM (Padachi, 2006). If the effects are considered to be fixed, the model is then estimated by OLS. If the null hypothesis is not rejected, we would have random effects, and the model is then estimated by Generalized Least Square (GLS) (Garcia & Martinez, 2007). The p-value obtained from Hausman test is lower than 0.05, rejecting the null hypothesis and accordingly indicating that there is a significant correlation between η_i and regressors. Accordingly, the FEM shall be employed.

To conduct regression analyses using OLS and FEM, I shall run four models in which each independent variable is being alternated respectively while keeping control variables constant. It is because I would like to determine the influence of working capital management on company profitability through finding the influence of each component of working capital management individually. This choice of determining separate influences is of consistent with all researchers found in my literature review (Gril, Biger & Mathur (2010); Deloof, 2003; Huynh & Su, 2010; Padachi, 2006; Garcia & Martinez, 2007; Nobanee, 2009; Hayajneh & Yassine, 2011). Those analyses shall be first applied to all companies included in two main sectors then being repeated for each sector. In OLS regressions, I also include time dummies and industry dummies as conducted for FEM regressions.

✚ Model 1:

$$ROA_{it} = \beta_0 + \beta_1 (IV_{it}) + \beta_2 (LN_{it}) + \beta_3 (SG_{it}) + \beta_4 (AG_{it}) + \eta_i + \lambda_i + \Upsilon_i + \varepsilon_{it}$$

✚ Model 2

$$ROA_{it} = \beta_0 + \beta_1 (AR_{it}) + \beta_2 (LN_{it}) + \beta_3 (SG_{it}) + \beta_4 (AG_{it}) + \eta_i + \lambda_i + \Upsilon_i + \varepsilon_{it}$$

✚ Model 3

$$ROA_{it} = \beta_0 + \beta_1 (AP_{it}) + \beta_2 (LN_{it}) + \beta_3 (SG_{it}) + \beta_4 (AG_{it}) + \eta_i + \lambda_i + \Upsilon_i + \varepsilon_{it}$$

✚ Model 4

$$ROA_{it} = \beta_0 + \beta_1 (CCC_{it}) + \beta_2 (LN_{it}) + \beta_3 (SG_{it}) + \beta_4 (AG_{it}) + \eta_i + \lambda_i + \Upsilon_i + \varepsilon_{it}$$

Note:

- **ROA_{it}**: Return on Assets of firm i in year t;
- **β₀**: Intercept coefficient of firm;
- **β₁**: Slope coefficient of independent variables (IV, AR, AP and CCC);
- **IV_{it}**: Inventory period of firm i in year t;
- **AR_{it}**: Receivables period of firm i in year t;
- **AP_{it}**: Payable period of firm i in year t;
- **CCC_{it}**: Cash conversion cycle of firm i in year t;
- **β₂**: Slope coefficient of natural logarithm of sales (LN);
- **LN_{it}**: Natural logarithm of sales of firm i in year t;
- **β₃**: Slope coefficient of sales growth (SG);
- **SG_{it}**: Growth of sales of firm i in year t;
- **β₄**: Slope coefficient of current liabilities to total assets, measuring aggressiveness of financing policy (AG);
- **AG_{it}**: Current liabilities to total assets of firm i in year t;
- **η_i**: unobservable heterogeneity, measuring the particular characteristics of each firm
- **λ_i**: time dummy
- **¥_i**: industry dummy
- **ε_{it}**: Residual errors of firm i in year t.

4.3.5 Other diagnostic tests for regression models**a. Detect multicollinearity problem**

I detect multicollinearity problem by evaluating VIF estimates. Multicollinearity is a statistical phenomenon in which two or more independent variables in a multiple regression model are highly correlated. In this situation the coefficient estimates may change erratically in response to small changes in the model or the data. Multicollinearity does not reduce the predictive power or reliability of the model as a whole, at least within the sample data themselves; it only affects calculations regarding individual independent variables. That is, a multiple regression model with correlated independent variables can indicate how well the entire bundle of independent variables predicts the dependent variable, but it may not give

valid results about any individual independent variable, or about which independent variables are redundant with respect to others (Farrar & Glauber, 1967).

$$\text{VIF} = \frac{1}{1 - R_j^2}$$

where R_j^2 is the coefficient of determination of a regression of independent variable j on all the other independent variables.

A VIF of 5 or 10 and above indicates a multicollinearity problem (O'Brien, 2007). This test was also employed by Huynh & Su (2010) and Grill, Biger and Mathur (2010).

b. Detect and correct outliers problem

An outlier refers to an observation that is numerically distant from the rest of the data (Barnett Lewis, 1994). In regression analysis outliers can distort regression lines and coefficients (Gordon, 1998). Accordingly it can mislead the results as a consequence. Detecting and correcting outliers that violate the normality assumption is one of the most crucial statistical diagnostics for OLS regression models (Choi, 2009). Accordingly, I shall solve that problem in terms of excluding outliers by using Cook's (1977) distance statistics. By that method, I can calculate the influence of each observation on the estimated coefficients using Cook's D. Values of Cook's D that are higher than $4/N$ are considered large, where N is the number of observations used in the OLS regressions. Then I discard the observations that have values larger than Cook's D and re-estimate the model.

c. Detect and correct heteroscedasticity problem

In all regressions, I use White test to determine the presence of heteroscedasticity problem then re-calculating standard errors for that problem in case of its presence. Heteroskedasticity occurs when the variance of the error terms differ across observations. The standard errors of the estimates are biased if we have heteroskedasticity (Christopher, 2006). This in turn leads to bias in test statistics and confidence intervals. White test is accordingly chosen to test the heteroscedasticity for all OLS regressions.

If the result rejects the null hypothesis of homoscedasticity of all OLS regressions, demonstrating that there exists heteroscedasticity problem for OLS regressions. I shall correct this problem by using robust standard errors by adding the parameter of robust to every regression. The robust option relaxes the assumption that the errors are identically

distributed made by OLS regression. It does not change coefficient estimates, but the test statistics will give reasonably accurate p-values because the standard errors are changed.

To conclude, as finishing this chapter, my last important terminology included in the problem statement “influence” (of working capital management) was clearly discussed by the reason why I chose regression analysis as my main statistical data analysis technique.

5. ANALYSIS AND FINDINGS

This chapter provides empirical findings obtained from those analyses which were discussed in Methodology part. I use the statistic software STATA version 10 to conduct those analyses. This chapter expects to provide readers with the results obtained from my empirical analyses which are conducted for the whole sample and for each sector. More importantly, the rationales behind those results are also discussed (i.e. why some influences of working capital management on company profitability are shown to be positive, why some are shown negative and even why others are demonstrated not to have any influence at all).

As discussed in the Research Objective in section 1.3, the influences of cash conversion cycle, number of days inventory and number of days accounts receivable on company profitability are expected to be negative whereas a positive influence of number of days account payable is anticipated. The rationale is that cash flow could be returned to the company faster when having these periods change in those directions.

5.1 Descriptive statistics

Table 5.1 provides descriptive statistics about all variables of all manufacturing and service sectors being studied. There are quite huge differences between the minimum and maximum values in number of days inventories, number of days accounts payable as well as cash conversion cycle among studied companies. Some company has zero day to order raw materials, produce and sell its product whereas it takes up to 877.86 days for other to conduct the same procedure. The rationale may due to the diffusion in the product nature, the automation level and the technology used in the manufacturing process as well as the capacity for having products ready to provide to customers among those companies. On average, companies included in this research spend 83.51 days for their inventory period and the standard deviation counts nearly 95 days. Regarding number of days accounts receivable, zero day is the minimum and 194.26 days is the maximum period for companies to collect trade debts from their customers. It may explain the differences in commercial policy, competitive pressure or inefficient management among those companies. According to the statistics, it takes them 61.77 days on average to collect their cash receipts while the standard deviation of this measure is around 29.91 days. For payable period, the minimum and maximum numbers of days are 3.49 and 906.70, respectively, accounting for 113.16

days of standard deviation. Companies averagely procrastinate paying their suppliers up to 98.37 days. Finally, people see the huge diffusion between the minimum and the maximum value in the cash conversion cycle. Some company uses up 976 days whereas other exposes a negative value of -780.55 days. On average, companies take 51.94 days to complete one cycle from paying cash for materials to suppliers until collecting cash from their customers. Standard deviation of cash conversion cycle accordingly ends up 141.66 days.

Regarding the values of return on assets, certain firms experience a loss in their profitability, resulting in -232% return on assets whereas some earn a very ideal ratio of more than 100%, maximum as 121%. On average, firms within the scope of study can gain 6.87% return on their assets. Their sales growth accordingly ranges from 100% loss to 218% gain and ends up 5.05% on average.

The ratio of current liabilities to total assets measures the degree of aggressive financing policy, with a higher ratio being relatively more aggressive. This ratio ranges from 7% to 83% and counts 35.24% averagely. The standard deviation for that measure is not quite high, explaining almost companies within the studied population have a relatively equivalent level of being aggressive in their own financing policy. They are not too aggressive in using current liabilities to finance their operations. They tend to lean on long-term external finance to support their daily operating activities.

As indicated in the result, the manufacturing sector is currently doing well with an average ROA of 9.48% and growth of sales accounts for 6.23% annually. In the mean time, we only find 2.44% ROA and 3.04% sales growth for service companies. Sales, which is used to measure firm size, is found significantly different among two sectors, say, 12,991,129 thousand Euros for manufacturing whereas only 1,254,012 thousand Euros for service companies on average, nearly 90% less. Moreover, the significant difference is witnessed between the minimum and maximum values within each sector. As a result, sales are then transformed into the logarithm indicator, as the proxy to measure firm size in order to avoid the presence of outliers. The degree of aggressive financing policy of those two sectors is also quite equivalent to each other, where those policies mostly lean on long-term liabilities or debts financing with more than 60% over their total assets on average.

Regarding the cash conversion cycle, manufacturing firms has the longest number of cash conversion days, say, 94.30 days, whereas we find a negative value for those operating in

service with -20.15 days. To partially explain for that, we can see firms doing manufacturing job usually take quite a long time, 108.78 days, to order raw materials, to produce and bring their goods into the market. In contrast, it only takes service companies 41.10 days to perform such procedure because they do not need to buy materials and involve in production process. For many service firms, they do not have inventories or those stocks only account for a very small portion of total assets (if any). However, those companies grant their customers the longest time to pay for receiving their service and also delay their payment to suppliers to the longest period as well, say, 73.81 days for accounts receivable period and 135.42 days for accounts payable period, respectively.

Table 5.1 Descriptive Statistics

39 Manufacturing Firms and 23 Service Firms Listed in the Netherlands, 2006-2010: 310 Firm-year Observation

VARIABLES		IV	AR	AP	CCC	ROA	Sales (thousands EUR)	SG	AG
ALL	MEAN	83.51	61.77	98.37	51.94	6.87%	8,637,037	5.05%	35.24 %
	MEDIAN	63.91	58.39	64.28	58.88	8.00%	701,281	3.00%	33%
	ST.DV	95.00	29.91	113.16	141.66	24.68%	35,961,632	35.69%	13.43 %
	MIN	0	0	3.49	-780.55	-232%	-7	-100%	7%
	MAX	876.86	194.26	906.70	976.16	121%	330,019,920	218%	83%
MANUFACTURING	MEAN	108.78	54.73	76.70	94.30	9.48%	12,991,129	6.23%	32.67 %
	MEDIAN	91.57	53.02	60.02	78.43	8.00%	1,440,347	3.00%	31%
	ST.DV	90.53	21.80	69.31	99.09	14.42%	44,771,178	37.68%	12.57 %
	MIN	0	0	10.51	-131.52	-18%	3,826	-75%	100%
	MAX	876.86	166.62	514.50	976.16	121%	330,019,920	218%	75%
SERVICE	MEAN	41.10	73.81	135.42	-20.15	2.44%	1,254,012	3.04%	39.59 %
	MEDIAN	10.19	69.65	97.32	10.06	7.00%	260,973	2.00%	38%
	ST.DV	87.20	37.26	156.39	171.56	35.57%	2,616,659	32.13%	13.78 %
	MIN	0	0	3.49	-780.55	-232%	-7	-100%	7%
	MAX	444.99	194.26	906.70	413.19	103%	14,179,300	174%	83%

The descriptive statistics indicates a presence of outliers of some observations due to the huge intervals between maximum and minimum values.

The first two extremes are under number of days inventory variable, where the maximum number of days is 876.86 belonging to Porceleyne company in 2008 whereas the minimum one is zero dedicated to other one manufacturing company and ten service companies. To explain the maximum extreme for days in inventory, people witnessed the severe financial crisis in 2008, which may cause the manufacturing company as Porceleyne to experience excessive inventories of more than nine million euro whereas its daily costs for goods which can be sold out was only 10 Euros. It means Porceleyne could only sell few goods. The company needed a long time to have all goods sold-out and had a long inventory period as a result. Regarding the minimum extreme, 10 over 23 service companies experienced zero inventories during all the five years of research, leading them to have zero days in consuming their inventories. It could be the case for companies operating in service field, where intangibility is the inherent characteristics of their goods. Most of them do not need to involve in production process to create tangible things and accordingly do not need to spend time to buy inventories then transform them into products and sell them in the market.

The second two extremes are dedicated to service sector with days in accounts payable. The maximum extreme is 906.70 days belonging to Nedsense, a computer service company. This company has tended to delay paying back to suppliers for many years since 2007 with usual delaying days was more than 700 days. Its cash conversion cycle has been significantly negative since this year also (always lower than minus 500 days). This company also has the minimum cash conversion cycle among all companies within sample, minus 780.55 in 2010. As discussed in literature review, a negative cash conversion cycle might be a good signal, saying that your company has more free cash to invest elsewhere. However, Nedsense has been experiencing lost in profitability for years, meaning a negative cash conversion cycle does not always account for an upward trend in a company's profitability. In another way around, Porceleyne has the longest cash conversion cycle among the whole sample, 906.70 days in 2006, but experienced a positive return on assets in this year. This positively long cash conversion cycle was due to its long inventory period which was five times multiplied by the very short accounts payable period.

Compared with other researches, I also see this problem in the study of Hayajneh & Yassine, (2011) where the cash conversion cycle of 53 Jordanian manufacturing firms ranked from

minus 1636 days to plus 1885.61 days within the period 2000-2006, or from minus 155.74 to plus 515.25 days for 1,009 Belgium firms from 1992 to 1996 (Deloof, 2003). But they did not mention how they solved their outliers in their researches. I will take this problem into account when running my OLS regressions and correct by adding robust parameter as discussed in the Methodology part.

5.2 Correlation analysis

Table 5.2 depicts the result obtained from Pearson correlation analysis for all firms dedicated to manufacturing and service sectors. The result shows negative relations between firm ROA with AR and AP, respectively, with the correlation coefficients of -0.31 and -0.16, both reaching the significant level at $\alpha=5\%$. Those explain that allowing customers to pay back longer and/or delaying payment to suppliers longer may associate with a reduction on company profitability. The correlation analysis also results in strongly positive association between firm ROA and CCC with the coefficients of -0.11 and p-value accounts for a significant level at $\alpha=10\%$. Accordingly, any cash conversion cycle lengthening can involve in an increase in company profitability and vice versa for 90% of the cases.

The result additionally indicates a negative correlation between AG and firm ROA. The correlation coefficient of that relationship is -0.12 and its p-value counts 0.03. It reaches the significant level at $\alpha=5\%$. Given the result, the more aggressive the company's financing policy, the lower the company's profitability and vice versa. Moreover, significantly positive correlations at level $\alpha=5\%$ are both found for the relationships between firm ROA with LN and with SG with 0.23 and 0.20 coefficients, respectively. The indication is that the bigger the firm size and/or the annual growth of sales, the higher the firm profitability and vice versa.

Table 5.2 Pearson Correlation Coefficients

39 Manufacturing Firms and 23 Service Firms Listed in the Netherlands, 2006-2010: 310 Firm-year Observation

VAR.	IV	AR	AP	CCC	ROA	LN	SG	AG
IV	1.000							
AR	0.005	1.000						
AP	0.103**	0.410*	1.000					
CCC	0.635*	-0.157*	-0.601*	1.000				
ROA	0.078	-0.315*	-0.159*	0.109**	1.000			
LN	-0.015	-0.286*	-0.285*	0.089	0.231*	1.000		
SG	0.141*	-0.039	-0.050	0.127*	0.199*	0.063	1.000	
AG	-0.082	0.138*	0.091	-0.149*	-0.124*	-0.116*	0.056	1.000

**Significant level at $\alpha=5\%$*

*** Significant level at $\alpha=10\%$*

The correlation matrix shows significant correlations among predictors, which can cause a problem of multicollinearity. However, the result from VIF calculations indicates that all predictors have that figure which is smaller than 2, demonstrating an absolute absence of multicollinearity between the predictors in all the regression models.

5.3 Regression analysis

In this section, regression analyses including FEM and OLS shall be employed for each sector and for the whole sample. Table 5.5 provides summaries of results obtained from those analyses.

5.3.1 Regression results for all two sectors

As indicated in table 5.3, the four regression analyses from FEM show significantly negative impact of account receivable period on company's return on assets. When reducing the time in which money is tied on customer hands, firms can have more free cash on their accounts in order to innovate their processes of producing and selling goods or providing services. Thanks to that, they can earn more operating profit because of obtaining more income whereas lessening more expense. In the mean time, the company's non-financial assets decrease due to the decrease of its account receivables. Consequentially, the operating

profit over non-financial assets of the company should increase. The result is consistent with major researches (Shin & Soenen, 1998; Deloof, 2003; Huynh & Su, 2010; Padachi, 2006; Garcia & Martinez, 2007).

Additionally, firm's return on assets also strongly increases with an increase in firm size measured by logarithm of sales and with a decrease in aggressive level of company financing policy. Consistently, Deloof (2003), Huynh & Su (2010), Padachi (2006) and Garcia & Martinez (2007) all concluded the ability of firm size in increasing company profitability. In this case, the larger the firm size, the higher benefit from economies of scale the firm can earn. This benefit importantly enhances firm's operating profitability by expanding the company's scale of production while reducing the average unit costs of production. And the negative effect of aggressive financing policy is also confirmed by the research of Afza & Nazir (2007). It suggests companies should not lean too much on short-term financing which is cheap but not significant for making huge investments in achieving superior operating profitability. Contradictorily, long-term financing such as long-term bank loans or share issues, and so forth can significantly buffer the company profitability, especially during the time of crisis. For example, long-term financing can create huge investments in building innovative plants or buying high-technology equipments in order to significantly enhance the company operating profitability through innovating its own manufacturing process.

Different from FEM, OLS regression (7) shows a significantly negative effect of accounts payable period on firm profitability. Paying back to suppliers faster can help firms receive a certain sum of trade discounts for paying on time or even a higher amount for paying in advance. Those discount amounts can accordingly help buffer the firm profitability indirectly through operating income instead of directly through financial income in term of income received from trade discounts. The rationale could be explained similar to the ROA's increase caused by the decrease in accounts receivable period as mentioned above. In this case, the money received from trade discounts act as a potential investment in operating profit while the decrease in accounts payable are explained as the decrease in non-financial assets. Companies can save up such free cash for making future investments in increasing their operating profit. As similar to FEM, results from OLS models also consistently indicate that firm's ROA can increase with firm size and decrease with aggressive financing policy significantly. In addition, firm profitability can also climb up with an increase in growth of

sales. The rationale is that those firms which possess some advantages such as monopoly position or bargaining power thanks to growth through economies of scale, a positive relationship between growth and profitability could be explained (Külter & Demirgüneş, 2007).

**Table 5.3 Influence of Working Capital Management on Company Profitability
39 Manufacturing Firms and 23 Service Firms Listed in the Netherlands, 2006-2010: 310
Firm-year Observation**

INDEPENDENT VARIABLES	Fixed Effects				Pooled OLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IV	-0.0002				0.00003			
AR		-0.0017*				-0.0003		
AP			-0.00007				-0.0001*	
CCC				-0.0003				0.0007
LN	0.201*	0.197*	0.192*	0.204*	0.013*	0.014*	0.013*	0.014*
SG	0.022	0.011	0.018	0.020	0.131*	0.114*	0.116*	0.113*
AG	-0.330*	-0.345*	-0.372*	-0.350*	-0.156*	-0.108**	-0.155*	-0.157*

* Significant level at 95%;

** Significant level at 90%

5.3.2 Analysis for each sector

a. Manufacturing sector

Regarding FEM regressions, the regression (1) indicates a significantly negative impact of IV on firm ROA. This implies a decrease in inventory period may help buffer the company profitability. In this respect, the negative relation could be explained that those manufacturing firms which speed up their stock consumption or their sales process can bring back their operating profit sooner while keeping their inventories level to decrease. Consequentially, the operating profit over non-financial assets of the company is increased. This is consistent with the result found for Jordanian manufacturing firms (Hayajneh & Yassine, 2011).

Regressions (2) and (3) indicate two significantly negative impacts of AR and AP on firm profitability. The rationale for those signs of impact can be discussed similarly as discussed in

section 5.3.1 (i.e. Companies earn more operating profitability thanks to having more free cash to invest elsewhere related to operating activities).

The regression (4) results in a significantly negative effect of CCC on ROA. The negative effect of CCC could be interpreted through a chain of negative effects of IV and AR together with a positive effect of AP on company profitability. The longer the inventory period, the slower the stock can be consumed. In the mean time, the longer the accounts receivable period and/or the shorter the accounts payable period, the lower the free cash companies can have to invest in operating activities. Converge the three effects together, we can explain for an increase in firm profitability due to the short cash conversion cycle. This result is different from the study of Grill, Biger & Mathur (2010), who found a positive relationship between CCC and profitability of American manufacturing firms. However, the result is in line with the findings of Hayajneh & Yassine (2011), providing empirical analysis for Jordanian manufacturing firms.

Besides, the result from FEM regressions shows a positive effect of SG on firm ROA. As sales growth increases, manufacturing firms shall reach a higher level of return on assets thanks to their monopoly position or bargaining power they have over their competitors in the market (as discussed in section 5.3.1).

Regression from (5) to (8) depicts results obtained from using OLS. As similar to FEM regression results, those results from OLS also indicate significantly negative effects of inventory period and cash conversion cycle whereas positive effect of sales growth on the company profitability. The rationale behind those signs of impact can be explained similarly to the explanation for FEM outcomes (i.e. Companies earn more operating profitability thanks to fastening sales process and having more free cash to invest elsewhere related to operating activities). In addition, OLS regressions indicate that firm profitability shall significantly increase with firm size which brings the benefit of economies of scale to the company.

**Table 5.4 Influence of Working Capital Management on Company Profitability
39 Manufacturing Listed in the Netherlands, 2006-2010: 195 Firm-year Observation**

INDEPENDENT VARIABLES	Fixed Effects				Pooled OLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IV	-0.0005*				-0.0001**			
AR		-0.0013*				-0.0003		
AP			-0.0004*				-0.0001	
CCC				-0.0007*				-0.0001*
LN	-0.075	-0.028	-0.061	-0.057	0.013*	0.011*	0.013*	0.012*
SG	0.090*	0.070*	0.079*	0.087*	0.082*	0.051*	0.077*	0.072*
AG	-0.044	-0.007	-0.043	-0.064	-0.052	-0.036	-0.051	-0.066

* Significant level at 95%;

** Significant level at 90%

b. Service sector

The regression analysis from FEM shows a negative influence of accounts receivable period on company's return on assets, reaching a significant level at $\alpha=10\%$. In other words, 90% possibility that a decrease in number of days receivable shall lead to an increase in company's return on assets for all firms operating in service sector. The explanation here is taken as similarly to how it was discussed in section 5.3.1 (i.e. Companies earn more operating profitability thanks to having more free cash to invest elsewhere related to operating activities).

Based on FEM results, policies regarding inventory management and trade creditor management do not work well in affecting service companies' profitability. It could be the case when service providers do not have much (if any) inventories in their hands because of the intangibility of goods they supply to their clients. Accordingly, any change in inventory management could neither buffer nor hamper the profitability of those companies. Moreover, looking at the balance sheets of service companies listed in the Netherlands, accounts payable in most of them occupy a pretty low proportion in total current liabilities, demonstrating that companies dedicated to this activity do not lean too much on short-term financing granted by their suppliers. As a result, trade credit management seems not able to influence the company profitability.

In addition, the FEM regression analysis in service sector also results in a positive effect of LN whereas a negative effect of AG on firm ROA with significant level. Consequentially, return on assets of service companies shall significantly increase with their firm size and decrease with a high aggressiveness level of financing policy. The rationale behind those signs of effect can also be referred to section 5.3.1 (i.e. Large firm size can bring the company benefit from economies of scale while short-term financing cannot help it make significant investment in order to have superior profitability).

Regarding results obtained from pool OLS regressions, positive impacts of inventory period and cash conversion cycle are found statistically significant. Those results are totally different from which I have found in the manufacturing sector and the whole sample. To explain for that, some service firms which maintain sufficiently high inventory levels reduce costs of possible interruptions in the service supplying process. This reduces the firm's supply costs and protects them against price fluctuations of input in the market, leading to an upward trend in their operating profitability. Inventories of service companies such as consultancy could be working paper in progress. If those consultancy firms can well prepare in advance certain templates for working papers which are common to some specific service offers, those reports can be handier to provide to their clients, reducing the cost of procrastination while enhancing operating income accordingly. The positive influence of CCC could be interpreted through a chain of positive impacts of IV and AR together with a negative impact of AP on company profitability. The longer the inventory period, the lower the cost involved in procrastinating of service supply. In the mean time, the longer the accounts receivable period, the higher credit sales earned. And the lower the accounts payable period, the higher level of short-term financing utilized. Converge the three effects together, we can explain for an increase in firm profitability due to the long cash conversion cycle.

Besides, sales growth has significantly positive impact on ROA whereas it has no impact in FEM regressions. However, I all find significantly positive influence of firm size and negative influence of aggressive financing policy in enhancing the company profitability in both regression analysis models. Please also refer to the discussion in section 5.3.1 to explain for those three signs of effect (i.e. Sale growth brings the monopoly position or bargaining

power while firm size brings the economies of scale benefit to the company whereas short-term financing prevent it from making significant investments in superior profitability).

**Table 5.5 Influence of Working Capital Management on Company Profitability
23 Service Companies Listed in the Netherlands, 2006-2010: 115 Firm-year Observation**

INDEPENDENT VARIABLES	Fixed Effects				Pooled OLS			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
IV	-0.0011				-0.0003*			
AR		-0.0027**				-0.0001		
AP			-0.0002				-0.0001	
CCC				-0.0003				-0.0002*
LN	0.345*	0.345*	0.341*	0.335*	0.026*	0.020*	0.021*	0.021*
SG	-0.024	-0.024	-0.011	-0.024	0.327*	0.327*	0.324*	0.328*
AG	-0.954*	-0.998*	-0.915*	-1.023*	-0.296*	-0.210	-0.292*	-0.298*

* Significant level at 95%;

** Significant level at 90%

Table 5.6 Summaries of Regression Results

SECTOR	SIGNIFICANT INFLUENCE			
	FIXED EFFECTS MODEL		ORDINARY LEAST SQUARE	
	NEGATIVE	POSITIVE	NEGATIVE	POSITIVE
ALL	AR	LN	AP	LN
	AG		AG	SG
MANUFACTURING	IV	SG	IV	SG
	AR		CCC	LN
	AP			
	CCC			
SERVICE	AR	LN	AG	IV
	AG			CCC
				LN
				SG

To conclude, the expectation on the signs of influence of working capital management component is now partially met. Manufacturing sector is seen to mostly meet that

expectation. In this sector, inventory period and cash conversion cycle were found to have negative influences on company profitability in both Fixed Effects and Ordinary Least Square regressions while accounts receivable period was seen to negatively affect the company profitability, witnessed by Ordinary Least Squares regressions. Differently, service firms only had accounts receivable period to negatively impact the company profitability as expected in Fixed Effects regressions. In the mean time, inventory period and cash conversion cycle were both found to have positive influences on profitability in Ordinary Least Square regressions. Moreover, accounts payable period of service sector was seen to have no effect in all regressions. However, the rationales for unexpected results obtained from analyzing service firms were already clearly discussed in the subsection section 5.3.2/b.

6. CONCLUSION

This chapter targets to summarize the main content of the thesis and to draw conclusion on the empirical findings. Based on that, it expects to provide a reference for Dutch companies, especially Dutch listed manufacturing and service companies, how to enhance their profitability by changing their working capital management then they can decide themselves, basing upon their specific company's circumstance. In addition, some limitations met during the course of research shall be discussed and few recommendations for future researches shall be also noted in this chapter. The limitation and recommendation are discussed to expectedly share personal experiences for other researchers to refer and to extend their researches.

6.1 Summary and Conclusion

Cash is king, especially when fundraising is harder than ever. It is a lifeline of a company which enables the company to fund daily operations, to meet capital requirements and to reinvest in other activities. One of the best ways to judge a company's cash flow health is to take a deep look on its working capital management. The better a company can manage its working capital, the lower the company's need on borrowings. Effective working capital management also needs for companies with cash surpluses to have efficient investments that can generate shareholder values. In order words, the way of working capital management can have a significant impact on both the liquidity and profitability of a company. Accordingly, this thesis attempts to provide empirical evidences about the influence of working capital management on the profitability for Dutch non-financial listed companies during the period 2006–2010. The research question aims at finding out whether working capital management can impact Dutch companies' profitability and if so, whether it is positively or negative affected. Based on that, it suggests Dutch companies, particularly Dutch non-financial listed companies, on how to efficiently manage their working capital in order to enhance their organizational profitability.

However, not all companies are the same. Such difference may due to the inherent characteristics of industries in which each company is currently working. Therefore, this thesis divided Dutch listed non-financial companies into two major sectors, including manufacturing and service sectors then giving analyses for each of them in addition to analyzing the whole sample collected. The study uses Pearson Correlation Analysis then

Regression Analysis using Fixed Effects Model and Pooled Ordinary Least Squares models with time dummies and industry dummies.

The result from Fixed Effect regressions indicate that company profitability in both manufacturing and service sectors is all negatively influenced by number of days accounts receivable. This result confirms that trade credit management plays an important role in contributing for a superior profitability of Dutch listed companies operating in manufacturing and service areas. In the mean time, Ordinary Least Square regressions result in positive impacts of firm size and sales growth on company profitability. Those results are found consistently for the whole sample and for each sector. However, some other results are found specifically to each sector as follows:

Regarding manufacturing sector, both Fixed Effects and Ordinary Least Square regressions confirm the negative influence of inventory period and cash conversion cycle in enhancing profitability of manufacturing companies. In addition, accounts payable period also negatively impact the profitability of those companies, confirmed by Fixed Effect regression. Contrast to manufacturing sector, regressions from Ordinary Least Square shows positive impacts of both inventory period and cash conversion cycle on profitability of companies operating in service area. Additionally, both Fixed Effects and Ordinary Least Square regressions confirm that aggressive financing policy, where companies tend to lean more on short-term financing, is seen to decrease the profitability of those companies.

6.2 Limitation

Due to the exceptionally sectorial characteristics of some non-financial sectors such as Hotel & Restaurant and sample sizes which are too small for some other sectors (i.e. Transport with only 4 companies and Construction with 6 companies), the study was conducted only for two most representative sectors listed in the Netherlands, manufacturing and service. Accordingly, the result could not be generalized for all the companies operating in the Netherlands.

6.3 Recommendations for Future Research

Future research should investigate how to generalize the findings beyond the Dutch listed manufacturing and service companies. Researchers should also attempt to investigate the non-listed firms to further the generalizability.

To conclude, this chapter ends up meeting all the expectations which were discussed in the very beginning of it. In the first place, manufacturing and service companies listed in the Netherlands now can refer to my research then apply to their specific cases on how to enhance company profitability by the way of influencing their working capital management. Moreover, other researchers can now take my limitation and recommendation as reference into their future studies.

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APPENDICES

Appendix 1: VIF caculation

SECTOR	VARIABLE	VIF			
		Model 1	Model 2	Model 3	Model 4
ALL	IV	1.19			
	AR		1.16		
	AP			1.12	
	CCC				1.22
	LN	1.15	1.16	1.16	1.12
	SG	1.13	1.11	1.11	1.13
	AG	1.08	1.09	1.09	1.09
MANUFACTURING	IV	1.09			
	AR		1.07		
	AP			1.01	
	CCC				1.20
	LN	1.04	1.04	1.00	1.13
	SG	1.24	1.19	1.19	1.21
	AG	1.01	1.01	1.01	1.03
SERVICE	IV	1.01			
	AR		1.11		
	AP			1.27	
	CCC				1.12
	LN	1.07	1.11	1.29	1.17
	SG	1.12	1.14	1.13	1.13
	AG	1.03	1.03	1.02	1.02

Appendix 2: List of Studied Companies

NO.	COMPANY	SECTOR	CURRENCY UNIT
1	Aalberts	Manufacturing	EUR
2	Accell	Manufacturing	EUR
3	Ahold	Manufacturing	EUR
4	Akzo	Manufacturing	EUR
5	Alanheri	Manufacturing	EUR
6	AMG	Manufacturing	EUR
7	ASM	Manufacturing	EUR
8	ASML	Manufacturing	EUR
9	Batenburg	Manufacturing	EUR
10	BE	Manufacturing	EUR
11	Crown	Manufacturing	EUR
12	CSM	Manufacturing	EUR
13	Draka	Manufacturing	EUR
14	DSM	Manufacturing	EUR
15	EADS	Manufacturing	EUR
16	Fornix	Manufacturing	EUR
17	Gamma	Manufacturing	EUR
18	Heineken NV	Manufacturing	EUR
19	Holland	Manufacturing	EUR
20	Hunter	Manufacturing	USD
21	Hydratec	Manufacturing	EUR
22	Imtech	Manufacturing	EUR
23	Kendrion	Manufacturing	EUR
24	Nedap	Manufacturing	EUR
25	Neways	Manufacturing	EUR
26	Nutreco	Manufacturing	EUR
27	Oce	Manufacturing	EUR
28	Philips	Manufacturing	EUR
29	Porceleyne	Manufacturing	EUR
30	Punch Graphix	Manufacturing	EUR
31	RoodMicrotec	Manufacturing	EUR
32	SBM	Manufacturing	USD
33	Schlumberger	Manufacturing	USD
34	Shell	Manufacturing	USD
35	STMicroelectronics	Manufacturing	USD
36	Tencate	Manufacturing	EUR

37	TKH	Manufacturing	EUR
38	Unilever	Manufacturing	EUR
39	Wessanen	Manufacturing	EUR
40	Brunel	Service	EUR
41	DPA	Service	EUR
42	Exact	Service	EUR
43	Fugro	Service	EUR
44	ICT	Service	EUR
45	Jubii	Service	EUR
46	Nedsense	Service	EUR
47	Oranjewoud	Service	EUR
48	Qurius	Service	EUR
49	Randstad	Service	EUR
50	Simac	Service	EUR
51	TIE	Service	EUR
52	TomTom	Service	EUR
53	Unit 4 Agresso	Service	EUR
54	AND	Service	EUR
55	Brill	Service	EUR
56	DOCdata	Service	EUR
57	Reed	Service	EUR
58	Roto	Service	EUR
59	Telegraaf (TMG)	Service	EUR
60	Wegener	Service	EUR
61	Wegener	Service	EUR
62	Stern	Service	EUR