TILBURG UNIVERSITY

Understanding Society

Determinants of Working Capital Management in SMEs: National Culture, a Missing Piece?

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ABSTRACT

This Master Thesis makes a contribution in closing a gap that exists in the academic literature concerning working capital management. By adding Hofstede's cultural dimensions as explanatory variables it is tried to find an explanation for the fact that other researchers found substantial differences along different ratios resulting from working capital management. Empirical analyses along a sample of 10,129 SMEs with complete data over the period 2006-2009 from eleven countries is done using panel data methodology in order to control for unobservable firm heterogeneity. Four cultural variables (power distance index, individualism, masculinity and uncertainty avoidance index) do significantly affect the four dependent variables (cash conversion cycle, inventory conversion period, receivables conversion period and payables conversion period). The only exception is individuality that does not have a significant effect on the firm's cash conversion cycle. The influences from firm age, size, gross profit margin, return on assets, sales growth, number of shareholders, leverage, cost of external finance and GDP growth on the four dependent variables are also investigated. Industry and country dummies are included into the model as control variables, whereas long-term orientation, cash flow and the time dummies were excluded due to (potential) multicollinearity problems. Furthermore, this study has found indications that the smaller the SME (medium-sized > small > micro) the stronger the effects and the higher the explanation powers (R^2) of the cultural variables are.

KEYWORDS

Working capital management, cash conversion cycle, inventories, accounts receivable, accounts payable, SMEs, rational choice theory, national culture, Hofstede.

FOREWORD

Months of thinking, reading academic papers, gathering data and in the end writing resulted in this Master Thesis. It forms the completion of my Master in Financial Management at Tilburg University. During the process I improved my researching skills and I learned a lot with regard to academic writing.

The subject of this Master Thesis is chosen because I am interested in the way organizations and people make decisions. Next, I am especially interested in small and medium-sized enterprises. Besides, the topic is in line with the goal that Tilburg University is trying to accomplish: *understanding society*. This Master Thesis helps in understanding society by reducing the existing gab in the academic literature on field of working capital management in small and medium-sized enterprises.

Before I invite you to join me on a scientific journey through my Master Thesis, I would like to thank some people. First of all, my special thanks go to my supervisor Jos Grazell for his assistance and supervision during this entire project. Furthermore, I would like to thank all my friends and family for their support during this project and during my whole study time at Tilburg University. I am especially grateful to my parents and my girlfriend Lianne, who believe in me and were always there when I needed them for advice. And what I believe to be the most valuable aspect of love, friendship and trust, they held me a mirror and forced me to move on at the more difficult moments.

Ben Boschker

Tilburg, 1st of August 2011

1. INTRODUCTION

1.1. Introduction

Corporate finance is about decision-making on three different fields: capital structure, capital budgeting and working capital management (AL Taleb, AL-Naser AL-Zoued and AL-Shubiri 2010; Ross, Westerfield and Jaffe 2005). Predominantly, the focus within the corporate finance literature has been on studying long-term financial decisions such as investments in fixed assets, capital structure, dividend policy and corporate valuation (Baños-Caballero, García-Teruel and Martínez-Solano 2010; García-Teruel and Martínez-Solano 2007a). However, it is arguable that the most important decisions within firms are made on the various components of working capital: accounts receivables, accounts payables and inventories, since they represent a significant part of a firm's assets (examples below) and affect a firm's profitability and liquidity (AL Taleb, AL-Naser AL-Zoued and AL-Shubiri 2010; García-Teruel and Martínez-Solano 2007a; Deloof 2003; Shin and Soenen 1998). This paper "considers working capital management to imply the management of a firm's accounts receivable, accounts payable, and inventories - and not the management of a firm's cash and marketable securities -" as this is typically for the academic literature (Kieschnick, LaPlante and Moussawi 2006). The sample used in this paper consists of 10,129 small and medium sized enterprises (SMEs) originated from three Asian countries: Japan (918), the Republic of Korea (4,773) and Taiwan (119), seven European countries: France (27), Germany (46), Greece (2,932), Poland (389), Sweden (740), Switzerland (23) and the United Kingdom (55), and the United States of America (107). From the sample it becomes clear that the investments of SMEs in their accounts receivables and inventories generally represent almost 44 percent of their total assets. Thereby, it has been found that the accounts payables represent over 28 percent of the total liabilities. AL Taleb, AL-Naser AL-Zoued and AL-Shubiri (2010) found similar results saying that the current assets of a manufacturer contains more than half of its total assets and for a distributer this percentage is even higher. Furthermore, García-Teruel and Martínez-Solano (2007a) discovered that the current assets from their sample with 8,872 Spanish SMEs were 69 percent of their total assets and that current liabilities were 52 percent of their total liabilities. Moreover, AL Taleb, AL-Naser AL-Zoued and AL-Shubiri (2010) argue that a firm's investment in fixed assets can be

reduced by renting or leasing plant and machinery, which is impossible for the various components of working capital.

1.2. Importance working capital management (WCM)

According to Ross, Westerfield and Jaffe (2005) there often exists a mismatch between cash inflows and cash outflows during operating activities. To control these cash flows and thereby reduce the potential negative effects on profitability and risk, it is important that working capital management is applied within firms to improve its value (Smith 1980). For example, Kieschnick, LaPlante and Moussawi (2008) showed that "a dollar invested in net operating capital is worth less on average that a dollar held in cash". Being more precisely than Smith (1980), García-Teruel and Martínez-Solano (2007a) add that making decisions on working capital implies making a tradeoff among profitability and risk. It is often seen that decisions intended to improve profitability at the same time increase risk, and vice versa, decisions trying to reduce risk lead frequently to a reduction of the potential profitability. In the end, the viability of a firm depends heavily on the ability to maintain and control an optimal level accounts receivables, inventory and accounts payables (Preve and Sarria-Allende 2010). This because it decreases financing costs and improves the means available to expand business (Filbeck and Krueger 2005). This is especially applicable in times of a financial crisis, like the current credit crisis, in which credit supplies from financial institutions and other investors are constrained (Mulford, Surani and Blake 2009). As an illustration, Mulford, Surani and Blake (2009) found that along their sample of 3,531 companies with a current market cap of at least $50 million the cash conversion cycle (CCC) across their nine years of data was the lowest in March 2009, which was the bottom of the current credit crisis. Dutch SMEs also face financial constrains and thus a need for a shorter CCC, because Dutch banks gave 35% less new loans, whereas banks deliver 89% of the required financing by Dutch SMEs (Financieringsmonitor MKB juli 2010).

1.3. Importance working capital management in SMEs

Although WCM is relevant to the whole corporate sector, it is especially important for SMEs in order to prevent the company from bankruptcy and to improve profitability (Peel and Wilson 1996). SMEs have more volatile profits and cash flows, are less liquid, are more dependent on short-term financing (Walker and Petty 1978) and are faced with higher portions of current assets

compared to larger companies (Peel, Wilson and Howorth 2000). Different researchers have already discovered that efficient WCM is a critical factor for the success, and even survival, of SMEs due to their dependency on short-term financing (McMahon and Holmes 1991; Grablowsky 1984). Berryman (1983) has found indications that „poor' or „careless' financial management is an important reason for the failure of small firms. Furthermore, a study by Dodge, Fullerton and Robbins (1994) stated that small US companies classify inadequate capital, cash flow management and inventory management as their most crucial internal issues. However, Peel and Wilson (1996) also found that 73.8% of the SMEs never used the economic order quantity model to reduce inventories and 78.0% never used factoring to reduce the amount of debtors. The results found by Howorth and Westhead (2003) point in the same direction suggesting "that small companies focus only on areas of working capital management where they expect to improve marginal returns". The conclusion can be drawn that WCM in SMEs is far from optimized and can be improved.

1.4. Cash conversion cycle, a measure for working capital management

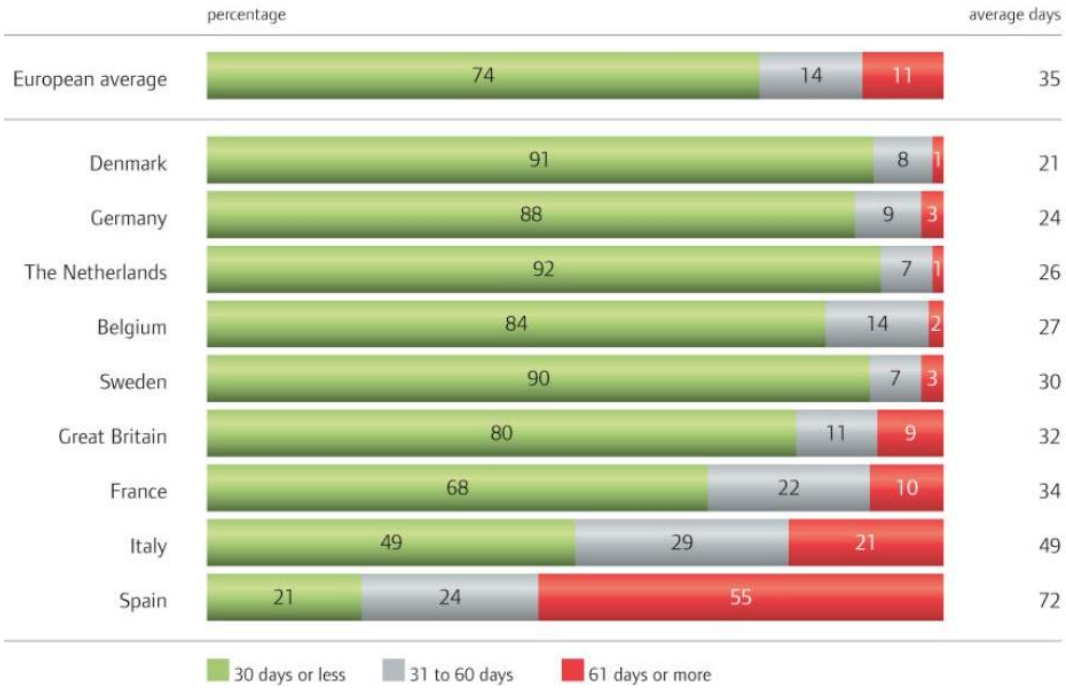
This paper uses the cash conversion cycle (CCC) as a comprehensive measure for WCM, because Gitman (1974) claimed that CCC plays a central role in WCM. Moreover, some previous researchers have already used CCC as a parameter for WCM (Baños-Caballero, García-Teruel and Martínez-Solano 2010; Nakamura and Palombini 2009; García-Teruel and Martínez-Solano 2007a; Padachi 2006; Deloof 2003; Soenen 1993). The CCC calculates the average amount of days that passes for a firm between paying suppliers and receiving money from their customers (García-Teruel and Martínez-Solano 2010). Just as Nakamura and Palombini (2009) did, an improved calculation of CCC is used in this paper which includes both the timing of the flows and the amount of capital invested in each segment.

1.5. Current research

Howorth and Westhead (2003) argued that the current knowledge and understanding of WCM practices of SMEs is insufficient, whereas others found that SMEs make less use of WCM routines (Pike and Pass 1987; Mitchell et al 1998). Until now, no other researchers than Baños-Caballero, García-Teruel and Martínez-Solano (2010) have studied the determinants of WCM in SMEs. That paper used data from only one country, Spain, so there has not yet been any study

investigating potential causes for differences in WCM determinants between SMEs in different countries. Because papers written about determinants of WCM are all focused on larger firms in one country (for example: AL Taleb, AL-Naser AL-Zoued and AL-Shubiri 2010; Nakamura and Palombini 2009) or do not tend to find causes for differences between countries (for example: Hill, Kelly and Highfield 2010; Baños-Caballero, García-Teruel and Martínez-Solano 2010), it resembles from the current literature that decision-making on working capital is a purely rational decision-making process. However, a variety of academic studies reveal that there seem to exist substantial differences in the average days of accounts receivables, accounts payables (Marotta 2005; Demigürc-Kunt and Maksimovic 2001) and inventories (Gausch and Kogan 2001) between countries. Furthermore, a study by collection agent Atradius (2011) reveals large differences between European countries in the payment terms for domestic customers (see Figure 1). Atradius found similar results for foreign customers. Therefore, according to Howorth and

Figure 1: Payment terms in days for domestic customers (Source: Atradius)



Westhead (2003) further studies are needed in an array of national and cultural contexts to search for internal and external factors that affect the working capital decision-making across firms of different sizes (i.e. micro, small, medium and large firms). This is in line with Van der Rijst (1994) who argued that the field of economics is a normative science, where the understanding

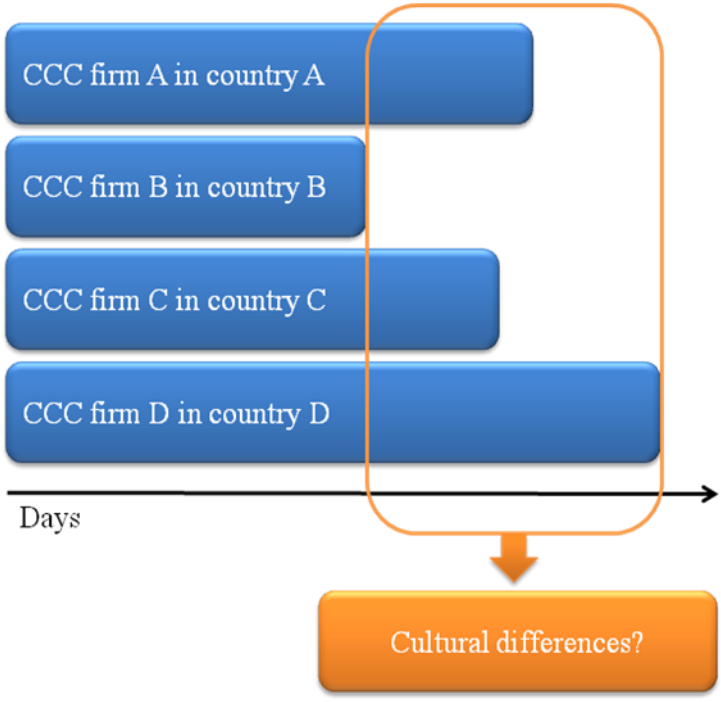
of economic behavior is only possible when taking into account the culture in which an individual is acting. Chang and Noorbakhsh (2008) state that "finance scholars … have only recently started utilizing cultural variables to study corporate financial management decision-makings in different countries." Chang and Noorbakhsh (2008) themselves studied how culture influences corporate cash holding decisions, because before them "the effect of culture on corporate cash holdings has not yet been investigated in the literature." Graham and Coyle (2000) wrote in their book "Framework for Credit risk Management" that sometimes national culture creates credit risk within a specific country. "For example, in some countries there is an acceptance that debts can be paid late and only after persistent demands from the supplier. Customers who pay late are simply conforming to what is normally expected, and would not see themselves as behaving badly." Also, Hall and Silva (2005) state that "cultures vary in the extent that attitudes are relaxed towards late payment of bills or, indeed, the observance of formal contracts." Another reason for this paper to focus on SMEs is that it could be expected that decision-making in these companies is more affected by national culture than in huge multinationals, which have many standardized protocols. Large companies also have more employees and thus more time available for investigating the optimal working capital structure. Moreover, the board of directors of multinationals often exists of persons with different nationalities and cultural backgrounds. This paper uses the official European Union definition of SMEs saying that SMEs employ fewer than 250 persons and have either an annual turnover not exceeding 50 million euro, or an annual balance sheet total not exceeding 43 million euro (see also "Appendix C: EU-definitions concerning micro, small and medium-sized enterprises (SMEs)").

1.6. Contributions of this paper

Until now, no studies could be found with hard data about the exact relationship between a SME's national culture and the investments in working capital. The purpose of this paper will be to make a contribution in closing this gap in the academic literature. This paper will therefore conduct a literature study followed by an empirical research along 27 French, 46 German, 2,932 Greek, 918 Japanese, 389 Polish, 4,773 South-Korean, 740 Swedish, 23 Swiss, 119 Taiwanese, 55 UK and 107 US SMEs in order to figure out whether or not decisions on WCM within SMEs are affected by a company's national culture.

Figure 2 displays a graphical reproduction of the main topic investigated in this paper. From the more practical point of view, this paper will contribute to a better understanding of the determinants of WCM in SMEs such that entrepreneurs and financial managers can improve their WCM by making more rationalized choices increasing profitability and reducing the risk of going bankrupt. Additionally, it gives policy-makers indications on how they can effectively inform the two parties mentioned above on WCM in order to boost economic growth and reduce unemployment rates. For example, Willcock (1993) reported that in the early nineties the economic recovery from the United Kingdom might be weakened and the default rates might be increased as a result of overtrading problems at which smaller companies expanded credit sales, without having adequate resources to finance the expansion. Rafuse (1996) even states that: "Working capital starvation is generally credited as a major cause if not the major cause of small business failure in the UK."

Figure 2: The CCC of firms with similar characteristics in four different countries



1.7. Structure of the paper

The remainder of this paper is structured as follows. In the next section, a literature review on determinants of WCM in SMEs is done and hypotheses are set. After an introduction is given about the rational choice theory, behavioral theory and its connection with national culture, the five dimensions of national culture will be introduced as potential new determinants. To make a model that is as complete as possible there are also several internal, one macroeconomic and three control variables added. Section 3 explains the data collection and the applied research methodology, whereas section 4 presents the results from the empirical research. Conclusions are

made and limitations written down in the final section, in common with recommendations to academics, policy-makers, entrepreneurs and financial managers within SMEs.

2. THEORETICAL FRAMEWORK

2.1. Introduction

The author initially tried to find evidence that differences in WCM-practices in SMEs from different countries could be explained by the fact that WCM is not a purely rational decision-making process. Therefore, after the concept of CCC has been introduced, the literature review starts with an introduction on the concept of the rational choice theory and its critics, such as the behavioral theory. Afterwards it becomes clear that potential correlations between national culture and the length of the CCC does not necessary mean that the rational choice theory does not hold for WCM. Consequently, national culture will no longer be used as a parameter to test whether WCM-decisions are made according to the rational choice theory. Instead, it will be tested whether or not different aspects (determinants) of national culture have influence on the outcomes of WCM. That is why a short overview is given of some effects of national culture on financial management already found in other studies.

Next, the concept of national culture will be explored and potential relationships with the length of a firm's CCC (and its components) disclosed. Afterwards, various internal (firm) variables, an external macroeconomic variable and three control variables investigated in previous research are explained that might have an effect on a firm's CCC. In the meantime it will be clear whether a positive or negative relationship is expected from the literature between a determinant and the CCC. This is done by making hypotheses, which will be tested in section 4: Results. Besides, this paper accounts for potential differences in the effect of the cultural determinants between medium-sized, small and micro companies at the end of this section. Many abbreviations are introduced while reading this paper. When you forgot the meaning of one, you can always find it in "Appendix A: Abbreviations used in paper".

2.2. Cash conversion cycle (CCC)

As mentioned in the introduction, this paper uses the CCC as a comprehensive measure for WCM, because Gitman (1974) claimed that CCC plays a central role in WCM. Moreover, some previous researchers have already used CCC as a parameter for WCM (Baños-Caballero, García-Teruel and Martínez-Solano 2010; Nakamura and Palombini 2009; García-Teruel and Martínez-Solano 2007a; Padachi 2006; Deloof 2003; Soenen 1993). The longer the CCC, the larger the

requirements for additional capital are, because more resources have to be invested in working capital (García-Teruel and Martínez-Solano 2010, Preve and Sarria-Allende 2010). Nevertheless, the author has the opinion that the most *wide spread* calculation of the CCC (CCCws = INVcp + RECcp – PAYcp) in the financial management literature has only very little value. One would expect that a negative CCCws means that such a company does not need any additional capital to finance their working capital, because it should get more than enough financing from its suppliers. However, when looking at company A (typical manufacturer) and company B (typical service provider), it is possible to see that although both have the same CCCws (minus 182.5 days), company B even needs net working capital financing equal to 108.04 days of sales to continue operations, whereas company A has a surplus equal to 7.3 days of sales to finance other assets (see Table 1).

Table 1: CCCws vs. CCC

	Company A (manufacturer)	Company B (service)	Company C (low sales)	Company D (high sales)
Costs of goods sold$_t$	800.0	10.0	800.0	800.0
Sales$_t$	2,000.0	2,000.0	1,000.0	4,000.0
Purchases$_t$	800.0	10.0	800.0	800.0
Inventories$_t$	160.0	2.0	400.0	400.0
Inventories$_{t-1}$	160.0	2.0	400.0	400.0
Accounts receivable$_t$	600.0	600.0	100.0	400.0
Accounts receivable$_{t-1}$	600.0	600.0	100.0	400.0
Accounts payable$_t$	800.0	10.0	100.0	100.0
Accounts payable$_{t-1}$	800.0	10.0	100.0	100.0
INVcp	73.0	73.0	182.5	182.5
RECcp	109.5	109.5	36.5	36.5
PAYcp	365.0	365.0	45.6	45.6
CCCws	-182.5	-182.5	173.4	173.4
CCC (used in this paper)	-7.3	108.0	146.0	63.9

To keep it easy to compare the different firms, the values of t are the same as the values of t-1.

CCCws = RECcp + INVcp – PAYcp

INVcp = ((inventories$_t$ + inventories$_{t-1}$) / 2) / *costs of goods sold*$_t$ * 365.

RECcp = ((accounts receivable$_t$ + accounts receivable$_{t-1}$) / 2) / sales$_t$ * 365.

PAYcp = ((accounts payable$_t$ + accounts payable$_{t-1}$) / 2) / *purchases*$_t$ * 365.

CCC = ((inventories$_t$ + inventories$_{t-1}$) / 2) / *sales*$_t$ * 365
+ ((accounts receivable$_t$ + accounts receivable$_{t-1}$) / 2) / sales$_t$ * 365
– ((accounts payable$_t$ + accounts payable$_{t-1}$) / 2) / *sales*$_t$ * 365

The reason is that the INVcp and the PAYcp are of far less importance to company B due to little costs of goods sold. Differences between low turnover (C) versus high turnover companies (D) also cause that INVcp, RECcp and PAYcp are of different importance to various companies. These two examples illustrate that companies with the same CCCws cannot be compared to each other. Therefore, it could be argued that the CCCws is a bad parameter for the quality of the company's WCM. Just as Nakamura and Palombini (2009) did, this paper therefore uses an improved calculation of CCC (see Table 1), which includes both the timing of the flows and the amount of capital invested in each segment. This calculation of the CCC is a better parameter for the quality of the firm's WCM and furthermore, it is also possible to compare the CCC's of various companies with each other.

Next, it is also interesting to see how the inventory conversion period (INVcp), receivables conversion period (RECcp) and payables conversion period (PAYcp) are affected by the different determinants and which of the three components is causing the differences in the CCC. The INVcp represents the number of days a firm can continue producing and selling from inventories without buying new replenishments. The RECcp gives the number of days between selling and receiving payments. The PAYcp represents the number of days before the firm pays their creditors. (See Table 1 for the formulas. Because it was impossible to extract $purchases_t$ directly from Orbis, it is calculated the way Preve and Sarria-Allende (2010) proposed: $purchases_t$ = costs of goods $sold_t$ + $inventories_t$ - $inventories_{t-1}$.)

In perfect capital markets, investment decisions are taken independently of financing decisions and are subject to the available investment opportunities or projects with a positive net present value. That is because firms experience no access limitations to different types of financing, whereby external capital can perfectly substitute internal resources (Modigliani and Miller 1958). This means that in a perfect capital market, where companies can easily attract external capital at a fair price, there are no opportunity costs associated to a longer CCC.

Unfortunately, perfect capital markets do not exist in practice and internal and external sources of capital do not perfectly substitute one for another. Due to market imperfections is internal finance frequently cheaper than external finance. In such situations in which investment and financing decisions are interdependent, an optimal CCC that maximizes firm value is achieved by balancing the costs and benefits of the different choices to make on working capital. Consequently, "the CCC should be sensitive to internal resources, cost of external financing,

capital market access and bargaining power with suppliers and customers", according to García-Teruel and Martínez-Solano (2010).

2.3. National culture, decision-making and working capital management

2.3.1. Rational choice theory (RCT)

The rational choice approach is labeled different within various fields of research. Economists use the words "neoclassicism" and "rational choice theory", political scientists use "public choice", psychologists use "expected utility theory" and sociologists use "rational choice theory". RCT makes the assumption that "if individuals behave rationally, the collective will benefit". This is the essence of economic theories that support minimal governmental interference, such as libertarianism and anarchism, unless individual actions harm collective interests. The basic principle of RCT is that an actor makes rational choices among various alternatives after the costs and benefits of each alternative have been weighted. These choices are based on a hierarchy of preferences (values and utilities) leading to choosing the option that maximizes the net benefit to the actor, while having the highest probability of occurrence. In other words, an actor chooses that option that is most in his self-interest. The values (and their sources) determining the preferences are irrelevant to rational choice theorists. This means that rational choice theorists assume that choices made to achieve (personal) objectives are in line with the actor's hierarchy of preferences (Zey 1998). According to Levi et al. (1990) are those basics of the RCT originated from the neoclassical economic theory, the utilitarian theory and the game theory.

According to the RCT, there are various restrictions under which rational choices are made by rational individuals (Zey 1998): 1) Scarcity of resources, meaning that different persons possess different resources and differential access to resources; 2) Related to the previous restriction are the opportunity costs, "those costs associated with forgoing the next most attractive course of action" (Friedman and Hechter 1988). Decision makers attempt to maximize net benefits. This also involves evaluating the relationship between the chances of achieving the highest possible net benefit and the consequences for the chances of reaching the second-highest net benefit; 3) Institutional norms influence both costs and benefits of each alternative available. Examples of institutional norms are: family norms, governmental laws, church commandments

and policies of school and other formal organizations; 4) The last constraint to rational decision-making is information. Within rational choice models it is assumed that people have adequate information to make the right choice maximizing their net benefit (Zey 1998).

A choice is being considered as a rational choice when an actor's preferences are both complete and transitive. "Preferences are complete if, for all instances of options A and B, the individual prefers A to B, or B to A, or is indifferent between A and B. The individual's preferences are transitive if, for all options A, B, and C, the person prefers A to B and B to C; then this person can be said to prefer A to C. If the person is indifferent to A and B, and B and C, then the person is indifferent between A and C." As can be seen above, together the assumptions of completeness and transitivity mean that an actor's preferences are consistent, meaning that one either prefers one alternative over the other or is indifferent between the alternatives. This way it is possible to represent the rational choice as a utility function (Zey 1998). The concept of utility itself is empty; it is purely about arranging (Klundert, Van de 2005). Hausman (1992) argued that "economists typically take the existence of rational preferences as tantamount to the existence of a utility function and rational choice as utility maximization".

According to economists, expectations (beliefs), preferences (desires) and constraints cause individuals to make choices. They consider preferences as givens that are not subject to rational judgment or worthy of empirical verification. However, expectations and preferences may be rational or irrational based on whether they are consistent. A person who chooses to spend all day calculating prime numbers is not considered rational, but economists do call this person entirely rational (Hausman 1992).

2.3.2. Critics at rational choice theory

The incorporation of economical variables in a utility function implies that preferences are endogenous. This looks like plausible, but it is questionable whether or not this method is always appropriate to explain choices made on economic subjects (Klundert, Van de 2005). According to Nobel Prize winner in economics Becker (1996) there are no doubts: "This extension of the utility-maximizing approach to include endogenous preferences is remarkably successful in unifying a wide class of behavior, including habitual, social and political behavior. I do not believe that any alternative approach – be it founded on „cultural', „biological' or „psychological'

forces – comes close to providing comparable insights and explanatory power." Such a form of economic imperialism encounters resistance by non-economists for two reasons.

The first critics are on the concept of rationality. Selten (1999) state that: "full rationality requires unlimited cognitive capabilities". Whatever the degree of complexity, one should always be able to solve the mathematical problems and make the necessary calculations. In reality, rationality is bounded, what makes the previous impossible and hence people will use rules of thumb and standard procedures. Concluding, bounded rationality means that "the capacity of human beings to formulate and solve complex problems is limited" (Douma and Schreuder 2002).

Secondly, the reproduction of the preferences through the help of the utility function is too less structured. There is a need for a distinction between preferences from the first and second order. First order (short term) preferences are about an immediate satisfaction of activities or possessions. Second order (long term) preferences are relevant to the judgment of and the change from the first order preferences (Klundert, Van de 2005).

To be able to rank all possible options according to the actor's preferences, one should have all the necessary information about all the options. "Taken literally, the completeness assumption is never satisfied, for there are many goods we know too little about to be able to evaluate" (Frank 2009). Furthermore, having incomplete information means that often not all possible options are known to the actor, so they are not even incorporated in the decision-making process. Contradictory, Frank (2009) argued that: "When information is costly to gather, and cognitive processing ability is limited, it is not even rational to make fully informed choices". Earlier, back in 1959, Simon already argued that entrepreneurs do not take decisions because they want to maximize their profits. In fact, they just want to get a certain rate of return on investment, attain a specific market share of reach a certain level of sales. Simon (1959) concludes that firms are making decisions to satisfy, not to maximize. Satisfying behavior can be described as: "searching for a solution that meets aspiration levels and is therefore acceptable" (Dauma and Schreuder 2002). According to Baumol and Quandt (1964), Simon (1959) asserts that entrepreneurs do not even try to maximize outcomes, because they realize that they only have incomplete information and encounter enormous costs of making precise calculations to maximize outcomes. Instead, viable solutions to their problems are satisfying to entrepreneurs.

A basic principle of RCT is that specific options are chosen because they add most to the total value or have the highest net benefit. This implies that not the value of the contribution to a specific aspect determines which option will be chosen, but the net benefit to the total value. Nevertheless, Kahneman and Tversky (1981) found that 12% would not buy a theater ticket of $10, when they lost a $10 bill on the way to the theater. Remarkably, in the case of losing their ticket on the way to the theater, even 54% would not buy a new theater ticket, despite the fact that both losses are worth the same, i.e. $10. Further, they proved that people attach more value to losses than to profits; people are risk averse towards gains, while they are risk seeking towards losses. Both examples indicate that people do not make rational choices, but that framing influences the outcomes. This could be because people are unable to integrate the consequences of the different decisions into one model, due to the complexity of the practical problems of concurrent decisions.

Herrnstein (1990) stated that: "The theory of rational choice fails as a description of actual behavior, but it remains unequaled as a normative theory. It tells us how we should behave in order to maximize reinforcement, not how we do behave." Reinforcement is a modern concept in behavioral psychology and synonymous with utility. Besides, Herrnstein (1990) wonders how the fact that organisms often behave against their self-interest with the descriptive theory of rational choice could be reconciled. People overeat, smoke, drink too much, make bad investment decisions or behave altruistically, like martyrs giving their life for the collective cause.

Concluding, there are many researchers from different fields of research who put question marks at different parts of the RCT. Most of them concluded that decisions are made based on bounded rationality. This could for example mean that decision-making on WCM could be affected by other factors than just hard facts, such as firm size or gross profit margin. According to the RCT, firms with similar characteristics and similar preferences in different countries should act similarly on WCM. However, as Herrnstein (1990) argued, RCT does well as a normative theory telling how people should maximize outcomes, but in reality persons behave differently.

2.3.3. Working capital management according to the rational choice theory

In the theoretical situation of firms managing working capital according to the RCT they will gather and evaluate all the information available before making decisions. Before making their decision they are calculating the net benefits of all the different options, whereby the management will choose that option that maximizes their desired outcome, based on their preferences on risk and profitability. Normally, this means that the management attempts to keep the receivables conversion period and the inventory conversion period as low as possible, whereas they try to maximize payables conversion period.

A well-known model for rational inventory management is the economic order quantity (EOQ) model with which a manager can minimize its costs of holding inventories by optimizing its order quantity (Q) to get the optimal order quantity (Q*). The EOQ-model considers two types of costs that are influencing inventory policy: carrying costs and shortage costs[1]. Per-unit or variable carrying costs per period (C) include direct costs of holding inventory, such as storage costs, handling costs (costs of tracking inventory), security costs (e.g. insurance costs) and costs due to obsolescence and rotting of perishable goods. Because the EOQ-model is assuming that inventory is sold off at a constant rate, average inventory is calculated by dividing Q by 2 (see Figure 4). So the carrying costs are calculated as: Carrying costs = Q / 2 x C. Shortage costs consist of fixed transaction costs per order for restocking (F) and costs due to lost sales. However,

Figure 4: Selling and restocking process

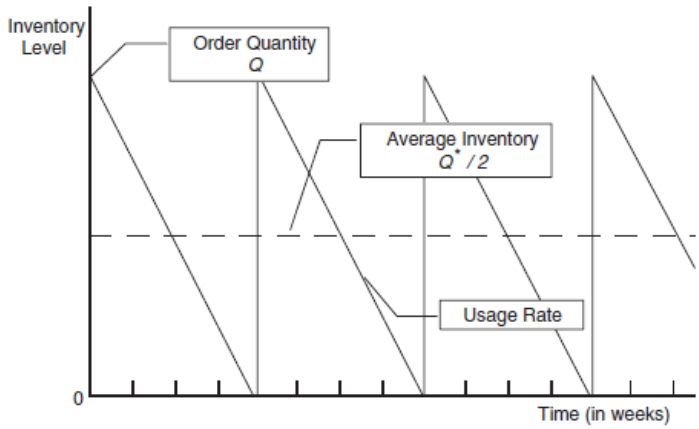
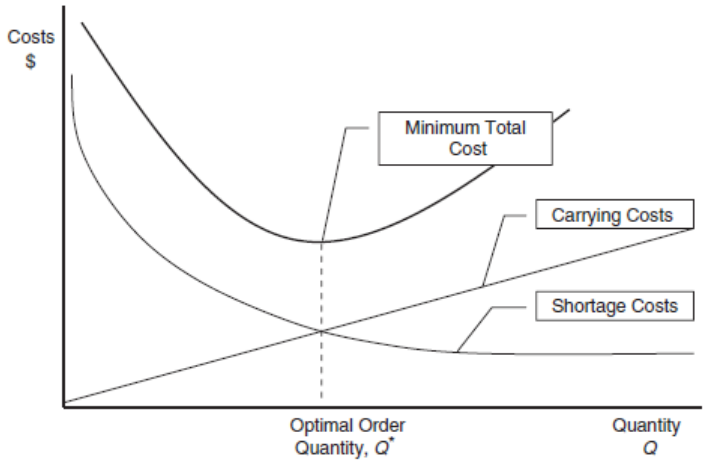


Figure 3: Determining optimal order quantity (Q)*



[1] Variable transaction costs per order for restocking and fixed carrying cost per period do not have any influence on the optimal order quantity (Q*).

costs of lost sales due to having no goods in inventory are excluded from the EOQ-model, since that model assumes that there are no stock-outs. This means that shortage costs are calculated as F times the number of orders, where the number of orders can be calculated by dividing the annual demand (D) for inventories by Q. So shortage costs are calculated as: Shortage costs = F x D / Q. To find Q*, it is first necessary to calculate the differentiation of the carrying costs plus the shortage costs and setting it equal to zero. Next, it is possible to rephrase this equation into the formula of Camp (see below) with which it is easy to determine the optimal order quantity and thus the optimal inventory level (see also Figure 3: Determining optimal order quantity (Q*)). (Preve and Sarria-Allende 2010).

$$Q^* = \sqrt{\frac{2D \times F}{C}}$$

Hence, if preferences are equal in different countries, the resulting CCC should be exactly the same for similar companies in different countries, assuming that all other conditions under which decisions are made are equal.

2.3.4. Working capital management according to the behavioral theory

In practice, firms manage working capital in a more pragmatic way, they will not gather and evaluate all the information available before making decisions, because they have only limited time and money available to search for and evaluate all the necessary information. The time and money costs can even outreach the expected benefits of making decisions while having complete information. Next, it is even questionable whether people have the cognitive capabilities to make all the calculations necessary for making the best decisions, since most researchers argue that people have only bounded rationality. Consequently, they are making simple calculations of the net benefits of some different options before making their decision, whereby the management will choose that option that satisfies their desired outcome, based on their preferences on risk and profitability. These simple calculations, or rules of thumb, are based on a process of trial and error. Actually, Baumol (2004) and Baumol and Quandt (1964) noted that heuristics such as satisfying, limited search, elimination by aspects and others, can be justified as optimally imperfect decisions, when problems are well defined and restricted or even complex. This means that if preferences are equal in different countries, the resulting CCC can be different for similar

companies in different countries, assuming that all other conditions, under which decisions are made, are equal.

2.3.5. National culture, decision-making and working capital management

One factor that influences our behavior when making decisions is our national culture. The influence from the national culture on the result of decision-making is twofold. This also applies to decision-making in order to improve a company's CCC. First, values derived from the national culture have influence on the preferences of the firm's managers who make choices. Second, the rules of thumb practiced within firms are affected by the national culture.

At first, values derived from the national culture have influence on the preferences of individuals or firms. Giuliano (2004), Fernández, Fogli and Olivetti (2004), Fernández and Fogli (2005) and Ichino and Maggi (2000) found evidence for the relationship between culture and preferences in different situations. More specifically, in the financial management literature Chui, Lloyd and Kwok (2002) argued in line with this and state: "Culture does matter because it affects management perception of the cost and risk related to debt finance and agency problems in each country." Also, Chang and Noorbakhsh (2009) claim that: "culture does matter because it affects the management's perception of the value of financial flexibility determined by the amount of available cash at hand and investor's perception of the degree of agency problems." The influence that national culture could potentially have on the preferences of individuals or firms is not necessary conflicting with the RCT. That is because economists do consider preferences as givens that are not subject to rational judgment or worthy of empirical verification. Instead, expectations and preferences may be rational or irrational based on whether they are consistent (Hausman 1992). Thus, the RCT leaves some space for the possibility that some aspects of a country's national culture could have an effect on the preferences, which could affect the outcomes of decision-making processes.

Secondly, national culture could possibly be influencing the rules of thumb practiced within SMEs, because culture involves and shapes habits and customs (Breuer and Quinten 2009). Next, Henrich et al. (2001) argue that: "simple imitation or social learning heuristics allow individuals to save the costs of individual learning, experimentation, and search by exploiting the information available in the minds of other individuals." Next, as argued by Kahneman and Tversky (1981), managers are unable to integrate the consequences of the different decisions into

one model, due to the complexity of the practical problems of concurrent decisions. They also found that framing influences the outcomes of the decision-making process and it is obvious that the framing could, just as someone's preferences, be affected by the national culture. It is expected that the smaller the company, the bigger the effects of national culture are, because smaller companies with fewer employees are less likely to employ finance specialists (Nayak and Greenfield 1994) and/or have sufficient resources, expertise and time available to introduce more complicated financial management practices (Sangster 1993; Keasey and Watson 1993).

Thus, the fact that firms use rules of thumb to find satisfying instead of maximizing outcomes (Simon 1959) is contrary to the RCT, because the RCT states that firms try to maximize their net outcome. Furthermore, it is expected that the national culture affects these rules of thumb and the preferences. Unfortunately, it will be impossible for this study to test whether the influences of national culture on the outcome of WCM are due to the influences from national culture on preferences or due to its influence on rules of thumb practiced within SMEs. As a result, it is not possible to consider potential correlations between different aspects of national culture and a company's CCC as a proof for non-rational WCM in SMEs, because it is known that rational choice theorists do not consider different preferences among people as irrational. This makes the author's initial intension of using national culture as a proxy for non-rational decision-making when it comes to WCM in SMEs impossible. Thereby, it is not possible to prove that the RCT cannot fully explain WCM in SMEs and is just a normative theory telling how managers should optimize WCM. Fortunately, with the hard numbers about a country's national culture and company data from Orbis available to the researcher it is still possible to check whether or not and in which direction WCM is affected by the national culture of the country where the company is based.

2.4. National culture and working capital management

2.4.1. National culture and financial management

Despite the fact that it is impossible to verify whether a firm's management of working capital is according to the RCT or not by adding national culture as an extra determinant of WCM, it is still interesting to investigate whether or not a firm's national culture affects the outcome of WCM: it's CCC. It is just as Guiso, Sapienza and Zingales (2006) concluded in their

paper "Does Culture Affect Economic Outcomes?": "Importing cultural elements will make economic discourse richer, better able to capture the nuances of the real world, and ultimately more useful." Consequently, national culture will no longer be used as a parameter to test whether WCM-decisions are made according to the rational choice theory. Instead, it will be tested whether or not different aspects (determinants) of national culture have influence on the outcomes of WCM.

Until now there has never been any research on the relationship between national culture and WCM. This, despite the call to researchers by Howorth and Westhead (2003) that further studies are needed in an array of national and cultural contexts to search for internal and external factors that affect the working capital decision-making across firms of different sizes (i.e. micro, small, medium and large firms). It is therefore impossible to formulate hypotheses based on outcomes from previous research. In other fields of financial management there have been only a few studies to the relationship between different determinants of national culture and financial variables. So did Chui, Lloyd and Kwok (2002) study the relationship between Schwartz's cultural dimensions and capital structure finding that "countries with high scores on the cultural dimensions of „conservatism' and „mastery' tend to have lower corporate debt ratios". Chang and Noorbakhsh (2008, 2009) studied how some of Hofstede's cultural dimensions influence corporate cash holding decisions, because before them "the effect of culture on corporate cash holdings has not yet been investigated in the literature".

2.4.2. Hofstede's five dimensions of national culture and working capital management

There are two researchers who have published leading theories on different dimensions of national culture: Hofstede and Schwartz. To explain variations in WCM, thus in an organizational context, the dimensions of national culture discovered by Hofstede are employed in this study. The choice to use Hofstede's dimensions of national culture instead of those from Schwartz (1994) is therefore based on the fact that Hofstede was operating in the field of business and management and analyzed values of IBM-employees in an organizational context, whereas Schwartz did research along teachers and students to find cultural differences between countries from a more psychological perspective. Furthermore, Hofstede (2001) found six of the seven dimensions from Schwartz (1994) to be significantly correlated with GNP/Capita[2], which

[2] Culture's Consequences, 2001: Exhibit 5.17

raises questions at his mind. Kirkman, Lowe and Gibson (2006) stated that there are also many critics at Hofstede's cultural framework for "reducing culture to an overly simplistic four- or five-dimension conceptualization, limiting the sample to a single multinational corporation, failing to capture the malleability of culture over time, and ignoring within-country cultural heterogeneity". But, "in spite of criticism, researchers have used this five-dimension framework due to its clarity, parsimony, and resonance with (corporate) managers". Originally, Hofstede identified only four dimensions of national culture: *power distance, individualism, masculinity* and *uncertainty avoidance*. Later on, he added a fifth dimension to his model, which is *long-term orientation*. In the next paragraphs all dimensions of national culture will be described into more details and indications will be given about the expected influence on WCM.

2.4.3. Cultural variable: Power distance index (PDI)

The first dimension of national culture found by Hofstede (2001) is power distance. Power distance is about the degree to which less powerful people and organizations accept that power and thus often also wealth is distributed unequally among people. Examples are the extent to which employees do whatever their employer asks them to do or the extent to which a company accepts price increases from a (monopolistic) supplier delivering key components for production. In countries with a high PDI-score such power distances are just accepted, whereas lower PDI countries will not automatically accept power distances. Within WCM there are two components in which a company deals with different parties that possibly have unequal power: debtors and creditors. This study uses a dataset of SME-companies and it is obvious that the smaller the company, the higher the chance that their counterpart is a larger one. According to Rafuse (1996) do larger firms, whether they are debtors or creditors, enforce their terms with smaller ones. It is possible that the degree to which smaller firms accept such enforcements depends heavily on the extent to which they accept power distances. Therefore, the author expects a positive correlation between PDI and the length of the receivables conversion period and a negative correlation between PDI and the length of the payables conversion period. Hence, because no relationship with the inventory conversion period is anticipated, it is estimated that PDI will have a positive relation with the length of a company's CCC. This debate yields the following hypotheses (see next page):

H_1: PDI has a positive relationship with the length of the CCC.

H_{1a}: PDI has no relationship with the length of the INVcp.

H_{1b}: PDI has a positive relationship with the length of the RECcp.

H_{1c}: PDI has a negative relationship with the length of the PAYcp.

2.4.4. Cultural variable: Individualism (IDV)

In contradiction to collectivism is the second dimension of Hofstede's national culture named individualism. Individualism versus collectivism is about the extent to which people think what is more important: the wellbeing of the person himself or the wellbeing of the society in general (Hofstede 2001). In the context of companies this can be translated to whether a firm will try to maximize its own profit or whether they feel responsible to help another firm, supplier or customer, when that firm is temporary facing difficulties. Where helping suppliers by paying early will cause the payables conversion period to decrease, will helping customers by providing longer payment terms increase the receivables conversion period. Consequently, the author expects a negative correlation between IDV and the length of the receivables conversion period and a positive correlation between IDV and the length of the payables conversion period. Because no relationship with the inventory conversion period is anticipated, it is estimated that IDV will have a negative relation with the length of a company's CCC. This debate yields the following hypotheses:

H_2: IDV has a negative relationship with the length of the CCC.

H_{2a}: IDV has no relationship with the length of the INVcp.

H_{2b}: IDV has a negative relationship with the length of the RECcp.

H_{2c}: IDV has a positive relationship with the length of the PAYcp.

2.4.5. Cultural variable: Masculinity (MAS)

The third dimension of Hofstede's national culture that is passing in review is masculinity. Masculine cultures are opposed to feminine cultures because the firsts have strict divisions of roles between the genders in society. Furthermore a country is called masculine when people attach high value to material rewards, performance and competition, whereas feminine cultures do concern more about quality of life and relationships. In addition, Hofstede (2001) added that

"MAS is entirely different from, and should not be confused with, individualism". In the context of WCM the author does not think that the score on MAS will highly affect the length of the CCC. However, he can imagine that firms in more feminine countries, in which relationships are considered as more important than material rewards such as profits, will take care more about other stakeholders than just the shareholders, such as customers and suppliers. Companies in more feminine countries will therefore try to keep relationships with customers and suppliers as good as possible. They will thus be more generous in their terms when setting up contracts with customers and suppliers leading to agreements that are not getting the most out of it for them. Relaxing terms to suppliers will lead to having to pay earlier what will cause the payables conversion period to decrease, whereas relaxing terms to customers will lead to receiving payments later and an increased receivables conversion period. Because most SMEs make the most of the sales in their own country, dealing with customers with the same cultural values, and because customers do under normal circumstances have more negotiation power than suppliers, it is expected that there exist positive correlations between MAS and the length of the receivables conversion period, as well as with the length of the payables conversion period. Because no relationship with the inventory conversion period is anticipated, it is estimated that MAS will have a positive relation with the length of a company's CCC. This debate yields the following hypotheses:

H_3: MAS has a positive relationship with the length of the CCC.

H_{3a}: MAS has no relationship with the length of the INVcp.

H_{3b}: MAS has a positive relationship with the length of the RECcp.

H_{3c}: MAS has a positive relationship with the length of the PAYcp.

2.4.6. Cultural variable: Uncertainty avoidance index (UAI)

The fourth dimension of national culture found by Hofstede (2001) is uncertainty avoidance, which is not similar to risk avoidance, a misinterpretation often made by previous researchers in business administration. Uncertainty avoidance is about the way people are dealing with the fact that the future is uncertain in human life. Cultures that avoid uncertainty prefer situations that are clearly interpretable and predictable and therefore structure their organizations, institutions and relationships. In personal life they try to cope with uncertainty through use of religion, law and

technology. In organizations they make use of technology, rules and rituals. Examples of uncertainty-avoiding rituals within organizations are writing and filing of memos and reports, the nomination of experts as persons who are beyond uncertainty, accounting, computer simulations, and planning and control systems. This means that it is expected that companies based in countries with a high score on the UAI try to avoid uncertainty about the length of their CCC by, for example, the use of better planning and control systems to monitor the different aspects of the CCC. They will better monitor whether or not debtors are paying too late and whether they should continue doing business with those customers of which it is uncertain when they are going to pay. Furthermore, they will better control inventory levels, such that they are sure they will not end up with surplus inventories they do not need in the production process or are not able to sell. Next, they will pay their suppliers as late as possible so they have a kind of guarantee that the ordered goods are delivered in time and the quality will be good. This way they are more certain that they will not need additional costly (external) capital to finance their working capital and additionally reduce the possibility of going bankrupt. However, most SMEs make the most of the sales in their own country, dealing with customers with the same ideas for avoiding uncertainty. The latter, in combination with the fact that customers do under normal circumstances have more negotiation power than suppliers, makes that the author expects the results from the better monitoring of debtors is counterbalanced by the negotiation power of the same group. In the end, the author therefore expects a negative relationship between UAI and the INVcp, but positive correlations between UAI and RECcp and PAYcp, ultimately leading to a negative relation between UAI and CCC. This debate yields the following hypotheses:

H_4: UAI has a negative relationship with the length of the CCC.

H_{4a}: UAI has a negative relationship with the length of the INVcp.

H_{4b}: UAI has a positive relationship with the length of the RECcp.

H_{4c}: UAI has a positive relationship with the length of the PAYcp.

2.4.7. Cultural variable: Long-term orientation (LTO)

The fifth and newest dimension added to Hofstede's model of national culture is long-term orientation (LTO). A low score on the LTO-index means that a country has a short-term orientation (STO). A short definition of LTO given by Hofstede (2001) is: "Long-term

orientation stands for the fostering of virtues oriented toward future rewards, in particular, perseverance and thrift. Its opposite pole, short-term orientation, stands for the fostering of virtues related to the past and present, in particular, respect for tradition, preservation of „face' and fulfilling social obligations." In the field of business Hofstede (2001) translated LTO into the building of relationships and market position, whereas STO implies being focused on short-term results. In order to improve market position in the long run firms have to build long-term relationships with other stakeholders than just shareholders, such as customers and suppliers. This means that they will be more generous in their terms when setting up contracts with customers and suppliers leading to agreements that are not getting the most out of it for them on the short-term. But these agreements with more generous terms will pay off in the long run by being a preferred supplier or preferred customer leading to a larger market share and better purchasing terms and ultimately higher profits. Relaxing terms to suppliers will lead to having to pay earlier what will cause the payables conversion period to decrease, whereas relaxing terms to customers will lead to receiving payments later and an increased receivables conversion period. As a result, the author expects a negative correlation between LTO and the length of the receivables conversion period and a positive correlation between LTO and the length of the payables conversion period. Because no relationship with the inventory conversion period is anticipated, it is estimated that LTO will have a negative impact on the length of a company's CCC. At first sight, this positive relation between LTO and the length of a firm's CCC, which in the end leads to a lower cash position, looks contrary to the findings of Chang and Noorbakhsh (2009) who found that LTO had a positive impact on the amount of cash holdings within a company. However, probably these larger cash positions are due to a lower or later dividend payment which leaves more cash in the company than the amount of cash that is stuck in the CCC. This debate yields the following hypotheses:

H_5: LTO has a positive relationship with the length of the CCC.

H_{5a}: LTO has no relationship with the length of the INVcp.

H_{5b}: LTO has a positive relationship with the length of the RECcp.

H_{5c}: LTO has a negative relationship with the length of the PAYcp.

2.5. Determinants of working capital management

Previous studies have already revealed many factors influencing WCM i.e. CCC. These factors will be added to the model in order to improve the reliability of the results that might be found in this paper about the relationships between the various determinants of national culture and the outcomes of WCM. An overview of the ten factors already found to be influencing the outcomes of WCM, just as the expected directions of the relations, can be found below. An overview of the factors that will not be included in the model can be found in paragraph "2.5.11. Overview determinants excluded from this paper".

2.5.1. External macroeconomic variable: GDP growth (ΔGDP)

The first factor, an external macroeconomic factor, that could be a possible determinant for the SME's CCC is the annual GDP growth rate (ΔGDP). The ΔGDP for every country in each year will be extracted directly from Orbis. According to Lamberson (1995) are changes in economic activity expected to influence WCM decisions of small firms, although these responses may be quite different from those taken in large firms. One reason is that it is difficult for a company to get external financing during economic recessions, because of limited cash supplies during these times (Chiou, Cheng and Wu 2006). Other reasons could be that declining sales, which come along with a decreasing GDP, lead to an increased level of inventories and that customers pay their invoices later than during periods of economic growth. Chiou, Cheng and Wu (2006) found empirical indications for this showing that "a firm has more accounts receivable or inventories" … "when the economy begins to slump". This could probably be explained by "the fact that the firm responds to a potential slump in sales by reducing production volume". Furthermore, Lamberson (1995) found a negative relation between inventories and GDP along a sample of fifty small firms. On the contrary, Blinder and Maccini (1991) found that companies reduce their inventories drastically during economic recessions. In addition, Walker (1991) found limited evidence for the fact that the ΔGDP influences the level of accounts receivable. Several researchers (Carpenter, Fazzari and Petersen 1994; Kashyap, Lamont and Stein 1994) discovered even greater cyclical fluctuations within small companies than within their larger counterparts. The latter could be explained by the fact that small companies face higher costs of short-term financing than large companies (Carpenter, Fazzari and Petersen 1994; Kashyap Lamont and Stein 1994). Contrary to the above, various researchers did not find a

significant relationship between ΔGDP and working capital requirements (AL Taleb, AL-Naser AL-Zoued and AL-Shubiri 2010; Nazir and Afza 2008b) or between ΔGDP and CCC (Baños-Caballero, García-Teruel and Martínez-Solano 2010). In the end, the author expects positive relationships between ΔGDP and accounts receivable, inventories and CCC, but a negative correlation between ΔGDP and accounts payable. This debate yields the following hypotheses:

H_6: ΔGDP has a negative relationship with the length of the CCC.

H_{6a}: ΔGDP has a negative relationship with the length of the INVcp.

H_{6b}: ΔGDP has a negative relationship with the length of the RECcp.

H_{6c}: ΔGDP has a negative relationship with the length of the PAYcp.

2.5.2. Internal variable: Firm age (AGE)

Chiou, Cheng and Wu (2006) stated that "the older the firm, the worse its management of working capital", because the high growth rates from the early years of a firm, which forced management to efficiently control working capital, will slow down in the course of time. Chiou, Cheng and Wu (2006) also found evidence for their statement by empirical research showing that age is positively related to working capital requirement (i.e. accounts receivable + inventories – accounts payable – other payable). Dodge and Robbins (1992) state that the organizational life cycle consists of four consecutive stages: formation, early growth, late growth and stability. They found that inventory and cost control were perceived as increasing problems going from the formation, via the early growth to the late growth stage. When they reached the last stage, stability, perceived problems decreased. This is in contract with findings of Howorth and Westhead (2003) showing "that firms focusing on stock management routines were younger". Following their line of thoughts, age is expected to be positively related with inventories and thus with CCC. Within previous literature the age of a firm is also used as a proxy for the company's quality and reputation, its knowledge of its customers (debtors) (Petersen and Rajan 1997), the duration of the contacts between suppliers and customers (Cuñat 2007) and the creditworthiness of a firm to debt- and equity-providers (Niskanen and Niskanen 2006). The latter is in line with Berger and Udell (1998) who found that older companies have better access to external financing and under better terms, which means investment in working capital is less expensive.

All the above mentioned factors suggest that a positive relation between age and CCC is expected. The existence of a positive relation is confirmed by Baños-Caballero, García-Teruel and Martínez-Solano (2010)[x], who found that the CCC of older firms is longer. Moreover, García-Teruel and Martínez-Solano (2010)[vi] discovered that younger firms use less credit from suppliers than the older ones. However, they did not notice a clear relationship between age and accounts receivable. Therefore, firm age (AGE), calculated as year of financial data (2009, 2008, 2007 or 2006) minus the date of incorporation, is added to the regression model and is expected to have a positive influence on the length of the CCC. This debate yields the following hypotheses:

H_7: AGE has a positive relationship with the length of the CCC.

H_{7a}: AGE has a positive relationship with the length of the INVcp.

H_{7b}: AGE has a positive relationship with the length of the RECcp.

H_{7c}: AGE has a negative relationship with the length of the PAYcp.

2.5.3. Internal variable: Size (SIZE)

Back in section "1.3. Importance working capital management in SMEs" from the introduction the author already concluded that WCM in SMEs is far from optimized and can be improved, while different researchers found that WCM is a critical factor for the success, and even survival, of SMEs. Howorth and Westhead (2003) argued that the current knowledge and understanding of WCM practices of SMEs is insufficient, whereas others found that SMEs make less use of WCM routines (Pike and Pass 1987; Mitchell et al 1998). Until now, Baños-Caballero, García-Teruel and Martínez-Solano (2010) were the only researchers who have studied the determinants of WCM in SMEs. It is expected that there could be differences in WCM between large firms and SMEs, because large firms can allocate more resources and expertise to manage the CCC and can profit more from economies of scale. These are the reasons why this paper focuses on the determinants of WCM in SMEs and not on those in large(r) firms. This paper uses two manners to find the effects of size on WCM: First in this section it will be checked whether or not size is a determinant of WCM by adding total assets as an independent variable to the regression model. Secondly, the group of SMEs will be split into three new

groups (micro, small and medium-sized enterprises[3]) in order to check whether the effect of culture is strengthened in smaller firms (see section "2.7. Size and the effect of national culture on working capital management").

The effect of size as a determinant of WCM is an interaction between four factors that come with size: capital market access and perceived costs of financial credit, negotiation power, reputation and economies of scale.

Trade credit (cost of foregone discounts) is more expensive than financial credit (interest), so firms with access to financial credit should use it (Molina and Preve 2007). That is why a study by Meltzer (1960) showed that enterprises with good access to the capital markets redistribute capital to enterprises with poor access to these markets via commercial credit. Niskanen and Niskanen (2006) found similar results for small firms showing that: "creditworthiness and access to capital markets are important determinants of trade credit extended by sellers". Next, Meltzer (1960) found that large firms have better access to the capital markets than smaller firms. Some reasons for this are that smaller firms have to deal with bigger asymmetric information problems (Berger, Klapper and Udell 2001; Jordan, Lowe and Taylor 1998) and are in general not followed by analysts. Furthermore, are smaller firms most of the time less diversified than larger enterprises which increases default risk. Thus, the use of commercial credit, which leads to a longer receivables conversion period, could give larger firms a competitive advantage over smaller firms. Besides, when transaction costs are added to the interest costs, trade credit can be perceived as cheaper than financial credit by small firms. That is because small firms are faced with relatively high fixed costs of time and effort required to arrange financial credit (Howorth and Reber 2003). Howorth and Reber (2003) also mention that: "Small firms with low levels of financial management skills may also be unaware of the high cost of trade credit implicit in foregone discounts".

This study uses a dataset of SMEs and it is obvious that the smaller the company the higher the chance that their counterpart is a larger one. According to Rafuse (1996) is "creditor management essentially a Darwinian situation, the survival of the fittest. Large companies enforce their terms with smaller companies, who in turn enforce their terms with those smaller

[3] The EU-definitions of micro, small and medium-sized companies are used. See "Appendix C: EU-definitions concerning micro, small and medium-sized enterprises (SMEs)" for the characteristics of each type of company.

yet. Very similar arguments can be advanced in the case of debtors, where aggressive collection action by large companies only succeeds in transferring resources from their smaller customers".

According to Long, Malitz and Ravid (1993) do "large firms usually have an established reputation, more is known ex ante about their product quality, and thus they have little need to extend trade credit. Smaller firms, however, may not yet have an established reputation and may need to provide trade credit to guarantee product quality"

The larger the size of the company the larger the economies of scale are. An economy of scale that affects working capital is the fact that smaller firms need to maintain relatively high levels of inventory (Preve and Sarria-Allende 2010) in order to profit from quantity discounts and to be prepared for somewhat volatile sales. Results found by Nakamura and Palombini (2009) confirm this by showing a strong negative relation between size and inventory conversion period. They also suggest that larger firms could coordinate their supply chain in a more efficient way compared to small firms.

Results found by Petersen and Rajan (1997)[i] suggest that large firms provide relatively more commercial credit to their customers than smaller firms do in the United States. A logical consequence of facing poor access to the capital markets is found by Jaffee (1968)[ii] showing that smaller firms depend more on the use of accounts payables (or trade credit) to finance their business. Other researchers also found that smaller companies lean to use more trade credit than larger firms (Molina and Preve 2007[iii]; Howorth and Reber 2003[iv]; Peterson and Rajan 1997). Nakamura and Palombini (2009)[v] found similar results showing that the payables conversion period displays a significant and negative relationship with size. Also among a study of SMEs in seven European countries there was found a positive relationship between size and accounts receivable (García-Teruel and Martínez-Solano 2010[vi]). In contrast, García-Teruel and Martínez-Solano (2010) also found that size is positively and significantly related to accounts payables in all countries indicating that larger firms have more negotiation power to their suppliers. In addition, Nakamura and Palombini (2009) found evidence for Rafuse's statement (1996) by showing that the receivables conversion period is negatively correlated to firm size and therefore suggest that this could be because of the greater market power from larger firms. Another reason could be that small firms provide more trade credit to guarantee product quality.

In the end, some researchers (AL Taleb, AL-Naser AL-Zoued and AL-Shubiri 2010[vii]; Nazir and Afza 2008b[xii]) were unable to find any statistically significant relationship between the

working capital requirements and size, whereas others did find a significant positive relationship (Hill, Kelly and Highfield 2010[viii]; Chiou, Cheng and Wu 2006[ix]). Furthermore, Nakamura and Palombini (2009)[v] found that the CCC was negatively associated with firm size, but those results were not statistically significant, whereas Kieschnick, LaPlante and Moussawi (2006) found there exists a positive relationship between size and CCC. The only research that was also focused at WCM in SMEs did reveal a positive but insignificant influence from size at the length of the CCC (Baños-Caballero, García-Teruel and Martínez-Solano 2010[x]).

The author expects that the poor capital market access and possibly also the unawareness of the high implicit costs of the use of trade credit due to less financial skills in smaller firms will exceed differences in negotiation power and the use of trade credit as a form of guarantee by small firms. Furthermore, he expects that economies of scale lead to relatively smaller inventories in larger firms. Thus, the expectations are that size will have a positive relationship with the length of the receivables conversion period and so the length of the CCC, but correlate negatively with the length of the inventory conversion period and the length of the payables conversion period. In this paper, total assets in € (million) will be used as a proxy for size. This debate yields the following hypotheses:

H_8: SIZE has a positive relationship with the length of the CCC.

H_{8a}: SIZE has a negative relationship with the length of the INVcp.

H_{8b}: SIZE has a positive relationship with the length of the RECcp.

H_{8c}: SIZE has a negative relationship with the length of the PAYcp.

2.5.4. Internal variable: Gross profit margin (GPM)

Recently, the company's gross profit margin (GPM) is in the academic literature used as a determinant of trade credit (García-Teruel and Martínez-Solano 2010[vi]) and as a variable influencing working capital requirements (Hill, Kelly and Highfield 2010[viii]). This far, it has not yet been used in relation to the CCC of a firm. García-Teruel and Martínez-Solano (2010) found that "the weight of trade credit as a proportion of sales is positively related to the gross profit margin in the European countries". This is in line with the empirical evidence that Petersen and Rajan (1997) found for their statement that "the larger a firm's gross profit margin the greater its incentive to sell, and if necessary, finance an additional unit". Conversely, Hill, Kelly and

Highfield (2010) found only limited support for a direct correlation between GPM and working capital requirements. Concluding, it is expected that firms with a higher GPM have more incentives to use trade credit as a form of price discrimination in order to increase sales and consequently their profit. According to Preve and Sarria-Allende (2010) is determining optimal inventory levels especially important for those whose profits are largely based on asset rotation rather than margin on sales, which means that GPM is expected to be positively correlated to the inventory conversion period. Other expectations are that GPM will have a positive relationship with the length of the receivables conversion period and so the CCC, but no influence on the length of the payables conversion period. GPM is defined as the ratio of gross profit to operating revenue (turnover) times 100%. This debate yields the following hypotheses:

H_9: GPM has a positive relationship with the length of the CCC.

H_{9a}: GPM has a positive relationship with the length of the INVcp.

H_{9b}: GPM has a positive relationship with the length of the RECcp.

H_{9c}: GPM has no relationship with the length of the PAYcp.

2.5.5. Internal variable: Return on assets (ROA)

The profitability of a firm, measured by the return on assets (ROA), is not only a result of good WCM. It is also another independent variable that is likely to affect WCM itself. More profitable firms have better access to external capital (Chiou, Cheng and Wu 2006) and thus will these firms distribute more trade credit to customers to get a commercial advantage, as explained in paragraph "2.5.3. Internal variable: Size (SIZE)". Furthermore, they are less concerned with maintaining an efficient WCM (Nazir and Afza 2008a). Instead, different researchers also suggested that trade credit could be used to increase sales or market share when a firm is facing profitability problems (Molina and Preve 2009; Petersen and Rajan 1997). Various studies found a positive relationship between profitability (ROA or ΔROA) and working capital requirements or CCC (AL Taleb, AL-Naser AL Zoued and AL-Shubiri 2010[vii]; Nazir and Afza 2008b[xii]; Chiou, Cheng and Wu 2006[ix]), whereas another did find a negative correlation (Baños-Caballero, García-Teruel and Martínez-Solano 2010[x]).

The expectations are that ROA will have a positive relationship with the length of the receivables conversion period, inventory conversion period and a negative correlation with the

length of the payables conversion period. Consequently, this means that a positive relation is expected between ROA and the length of the CCC. The ROA is calculated as profit (loss) for period divided by total assets times 100%. This debate yields the following hypotheses:

H_{10}: ROA has a positive relationship with the length of the CCC.

H_{10a}: ROA has positive relationship with the length of the INVcp.

H_{10b}: ROA has a positive relationship with the length of the RECcp.

H_{10c}: ROA has a negative relationship with the length of the PAYcp.

2.5.6. Internal variable: Cash flow (CF)

Another internal variable that will be incorporated into the model is the cash flow (CF) generated internally by the company. CF can easily be derived from Orbis, which uses the formula: net profit plus depreciation, and to correct for firm size it will be divided over total assets and multiplied by 100%. Despite the fact that CF is only differing from profitability (ROA) due to the addition of depreciation, the variable is added to the model because this difference is quite important as every finance specialist is supposed to know that "cash is king and cash flow is queen". García-Teruel and Martínez-Solano (2010) expected that firms with bigger cash flows grant more trade credit to their customers to get a competitive advantage. On the contrary, these firms will need less credit from their suppliers. Based on the findings of Fazzari and Petersen (1993) did Baños-Caballero, García-Teruel and Martínez-Solano (2010) suggest: "… that firms with a larger capacity to generate internal resources have higher current asset levels, which might be because of the lower cost of funds invested in working capital for these companies".

In line with the expectations, did various studies find significant positive relationships between CF and working capital requirements (Hill, Kelly and Highfield 2010[viii]) or the length of the CCC (Baños-Caballero, García-Teruel and Martínez-Solano 2010[x]). Niskanen and Niskanen (2006)[xi] discovered a significant negative correlation between CF and accounts payable, whereas they also found an insignificant positive with accounts receivable. Along SMEs in all seven countries investigated García-Teruel and Martínez-Solano (2010)[vi] found a significant negative relationship between CF and creditors. But the relation between CF and debtors was not that clear showing that "Finnish, French and Greek SMEs that generate more resources grant more

trade credit to their customers", whereas "this result is not repeated for Spanish, Swedish or British firms. A negative and significant relationship between the variables is found for Belgian firms". These country differences could possibly be clarified by differences in national culture. Contrary to the expectations did Nakamura and Palombini (2009)[v] find significant negative relations between free cash flow and inventory conversion period as well as the length of the CCC. The relationships with working capital requirements, receivables conversion period and payables conversion period all showed a negative but insignificant relation. Also, Appuhami (2008)[xiii] and Chiou, Cheng and Wu (2006)[ix] found significant negative relationships between operating cash flows and working capital requirements. Other researchers did not find any statistically significant relationships (AL Taleb, AL-Naser AL-Zoued and AL-Shubiri 2010[vii]; Nazir and Afza 2008b[xii]).

Concluding, the expectations are that CF will have a negative correlation with the length of the payables conversion period. Furthermore, positive relationships with the length of the receivables conversion period and the length of the inventory conversion period will also lead to a negative relation with the length of the CCC. This debate yields the following hypotheses:

H_{11}: CF has a positive relationship with the length of the CCC.

H_{11a}: CF has a positive relationship with the length of the INVcp.

H_{11b}: CF has a positive relationship with the length of the RECcp.

H_{11c}: CF has a negative relationship with the length of the PAYcp.

2.5.7. Internal variable: Sales growth (GROWTH)

Although they might be very profitable, firms with rapid sales growth face higher risks of becoming overwhelmed by liquidity problems and thus bankruptcy than firms not growing (that fast). This is because growing enterprises need extra capital to invest in inventories and receivables, through which an enterprise could run short of cash being unable to pay their bills (AL Taleb, AL-Naser AL-Zoued and AL-Shubiri 2010). That is why Chiou, Cheng and Wu (2006) did already suggest that firms with fast growing sales pay more attention to WCM. In this study the variable sales growth (GROWTH) is measured by the ratio $(sales_t - sales_{t-1}) / sales_{t-1} * 100\%$.

An example of more attention to WCM in growing firms is that managers may decide to build up inventory levels to anticipate on future sales growth (Kieschnick, LaPlante and Moussawi 2006; Nunn 1981). Blazenko and Vandezande (2003) found evidence for the fact that inventories are being positively related to expected sales. Depending on the reason behind the anticipated sales growth, the effects on the different components of the CCC could be different. For example, firms fighting for market share could use relaxed trade credit terms as a competitive advantage (Preve and Sarria-Allende 2010) leading to a longer receivables conversion period. Similarly could enterprises that need to increase sales (or market share) in order to become or stay profitable lengthen the receivables conversion period (Molina and Preve 2009; Niskanen and Niskanen 2006; Petersen and Rajan 1997). In other situations in which firms have for example unique products or services customers are willing to pay earlier, whereas suppliers offer these firms more credit with better terms in the hope of building a good relationship, because they do not want to lose such a promising customer (Hill, Kelly and Highfield 2010; Howorth and Reber 2003). In such situations funds tied up in inventories and accounts receivable are hidden reserves and suppliers provide extra capital that can be used to finance growth (Appuhami 2008). According to Cuñat (2007) are high growth firms also dependent on suppliers for financing because the difficulties they face in attracting other forms of finance. Binks and Ennew (1996) do argue even that: “the faster the rate of growth the higher the likelihood of problems in access to (bank) credit”.

Finally, various studies found a significant negative relationship between GROWTH and working capital requirements (AL Taleb, AL-Naser AL-Zoued and AL-Shubiri 2010[vii]; Hill, Kelly and Highfield 2010[viii]), whereas others were unable to find any statistically significant relationship (Nakamura and Palombini 2009[v]; Nazir and Afza 2008b[xii]; Appuhami 2008[xiii]; Chiou, Cheng and Wu 2006[ix]). Furthermore, Nakamura and Palombini (2009) found significant negative relationships between GROWTH at one side and the inventory conversion period, the receivables conversion period, the payables conversion period and the CCC at the other side. However, they did not find any significant relationship between GROWTH and WCR. Their negative relationship between GROWTH and payables conversion period is strange, but could indicate that companies with declining sales experience difficulties paying their bills. The only research that was also focused at WCM in SMEs did reveal a negative and significant influence from GROWTH at the length of the CCC (Baños-Caballero, García-Teruel and Martínez-Solano

2010[x]). García-Teruel and Martínez-Solano (2010)[vi] did find that GROWTH is significantly negatively related to accounts receivable and significantly positively to accounts payable within SMEs.

For this study, the expectations are that growth will have an inverse relationship with the length of the receivables conversion period and so the length of the CCC, but a positive correlation with the length of the inventory conversion period and the length of the payables conversion period. This debate yields the following hypotheses:

H_{12}: GROWTH has a negative relationship with the length of the CCC.

H_{12a}: GROWTH has positive relationship with the length of the INVcp.

H_{12b}: GROWTH has a negative relationship with the length of the RECcp.

H_{12c}: GROWTH has positive relationship with the length of the PAYcp.

2.5.8. Internal variable: Number of shareholders (NOS)

The concentration of ownership and control within small firms makes formal management accounting information less necessary (Howorth and Westhead 2003). This could mean that management is less aware of the amount and the possibilities of the capital that is invested in inventories and accounts receivable and is financed by suppliers. Less monitoring from shareholders could subsequently lead to a longer CCC. Because of the limited knowledge of WCM-practices within SMEs (Nayak and Greenfield 1994; Sangster 1993; Keasey and Watson 1993), the chance is big that the introduction of one or more external shareholders brings in additional and useful knowledge to improve WCM. Results found by Kieschnick, LaPlante and Moussawi (2006) indicate into this direction, showing that the proportion of stock held by the CEO is significantly positively related to the CCC.

On the other side, it is common knowledge that many managers (CEOs) of SMEs are also the owners. Thus, problems related to conflict of interests between owners and managers as known from the agency theory, such as a generous credit policy or too high levels of stocks, are almost inexistent in such firms. The fact is that the owner-manager will benefit himself if he keeps the CCC as short as possible. Nakamura and Palombini (2009)[v] found some (insignificant) evidence for this, showing that the presence of ownership concentration in (large) listed firms from Brazil is negatively correlated to the CCC.

The expectations are that more shareholders will lead to an improved knowledge and monitoring of WCM within SMEs. As a consequence, it is expected that NOS will have an inverse relationship with the length of the receivables conversion period, the length of the inventory conversion period and so the length of the CCC, but a positive correlation with and the length of the payables conversion period. With Orbis it is only possible to extract the current number of recorded shareholders. Therefore, the number of recorded shareholders in the years 2006 – 2009 is assumed to be equal to the current number. This debate yields the following hypotheses:

H_{13}: NOS has a negative relationship with the length of the CCC.

H_{13a}: NOS has negative relationship with the length of the INVcp.

H_{13b}: NOS has a negative relationship with the length of the RECcp.

H_{13c}: NOS has positive relationship with the length of the PAYcp.

2.5.9. Internal variable: Leverage (LEV)

The next variable that could influence WCM is the leverage (LEV) of a company, which is calculated as the ratio of debt (short term loans + long term debt) to total assets times 100%.

According to the pecking order theory do firms prefer internal to external financing (Myers 1984). This means that managers will first try to optimize their working capital in order to free cash which is locked-up in accounts receivable and excess inventories. Furthermore, they try to negotiate better payment terms with suppliers. Ultimately, an inverse relationship between leverage and the length of the CCC is expected according to the pecking order theory. Next, when a company gets financing do providers of debt (often banks) just like shareholders monitor that company. Small firms with little resources (human and organizational) give even more priority to the requirements of external investors than their own internal management controls (Howorth and Westhead 2003). This means that firms that are using external finance may invest more time and energy in their WCM in order to meet the requirements of those investors. Normally, this again would lead to a more optimal use of working capital.

However, there are also counterarguments supposing a different relation between leverage and WCM. Molina and Preve (2007) argue that trade credit (cost of foregone discounts) is more expensive than financial credit (interest), so firms with access to financial credit should use it.

One can imagine that this will lead to a shorter payables conversion period. That is why a study by Meltzer (1960) showed that enterprises with good access to the capital markets redistribute capital to enterprises with poor access to these markets via commercial credit. Niskanen and Niskanen (2006) found similar results for small firms showing that: "creditworthiness and access to capital markets are important determinants of trade credit extended by sellers". Thus, the use of commercial credit, which leads to a longer receivables conversion period, could give firms with good access to financial credit a competitive advantage over firms with worse access to financial credit.

Different researchers found support for the pecking order theory and the extra monitoring through external investors. Howorth and Westhead (2003) proved that along a sample of small UK firms: "firms which do the least working capital management appear … to have … less external finance". Others found a significant inverse relationship between leverage and working capital requirements (AL Taleb, AL-Naser, AL-Zoued and AL-Shubiri 2010[vii]; Nakamura and Palombini 2009[v]; Nazir and Afza 2008b[xii]; Chiou, Cheng and Wu 2006[ix]) or the length of the CCC (Baños-Caballero, García-Teruel and Martínez-Solano 2010[x]; Nakamura and Palombini 2009). More into detail, Nakamura and Palombini (2009) did find a significant negative correlation between leverage and the inventory conversion period and a significant positive one with the payables conversion period, but they also found a significant positive relation with the receivables conversion period indicating that firms with better access to financial credit redistribute it to firms with poor access to these markets via commercial credit in order to get a competitive advantage. Also, Appuhami (2008)[xiii] found proof for the redistribution view showing that leverage is significantly positively related to the working capital requirements.

Finally, it is expected that LEV will have an inverse relationship with the length of the receivables conversion period, the length of the inventory conversion period and so the length of the CCC, but a positive correlation with and the length of the payables conversion period. This debate yields the following hypotheses:

H_{14}: LEV has a negative relationship with the length of the CCC.

H_{14a}: LEV has negative relationship with the length of the INVcp.

H_{14b}: LEV has a negative relationship with the length of the RECcp.

H_{14c}: LEV has positive relationship with the length of the PAYcp.

2.5.10. Internal variable: Cost of external finance (FCOST)

The last but not the least internal variable found in the literature and added to the model is the cost of external finance (FCOST). FCOST is calculated as interest paid$_t$ / ((non-current liabilities$_t$ + non-current liabilities$_{t-1}$) / 2 + (current liabilities$_t$ + current liabilities$_{t-1}$) / 2 – (creditors$_t$ + creditors$_{t-1}$) / 2) * 100%. When the cost of external finance increases, firms will be less generous in providing financing to their customers. Furthermore, they will ask more financing from their suppliers by paying late (García-Teruel and Martínez-Solano 2010; Filbeck and Krueger 2005). One can also imagine that firms will try to avoid financing costs caused by maintaining stock levels that are too large. García-Teruel and Martínez-Solano (2010)[vi] found also empirical evidence along European SMEs for their statement by discovering significant inverse relationships between cost of external financing and accounts receivable and significant positive correlations with accounts payable. However, Appuhami (2008)[xiii] found an unexpected result, observing a significant and positive correlation between finance expenditure[xiii] and working capital requirements.

Finishing, the expectations are that FCOST will have a positive correlation with the length of the payables conversion period. Furthermore, negative relationships with the length of the receivables conversion period and the length of the inventory conversion period will also lead to a negative relation with the length of the CCC. This debate yields the following hypotheses:

H_{15}: FCOST has a negative relationship with the length of the CCC.

H_{15a}: FCOST has a negative relationship with the length of the INVcp.

H_{15b}: FCOST has a negative relationship with the length of the RECcp.

H_{15c}: FCOST has a positive relationship with the length of the PAYcp.

2.5.11. Overview determinants excluded from this paper

Due to the finding of about thirty possible determinants of WCM in the academic literature, the author decided to include only a selection of these determinants in the model used in this paper for practical reasons. He chose to include different types of variables that were expected to have significant relationships with the length of a firm's CCC. Besides, multiple determinants found in the academic literature were excluded from the regression model used in this paper for several reasons. These reasons vary from: 1) not having the right data, 2) expecting huge overlap

with one or more other variables already used in the model or 3) preventing finding correlations that cannot for sure be ascribed to the researched aspect, because in reality a third and unknown variable could have been tested for having a relation with WCM. The full list of those possible determinants, the specific reason(s) for exclusion and the relevant literature per potential variable can be found in Appendix B: Overview determinants found in the literature but not used in this paper.

2.6. Control variables

Three control variables are included to the model to significantly increase the probability that the variables in the model are measuring what they are intended to do, i.e.: industry, time and country. No hypotheses are set for the control variables.

2.6.1. Control variable: Industry

Industry is the first control variable that will be added to the model, because the distribution of credit to customers, the management of inventory and a firm's ability to delay payments could depend on industry structures. Where some companies can relatively easily minimize accounts receivable and inventory, others are better suited to maximize accounts payable (Filbeck and Krueger 2005). For example, firms sell different types of goods which lead to different types of inventory management. Firms that sell goods with high obsolescence rates or perishable goods need to take care to not set to high inventory levels. Other companies need to hold larger inventory levels to prevent suffering from high price fluctuations from raw materials during projects with fixed prices or even losing sales because of not having enough (key) materials for production (Preve and Sarria-Allende 2010). Actually, Ng, Smith and Smith (1999), Petersen and Rajan (1997) and Smith (1987) showed that trade credit terms differ between industries and that there exist only limited differences within industries. Variations in levels of accounts receivable and accounts payable across industries are also found by García-Teruel and Martínez-Solano (2010), Preve and Sarria-Allende (2010) and Niskanen and Niskanen (2006). Additionally, several studies (Baños-Caballero, García-Teruel and Martínez-Solano 2010; Nazir and Afza 2008b, 2007; Kieschnick, LaPlante and Moussawi 2006; Weinraub and Visscher 1998; Hawawini, Viallet and Vora 1986) proved that WCM is affected by industry factors. Although, WCM-practices within industries change significantly over the time, distinctions between

industries continue to persist (Filbeck and Krueger 2005; Hawawini, Viallet and Vora 1986). Nakamura and Palombini (2009) suggest that these changes could be connected to macroeconomic factors like interest rates, competition and innovation. Nevertheless, Chiou, Cheng and Wu (2006) did not find a significant relation between industry and WCM. The researcher expects to find evidence for the fact that the industry in which a company operates influences WCM (i.e. CCC). Just as Kieschnick, LaPlante and Moussawi (2008) did, firms within the financial service industries will not be included in the sample, because working capital has a distinct meaning in these industries. Instead, only firms from the following three specific industries (NACE Rev. 2 main sections) are selected: "Construction", "Manufacturing" and "Transportation and storage". These industries are chosen because the researcher expects firms within these industries to have considerable amounts of accounts receivable, inventories and accounts payable such that potential influences from other determinants can be observed more easily. Thus, two industry dummy variables are added to the regression model to control for industry effects: I_CON for the construction companies and I_TS for transportation and storage companies. When a firm scores a zero for both I_CON and I_TS, then it is a manufacturer (I_MAN).

2.6.2. Control variable: Time

The second control variable is time. The time dummies, which vary over time but are equal for all firms, are added to the model to capture time-specific macro economic factors, other than ΔGDP, that are out of the management's control. The inclusion of time dummies is also in line with other studies (García-Teruel and Martínez-Solano 2010; Baños-Caballero, García-Teruel and Martínez-Solano 2010; Hill, Kelly and Highfield 2010). Furthermore, various studies (Filbeck and Krueger 2005; Hawawini, Viallet and Vora 1986) found that WCM-practices within industries change significantly over the time. Nakamura and Palombini (2009) suggest that these changes could be connected to macroeconomic factors like interest rates, competition and innovation. Thus, three dummy variables are added to the model to control for time effects: D2006, D2007 and D2008. When a firm scores a zero for all these three dummies, the year is 2009.

2.6.2. Control variable: Country

The last control variable will be the country in which a company is established. These country dummies are introduced in order to check whether or not countries have specific characteristics influencing the WCM in SMEs that could not be explained by the cultural variables. The other way round the country dummies also control for the possibility that the cultural variables are in reality measuring the effect of a specific country characteristic on the WCM in SMEs. Thus, ten dummy variables are added to the model to control for country effects. When a firm scores a zero for all these ten dummies, the firm's country or origin is the United States of America.

2.7. Size and the effect of national culture on working capital management

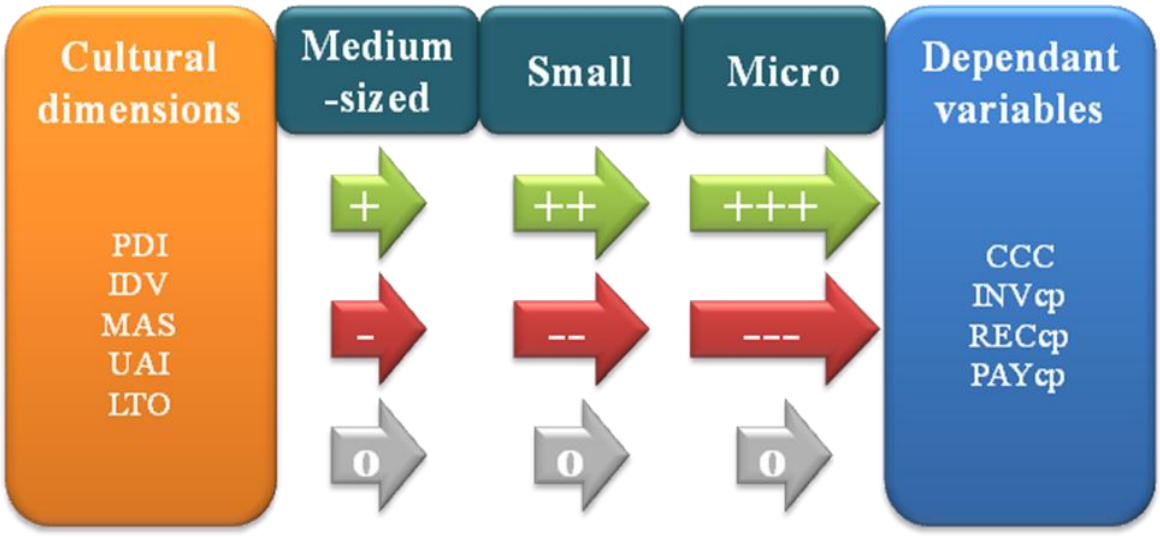
When discussing the subject of finance within small businesses, Keasey and Watson (1993) mentioned that "… the development of many abstract mathematical models seems to have ruled out asking people what they do. Instead of a subject that is based upon understanding and improving what people do in practice, we have a subject built around formal models so heavily dependent upon strict rationality conditions and tractability requirements that the descriptive and policy relevance of their conclusions are always open to considerable doubt". The author agrees with them and is expecting that: *the smaller the company is, the bigger the effects of national culture are on WCM*. There are various reasons found in the literature that could support this statement.

Nayak and Greenfield (1994) argued that micro firms (less than 10 employees) are much less likely to employ finance specialists and use a more ad hoc or subjective form of WCM. Other researchers noted that those firms are less likely to have sufficient resources, expertise and time available to introduce more complicated financial management practices (Sangster 1993; Keasey and Watson 1993). Based on observations from others (Gable and Topol 1987; Sexton and Van Auken 1985; Robinson and Pearce 1984) that smaller companies consider formal strategic planning as less relevant than bigger ones did, Bianchi and Bivona (2000) conclude that: "A small business entrepreneur is more concerned with day-to-day operational problems of running the firm and has neither the time nor the staff to invest in strategic planning". Because they discovered that small firms pursue similar goals than large firms, Peel and Wilson (1996) think that "it is the lack of financial management skills in the small firm sector which (at least partly)

explains the relatively low usage of the more sophisticated capital budgeting techniques, rather than a pursuance of non-wealth maximization firm objectives". In addition, Howorth and Westhead (2003) found that most small firms focus attention on one area of WCM. Furthermore, they conclude that: "Time constraints not only limit the amount of time for WCM, but also the amount of time available to assess whether changes to current WCM policy would be worthwhile". Ultimately, all those factors do point into the direction that the smaller the company, the more its working capital management is based on the preferences, applied rules of thumb and entrepreneurial intuitions of the owners or key managers. Evidently, these could be biased by national culture. This debate yields the following hypotheses, which is also represented graphically in Figure 5:

H_{16}: The smaller the SME (micro < small < medium-sized), the bigger the effects of the different determinants of national culture on WCM.

Figure 5: The smaller the SME, the bigger the effects of the different determinants of national culture on WCM.



3. DATA & METHODOLOGY

3.1. Introduction

In section 3 the sample data and the databases are described, the selection process and criteria clarified, and methodology amplified. This makes it possible to present the results in section 4.

3.2. Data and sample collection

3.2.1. Final sample

Firms were included into the sample if they met the conditions of a SME and had complete data over the period ranging from 2006 up to and including 2009. The 10,129 SMEs in the sample used for this research are originated from three Asian countries: Japan (918), Republic of Korea (4,773) and Taiwan (119), seven European countries: France (27), Germany (46), Greece (2,932), Poland (389), Sweden (740), Switzerland (23) and the United Kingdom (55), and the United States of America (107). The SME-definition is based on the definition used by the European Union, which can be found in "Appendix C: EU-definitions concerning micro, small and medium-sized enterprises (SMEs)". This means an enterprise is considered to be a SME when it employs fewer than 250 persons and when it has either an annual turnover not exceeding 50 million euro, or an annual balance sheet total not exceeding 43 million euro. For the second part of the analyses, it is necessary to divide the category of SMEs into three subgroups. 1) When an enterprise employs fewer than 10 persons and has an annual turnover or annual balance sheet total not exceeding 2 million euro it is called a micro firm. 2) When an enterprise is larger, but still employs fewer than 50 persons and has an annual turnover or annual balance sheet total not exceeding 10 million euro it is called a small firm. 3) Bigger firms are called medium-sized enterprises.

3.2.2. Databases

Two databases were used to obtain the necessary data for this research. First, the data with the country scores about the different cultural dimensions of Hofstede's national culture were extracted from his website (www.geert-hofstede.com). The countries with just estimated cultural values were not excluded from the research in order to reduce the chance of finding strong

correlations between the cultural dimensions. Noorderhaven et al. (2002) argue that "the use of estimations is a perfectly legitimate way of extending the applicability of Hofstede's indices, as long as the difference in reliability between these estimates and proxies and the original scores based on Hofstede's research are taken into account". In the end, the only country with estimated values included in the model was Poland.

Second, the Orbis database, a database owned by Bureau van Dijk with financial and economical data from companies all over the world, was used to search for the company financials needed to do this research. Unfortunately, it was not possible to check for accounting policies (FIFO, LIFO, etc.) used by companies in setting inventory levels, because that information was not made available by Orbis. Furthermore, Orbis also provides information about the ΔGDP in a country and the industry in which a company operates.

3.2.3. Selection process and selection criteria

Orbis makes it possible to use a search strategy to filter out companies which do not satisfy the set of requirements. Therefore, such a set of requirements, which can be found in "Appendix D: Orbis search strategy", was composed based on the data needed to be able to calculate all the variables necessary for the model. After the data was extracted from Orbis, all the variables needed were calculated in an excel-file. Afterwards diverse firms were removed from the file for having anomalies, having outliers, missing values or because they are not a SME. The latter companies had both an annual turnover exceeding 50 million euro and an annual balance sheet total exceeding 43 million euro and thus did not comply with the characteristics of the EU-definition of a SME. Other observations had anomalies, such as negative values for one of their balance sheet accounts or for either sales, costs of goods sold or interest paid. Firms with no sales or no costs of goods sold in one or more years were excluded from the sample because that makes it impossible to calculate the GROWTH-variable or the INVcp-variable. A GROWTH larger than 500% in one year is considered as an unrealistic growth. A GPM smaller -/- 100% is also considered as unrealistic (in Orbis this is called 'n.s.' or „non significant'). Both enterprises with either a ROA smaller than -/- 100% or a LEV bigger than 100% have no equity left and are practically bankrupt. Also a FCOST larger than 100% is regarded as an extreme value. It is unlikely that firms with a PAYcp or a RECcp longer than 730 days (two years) will pay their bills or get paid by their debtors, whereas companies with an INVcp longer than 730 days are

considered to have inventories that are far too large. For some firms the date of incorporation was missing (unknown) so the firm's AGE could not be calculated and in one case the creditors were larger than the current liabilities, which is of course impossible. At the end, all firms based in countries which had less than 20 companies left in the sample were removed in order to improve the reliability of the results found for the cultural variables. This means a sample of 5,823 SMEs was left from the original file with 6,811 companies. Later, extra firms were added to the sample in order to avoid multicollinearity problems. Ultimately, the final sample had 10,129 SMEs from an original file with 12,019 firms. See "Appendix E: Values Hofstede & number of firms per country" for the amounts of firms deleted per country.

3.2.4. Descriptive statistics final sample

The descriptive statistics for all independent and dependent variables can be found in Table 2 on the next page. The first thing to look at is whether all the outliers were deleted. Remember that the maximum value found for SIZE may be large but does not mean that it violates the SME-criteria. Those firms may have more than € 43 million of assets; they do have less than € 50 million sales. The conclusion is that all outliers are deleted. Furthermore, a good spread of the values for different variables, and of particular importance the cultural dimensions, is noticeable. This is important to be able to find causes for differences in WCM between firms. The economic recession following the credit crisis can also be seen in the numbers leading to a minimum value for ΔGDP that is negative. Only Poland (1.70%) and the Republic of Korea (0.32%) had a marginal positive ΔGDP in 2009. Furthermore, an interesting point of attention is the fact that the average sales growth (GROWTH) for the SMEs in the sample was 2.7 times larger than the ΔGDP, indicating that the real growth of the economy comes mainly from the SMEs.

Table 2: Descriptive statistics final sample

Variable	Obs	Mean	Std. Dev.	Min	Max
PDI	40,516	57.123	8.432	31	68
IDV	40,516	32.566	17.980	17	91
MAS	40,516	48.426	20.326	5	95
UAI	40,516	88.645	21.677	29	112
LTO	28,588	67.796	17.332	25	87
DELTA_GDP	40,516	2.329	2.969	-6.298	6.8
AGE	40,516	20.326	16.406	0	193
SIZE	40,516	10.162	11.843	0.02	349.87
GPM	40,516	20.420	14.250	-92.97	98.17
ROA	40,516	3.028	9.937	-99.62	201.35
CF	33,656	5.453	10.146	-99.02	202.92
GROWTH	40,516	6.320	39.842	-95.24	499.65
NOS	40,516	3.220	2.974	1	67
LEV	40,516	29.274	21.620	0	99.77
FCOST	40,516	4.738	3.839	0	99.69
INVcp	40,516	75.414	85.405	0	729.13
RECcp	40,516	98.877	82.838	0	726.9
PAYcp	40,516	72.586	68.339	0	727.42
CCC	40,516	99.609	99.589	-459.12	1,134.38

In Table 3 on the next page you are able to see descriptive statistics per country and per industry, as well as the national values for the Hofstede's cultural dimensions. It is not difficult to see that there exist clear differences in the mean values of CCC, INVcp, RECcp and PAYcp between the industry sectors and between the countries. For example, companies in the transportation and storage sector (I_TS) have only a short INVcp. This sounds logically because their main business is delivering a service (transporting and storing the inventories of other companies) and not (producing and) selling a physical product, which needs the holding of large inventories. It should be mentioned that the companies in the final sample are not equally distributed among the countries. Especially the Republic of Korea and Greece are very well represented in the sample, whereas France, Germany, Switzerland and the UK are represented with less than 60 firms each. This means that some results found further on in this research could slightly differ if the firms were more equally spread among the countries. However, there are country dummies added to the model that also (partly) control for this unbalance, just as industry dummies are added to control for the unbalanced spread of companies over the different sectors.

Table 3: Descriptive statistics per country

	Total sample	France	Germany	Greece	Japan	Poland	Republic of Korea	Sweden	Switzerland	Taiwan	UK	USA
# Companies												
I_CON	1,378	1	0	370	285	79	508	129	0	4	0	2
I_TS	351	1	3	171	36	19	58	35	20	4	1	3
I_MAN	8,400	25	43	2,391	597	291	4,207	576	3	111	54	102
Total	*10,129*	*27*	*46*	*2,932*	*918*	*389*	*4,773*	*740*	*23*	*119*	*55*	*107*
Hofstede's cultural dimensions												
PDI		68	35	60	54	68	60	31	34	58	35	40
IDV		71	67	35	46	60	18	71	68	17	89	91
MAS		43	66	57	95	64	39	5	70	45	66	62
UAI		86	65	112	92	93	85	29	58	69	35	46
LTO		N.a.	31	N.a.	80	32	75	33	N.a.	87	25	29
Mean values of CCC												
I_CON	80	-1	N.a.	118	80	37	72	36	N.a.	1	N.a.	72
I_TS	40	-16	18	62	27	29	24	6	-9	55	55	24
I_MAN	105	87	77	172	70	69	80	76	91	108	78	100
Total	*100*	*80*	*73*	*159*	*71*	*61*	*78*	*66*	*4*	*102*	*78*	*98*
Mean values of INVcp												
I_CON	46	21	N.a.	82	42	26	33	14	N.a.	11	N.a.	47
I_TS	9	8	5	9	5	10	8	3	31	0	0	19
I_MAN	83	97	118	123	58	72	63	78	107	107	115	136
Total	*75*	*91*	*110*	*111*	*51*	*59*	*59*	*63*	*41*	*100*	*113*	*131*
Mean values of RECcp												
I_CON	95	3	N.a.	160	79	71	71	53	N.a.	75	N.a.	62
I_TS	91	58	31	141	57	53	46	29	21	60	84	49
I_MAN	100	107	48	171	91	62	74	45	64	63	66	55
Total	*99*	*101*	*47*	*168*	*86*	*64*	*73*	*45*	*27*	*64*	*66*	*55*
Mean values of PAYcp												
I_CON	63	63	N.a.	135	42	64	31	34	N.a.	91	N.a.	32
I_TS	80	176	40	110	33	37	35	32	188	9	72	54
I_MAN	74	126	62	120	81	60	53	37	59	46	104	60
Total	*73*	*126*	*61*	*121*	*67*	*60*	*51*	*36*	*171*	*47*	*103*	*60*

3.3. Methodology

Based on the theories described and the hypotheses set in section 2 four equations were composed and will be tested using panel data methodology. The equations can be found below:

$$CCC_{it} = \beta_0 + \beta_1 PDI_i + \beta_2 IDV_i + \beta_3 MAS_i + \beta_4 UAI_i + \beta_5 LTO_i + \beta_6 \Delta GDP_{it} + \beta_7 AGE_{it} + \beta_8 SIZE_{it} + \beta_9 GPM_{it} + \beta_{10} ROA_{it} + \beta_{11} CF_{it} + \beta_{12} NOS_i + \beta_{13} GROWTH_{it} + \beta_{14} LEV_{it} + \beta_{15} FCOST_{it} + \gamma_i + \delta_i + \lambda_t + \mu_i + \varepsilon_{it}.$$

$$INVcp_{it} = \beta_0 + \beta_1 PDI_i + \beta_2 IDV_i + \beta_3 MAS_i + \beta_4 UAI_i + \beta_5 LTO_i + \beta_6 \Delta GDP_{it} + \beta_7 AGE_{it} + \beta_8 SIZE_{it} + \beta_9 GPM_{it} + \beta_{10} ROA_{it} + \beta_{11} CF_{it} + \beta_{12} NOS_i + \beta_{13} GROWTH_{it} + \beta_{14} LEV_{it} + \beta_{15} FCOST_{it} + \gamma_i + \delta_i + \lambda_t + \mu_i + \varepsilon_{it}.$$

$$RECcp_{it} = \beta_0 + \beta_1 PDI_i + \beta_2 IDV_i + \beta_3 MAS_i + \beta_4 UAI_i + \beta_5 LTO_i + \beta_6 \Delta GDP_{it} + \beta_7 AGE_{it} + \beta_8 SIZE_{it} + \beta_9 GPM_{it} + \beta_{10} ROA_{it} + \beta_{11} CF_{it} + \beta_{12} NOS_i + \beta_{13} GROWTH_{it} + \beta_{14} LEV_{it} + \beta_{15} FCOST_{it} + \gamma_i + \delta_i + \lambda_t + \mu_i + \varepsilon_{it}.$$

$$PAYcp_{it} = \beta_0 + \beta_1 PDI_i + \beta_2 IDV_i + \beta_3 MAS_i + \beta_4 UAI_i + \beta_5 LTO_i + \beta_6 \Delta GDP_{it} + \beta_7 AGE_{it} + \beta_8 SIZE_{it} + \beta_9 GPM_{it} + \beta_{10} ROA_{it} + \beta_{11} CF_{it} + \beta_{12} NOS_i + \beta_{13} GROWTH_{it} + \beta_{14} LEV_{it} + \beta_{15} FCOST_{it} + \gamma_i + \delta_i + \lambda_t + \mu_i + \varepsilon_{it}.$$

Where: i = 1,…,N refers to the company and t = 1,…,T refers to time. CCC measures the cash conversion cycle, INVcp the inventories conversion period, RECcp the receivables conversion period, and PAYcp the payables conversion period. β_0 is a constant term. PDI represents the power distance index, IDV the individualism, MAS the masculinity, UAI the uncertainty avoidance index, and LTO the long-term orientation in a country. ΔGDP is change of GDP over the year. AGE relates to the age of a company, SIZE to its size, GPM to the gross profit margin, ROA to the return on assets, CF to its cash flow, NOS to the number of recorded shareholders, GROWTH to the sales growth of the firm, LEV to the firm's leverage, and FCOST to the cost of external finance. Next, the γ_i-parameters are controlling for the specific characteristics of each firm, the δ_i-parameters for industry uniqueness, λ_t-parameters for macroeconomic changes over time that are equal for all enterprises, whereas the μ_i-parameters

control for particular country specific characteristics that could potentially influence the dependant variables. ε_{it} is the error term.

The panel data model will be used in order to control for unobservable heterogeneity through which biases stemmed from the existence of individual firm effects will be excluded (Hsiao 1985). In specific, the random effects panel data model will be used, because there are various reasons to believe that some specific and known differences between individual firms will affect the dependent variables. With the fixed-effects model it is impossible to search for such differences, because that model "controls for all time-invariant differences between the individuals, so the estimated coefficients of the fixed-effects models cannot be biased because of omitted time-invariant characteristics. One side effect of the features of fixed-effects models is that they cannot be used to investigate time-invariant causes of the dependent variables", like the cultural variables, the NOS and the industry dummies. "Technically, time-invariant characteristics of the individuals (firms) are perfectly collinear with the person (or firm) dummies. A time-invariant characteristic cannot cause such a change, because it is constant for each person" (Kohler and Kreuter 2009). Instead, the random-effects model assumes no correlation between independent variables and the firm dummies allowing time-invariant factors to have explanatory power. Furthermore, the Breusch and Pagan Lagrangian multiplier test for random effects will be used to test whether a model is capturing firm heterogeneity. The model is appropriate when the null hypothesis is rejected, meaning that significant differences exist between firms that affects the dependent variable (Breusch and Pagan 1980).

In the end, it will be checked whether or not the size of the SME affects the influence of the five cultural dimensions on WCM. This will be done by using the same models as above. The only difference is that the models are controlled for size (micro, small or medium-sized).

The actual empirical analyses and results can be found in the next section.

4. EMPERICAL ANALYSES & RESULTS

4.1. Introduction

This section has the goal of providing and explaining the results from the panel data analyses. Before the results are explained in paragraph 4.3 and further, it is necessary to introduce you as a reader through the steps that have been taken in order to find the best models. This will be done in paragraph 4.2. Afterwards, in section 5 the results will be summarized, the limitations clarified and the recommendations for further research given.

4.2. Finding the best model(s)

The search for the best model will start by means of the dependent variable CCC. The first seven models that will be explained can be found in "Appendix F: Finding the best panel data regression equation". The goal was to keep the final model as complete as possible. Model 1 is the complete model and is based on a sample of 5,823 firms from eight countries as can be seen in "Appendix E: Values Hofstede & number of firms per country". However, when taking a look at the correlation matrix of model 1 (see "Appendix G: Correlation matrix based on 5,823 firms - Model 1 -"), there are high correlations between many independent variables. High correlations, which means statistically significant and smaller than -0.4 or bigger than 0.4, between independent variables could lead to multicollinearity problems. One problem is getting greater standard errors and smaller t-statistics, which makes it harder to reject the null hypothesis. Another consequence is that the betas (β) of two highly positively correlated independent variables are likely to have a highly and negative correlation. This means that one of the two factors is overestimated, whereas the other is underestimated. Such estimates of the betas tend to be very unstable from one sample to another. These multicollinearity problems can be solved best by adding extra data to the sample. Otherwise, one can drop an independent variable that has a high correlation with another (Silvey 1969, Farrar and Glauber 1967).

Therefore, the CF-variable was removed in model 2 because of the very high and significant correlation with ROA (0.95). The fact that CF and ROA have a strong correlation is not surprising seen the only difference between those two is the depreciation which is subtracted in the ROA compared to the CF. It was chosen to delete CF instead of ROA because the removal of CF made it possible to extend the sample from 5,823 to 7,147 firms originated from nine instead

of eight countries (see "Appendix E: Values Hofstede & number of firms per country"). Furthermore, it is common knowledge that many managers in SMEs focus on profitability instead of cash flow, which makes ROA a better predictor of WCM in SMEs. Now it is possible to see that the coefficient of ROA switched sign, which indicates that there was indeed a matter of multicollinearity.

Next, the LTO variable will be deleted in model 3, because it is still possible to detect highly and significant correlations between independent variables in the correlation matrix of model 2 (see "Appendix H: Correlation matrix based on 7,147 firms - Model 2 -"). This despite the fact that the correlations are reduced due to the expansion of the sample. The LTO variable was chosen because of the strong and significant correlations with PDI (0.62), IDV (-0.84) and UAI (0.73). Moreover, the removal of the LTO variable makes it possible to again put extra firms into the sample from countries with an unknown LTO value reaching the final sample with 10,129 companies from eleven countries (see "Appendix E: Values Hofstede & number of firms per country").

It has been noticed that two time dummies are strong and significantly correlated to ΔGDP and just like Baños-Caballero, García-Teruel and Martínez-Solano (2010) did, it was thus decided to drop the time dummies in model 4. These correlations are not surprising, because ΔGDP is expected to include environmental changes in a country over time. Whereas this „only' makes the relationship between ΔGDP and CCC twice as negative, it does the relationships between ΔGDP and the other dependent variables either become significant or change sign. So it definitely solved a multicollinearity problem.

The highly and significant negative correlation between Greece and the Republic of Korea (-0.60) will be left for what it is, because the country dummies are included just for controlling purposes and the deletion of one country dummy would make all the country dummies worthless. Furthermore, the highly and significant correlations between PAYcp and RECcp (0.51), CCC and INVcp (0.69), and CCC and RECcp (0.72) do not have to be dealt with, because they are all dependent variables.

Now, there are still some multicollinearity problems between the cultural variables to deal with, but first it will be checked whether or not it are really the cultural factors that influence the dependant variables. Consequently, the country dummies were deleted in model 5 and subsequently the cultural variables in model 6. In the end, both the cultural factors and the

country dummies were removed in model 7. Now, one is able to see that the inclusion of the country dummies hardly affects the R^2, whereas the inclusion of the cultural variables leads to a huge increase of the R^2. This leads to the conclusion that the cultural dimensions do have important explanatory power and are not measuring other particular country specific characteristics, whereas the country dummies have only very little explanatory power. WCM differences across companies from different countries are thus affected by the national culture. However, also the country dummies will be kept into the model to keep the model as complete as possible.

As mentioned just before, there still exist some multicollinearity problems between the cultural variables that need to be solved. These are very clear because of high and significant correlations on one side and the switch of direction for all the four cultural coefficients, when the sample was enlarged by the deletion of the LTO variable, on the other side. Thus the author decided to make different models with the dimensions of culture that are not correlating too much (between -0.4 and 0.4). This has as a result that in the next paragraph model 6 is taken as the basis model and the cultural variables are put into and taken from the model one after the other, leading to a clear overview of the individual influences of the different cultural factors. At this moment, one is able to observe that the betas (β) of two highly positively correlated independent variables (PDI and UAI, 0.80) do have a highly and negative correlation in model 4, whereas in reality they have both a positive relationship with CCC. This means that UAI is overestimated, whereas PDI is underestimated in model 4. Also IDV and MAS are respectively over- and underestimated in model 4. Ultimately, these are all consequences of multicollinearity problems that are thus solved in models 8 - 13, which are thus the best models for the purpose of this study.

4.3. Discussion of the results

First, the models are shown in Table 4, Table 5, Table 6 and Table 7 on the next four pages. Afterwards, the results are explained. Because in this paper research is done on four dependent variables: CCC, INVcp, RECcp and PAYcp, these abbreviations are put in front of the model number to be clear which model will be discussed. Remember, a list with the meaning of all abbreviations can be found in “Appendix A: Abbreviations used in paper”. When not further specified, SMEs are meant when talking about firms, companies or enterprises. Next, *** is used

to identify that a relationship between an independent and a dependent variable is significant at the 99 per cent level, ** represents a 95 per cent significance and * a 90 per cent significance.

Table 4: Determinants of CCC in SMEs

Model	CCC-6	CCC-8	CCC-9	CCC-10	CCC-11	CCC-12	CCC-13
PDI	Out	1.354***	1.506***	Out	Out	Out	Out
IDV	Out	Out	Out	-0.037	-0.030	Out	Out
MAS	Out	0.131***	Out	0.395***	Out	0.394***	Out
UAI	Out	Out	Out	Out	Out	Out	1.296***
ΔGDP	-2.152***	-2.155***	-2.147***	-2.169***	-2.151***	-2.171***	-2.141***
AGE	0.485***	0.619***	0.671***	0.398***	0.495***	0.385***	0.593***
SIZE	-0.123**	-0.110*	-0.0983*	-0.141**	-0.124**	-0.140**	0.027
GPM	0.396***	0.419***	0.422***	0.385***	0.399***	0.383***	0.395***
ROA	-0.527***	-0.542***	-0.547***	-0.514***	-0.529***	-0.512***	-0.535***
GROWTH	-0.319***	-0.319***	-0.318***	-0.320***	-0.319***	-0.320***	-0.321***
NOS	1.172***	1.078***	1.047***	1.226***	1.167***	1.232***	1.517***
LEV	0.566***	0.532***	0.528***	0.563***	0.563***	0.566***	0.513***
FCOST	-0.799***	-0.851***	-0.874***	-0.774***	-0.801***	-0.770***	-0.972***
I_CON	-10.63***	-10.53***	-9.536***	-13.20***	-10.52***	-13.34***	-10.89***
I_TS	-64.80***	-63.64***	-62.80***	-66.48***	-64.61***	-66.71***	-69.52***
France	-7.679	-9.071	-9.068	-8.036	-7.650	-8.073	-12.170
Germany	-11.720	-14.190	-13.680	-13.580	-11.550	-13.800	-18.570
Greece	7.046	6.954	6.604	8.057	7.083	8.008	6.998
Japan	22.62***	21.46***	21.10***	23.32***	22.63***	23.30***	18.04***
Poland	27.34***	24.78***	24.53***	27.39***	27.35***	27.38***	16.82**
S-Korea	10.210	10.000	9.796	10.79*	10.250	10.730	10.030
Sweden	9.057	8.237	8.024	9.440	9.085	9.404	7.566
Switzerland	16.930	15.950	15.060	18.900	16.840	19.010	13.390
Taiwan	22.77**	20.69*	20.73*	22.06**	22.76**	22.07**	17.160
UK	-7.022	-7.384	-7.316	-7.213	-6.997	-7.247	-9.294
Constant	67.88***	-17.14**	-20.36**	51.70***	68.63***	50.77***	-48.13***
Observations	40,516	40,516	40,516	40,516	40,516	40,516	40,516
Number of ID	10,129	10,129	10,129	10,129	10,129	10,129	10,129
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R^2	0.0899	0.1054	0.1049	0.0958	0.0900	0.0957	0.1644
P-Breusch-Pagan	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Robust standard errors

*** p<0.01, ** p<0.05, * p<0.1

P-Breusch-Pagan gives the P-value from the Breusch-Pagan Lagrange multiplier test. Rejection of the null hypotheses means that individual firm effects are present in the data.

Table 5: Determinants of INVcp in SMEs

Model	INVcp-6	INVcp-8	INVcp-9	INVcp-10	INVcp-11	INVcp-12	INVcp-13
PDI	Out	0.461***	0.525***	Out	Out	Out	Out
IDV	Out	Out	Out	0.190***	0.193***	Out	Out
MAS	Out	0.055	Out	0.142***	Out	0.144***	Out
UAI	Out	Out	Out	Out	Out	Out	0.617***
ΔGDP	-1.507***	-1.507***	-1.504***	-1.525***	-1.518***	-1.514***	-1.499***
AGE	0.333***	0.376***	0.398***	0.228***	0.263***	0.296***	0.385***
SIZE	0.194***	0.199***	0.204***	0.192***	0.197***	0.188***	0.267***
GPM	1.300***	1.304***	1.306***	1.282***	1.287***	1.294***	1.291***
ROA	-0.765***	-0.769***	-0.771***	-0.749***	-0.755***	-0.759***	-0.766***
GROWTH	-0.191***	-0.191***	-0.191***	-0.192***	-0.191***	-0.191***	-0.192***
NOS	0.821***	0.792***	0.779***	0.876***	0.855***	0.843***	0.991***
LEV	0.218***	0.207***	0.205***	0.233***	0.233***	0.218***	0.193***
FCOST	-0.002	-0.022	-0.030	0.024	0.015	0.007	-0.088
I_CON	-22.97***	-23.01***	-22.60***	-24.66***	-23.69***	-23.96***	-23.12***
I_TS	-76.18***	-75.83***	-75.48***	-78.10***	-77.42***	-76.88***	-78.42***
France	-3.620	-4.099	-4.101	-3.949	-3.813	-3.761	-5.756
Germany	11.400	10.510	10.720	9.540	10.270	10.640	8.138
Greece	11.95**	11.95**	11.80**	12.05**	11.70**	12.30**	11.93**
Japan	15.24***	14.87***	14.72***	15.39***	15.14***	15.50***	13.07**
Poland	20.47***	19.62***	19.51***	20.45***	20.43***	20.50***	15.49**
S-Korea	10.61**	10.56**	10.47**	10.50**	10.31**	10.80**	10.53**
Sweden	8.910	8.641	8.551	8.855	8.726	9.038	8.200
Switzerland	28.460	28.160	27.800	29.790	29.050	29.210	26.740
Taiwan	23.07**	22.35**	22.37**	22.83**	23.08**	22.82**	20.41**
UK	9.395	9.277	9.301	9.142	9.217	9.316	8.337
Constant	32.22***	2.881	1.520	21.25***	27.32***	25.98***	-22.93***
Observations	40,516	40,516	40,516	40,516	40,516	40,516	40,516
Number of ID	10,129	10,129	10,129	10,129	10,129	10,129	10,129
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R2	0.1509	0.1534	0.1534	0.1526	0.1518	0.1517	0.1729
P-Breusch-Pagan	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Robust standard errors

*** p<0.01, ** p<0.05, * p<0.1

P-Breusch-Pagan gives the P-value from the Breusch-Pagan Lagrange multiplier test. Rejection of the null hypotheses means that individual firm effects are present in the data.

Table 6: Determinants of RECcp in SMEs

Model	RECcp-6	RECcp-8	RECcp-9	RECcp-10	RECcp-11	RECcp-12	RECcp-13
PDI	Out	1.448***	2.134***	Out	Out	Out	Out
IDV	Out	Out	Out	-0.130***	-0.113***	Out	Out
MAS	Out	0.585***	Out	0.869***	Out	0.867***	Out
UAI	Out	Out	Out	Out	Out	Out	1.681***
ΔGDP	-0.884***	-0.917***	-0.891***	-0.918***	-0.878***	-0.925***	-0.896***
AGE	0.172***	0.207***	0.438***	0.001	0.213***	-0.046	0.318***
SIZE	-0.144***	-0.174***	-0.131***	-0.197***	-0.149***	-0.193***	0.020
GPM	0.306***	0.324***	0.354***	0.290***	0.316***	0.281***	0.319***
ROA	-0.355***	-0.357***	-0.389***	-0.330***	-0.362***	-0.323***	-0.371***
GROWTH	-0.317***	-0.317***	-0.315***	-0.319***	-0.317***	-0.319***	-0.318***
NOS	-0.032	-0.054	-0.204	0.082	-0.052	0.105	0.426**
LEV	0.248***	0.211***	0.193***	0.238***	0.239***	0.249***	0.173***
FCOST	-0.241**	-0.230**	-0.320***	-0.171*	-0.248**	-0.160	-0.426***
I_CON	2.725	-0.235	4.271*	-2.744	3.151	-3.213	2.309
I_TS	-8.885**	-9.811**	-6.068	-12.27***	-8.161*	-13.09***	-15.06***
France	0.012	-2.011	-2.021	-0.778	0.115	-0.906	-5.896
Germany	5.225	0.165	2.384	1.359	5.876	0.613	-3.740
Greece	4.650	5.569	3.970	6.895	4.786	6.726	4.522
Japan	25.89***	25.32***	23.67***	27.40***	25.94***	27.32***	19.88***
Poland	38.22***	35.25***	34.02***	38.18***	38.22***	38.15***	24.32***
S-Korea	7.955	8.279*	7.342	9.278*	8.128	9.071*	7.691
Sweden	10.87*	10.35*	9.388*	11.74**	10.97*	11.61**	8.928*
Switzerland	9.012	10.310	6.396	13.180	8.666	13.570	4.492
Taiwan	21.18**	18.09**	18.23**	19.58**	21.17**	19.59**	13.840
UK	-9.462	-10.170	-9.949	-9.882	-9.371	-9.998	-12.470
Constant	79.71***	-30.64***	-45.36***	45.23***	82.56***	42.00***	-70.67***
Observations	40,516	40,516	40,516	40,516	40,516	40,516	40,516
Number of ID	10,129	10,129	10,129	10,129	10,129	10,129	10,129
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R2	0.0589	0.1173	0.1027	0.1025	0.0598	0.1017	0.2423
P-Breusch-Pagan	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Robust standard errors

*** p<0.01, ** p<0.05, * p<0.1

P-Breusch-Pagan gives the P-value from the Breusch-Pagan Lagrange multiplier test. Rejection of the null hypotheses means that individual firm effects are present in the data.

Table 7: Determinants of PAYcp in SMEs

Model	PAYcp-6	PAYcp-8	PAYcp-9	PAYcp-10	PAYcp-11	PAYcp-12	PAYcp-13
PDI	Out	0.468***	1.241***	Out	Out	Out	Out
IDV	Out	Out	Out	0.115***	0.127***	Out	Out
MAS	Out	0.652***	Out	0.743***	Out	0.744***	Out
UAI	Out	Out	Out	Out	Out	Out	1.096***
ΔGDP	-0.168**	-0.195***	-0.200***	-0.188***	-0.171**	-0.187**	-0.195***
AGE	0.042	-0.065	0.191***	-0.185***	-0.003	-0.145***	0.125***
SIZE	-0.0941**	-0.122***	-0.0735*	-0.131***	-0.0913**	-0.134***	0.058
GPM	0.782***	0.766***	0.812***	0.740***	0.772***	0.751***	0.775***
ROA	-0.573***	-0.553***	-0.601***	-0.530***	-0.564***	-0.538***	-0.590***
GROWTH	-0.177***	-0.178***	-0.175***	-0.180***	-0.177***	-0.179***	-0.177***
NOS	-0.338	-0.275	-0.454*	-0.194	-0.314	-0.216	-0.071
LEV	-0.156***	-0.173***	-0.197***	-0.145***	-0.143***	-0.157***	-0.218***
FCOST	0.756***	0.817***	0.696***	0.860***	0.773***	0.846***	0.589***
I_CON	-6.249***	-10.49***	-5.464***	-11.81***	-6.691***	-11.42***	-6.723***
I_TS	4.460	1.901	6.012	0.163	3.670	0.870	0.319
France	4.901	3.769	3.813	3.956	4.755	4.088	1.268
Germany	30.04***	25.94***	28.43***	25.40***	29.30***	26.07***	24.32***
Greece	7.406*	8.818**	7.069*	9.011**	7.234*	9.169**	7.475*
Japan	17.98***	18.59***	16.82***	19.09***	17.88***	19.18***	14.36***
Poland	31.42***	30.43***	29.18***	31.22***	31.35***	31.29***	22.90***
S-Korea	5.968	6.675	5.658	6.722	5.759	6.913*	5.906
Sweden	9.223**	9.462**	8.425*	9.717**	9.087*	9.844**	8.080*
Switzerland	12.720	15.54*	11.280	16.88*	13.080	16.57*	9.843
Taiwan	16.25**	14.44**	14.63**	14.88**	16.24**	14.89**	11.70*
UK	6.457	5.996	6.232	5.920	6.330	6.033	4.677
Constant	53.86***	-1.717	-18.46***	18.63***	50.53***	21.61***	-43.42***
Observations	40,516	40,516	40,516	40,516	40,516	40,516	40,516
Number of ID	10,129	10,129	10,129	10,129	10,129	10,129	10,129
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R2	0.0898	0.1353	0.1112	0.1330	0.0898	0.1327	0.2007
P-Breusch-Pagan	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Robust standard errors

*** p<0.01, ** p<0.05, * p<0.1

P-Breusch-Pagan gives the P-value from the Breusch-Pagan Lagrange multiplier test. Rejection of the null hypotheses means that individual firm effects are present in the data.

4.3.1. Cultural variable: Power distance index (PDI)

The analyses show that PDI has both a positive relationship with RECcp*** and PAYcp***, but also that the effect on RECcp is larger than the effect on PAYcp. This means that debtors, who under normal circumstances have more negotiation power than creditors, can delay payments to the creditors in countries with a higher acceptance of power inequalities (high PDI). Because SMEs deal often with larger counterparts, they are not able to enforce the same payment terms to their creditors as their debtors can do. This is in line with Rafuse (1996) who argued that larger firms, whether they are debtors of creditors, enforce their terms with the smaller ones. The adding of PDI to the model causes a huge increase of the R^2's, or the explanation power, of the RECcp and the PAYcp models (8 and 9). There was also a positive*** relation found between PDI and the length of the INVcp, where no relation was expected. This could indicate that SMEs hold on larger inventories in order to be able to gain more time and thus negotiation power while ordering restock. The conclusions are that SMEs from countries with a high PDI do have a longer CCC***, indicating a WCM that is less efficient.

4.3.2. Cultural variable: Individualism (IDV)

As hypothesized, the results show indeed a negative*** relation between IDV and RECcp and a positive*** one with PAYcp. This indicates that firms from individualistic countries do not feel responsible to help other firms and try to pay their costumers as late as possible, when at the same time collecting their money from suppliers as soon as possible. The relation between IDV and INVcp also seems to be positive*** for what no good theory can be found. Ultimately, IDV has a slightly and insignificant negative influence on the length of the CCC. The worth of all the relationships found between IDV and the dependent variables are questionable, because the including of IDV as an explanatory variable did hardly contribute to the explanatory power of any of the models.

4.3.3. Cultural variable: Masculinity (MAS)

MAS has a positive*** effect on all the dependent variables. However, in contradiction with RECcp, PAYcp and CCC models, the explanatory power of the INVcp models (8, 10 and 12) are hardly increased by bringing in MAS as an extra independent variable. More masculine cultures do attach high value to material rewards, performance and competition. One way to improve performance within firms is by delaying payments. This is relatively easy because customers do

under normal circumstances have more negotiation power than suppliers. This is thus exactly what is happening in more masculine countries leading to a longer RECcp and a longer PAYcp. In the end, the amount of debtors plus inventories is normally larger than the amount of creditors, which thus lead to positive net impact on the CCC.

4.3.4. Cultural variable: Uncertainty avoidance index (UAI)

From the results it can be concluded that it is very clear that the UAI in a country is a very important factor explaining differences in WCM. The introduction of UAI does highly improve the explanation power (R^2) of the models RECcp-13, PAYcp-13 and consequently the CCC-13. To a lesser extent it also improves the explanation power of model INVcp-13. UAI is thus the cultural variable that adds by far the most value to the models. The relation between UAI and INVcp is not confirming hypothesis H^{4a}. Instead, there exists a positive*** relationship between UAI and INVcp. This suggests that SMEs in countries with a high UAI do not use planning and control systems in order to prevent ending up with surplus inventories which they do not need in the production process or are not able to sell. On the contrary, it could be that they do everything to be sure that the production process will not be interrupted due to a short of supplies. Given the fact that most SMEs get most of their business in their own country, it could also be that companies hold larger inventories because their customers avoid uncertainty by demanding immediate supply if necessary or, if that is not possible, will look for another supplier. UAI also positively*** influences RECcp, PAYcp and CCC. The reason for this could be that customers have usually more negotiation power on payment terms than suppliers. Thus can firms pay suppliers as late as possible in order to get a kind of guarantee for product quality and in time delivery.

4.3.5. Cultural variable: Long-term orientation (LTO)

LTO was deleted from the models because of multicollinearity problems. Unfortunately, it was thus not possible to detect potential relationships between LTO on one side and INVcp, RECcp, PAYcp and ultimately CCC on the other side.

4.3.6. External macroeconomic variable: GDP growth (ΔGDP)

Earlier, some studies did not find any significant relationship between ΔGDP and working capital requirements (AL Taleb, AL-Naser AL-Zoued and AL-Shubiri 2010; Nazir and Afza

2008b) or between ΔGDP and CCC (Baños-Caballero, García-Teruel and Martínez-Solano 2010). However, this study found strong and negative*** relationships between ΔGDP and INVcp, RECcp, and CCC in all models, whereas the effect on PAYcp is only slightly negative**/***. This was in line with the hypotheses. The result is also similar to a study by Chiou, Cheng and Wu (2006) along listed firms from Taiwan which showed that "a firm has more accounts receivables or inventories (…) when the economy begins to slump". Furthermore, Lamberson (1995) also found an inverse relation between inventories and GDP along a sample of fifty small firms from the United States of America. The first conclusion is thus that SMEs are not able to sell their inventories when the economy is in a downturn or that they are anticipating too late to declining sales, whereas they are able to keep inventories to a minimum during booming times. Secondly, the debtors are paying SMEs later when the economy slinks compared to years of growth. However, it is interesting to report that the inverse relation with the RECcp is much stronger than with the PAYcp. This could indicate that larger firms with more negotiation power use trade credit provided by SMEs as a substitute for other forms of external finance, because of limited cash supplies during economic recessions. In the end do SMEs need to carefully control their CCC in times of a slinking economy because they need to invest more money into their working capital, while it is very hard to get enough external financing during these times.

4.3.7. Internal variable: Firm age (AGE)

AGE is found to have positive*** influences on the management of inventories and the total WCM, which are similar results as Baños-Caballero, García-Teruel and Martínez-Solano (2010)[x] found, i.e. older firms have a longer CCC. These findings are in line with the statement and findings of Chiou, Cheng and Wu (2006) that "the older the firm, the worse its management of working capital". This could be because the high growth rates from the early years of a firm, which forced management to efficiently control working capital, will slow down in the course of time. The positive relation between AGE and INVcp is also in line with the findings of Howorth and Westhead (2003) showing "that firms focusing on stock management routines were younger".

AGE is considered as a proxy for the knowledge of its customers (Petersen and Rajan 1997) and for the creditworthiness of a firm to debt- and equity-providers (Niskanen and Niskanen 2006, Berger and Udell 1998). From this point of view the founded positive*** relation between AGE and RECcp sounds logical. Note that this relationship is almost inexistent and insignificant

in models RECcp-10 and RECcp-12. It indicates that older SMEs are getting external finance more easily (cheaper) and are redistributing it to customers they know in order to be their preferred supplier. Next, conflicting, both significant and insignificant, results are found when looking at the effect from AGE on the time in which SMEs pay their creditors. The author is thus not able to conclude whether or not this result is similar to García-Teruel and Martínez-Solano (2010)[vi] who discovered that younger SMEs use less credit from suppliers than the older ones.

4.3.8. Internal variable: Size (SIZE)

At first, the results show that SIZE is positively***/**/* related to INVcp. This is contrary to findings of Nakamura and Palombini (2009) and the expectations of the author; Due to economies of scale one would expect that smaller firms need to maintain relatively high levels of inventory (Preve and Sarria-Allende 2010) in order to profit from quantity discounts and to be prepared for somewhat volatile sales.

In all models, except RECcp-13, there was found a negative*** influence from SIZE on RECcp. Such influence is in line with the Darwinian theory of negotiation power, suggesting that larger firms have more negotiation power than smaller firms (Rafuse 1996), and with Long, Malitz and Ravid (1993) who are stating that: "large firms usually have an established reputation, more is known ex ante about their product quality, and thus they have little need to extend trade credit. Smaller firms, however, may not yet have an established reputation and may need to provide trade credit to guarantee product quality".

Also in all models, except PAYcp-13, there was found a negative***/**/* impact from SIZE on PAYcp. Meltzer (1960) found that large firms have better access to the capital markets than smaller firms. Given this fact, the inverse relationship suggests that larger firms can save more money by replacing expensive trade credit with cheaper financial credit than with delaying payment to their creditors, which they can because of their larger negotiation power (Rafuse 1996). Next, it seems that relatively high fixed costs of time and effort required to arrange financial credit (Howorth and Reber 2003) make smaller firms decide to use more trade credit. Hereby, it should also be mentioned that "small firms with low levels of financial management skills may also be unaware of the high cost of trade credit implicit in foregone discounts" (Howorth and Reber 2003).

Ultimately, the consequence of the above for the firm's CCC is that, again in all models except CCC-13, there is found a negative**/* impact from a larger SIZE on the firm's CCC.

Larger SMEs are thus better able to reduce the relative amount of working capital used. This is contradicting to the only other study that was also focused at WCM in SMEs. Baños-Caballero, García-Teruel and Martínez-Solano (2010)[x] did namely found that the length of the CCC is positively but insignificant affected by SIZE.

4.3.9. Internal variable: Gross profit margin (GPM)

The tables show that a higher GPM makes all four dependent variables longer***. This is in line with the expectation that firms with a higher GPM have more incentives to use trade credit as a form of price discrimination in order to increase sales and consequently their profit, which was previously confirmed by García-Teruel and Martínez-Solano (2010)[vi] and Petersen and Rajan (1997). Another expectation made by Preve and Sarria-Allende (2010) is proved to be true in this sample. According to them should keeping optimal inventory levels be especially important for those whose profits are largely based on asset rotation rather than margin on sales. Besides, it could be that for firms with a higher GPM the costs of holding extra inventories are smaller than the extra profits they could make by ensuring that they are always able to sell when getting an unexpected rush order. Furthermore, it is not unlikely that a SME that is able to earn a high GPM produces special or high quality products which makes it an attractive customer. This gives such a SME negotiation power, which for example means that suppliers are willing to grant longer payment terms. Finally, the combined effect of the increased inventory levels and accounts receivable are larger than the increase of the accounts receivable leading to a longer CCC in firms with a higher GPM.

4.3.10. Internal variable: Return on assets (ROA)

In the tables it can be found that a higher ROA causes the length of all four dependent variables to become shorter***. The discovery of the negative correlation between ROA and CCC is in line with Baños-Caballero, García-Teruel and Martínez-Solano (2010)[x], whose study was also along a sample of Spanish SMEs. According to Shin and Soenen (1998) do companies with a higher ROA posses more bargaining power with customers (and suppliers) leading to a better WCM. Furthermore, it can be argued that if a company already has a high ROA, it is very hard to increase the profitability without a further decline of the total assets and a restructuring of the financing. Hence, firms will for example try to further minimize inventories and debtors,

whereas they also replace the relatively expensive trade credit by other forms of external financing that are cheaper, especially for highly profitable firms.

4.3.11. Internal variable: Cash flow (CF)

CF was deleted from the models because of multicollinearity problems. Unfortunately, it was thus not possible to detect potential relationships between CF on one side and INVcp, RECcp, PAYcp and ultimately CCC on the other side. However, because of the very strong correlation with ROA (0.95), similar results could have been expected for CF when put into the model instead of ROA.

4.3.12. Internal variable: Sales growth (GROWTH)

This study found, just like Nakamura and Palombini (2009)[v] did, inverse*** relationships between GROWTH and all the dependent variables. Also, the only research that was also focused at WCM in SMEs did reveal a negative and significant influence from GROWTH at the length of the CCC (Baños-Caballero, García-Teruel and Martínez-Solano 2010[x]). García-Teruel and Martínez-Solano (2010)[vi] did find that GROWTH is significantly negatively related to accounts receivable as well, but found a significant positive relation with account payable along a sample of SMEs. The negative relation with PAYcp could indicate that companies with declining sales experience difficulties paying their bills, whereas the inverse relation with RECcp show that growing enterprises need to collect their bills as soon as possible in order be able to finance the growth. Binks and Ennew (1996) do argue even that "the faster the rate of growth the higher the likelihood of problems in access to (bank) credit". This means that, although they might be very profitable, firms with rapid sales growth face higher risks of becoming overwhelmed by liquidity problems and thus bankruptcy than firms not growing (that fast). In such situations funds tied up in inventories and accounts receivable are hidden reserves that can be used to finance growth (Appuhami 2008). All things considered, it can be stated that growing firms do better control their inventories and debtors, whereas firms with declining sales are delaying payment in order not to face bankruptcy.

4.3.13. Internal variable: Number of shareholders (NOS)

The NOS is positively*** related to the length of the INVcp and the CCC, which means the fewer the NOS the shorter the INVcp and the CCC. Next, it was also found that a lower NOS

leads to a longer length of the PAYcp (insignificant relationship). These relations are not strange given the fact that many SMEs have only very few owners, who are most of the time also the managers. Thus, problems related to conflict of interests between owners and managers as known from the agency theory, such as poor WCM, are almost inexistent in such firms. In contrast, no evidence was found that the introduction of more shareholders brings in additional and useful knowledge to improve WCM, from which SMEs have only limited knowledge (Nayak and Greenfield 1994; Sangster 1993; Keasey and Watson 1993). At last, no clear relationship could be discovered between NOS and RECcp.

4.3.14. Internal variable: Leverage (LEV)

A SME with a high leverage is in most circumstances considered to have good access to financial credit. Molina and Preve (2007) argue that trade credit (cost of foregone discounts) is more expensive than financial credit (interest), so firms with access to financial credit should use it. One can imagine that the latter will lead to a shorter PAYcp just as found*** in this research. Further, this study has in line with the redistribution view and various other researchers (Nakamura and Palombini 2009; Niskanen and Niskanen 2006; Meltzer 1960) found a positive*** relation between LEV and RECcp. This suggests that enterprises with good access to the capital markets redistribute capital to enterprises with poor access to these markets. They do this via commercial credit in order to earn the foregone discounts or to get a competitive advantage over firms with worse access to capital markets. No good explanation can be given for the positive*** relation between LEV and INVcp. Maybe do firms attract external finance in order to invest in inventories, such that they are always able to sell and increase profits if they get an unexpected rush order. It can be concluded that for SMEs with a high LEV due to good access to capital markets, it is interesting to use external capital to invest in working capital components (longer*** CCC) in order to earn or save more than the interest costs. No evidence was thus found for the pecking order theory or the possibility that a higher LEV leads to a stricter monitoring of the WCM due to restrictions from the finance providers.

4.3.15. Internal variable: Cost of external finance (FCOST)

The relations between FCOST and the dependent variables RECcp (negative***/**/*/insignificant), PAYcp (positive***) and CCC (negative***) are according to the expectations. The indications are that higher financing costs makes it less attractive to provide

generous financing to their customers, while they are more willing to pay the cost of foregone discounts to their creditors in exchange for a longer credit period. Since no clear and only insignificant effects can be found on the INVcp, the ultimate effect on the CCC is also negative.

4.3.16. Control variable: Industry

As expected and in line with other researchers (Baños-Caballero, García-Teruel and Martínez-Solano 2010; Nazir and Afza 2008b, 2007; Kieschnick, LaPlante and Moussawi 2006; Weinraub and Visscher 1998; Hawawini, Viallet and Vora 1986) this study found significant differences in WCM between industries, in this case: manufacturers (I_MAN), firms in the construction industry (I_CON) and companies in the transportation and storage sector (I_TS). For example, firms from the last group do have a much shorter*** INVcp. This sounds logically because their main business is delivering a service (transporting and storing the inventories of other companies) and not (producing and) selling a physical product, which needs the holding of large inventories.

4.3.17. Control variable: Time

The time dummies were deleted from the models since high correlations with ΔGDP caused multicollinearity problems. Unfortunately, it was thus not possible to control for time specific effects, other than ΔGDP.

4.3.18. Control variable: Country

Although the country dummies do add only a little to the explanatory power of the different models, it is possible to find some significant differences between various countries that are not caught up in the differences between cultural values.

4.3.19. Size and the effect of national culture on working capital management

In the end, this research is not only checking whether or not different cultural dimensions have influence on the decisions managers within SMEs make on WCM. This study is also investigating whether or not the size of the SME affects the influence of the five cultural dimensions on WCM. This will be done by using the same models as before. The only difference is that separate panel data regressions are taken for the different subgroups (micro, small or medium-sized). In ”Appendix J:” all models are arranged such that it is easy to compare the influences of the company size on the effect that the cultural dimensions have on WCM. It was

chosen to only show the cultural variables and the R^2, because the other variables are not needed to do the analyses. Again, the models INVcp-6, RECcp-6, PAYcp-6 and CCC-6 are set as the ground models. Because the including of the cultural variable IDV in none of the models INVcp-11, RECcp-11, PAYcp-11 and CCC-11 lead to an increase of the explanatory power that is worth mentioning, these models are not included in the following findings. In 17 out of the 20 models (85%) it seems that the explanatory power of the cultural variable is increasing when the size of the firm decreases from medium-sized via small to micro. In only three models this was not the case. Furthermore, in 21 out of the 28 cases (75%) does the coefficient of the cultural variable gets a stronger sign in the negative or the positive direction when the firm decreases from medium-sized via small to micro. By coincidence, all cultural variables that get a stronger sign are positive and do thus have a coefficient that becomes stronger in the positive direction.

Not any researcher has studied the effect from national culture on WCM before or did look for differences between firms of different sizes such as found in this paper. This makes the author conclude that Keasey and Watson (1993) were right when they mentioned that "the development of many abstract mathematical models seems to have ruled out asking people what they do. Instead of a subject that is based upon understanding and improving what people do in practice, we have a subject built around formal models so heavily dependent upon strict rationality conditions and tractability requirements that the descriptive and policy relevance of their conclusions are always open to considerable doubt". Nayak and Greenfield (1994) were possibly right arguing that micro firms (less than 10 employees) are much less likely to employ finance specialists and use a more ad hoc or subjective form of WCM. Other researchers noted that those firms are less likely to have sufficient resources, expertise and time available to introduce more complicated financial management practices (Sangster 1993; Keasey and Watson 1993). Ultimately, all those factors above in combination with the findings of this research do point into the direction that the smaller the company, the more its working capital management is based on the preferences, applied rules of thumb and entrepreneurial intuitions of the owners or key managers. Evidently, the results indicate that these preferences, applied rules of thumb and entrepreneurial intuitions of the owners or key managers are influenced by national culture.

5. SUMMARY & LIMITATIONS & RECOMMENDATIONS

5.1. Introduction

The last section concludes this Master Thesis. Beginning by summarizing the initial and final goals of this paper, the research process, and the main results in paragraph 5.2, some managerial recommendations are given in paragraph 5.3. Recommendations to politicians will be presented in paragraph 5.4. This Master Thesis will be ended by mentioning the limitations of this study and providing the recommendations for future research in paragraph 5.5. This should provide you as a reader with a clear overview of the contributions of this study to the academic literature in the field of working capital management (WCM).

5.2. Summary

A variety of studies reveal that there seem to exist substantial differences in the average days of accounts receivables, accounts payables (Marotta 2005; Demigürc-Kunt and Maksimovic 2001) and inventories (Gausch and Kogan 2001) between countries. Therefore, according to Howorth and Westhead (2003) further studies are needed in an array of national and cultural contexts to search for internal and external factors that affect the working capital decision-making across firms of different sizes (i.e. micro, small, medium and large firms). Until now, no studies could be found with hard data about the exact relationship between a SME's national culture and the investments in working capital. This paper is the first to make a contribution in closing this gap in the academic literature. It is done by adding Hofstede's cultural dimensions as explanatory variables for different aspects resulting from WCM: cash conversion cycle (CCC), inventories conversion period (INVcp), receivables conversion period (RECcp) and payables conversion period (PAYcp).

More precisely, at first instance it was intended to prove that the rational choice theory cannot fully explain the outcomes of the decisions made within SMEs in the field of working capital management. The fact is that firms use rules of thumb to find satisfying instead of maximizing outcomes (Simon 1959). This is contrary to the rational choice theory, because this theory states that firms try to maximize their net outcome. Furthermore, it is expected that the national culture affects these rules of thumb and the preferences. Unfortunately, it was impossible for this study to test whether the influences of national culture on the outcome of WCM are due to the influences from national culture on preferences or due to its influence on

rules of thumb practiced within SMEs. It is known that rational choice theorists do not consider different preferences among people as irrational, which makes it impossible to consider potential correlations between different aspects of national culture and a company's CCC as a proof for non-rational WCM in SMEs. This makes the author's initial intension of using national culture as a proxy for non-rational decision-making when it comes to WCM in SMEs impossible. Thereby, it is not possible to prove that the rational choice theory cannot fully explain WCM in SMEs and is just a normative theory telling how managers should optimize WCM. However, with the hard numbers about a country's national culture and company data from Orbis available to the researcher it is still interesting to investigate whether or not a firm's national culture is a missing piece in explaining the outcome of the decisions taken while managing working capital. It is just as Guiso, Sapienza and Zingales (2006) concluded in their paper "Does Culture Affect Economic Outcomes?": "Importing cultural elements will make economic discourse richer, better able to capture the nuances of the real world, and ultimately more useful." Another goal, but of secondary importance, is to check whether or not the effects of the different aspects of national culture on WCM are stronger and have more explanatory power the smaller the SME.

The research was set up as follows: After reviewing existing literature a model was made based on ten determinants of WCM that already have been investigated before. Many others were chosen not to include for several reasons. For example, for some variables the data is unavailable to the researcher, while others show huge similarity with independent variables that are put into the model and thus face the risk for multicollinearity problems. Of course, the cultural dimensions (power distance index (PDI), individualism (IDV), masculinity (MAS), uncertainty avoidance index (UAI) and long term orientation (LTO)), which are of special interest to the researcher, were also added to the model. Hofstede's dimensions of national culture were used instead of those from Schwartz (1994). The main reason is that Hofstede was operating in the field of business and management and analyzed values of IBM-employees in an organizational context, whereas Schwartz did research along teachers and students to find cultural differences between countries from a more psychological perspective. In the end, some extra dummy variables were included in the model to control for particular industry, time and country effects in order to built the best possible model.

The panel data model was chosen in order to control for unobservable heterogeneity through which biases stemmed from the existence of individual firm effects will be excluded (Hsiao

1985). This was necessary because firms with complete data over the four-year period 2006-2009 were included into the sample. In specific, the random effects panel data model was used, because there were various reasons to believe that some specific and known differences between individual firms will affect the dependent variables. The fixed-effects model was inappropriate because time-invariant characteristics, such as the cultural variables, the number of shareholders and the industry dummies, are perfectly collinear with the firm dummies (Kohler and Kreuter 2009). While searching for the most reliable models, (potential) multicollinearity problems forced the researcher to exclude long term orientation, cash flow and the time dummies as explanatory variables. Multicollinearity problems between the cultural variables also caused that different models had to be made that included only one or two of the four remaining cultural variables each.

Two databases were needed to construct the final sample consisting of 10,129 SMEs originated from three Asian countries: Japan (918), the Republic of Korea (4,773) and Taiwan (119), seven European countries: France (27), Germany (46), Greece (2,932), Poland (389), Sweden (740), Switzerland (23) and the United Kingdom (55), and the United States of America (107). First, the data with the country scores about the different cultural dimensions of Hofstede's national culture were extracted from his website (www.geert-hofstede.com). Second, the Orbis database, a database owned by Bureau van Dijk with financial and economical data from companies all over the world, was used to search for the company financials needed to do this research.

The answer to the main question and at the same time title of this Master Thesis *"Determinants of working capital management in SMEs: national culture, a missing piece?"* is: *YES*. The four cultural variables do all have significant influences on the four dependent variables. The only exception is IDV that does not have a significant effect on the firm's CCC. The fact whether a country is very individualistic or collectivistic does also hardly improves the explanatory power (R^2) of the models. Instead, the PDI, the MAS and especially the UAI do improve the explanatory power of the models a lot. Besides, it has been found that the explanatory power from in particular the RECcp and the PAYcp models are highly improved by adding cultural variables. This means that the differences in the average days of accounts receivables, accounts payables (Marotta 2005; Demigürc-Kunt and Maksimovic 2001) and

inventories (Gausch and Kogan 2001) between countries can at least partly be explained by cultural differences.

More into detail, a higher acceptation of power distances in a country will lead to a longer INVcp, RECcp, PAYcp and ultimately CCC in a country. The more individualistic a country is the longer the INVcp and the PAYcp, the shorter the RECcp and also the shorter (insignificant) the CCC. Firms from more masculine countries do also have a longer INVcp, RECcp, PAYcp and ultimately CCC, just as companies from countries that are very uncertainty avoiding do. Consequently, managers from SMEs in feminine countries where people do not accept power distances, but accept some uncertainty in life have do most efficiently manage their working capital.

The discovered impacts that the internal and macro-economic variables have on the dependent variables are just side effects of the main purpose of this study. Therefore, they are not repeated here in this summary. Hence, they are included in the overview of all hypotheses and results that can be found in "Appendix K: Overview of all hypotheses and results".

The other purpose of checking whether or not the effects of the different aspects of national culture on WCM are stronger and have more explanatory power the smaller the SME is, can be answered positively. The preferences, applied rules of thumb and entrepreneurial intuitions of the owners or key managers with respect to WCM are thus in line with the expectations more influenced by national culture, the smaller the SME.

Concluding, this paper contributes to a better understanding of the determinants of WCM in SMEs, especially with regard to national culture, such that entrepreneurs and financial managers can improve their WCM by making more rationalized choices increasing profitability and reducing the risk of going bankrupt.

5.3. Managerial recommendations

Managers and entrepreneurs within SMEs should understand the importance of WCM for the liquidity, profitability and ultimately the survival of their company. Therefore, Peel and Wilson (1996) were right asserting "that smaller firms should adopt formal working capital management routines in order to reduce the probability of business closure, as well as to enhance business performance". This is in line with various researchers who found that small firms that are incorporating formal planning achieve a better performance than do others (Bracker, Keats and

Pearson, 1998; Bracker and Pearson, 1986; Ackelsberg and Arlow, 1985; Jones, 1982; Van Hoorn, 1979; Shuman, 1975). However, it is important to be aware of the fact that the WCM-practices that other companies around them apply are often not the most optimal practices. The rules of thumb SMEs apply to find satisfying instead of maximizing outcomes (Simon 1959) are presumably often biased by their national culture. So, when (re)setting WCM-policies, while having time constraints and limited financial knowledge that prevent you from doing in-depth research, it is beneficial to compare WCM-policies from similar companies in different countries. This way you are better able to make your own considerations on what the most optimal or just a better and more suitable WCM-policy is for your company. Another solution is to ask advice from a specialized but often expensive consulting company.

Another thing that managers and entrepreneurs within SMEs should know when doing business with foreign companies is that those companies could have other ideas about payment terms, which come from cultural differences and could lead to longer collection periods. One should not be surprised that business partners from more masculine and collectivistic countries where people do accept power distances and some uncertainty in life, will pay their bills later than firms from feminine and more individualistic countries, where people do not accept power distances and avoid uncertainty in life. When buying goods from firms in the first group of countries you are yourself as a customer also allowed to pay your bills later, which improves your cash conversion cycle. Take a look at www.geert-hofstede.com or "Appendix E: Values Hofstede & number of firms per country" to get an idea whether your (potential) business partner will pay earlier or later based on the cultural values of that specific country. Also credit insurance companies and collection agencies could take a look at the cultural values of the countries with which their (potential) clients do business. This, in order to get a first impression whether or not and at what price, based on the risks involved, to serve their clients.

5.4. Recommendations for politicians

Policymakers from the European Union already understood the importance of WCM for the liquidity, profitability and ultimately the survival of in particular SMEs. Therefore, on the 24th January of 2011 the Counsel of the European Union adopted new rules on combating late payment in commercial transactions, which member states have to implement in the national laws within two years. Especially SMEs take advantages of the increased protection of creditors,

because they are often forced to accept late payments by large organizations (EU-letter 5423/11; EU-directive PE-CONS 57/10).

Furthermore, it would be a great idea if chambers of commerce or other governmental organizations would provide SMEs and entrepreneurs starting-up their company with some brief and easy readable information containing some simple tips to manage working capital more efficiently. This could help preventing fast growing and highly profitable firms from going bankrupt because of liquidity problems due to a bad management of working capital. Remember, that declining unemployment rates are highly dependent on a flourishing SME-sector, the ultimate job creators in most countries like for example Canada (BMO 2003) and the Netherlands (EIM 2007).

The last recommendation to politicians is to check whether it is true that the average sales growth of the SMEs is no less than 2.7 times larger than the GDP growth as seems from the sample used in this paper. When this is indeed true, governments should immediately give more priority to the SME sector instead of large companies, because this indicates that the real growth of the economy comes mainly from the SMEs and not from larger companies.

5.5. Limitations and recommendations for future research

The first limitation is that it proved not to be possible to use national culture as a proxy for non-rational decision-making. Hence, researchers doubting about studying whether decisions in a certain setting are made according to the rational choice theory should try to find another parameter for non-rational decision-making.

Secondly, because no previous research has been done on the relation between national culture and WCM, it was impossible to base the hypotheses regarding the cultural variables on findings or statements from others. Instead, assumptions have been made based on logical thinking by the author.

The third and most important limitation to this research is the lack of SMEs with complete financial data from a sufficient number of countries. This caused multicollinearity problems along the cultural variables. Putting them together in one model was thus impossible. This made the researcher unable to discover the combined effects that all four (or five) cultural dimensions from Hofstede have on the various aspects of WCM. To be able to increase the number of countries and thus solve this problem, researchers could use financial data from another database

than Orbis. Another way is to exclude some internal firm variables from the model, so that the chance is higher that firms with all the necessary financial information are found.

The fourth limitation is associated to the previous one. If one is able to extent the number of countries, one should consider dropping countries with Hofstede scores that are "best estimates" in order to increase the accuracy of these values and thus the reliability of the empirical research done with these numbers. In this Master Thesis Poland, which has only best estimates, was included in the sample in an attempt to decrease the correlations between the cultural variables.

The fifth limitation concerns the spread of the firms over the countries. Given the total number of 10,129 companies in the sample, it is obvious that the number of Greece (2,932) and Korean (4,773) companies is relatively large compared to the amount of firms from France (27), Germany (46), Switzerland (23), Taiwan (119), the United Kingdom (55) or the United States of America (107). The Greece and Korean firms do thus have a relatively large impact on the empirical findings. This means that some results found in future research could slightly differ if the firms are more equally spread among the countries. However, there are country dummies added to the model that also (partly) control for this unbalance, just as industry dummies are added to control for the unbalanced spread of companies over the different sectors.

Another recommendation concerns the fact that this study has limited the search for differences in WCM between medium-sized, small and micro enterprises to the differences of the impact that the cultural dimensions have. Future research could check whether the various internal variables have different affects to WCM in the three subgroups of SMEs.

The seventh limitation deals with the fact that it was not possible to check for accounting policies (FIFO, LIFO, etc.) used by companies in setting inventory levels, because that information was not made available by Orbis. Results for INVcp and the CCC could be slightly different if all inventories were recalculated to one accounting policy regarding inventories. Furthermore, it could be that a correlation exists between firms from countries with a higher score on one or more of the cultural variables and the preference of a specific accounting policy. The latter could also be a topic for future research.

This opportunity is also used to give some recommendations besides those following the limitations. For example, it could be interesting to conduct a research on the potential influence that the level of uncertainty avoidance in a specific country has on the relationship between sales

volatility (excluded from the model in this paper) and decision-making within SMEs, for example the management of working capital.

Furthermore, a last point of attention that could be interesting for future research is the fact that the average sales growth (GROWTH) for the SMEs in the sample was 2.7 times larger than the ΔGDP, indicating that the real growth of the economy comes mainly from the SMEs.

---- The end ----

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APPENDICES

Appendix A: Abbreviations used in paper

AGE:	Firm age
CCC:	Cash conversion cycle
CCCws:	Most *wide spread* calculation of the CCC
CF:	Cash flow
FCOST:	Cost of external finance
ΔGDP:	GDP growth
GPM:	Gross profit margin
I_CON:	Industry: construction
I_TS:	Industry: transportation and storage
I_MAN:	Industry: manufacturing
IDV:	Individualism
INVcp:	Inventory conversion period
LEV:	Leverage
LTO:	Long-term orientation
MAS:	Masculinity
NOS:	Number of shareholders
PAYcp:	Payables conversion period
PDI:	Power distance index
RCT:	Rational choice theory
ROA:	Return on assets
RECcp:	Receivables conversion period
SIZE:	Size
SMEs:	Small and medium sized enterprises
UAI:	Uncertainty avoidance index
WCM:	Working capital management

Appendix B: Overview determinants found in the literature but not used in this paper

Capital expenditure

Reason(s) exclusion

Capital expenditure increases the total value of the fixed assets and is expected to have a high positive correlation with sales growth, which is already admitted to the model. This is because sales growth can only be achieved when production is expanded and thus most of the times you need to increase the investments in fixed assets. Therefore, the added value of capital expenditure to the model will be minimal. Furthermore, not all data used by Appuhami (2008) to calculate capital expenditure are available to the author.

Relevant references

Appuhami, B.A.R. (2008), The Impact of Firms' Capital Expenditure on Working Capital Management: an Empirical Study Across Industries in Thailand, *International Management Review*, Vol. 4, No. 1, p. 11-24.

Proportion of (tangible) fixed assets

Reason(s) exclusion

Proportion of (tangible) fixed assets is expected to have a high negative correlation with CCC, because the proportions of accounts receivable and inventories almost fully determine the proportion of a firm's (tangible) fixed assets and vice versa. Thus adding the proportion of (tangible) fixed assets could contaminate the results.

Relevant references

Kieschnick, R., LaPlante, M. & Moussawi, R. (2006), Corporate Working Capital Management: Determinants and Consequences, working paper, University of Texas, Dallas.

Baños-Caballero, S., García-Teruel, P.J. & Martínez-Solano, P. (2010), Working capital management in SMEs, *Accounting and Finance,* Vol. 50, No. 3, p. 511-527.

Seasonality and sales volatility (or sales uncertainty)

Reason(s) exclusion

Seasonality and sales volatility (or sales uncertainty) are not exactly the same, but seasonality leads to a more volatile sales pattern within one year. Because the author has only the disposal over the annual accounting numbers, he was not able to find the effects of seasonality on WCM.

Sales volatility is excluded from the model, because the author did not want to make the model to complicated and he also expects sales volatility to be highly related to sales growth.

Relevant references

Howorth, C. & Westhead, P. (2003), The focus of working capital management in UK small firms, *Management Accounting Research,* Vol. 14, No. 2, p. 94-111.

Hill, M.D., Kelly, G.W. & Highfield, M.J. (2010), Net Operating Working Capital Behavior: A First Look, *Financial Management*, Vol. 39, No. 2, p783-805.

Legal system

Reason(s) exclusion

The limited number of countries used in this paper made the author decide to leave the dummy variable „legal system of a country' out of the model preventing finding correlations that cannot for sure be ascribed to the researched aspect, because in reality a third and unknown variable was tested for having a relation with WCM. Besides, the expected relationships are unknown, because Chui, Lloyd and Kwok (2002) were looking for causal connection between the legal system of a country and the use of debt (capital structure).

Relevant references

Chui, A.C.W., Lloyd, A.E. & Kwok, C.C.Y. (2002), The Determination of Capital Structure: Is National Culture a Missing Piece to the puzzle?, *Journal of International Business Studies*, Vol. 33, No. 1, p. 99-127.

Banking sector (financial institutions)

Reason(s) exclusion

Chui, Lloyd and Kwok (2002) found indications that "firms in countries with larger banking sectors tend to have higher debt ratios." This means that a huge overlap and thus a high correlation with determinant leverage, which is added to the model, is expected. Baños-Caballero, García-Teruel and Martínez-Solano (2010) did only mention that their findings on WCM in SMEs were based on a sample of SMEs from Spain, which has a banking oriented financial system. They did not try to find causal relationships between banking sector and WCM in SMEs. Thus, the author chose to leave the variable banking sector out of the model.

Relevant references

Chui, A.C.W., Lloyd, A.E. & Kwok, C.C.Y. (2002), The Determination of Capital Structure: Is National Culture a Missing Piece to the puzzle?, *Journal of International Business Studies*, Vol. 33, No. 1, p. 99-127.

Baños-Caballero, S., García-Teruel, P.J. & Martínez-Solano, P. (2010), Working capital management in SMEs, *Accounting and Finance,* Vol. 50, No. 3, p. 511-527.

Religion

Reason(s) exclusion

Stulz and Williamson (2003) concluded that "Catholic countries have significantly weaker creditor rights than other countries" and "openness reduces the influence of religion on creditor rights, so that Catholic countries where international trade is more important have better protection of creditor rights." However, the limited number of countries used in this paper made the author decide to leave the dummy variable „religion' out of the model preventing finding correlations that cannot for sure be ascribed to the researched aspect, because in reality a third and unknown variable was tested for having a relation with WCM. Next, religion is part of a country's culture and could therefore be partially explained by the five dimensions of Hofstede's national culture.

Relevant references

Stulz, R. & Williamson, R. (2003), Culture, Openness, and Finance, *Journal of Financial Economics,* Vol. 70, No. 3, p. 313-349.

Market power

Reason(s) exclusion

Hill, Kelly and Highfield (2010) used the company's market share as a proxy for the company's market power. However, the author had no access to data containing market shares of each company.

Relevant references

Kieschnick, R., LaPlante, M. & Moussawi, R. (2006), Corporate Working Capital Management: Determinants and Consequences, working paper, University of Texas, Dallas.

Hill, M.D., Kelly, G.W. & Highfield, M.J. (2010), Net Operating Working Capital Behavior: A First Look, *Financial Management*, Vol. 39, No. 2, p783-805.

Board characteristics measured by firm's number directors

Reason(s) exclusion

The author had no access to data containing the number of directors of each company.

Relevant references

Kieschnick, R., LaPlante, M. & Moussawi, R. (2006), Corporate Working Capital Management: Determinants and Consequences, working paper, University of Texas, Dallas.

Board characteristics measured by proportion of outside members

Reason(s) exclusion

The author had no access to data containing the proportion of outside members in a firm's board.

Relevant references

Kieschnick, R., LaPlante, M. & Moussawi, R. (2006), Corporate Working Capital Management: Determinants and Consequences, working paper, University of Texas, Dallas.

Nakamura, W.T. & Palombini, N.V.N. (2009), The Determinant Factors of Working Capital Management in the Brazilian Market, Universidade Presbiteriana Mackenzie, São Paulo, Brazil.

CEO compensation measured by total current compensation excluded stock options

Reason(s) exclusion

The author had no access to data containing CEO compensation measured by total current compensation excluded stock options.

Relevant references

Kieschnick, R., LaPlante, M. & Moussawi, R. (2006), Corporate Working Capital Management: Determinants and Consequences, working paper, University of Texas, Dallas.

CEO compensation measured by CEO's total unexercised stock options / Presence of annual compensation linked to profit

Reason(s) exclusion

The author had no access to data containing CEO compensation linked to profit.

Relevant references

Kieschnick, R., LaPlante, M. & Moussawi, R. (2006), Corporate Working Capital Management: Determinants and Consequences, working paper, University of Texas, Dallas.

Nakamura, W.T. & Palombini, N.V.N. (2009), The Determinant Factors of Working Capital Management in the Brazilian Market, Universidade Presbiteriana Mackenzie, São Paulo, Brazil.

Short-term finance (ratio of current liabilities to sales)

Reason(s) exclusion

The author chose not to include short-term finance in the model, due to the fact that a major part of the current liabilities consists of accounts payable, one of the three factors determining the CCC of a firm, the dependant variable.

Relevant references

García-Teruel, P.J. & Martínez-Solano, P. (2010), Determinants of Trade Credit: A Comparative Study of European SMEs, *International Small Business Journal*, Vol. 28, No. 3, p. 215-233.

Ratio of short-term financial debt to assets

Reason(s) exclusion

The decision to finance a company with short-term or long-term debt is a capital structure decision and not a WCM decision. However, it has been suggested that more external financing (i.e. higher leverage) is associated with a better access to external financing and a tighter management of working capital, because of stricter outside monitoring by the debt providers (see §2.5. Determinants of working capital management → 2.5.9. Internal variable: Leverage (LEV)). Therefore, the author chose to add determinant leverage to the model instead of the ratio of short-term financial debt to assets and the ratio of long-term debt to assets.

Relevant references

García-Teruel, P.J. & Martínez-Solano, P. (2010), Determinants of Trade Credit: A Comparative Study of European SMEs, *International Small Business Journal*, Vol. 28, No. 3, p. 215-233.

Ratio of long-term debt to assets

Reason(s) exclusion

The decision to finance a company with short-term or long-term debt is a capital structure decision and not a WCM decision. However, it has been suggested that more external financing

(i.e. higher leverage) is associated with a better access to external financing and a tighter management of working capital, because of stricter outside monitoring by the debt providers (see §2.5. Determinants of working capital management → 2.5.9. Internal variable: Leverage (LEV)). Therefore, the author chose to add determinant leverage to the model instead of the ratio of short-term financial debt to assets and the ratio of long-term debt to assets.

Relevant references

García-Teruel, P.J. & Martínez-Solano, P. (2010), Determinants of Trade Credit: A Comparative Study of European SMEs, *International Small Business Journal*, Vol. 28, No. 3, p. 215-233.

Ratio of current assets to total assets

Reason(s) exclusion

The ratio of current assets to total assets is excluded from the model, because current assets contain accounts receivable and inventories.

Relevant references

García-Teruel, P.J. & Martínez-Solano, P. (2010), Determinants of Trade Credit: A Comparative Study of European SMEs, *International Small Business Journal*, Vol. 28, No. 3, p. 215-233.

Operating cycle

Reason(s) exclusion

The operating cycle is excluded from the model, because it is the sum of days accounts receivable and days inventory, which are already caught up in the dependant variable CCC.

Relevant references

Nazir, M.S. & Afza, T. (2008b), On the Factor Determining Working Capital Requirements. Proceedings of ASBBS, Vol. 15, No. 1, p. 293-301.

AL Taleb, G., AL-Naser AL-Zoued, A. & AL-Shubiri, F.N. (2010), The Determinants of Effective Working Capital Management Policy: A Case Study on Jordan, *Interdisciplinary Journal of Contemporary Research In Business*, Vol.2 (2010), No. 4 (Aug), p. 248-264.

Long production cycle

Reason(s) exclusion

The length of the production cycle could be an interesting determinant of WCM. Unfortunately, the author is unable to find out a company's length of the production cycle.

Relevant references

Howorth, C. & Westhead, P. (2003), The focus of working capital management in UK small firms, *Management Accounting Research,* Vol. 14, No. 2, p. 94-111.

Tobin's Q

Reason(s) exclusion

Because market values of equity are unknown for the SMEs in the sample, it is impossible to calculate the Tobin's Q.

Relevant references

Nazir, M.S. & Afza, T. (2008b), On the Factor Determining Working Capital Requirements. Proceedings of ASBBS, Vol. 15, No. 1, p. 293-301.

AL Taleb, G., AL-Naser AL-Zoued, A. & AL-Shubiri, F.N. (2010), The Determinants of Effective Working Capital Management Policy: A Case Study on Jordan, *Interdisciplinary Journal of Contemporary Research In Business*, Vol.2 (2010), No. 4 (Aug), p. 248-264.

Operating expenditure

Reason(s) exclusion

"Operating expenditure is the cost of ongoing operations, product or system." It includes "salaries, wages and facilities expenses, such as rent, rates, electricity etc" (Appuhami 2008). The author chose to exclude operating expenditure, because it is already caught up in internally generated cash flows.

Relevant references

Appuhami, B.A.R. (2008), The Impact of Firms' Capital Expenditure on Working Capital Management: an Empirical Study Across Industries in Thailand, *International Management Review*, Vol. 4, No. 1, p. 11-24.

Product quality

Reason(s) exclusion

García-Teruel and Martínez-Solano (2010) measure product quality by calculating sales / (total assets - accounts receivable) at which a lower sales turnover is associated with higher quality goods. In his turn, selling higher quality goods is expected to lead to lower accounts receivables by García-Teruel and Martínez-Solano (2010). One can put question marks at this

proxy for product quality and furthermore, it is expected that product quality is partially taken into account by the industry dummies.

Relevant references

García-Teruel, P.J. & Martínez-Solano, P. (2010), Determinants of Trade Credit: A Comparative Study of European SMEs, *International Small Business Journal*, Vol. 28, No. 3, p. 215-233.

Financial distress

Reason(s) exclusion

Whether a company is in financial distress or not could be an interesting determinant of WCM. Unfortunately, the author has no data telling whether or not a company faces financial distress.

Relevant references

Hill, M.D., Kelly, G.W. & Highfield, M.J. (2010), Net Operating Working Capital Behavior: A First Look, *Financial Management*, Vol. 39, No. 2, p783-805.

Appendix C: EU-definitions concerning micro, small and medium-sized enterprises (SMEs)

Micro, small and medium-sized enterprises (SMEs)

As the table shows, the category of micro, small and medium-sized enterprises consists of enterprises which employ fewer than 250 persons and which have either an annual turnover not exceeding 50 million euro, or an annual balance sheet total not exceeding 43 million euro.

Enterprise category	Headcount: Annual Work Unit (AWU)	Annual turnover	or	Annual balance sheet total
Medium-sized	< 250	≤ €50 million (in 1996 € 40 million)	or	≤ €43 million (in 1996 € 27 million)
Small	< 50	≤ €10 million (in 1996 € 7 million)	or	≤ €10 million (in 1996 €5 million)
Micro	< 10	≤ €2 million (previously not defined)	or	≤ €2 million (previously not defined)

(See also next page)

Medium-sized enterprises

Medium-sized enterprises are defined as enterprises which employ fewer than 250 persons and which have either an annual turnover not exceeding 50 million euro, or an annual balance sheet total not exceeding 43 million euro.

Small enterprises

Small enterprises are defined as enterprises which employ fewer than 50 persons and whose annual turnover or annual balance sheet total does not exceed 10 million euro.

Micro enterprises

Micro enterprises are defined as enterprises which employ fewer than 10 persons and whose annual turnover or annual balance sheet total does not exceed 2 million euro.

Sources

Commission Recommendation 2003/361/EC (2003), Concerning the Definition of Micro, Small and Medium-sized Enterprises, *Official Journal of the European Union*, L124, p. 36-41.

European Commission (2003), The New SME Definition: User Guide and Model Declaration, Enterprise and Industry Publications.

Appendix D: Orbis search strategy

Step		Step result	With Cash flow Search result	Without Cash flow Search result
1	Number of employees: 2009, 2008, 2007, 2006, max=250, for all the selected periods	2,933,086	2,933,086	2,933,086
2	Total assets: All companies with a known value, 2009, 2008, 2007, 2006, for all the selected periods	6,290,705	2,123,369	2,123,369
3	Operating revenue (Turnover): All companies with a known value, 2009, 2008, 2007, 2006, for all the selected periods	4,535,732	1,927,994	1,927,994
4	P/L for period [=Net income]: All companies with a known value, 2009, 2008, 2007, 2006, for all the selected periods	4,263,583	1,920,217	1,920,217
5	No of shareh.: 1, 2, 3, 4, 5 or more	19,701,112	914,507	914,507
6	Sales: All companies with a known value, 2009, 2008, 2007, 2006, 2005, for all the selected periods	2,739,779	609,191	609,191
7	Costs of goods sold: All companies with a known value, 2009, 2008, 2007, 2006, for all the selected periods	884,283	68,796	68,796
8	Loans: All companies with a known value, 2009, 2008, 2007, 2006, 2005, for all the selected periods	4,218,231	64,675	64,675
9	Long term debt: All companies with a known value, 2009, 2008, 2007, 2006, 2005, for all the selected periods	3,345,667	57,249	57,249
10	Cash flow: All companies with a known value, 2009, 2008, 2007, 2006, for all the selected periods	2,865,654	44,273	0
11	Non-current liabilities: All companies with a known value, 2009, 2008, 2007, 2006, 2005, for all the selected periods	4,756,911	44,273	57,249
12	Current liabilities: All companies with a known value, 2009, 2008, 2007, 2006, 2005, for all the selected periods	5,031,484	44,273	57,247
13	Creditors: All companies with a known value, 2009, 2008, 2007, 2006, 2005, for all the selected periods	4,297,042	43,971	56,890
14	Stock: All companies with a known value, 2009, 2008, 2007, 2006, 2005, for all the selected periods	4,754,624	43,325	56,054
15	Debtors: All companies with a known value, 2009, 2008, 2007, 2006, 2005, for all the selected periods	4,679,285	43,298	56,006
16	World region/Country/Region in country: Argentina, Australia, Austria, Bangladesh, Belgium, Brazil, Bulgaria, Canada, Chile, China, Colombia, Costa Rica, Czech Republic, Denmark, Ecuador, El Salvador, Estonia, Finland, France, Germany, Greece, Guatemala, Hong Kong, Hungary, India, Indonesia, Islamic Republic of Iran, Ireland, Israel, Italy, Jamaica, Japan, Republic of Korea, Luxembourg, Malaysia, Malta, Mexico, Morocco, Netherlands, New Zealand, Norway, Pakistan, Panama, Peru, Philippines, Poland, Portugal, Romania, Russian Federation, Singapore, Slovakia, South Africa, Spain, Suriname, Sweden, Switzerland, Taiwan, Thailand, Trinidad and Tobago, Turkey, United Kingdom, United States of America, Uruguay, Venezuela, Vietnam	79,927,948	22,743	30,373
17	NACE Rev. 2 main sections: Manufacturing, Construction, Transportation and storage	15,441,313	10,882	14,315
18	Interest paid: All companies with a known value, 2009, 2008, 2007, 2006, for all the selected periods	1,850,034	9,869	12,019
19	Gross profit: All companies with a known value, 2009, 2008, 2007, 2006, for all the selected periods	1,010,016	9,869	12,019
Total			**9,869**	**12,019**

Appendix E: Values Hofstede & number of firms per country

*	Country	Hofstede's Dimensions					Model 1			Model 2			Model 3 and further		
		PDI	IDV	MAS	UAI	LTO	Ori.	Del.	Final	Ori.	Del.	Final	Original	Deleted	Final
	Argentina	49	46	56	86		0	0	0	0	0	0	0	0	0
	Australia	36	90	61	51	31	10	10	0	10	10	0	10	10	0
	Austria	11	55	79	70		0	0	0	0	0	0	2	2	0
	Bangladesh	80	20	55	60	40	0	0	0	0	0	0	0	0	0
*	Belgium	65	75	54	94		0	0	0	0	0	0	6	6	0
	Brazil	69	38	49	76	65	0	0	0	0	0	0	0	0	0
	Bulgaria	70	30	40	85		0	0	0	0	0	0	0	0	0
*	Canada	39	80	52	48	23	0	0	0	0	0	0	0	0	0
	Chile	63	23	28	86		0	0	0	0	0	0	0	0	0
*	China	80	20	66	30	118	31	31	0	33	33	0	33	33	0
	Colombia	67	13	64	80		0	0	0	0	0	0	1	1	0
	Costa Rica	35	15	21	86		0	0	0	0	0	0	0	0	0
*	Czech Republic	57	58	57	74	13	1	1	0	1	1	0	1	1	0
	Denmark	18	74	16	23		0	0	0	0	0	0	10	10	0
	Ecuador	78	8	63	67		0	0	0	0	0	0	0	0	0
	El Salvador	66	19	40	94		0	0	0	0	0	0	0	0	0
*	Estonia	40	60	30	60		0	0	0	0	0	0	0	0	0
	Finland	33	63	26	59		0	0	0	0	0	0	18	18	0
	France	68	71	43	86		0	0	0	0	0	0	40	13	27
	Germany	35	67	66	65	31	64	18	46	64	18	46	64	18	46
	Greece	60	35	57	112		0	0	0	0	0	0	3,441	509	2,932
	Guatemala	95	6	37	101		0	0	0	0	0	0	0	0	0
	Hong Kong	68	25	57	29	96	5	5	0	5	5	0	5	5	0
*	Hungary	46	80	88	82	50	0	0	0	0	0	0	0	0	0
	India	77	48	56	40	61	0	0	0	0	0	0	0	0	0
	Indonesia	78	14	46	48		0	0	0	0	0	0	7	7	0
	Iran	58	41	43	59		0	0	0	0	0	0	0	0	0
	Ireland	28	70	68	35		0	0	0	0	0	0	3	3	0
	Israel	13	54	47	81		0	0	0	0	0	0	15	15	0
	Italy	50	76	70	75		0	0	0	0	0	0	5	5	0
	Jamaica	45	39	68	13		0	0	0	0	0	0	0	0	0
	Japan	54	46	95	92	80	618	182	436	1,292	374	918	1,292	374	918
*	Luxembourg	40	60	50	70		0	0	0	0	0	0	0	0	0
	Malaysia	104	26	50	36		0	0	0	0	0	0	3	3	0
*	Malta	56	59	47	96		0	0	0	0	0	0	0	0	0
	Subtotal A						*729*	*247*	*482*	*1,405*	*441*	*964*	*4,956*	*1,033*	*3,923*

The cultural values from countries with an * are estimated by Geert Hofstede.

(See also next page)

*	Country	Hofstede's Dimensions					Model 1			Model 2			Model 3 and further		
		PDI	IDV	MAS	UAI	LTO	Ori.	Del.	Final	Ori.	Del.	Final	Original	Deleted	Final
	Mexico	81	30	69	82		0	0	0	0	0	0	0	0	0
*	Morocco	70	46	53	68		0	0	0	0	0	0	0	0	0
	Netherlands	38	80	14	53	44	4	4	0	4	4	0	4	4	0
	New	22	79	58	49	30	0	0	0	0	0	0	0	0	0
	Norway	31	69	8	50	20	10	10	0	10	10	0	10	10	0
	Pakistan	55	14	50	70	0	0	0	0	0	0	0	0	0	0
	Panama	95	11	44	86		0	0	0	0	0	0	0	0	0
	Peru	64	16	42	87		0	0	0	0	0	0	0	0	0
	Philippines	94	32	64	44	19	3	3	0	3	3	0	3	3	0
*	Poland	68	60	64	93	32	0	0	0	429	40	389	429	40	389
	Portugal	63	27	31	104		0	0	0	0	0	0	0	0	0
*	Romania	90	30	42	90		0	0	0	0	0	0	0	0	0
*	Russian	93	39	36	95		0	0	0	0	0	0	0	0	0
	Singapore	74	20	48	8	48	1	1	0	1	1	0	1	1	0
*	Slovakia	104	52	110	51	38	0	0	0	0	0	0	0	0	0
	South Africa	49	65	63	49		0	0	0	0	0	0	0	0	0
	Republic of Korea	60	18	39	85	75	4,804	460	4,344	5,278	505	4,773	5,278	505	4,773
	Spain	57	51	42	86		0	0	0	0	0	0	3	3	0
*	Surinam	85	47	37	92		0	0	0	0	0	0	0	0	0
	Sweden	31	71	5	29	33	779	60	719	810	70	740	810	70	740
	Switzerland	34	68	70	58		0	0	0	0	0	0	34	11	23
	Taiwan	58	17	45	69	87	177	58	119	177	58	119	177	58	119
	Thailand	64	20	34	64	56	0	0	0	0	0	0	0	0	0
*	Trinidad	47	16	58	55		0	0	0	0	0	0	0	0	0
	Turkey	66	37	45	85		0	0	0	0	0	0	0	0	0
	United Kingdom	35	89	66	35	25	80	26	54	82	27	55	82	27	55
	United States of America	40	91	62	46	29	224	119	105	232	125	107	232	125	107
	Uruguay	61	36	38	100		0	0	0	0	0	0	0	0	0
	Venezuela	81	12	73	76		0	0	0	0	0	0	0	0	0
*	Vietnam	70	20	40	30	80	0	0	0	0	0	0	0	0	0
	Subtotal B						*6,082*	*741*	*5,341*	*7,026*	*843*	*6,183*	*7,063*	*857*	*6,206*
	Total						**6,811**	**988**	**5,823**	**8,431**	**1,283**	**7,147**	**12,019**	**1,887**	**10,129**

The cultural values from countries with an * are estimated by Geert Hofstede.

Appendix F: Finding the best panel data regression equations

Determinants of CCC in SMEs

Model	CCC-1	CCC-2	CCC-3	CCC-4	CCC-5	CCC-6	CCC-7
PDI	2.046***	1.357***	-3.147***	-2.909***	-2.915***	Out	Out
IDV	0.057	-0.088	0.916***	0.938***	0.936***	Out	Out
MAS	0.180	0.144	-1.427***	-1.485***	-1.488***	Out	Out
UAI	-1.121***	-1.022***	3.418***	3.401***	3.405***	Out	Out
LTO	0.069	0.297	Out	Out	Out	Out	Out
ΔGDP	0.847***	1.112***	-1.063***	-2.105***	-2.105***	-2.152***	-2.159***
AGE	0.232***	0.227***	0.439***	0.448***	0.448***	0.485***	0.471***
SIZE	0.316***	0.335***	0.309***	0.323***	0.323***	-0.123**	-0.133**
GPM	0.271***	0.405***	0.326***	0.329***	0.328***	0.396***	0.397***
ROA	0.184	-0.559***	-0.514***	-0.514***	-0.513***	-0.527***	-0.525***
CF	-0.745***	Out	Out	Out	Out	Out	Out
GROWTH	-0.264***	-0.258***	-0.327***	-0.323***	-0.323***	-0.319***	-0.319***
NOS	-0.089	-0.038	2.244***	2.252***	2.257***	1.172***	1.201***
LEV	0.269***	0.295***	0.586***	0.585***	0.587***	0.566***	0.573***
FCOST	-0.720***	-0.745***	-1.092***	-1.142***	-1.141***	-0.799***	-0.752***
I_CON	-5.586*	0.663	-6.565**	-6.546**	-6.692**	-10.63***	-10.38***
I_TS	-61.36***	-53.45***	-79.98***	-79.80***	-79.70***	-64.80***	-64.44***
D2006	-11.58***	-13.09***	-8.265***	Out	Out	Out	Out
D2007	-9.159***	-10.91***	-7.068***	Out	Out	Out	Out
D2008	-4.460***	-5.801***	-7.764***	Out	Out	Out	Out
France	-34.62***	-25.98***	-16.410	-16.240	Out	-7.679	Out
Germany	-11.850	-10.800	-23.79*	-23.51*	Out	-11.720	Out
Greece	-6.018	-2.590	2.780	2.965	Out	7.046	Out
Japan	-5.498	-2.070	10.180	10.430	Out	22.62***	Out
Poland	-13.30*	-9.412	4.431	4.876	Out	27.34***	Out
S-Korea	-4.718	-1.024	6.946	7.100	Out	10.210	Out
Sweden	-5.787	-1.965	4.752	4.914	Out	9.057	Out
Switzerland	-10.390	-6.501	6.115	6.274	Out	16.930	Out
Taiwan	4.519	6.864	14.490	14.650	Out	22.77**	Out
UK	-9.216	-7.702	-12.600	-12.460	Out	-7.022	Out
Constant	34.590	46.290	-12.210	-25.95***	-20.19***	67.88***	78.49***
Observations	23,292	28,588	40,516	40,516	40,516	40,516	40,516
Number of ID	5,823	7,147	10,129	10,129	10,129	10,129	10,129
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
R^2	0.0925	0.1020	0.2346	0.2343	0.2329	0.0899	0.0868
P-Breusch-Pagan	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Robust standard errors
*** p<0.01, ** p<0.05, * p<0.1
P-Breusch-Pagan gives the P-value from the Breusch-Pagan Lagrange multiplier test. Rejection of the null hypotheses means that individual firm effects are present in the data.

Appendix G: Correlation matrix based on 5,823 firms - Model 1 -

	PDI	IDV	MAS	UAI	LTO	DELTA_GDP	AGE	SIZE	GPM	ROA	CF	GROWTH	NOS	LEV	FCOST	I_CON	I_TS
PDI	1.0000																
IDV	*-0.9484***	1.0000															
MAS	*0.4049***	-0.1365***	1.0000														
UAI	*0.9562***	*-0.8561***	*0.6056***	1.0000													
LTO	*0.9515***	*-0.8994***	*0.5081***	*0.9519***	1.0000												
DELTA_GDP	0.3553***	*-0.4088***	-0.124***	0.2636***	0.2706***	1.0000											
AGE	-0.3987***	*0.4427***	0.1316***	-0.2875***	-0.2926***	-0.3106***	1.0000										
SIZE	-0.0087	0.0531***	0.175***	0.0244***	0.0182***	-0.0586***	0.2217***	1.0000									
GPM	-0.1317***	0.1745***	0.0448***	-0.1297***	-0.1777***	-0.0211***	0.0135**	0.0771***	1.0000								
ROA	-0.019***	-0.0376***	-0.1316***	-0.034***	-0.0063	0.09***	-0.0227***	-0.0479***	0.2047***	1.0000							
CF	-0.1413***	0.0895***	-0.1459***	-0.1447***	-0.1171***	0.0338***	0.0312***	-0.0579***	0.2472***	*0.9654****	1.0000						
GROWTH	0.0089	-0.0101	-0.0089	0.007	0.0004	0.1006***	-0.0863***	0.0032	0.056***	0.1959***	0.1926***	1.0000					
NOS	0.0694***	-0.0019	0.1074***	-0.0016	-0.0093	0.0518***	-0.0845***	0.2258***	0.1887***	-0.1068***	-0.1091***	0.0097	1.0000				
LEV	*0.4012****	-0.3977***	0.079***	0.3799***	0.3472***	0.1722***	-0.2758***	-0.0953***	-0.1384***	-0.2376***	-0.2811***	-0.028***	-0.0759***	1.0000			
FCOST	0.272***	-0.2909***	-0.098***	0.2009***	0.1581***	0.1937***	-0.2493***	-0.0906***	-0.0625***	-0.0856***	-0.1236***	0.037***	0.0588***	0.3423***	1.0000		
I_CON	-0.0735***	0.0823***	0.0455***	-0.0373***	-0.0291***	-0.0666***	0.0467***	-0.0746***	-0.1314***	0.0826***	0.0635***	0.0357***	-0.0744***	-0.2302***	-0.0281***	1.0000	
I_TS	-0.07***	0.0703***	-0.0011	-0.0582***	-0.0561***	-0.035***	0.0774***	0.0636***	-0.0112*	0.0009	0.017***	-0.0007	-0.0089	-0.0334***	-0.0439***	-0.0474***	1.0000
D2006	0	0	0	0	0	*0.4677****	-0.0564***	-0.0019	0.0117*	0.0522***	0.0531***	0.1402***	0	-0.0051	-0.0096	0	0
D2007	0	0	0	0	0	*0.4312****	-0.0188***	-0.0001	0.005	0.0306***	0.0285***	-0.006	0	0.005	-0.0014	0	0
D2008	0	0	0	0	0	0	0.0188***	-0.0232***	-0.0032	-0.0413***	-0.0408***	-0.1275***	0	0.0058	0.0274***	0	0
France	0.0002	0.0047	0.0222***	0.0086	0.0082	-0.0097	0.018***	0.0071	-0.0174***	-0.0018	-0.0036	-0.0076	-0.0086	0.0018	-0.0005	0.0224***	-0.0074
Germany	-0.0068	0.0107	0.0113*	-0.0006	-0.0086	-0.0048	0.0051	-0.0029	-0.004	0.0107	0.007	0.0046	-0.0047	-0.0097	-0.0112*	-0.0004	-0.0078
Greece	-0.0094	0.0036	-0.0217***	-0.0131**	-0.0117*	0.0021	-0.0128*	-0.0202***	0.0201***	0.012*	0.0112*	-0.0022	-0.0126*	-0.0192***	-0.0351***	-0.0098	-0.0049
Japan	0.0402***	-0.0426***	-0.0175***	0.0302***	0.0216***	0.0286***	-0.0399***	-0.0034	-0.0287***	-0.0206***	-0.0264***	-0.012*	0.0031	0.0807***	0.1199***	-0.0188***	0.0001
Poland	0.0514***	-0.0478***	-0.0045	0.0404***	0.0285***	0.032***	-0.0049***	-0.0181***	-0.0115*	-0.0038	-0.0094	0.0199***	0.0281***	0.0394***	0.2234***	0.0374***	-0.0158**
S-Korea	-0.0403***	0.0405***	0.0109*	-0.0324***	-0.0221***	-0.0265***	0.0361***	0.0175***	0.0061	0.0161**	0.0219***	0.0011	0.0018	-0.063***	-0.1062***	0.0125*	0.0271***
Sweden	0.0128*	-0.0102	0.0119*	0.0149**	0.0107	0.0037	0.0146**	0.0063	-0.0041	-0.0128*	-0.0129**	-0.002	-0.0017	0.0311***	0.0026	-0.0155**	-0.0192***
Switzerland	0.0159**	-0.019***	-0.0082	0.0121*	0.0116*	0.0106	-0.0165**	-0.0048	-0.0163**	-0.0104	-0.0121*	0.0208***	-0.0065	0.015***	0.0197***	-0.0076	-0.0072
Taiwan	0.0171***	-0.0136**	0.021***	0.0209***	0.0202***	0.0013	-0.0048	-0.0026	-0.0021	-0.012*	-0.015**	-0.0059	-0.0019	0.0388***	0.004	-0.0099	-0.0144**
UK	0.0011	0.0072	0.0158**	0.0047	0.0001	-0.0046	-0.0109*	-0.0002	0.0044	-0.0224***	-0.0193***	0.0132**	0.0099	0.0051	0.0059	0.0193***	-0.0102
INVcp	-0.0699***	0.0921***	0.0141**	-0.077***	-0.0878***	-0.0687***	0.0642***	0.1124***	0.343***	-0.1564***	-0.136***	-0.1068***	0.1147***	0.0376***	0.005	-0.1634***	-0.1138***
RECcp	0.1969***	-0.1652***	0.1528***	0.2101***	0.2002***	0.0257***	-0.0268***	0.0278***	0.0806***	-0.1258***	-0.1583***	-0.2064***	0.0131**	0.0522***	0.0153**	-0.0065	-0.088***
PAYcp	0.0688***	-0.0174***	0.1692***	0.0958***	0.0676***	-0.0197***	0.0157**	0.0788***	0.1451***	-0.1764***	-0.1711***	-0.1347***	0.0912***	0.0133**	0.0187***	-0.1147***	-0.0564***
CCC	0.0449***	-0.0356***	0.0235***	0.0336***	0.0366***	-0.0293***	0.0261***	0.0602***	0.1715***	-0.1494***	-0.1589***	-0.1681***	0.0451***	0.0837***	0.0053	-0.067***	-0.1162***

	D2006	D2007	D2008	France	Germany	Greece	Japan	Poland	S-Korea	Sweden	Switzerland	Taiwan	UK	INVcp	RECcp	PAYcp	CCC
D2006	1.0000																
D2007	-0.3333***	1.0000															
D2008	-0.3333***	-0.3333***	1.0000														
France	0	0	0	1.0000													
Germany	0	0	0	-0.0031	1.0000												
Greece	0	0	0	-0.0351***	-0.0372***	1.0000											
Japan	0	0	0	-0.0164**	-0.0173***	-0.1966***	1.0000										
Poland	0	0	0	-0.0093	-0.0098	-0.1112***	-0.0519***	1.0000									
S-Korea	0	0	0	-0.052***	-0.055***	*-0.6243****	-0.2911***	-0.1647***	1.0000								
Sweden	0	0	0	-0.0153**	-0.0162**	-0.1838***	-0.0857***	-0.0485***	-0.2722***	1.0000							
Switzerland	0	0	0	-0.0028	-0.003	-0.0341***	-0.0159**	-0.009	-0.0505***	-0.0149**	1.0000						
Taiwan	0	0	0	-0.0057	-0.006	-0.0685***	-0.0319***	-0.0181***	-0.1014***	-0.0298***	-0.0055	1.0000					
UK	0	0	0	-0.004	-0.0043	-0.0483***	-0.0225***	-0.0127*	-0.0715***	-0.021***	-0.0039	-0.0078	1.0000				
INVcp	-0.0497***	-0.0162**	0.0298***	-0.0213***	0.0008	0.0133**	-0.0045	-0.0231***	-0.009	0.0092	0.003	0.0037	0.0105	1.0000			
RECcp	-0.0381***	0.0069	0.0234***	-0.0106	-0.0134**	-0.0205***	0.0152**	0.0005	0.0085	0.004	-0.0075	0.0242***	-0.0227***	0.1455***	1.0000		
PAYcp	-0.0243***	0.0023	0.0278***	-0.0036	-0.0093	-0.0005	0.0116*	0.0156**	-0.0161**	0.0099	0.0076	-0.0003	-0.001	0.2038***	0.3223***	1.0000	
CCC	-0.0557***	-0.0105	0.0305***	-0.0219***	-0.0074	-0.0056	0.0057	-0.0258***	0.0046	0.0061	-0.0054	0.0217***	-0.0041	*0.7052****	*0.6219****	-0.0779***	1.0000

*** significant at 1%, ** significant at 5%, * significant at 10%

Appendix H: Correlation matrix based on 7,147 firms - Model 2 -

	PDI	IDV	MAS	UAI	LTO	DELTA_GDP	AGE	SIZE	GPM	ROA	GROWTH	NOS	LEV	FCOST	I_CON	I_TS	D2006
PDI	1.0000																
IDV	***-0.7453***	1.0000															
MAS	0.3406***	0.0863***	1.0000														
UAI	***0.9267***	***-0.6656***	***0.6064***	1.0000													
LTO	***0.623***	***-0.8397***	0.3345***	***0.7282***	1.0000												
DELTA_GDP	0.3671***	-0.3209***	-0.2033***	0.2076***	0.0622***	1.0000											
AGE	-0.3332***	***0.4182***	0.2496***	-0.1875***	-0.1895***	-0.3096***	1.0000										
SIZE	-0.058***	0.0448***	0.1635***	0.0085	0.0727***	-0.1078***	0.2365***	1.0000									
GPM	-0.1035***	0.1535***	0.0061	-0.1223***	-0.1743***	0.0072	0.0053	0.0615***	1.0000								
ROA	-0.0025	-0.0217***	-0.1135***	-0.0327***	-0.0403***	0.1025***	-0.0375***	-0.0528***	0.2095***	1.0000							
GROWTH	0.0157***	-0.0057	-0.0035	0.0116*	-0.0063	0.0943***	-0.0796***	-0.0029	0.0409***	0.1962***	1.0000						
NOS	0.0399***	-0.0068***	-0.0361***	-0.0517***	0.0146**	0.0691***	-0.114***	0.2047***	0.1783***	-0.0921***	0.0042	1.0000					
LEV	0.308***	***-0.4189***	-0.0394***	0.2885***	0.3443***	0.1365***	-0.2583***	-0.0671***	-0.1131***	-0.2329***	-0.0352***	-0.0336***	1.0000				
FCOST	0.2481***	-0.2904***	-0.2161***	0.1286***	0.0762***	0.2264***	-0.2653***	-0.1176***	-0.0368***	-0.0673***	0.0301***	0.0923***	0.3127***	1.0000			
I_CON	-0.0338***	0.093***	0.1335***	0.0243***	-0.0042	-0.0753***	0.0424***	-0.093***	-0.148***	0.0701***	0.0512***	-0.0922***	-0.255***	-0.0604***	1.0000		
I_TS	-0.0595***	0.089***	0.0233***	-0.0467***	-0.0675***	-0.0323***	0.0772***	0.0464***	-0.0279***	-0.0019	-0.0019	-0.0256***	-0.0434***	-0.0502***	-0.0611***	1.0000	
D2006	0	0	0	0	0	***0.4362***	-0.0521***	-0.0059	0.0101*	0.0496***	0.1192***	0	-0.0043	-0.0077	0	0	1.0000
D2007	0	0	0	0	0	***0.4162***	-0.0174***	-0.0029	0.0043	0.0338***	0.0075	0	0.0048	-0.0009	0	0	-0.3333***
D2008	0	0	0	0	0	-0.1595***	0.0174***	-0.0165***	-0.0033	-0.0394***	-0.109***	0	0.0057	0.0252***	0	0	-0.3333***
France	-0.0005	0.0027	0.0091	0.0043	0.0037	-0.005	0.0169***	0.0077	-0.011*	0.0032	-0.007	-0.006	0.0013	0.002	0.0117**	-0.0076	0
Germany	0.004	0.023***	0.0258***	0.0094	-0.0191***	-0.0023	-0.0027	-0.004	-0.0127**	0.0037	0.0025	-0.0104*	-0.0208***	-0.0152**	0.0058	-0.0096	0
Greece	-0.0069	-0.0019	-0.0347***	-0.0181***	-0.0165***	0.0109*	-0.0153***	-0.0251***	0.0227***	0.01*	-0.0026	-0.0067	-0.0066	-0.0111*	-0.0226***	0.0024	0
Japan	0.0322***	-0.0484***	-0.0358***	0.0178***	0.0193***	0.0293***	-0.0462***	-0.0065	-0.0215***	-0.0152**	-0.0094	0.0099*	0.0729***	0.1075***	-0.0185***	0.0039	0
Poland	0.0471***	-0.0557***	-0.0295***	0.029***	0.0233***	0.0366***	-0.0539***	-0.0228***	-0.0048	0.0007	0.0172***	0.0317***	0.0388***	0.2296***	0.0293***	-0.0193***	0
S-Korea	-0.0316***	0.0491***	0.0401***	-0.0158***	-0.0173***	-0.0311***	0.0427***	0.0222***	0.0021	0.0126**	0.0005	-0.0067	-0.063***	-0.1129***	0.019***	0.0147**	0
Sweden	0.0109*	-0.0068	0.0137**	0.0147**	0.0097	0.0007	0.0171***	0.0121**	-0.0056	-0.0104*	0.0024	-0.0025	0.0262***	-0.0069	-0.0086	-0.0106*	0
Switzerland	0.0108*	-0.0225***	-0.0163***	0.0059	0.0125**	0.0098*	-0.0164***	-0.0021	-0.0145**	-0.0098*	0.0175***	-0.0023	0.0165***	0.0193***	-0.0107*	-0.0071	0
Taiwan	0.0112*	-0.0147**	0.0175***	0.0183***	0.0242***	-0.0036	-0.0046	-0.0016	-0.0091	-0.0132**	-0.0064	-0.0038	0.0318***	0.0018	-0.0038	-0.0158***	0
UK	-0.0035	0.0089	0.0134**	0.0038	0.0113*	-0.0092	-0.0104*	0.0003	0.0002	-0.0222***	0.0064	0.0101*	0.0088	-0.0008	0.0301***	-0.0112*	0
INVcp	-0.0615***	0.0657***	-0.022***	-0.08***	-0.0748***	-0.0477***	0.0573***	0.1088***	0.3381***	-0.1488***	-0.1122***	0.1125***	0.0624***	0.0208***	-0.1709***	-0.1223***	-0.0479***
RECcp	0.1547***	-0.1291***	0.1575***	0.1946***	0.1871***	-0.0139**	0.0129**	0.0551***	0.0794***	-0.1306***	-0.2126***	-0.0008	0.0437***	-0.0086	0.001	-0.0786***	-0.0291***
PAYcp	0.0619***	0.0224***	0.1797***	0.1027***	0.0426***	-0.0334***	0.0492***	0.0938***	0.1303***	-0.1706***	-0.137***	0.0603***	-0.0212***	0.0156***	-0.1354***	-0.0604***	-0.0175***
CCC	0.0279***	-0.0551***	-0.0046	0.02**	0.0548***	-0.0329***	0.0279***	0.0687***	0.1781***	-0.1434***	-0.1725***	0.048***	0.1006***	0.0047	-0.054***	-0.1172***	-0.051***

	D2007	D2008	France	Germany	Greece	Japan	Poland	S-Korea	Sweden	Switzerland	Taiwan	UK	INVcp	RECcp	PAYcp	CCC
D2007	1.0000															
D2008	-0.3333***	1.0000														
France	0	0	1.0000													
Germany	0	0	-0.0032	1.0000												
Greece	0	0	-0.0325***	-0.0412***	1.0000											
Japan	0	0	-0.0149**	-0.019***	-0.1918***	1.0000										
Poland	0	0	-0.0084	-0.0106*	-0.1076***	-0.0495***	1.0000									
S-Korea	0	0	-0.0489***	-0.0621***	***-0.6282***	-0.2887***	-0.162***	1.0000								
Sweden	0	0	-0.0143**	-0.0182***	-0.1842***	-0.0846***	-0.0475***	-0.2771***	1.0000							
Switzerland	0	0	-0.0024	-0.003	-0.0306***	-0.0141**	-0.0079	-0.0461***	-0.0135**	1.0000						
Taiwan	0	0	-0.0053	-0.0067	-0.0679***	-0.0312***	-0.0175***	-0.1021***	-0.0299***	-0.005	1.0000					
UK	0	0	-0.0037	-0.0047	-0.0479***	-0.022***	-0.0123**	-0.072***	-0.0211***	-0.0035	-0.0078	1.0000				
INVcp	-0.0177***	0.0289***	-0.017***	-0.006	0.0153***	-0.0038	-0.0199***	-0.0101*	0.0081	0.0041	0.0058	0.0098*	1.0000			
RECcp	0.0029	0.0132**	-0.0075	-0.0098*	-0.0216***	0.0095	-0.0022	0.0148**	0.0006	-0.0074	0.0195***	-0.0172***	0.1402***	1.0000		
PAYcp	-0.0012	0.0218***	-0.0043	-0.0019	0.0006	0.0075	0.014**	-0.0117**	0.0026	0.0058	0.0015	0.004	0.2015***	0.3369***	1.0000	
CCC	-0.0132**	0.0255***	-0.0162***	-0.0133**	-0.0064	0.0034	-0.0235***	0.0081	0.0051	-0.0039	0.0191***	-0.0043	***0.6992***	***0.6153***	-0.0872***	1.0000

*** significant at 1%, ** significant at 5%, * significant at 10%

Appendix I: Final correlation matrix based on 10,129 firms - Model 3 and further -

	PDI	IDV	MAS	UAI	DELTA_GDP	AGE	SIZE	GPM	ROA	GROWTH	NOS	LEV	FCOST	I_CON	I_TS	D2006
PDI	1.0000															
IDV	-0.6935***	1.0000														
MAS	0.3671***	0.1101***	1.0000													
UAI	0.8047***	-0.4181***	0.6046***	1.0000												
DELTA_GDP	0.2906***	-0.2783***	-0.18***	0.0953***	1.0000											
AGE	-0.2865***	0.373***	0.2259***	-0.0956***	-0.2474***	1.0000										
SIZE	-0.1047***	0.0414***	0.0818***	-0.1537***	-0.0836***	0.2129***	1.0000									
GPM	-0.0678***	0.1626***	0.0527***	0.016***	-0.0057	0.0646***	0.0488***	1.0000								
ROA	-0.0048	-0.0243***	-0.1054***	-0.0335***	0.1024***	-0.0464***	-0.0461***	0.2176***	1.0000							
GROWTH	0.0182***	-0.003	0.0031	0.023***	0.1413***	-0.0808***	-0.0026	0.0302***	0.1988***	1.0000						
NOS	0.0377***	-0.0479***	-0.0358***	-0.0454***	0.0513***	-0.0633***	0.2013***	0.1446***	-0.0849***	-0.0003	1.0000					
LEV	0.2324***	-0.3584***	-0.0489***	0.13***	0.0904***	-0.1804***	-0.0034	-0.0821***	-0.2325***	-0.0375***	-0.026***	1.0000				
FCOST	0.2208***	-0.2005***	-0.1056***	0.1987***	0.1571***	-0.1932***	-0.1385***	-0.0059	-0.0662***	0.052***	0.0602***	0.2457***	1.0000			
I_CON	-0.0306***	0.0728***	0.1033***	0.003	-0.0532***	-0.0238***	-0.0665***	-0.132***	0.0893***	0.0733***	-0.0741***	-0.2252***	0.0115**	1.0000		
I_TS	-0.048***	0.0883***	0.0503***	0.0237***	-0.0249***	0.064***	0.0213***	0.0308***	-0.0003	0.001	-0.0304***	-0.0464***	-0.0306***	-0.0752***	1.0000	
D2006	0	0	0	0	0.4865***	-0.0528***	-0.0149***	0.0055	0.0454***	0.1258***	0	-0.0143***	-0.0063	0	0	1.0000
D2007	0	0	0	0	0.4222***	-0.0176***	-0.005	0.0041	0.0385***	0.0365***	0	0.0013	0.0159***	0	0	-0.3333***
D2008	0	0	0	0	-0.1754***	0.0176***	-0.0046	-0.0006	-0.0261***	-0.0727***	0	0.007	0.0338***	0	0	-0.3333***
France	0.0008	0.0021	0.0083*	0.0061	-0.0036	0.009*	-0.0024	-0.0023	0	-0.0069	-0.0045	0.0015	0.0037	0.0018	0.0007	0
Germany	0.0058	0.0184***	0.0228***	0.0137***	-0.002	0.0022	-0.0035	-0.0034	0.0014	0.0067	-0.0109**	-0.007	-0.0028	-0.0011	-0.0048	0
Greece	-0.0105**	-0.0013	-0.0329***	-0.0248***	0.0084*	-0.0142***	-0.0117**	0.0094*	0.0103**	-0.0016	-0.0004	-0.029***	-0.0083*	-0.0069	0.0005	0
Japan	0.0371***	-0.0342***	-0.0135***	0.0472***	0.0175***	-0.0352***	-0.0234***	-0.006	-0.0161***	-0.005	0.0062	0.0783***	0.0943***	-0.0089*	-0.0015	0
Poland	0.0531***	-0.0322***	0.005	0.0801***	0.0179***	-0.05***	-0.0533***	0.0081	-0.0083*	0.02***	0.0137***	0.0454***	0.2205***	0.0436***	0.0071	0
S-Korea	-0.0371***	0.0369***	0.0204***	-0.042***	-0.02***	0.0429***	0.0356***	-0.0016	0.014***	-0.0035	-0.0021	-0.0477***	-0.113***	0.0004	0.0082*	0
Sweden	0.0083*	-0.008	0.0074	0.0021	0.0012	0.0039	0.0144***	-0.0097*	-0.0087*	-0.0001	-0.0051	0.0207***	-0.0209***	-0.0173***	-0.0179***	0
Switzerland	0.0091*	-0.0188***	-0.0127**	0.0047	0.007	-0.0126**	0.006	-0.0133***	-0.0046	0.0152***	0.0041	0.0122**	0.0078	-0.0068	-0.009*	0
Taiwan	0.0128**	-0.0098**	0.0163***	0.0189***	-0.0034	0.0004	-0.0094*	0.0018	-0.0146***	-0.0092*	-0.0105**	0.0189***	-0.0009	-0.0139***	-0.0006	0
UK	-0.0027	0	0.0107**	0.0026	-0.0065	-0.0018	0.0006	0.0069	-0.0162***	0.0066	0.0085*	0.0033	-0.0055	0.0295***	-0.0067	0
INVcp	0.0211***	0.0666***	0.0565***	0.1445***	-0.0777***	0.0818***	0.0307***	0.2605***	-0.1532***	-0.1119***	0.077***	0.0734***	0.0594***	-0.1377***	-0.147***	-0.0464***
RECcp	0.1926***	-0.0159***	0.2148***	0.4352***	-0.0745***	0.04***	-0.0784***	0.1196***	-0.1035***	-0.1563***	0.0007	0.0752***	0.1228***	-0.0199***	-0.0188***	-0.0316***
PAYcp	0.125***	0.0655***	0.2206***	0.3488***	-0.0573***	0.0311***	-0.042***	0.1919***	-0.1329***	-0.0903***	0.0184***	-0.0218***	0.1418***	-0.0528***	0.0211***	-0.0096*
CCC	0.1024***	-0.002	0.0973***	0.2701***	-0.0894***	0.0788***	-0.0205***	0.1503***	-0.1311***	-0.1614***	0.0384***	0.1303***	0.0661***	-0.0768***	-0.1138***	-0.0543***

	D2007	D2008	France	Germany	Greece	Japan	Poland	S-Korea	Sweden	Switzerland	Taiwan	UK	INVcp	RECcp	PAYcp	CCC
D2007	1.0000															
D2008	-0.3333***	1.0000														
France	0	0	1.0000													
Germany	0	0	-0.0035	1.0000												
Greece	0	0	-0.033***	-0.0431***	1.0000											
Japan	0	0	-0.0163***	-0.0213***	-0.2015***	1.0000										
Poland	0	0	-0.0103**	-0.0135***	-0.1276***	-0.0631***	1.0000									
S-Korea	0	0	-0.0488***	-0.0638***	-0.6025***	-0.298***	-0.1887***	1.0000								
Sweden	0	0	-0.0145***	-0.019***	-0.1792***	-0.0886***	-0.0561***	-0.265***	1.0000							
Switzerland	0	0	-0.0025	-0.0032	-0.0304***	-0.0151***	-0.0095*	-0.045***	-0.0134***	1.0000						
Taiwan	0	0	-0.0056	-0.0074	-0.0696***	-0.0344***	-0.0218***	-0.1029***	-0.0306***	-0.0052	1.0000					
UK	0	0	-0.0038	-0.005	-0.0472***	-0.0233***	-0.0148***	-0.0698***	-0.0207***	-0.0035	-0.0081	1.0000				
INVcp	-0.0267***	0.0131***	-0.0088*	-0.0014	0.0004	0.0154***	0.0134***	-0.0127**	-0.0044	0.0074	0.0191***	-0.0006	1.0000			
RECcp	-0.0167***	-0.0073	-0.0047	-0.0052	-0.0429***	0.0646***	0.0656***	-0.0234***	0.0046	-0.0033	0.0183***	-0.0164***	0.253***	1.0000		
PAYcp	-0.0107**	-0.0041	-0.0024	0.02***	-0.0115**	0.0432***	0.0718***	-0.0435***	-0.0011	-0.0012	0.014***	-0.0023	0.278***	0.5069***	1.0000	
CCC	-0.0294***	0.0054	-0.0081	-0.0166***	-0.0265***	0.0424***	0.024***	-0.0053	0.0008	0.0017	0.0181***	-0.012**	0.6855***	0.7237***	0.1084***	1.0000

*** significant at 1%, ** significant at 5%, * significant at 10%

Appendix J: Tables culture and SME-subgroups

This appendix consists of seven pages with tables.

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Model	Medium-Sized CCC-6	Small CCC-6	Micro CCC-6
PDI	Out	Out	Out
IDV	Out	Out	Out
MAS	Out	Out	Out
UAI	Out	Out	Out
R^2	0.093	0.123	0.109

Model	Medium-Sized CCC-8	Small CCC-8	Micro CCC-8	Stronger effect?	Bigger R^2 value
PDI	0.998***	1.456***	1.247*	No	
IDV	Out	Out	Out		
MAS	-0.026	0.487***	0.840**	Yes	
UAI	Out	Out	Out		
R^2	0.104	0.146	0.137		
$R^2 - R^2$ CCC-6	0.011	0.023	0.028		Yes

Model	Medium-Sized INVcp-6	Small INVcp-6	Micro INVcp-6
PDI	Out	Out	Out
IDV	Out	Out	Out
MAS	Out	Out	Out
UAI	Out	Out	Out
R^2	0.203	0.150	0.121

Model	Medium-Sized INVcp-8	Small INVcp-8	Micro INVcp-8	Stronger effect?	Bigger R^2 value
PDI	0.374***	0.369**	-0.009	No	
IDV	Out	Out	Out		
MAS	-0.053	0.247***	0.832***	Yes	
UAI	Out	Out	Out		
R^2	0.206	0.154	0.139		
$R^2 - R^2$ INVcp-6	0.002	0.004	0.017		Yes

Model	Medium-Sized RECcp-6	Small RECcp-6	Micro RECcp-6
PDI	Out	Out	Out
IDV	Out	Out	Out
MAS	Out	Out	Out
UAI	Out	Out	Out
R^2	0.048	0.082	0.086

Model	Medium-Sized RECcp-8	Small RECcp-8	Micro RECcp-8	Stronger effect?	Bigger R^2 value
PDI	1.108***	1.521***	-0.027	No	
IDV	Out	Out	Out		
MAS	0.332***	1.040***	2.204***	Yes	
UAI	Out	Out	Out		
R^2	0.095	0.158	0.181		
$R^2 - R^2$ RECcp-6	0.047	0.076	0.095		Yes

Model	Medium-Sized PAYcp-6	Small PAYcp-6	Micro PAYcp-6
PDI	Out	Out	Out
IDV	Out	Out	Out
MAS	Out	Out	Out
UAI	Out	Out	Out
R^2	0.081	0.102	0.098

Model	Medium-Sized PAYcp-8	Small PAYcp-8	Micro PAYcp-8	Stronger effect?	Bigger R^2 value
PDI	0.387***	0.346**	-2.208***	No	
IDV	Out	Out	Out		
MAS	0.412***	0.977***	2.849***	Yes	
UAI	Out	Out	Out		
R^2	0.120	0.157	0.201		
$R^2 - R^2$ PAYcp-6	0.039	0.055	0.103		Yes

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Model	Medium-Sized CCC-9	Small CCC-9	Micro CCC-9	Stronger effect?	Bigger R^2 value
PDI	0.973***	2.113***	2.599***	Yes	
IDV	Out	Out	Out		
MAS	Out	Out	Out		
UAI	Out	Out	Out		
R^2	0.103	0.143	0.132		
$R^2 - R^2$ CCC-6	0.011	0.020	0.024		Yes

Model	Medium-Sized INVcp-9	Small INVcp-9	Micro INVcp-9	Stronger effect?	Bigger R^2 value
PDI	0.324***	0.702***	1.330***	Yes	
IDV	Out	Out	Out		
MAS	Out	Out	Out		
UAI	Out	Out	Out		
R^2	0.205	0.153	0.131		
$R^2 - R^2$ INVcp-6	0.002	0.003	0.010		Yes

Model	Medium-Sized RECcp-9	Small RECcp-9	Micro RECcp-9	Stronger effect?	Bigger R^2 value
PDI	1.424***	2.927***	3.526***	Yes	
IDV	Out	Out	Out		
MAS	Out	Out	Out		
UAI	Out	Out	Out		
R^2	0.086	0.136	0.145		
$R^2 - R^2$ RECcp-6	0.038	0.054	0.059		Yes

Model	Medium-Sized PAYcp-9	Small PAYcp-9	Micro PAYcp-9	Stronger effect?	Bigger R^2 value
PDI	0.793***	1.676***	2.399***	Yes	
IDV	Out	Out	Out		
MAS	Out	Out	Out		
UAI	Out	Out	Out		
R^2	0.098	0.129	0.135		
$R^2 - R^2$ PAYcp-6	0.017	0.027	0.036		Yes

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Model	Medium-Sized CCC-10	Small CCC-10	Micro CCC-10	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	-0.127***	0.252***	0.077	No	
MAS	0.135***	0.847***	1.344***	Yes	
UAI	Out	Out	Out		
R^2	0.094	0.140	0.136		
$R^2 - R^2$ CCC-6	0.002	0.018	0.027		Yes

Model	Medium-Sized INVcp-10	Small INVcp-10	Micro INVcp-10	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	0.111**	0.343***	0.483*	Yes	
MAS	-0.007	0.354***	0.976***	Yes	
UAI	Out	Out	Out		
R^2	0.203	0.157	0.142		
$R^2 - R^2$ INVcp-6	0.000	0.007	0.021		Yes

Model	Medium-Sized RECcp-10	Small RECcp-10	Micro RECcp-10	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	-0.274***	0.305***	0.769***	Yes	
MAS	0.522***	1.420***	2.431***	Yes	
UAI	Out	Out	Out		
R^2	0.084	0.151	0.187		
$R^2 - R^2$ RECcp-6	0.036	0.068	0.101		Yes

Model	Medium-Sized PAYcp-10	Small PAYcp-10	Micro PAYcp-10	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	-0.030	0.463***	1.587***	Yes	
MAS	0.474***	1.087***	2.489***	Yes	
UAI	Out	Out	Out		
R^2	0.117	0.163	0.222		
$R^2 - R^2$ PAYcp-6	0.036	0.061	0.123		Yes

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Model	Medium-Sized CCC-11	Small CCC-11	Micro CCC-11	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	-0.110**	0.178**	-0.564**	No	
MAS	Out	Out	Out		
UAI	Out	Out	Out		
R^2	0.094	0.123	0.112		
$R^2 - R^2$ CCC-6	0.001	0.000	0.004		No, but hardly any effect

Model	Medium-Sized INVcp-11	Small INVcp-11	Micro INVcp-11	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	0.110**	0.312***	0.021	No	
MAS	Out	Out	Out		
UAI	Out	Out	Out		
R^2	0.203	0.153	0.121		
$R^2 - R^2$ INVcp-6	0.000	0.003	0.000		No, but hardly any effect

Model	Medium-Sized RECcp-11	Small RECcp-11	Micro RECcp-11	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	-0.207***	0.181***	-0.391*	No	
MAS	Out	Out	Out		
UAI	Out	Out	Out		
R^2	0.054	0.083	0.090		
$R^2 - R^2$ RECcp-6	0.006	0.000	0.004		No, but hardly any effect

Model	Medium-Sized PAYcp-11	Small PAYcp-11	Micro PAYcp-11	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	0.029	0.362***	0.375*	Yes	
MAS	Out	Out	Out		
UAI	Out	Out	Out		
R^2	0.081	0.105	0.097		
$R^2 - R^2$ PAYcp-6	0.000	0.002	-0.001		No, but hardly any effect

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Model	Medium-Sized CCC-12	Small CCC-12	Micro CCC-12	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	Out	Out	Out		
MAS	0.123***	0.833***	1.320***	Yes	
UAI	Out	Out	Out		
R^2	0,093	0,139	0,136		
$R^2 - R^2$ CCC-6	0,000	0,016	0,027		Yes

Model	Medium-Sized INVcp-12	Small INVcp-12	Micro INVcp-12	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	Out	Out	Out		
MAS	0,003	0.335***	0.829***	Yes	
UAI	Out	Out	Out		
R^2	0,203	0,154	0,139		
$R^2 - R^2$ INVcp-6	0,000	0,004	0,017		Yes

Model	Medium-Sized RECcp-12	Small RECcp-12	Micro RECcp-12	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	Out	Out	Out		
MAS	0.497***	1.402***	2.194***	Yes	
UAI	Out	Out	Out		
R^2	0,075	0,148	0,181		
$R^2 - R^2$ RECcp-6	0,027	0,066	0,095		Yes

Model	Medium-Sized PAYcp-12	Small PAYcp-12	Micro PAYcp-12	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	Out	Out	Out		
MAS	0.471***	1.059***	1.991***	Yes	
UAI	Out	Out	Out		
R^2	0,117	0,156	0,191		
$R^2 - R^2$ PAYcp-6	0,035	0,054	0,092		Yes

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Model	Medium-Sized CCC-13	Small CCC-13	Micro CCC-13	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	Out	Out	Out		
MAS	Out	Out	Out		
UAI	0.993***	1.449***	1.230***	No	
R^2	0.141	0.200	0.155		
$R^2 - R^2$ CCC-6	0.048	0.078	0.046		No

Model	Medium-Sized INVcp-13	Small INVcp-13	Micro INVcp-13	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	Out	Out	Out		
MAS	Out	Out	Out		
UAI	0.413***	0.687***	0.780***	Yes	
R^2	0.212	0.175	0.151		
$R^2 - R^2$ INVcp-6	0.009	0.024	0.030		Yes

Model	Medium-Sized RECcp-13	Small RECcp-13	Micro RECcp-13	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	Out	Out	Out		
MAS	Out	Out	Out		
UAI	1.317***	1.880***	1.757***	No	
R^2	0.206	0.265	0.211		
$R^2 - R^2$ RECcp-6	0.157	0.183	0.125		No

Model	Medium-Sized PAYcp-13	Small PAYcp-13	Micro PAYcp-13	Stronger effect?	Bigger R^2 value
PDI	Out	Out	Out		
IDV	Out	Out	Out		
MAS	Out	Out	Out		
UAI	0.798***	1.222***	1.448***	Yes	
R^2	0.160	0.217	0.207		
$R^2 - R^2$ PAYcp-6	0.079	0.115	0.109		No

Appendix K: Overview of all hypotheses and results

Sorted by dependent variable (Sorted by indep. Var. on next page)

Hypothesis	Independent	Dependent	Expected	Found
H1	PDI	CCC	+	+
H2	IDV	CCC	-	- (insign.)
H3	MAS	CCC	+	+
H4	UAI	CCC	-	+
H5	LTO	CCC	+	Out
H6	ΔGDP	CCC	-	-
H7	AGE	CCC	+	+
H8	SIZE	CCC	+	5x - (sign.) & 1x + (insign.)
H9	GPM	CCC	+	+
H10	ROA	CCC	+	-
H11	CF	CCC	+	Out
H12	GROWTH	CCC	-	-
H13	NOS	CCC	-	+
H14	LEV	CCC	-	+
H15	FCOST	CCC	-	-
H1a	PDI	INVcp	0	+
H2a	IDV	INVcp	0	+
H3a	MAS	INVcp	0	+
H4a	UAI	INVcp	-	+
H5a	LTO	INVcp	0	Out
H6a	ΔGDP	INVcp	-	-
H7a	AGE	INVcp	+	+
H8a	SIZE	INVcp	-	+
H9a	GPM	INVcp	+	+
H10a	ROA	INVcp	+	-
H11a	CF	INVcp	+	Out
H12a	GROWTH	INVcp	+	-
H13a	NOS	INVcp	-	+
H14a	LEV	INVcp	-	+
H15a	FCOST	INVcp	-	No clear direction (Insign.)
H1b	PDI	RECcp	+	+
H2b	IDV	RECcp	-	-
H3b	MAS	RECcp	+	+
H4b	UAI	RECcp	+	+
H5b	LTO	RECcp	+	Out
H6b	ΔGDP	RECcp	-	-
H7b	AGE	RECcp	+	'+ & 1x - (insign.)
H8b	SIZE	RECcp	+	5x - (sign.) & 1x + (insign.)
H9b	GPM	RECcp	+	+
H10b	ROA	RECcp	+	-
H11b	CF	RECcp	+	Out
H12b	GROWTH	RECcp	-	-
H13b	NOS	RECcp	-	No clear direction (Insign.)
H14b	LEV	RECcp	-	+
H15b	FCOST	RECcp	-	-
H1c	PDI	PAYcp	-	+
H2c	IDV	PAYcp	+	+
H3c	MAS	PAYcp	+	+
H4c	UAI	PAYcp	+	+
H5c	LTO	PAYcp	-	Out
H6c	ΔGDP	PAYcp	-	-
H7c	AGE	PAYcp	-	No clear direction
H8c	SIZE	PAYcp	-	5x - (sign.) & 1x + (insign.)
H9c	GPM	PAYcp	0	+
H10c	ROA	PAYcp	-	-
H11c	CF	PAYcp	-	Out
H12c	GROWTH	PAYcp	+	-
H13c	NOS	PAYcp	+	- (Insign.)
H14c	LEV	PAYcp	+	-
H15c	FCOST	PAYcp	+	+

Sorted by independent variable

Hypothesis	Independent	Dependent	Expected	Found
H1	PDI	CCC	+	+
H1a	PDI	INVcp	0	+
H1b	PDI	RECcp	+	+
H1c	PDI	PAYcp	-	+
H2	IDV	CCC	-	- (insign.)
H2a	IDV	INVcp	0	+
H2b	IDV	RECcp	-	-
H2c	IDV	PAYcp	+	+
H3	MAS	CCC	+	+
H3a	MAS	INVcp	0	+
H3b	MAS	RECcp	+	+
H3c	MAS	PAYcp	+	+
H4	UAI	CCC	-	+
H4a	UAI	INVcp	-	+
H4b	UAI	RECcp	+	+
H4c	UAI	PAYcp	+	+
H5	LTO	CCC	+	Out
H5a	LTO	INVcp	0	Out
H5b	LTO	RECcp	+	Out
H5c	LTO	PAYcp	-	Out
H6	ΔGDP	CCC	-	-
H6a	ΔGDP	INVcp	-	-
H6b	ΔGDP	RECcp	-	-
H6c	ΔGDP	PAYcp	-	-
H7	AGE	CCC	+	+
H7a	AGE	INVcp	+	+
H7b	AGE	RECcp	+	+ & 1x - (insign.)
H7c	AGE	PAYcp	-	No clear direction
H8	SIZE	CCC	+	5x - (sign.) & 1x + (insign.)
H8a	SIZE	INVcp	-	+
H8b	SIZE	RECcp	+	5x - (sign.) & 1x + (insign.)
H8c	SIZE	PAYcp	-	5x - (sign.) & 1x + (insign.)
H9	GPM	CCC	+	+
H9a	GPM	INVcp	+	+
H9b	GPM	RECcp	+	+
H9c	GPM	PAYcp	0	+
H10	ROA	CCC	+	-
H10a	ROA	INVcp	+	-
H10b	ROA	RECcp	+	-
H10c	ROA	PAYcp	-	-
H11	CF	CCC	+	Out
H11a	CF	INVcp	+	Out
H11b	CF	RECcp	+	Out
H11c	CF	PAYcp	-	Out
H12	GROWTH	CCC	-	-
H12a	GROWTH	INVcp	+	-
H12b	GROWTH	RECcp	-	-
H12c	GROWTH	PAYcp	+	-
H13	NOS	CCC	-	+
H13a	NOS	INVcp	-	+
H13b	NOS	RECcp	-	No clear direction (insign.)
H13c	NOS	PAYcp	+	- (insign.)
H14	LEV	CCC	-	+
H14a	LEV	INVcp	-	+
H14b	LEV	RECcp	-	+
H14c	LEV	PAYcp	+	-
H15	FCOST	CCC	-	-
H15a	FCOST	INVcp	-	No clear direction (insign.)
H15b	FCOST	RECcp	-	-
H15c	FCOST	PAYcp	+	+

ENDNOTES

[i] Petersen and Rajan (1997)
Size = book value of assets.

[ii] Jaffee (1968)
Size = assets.

[iii] Molina and Preve (2007)
Size = a firm is considered large if its sales are larger or equal to the median of its industry in any given year and small otherwise.

[iv] Howorth and Reber (2003)
Size = number of employees.

[v] Nakamura and Palombini (2009)
Size = logarithm of sales.
GROWTH = $(sales_t – sales_{t-1}) / sales_{t-1}$.
OC = "dummy of presence of ownership concentration above 20% in one investor"
LEV = long term debt / total assets.
CF = log(free cash flow / total assets).
CCC = D_AR + D_IN - D_AP.
RECcp is called: days of accounts receivable (D_AR).
D_AR = accounts receivables / sales * 365.
INVcp is called: days of inventories (D_IN).
D_IN = inventories / sales * 365.
PAYcp is called: days of accounts payable (D_AP).
D_AP = accounts payable / sales * 365.
Working capital requirements = (accounts receivable + inventory) / (total assets – financial assets)

[vi] García-Teruel and Martínez-Solano (2010)
Size = logarithm of the assets.
AGE = logarithm of (1 + age).
GPM = ratio of gross profit to sales.
GROWTH = yearly variations in the sales.
FCOST = "defined as the ratio of finance costs over the cost of external financing excluding trade creditors"
CF = (net profits + depreciation) / sales.
Accounts receivable = account receivable / sales.
Accounts payable = account payable / sales.

[vii] AL Taleb, AL-Naser, AL-Zoued and AL-Shubiri (2010)
Size = natural logarithm of total assets.
ROA = net income / total assets.
GROWTH = change in annual sales
CF = "Operating cash flows are the cash flows generated from the routine operations of the firm and obtained directly from the cash flow statement as well as deflated by total assets."
LEV = total debs / total assets.
Working capital requirements = (cash and equivalents + marketable securities + inventories + accounts receivables) – (accounts payables + other payables). Working capital requirements is deflated by total assets to control the size effect.

[viii] Hill, Kelly and Highfield (2010)
Size = "natural logarithm of the lagged annual inflation-adjusted market value of equity."
GPM = (sales - cost of goods sold) / sales.
GROWTH = "the percentage change in sales over the previous year."
CF = "operating income before depreciation minus tax as a percentage of net assets."

Working capital requirements = (inventories + accounts receivables) – (accounts payables).

[ix] Chiou, Cheng and Wu (2006)
Size = first order difference of total assets.
AGE = "firm age, from the establishment of the company up to the year of sample data."
ΔROA = the change in the ROA.
ΔGROWTH = change in the sales growth. Growth is deflated by total assets.
LEV = total liabilities / total assets. Chiou, Cheng and Wu (2006) used the first order seasonal difference of the leverage: ΔLEV
CF: "ΔOCF_TA is the change in the operating cash flow, deflated by total assets."
Working capital requirements = (inventories + accounts receivables) – (accounts payables + accrued expenses + other payables).

[x] Baños-Caballero, García-Teruel and Martínez-Solano (2010)
Size = natural logarithm of total assets.
AGE = natural logarithm of age.
ROA = EBIT / total assets.
GROWTH = $(sales_t – sales_{t-1}) / sales_{t-1}$.
LEV = debt / total assets.
CF = (net profit + depreciation) / total assets.
CCC = (accounts receivable / sales) * 365 + (inventories / purchases) * 365 – (accounts payable / purchases) * 365.

[xi] Niskanen and Niskanen (2006)
CF = net profits / sales.
[xii] Nazir and Afza (2008b)
Size = natural log of total assets.
ROA = net income / total assets.
GROWTH = firm's sales variability measured by changes in annual sales.
LEV = total debt / total assets.
CF: "Operating cash flows are the cash flows generated from the routine operations of the firm and obtained directly from the cash flow statement as well as deflated by total assets."
Working capital requirements = "(cash and equivalents + marketable securities + inventories + accounts receivables) – (accounts payables + other payables). Working capital requirements are deflated by total assets to control the size effect."

[xiii] Appuhami (2008)
GROWTH = sales growth.
LEV = long term debt / equity.
FCOST: "Finance expenditure is cost incurred on debt capital. Interest incurred on debentures, bank loan and other long term liabilities are recognized as finance expenditures."
CF = operating cash flow.
Working capital requirements = (accounts receivable + inventories) – (accounts payable + other payable)