

National Culture and Small Firms' Use of Trade Credit: Evidence from Europe

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Abstract

We examine the use of trade credit in Western Europe by relying on a sample of 182,296 small firms for the period 2003-2013. Building on information asymmetry theory, we explore how a country's culture can impact SMEs use of trade credit. We discover that countries' cultural norms play a key role in explaining trade credit differences in Europe. We find that in countries with high power distance, high individualism, high masculinity, and high uncertainty avoidance rely more on trade credit.

JEL: G3; G32

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Introduction

Trade credit, the provision of credit by suppliers to their customers, is a common business practice in all economies. Irrespective of the existence of a specialized financial sector and trade credit being considered to be very costly to the firm (Boissay and Gropp 2007; Cuñat 2006)¹ it is regarded as the most important source of financing, especially for small and medium enterprises (SMEs). For example, Berger and Udell (1998) show that 15.78% of the total assets of US small firms are funded by trade credit. In Europe, Bougheas et al. (2009) document that trade credit in

¹ Boissay and Gropp (2007) estimate the implicit annual interest of trade credit to be about 40%.

Germany, France and Italy represents more than 25% of total assets. In the UK, 70% of total short-term debt is financed through trade credit (Guariglia and Mateut 2006).

Given the importance of trade credit to firm financing as well as in investment decisions, a body of research has been devoted to assessing the determinants of trade credit. Despite the number of trade credit studies, the motives of its use are still not well understood. Much of the extant literature suggests that banks are unwilling to provide loans (Boissay and Gropp 2007; Brennan et al. 1988; Mian and Smith 1992; Petersen and Rajan 1997; Smith 1987). The main explanation for the unwillingness of banks in providing credit to SMEs is information asymmetry. It is generally argued that SMEs are unable to obtain bank loans because it is too difficult for banks to assess and monitor SMEs creditworthiness. On the other hand, it is argued that monitoring costs for trade credit providers (i.e. suppliers of goods) are lower because they enjoy an easy access to information thanks to established long term relationship through business dealing. In addition, trade credit providers interact regularly with firms and as such they have the ability to cancel or repossess goods to firms in the event of default.

In practice, the use of trade credit differs markedly across countries. For instance, a study conducted by the European Central Bank² that covers the euro area shows that trade credit is more prevalent in Mediterranean European countries (trade credit represents 20% to 30% of sales in Spain, Portugal and Italy) than in Northern countries (Finland, Germany and Netherlands trade credit is below 10% of sales). We contend that trade credit cross-country differences may depend on the underlying societal norms.

Indeed, Williamson (2000) argues that the financial choices available to a firm are subject to its formal (e.g. financial legal systems) as well as informal (e.g. underlying societal norms) institutions. According to North (1990), informal institutions such as customs, religion, language and

² https://www.ecb.europa.eu/pub/pdf/other/mb201104_focus02.en.pdf?3f637f4dac75e3f3f33498b32f133de2

culture have a far deeper influence on a firm's decision than formal laws and economic rules. Support to this point is provided by credit access studies on soft factors (e.g. the intensity of the relationship between creditor and debtor, the trust between loan manager and entrepreneur, the closeness of the relationship between bank and firm, etc.) and their impact on credit access (Elsas and Krahnert 1998; Hernandez-Canovas and Martinez-Solano 2007; Moro and Fink 2013; Stein 2002). This growing literature, however, has yet to identify a clear channel through which informal institutions, such as cultural values, affect firms' decisions. As such, we draw on information asymmetry theory to uncover whether national cultural dimensions are associated with the use of trade credit.

Moving from the fact that bank and trade credit can substitute each other (Howorth and Reber 2003; Matias Gama and Van Auken 2015; Tang and Moro 2020), we posit that trade credit use depends on the firm's management propensity to cooperate and share information with the providers of funds. We argue that in a culture that does not value cooperation and push for success and competition among actors, information asymmetry is acute so that banks find it difficult to provide credit, leading SMEs to substitute bank credit with trade credit. On the other hand, cultures that promote cooperation and collaboration stimulate information sharing, facilitating SMEs access to bank credit. In short, culture affects access to bank credit that, in turn, affects the use of trade credit. Such an effect is further amplified in the case of SMEs that on the one hand suffer from high level of information asymmetry and on the other are more affected by the national culture (the market they serve is very often local and the management team is local). Thus, the degree of information asymmetry embedded in the national culture affects short-term financing strategies (i.e., short term bank loan and trade credit). We explore the link by relying on Hofstede's (Hofstede 1981, 1983; Hofstede et al. 1990) cultural dimensions³ that allow to explain cross-country differences. In

³ Hofstede categorises the world culture into clusters, depending on how the national culture is in relation to a) change and uncertainty b) power distance and hierarchic structures c) individuality d) long term pragmatism and e) masculinity – femininity (task orientation versus person-orientation).

particular, we contend that information asymmetry is more pronounced in masculine and individualist culture with high power distance and uncertainty avoidance so that these cultures are those where SMEs rely more on trade credit.

Our analysis uses a comprehensive sample of 182,296 European SMEs over the period 2003-2013, making 1,161,018 firm-year observations. In particular, we use a sample of sixteen countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, and United Kingdom). We find that Southern European countries, namely Portugal, Spain, Italy and Greece, rely more on trade credit than Scandinavian countries. For example, trade credit represents, on average, 25.27% of total assets of Italian SMEs, whereas in Finland trade credit is, on average, only 10.29%. We find that in countries characterised by high power distance, high individualism, high masculinity and high uncertainty avoidance rely more on trade credit. We also find that the role of culture is not affected by the economic crisis Europe faced in 2008. The findings are also robust to alternative specification, alternative estimation techniques, and alternative measures of national culture, as well as the potential endogeneity issue that emanates from the joint determination of short-term bank loan and trade credit. In addition, we control for differences in the determinants of trade credit at country level, and whether our results are affected by a particular country (or few countries), or by a particular industry.

Our study advances the extant literature by developing a conceptual theoretical framework based on information asymmetry theory to underscore the salient effect of national culture in the determination of trade credit. Another feature of this work is the focus on European SMEs. There is little research that considers the similarities or differences between countries that fall into the same general legal framework and display similar level of economic development. Indeed, the behaviour of capital markets in Western Europe might often be perceived to be comparatively similar in terms of market maturity and sophistication. However, European countries also display noticeable cultural differences that affect market conditions.

The remainder of this paper is structured as follows. The next section presents the conceptual theoretical framework and hypotheses. While section 3 discusses the methodology and sample description. Section 4 presents our main results, with section 5 discussing the robustness tests. Section 6 concludes.

2. Prior studies and theoretical framework

Firms can use different sources of finance in order to support their operations. When it turns to short/medium term debt (the focus of our work), SMEs can typically rely on bootstrap finance (informal and personal finance that is used during the very early stage of the firm's life), crowdfunding debt finance (a very innovative source of finance that started to be more popular in the last 3/5 years), short term bank finance in the form of overdraft, discounting, short term loans, etc. and trade credit. In fact, bootstrap finance is able to cover only limited amount of financial needs and for a limited period of time so that its role becomes irrelevant very early in firm's life. Crowdfunding debt finance is a very innovative form of finance and at the time of writing it plays an incredibly marginal role as a source of finance for firms. This implies that short/medium term finance boils down to bank finance (in its different forms) and trade credit. Research suggests that there are two types of trade credit. The first one, is called one-part-contract and gives to the customer the choice of settling the invoice immediately or delaying the payment for a period of time. Clearly, delaying the payment for a period of time is a form of "free" credit to the customer. The second type is called two-part-contract. In this case, the customer has two alternative options: either to settle the invoice immediately and enjoy a discount or delay the payment and lose the discount. For instance, a common form of a two-part contract used in Europe is "2/10 net 30" where "2/10" implies that the customer enjoys a discount of 2% of the invoiced amount if it is settled within ten days. The "net 30" means that alternatively the full invoiced amount is due within 30 days. Thus, customer's decision to delay payment rather than to take the 2% discount incurs a cost. In our example, further 20 days

implies an annualised interest rate of 43.9%. It is evident in this case trade credit is expensive if the firm does not take advantage of early payment discount (Cuñat 2006; Petersen and Rajan 1994).

Besides being an expensive source of financing, some studies argue that the use of trade credit increases firm information asymmetry when a firm seeks bank financing (Neuberger et al. 2008; Rheinbaben and Ruckes 2004). In a similar vein, Howorth et al. (2003) and Vesala (2007) suggest that the use of alternative sources of financing increases administrative and managerial costs. However, Deloof (2003) argue that trade credit can be beneficial to the firm because it increases the efficiency of cash and invoice management and hence reduces transaction costs. Another reason advanced in the literature to the use of trade credit is that suppliers of goods provide it in order to attract customers. In other words, suppliers provide trade credit as a marketing tool (Deloof and Jegers 1996). All in all, research insinuates that firms face a trade-off between the advantages and the disadvantages of relying on trade credit over and above bank finance (Detragiache et al. 2000). Notwithstanding these non-financial justifications are appealing for explaining why SMEs rely on trade credit, we argue that its use is better understood when it is explored jointly with bank finance.

It is generally held that banks use a different approach to evaluate the creditworthiness of a firm compared to trade credit providers. Banks rely mainly on factual financial data from the annual/interim financial statements integrated by additional information provided by the firm (Berger and Udell 2006). Thus, banks depend on firms' capability to produce the information (that can be limited in the case of small firms), the timeliness with which the information is produced, and firms' willingness to disclose information (Moro et al. 2015). With respect to information disclosure, some researchers argue that SMEs are reluctant to share business information with banks because they are concerned about a possible leak of information which may undermine their competitive advantage (Lowry et al. 2014; Rheinbaben and Ruckes 2004). In addition to this, SMEs have limited assets to provide as collateral to banks. As such, banks face information asymmetry that adversely affect their capability to evaluate SMEs and the incapability of firms to provide collateral in order to hedge the

risk banks incur. Thus, small firms may be denied credit not because they are borrowers of poor quality but because they are not able to feed banks with information/collateral. Thus firms turn to trade credit as a substitute to bank credit (Tang and Moro 2020)

In fact, trade credit providers, do not assess customers creditworthiness on factual financial information provided by them. Trade creditors rely on private information available to them through the commercial relationship such as previous regular payments on former supplies and the regular financial relationship with other business partners (Smith 1987). This suggests that trade creditors enjoy an information competitive advantage compared to banks (Tsuruta 2008). This also implies that trade creditors' decision about providing or extending credit to a firm can be taken rapidly by exploiting reliable and up to date information. Similarly, trade creditors can rapidly recover any outstanding credit by simply stopping the supply of goods. Thus, even if providers of trade credit are affected by culture in a way similar to banks, nevertheless the fact that former face lower information asymmetry implies that any cultural effect on how providers of funds deal with information asymmetry has a greater role on banks than on suppliers.

To sum up there are at least three reasons that explain that the use of trade credit depends on bank credit access (and how culture affects it). First, research provides evidence of the substitution between bank credit and trade credit so that trade credit is used when firms do not access or think they are not able to access bank credit. (Tang and Moro 2020). Second, and linked partially to the previous point, there is a clear pecking order that implies that firms use trade credit before bank credit (Bartholdy et al. 2015) so that when firms struggle to secure bank credit they rely more on trade credit (Howorth and Reber 2003; Matias Gama and Van Auken 2015). Third, evidence suggest that firms reliance on trade credit is greater: i) during financial crisis (McGuinness and Hogan 2016; Psillaki and Eleftheriou 2015); ii) in less developed banking system (Cassia and Vismara 2009).

As mentioned, trade credit's use differs significantly across countries. For instance, a survey

published by the European Central Bank⁴ on the use of trade credit in the euro area shows that trade credit is more common in Mediterranean European countries than in Northern European countries. In our research, we posit that trade credit use depend on the underlying societal norms. As such we argue that culture permeates every aspect of the life of individuals as well as organisations. In other words, culture affects the way in which the society is shaped, including the propensity to share information. Thus, we posit that information asymmetry is acute in cultures that do not value cooperation and push for success and competition among actors. In such an environment banks find it difficult to provide credit, leading SMEs to substitute bank credit with trade credit. On the other hand, cultures that promote cooperation and collaboration stimulate information sharing, leading SMEs to rely more on bank credit because the latter are less concerned about possible leak of sensitive information. In short, culture affects access to bank credit and the use of trade credit.

Interestingly enough, the role of culture on the use of trade credit can be amplified in the case of SMEs for different reasons: i) the market served by the small and medium firms is more likely to be a local one (Barkema and Vermeulen 1998; Kogut and Zander 1993) and thus, SMEs are more affected by their national culture; ii) the management team in small and medium firms is likely to be local (Huse 2003) and as suggested by Ramírez and Tadesse (2009) the decisions of firms with domestic managers reflect the values of the society; iii) SMEs are more vulnerable to market imperfections such as informational asymmetry and financial constraints (Van Caneghem and Van Campenhout 2012), which give rise to moral hazard and adverse selection when it comes to credit access (see inter alia Belghitar and Khan 2013); iv) management's cultural values have greater influence on risk-taking in the small firms than in large ones as shown by Li et al. (2013) that stresses that managers in smaller firms have more discretion and hence are more likely to be influenced by cultural values when making decisions.

⁴ https://www.ecb.europa.eu/pub/pdf/other/mb201104_focus02.en.pdf?3f637f4dac75e3f3f33498b32f133de2

In his seminal work, Hofstede (1983) sees national culture as the collective programming of the mind that distinguishes the members of one group or category of people from another. He develops four dimensions that allow for a taxonomy of national culture: power distance (the degree to which the less powerful members of a society accept and expect that power is distributed unequally); individualism (a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families); masculinity vs femininity dimension (masculinity represents a preference for achievement, heroism, assertiveness, and material rewards for success while femininity stands for a preference for cooperation, modesty, caring for the weak and quality of life); uncertainty avoidance (the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity).

2.1. Hypotheses development

In competitive national cultures where the winner-takes-all approach prevails, systems of formal control are pervasive (Das and Teng 1998) and SMEs consider financing bodies antagonist subjects. SMEs are very protective about information so that information asymmetry faced by banks is high. On the other hand, in less competitive environments, characterized by very flat organizations, SMEs perceive financing bodies as business partners and are more likely to share information (Ferrary 2003; Howorth et al. 2006). When societies exhibit a large degree of power distance bank-firm relation is formal and firms perceive banks as distant entities that cannot be trusted (Ferrary 2003). In such a national cultural environment, SMEs are unwilling to make information easily available and bank credit denial is high because banks lack access to information (Berger and Udell 2006). Thus, SMEs turn to alternative forms of finance, namely trade credit. Thus, we derive the following hypothesis

H1: There is a positive relationship between power distance dimension and the use of trade credit

In masculine societies with preference for achievement, mistakes are not tolerated. Banks are careful in taking lending decision and ask additional information instead of relying on personal relationships and trust (Berger and Udell 2006; Howorth and Moro 2006; Uzzi 1999). The result is that SMEs perceive banks as intrusive entities (Das and Teng 1998). Thus, managers of SMEs are reluctant to provide information, leading to greater information asymmetry faced by banks. In such an environment banks will constrain the provision of credit forcing SMEs to look for alternative sources of finance. As a consequence, SMEs turn to trade credit because trade credit suppliers rely on information that is readily available to them irrespective of the cooperative behaviour of SMEs. Since suppliers use the current regularity of payments and the news that circulate in the business community to take decision, they face less information asymmetry and are in a better position to provide credit compared to banks.

H2: There is a positive relationship between masculinity dimension and the use of trade credit

In individualistic societies where individuals are expected to take care only of themselves and their immediate families, there is little room for the development of informal and personal relationship among business partners (Uzzi and Lancaster 2003). SMEs tend to see banks as external antagonistic entities that take lending decision according to credit scoring/rating lending models or on asset lending technologies (Berger and Udell 2006). As such, SMEs avoid to share information (Lowry et al. 2014; Rheinbaben and Ruckes 2004). In addition, in individualistic societies, the loose knits that the firm's management has with the bank make it difficult for the bank to have a clear understanding of the SME (Howorth and Moro 2006). All in all, banks face information asymmetry and SMEs turn to trade credit to cover their short-term financial needs since suppliers are in a better position to process and acquire information than banks (Mian and Smith 1992; Tang and Moro 2020;

Tsuruta 2008). It is argued that suppliers, through their commercial relationship (the regular payments on previous supplies, financial relationship with other business partners, etc), have better information and control on the business of their customers (SMEs) (Smith 1987).

H3: There is a positive relationship between individualism dimension and the use of trade credit

Finally, in high uncertainty avoidance cultures, SMEs are less comfortable with the banking system because they find it uncertain and ambiguous so that they refrain from sharing information. At the same time banks are very prudent and ask additional information in order to take loan decisions. The consequence is that SMEs may struggle to access the finance they need and thus can be forced to turn to trade credit (Tang and Moro 2020). In addition, in high uncertainty avoidance cultures banks follow more formal rules in the lending decision process so that also in this context SMEs may face increased costs in dealing with banks (Howorth and Moro 2012). Thus, we derive the following hypothesis.

H4: There is a positive relationship between uncertainty avoidance dimension and the use of trade credit

3. Methodology and sample description

3.1 Methodology

To test our hypotheses, we use panel data regression analysis to account for firm heterogeneity. To this end, we run Breusch–Pagan Lagrange Multiplier (LM) tests to test the effect of the pooled specifications against the firm’s random effects specifications. The LM tests are statistically significant at the 1% level, suggesting that the random effects model is preferable to the pooled model; hence the

random effects model is reported in the specifications that include culture variables. We start estimating a specification that does not consider the cultural dimension and then we show the results of four additional specifications that control for each cultural dimension.

We also implemented a battery of additional tests. It could be also argued that the results can be influenced by the cultural variables used. Thus, we re-estimate the model by using an alternative measure of culture, namely, Schwartz Culture Factors since also some dimensions of Schwartz taxonomy properly fit the effect of culture on competitive/cooperative context, the propensity to share information and the preference for finance flexibility. We also control the effect of time (by interacting culture with year) and the potential effect of the financial crisis on the use of trade credit by splitting the sample in three different periods (pre, during and post-financial crisis) and interacting a financial crisis binary variable with the culture dimensions.

Since it could be argued that our analysis can suffer from endogeneity because of the simultaneity between trade credit and bank credit, we estimate this relationship in a framework of simultaneous regressions by applying two and three stage least squares and two-step system GMM. In addition, it is important to check for any impact that the legal environment can have on trade credit decision. Thus, we re-estimated our original specifications including legal variables as controls. It could be argued that in the periods of credit constraints trade credit for small firms may act as a complement rather than a substitute to bank credit (Psillaki and Eleftheriou 2015), therefore, we additionally divide our sample into small and medium-sized firms. Given that our dataset variables vary at more than one level (firm, sector and country) we first implement a multi-level regression model. Second, since the number of firms by country, industry and year are different in our sample, we further test whether our results are affected by one or few countries, or by the industries and/or by years. Thus, to comply with this purpose, we re-estimated the original model 34 times, each time dropping either a country, a sector or a year for each cultural dimension. Hence, if a country or an industry impacts the results, when the former or the latter is dropped one should

observe big differences in the cultural coefficients. We also re-estimated the model with the variables averaged per year/sector (1,232 observations) with and without winsorization of all variables at the bottom and top 1 percent. At last, there is no such thing as a definitive measure of trade credit. This implies that the analysis is sensitive to the way trade credit is measured. In order to control this issue, we re-estimated the model by using an alternative measure of trade credit, namely creditors days.

3.2 Data

The accounting and financial data was obtained from *ORBIS*, a global company database produced by *Bureau van Dijk* which contains information on over 80 million European private companies. This is a comprehensive database which provides accounting and financial information in an analogous and uniform format allowing comparisons across countries. We started by selecting *Manufacturing SMEs* from sixteen Western European countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden and United Kingdom) and from seven different sectors (chemicals, rubber, plastics, non-metallic products; food, beverages, tobacco; machinery, equipment, furniture, recycling; metals & metal products; publishing, printing; textiles, wearing apparel, leather and wood, cork, paper). The data is organized following the Statistical Classification of Economic Activities in the European Community, Rev. 2 (2008) and it is reported in ORBIS under NACE Rev. 2 main section, *C – Manufacturing*. We select only small and medium sized enterprises following the European Commission Recommendation 2003/361/EC grouped according to the number of employees, annual turnover or annual balance sheet total. The outliers (such debt ratios above 1) are excluded but we do not follow any automatic outliers' exclusion such as the 1 percent observations in both tails. We integrated the original BvD dataset with macroeconomic information (e.g. GDP or Unemployment) from Eurostat Dataset and with legal variables from Doing Business dataset by World Bank.

The time period of this study is from 2003 to 2013. The final sample consists of 182,296

unique unbalanced SMEs, giving us 1,161,018 SME-year observations. Table 1 provides the distribution of the sample by country (in Panel A) and by industry (in Panel B).

TABLE 1 HERE

The proportion of observations per country mirrors the proportion of small and medium SMEs in existence according to the EU statistics: in fact, Italy is the country with the greatest number of observations followed by Germany. The country with the smallest number of observations is Iceland. Panel B shows that the most represented industry is the “Machinery, Equipment and Furniture” (32.60% of the observations) followed by “Metals and Metal Products” (18.94% of the observations). The smallest sector is Publishing and Printing (3.49% of the observations).

The main variable of interest in this study is trade credit. To obtain industry-level measures of trade credit usage, we estimate the ratio of accounts payable to total assets (Fisman and Love 2003).

TABLE 2

From Panel A, in Table 2, trade credit in Europe, on average, represents 16% of the total assets of SMEs. However, when we look at the average of the trade credit by country, the descriptive statistics are revealing. Trade credit in Finland, on average, is 10.3%: compared to the other European SMEs, Finnish SMEs have the smallest trade credit ratio. On the other hand, SMEs in Italy have the highest trade credit ratio, representing, on average, 25.3% of total assets. Looking over the period of analysis (2003-2013), there are some interesting patterns. We notice that in Italy, France, Portugal and Spain, trade credit decreases. For instance, in 2003 Italy’s trade credit represented 29.2% of total assets, whereas in 2013 it represented only 23.6%. As for the other European countries, we do not notice a significant change. Turning to Panel B Table 2, there are no major

differences across the sectors. On average, the Food, Beverage and Tobacco sector has the highest trade credit ratio, 16.7%; whereas, the Textile, Wearing and Apparel sector has the lowest ratio, 15.5%. Similarly, we do not observe any difference in the trade credit by sector for each country. All in all, the descriptive statistics indicate that the use of trade credit appear to be more related to country aspects than to sector characteristics.

3.2.1 Cultural variables

The independent variables of interest in our research are those that measure culture. As already discussed we rely on Hofstede's culture dimensions (Hofstede 1981, 1983; Hofstede et al. 1990). Hofstede's is the earliest and most widely cited national culture metric (Aggarwal, 2016).

As discussed in the theoretical framework section our study relies on four national culture dimension: power distance (PD); Individualism (IND); masculine vs femininity (MAS) uncertainty avoidance (UA).

3.2.2 Firm characteristic variables and Macroeconomic Variables

As additional control variables, we also include two sets of variables: the first set looks at each SME's characteristics since the trade credit decision could depend on the SME performance and financial strategy. The second set includes macroeconomic variables as the economic context as well as the credit availability might affect the decision to use different sources of finance.

Focusing on the SME's related variables, we include the ratio between accounts receivable and total assets, commonly known as DEBTORS (McGuinness and Hogan 2016). If an SME decides (or it is forced) to provide more credit to the customers, i.e. it faces a greater debtor ratio, it needs more finance. The expectation is that the additional finance requested by the customer is, at least in part, financed by relying more on the trade credit (commonly known as creditors). Thus, we expect a positive relationship between debtors and the use of trade credit. The use of trade credit is also affected by how much stock the SME has: the greater the amount of stock (be it raw material, work in progress or final product) the SME has, the greater the need for additional finance. Moreover, the

liquidity preference of the SME may affect the amount of trade credit: SMEs that prefer to have greater amount of cash in hand, may use more trade credit in order to make such amounts of cash available. Both the amount of stock and the SME preference for liquidity affect the trade credit in the same direction: they increase the amount of trade credit the SME uses. We take these aspects into consideration by including the variable LIQUIDITY that is the sum of cash and cash equivalents (marketable securities) and stock divided by the total assets of the SME. Alternatively, we measure liquidity as cash and cash equivalents (marketable securities) over total assets (Hall et al. 2014). Bige Results are qualitatively similar, as discussed in the empirical results section. According to pecking order theory, SMEs tend to rely on the profit in order to finance their activities, as retained profit is the cheapest source of finance (Myers and Majluf 1984). We take this aspect into consideration by including a variable (PROFITABILITY) that considers after tax profit but adds up depreciation and amortisation scaled by total assets. Our expectation is that profitability is negatively related to the use of trade credit. We also control for the level of short-term bank credit (BC) available to the firm. An SME's ability to use bank credit to finance its current activities also impacts the use of trade credit: the greater the capability to leverage alternative sources of finance, the smaller the reliance on trade credit (substitution effect between trade credit and bank credit). Finally, an SME's financial needs are also dependent on its dimensions: bigger SMEs need more finance and, thus, they can try to use more trade credit. In addition, bigger SMEs may have more negotiating power with suppliers and thus are able to obtain trade credit at better conditions. However, bigger SMEs are also able to access many alternative sources of finance (such as additional capital) and they are also in a better position to negotiate good terms when accessing financing (i.e. better terms on the loans). The size of the SME is measured by natural logarithm of total assets (Hall et al. 2014).

Table 3 presents the firm specific descriptive statistics and Table 4 shows the correlation.

TABLE 3 HERE

TABLE 4 HERE

The average, over all the countries, for SMEs liquidity (LIQUIDITY) is 0.299. The country with the lowest liquidity ratio is Greece (0.248), German SMEs have the highest ratio (0.373). The picture depicted by DEBTORS is only partially different: the overall average is 0.242 – the country with the greatest debtors is Greece (0.339) and the one with the smallest debtors is Austria (.041). Dutch SMEs are the most profitable (PROFITABILITY) with a ratio of 0.121 compared to the other European countries in the sample. Regarding the use of alternative sources of short-term finance, the overall average ratio of short-term bank credit is 0.306. Austria’s SMEs have the highest ratio of bank credit, representing about 53% of the total assets whereas Irish SMEs have the lowest debt ratio (0.206). This is not surprising, given that Austria has the lowest trade credit ratio as discussed above.

Turning our attention to the macroeconomic aspects, we include two variables: CREDIT (defined as the amount of credit provided by the financial sector as a percentage of the GDP) and UNEMPLOYMENT (the percentage on unemployed persons among the population of working age). The argument for credit is that the greater the amount of credit provided by the financial sector, the lower the need for trade credit since the financial needs can be more easily covered by banks and other financial institutions. Thus, a negative relationship is expected. As can be seen from the data for such countries as Denmark, Iceland, Ireland and Netherlands the amount of credit provided by the financial sector is more than twice the country’s GDP, whereas the respective figures for Greece, Belgium and Finland is less than 1.2 times. Unemployment as a variable allows us to control for the general economic environment. High unemployment rate implies an economy that is not expanding and where doing business can be quite difficult. Across countries and for the period analysed in this study (2003-2013) the highest average unemployment rates were documented for Greece and Spain

(13.28% and 15.66%, respectively), along with the lowest values for Austria, Iceland, Norway and Netherlands (between 3-5%).

4. Empirical Results

Our first test is to explore whether there is a general significant relationship between trade credit use and culture. Table 2 suggests that Southern European countries (Spain, Italy, Portugal and Greece) rely more on trade credit than Scandinavian European countries. For example, trade credit represents, on average, 25.27% of total assets of Italian SMEs, whereas in Finland trade credit is, on average, only 10.29%. Thus, we want to test whether this difference can be driven by culture. For this reason, we run preliminary tests by dividing the countries by quartiles according to their cultural variable values. We expect that top quartile countries by cultural variable values have higher (lower) average trade credit (bank credit) values. The opposite should be observed to bottom quartile countries according to their cultural variable values. To assess whether average values for trade credit and bank credit are statistically different among top and bottom quartile countries we perform the Wilcoxon rank-sum non-parametric test between the means of two independent samples (top and bottom quartile countries) with a null hypothesis that there is no difference in mean values presented for firms in the top and bottom quartile countries against an alternative hypothesis that a particular population tends to have larger values than the other. The results for trade credit average values (Table 5, Panel A) show that the difference between the two groups of countries average trade credit in the upper quartile and in the lower quartile according to Hofstede's cultural dimensions is statistically significant at 1 percent level. Accordingly, the group of countries located in the top quartile by Hofstede's cultural dimensions have lower average bank credit values than the ones in the bottom quartile (statistically significant at 1 percent level, Table 5, Panel B). This first test suggests that European countries' reliance on trade credit depends on cultural dimensions and a substitution effect does exist among trade credit and bank credit.

TABLE 5 HERE

Next, we examine whether our results are driven by differences in the firm-specific determinants of trade credit. In order to do this, we re-estimate the specification (excluding Hofstede culture dimensions) country by country. In terms of an SME's specific determinants of trade credit, there appears to be a lot of consistency among the countries in the sample. Liquidity is always positively significant, except in Finland. Apart from Sweden, debtors are significantly positively related to trade credit. Profitability affects trade credit negatively with the exceptions for Ireland and the Netherlands. Bank credit is negatively related to trade credit. Finally, Size is negatively related to trade credit, except for Spain. It is also not significant in the case of the Netherlands. By and large the results are qualitatively similar, showing that to all countries Liquidity and Debtors affect positively trade credit, whereas more profitable firms, those that use more bank credit and those that are larger make less use of trade credit. These results indicate that firm characteristics do not affect differently trade credit levels across countries.

Table 6 reports our baseline results for six specifications where the dependent variable is trade credit (TC) and the independent variables are firm specifics, country characteristics and Hofstede cultural dimensions as defined previously.

TABLE 6 HERE

To allow comparison with previous studies on trade credit, Model 1 includes only firm and macroeconomic variables. Liquidity and debtors are positively related to the use of Trade credit as expected while profitability and bank credit are negatively related to Trade credit. The sign of the variable SIZE (firm dimension) is of particular interest since we do not have any prior expectation.

Our result supports the argument that larger SMEs use less trade credit, possibly because they are able to rely more on alternative sources of finance, namely bank credit. However, when the full sample is divided into small vs. medium-sized firms⁵, we do not observe differences in the relationship, statistical significance among firm characteristics variables and the use of trade credit. This is an interesting and relevant result, showing that regardless of whether a firm is small or medium-sized there is a substitutability among trade credit and bank credit. This result adds to the existing academic evidence and it is partially at variance with some past research (Psillaki and Eleftheriou 2015) that suggests that trade credit for small firms acts generally as complement rather substitute to bank credit. In fact, past research suggests that such an evidence is mainly linked to periods of tight money.

With regard to macroeconomic variables, greater availability of credit from the financial system reduces the use of trade credit while higher unemployment increases its use. The last point supports the fact that in harsher times (i.e. when unemployment is higher) SMEs rely more on trade credit, possibly because it is harder for them to access finance from banks or alternative sources.

In Model 2, we augment our specification by including the Power Distance (PD) culture variable. Compared to Model 1, there are no changes in firm and macroeconomic variables in terms of sign and significance. In addition, the variable of interest PD is significant and positively related to trade credit as hypothesised (H1): as expected the greater the power distance the greater the use of trade credit. Along similar lines, Individualism (IND), in Model 3, is positive and significant (H2) suggesting that in highly individualistic societies SMEs rely more on trade credit, as it allows them to avoid asymmetry related issues and reduces the costs linked to control. Model 4 presents the results including the cultural variable of Masculinity (MAS). No change in the significance and sign of control variables. Also this result is in line with what we expect (H3) and suggests that in masculine societies that are driven by competition, achievement and success, managers rely more on

⁵ According to the European Commission Recommendation 2003/361/EC.

trade credit. Finally, in Model 5 we include Uncertainty Avoidance (UA). All variables are significant, including UA (H4) that is positively and significantly related to trade credit: as expected, in high uncertainty avoidance societies, SMEs rely more on trade credit.

For models 2 to 6 we re-estimate our results without the variable unemployment (due the reported high correlation with the culture variables): no change in the role of the controls and the four cultural dimensions. In addition, we use GDP growth as an alternative macro factor in our analysis. Also in this case there are no changes in the other variables (sign and statistical significance) as well as in the effect of culture dimensions on trade credit.

It could be argued that our results are affected by the way in which we measure trade credit. Thus, we re-estimate our models by using an alternative measure of trade credit namely creditor's days. This is calculated as the ratio between the creditors and the cost of goods sold (COGS) times 365. Regarding macroeconomic and firm level variables, the results are consistent with the results reported in Table 6. Interestingly, Hofstede cultural dimensions maintain their significance level and their original sign, suggesting that our results are robust to the alternative measure of trade credit.

There is no such thing as a definitive measure of culture. This implies that our results can be affected by the way in which we measure culture. Even if our analysis relies on Hofstede's model that is very consolidated and has been widely used for more than 30 years, we cannot rule out that by measuring culture in a different way, one can obtain different results. Thus, we re-estimate our original model by using an alternative measure of culture: Schwartz Culture Factors. The decision to rely on this alternative metric is based on the fact that it allows us to maintain our focus on the embeddedness of the intensity of cooperation/competition and information asymmetry in national culture. We use Hierarchy (HIER) a cultural dimension that focuses on whether individuals are socialized to comply with the roles assigned to them in the hierarchy and subjected to sanctions if they fail to comply. In such societies there is little room for the development of a more personal dimension of the business relationship and thus a reduced room for cooperation. Thus, following the

reasoning we develop for the Hofstede dimensions, we expect HIER positively related to the use of trade credit. The second dimension is affective autonomy (AFA), that is societies where individuals are viewed as autonomous entities that are expected to cultivate and express their own preferences. In such societies the room for cooperation is also reduced and thus we expect a positive relation between AFA and trade credit. Finally, we include Mastery (MAS), that measures how individuals value succeeding and getting ahead through self-assertion. Also, this societies are not expected to stimulate and cultivate cooperation and thus we expect a positive relation between MAS and trade credit. The results we obtain are not reported here. They are consistent with our previous findings: Schwartz Cultural Factors are positively and significantly related to trade credit reinforcing the findings we obtain with Hofstede dimensions.

At last, we analyse whether the recent Financial crisis had affected the relevance of culture on trade credit levels. We augmented models 2 to 6 from Table 6 by including two additional variables to control for the financial crisis period (2008-2009). A binary variable, equals to one if years are 2008 and 2009 and zero otherwise, and its interaction with the culture dimensions (results not reported here). The results indicate that culture maintains its important role also during the financial crisis. Additionally, we re-estimated models 2 to 6 from Table 6 in three different periods (sub-samples). Pre (2003-2006), during (2007-2009) and post (2010-2013) Financial Crisis. In all the three periods and model specifications we still observe the effect of culture dimensions on trade credit levels. These results support the argument that culture has a very relevant and stable effect so that economic shocks do not compromise its role.

All in all, our analysis suggests consistently an important role of culture in defining the intensity of the use of trade credit: SMEs that operate in national cultures that score high in Hofstede dimension make a greater use of trade credit.

5. Robustness Analysis

Even if our results appear to be robust to alternative national culture metric, measure of trade credit and controls, some additional robustness checks mainly linked to econometric aspects are needed. In this section, we present the result of a battery of robustness checks to ensure the validity of the foregoing results.

5.1 Simultaneous Regressions

As discussed above, it could be argued that trade credit and bank credit could be jointly determined, so this may raise concerns on the clear distinction between dependent (trade credit) and explanatory variable (bank credit) and, in turn, question the results presented in table 6 on the subject of endogeneity. To control for this potential issue, we implement different approaches. First, we start by re-estimating our models using Two-Stage least squares (2SLS), where Bank Credit variable is instrumented. Second, we extend our analysis to Three-Stage Least Squares (3SLS), a system of structural equations, where the potential endogenous explanatory variable (Bank Credit) is a dependent variable in other equation in the system. Unlike the single-equation models, when the simultaneous-equation models are applied one may not estimate the parameters of a single equation without taking into account information provided by other equations in the system (Davidson and MacKinnon 1993; Zellner and Theil 1962). The 3SLS method has the advantage of exploiting the information contained in the disturbances across equations. More precisely, 3SLS assumes that the disturbance terms to be contemporaneously correlated. As it utilises more information, it produces more precise parameter estimates. At last, we apply the two-step system in generalised method of moments (GMM) estimation introduced by Blundell and Bond (1998). The system GMM model employs lagged values and lagged first-differences as instruments for levels equations. According to Blundell and Bond (1998) two-step approach to GMM estimation provides better predictors when the original equation is added in levels for the endogenous variables within the model. To overcome the risk of instruments proliferation we limited the lag depth and collapsed the matrix/set of instruments. The results are reported in table 7, 8 and 9.

TABLE 7 HERE

TABLE 8 HERE

TABLE 9 HERE

Interestingly, there are no changes: the estimated variables maintain the same sign and significance in all models and specifications consistent with the results presented in Table 6. All the culture variables have a positive and significant effect on trade credit (TC). We also observe substitutability among trade credit levels and bank credit (Tang and Moro 2020).

5.2. *Effect of time*

One finding from the descriptive statistics on trade credit suggests that it is decreasing over the period of our analysis in some countries such as Italy and Portugal. In order to take into consideration the discussed convergence of the use of trade credit among countries in Europe, we re-estimate our specifications by introducing the time variable (year) with the Hofstede cultural variables. Results are reported in table 10

TABLE 10 HERE

Firm and macroeconomic variables maintain their original sign and are significant; Hofstede's cultural dimensions are positively related to trade credit and are significant. More interestingly, in all four models, the interaction terms are statistically significant and negatively

related to trade credit used. The reduction in cultural differences among the different countries over the last years may indicate a sign of convergence with a progressively reduced role played by culture on firms' financial decisions across Western Europe. This finding is not completely unexpected if one considers that globalisation pushes towards the development of a pervasive and homogeneous general culture. However, from a statistical/econometric point of view these results should be taken with caution. Moreover, the interaction coefficients are very small compared to the cultural dimension's coefficients. Therefore, a possible dilution of the cultural differences it is not expected to happen soon if this speed of adjustment remains.

5.3 Nested and Unbalanced data

Our dataset variables vary at more than one level (firm, sector and country) and the number of firms by country, industry and year are also different in the sample. To address these sample characteristics, we perform additional robustness tests to examine whether the results are affected by one or a few countries or are driven by the industry or year. Additionally, we take into consideration variations among countries, sectors and firms.

First, we re-estimate our results with the use of a multi-level/hierarchical regression model. Results reported in table 11.

TABLE 11 HERE

Second, to examine whether the results are affected by one or a few countries or are driven by the industry or year we re-estimate the original model presented 34 times, each time dropping either a country, a sector or a year for each cultural dimension (Leamer histograms – figure 1). If one country or an industry drives the results, then we expect to find big differences in the cultural coefficients when that country or that industry is dropped.

FIGURE 1 HERE

We end up with very consistent result: the coefficients for the four cultural dimensions are always positive, i.e. irrespective of the model used, the country we drop or the sector we drop, suggesting that our results are not influenced by an industry or by a country or by the multilevel structure of the data. In addition, the cultural dimensions coefficients values are very consistent (sign and significance) across the different model specifications implemented.

5.4 Additional legal environment variables

There is ample evidence in the literature that suggests that institutional environment (legal, political, economic, financial, and social systems that surround firms and grant them legitimacy) plays a key role in explaining a firm's behaviour. With regard to the legal system, La Porta et al. (1998) provide evidence that investors in countries with common law traditions are better protected than investors in countries with civil law origins. Likewise, Zheng et al. (2012) argue that the cost of imposing contracts depends largely on the country's legal system. There is also some evidence in the literature which suggests that the quality of the country's law enforcement influences firms' financing choices (Giannetti 2003; Qian and Strahan 2007). In an effective judicial environment, creditors can easily recover their credit and thus can be more prone to provide credit upfront (Moro et al. 2016) thus reducing the use of trade credit because of greater availability of bank credit. In countries that have a more inefficient judicial system, SMEs can turn to trade credit in order to compensate for the increased difficulties they face in accessing bank finance. However, the quality of the judicial system is also correlated to the culture of a country: regulation setting and implementation is influenced by the country's culture. As such, we examine the correlation between these variables and our focal cultural variables. As expected, we find large variance inflation factor. Keeping in mind the potential collinearity issue, we re-estimate our original specifications by including two variables (the cost of the judicial procedure as a percentage of the estate and the time

(in days) needed to obtain a decision by the judge) one at a time.

The results regarding firm, macroeconomic and cultural variables are qualitatively similar to those previously reported (Table 11).

TABLE 11 HERE

The effective judicial environment variables are significant. Interestingly, the amount of time needed to obtain the final decision from a judge is always positively related to trade credit. This can be linked to the fact that more inefficient legal systems constrain access to bank credit. Thus, SMEs are forced to use more trade credit in order to satisfy their financial needs. On a similar note, the cost of the procedure is also positively related to trade credit. This suggests that the inefficient judicial system forces the SME to switch their source of funds from bank credit to trade credit. More importantly to our research is the fact that nothing changes in the case of our variables of interest: all four cultural factors maintain their original sign both when we enter them one by one and when we include all cultural factors together. Thus, we can conclude that culture affects trade credit beyond the effectiveness of the legal system.

6 Conclusion

Our study proposes a theoretical framework where national cultures affect the firm in important decisions such as short-term lending. In particular, we rely on Hofstede (1983) cultural dimensions to show how the national culture is key in determining the trade-off decision between bank short term loan and trade credit for a sample of Europe SMEs. Despite the fact these countries share similar institutional characteristics, we find striking differences in the behaviour of SMEs on the short-term borrowing decision.

By embedding national culture with information theory, we argue that in high power distance

countries, as well as in individualistic and masculine societies, suppliers of goods/services are more prone to provide trade credit because they have better information and control of the business of SMEs. Similarly, in countries with high uncertainty avoidance, we contend that SMEs are not willing to share information, and that banks tend to be very demanding in terms of information. As such, SMEs turn towards trade credit. To sum up, our theoretical approach suggests that in competitive cultural contexts where the relationship between banks and firms is less friendly, SMEs tend to rely more on trade credit because banks are less likely to provide finance to SMEs since banks are adversely affected by information asymmetry and agency issues. The empirical results are consistent with our hypotheses. In addition, our findings are robust to the inclusion of 1) additional institutional country-level variables; 2) alternative measures of culture and; 3) alternative measures of trade credit. The results are also supported by an alternative metric for measuring culture (namely – Schwartz taxonomy). Our evidences also suggest that culture seems to reduce its influence as time goes by even if the “reduction” effect is small and, according to the current decreasing trend, it will need decades before culture’s role will fade away. We argue that the progressively reduced effect of culture is the result of the globalisation that tends to move different cultures toward a general common one.

In general terms, our results are in line with past research on credit access that argues for the importance of the length of the relationship (Berger and Udell 1995; Petersen and Rajan 1994), the closeness of the relationship (Rheinbaben and Ruckes 2004), the quality and intensity of the interaction between borrower and lender (Elsas and Krahen 1998; Harhoff and Körting 1998), the role of ethics and religion (W. Li et al. 2020), and the importance of trust (Ferrary 2003; Howorth and Moro 2012). At the same time our results are at variance with work by El Ghouli and Zheng (2016). We ascribe different result to the fact that they do not focus on the substitution effect between debt and trade credit so that they are not able to appreciate the fact that in collectivist societies can be easier for firms to access bank credit and implicitly reduce the use of trade credit

Besides, they deal with a sample of larger firms that implies different relationship between firms and suppliers with respect the relationship in the case of small and medium ones. More specifically, our evidence contributes to the literature of both finance and management of SMEs. As far as SMEs' finance research is concerned, our evidence stresses the impact of SMEs difficulties in producing and sharing information (Lowry et al. 2014). We uncover how firms behave in national cultures that do not facilitate information sharing. We show how national culture informs firms' decisions about alternative sources of finance (Tsuruta 2008, 2010). Our findings also expand past research on the use of trade credit in general (Atanasova and Wilson 2003; Marotta 2005) uncovering the important role of competitive vs collaborative national cultures. Interestingly, we also expand the knowledge about the determinants of the use of trade credit during financial crisis (Carbó-Valverde et al. 2016) suggesting that culture maintains its important role irrespective of the financial shocks. As far as SMEs' management research is concerned, our findings suggest the importance of "soft" factors (see e.g. Doney et al. 1998; Shane 1994) in financing decisions by uncovering the important role of managers' behaviour (information sharing) as shaped by the national culture in business relationship and the consequences that such a behaviour can have.

Our results carry implication for both banks and firms. For banks operating in more competitive countries (i.e. high values in Hofstede's dimensions), our results suggest that they should find alternative ways to access the information about borrowers if they do not want to lose the possibility to lend to good but informationally opaque firms. As far as SMEs that operate in competitive national culture are concerned, our results suggest the importance of relying on alternative sources of finance that, possibly, goes beyond bank and trade credit.

Our findings open a new strand of research that might examine the effects of cultural norms on SMEs decision making in general since they provide the insight that national culture needs to be considered when analysing SMEs' financial decision. Interestingly, the analysis of a sample of SMEs from Europe shows that culture is a key determinant of trade credit, despite the fact that European

countries share similar institutional characteristics. The results remain consistent even after controlling for macroeconomic and legal environment. Moreover, our focus is on the link between banks and creditors. However, it can be very interesting to explore the role of culture on firm's decision to provide credit (the debtor side) and how firms' capability to access bank credit can affect their decision to extend credit to customers. To the best of our knowledge this area is currently not explored.

However, our analysis has also some limitation. Due to SME's data limitations (limited country coverage) our results cannot be "*sic et simpliciter*" generalised to Asian, African or American countries. This may be of interest for further research. However, we contend that the impact of culture on trade credit should be measured among countries with similar configuration of financial systems, thus cross-countries use and provision of trade credit can be attributed to the culture and not affected by legal environment, the level of economic development, macro-economic conditions, political conditions, and the level of institutional development.

What can be learnt from our findings? There is a significant difference in the use of trade credit amongst Europe SMEs. Southern European countries rely more on trade credit than Northern European countries. This study shows, theoretically and empirically, that culture plays a vital role in explaining this difference and helps to understand better the trade-off between trade credit and short-term bank credit.

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Table 1: Sample distribution by country and industry

The table reports the distribution of firms by country (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden and United Kingdom) and sector (Chemicals, rubber, plastics, non-metallic products, Food, beverages, tobacco, Machinery, equipment, furniture, recycling, Publishing, printing, Textiles, wearing apparel, leather and Wood, cork, paper)

| PANEL A: Sample distribution by country | | | PANEL B: Sample distribution by sector | | |
|------------------------------------------------|------------------|----------------|----------------------------------------------------|------------------|----------------|
| | Freq. | Percent | | Freq. | Percent |
| Austria | 21,597 | 1.86 | Chemicals, rubber, plastics, non-metallic products | 211,627 | 18.23 |
| Belgium | 45,305 | 3.90 | Food, beverages, tobacco | 152,177 | 13.11 |
| Denmark | 9,201 | 0.79 | Machinery, equipment, furniture, recycling | 378,504 | 32.60 |
| Finland | 14,661 | 1.26 | Metals & metal products | 219,932 | 18.94 |
| France | 124,443 | 10.72 | Publishing, printing | 40,463 | 3.49 |
| Germany | 178,472 | 15.37 | Textiles, wearing apparel, leather | 88,046 | 7.58 |
| Greece | 29,431 | 2.53 | Wood, cork, paper | 70,269 | 6.05 |
| Iceland | 1,142 | 0.10 | | | |
| Ireland | 9,623 | 0.83 | | | |
| Italy | 339,175 | 29.21 | | | |
| Netherlands | 35,633 | 3.07 | | | |
| Norway | 16,673 | 1.44 | | | |
| Portugal | 37,463 | 3.23 | | | |
| Spain | 147,387 | 12.69 | | | |
| Sweden | 28,130 | 2.42 | | | |
| United Kingdom | 122,682 | 10.57 | | | |
| Total | 1,161,018 | 100 | | 1,161,018 | 100 |

Table 2: Trade credit by country/year and sector/country

The table reports the mean trade credit (calculated as accounts receivable over total assets) for Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden and United Kingdom for firms on ORBIS database over the period 2003–2013 (Panel A) and for Chemicals, rubber, plastics, non-metallic products, Food, beverages, tobacco, Machinery, equipment, furniture, recycling, Publishing, printing, Textiles, wearing apparel, leather and Wood, cork, paper for the sixteen countries (Panel B).

Panel A: Trade Credit by country

| Year | Austria | Belgium | Denmark | Finland | France | Germany | Greece | Iceland |
|--------------|---------|---------|---------|---------|--------|---------|--------|---------|
| 2003 | 0.087 | 0.211 | --- | 0.111 | 0.248 | 0.129 | 0.226 | --- |
| 2004 | 0.106 | 0.208 | --- | 0.108 | 0.251 | 0.128 | 0.218 | 0.103 |
| 2005 | 0.109 | 0.203 | --- | 0.103 | 0.251 | 0.125 | 0.216 | 0.119 |
| 2006 | 0.106 | 0.198 | 0.079 | 0.098 | 0.255 | 0.131 | 0.217 | 0.109 |
| 2007 | 0.138 | 0.197 | 0.074 | 0.104 | 0.253 | 0.131 | 0.206 | 0.107 |
| 2008 | 0.109 | 0.203 | 0.105 | 0.101 | 0.230 | 0.117 | 0.210 | 0.118 |
| 2009 | 0.105 | 0.203 | 0.105 | 0.101 | 0.200 | 0.103 | 0.209 | 0.136 |
| 2010 | 0.102 | 0.198 | 0.105 | 0.107 | 0.209 | 0.117 | 0.203 | 0.117 |
| 2011 | 0.102 | 0.197 | 0.104 | 0.106 | 0.212 | 0.118 | 0.209 | 0.105 |
| 2012 | 0.100 | 0.191 | 0.104 | 0.102 | 0.206 | 0.111 | 0.206 | 0.118 |
| 2013 | 0.099 | 0.196 | 0.100 | 0.096 | 0.202 | 0.109 | 0.205 | 0.120 |
| TOTAL | 0.107 | 0.199 | 0.104 | 0.103 | 0.227 | 0.118 | 0.211 | 0.115 |

| Year | Ireland | Italy | Netherlands | Norway | Portugal | Spain | Sweden | United Kingdom | TOTAL |
|--------------|---------|-------|-------------|--------|----------|-------|--------|----------------|-------|
| 2003 | 0.137 | 0.292 | 0.156 | 0.144 | 0.251 | 0.219 | 0.134 | 0.169 | 0.179 |
| 2004 | 0.153 | 0.270 | 0.168 | 0.133 | 0.248 | 0.222 | 0.126 | 0.169 | 0.174 |
| 2005 | 0.157 | 0.273 | 0.171 | 0.135 | 0.254 | 0.220 | 0.126 | 0.168 | 0.175 |
| 2006 | 0.183 | 0.285 | 0.169 | 0.135 | 0.234 | 0.228 | 0.125 | 0.169 | 0.170 |
| 2007 | 0.179 | 0.277 | 0.166 | 0.135 | 0.235 | 0.228 | 0.129 | 0.169 | 0.171 |
| 2008 | 0.158 | 0.244 | 0.158 | 0.130 | 0.224 | 0.156 | 0.123 | 0.163 | 0.159 |
| 2009 | 0.150 | 0.228 | 0.140 | 0.136 | 0.210 | 0.142 | 0.124 | 0.156 | 0.153 |
| 2010 | 0.152 | 0.243 | 0.156 | 0.134 | 0.195 | 0.149 | 0.124 | 0.169 | 0.155 |
| 2011 | 0.164 | 0.244 | 0.160 | 0.134 | 0.193 | 0.144 | 0.125 | 0.171 | 0.155 |
| 2012 | 0.177 | 0.234 | 0.144 | 0.126 | 0.193 | 0.139 | 0.121 | 0.165 | 0.152 |
| 2013 | 0.186 | 0.236 | 0.150 | 0.130 | 0.193 | 0.139 | 0.121 | 0.162 | 0.153 |
| TOTAL | 0.166 | 0.253 | 0.158 | 0.133 | 0.217 | 0.165 | 0.124 | 0.166 | 0.160 |

Panel B: Trade credit by Sector

| Sector | Austria | Belgium | Denmark | Finland | France | Germany | Greece | Iceland |
|----------------------------------------------------|---------|---------|---------|---------|--------|---------|--------|---------|
| Chemicals, rubber, plastics, non-metallic products | 0.121 | 0.201 | 0.103 | 0.102 | 0.240 | 0.106 | 0.210 | 0.119 |
| Food, beverages, tobacco | 0.107 | 0.199 | 0.104 | 0.101 | 0.211 | 0.179 | 0.209 | 0.117 |
| Machinery, equipment, furniture, recycling | 0.103 | 0.198 | 0.103 | 0.105 | 0.234 | 0.111 | 0.212 | 0.109 |
| Metals & metal products | 0.102 | 0.198 | 0.104 | 0.100 | 0.229 | 0.119 | 0.214 | 0.108 |
| Publishing, printing | 0.111 | 0.194 | 0.102 | 0.108 | 0.237 | 0.127 | 0.214 | 0.114 |
| Textiles, wearing apparel, leather | 0.106 | 0.204 | 0.103 | 0.113 | 0.190 | 0.115 | 0.214 | 0.095 |
| Wood, cork, paper | 0.104 | 0.202 | 0.106 | 0.101 | 0.228 | 0.118 | 0.210 | 0.124 |

| Sector | Ireland | Italy | Netherlands | Norway | Portugal | Spain | Sweden | United Kingdom | TOTAL |
|----------------------------------------------------|---------|-------|-------------|--------|----------|-------|--------|----------------|-------|
| Chemicals, rubber, plastics, non-metallic products | 0.134 | 0.248 | 0.136 | 0.131 | 0.205 | 0.157 | 0.126 | 0.156 | 0.156 |
| Food, beverages, tobacco | 0.187 | 0.256 | 0.189 | 0.132 | 0.197 | 0.165 | 0.126 | 0.187 | 0.167 |
| Machinery, equipment, furniture, recycling | 0.168 | 0.250 | 0.155 | 0.133 | 0.221 | 0.172 | 0.124 | 0.155 | 0.159 |
| Metals & metal products | 0.197 | 0.251 | 0.188 | 0.130 | 0.225 | 0.172 | 0.124 | 0.179 | 0.165 |
| Publishing, printing | 0.213 | 0.248 | 0.164 | 0.130 | 0.168 | 0.145 | 0.122 | 0.180 | 0.161 |
| Textiles, wearing apparel, leather | 0.115 | 0.268 | 0.105 | 0.141 | 0.244 | 0.174 | 0.127 | 0.173 | 0.155 |
| Wood, cork, paper | 0.145 | 0.250 | 0.132 | 0.138 | 0.225 | 0.163 | 0.123 | 0.194 | 0.160 |

Table 3: Firm characteristic descriptive statistics

The table reports the number of firm-year observations, mean and standard deviation for the following variables per country: *Liquidity* is defined as Cash and Cash Equivalents (market securities) plus stock over Total Assets, *Debtors* is equal to Accounts Receivable over Total Assets, *Profitability* defined as Earnings after Taxes plus Amortization & Depreciation over Total Assets, *Bank Credit* measured as Short Term Bank Loans over Total Assets and *Size* calculated as the natural logarithm of Total Assets. All variables are calculated from ORBIS database over the period 2003-2013.

| | <i>Liquidity</i> | | | <i>Debtors</i> | | | <i>Profitability</i> | | | <i>Bank Credit</i> | | | <i>Size</i> | | |
|-----------------------|------------------|-------|----------|----------------|-------|----------|----------------------|-------|----------|--------------------|-------|----------|-------------|-------|----------|
| | # obs. | Mean | Std Dev. | # obs. | Mean | Std Dev. | # obs. | Mean | Std Dev. | # obs. | Mean | Std Dev. | # obs. | Mean | Std Dev. |
| Austria | 21,223 | 0.310 | 0.209 | 21,597 | 0.041 | 0.097 | 8,286 | 0.101 | 0.213 | 21,014 | 0.531 | 0.490 | 21,597 | 8.734 | 0.825 |
| Belgium | 44,706 | 0.309 | 0.208 | 45,304 | 0.273 | 0.181 | 44,250 | 0.093 | 0.178 | 45,300 | 0.247 | 0.207 | 45,305 | 8.650 | 0.792 |
| Denmark | 8,166 | 0.291 | 0.171 | 8,803 | 0.203 | 0.138 | 8,770 | 0.085 | 0.150 | 9,012 | 0.346 | 0.228 | 9,201 | 8.687 | 0.800 |
| Finland | 14,055 | 0.329 | 0.191 | 14,661 | 0.168 | 0.127 | 13,824 | 0.104 | 0.133 | 14,641 | 0.267 | 0.191 | 14,661 | 8.676 | 0.795 |
| France | 120,957 | 0.355 | 0.190 | 123,385 | 0.302 | 0.168 | 121,878 | 0.073 | 0.127 | 123,315 | 0.259 | 0.276 | 124,443 | 8.642 | 0.797 |
| Germany | 175,814 | 0.373 | 0.213 | 178,010 | 0.070 | 0.124 | 89,709 | 0.108 | 0.911 | 119,975 | 0.331 | 3.716 | 178,472 | 8.623 | 0.776 |
| Greece | 29,405 | 0.248 | 0.159 | 29,431 | 0.339 | 0.203 | 26,818 | 0.053 | 0.361 | 29,431 | 0.281 | 0.235 | 29,431 | 8.593 | 0.746 |
| Iceland | 1,108 | 0.250 | 0.184 | 1,141 | 0.161 | 0.134 | 1,022 | 0.083 | 0.174 | 1,141 | 0.305 | 0.282 | 1,142 | 8.544 | 0.733 |
| Ireland | 8,943 | 0.289 | 0.203 | 9,558 | 0.219 | 0.200 | 4,403 | 0.096 | 1.500 | 9,535 | 0.206 | 0.289 | 9,623 | 8.667 | 0.759 |
| Italy | 337,578 | 0.254 | 0.171 | 339,158 | 0.292 | 0.213 | 334,643 | 0.049 | 0.086 | 339,175 | 0.309 | 0.233 | 339,175 | 8.628 | 0.766 |
| Netherlands | 33,217 | 0.339 | 0.220 | 35,515 | 0.408 | 0.239 | 9,683 | 0.121 | 0.181 | 6,335 | 0.371 | 0.400 | 35,633 | 8.544 | 0.750 |
| Norway | 16,149 | 0.329 | 0.204 | 16,673 | 0.218 | 0.170 | 15,411 | 0.099 | 0.173 | 16,673 | 0.304 | 0.293 | 166,73 | 8.712 | 0.817 |
| Portugal | 37,301 | 0.252 | 0.172 | 37,462 | 0.356 | 0.191 | 36,558 | 0.058 | 0.099 | 37,414 | 0.248 | 0.188 | 37,463 | 8.564 | 0.750 |
| Spain | 142,515 | 0.258 | 0.175 | 147,327 | 0.300 | 0.183 | 143,672 | 0.062 | 0.139 | 146,835 | 0.287 | 0.248 | 147,387 | 8.589 | 0.783 |
| Sweden | 26,768 | 0.335 | 0.182 | 28,128 | 0.200 | 0.132 | 26,979 | 0.104 | 0.131 | 28,127 | 0.259 | 0.178 | 28,130 | 8.642 | 0.796 |
| United Kingdom | 112,178 | 0.302 | 0.196 | 121,840 | 0.164 | 0.197 | 72,752 | 0.088 | 0.393 | 120,224 | 0.370 | 0.407 | 122,682 | 8.650 | 0.793 |
| ALL | 1,130,083 | 0.299 | 0.194 | 1,157,993 | 0.242 | 0.208 | 958,658 | 0.070 | 0.340 | 1,068,147 | 0.306 | 1.273 | 1,161,018 | 8.626 | 0.779 |

Table 4: Spearman's rank correlation matrix

The table presents the Spearman's rank correlation matrix. *Creditors* is calculated as Accounts Receivable over total assets. *Liquidity* is defined as Cash and Cash Equivalents plus Marketable securities over Total Assets, *Debtors* is equal to Accounts Receivable over Total Assets, *Profitability* defined as Earnings after Taxes plus Amortization & Depreciation over Total Assets, *Bank Credit* measured as Short-Term Bank Loans over Total Assets. *Size* is calculated as the natural logarithm of Total Assets. *Credit* is the Domestic Credit provided by Financial sector as a percentage of GDP and *Unemployment* is the percentage of total Labour Force. *PD*, *IND*, *MAS* and *UA* are Hofstede cultural dimensions for Power Distance, Individualism, Masculinity/Femininity and Uncertainty Avoidance, respectively. All variables are calculated over the period 2003-2013. Superscripts indicate statistical significance at 0.01 (***), 0.05 (**) and 0.10 (*) percent levels.

| | <i>Creditors</i> | <i>Liquidity</i> | <i>Debtors</i> | <i>Profitability</i> | <i>Bank credit</i> | <i>Size</i> | <i>Credit</i> | <i>Unemployment</i> | <i>PD</i> | <i>IND</i> | <i>MAS</i> | <i>UA</i> |
|----------------------|------------------|------------------|----------------|----------------------|--------------------|-------------|---------------|---------------------|------------|------------|------------|-----------|
| <i>Creditors</i> | 1.0000 | | | | | | | | | | | |
| <i>Liquidity</i> | 0.0152*** | 1.0000 | | | | | | | | | | |
| <i>Debtors</i> | 0.5402*** | -0.1353*** | 1.0000 | | | | | | | | | |
| <i>Profitability</i> | -0.0695*** | 0.0587*** | 0.0093*** | 1.0000 | | | | | | | | |
| <i>Bank credit</i> | -0.0905*** | -0.0339*** | 0.0660*** | -0.1986*** | 1.0000 | | | | | | | |
| <i>Size</i> | 0.0222*** | -0.0001 | -0.0398*** | 0.0370*** | -0.0427*** | 1.0000 | | | | | | |
| <i>Credit</i> | -0.0945*** | -0.0662*** | 0.0079*** | -0.0628*** | -0.0594*** | 0.0240*** | 1.0000 | | | | | |
| <i>Unemployment</i> | 0.0263*** | -0.0432*** | 0.0670*** | -0.0910*** | -0.0669*** | -0.0878*** | 0.3613*** | 1.0000 | | | | |
| <i>PD</i> | 0.1554*** | 0.0016 | 0.2042*** | -0.0408*** | -0.0664*** | -0.1349*** | -0.0962*** | 0.4665*** | 1.0000 | | | |
| <i>IND</i> | 0.1760*** | -0.0403*** | 0.0209*** | -0.0732*** | 0.0727*** | 0.0329*** | -0.1218*** | -0.4299*** | -0.4186*** | 1.0000 | | |
| <i>MAS</i> | 0.1388*** | -0.0773*** | -0.0190*** | -0.1551*** | 0.0835*** | 0.0333*** | -0.2471*** | -0.2937*** | -0.3551*** | 0.7301*** | 1.0000 | |
| <i>UA</i> | 0.1018*** | -0.0432*** | 0.1957*** | -0.0619*** | -0.0615*** | -0.1362*** | -0.0553*** | 0.4951*** | 0.9404*** | -0.5644*** | -0.3733 | 1.0000 |

Table 5: Culture dimensions - trade and bank credit

Table provides the mean values for Trade Credit (Panel A) and Bank Credit (Panel B) in the upper and bottom quartile countries by Hofstede Cultural dimensions (Power Distance, Individualism, Masculinity and Uncertainty Avoidance) *Wilcoxon Z test* is the Wilcoxon rank-sum (Mann–Whitney) test of the null hypothesis that two independent samples (Upper and bottom quartile countries) have equal average values for trade credit (bank credit) Panel A (Panel B). A significant Z value indicates confidence in rejecting that the respective two samples are the same (rejecting that they have same mean values). Superscripts indicate statistical significance at 0.01 (***) , 0.05 (**) and 0.10 (*) percent levels.

Panel A: Trade Credit

| | Mean of Upper Quartile countries | Mean of Lower Quartile countries | <i>Wilcoxon Z test</i> |
|------------------------------|----------------------------------|----------------------------------|------------------------|
| <i>Power Distance</i> | 0.2138 | 0.1335 | 107.628*** |
| <i>Individualism</i> | 0.1940 | 0.1751 | 128.468*** |
| <i>Masculinity</i> | 0.1728 | 0.1326 | 140.115*** |
| <i>Uncertainty Avoidance</i> | 0.2138 | 0.1241 | 158.367*** |

Panel B: Bank Credit

| | Mean of Upper Quartile countries | Mean of Lower Quartile countries | <i>Wilcoxon Z</i> |
|------------------------------|----------------------------------|----------------------------------|-------------------|
| <i>Power Distance</i> | 0.2571 | 0.3308 | -91.391*** |
| <i>Individualism</i> | 0.2949 | 0.3055 | -36.763*** |
| <i>Masculinity</i> | 0.2909 | 0.3098 | -14.606*** |
| <i>Uncertainty Avoidance</i> | 0.2571 | 0.2636 | -7.196*** |

Table 6: Main regressions (Baseline model)

The table presents multi-country results (Austria, Belgium, Denmark Finland, France, Germany, Greece, Iceland, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden and United Kingdom), The sample consists of 904,310 firm-year observations (147,306 unique firms) on ORBIS database over the period 2003-2013. The following model is estimated:

$$Creditors_{i,t} = \beta_{0,i} + \beta_{0,t} + \sum_{k=1}^K \beta_{1,k} Y_{i,k,t} + v_i + \varepsilon_{i,t}$$

where, $Creditors_{i,t}$ is the stacked vector of the dependent (endogenous) variable defined as Accounts Receivable over total assets of firm i in year t , $Y_{i,k,t}$ is the matrix of K firm, country-specific and culture independent (explanatory) variables such as $Liquidity_{i,t}$ is defined as Cash and Cash Equivalents plus Stock over Total Assets of firm i in year t , $Debtors_{i,t}$ is equal to Accounts Receivable over Total Assets of firm i in year t , $Profitability_{i,t}$ defined as Earnings after Taxes plus Amortization & Depreciation over Total Assets of firm i in year t , $Bank\ Credit_{i,t}$ measured as Short Term Bank Loans over Total Assets of firm i in year t and $Size_{i,t}$ calculated as the natural logarithm of Total Assets of firm i in year t . $Credit_t$ is the Domestic Credit provided by Financial sector as a percentage of GDP in year t and $Unemployment_t$ is the percentage of total Labour Force in year t . PD , IND , MAS and UA are Hofstede cultural dimensions for Power Distance, Individualism, Masculinity/Femininity and Uncertainty Avoidance for each country, respectively. $\beta_{0,i}$ is the firm-specific intercept in the fixed-effects model, $\beta_{0,t}$ is the period-specific intercept, $\beta_{1,k}$ is the matrices of coefficients, v_i is the firm-specific error term in the random-effects model and $\varepsilon_{i,t}$ is the vector of error terms. Model 1 is estimated with firm fixed effects. Models 2 to 6 are estimated with firm random effects. Superscripts indicate statistical significance at 0.01 (***) , 0.05 (**) and 0.10 (*) percent levels. t statistics in parentheses. The coefficients' standard errors are adjusted for the effects of non-independence by clustering on each country.

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| <i>Liquidity</i> | 0.0820*** (24.34) | 0.0818*** (24.03) | 0.0823*** (24.77) | 0.0850*** (25.31) | 0.0820*** (24.43) | 0.0841*** (24.81) |
| <i>Debtors</i> | 0.3817*** (30.19) | 0.3798*** (29.33) | 0.3842*** (30.75) | 0.3833*** (30.63) | 0.3815*** (29.93) | 0.3809*** (29.62) |
| <i>Profitability</i> | -0.0186* (-1.68) | -0.0185* (-1.68) | -0.0186* (-1.68) | -0.0185* (-1.68) | -0.0186* (-1.68) | -0.0183 (-1.68) |
| <i>Bank credit</i> | -0.1442*** (-16.52) | -0.1437*** (-16.43) | -0.1438*** (-16.59) | -0.1449*** (-16.59) | -0.1442*** (-16.51) | -0.1435*** (-16.48) |
| <i>Size</i> | -0.0112*** (-24.24) | -0.0106*** (-24.03) | -0.0116*** (-25.50) | -0.0116*** (-25.32) | -0.0112*** (-24.73) | -0.0106*** (-24.35) |
| <i>Credit</i> | -0.0266*** (-32.00) | -0.0244*** (-26.35) | -0.0223*** (-27.10) | -0.0199*** (-24.02) | -0.0261*** (-28.22) | -0.0117*** (-12.89) |
| <i>Unemployment</i> | 0.1957*** (25.00) | 0.1726*** (20.55) | 0.2629*** (32.02) | 0.2043*** (26.08) | 0.1916*** (22.68) | 0.2136*** (24.96) |
| <i>PD</i> | --- | 0.0560*** (9.39) | --- | --- | --- | 0.0859*** (8.37) |
| <i>IND</i> | --- | --- | 0.1780*** (60.46) | --- | --- | 0.1894*** (39.79) |
| <i>MAS</i> | --- | --- | --- | 0.1192*** (58.61) | --- | 0.0652*** (25.87) |
| <i>UA</i> | --- | --- | --- | --- | 0.0057* (1.93) | 0.0329*** (5.81) |
| <i>Constant</i> | 0.2111*** (28.32) | 0.1782*** (27.84) | 0.0731*** (8.62) | 0.1334*** (17.00) | 0.2063*** (31.86) | -0.0575*** (-7.25) |
| <i>Sector Dummy</i> | YES | YES | YES | YES | YES | YES |
| <i>Years Dummy</i> | YES | YES | YES | YES | YES | YES |
| <i>Observations</i> | 904,310 | 904,310 | 904,310 | 904,310 | 904,310 | 904,310 |
| <i>Firms</i> | 147,306 | 147,306 | 147,306 | 147,306 | 147,306 | 147,306 |
| <i>R-Squared</i> | 0.2892 | 0.2916 | 0.3130 | 0.3058 | 0.2892 | 0.3264 |

**Table 7 Simultaneous Regressions
Instrumental Variables (Two-Stage Least Square) Regression**

$Liquidity_{i,t}$ is defined as Cash and Cash Equivalents plus Stock over Total Assets of firm i in year t , $Debtors_{i,t}$ is equal to Accounts Receivable over Total Assets of firm i in year t , $Profitability_{i,t}$ defined as Earnings after Taxes plus Amortization & Depreciation over Total Assets of firm i in year t , $Bank\ Credit_{i,t}$ measured as Short Term Bank Loans over Total Assets of firm i in year t and $Size_{i,t}$ calculated as the natural logarithm of Total Assets of firm i in year t . $Credit_t$ is the Domestic Credit provided by Financial sector as a percentage of GDP in year t and $Unemployment_t$ is the percentage of total Labour Force in year t . PD , IND , MAS and UA are Hofstede cultural dimensions for Power Distance, Individualism, Masculinity/Femininity and Uncertainty Avoidance for each country, respectively.

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|----------------------|------------------------|-------------------------|-------------------------|------------------------|------------------------|
| <i>Bank credit</i> | -0.0563*** (-17.02) | -0.0610*** (-18.47) | -0.0651*** (-19.83) | -0.0594*** (-17.89) | -0.0585*** (-18.31) |
| <i>Liquidity</i> | 0.0646*** (41.84) | 0.0679*** (46.40) | 0.0751*** (54.10) | 0.0669*** (45.13) | 0.0702*** (49.03) |
| <i>Debtors</i> | 0.4087*** (209.68) | 0.4203*** (258.54) | 0.4187*** (249.54) | 0.4160*** (231.04) | 0.4056*** (206.07) |
| <i>Profitability</i> | -0.0641** (-2.53) | -0.0657** (-2.53) | -0.0642** (-2.54) | -0.0658** (-2.53) | -0.0607** (-2.53) |
| <i>Size</i> | 0.0015*** (7.79) | -0.0001 (-0.36) | -0.0010** (-2.36) | 0.0010*** (3.03) | 0.0010*** (5.40) |
| <i>Credit</i> | -0.0559 (-91.23)*** | -0.0659*** (-113.95) | -0.0603*** (-107.10) | -0.0635*** (-95.61) | -0.0494*** (-70.46) |
| <i>Unemployment</i> | -0.1496*** (-24.85) | 0.2118*** (23.88) | 0.0396*** (4.59) | -0.0649*** (-10.93) | 0.0519*** (7.84) |
| <i>PD</i> | 0.0785*** (32.46) | --- | --- | --- | 0.2007*** (42.88) |
| <i>IND</i> | --- | 0.1211*** (84.73) | --- | --- | 0.0593*** (21.58) |
| <i>MAS</i> | --- | --- | 0.0784*** (47.96) | --- | 0.0861*** (35.03) |
| <i>UA</i> | --- | --- | --- | 0.0148*** (8.84) | -0.0742*** (-24.34) |
| <i>Constant</i> | 0.1290*** (35.97) | 0.0679*** (21.49) | 0.1218*** (36.13) | 0.1665*** (45.84) | -0.0010 (-0.22) |
| <i>Sector Dummy</i> | YES | YES | YES | YES | YES |
| <i>Years Dummy</i> | YES | YES | YES | YES | YES |
| <i>Observations</i> | 764,007 | 764,007 | 764,007 | 764,007 | 764,007 |
| <i>R-Squared</i> | 0.2901 | 0.2968 | 0.2948 | 0.2880 | 0.3046 |

Table 8 Three-Stage Least Squares Regression

$Liquidity_{i,t}$ is defined as Cash and Cash Equivalents plus Stock over Total Assets of firm i in year t , $Debtors_{i,t}$ is equal to Accounts Receivable over Total Assets of firm i in year t . $Debtors_{i,t}$ is equal to Accounts Receivable over Total Assets of firm i in year t . $Profitability_{i,t}$ defined as Earnings after Taxes plus Amortization & Depreciation over Total Assets of firm i in year t . $Size_{i,t}$ calculated as the natural logarithm of Total Assets of firm i in year t . $Unemployment_t$ is the percentage of total Labour Force in year t . $Credit_t$ is the Domestic Credit provided by Financial sector as a percentage of GDP in year t . $Bank\ Short\ Term\ Debt_{i,t}$ measured as Short Term Bank Loans over Total Assets of firm i in year t . $Trade\ Credit_{i,t}$ measured as Trade Credit over Total Assets of firm i in year t and $Size_{i,t}$ calculated as the natural logarithm of Total Assets of firm i in year t . PD , IND , MAS and UA are Hofstede cultural dimensions for Power Distance, Individualism, Masculinity/Femininity and Uncertainty Avoidance for each country, respectively.

| | BC | TC | BC | TC | BC | TC | BC | TC |
|-----------------------------|------------------------|------------------------|-------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| <i>Liquidity</i> | -0.0263*** (-11.62) | 0.06047*** (57.64) | 0.0168*** (7.87) | 0.0765*** (77.78) | 0.0148*** (7.17) | 0.0704*** (57.94) | -0.0223*** (-10.17) | 0.0609*** (57.86) |
| <i>Debtors</i> | -0.0910*** (-8.49) | 0.4349*** (395.09) | 0.1687*** (19.07) | 0.4228*** (451.58) | 0.1437*** (17.63) | 0.4438*** (364.22) | -0.0452*** (-4.54) | 0.4357*** (424.51) |
| <i>Profitability</i> | -0.0642*** (-71.35) | -0.0570*** (-57.07) | -0.0742*** (-90.31) | 0.0025*** (2.57) | -0.0725*** (-90.05) | -0.0660*** (-40.94) | -0.0663*** (-76.34) | -0.0566*** (-57.25) |
| <i>Size</i> | -0.0172*** (-50.68) | -0.0074*** (-23.57) | -0.01374*** (-43.32) | 0.0044*** (15.88) | -0.0149*** (-46.84) | -0.0113*** (-26.28) | -0.0151*** (-45.95) | -0.0074*** (-24.85) |
| <i>Unemployment</i> | -0.4343*** (-42.75) | -0.3275*** (-48.61) | -0.5585*** (-81.72) | 0.3382*** (43.08) | -0.5662*** (-82.32) | -0.2930*** (-24.78) | -0.5073*** (-54.64) | -0.3164*** (-41.86) |
| <i>GDP</i> | -0.0987*** (-57.40) | --- | -0.1013*** (-55.83) | --- | -0.0401*** (-30.40) | --- | -0.0976*** (-53.76) | --- |
| <i>Credit</i> | --- | -0.0398*** (-61.31) | --- | -0.0434*** (-81.81) | --- | -0.0337*** (-50.73) | --- | -0.0404*** (-63.98) |
| <i>Bank Short Term Debt</i> | --- | -0.5639*** (-47.44) | --- | 0.2944*** (24.85) | --- | -0.7223*** (-33.04) | --- | -0.5574*** (-47.10) |
| <i>Trade Credit</i> | 0.2972*** (11.55) | --- | -0.3698*** (-17.95) | --- | -0.2960*** (-15.88) | --- | 0.1539*** (6.57) | --- |
| <i>PD</i> | -0.2397*** (-50.80) | 0.0121*** (4.62) | --- | --- | --- | --- | --- | --- |
| <i>IND</i> | --- | --- | 0.1522*** (36.11) | 0.1263*** (92.12) | --- | --- | --- | --- |
| <i>MF</i> | --- | --- | --- | --- | 0.0995*** (41.33) | 0.1455*** (68.71) | --- | --- |
| <i>UA</i> | --- | --- | --- | --- | --- | --- | -0.1078*** (-40.97) | 0.0039*** (2.91) |
| <i>Constant</i> | 1.6205*** (85.12) | 0.3591*** (49.34) | 1.4405*** (80.79) | -0.1341*** (-22.92) | 0.8522*** (59.63) | 0.3478*** (36.43) | 1.567*** (79.01) | 0.3603*** (54.58) |
| <i>Observations</i> | | | | | | | | |
| <i>Chi-Squared</i> | 24035.19 | 208853.88 | 21555.88 | 245804.99 | 22164.46 | 161246.28 | 21629.06 | 208514.07 |

Table 9 - Two-step system GMM

$Trade\ Credit_{i,t}$ measured as Trade Credit over Total Assets of firm i in year t and $Size_{i,t}$ calculated as the natural logarithm of Total Assets of firm i in year t . $Bank\ Credit_{i,t}$ measured as Short Term Bank Loans over Total Assets of firm i in year t and $Size_{i,t}$ calculated as the natural logarithm of Total Assets of firm i in year t . $Liquidity_{i,t}$ is defined as Cash and Cash Equivalents plus Stock over Total Assets of firm i in year t . $Debtors_{i,t}$ is equal to Accounts Receivable over Total Assets of firm i in year t . $Profitability_{i,t}$ defined as Earnings after Taxes plus Amortization & Depreciation over Total Assets of firm i in year t . $Size_{i,t}$ calculated as the natural logarithm of Total Assets of firm i in year t . $Credit_t$ is the Domestic Credit provided by Financial sector as a percentage of GDP in year t . $Unemployment_t$ is the percentage of total Labour Force in year t . $Bank\ Credit_{i,t}$ measured as Short Term Bank Loans over Total Assets of firm i in year t and $Size_{i,t}$ calculated as the natural logarithm of Total Assets of firm i in year t . $Trade\ Credit_{i,t}$ measured as Trade Credit over Total Assets of firm i in year t and $Size_{i,t}$ calculated as the natural logarithm of Total Assets of firm i in year t . PD , IND , MAS and UA are Hofstede cultural dimensions for Power Distance, Individualism, Masculinity/Femininity and Uncertainty Avoidance for each country, respectively.

| | BC | TC | BC | TC | BC | TC | BC | TC |
|-----------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| $Trade\ Credit_{t-1}$ | --- | 0.3230*** (63.21) | --- | 0.3239*** (64.11) | --- | 0.3167*** (61.99) | --- | 0.3197*** (62.22) |
| $Trade\ Credit_{t-2}$ | --- | 0.0658*** (21.60) | --- | 0.0671*** (22.10) | --- | 0.0637*** (21.10) | --- | 0.0646*** (21.19) |
| $Bank\ Credit_{t-1}$ | 0.1021*** (10.16) | --- | 0.0962*** (9.90) | --- | 0.1054*** (10.61) | --- | 0.1034*** (10.08) | --- |
| $Liquidity$ | 0.0344*** (9.09) | 0.0450*** (32.12) | 0.0297*** (7.76) | 0.0438*** (33.03) | 0.0410*** (10.62) | 0.04880*** (36.37) | 0.0338*** (8.77) | 0.0453*** (32.96) |
| $Debtors$ | 0.3358*** (30.18) | 0.2720*** (92.20) | 0.3716*** (30.69) | 0.2752*** (94.95) | 0.3552*** (28.98) | 0.2769*** (95.26) | 0.3326*** (29.15) | 0.2758*** (93.25) |
| $Profitability$ | -0.2031*** (-3.20) | -0.1561*** (-7.95) | 0.12156* (1.85) | -0.1276*** (-9.30) | 0.1145*** (1.73) | -0.1272*** (-9.00) | -0.2650*** (-3.49) | -0.1512*** (-8.34) |
| $Size$ | -0.0080*** (-11.26) | -0.006** (-2.12) | -0.0089*** (-12.11) | -0.0013*** (-4.93) | -0.0104*** (-12.60) | -0.0016*** (-5.68) | -0.0071*** (-9.90) | -0.0008*** (-2.97) |
| $Credit$ | -0.0346*** (-21.83) | -0.0318*** (-44.72) | -0.0304*** (-18.38) | -0.0345*** (-47.38) | -0.0240*** (-14.81) | -0.0318*** (-44.76) | -0.0322*** (-19.57) | -0.0357*** (-48.16) |
| $Unemployment$ | -0.6801*** (-18.68) | 0.0735*** (4.43) | -0.5544*** (-15.68) | 0.1983*** (12.37) | -0.5990*** (-16.48) | 0.0844*** (5.50) | -0.7390*** (-19.57) | 0.1253*** (8.03) |
| $Unemployment_{t-1}$ | 0.3953*** (10.93) | -0.14479*** (-8.99) | 0.4012*** (12.54) | -0.1392*** (-9.54) | 0.3719*** (11.70) | -0.0907*** (-6.58) | 0.4130*** (10.63) | -0.1647*** (-10.68) |
| $Bank\ Credit$ | --- | -0.0407*** (-6.38) | --- | -0.0346*** (-5.70) | --- | -0.0408*** (-6.56) | --- | -0.0429*** (-6.75) |
| $Trade\ Credit$ | -0.7082*** (-27.64) | --- | -0.8094 (29.60) | --- | -0.7760*** (-27.83) | --- | -0.7118*** (-27.11) | --- |
| PD | -0.0808*** (-12.13) | 0.0161*** (6.92) | --- | --- | --- | --- | --- | --- |
| IND | --- | --- | 0.1243*** (20.02) | 0.0649*** (36.11) | --- | --- | --- | --- |
| MF | --- | --- | --- | --- | 0.1371*** (19.72) | 0.0443*** (30.01) | --- | --- |
| UA | --- | --- | --- | --- | --- | --- | 0.0340*** (6.61) | 0.0051*** (3.54) |
| $Constant$ | 0.4827*** (44.86) | 0.0962*** (22.22) | 0.3367*** (34.91) | 0.0541*** (15.47) | 0.3416*** (34.69) | 0.0797*** (22.74) | 0.4645*** (39.72) | 0.1132*** (26.90) |
| $Instruments$ | 98 | 45 | 98 | 45 | 98 | 45 | 98 | 45 |
| $AR(1)$ | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] | [0.000] |
| $AR(2)$ | [0.238] | [0.699] | [0.759] | [0.877] | [0.591] | [0.554] | [0.203] | [0.750] |
| $Observations$ | 729,944 | 592,243 | 729,944 | 592,243 | 729,944 | 592,243 | 729,944 | 592,243 |
| $Firms$ | 127,624 | 113,060 | 127,624 | 113,060 | 127,624 | 113,060 | 127,624 | 113,060 |

Superscripts indicate statistical significance at 0.01 (***), 0.05 (**), and 0.10 (*) percent levels. t statistics in parentheses. The values reported for $AR(1)$ and $AR(2)$ are the p-values for first and second-order autocorrelated disturbances in the first difference equations.

Table 10 - Effect of Time

$Liquidity_{i,t}$ is defined as Cash and Cash Equivalents plus Stock over Total Assets of firm i in year t , $Debtors_{i,t}$ is equal to Accounts Receivable over Total Assets of firm i in year t . $Profitability_{i,t}$ defined as Earnings after Taxes plus Amortization & Depreciation over Total Assets of firm i in year t . $Bank\ Credit_{i,t}$ measured as Short Term Bank Loans over Total Assets of firm i in year t and $Size_{i,t}$ calculated as the natural logarithm of Total Assets of firm i in year t . $Trade\ Credit_{i,t}$ measured as Trade Credit over Total Assets of firm i in year t and $Size_{i,t}$ calculated as the natural logarithm of Total Assets of firm i in year t . $Unemployment_t$ is the percentage of total Labour Force in year t . PD , IND , MAS and UA are Hofstede cultural dimensions for Power Distance, Individualism, Masculinity/Femininity and Uncertainty Avoidance for each country, respectively. $Year_PD$, $Year_IND$, $Year_MAS$, $Year_US$ are the interaction of Hofstede culotureal dimension and year.

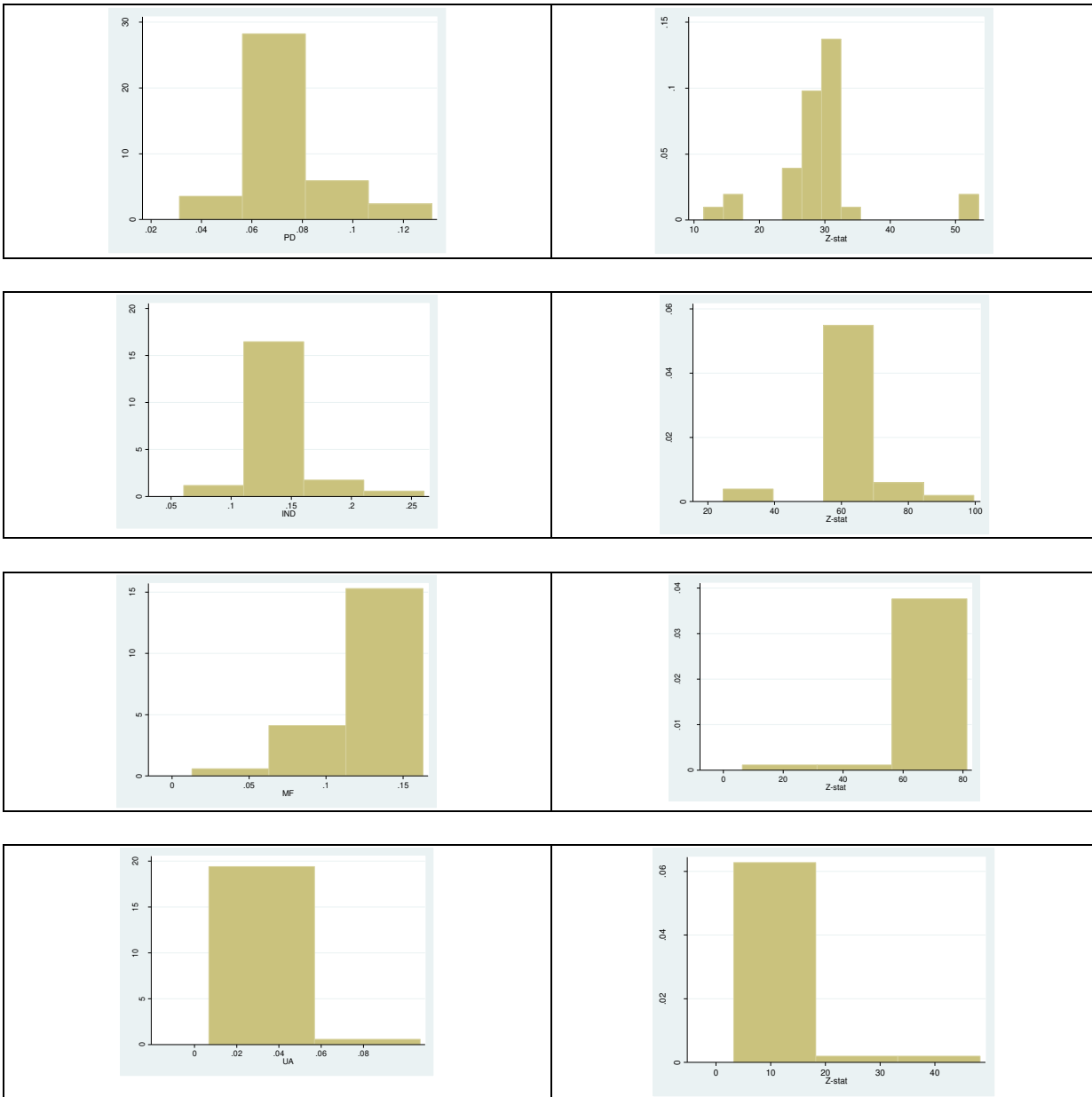
| | Model 1 | Model 2 | Model 3 | Model 4 |
|---------------------------------|------------------------|------------------------|------------------------|------------------------|
| <i>Liquidity</i> | 0.0819*** (24.03) | 0.0823*** (24.78) | 0.0851*** (25.36) | 0.2889*** (24.42) |
| <i>Debtors</i> | 0.3793*** (29.21) | 0.3843*** (30.76) | 0.3839*** (30.67) | 0.3815*** (29.93) |
| <i>Profitability</i> | -0.0185* (-1.68) | -0.0186* (-1.68) | -0.0185* (-1.68) | -0.0186* (-1.68) |
| <i>Bank Credit</i> | -0.1436*** (-16.42) | -0.1439*** (-16.59) | -0.1451*** (-16.60) | -0.1441*** (-16.51) |
| <i>Size</i> | -0.0106*** (-23.96) | -0.0117*** (-25.61) | -0.0115*** (-24.72) | -0.0111*** (-24.66) |
| <i>Trade Credit_t</i> | -0.0265*** (-29.48) | -0.0219*** (-26.82) | -0.0182 (-22.27) | -0.0266*** (-28.91) |
| <i>Unemployment</i> | 0.1978*** (23.71) | 0.2439*** (28.85) | 0.1857*** (23.68) | 0.1995*** (23.82) |
| <i>Year_PD</i> | -0.0065*** (-14.91) | --- | --- | --- |
| <i>PD</i> | 0.0972*** (13.09) | --- | --- | --- |
| <i>Year_IND</i> | --- | -0.0020*** (-4.30) | --- | --- |
| <i>IND</i> | --- | 0.1884*** (44.86) | --- | --- |
| <i>Year_MAS</i> | --- | --- | -0.0032*** (-8.66) | --- |
| <i>MAS</i> | --- | --- | 0.1403*** (37.74) | --- |
| <i>Year_UA</i> | --- | --- | --- | -0.0012*** (-4.61) |
| <i>UA</i> | --- | --- | --- | 0.0130*** (3.68) |
| <i>Constant</i> | 0.1908*** (29.49) | 0.0814*** (9.77) | 0.1370*** (17.84) | 0.2092*** (31.98) |
| <i>Sector Dummy</i> | YES | YES | YES | YES |
| <i>Years Dummy</i> | YES | YES | YES | YES |
| <i>Observations</i> | 904,310 | 904,310 | 904,310 | 904,310 |
| <i>Firms</i> | 147,306 | 147,306 | 147,306 | 147,306 |
| <i>R-Squared</i> | 0.2908 | 0.3132 | 0.3060 | 0.2889 |

Table 11 – Nested regression

$Liquidity_{i,t}$ is defined as Cash and Cash Equivalents plus Stock over Total Assets of firm i in year t , $Debtors_{i,t}$ is equal to Accounts Receivable over Total Assets of firm i in year t . $Profitability_{i,t}$ defined as Earnings after Taxes plus Amortization & Depreciation over Total Assets of firm i in year t . $Bank\ Credit_{i,t}$ measured as Short Term Bank Loans over Total Assets of firm i in year t and $Size_{i,t}$ calculated as the natural logarithm of Total Assets of firm i in year t . $Credit_t$ is the Domestic Credit provided by Financial sector as a percentage of GDP in year t . $Unemployment_t$ is the percentage of total Labour Force in year t . PD , IND , MAS and UA are Hofstede cultural dimensions for Power Distance, Individualism, Masculinity/Femininity and Uncertainty Avoidance for each country, respectively.

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>Liquidity</i> | 0.0827*** (5.49) | 0.0827*** (5.49) | 0.0827*** (5.49) | 0.0827*** (5.49) | 0.0827*** (5.49) |
| <i>Debtors</i> | 0.4155*** (20.84) | 0.4155*** (20.85) | 0.4155*** (20.85) | 0.4155*** (20.85) | 0.4155*** (20.84) |
| <i>Profitability</i> | -0.0197 (-1.40) | -0.0197 (-1.40) | -0.0197 (-1.40) | -0.0197 (-1.40) | -0.0197*** (-1.40) |
| <i>Bank credit</i> | -0.0889*** (-5.71) | -0.0889*** (-5.72) | -0.0889*** (-5.72) | -0.0889*** (-5.72) | -0.0889*** (-5.71) |
| <i>Size</i> | 0.0018 (0.76) | 0.0018 (0.76) | 0.0018 (0.76) | 0.0018 (0.76) | 0.0018*** (0.76) |
| <i>Credit</i> | -0.0032 (-0.45) | -0.0033 (-0.46) | -0.0032 (-0.45) | -0.0032 (-0.45) | -0.0032*** (-0.45) |
| <i>Unemployment</i> | 0.1783*** (5.60) | 0.1792*** (5.64) | 0.1787*** (5.62) | 0.1785*** (5.61) | 0.1782*** (5.58) |
| <i>PD</i> | 0.0583*** (3.77) | --- | --- | --- | 0.0670*** (2.46) |
| <i>IND</i> | --- | 0.0311* (1.83) | --- | --- | 0.0565*** (1.96) |
| <i>MAS</i> | --- | --- | 0.0481*** (4.70) | --- | 0.0429*** (2.68) |
| <i>UA</i> | --- | --- | --- | 0.0308*** (3.24) | 0.0017*** (0.06) |
| <i>Constant</i> | -0.0004 (-0.001) | 0.0036 (0.11) | 0.0037 (0.14) | 0.0045 (0.16) | -0.0593*** (-1.46) |
| <i>Observations</i> | 904,310 | 904,310 | 904,310 | 904,310 | 904,310 |
| <i>Country/Sector</i> | 112 | 112 | 112 | 112 | 112 |
| <i>Chi2</i> | 1752.51*** | 1648.17*** | 1500.77*** | 1560.16*** | 2569.41*** |

3. Leamer histograms



Each histogram contains 34 regressions (drop one country, year and sector at the time). Coefficients are on left histograms and Z-statistics on the right

Table 12 – Legal Environment

$Liquidity_{i,t}$ is defined as Cash and Cash Equivalents plus Stock over Total Assets of firm i in year t , $Debtors_{i,t}$ is equal to Accounts Receivable over Total Assets of firm i in year t . $Profitability_{i,t}$ defined as Earnings after Taxes plus Amortization & Depreciation over Total Assets of firm i in year t . $Credit_t$ is the Domestic Credit provided by Financial sector as a percentage of GDP in year t . $Unemployment_t$ is the percentage of total Labour Force in year t . PD , IND , MAS and UA are Hofstede cultural dimensions for Power Distance, Individualism, Masculinity/Femininity and Uncertainty Avoidance for each country, respectively. $Cost$ of the legal procedure in the country. $Procedures$ number of procedures to obtain a final decision by a judge.

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|----------------------|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| <i>Liquidity</i> | 0.0819*** (93.02) | 0.0823*** (93.68) | 0.0839*** (95.33) | 0.0827*** (94.02) | 0.0835*** (95.19) |
| <i>Debtors</i> | 0.3783*** (476.83) | 0.3845*** (488.67) | 0.3841*** (488.06) | 0.3784*** (478.08) | 0.3810*** (481.59) |
| <i>Profitability</i> | -0.0184*** (-54.98) | -0.0186*** (-55.43) | -0.0185*** (-55.40) | -0.0184*** (-54.98) | -0.0183*** (-54.76) |
| <i>Debt</i> | -0.1435*** (-254.15) | -0.1437*** (-254.88) | -0.1446*** (-256.43) | -0.1440*** (-255.17) | -0.1434*** (-254.70) |
| <i>Size</i> | -0.0106*** (-40.66) | -0.0115*** (-44.41) | -0.0123*** (-47.21) | -0.0109*** (-42.03) | -0.0109*** (-41.80) |
| <i>Credit</i> | -0.0300*** (-40.19) | -0.0190*** (-24.73) | -0.0217*** (-28.42) | -0.0284*** (-37.98) | -0.0108*** (-13.87) |
| <i>Unemployment</i> | 0.21431*** (47.91) | 0.2542*** (57.59) | 0.2423*** (54.93) | 0.2123*** (47.53) | 0.2184*** (48.92) |
| <i>PD</i> | 0.1068*** (40.54) | --- | --- | --- | 0.0708*** (9.36) |
| <i>IND</i> | --- | 0.2087*** (66.22) | --- | --- | 0.1803*** (39.51) |
| <i>MF</i> | --- | --- | 0.1144*** (61.39) | --- | 0.0646*** (18.99) |
| <i>UA</i> | --- | --- | --- | 0.1053*** (45.76) | 0.0526*** (7.31) |
| <i>Cost</i> | 0.2587*** (52.03) | -0.0846*** (-13.35) | 0.1122*** (22.83) | 0.3723*** (60.96) | 0.0376*** (4.34) |
| <i>Procedures</i> | -0.0382*** (-17.03) | 0.0120*** (5.18) | -0.0537*** (-23.65) | -0.0581*** (-25.05) | -0.0280*** (-11.57) |
| <i>Constant</i> | 0.1508*** (37.24) | 0.0592*** (13.43) | 0.1816*** (48.20) | 0.1254*** (29.76) | -0.0270*** (-4.70) |
| <i>Year Dummy</i> | YES | YES | YES | YES | YES |
| <i>Sector Dummy</i> | YES | YES | YES | YES | YES |
| <i>Observations</i> | 904,310 | 904,310 | 904,310 | 904,310 | 904,310 |
| <i>Firms</i> | 147,306 | 147,306 | 147,306 | 147,306 | 147,306 |
| <i>R-Squared</i> | 0.3053 | 0.3130 | 0.3109 | 0.3063 | 0.3266 |

National culture and small firms' use of trade credit: evidence from Europe

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