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Religion, national culture and cross-country differences in the use of trade credit

Evidence from European SMEs

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Abstract

Purpose – The purpose of this paper is to investigate whether religion or national culture can explain previously observed cross-country variation in trade credit.
Design/methodology/approach – Using the firm-level SME data from 35 European countries, religion and cultural factors of Hofstede and Schwartz, the authors provide new evidence on the determinants of the cross-country variation in trade credit.
Findings – The results indicate that religion and national culture are associated with trade credit. The authors find that the levels of trade credit are higher in Catholic countries than in Protestant ones and that peoples' religiousness has an impact on trade credit only in Catholic countries. The authors also find that Hofstede's cultural dimensions, such as power distance and uncertainty avoidance, are positively associated with trade credit.
Practical implications – Overall, authors' findings indicate that religion and national culture are important determinants of trade credit management, and that the association between commonly used cultural values and trade credit depends on the religious, legal, and financial environment.
Originality/value – To the best of authors' knowledge, this is the first study to research the relationship between national culture and trade credit.

Keywords Working capital, Religion

Paper type Research paper

1. Introduction

The European Union expanded to include 28 members in 2014. Of these, 18 share a common currency, the euro. Although the Union has made attempts to harmonize its currency, and its political and judicial systems, national culture is not necessarily as easy to harmonize. By national culture, we refer to the values and attitudes expected to drive people's actions (Hofstede, 1980). It has also been suggested in the previous literature that nations are not necessarily willing to harmonize their values or cultures. Two opposite theories have been presented to explain these differences in harmonizing cross-country values (Breuer and Quinten, 2009). First, the theory of convergence suggests that people are willing to converge their attitudes and behavior to harmonize the economic system. The latter one, the theory of divergence, however, suggests that at many levels, the differences in attitudes and behavior exist a long time after integration.

According to Hofstede (1980) and Schwartz (1994), national culture affects values and attitudes and, thereby, drives people's behavior. If we assume that managers represent the nation of the company's location, by using firm-level financial data, we can evaluate the

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relationship between culture and financial decision making. From an economic point of view, national culture may drive financial decision making and has recently become the point of interest in many financial studies (Chui *et al.*, 2002; Breuer and Quinten, 2009; Shao *et al.*, 2010; Chui *et al.*, 2010). Chui *et al.* (2010), for example, find a relationship between national individualism and momentum profits, whereas Shao *et al.* (2010) suggest that national cultural dimensions are related to dividend policy.

We contribute to this literature by extending this line of research into another area that country-specific national culture elements play in financial decision making, i.e., determining the previously observed differences in levels of trade credit across different countries. Even if a number of previous studies have investigated the relationship between national culture and corporate finance, to the best of our knowledge, this is the first study to research the relationship between national culture and trade credit. In addition to this, we also add religion as an additional driver of financial behavior, e.g., Baxamusa and Jalal (2016) have suggested that religion has an impact on capital structure. To our knowledge, ours is the first study to investigate the interaction between religion and culture on financial decision making.

Our results suggest that the major religion of the country where a company operates has an impact on the levels of trade credit observed. The results indicate that the levels of trade credit are higher in the Catholic countries than in the Protestant ones. Also, our results suggest that religious adherence measured by the share of people believing in God is negatively associated with trade credit in Protestant countries but positively associated in Catholic countries. We further find that several cultural dimensions and national cultural orientations explain country specific differences in trade credit. Companies operating in countries with higher power distance and uncertainty avoidance have lower levels of trade credit. Companies operating in the Catholic countries having higher score of individualism have a lower level of trade credit. This association is the opposite in the Protestant countries. We also find that the levels of trade credit are higher in more conservative countries and lower in the countries with higher scores of intellectual autonomy. Our results remain after controlling for the legal and financial environments.

The reminder of this paper is organized as follows. Section 2 presents the relevant literature review. Section 3 describes the data, variables and methods. Section 4 presents the results. Section 5 presents the conclusion.

2. Literature review

2.1 Trade credit

Trade credit, working capital and working capital management have recently received a lot of attention in the literature for two main reasons. First, investment in trade credit or working capital as a whole unnecessarily ties up funds that, at least in some cases, could be invested more profitably. Previous studies also demonstrate that firms with shorter cycles of working capital or its components perform better (Charitou *et al.*, 2010; Samiloglu and Demirgües, 2008; García-Teruel and Martinez-Solano, 2007; Deloof, 2003; Filbeck *et al.*, 2007). Second, the use of trade credit instead of bank loans as a source of funds has increased, especially during the financial crisis and this credit has become a critical source of funds, for both small and large companies (Petersen and Rajan, 1997; Demirgüç-Kunt and Maksimovic, 2001).

Theory and evidence provide several explanations for the use and offer of trade credit. Trade credit theories suggest that although a customer benefits from delayed payment, a seller must have a motive to grant this credit (Schwartz, 1974). Supplier's motives can be based on expected sales increases or an information advantage (Schwartz, 1974; Ferris, 1981; Petersen and Rajan, 1997). Several firm-specific factors, such as industry, size and access to financial markets, explain differences in trade credit behavior (e.g. Petersen and Rajan, 1997).

The power structure in the supply chain can also drive credit terms. The dependence between dealing participants is associated with their power relations, which are important in supply chain management (Emerson, 1962; El-Ansary and Stern, 1972). For example, if a supplier is dependent on a customer, the former offers better trading terms.

Large firms may have a market position that enables them to negotiate better credit terms on both sides of a transaction. For example, smaller firms may have only one supplier from which to choose products or services, or large firms may contribute significant portions of the supplier firm's sales. Small supplier firms may be willing to suffer delayed payments even if this presents difficulties because of the low risk of credit loss (Collis *et al.*, 2013).

Trade credit levels vary greatly by country (Kneeshaw, 1995). An average payment duration in B-2-B trade 2013 was, for example, 26 days in Finland, 39 days in Switzerland, 85 days in Spain, and 110 days in Turkey (Intrum Justitia, 2013). Trade credit theories neither predict nor explain the cross-country differences in trade credit. Previous studies suggest that a country's legal and financial environment explains some of these differences. Trade credit levels are higher and cycles longer in countries with less developed legal systems (Demirgüç-Kunt and Maksimovic, 2001; Mättö and Niskanen, 2014). Because trade credit is one part of corporate finance, it is explicit that the architecture of financial markets and firms' ability to acquire financing are associated with the use of trade credit. The literature suggests two approaches to the use of trade credit; the substitution and the redistribution (or complementarity) hypotheses. The redistribution hypothesis implies that suppliers may be more accurate in monitoring contracts and are therefore willing to extend credit to customers. The customer may use this in advantage to apply bank financing (Biais and Gollier, 1997; Burkart and Ellingsen, 2004). Demirgüç-Kunt and Maksimovic (2001) find that firms extend more trade credit to their customers in countries with larger banking systems, and Mättö and Niskanen (2014) find that the negative effect of a market-based financial environment on trade credit exists only in French-legal system countries. It is also plausible to assume that other differences in countries could explain the variation in trade credit. Cultural value-scoring as well as religious differences provide another way to explain the cross-country variation in trade credit.

2.2 National culture

Hofstede and Bond (1988) define culture as follows:

> Culture is the collective programming of the mind that distinguishes the members of one category of people from those of another.

They argue that national culture applies also in corporate culture. According to Huntington (1996), people are more likely to trust and understand other people who share the same language, religion, values, institutions and culture. The mechanism of the cultural influence on corporate finance goes through human behavior. National culture affects our values and attitudes which can be seen in our behavior (Breuer and Quinten, 2009). Hofstede (1980) and Schwartz (1994) have evaluated national cultural dimensions or orientations that are often used in empirical studies. The dimensions of both Hofstede and Schwartz have been used widely. The differences between them as well as their usefulness in examining differences in economic behavior, has also been debated in, e.g., Gouveia and Ros (2000).

We follow previous studies in the field of culture and finance, and include in our analysis three of Hofstede's cultural dimensions that are used most often: individualism, power distance and uncertainty avoidance (e.g. Fidrmuc and Jacob, 2010).

According to Hofstede, individualism is a measure of people being individualistic or collectivistic. Some studies suggest that individualism is associated with financial decision making. Malul and Shoham (2008) find that the banking sector in more individualistic

countries is less concentrated. Individualism is also positively associated with firms' performance and efficient management practices (Newman and Nollen, 1996). Because effective financial management should result in lower levels of trade receivables and higher levels of trade payables, we expect individualism to be positively associated with account payables and negatively associated with account receivables.

Power distance measures the level at which less powerful members of society accept the unequal distribution of power (Hofstede, 1980). Low-power distance indicates that a country or society emphasizes shared power and equality. Prior literature suggests that in high-power-distance countries, the banking sector is less concentrated (Malul and Shoham, 2008; Malul *et al.*, 2009). Less concentrated bank markets indicate that bank loans are less available, especially for small firms, and, therefore, firms need to invest more in working capital (Demirgüç-Kunt and Maksimovic, 1998). We expect that the power distance is positively associated with trade credit.

Uncertainty avoidance is "the extent to which the members of a culture feel threatened by uncertain or unknown situations" (Hofstede, 1980). In cultures with high uncertainty-avoidance scores, managers tend to be fearful of potential financial distress and, therefore, are willing to hold onto larger amounts of cash (Chang and Noorbakhsh, 2009; Remirez and Tadesse, 2009). Bae *et al.* (2012) find that uncertainty avoidance is negatively associated with dividend payouts, and Shoham and Malul (2012) find that uncertainty avoidance drives people to have higher rates of saving. Kwok and Tadesse (2006), however, find that countries with higher scores of uncertainty avoidance are more likely to have a bank-based financial environment. Griffin *et al.* (2009) find that the higher level of uncertainty avoidance in the manager's origin country is positively associated with both long-term and short-term debt. Based on previous evidence on the effect of uncertainty avoidance in corporate finance, we expect that uncertainty avoidance is negatively related to accounts payable.

Taking into account the debate on the usefulness and reliability of Hofstede's cultural dimensions, we explore additional national cultural measures from the Schwartz database (SVS 1988–2002). Schwartz divides the cultural values into seven cultural orientations: embeddedness (also known as conservatism), intellectual and affective autonomy, hierarchy, egalitarianism, mastery and harmony. From these orientations, we include embeddedness and intellectual autonomy in our study.

Conservatism is maintaining the status quo and collectivism, and the values behind conservatism are social order, and respect for tradition and security. In previous studies, conservatism is associated with lower debt ratios (Chui *et al.*, 2002) and higher dividend payouts (Shao *et al.*, 2010). This is in line with an argument that people in countries with higher conservatism scores place more importance on social and working harmony, public image and security conformity. Conservatism is also positively associated with both long-term and short-term debt (Griffin *et al.*, 2009). Breuer and Salzmann (2008) find that more conservative countries have a bank-based system, but Breuer *et al.* (2014) find that companies in a conservative environment use more bonds than bank financing. From the trade credit point of view, it is unlikely that bond finance has a straightforward relationship with working capital management — e.g., as the substitute for accounts payable — especially in the case of SMEs. However, according to redistribution theory, trade credit is likely to be used more in a bank-based environment (e.g. Demirgüç-Kunt and Maksimovic, 2001; Mättö and Niskanen, 2014). We consider conservatism to be related to effective working capital management (Chui *et al.*, 2002; Griffin *et al.*, 2009). That is, we expect to see a positive relationship with accounts payable and a negative relationship with accounts receivable.

Schwartz has two separate orientations for autonomy: intellectual and affective. These orientations deal with creativity, curiosity, self-indulgence, and the exciting life. As opposed to conservative counties, countries with a higher emphasis on autonomy are seen as having a market-based system but using more bank than bond financing (Breuer and Salzmann, 2008;

Breuer and Quinten, 2009). We follow Breuer and Quinten, (2009) and use solely intellectual autonomy in our analysis, because it is more likely to represent the values in corporate decision making. Because intellectual autonomy is opposite to conservatism, we expect it to be positively associated with accounts receivable but negatively related to accounts payable.

2.3 Religion

Religion has played a particular role in Europe and is, therefore, expected to drive values and attitudes that are reflected in cultural measures. According to Hofstede (2001), cultural values are reinforced by religion. Max Weber (1920/2002) demonstrates that work and savings create capital growth and that the Protestant communities are more productive than the Catholic ones. Renneboog and Spaenjers (2012) document several links between religion and financial attitudes. They find for example, that Catholics are more risk averse and that Protestants put more control on financial responsibility. Baxamusa and Jalal (2016) find that the religion of the CEO explains the firm's financial behavior. They find for example, that Catholic CEOs use less debt that Protestant ones. Previous studies also suggest that Catholic countries protect the rights of creditors less than Protestant ones (Stulz and Williamson, 2003).

Granting trade credit is always partly a question of trust between dealing participants. Guiso *et al.* (2003) find that religious beliefs have a positive effect on trust but the effect is different in Catholic and Protestant countries. In Catholic-dominated countries, religion has a less positive impact on trust. Similarly, prior evidence shows that the Catholic religion has a negative impact on trust (La Porta *et al.*, 1998). Although the higher level of trust should be seen at higher level of trade credit granted, we cannot observe which shares of the current receivables are granted or delayed. Arruñada (2010) find little support for Weber's work ethic, but strong support for a social ethic, where Protestant values shape individuals to be more active in mutual social control and more supportive of institutions. If there is something that remains today from this historical phenomenon, it is possible that in addition to the cultural factors mentioned above, religion can play a role in financial decision making and the levels at which firms use and offer trade credit.

3. Data and sample

3.1 Firm data

Financial firm data are collected from the Amadeus database supplied by Bureau van Dijk. That database provides financial data on 44 European countries. We require information for the years 2007–2011, and some of the counties do not have SME information for this period. Our final sample consists of 35 European countries, and the excluded countries are: Albania, Belarus, Kosovo, Liechtenstein, Macedonia, Moldova, Monaco, Norway and Turkey. Hofstede cultural data is available for 31 countries and Schwartz data for 27 countries in our European data set. We include the maximum possible number of countries in each of our analyses. The total number of observations is 509,923 firm years and 126,593 firms in the 35-country data set, 503,075 firm years and 124,732 firms in 31-country data set, and 498,072 firm years and 122,861 firms in 27-country data set. Some countries have considerably more firm observations in our sample than others. To deal with the possibility that the results are driven by the countries that have more observations, we run – as a robustness check — our analysis for a random sample with a maximum of 1,000 firm observations per country. We exclude observations with missing values of our main variables and negative and extreme values of some of our variables, such as leverage. We also cut 1 and 99 percent of our main variables to exclude possible outliers. All firm-level data are in one currency, euro. The descriptive statistics of firm data for these three samples is presented in Table I.

Variable	Obs.	Mean	Median	SD	Min.	Max.
ARR	509,923	28.52	25.82	19.52	0.00	83.86
APR	509,923	17.91	14.29	15.77	0.00	78.57
SALES	509,923	23,004.97	10,320.06	36,409.83	2,061.62	331,556.20
GROWTH	509,923	5.43	2.90	25.76	−56.27	185.45
AGE	509,923	31.23	21.00	28.71	0	112
LEVERAGE	509,923	16.88	11.32	19.02	0.00	1,009.42
ROA	509,923	3.48	2.22	7.22	−27.33	32.55
INVENTORY	509,923	18.10	14.29	16.88	0.00	98.30
ZSCORE	509,923	5.92	5.67	12.78	−1,735.10	1,002.82
PUBLIC	509,923	0.015		0.12	0	1

Notes: Relative accounts receivable (*ARR*) is calculated as the percentages of accounts receivable to total assets; relative accounts payable (*APR*) is calculated as the percentages of accounts payable to total assets; *PUBLIC* indicates the status of firm being listed; *SALES* is a firm's sales in €1,000; *GROWTH* is the annual growth % of sales; *AGE* is a firm's age in years; *LEVERAGE* is measured as the percentage of noncurrent liabilities to total assets; return of assets (*ROA*) is calculated as (net income divided by total assets)×100 percent; *INVENTORY* is measured as percentage of inventories to total assets; and *ZSCORE* is from Altman (1968) and Ohlson (1980), re-estimated by Begley *et al.* (1996) and designed to forecast firm bankruptcy. A lower score indicates the higher probability of insolvency

Table I.
Descriptive statistics of firm-level variables in the full sample

3.2 Cultural and religious data

Information on the major religion of each country is taken from the World Fact Book of the CIA. The religions are divided into two categories: Protestant and Catholic. For simplicity, we use a dummy variable, which gets the value of 1 for Catholic countries as there are more Catholics than Protestants in the country. As a robustness check, we use an additional proxy for Protestant countries, with the *PROTESTANT%* measuring the percentage share of Protestants in the country. Information on belief in God was taken from the Special Eurobarometer 73.1 ebs341 and measures the percentage of people who believe in God. This measure has been previously used by, e.g., Guiso *et al.* (2003).

Our cultural variables are, as in several previous studies, from the Hofstede Centre. We use cultural dimension scores that are recalculated to fit a scale from 0 to 100. We also use Schwartz cultural orientations, which are calculated from the Schwartz original data (Schwartz value survey, SVS 1998–2005). We follow the Schwartz codebook and correct the orientation scores by the mean difference for each country. The scale of orientation scores is from 0 to 7.

3.3 Other country-specific data

The gross domestic product per capita (GDP) in thousands of euros and its annual change are taken for each year from the World Bank database.

3.4 Variables

3.4.1 Dependent variables. The use of trade credit plays a very important role in working capital management, and it is a significant part of company's short-term finance. We use both accounts receivable (*ARR*) and accounts payable (*APR*), both as percentages of total assets as a dependent variable (e.g. Fisman and Love, 2003; Alphonse *et al.*, 2004; Bougheas *et al.*, 2009). Although trade credit appears on both sides of balance sheet, i.e., one company's receivables have to be another's payables, it is important to study both accounts separately. This must be done because our research sample consists of selected SME companies that presents all European SMEs, and it is likely that the firm in the sample may have receivables from a firm out of the sample, and vice versa.

3.4.2 Country-specific variables. To investigate the impact of national culture on trade credit, we use several culture-related variables. We use two variables for religion: *DCATHOLIC*, which is the dummy variable for countries where the share of Catholics is higher than Protestants. *BELIEF* is a measure for religiosity and measures the share of people who believe in God in a given country. *PROTESTANT%* is an alternative measure for *DCAHTOLIC* and is the share of Protestant people in a country.

We use five variables as our cultural measures, three from Hofstede: power distance (*POWERD*), individualism (*INDIV*) and uncertainty avoidance (*UNCERT*) and two from Schwartz: embeddedness /conservatism (*EMBEDD*) and intellectual autonomy (*INTAUT*).

To control for the country-specific macroeconomic condition, we use (*LNGDP*) which is the logarithm of GDP and its annual change (ΔDPH). In 2SLS analysis, we use additional institutional variables as instruments for culture. Our measure for *LEGAL* is a combination of three factors from LaPorta *et al.* (1998): rule of law, efficiency of judicial system, and corruption. Our *SYSTEM* measure indicates whether the country's financial system is more market- or bank-based, and is defined as the natural log of (market capitalization/claims on the private sector by commercial banks), both scaled by the GDP.

3.4.3 Control variables. We use a number of commonly used firm-level control variables to capture the normal firm- level differences in the use of trade credit. First, *PUBLIC* is the dummy variable for listed firms. It is important to control the listing status, because previous studies state that it can be a factor in obtaining external finance because of information asymmetry (Jensen and Meckling, 1976; Berger *et al.*, 2001; Niskanen and Niskanen, 2006). Because of possible power structures in supply chains, firm listing status can also act as proxy for the use of negotiation power. This should be seen as a positive impact on trade credit in payables and negative in receivables.

Second, we control for firm size (*LNSALES*) measured by the natural logarithm of firm sales. Kieschnick *et al.* (2006) show that firm size increases the need for working capital. Studies on trade credit, however, point out that the larger firms have better access to financial markets and might, therefore, act as financial intermediates (Niskanen and Niskanen, 2006; Petersen and Rajan, 1997). However, small firms may be forced to finance the operations of their larger business partners that have more market power (Brennan *et al.*, 1988; Mian and Smith, 1992; Niskanen and Niskanen, 2006).

We control for firm growth by the annual growth of sales (*GROWTH*). Because firms can finance their growth by trade credit and may extend their accounts receivable to accumulate more sales (García-Teruel and Martinez-Solano, 2010), we expect that growth is positively associated with trade credit.

A firm's accessibility to financial markets depends on its age (Berger and Udell, 1998). This positive relationship between firm age and bank debt can indicate that older firms to have better possibilities to manage their working capital. However, a firm's age is stated to have a positive but not necessarily linear relationship with accounts receivable and a positive relationship with accounts payable (Petersen and Rajan, 1997; Niskanen and Niskanen, 2006). The variable (*LNAGE*) capturing firm age is defined as a natural logarithm of a firm's age +1.

The level of leverage is evaluated as the ratio of noncurrent liabilities to total assets and is stated to be negatively associated with a cash conversion cycle (*CCC*) (Baños-Caballero *et al.*, 2010). The authors believe that this is because of a higher premium of debt and the more expensive cost of funds invested in working capital. The redistribution hypothesis, however suggests that firms having better access to capital markets are willing to extend more trade credit (Petersen and Rajan, 1997; Niskanen and Niskanen, 2006). In that case, one might expect the positive association between leverage and accounts receivable.

A firm's ability to perform and create welfare for its shareholders should always be in the interest. The return of assets (*ROA*) is often used as a dependent variable in working capital studies. The existing negative association between profit and *CCC* makes *ROA* not only

important to control but also interesting to examine this relationship in the presence of national cultural variables.

INVENTORY is measured as the percentages of inventory to total assets and it is controlled because of the known association with trade credit (Bougheas *et al.*, 2009).

ZSCORE is designed to forecast firm insolvency and bankruptcy. It is originally evaluated by Altman (1968) and Ohlson (1980), and re-estimated by Begley *et al.* (1996). One element in the original Zscore is a firm's market price. Altman (2000) reorganizes the Zscore model and debates that in the private firms, the book value of equity can be used instead of the market price. Our *ZSCORE* uses this book value in the variable estimate. *ZSCORE* is defined as follows: 0.104×(wc/total assets) + 1.010×(retained earnings/total assets) + 0.106×(operational profit/total assets) + 0.003×(Capital/total liabilities) + 0.169×(Sales/total assets). The higher value of Zscore indicates the lower possibility of insolvency and, therefore, firms that have high Zscore values are presumed to have lower levels of working capital (Baños-Caballero *et al.*, 2013).

3.5 Methods

At the first stage, we evaluate the country variation in our dependent variables using one-way ANOVA and Kruskall–Wallis rank tests. We use the *t*-test and the Wilcoxon (Mann–Whitney) test to explore the differences in trade credit between Catholic and Protestant countries.

We run our primary analysis using firm-level data. Correlations between country-level variables (Table IV) are similar in both the firm-level full data and country-industry-level sample, indicating that the big countries (countries with substantively more observations) do not drive the results in the full data. To confirm this, as a robustness check, we also use the random firm-level observation method for the countries with more than 1,000 firm observations in our analysis. On the firm level, we run a regular OLS with year and industry dummies and with corrected standard errors clustered by industries. We call this basic OLS (equation 1). This method is similar to Chang and Noorbakhsh (2009):

$$Y = \alpha + \beta_j DCATHOLIC_j + \beta_k \text{culture} + \beta_l \text{controls} + \sum_{y=8}^{11} \text{year}_y + \sum_{s=1}^{13} \text{industry}_s + u + \varepsilon. \quad (1)$$

We find that religion, especially the dummy for Catholic countries, is very much correlated with some of our culture variables, such as power distance and uncertainty avoidance. We, therefore, run our basic model separately for Protestant and Catholic countries. As a robustness check, we control for a country's legal and financial environment orthogonalizing the culture variables. This method is similar to Antia *et al.* (2007) and Bae *et al.* (2012).

4. Results

4.1 Comparative analysis

We first run the one-way ANOVA and Kruskall–Wallis tests to examine if there are differences in the trade credit variables between countries in our sample; we also run *t*-tests and Wilcoxon (Mann–Whitney) tests to explore differences between Catholic and Protestant countries. Based on the mean (median) values in our full sample, the lowest level of accounts receivable (*ARR*) of 13 percent (7 percent) of total assets is in Switzerland and the highest of 39 percent (28 percent) of total assets in Greece. The *F*-value in the one-way ANOVA for *ARR* is 874.10 and significant at the 1 percent level. These results hold in our random sample and country-industry-level sample. Statistics for the trade credit measures and country comparison are presented in Table II.

When it comes to religion, in our full sample, we observe significant differences for both measures of trade credit. For example, the mean (median) value of *ARR* is 20 percent

S. No.	Country	*n* (firm year)	*ARR* Mean	*ARR* Median	*APR* Mean	*APR* Median
1	Austria	2,941	13.77	*9.48*	8.84	*5.50*
2	Belgium	22,686	30.26	*28.26*	22.98	*19.76*
3	Bosnia-Herzegovina	2,443	25.30	*22.28*	21.98	*18.78*
4	Bulgaria	4,163	18.59	*15.05*	18.64	*14.25*
5	Croatia	6,603	29.25	*26.12*	21.08	*17.45*
6	Cyprus	*144*	*31.86*	*28.92*	*20.84*	*16.57*
7	Czech Republic	17,736	23.63	*20.01*	18.11	*13.84*
8	Denmark	*2,429*	*21.26*	*18.18*	*12.00*	*9.35*
9	Estonia	2,231	15.33	*11.68*	10.92	*7.17*
10	Finland	7,992	16.68	*14.17*	10.84	*8.14*
11	France	17,946	28.57	*26.81*	21.99	*18.99*
12	Germany	33,528	17.08	*14.11*	9.48	*6.28*
13	Greece	14,535	38.23	*38.17*	21.68	*17.89*
14	Hungary	1,866	17.23	*12.54*	13.11	*9.12*
15	Iceland	31	16.99	*16.68*	8.32	*13.51*
16	Ireland	*894*	*22.25*	*19.35*	*11.54*	*13.38*
17	Italy	120,781	33.94	*32.74*	24.76	*22.76*
18	Latvia	1,729	17.87	*13.04*	14.25	*9.87*
19	Lithuania	3,087	23.64	*20.58*	18.58	*15.02*
20	Luxembourg	341	26.94	*24.43*	13.47	*9.93*
21	Malta	289	23.61	*17.91*	20.23	*17.11*
22	Montenegro	48	22.40	*15.78*	3.86	*0.03*
23	The Netherlands	1,011	37.85	*35.81*	12.53	*8.94*
24	Poland	8,622	26.59	*22.96*	19.48	*15.37*
25	Portugal	26,554	39.26	*38.36*	21.59	*18.96*
26	Romania	2,975	29.15	*25.82*	20.63	*16.85*
27	Russia	*15,373*	*22.27*	*16.95*	*24.44*	*17.78*
28	Serbia	4,658	25.46	*22.14*	24.46	*20.43*
29	Slovakia	422	30.79	*27.50*	25.61	*21.96*
30	Slovenia	5,235	29.11	*26.65*	26.80	*23.86*
31	Spain	102,611	31.15	*29.14*	10.98	*4.63*
32	Sweden	31,045	20.14	*17.52*	12.29	*9.46*
33	Switzerland	207	13.42	*6.72*	9.16	*5.61*
34	Ukraina	4,213	20.79	*15.68*	22.56	*16.55*
35	UK	*42,554*	*23.31*	*20.65*	*15.08*	*11.03*
	Total	509,923	28.52	25.82	17.91	*14.29*
	F (χ^2)		1,841.09***	(58,837***)	2,522.81***	(96,375***)

Notes: ANOVA *F* and Kruskall–Wallis χ^2 statistics *** indicating significance at a 1 percent level. Relative accounts receivable (*ARR*) is calculated as the percentages of accounts receivable to total assets; relative accounts payable (*APR*) is calculated as the percentages of accounts payable to total assets

Table II.
Mean and median values of dependent variables in each country

(17 percent) to total assets in the Protestant countries and 31 percent (29 percent) of total assets in the Catholic ones. The mean (median) rates of *APR* in the Protestant countries are 12 percent (8.7 percent) and 20 percent (17 percent) in the Catholic countries. These results suggest that the religion may play a role in the levels where firms offer and use trade credit. These results are in line with our expectations and in line with Max Weber (1920/2002). Table III presents the mean and median values of dependent variables, and *t*-test and Wilcoxon test results by religion.

We run Pearson and Spearman correlations between firm-level variables for the full firm-level sample and both correlations between country-level variables for firm-level data. The relatively high number of observations (509,923 firm years) results in significant correlations for almost every pair of variables. However, in the case of firm-level variables,

Mean median	Full sample *ARR*		Full sample *APR*		Random sample 1,000 *ARR*		Random sample 1,000 *APR*	
Protestant	20.169		12.421		18.084		11.378	
	17.008		*8.725*		*15.206*		*8.394*	
Catholic	31.071		19.592		28.022		20.199	
	29.029		*16.658*		*25.183*		*16.767*	
t	−1,900.00	****	−1,700.00	***	−72.18	***	−83.82	***
z	*−173.88*	***	*−129.05*	***	*−61.53*	***	*−66.14*	***
n (Protestant)	119,308					14,992		
n (Catholic)	390,615					66,310		

Notes: Mean and median values of dependent variables by religion in a full sample, country-industry-level sample and random sample. *T*-statistics and Wilcoxon (Mann–Whitney) *Z*-statistics with *10, **5 and ***1 percent significance levels. Relative accounts receivable (*ARR*) is calculated as percentages of accounts receivable to total assets; relative accounts payable (*APR*) is calculated as percentages of accounts payable to total assets

Table III.
Mean and median values of dependent variables in Catholic and Protestant countries

the highest correlations are between our trade credit measures. For our country-level variables, there are relatively high correlations. For example, the Hofstede's individualism and uncertainty avoidance are highly correlated (−0.63). We also find high correlations between *LNGDP* and some of our cultural variables. To deal with a possible multicollinearity problem in our regressions, we run our analysis on separate models for highly correlated cultural variables. The correlation matrix is presented in Table IV.

4.2 Multivariate analysis

We run our regression for both dependent variables. In the first stage, we run the regressions at the firm level with industry and year dummies and with industry-clustered standard errors; then we add the cultural variables to observe the change in R^2. Petersen (2009) suggests that in panel data, the standard errors should be adjusted in firm clusters. We find that industry-clustered standard errors are relatively larger than firm-clustered standard errors, and use industry-clustered standard errors in our analysis.

4.2.1 Religion. In our full sample in Table V, the coefficient for *DCATHOLIC* is positive and statistically significant. The results suggest that companies in the Catholic countries use trade credit more than companies in the Protestant ones, even when we control for additional country-level determinants. The levels of *ARR* are about 7–13 percentage points higher in the Catholic countries as opposed to the Protestant ones. For example, the effect of the *DCATHOLIC* dummy variable is 13 percentage points on *ARR* when both firm-level and the Schwartz cultural variables are held constant. Similarly, the levels of *APR* are about 5–10 percentage points higher in the Catholic countries after controlling for firm- and country-level determinants. The *BELIEF* variable has a positive and significant connection with trade credit. On average, a 1 percentage point increase in the share of religious people in the country increases the *ARR* (*APR*) level 0.18 (0.08) percentage points, with the main religion (*DCATHOLIC*) held constant. Our additional proxy for the main religion of country, *PROTESTANT%* measures the percentage share of the Protestant people of the country. In the untabulated results, the coefficient of *PROTESTANT%* is −0.172 for *ARR* and −0.082 for *APR*. This indicates that on average, a 1 percentage point increase in the share of Protestants in on country results in about 0.17 percentage point decrease in receivable levels and about 0.08 percentage point decrease in payable levels. Both coefficients are significantly different from zero and give additional support for our findings on religion and trade credit.

4.2.2 Hofstede cultural dimensions. In our full sample basic OLS analysis, INDIV takes a significant negative sign for the *ARR*, and a significant and positive sign for *APR*.

Table IV.
Pearson and Spearman correlations

Panel A: firm-level full sample. Pearson (Spearman) correlations in lower left (upper right) diagonal

$n = 475{,}899$	*DCATHOLIC*	*PROTESTANT%*	*BELIEF*	*POWERD*	*INDIV*	*UNCERT*	*EMBEDD*	*INTAUT*	*LNGDP*	Δ*GDP*
DCATHOLIC	1	−0.83	0.54	0.75	−0.32	0.76	0.25	0.33	−0.59	0.02
PROTESTANT%	−0.91	1	−0.64	−0.52	0.20	−0.55	−0.20	−0.56	0.49	0.04
BELIEF	0.06	−0.67	1	0.18	0.03	0.40	−0.06	0.46	−0.37	−0.06
POWERD	0.81	−0.74	0.35	1	−0.58	0.90	−0.01	−0.22	−0.60	0.05
INDIV	−0.42	0.04	−0.25	−0.56	1	−0.64	0.19	0.36	0.57	−0.12
UNCERT	0.84	−0.85	0.55	0.86	−0.63	1	0.29	0.08	0.10	0.06
EMBEDD	0.21	0.01	−0.21	0.15	0.19	−0.05	1	0.29	0.08	0.10
INTAUT	0.12	−0.14	0.25	−0.18	0.40	−0.05	0.14	1	0.20	−0.07
LNGDP	−0.43	0.49	−0.23	−0.56	0.57	−0.45	0.03	0.55	1	0.11
Δ*GDP*	0.06	−0.05	−0.04	0.07	−0.10	0.08	0.10	−0.05	−0.03	1

Panel B: Pearson (Spearman) correlations in lower left (upper right) diagonal for firm-level variables. Full sample

$n = 509{,}923$	*ARR*	*APR*	*PUBLIC*	*LNSALES*	*GROWTH*	*LNAGE*	*LEVERAGE*	*ROA*	*INVENTORY*	*ZSCORE*
ARR	1	0.43	−0.05	0.04	0.05	0.00	−0.21	0.05	−0.05	0.18
APR	0.42	1	−0.04	0.20	0.08	0.00	−0.14	−0.05	0.23	−0.09
PUBLIC	−0.06	−0.05	1	0.07	0.01	0.02	0.00	−0.01	−0.04	−0.02
LNSALES	0.02	0.13	0.09	1	0.12	0.02	−0.01	0.08	0.05	0.02
GROWTH	0.04	0.09	0.02	0.09	1	−0.06	0.00	0.22	−0.02	0.24
LNAGE	−0.02	−0.03	0.03	0.01	−0.07	1	−0.01	−0.02	0.07	−0.04
LEVERAGE	−0.25	−0.21	−0.01	0.00	0.01	−0.05	1	−0.26	−0.06	−0.19
ROA	0.03	−0.06	−0.02	0.06	0.18	0.00	−0.22	1	0	0.61
INVENTORY	−0.14	0.20	−0.04	0.03	−0.01	0.04	−0.11	−0.07	1	
ZSCORE	0.09	−0.06	−0.01	0.01	0.15	−0.03	−0.14	0.40	0.13	1

Notes: Correlations between country-level variables (Panel A) and between firm-level variables (Panel B) for a firm-level full sample. *DCATHOLIC* is a dummy for a Catholic country, *PROTESTANT%* is the share of Protestant people of country and *BELIEF* is percentage share of people believing God; *POWERD INDIV* and *UNCERT* are measures for power distance, individualism and uncertainty, respectively, and are from the Hofstede Centre and *EMBEDD* and *INTAUT* are measures for embeddedness and int_autonomy and are from the Schwartz database; *LNGDP* is natural logarithm of *GDP* per capita and Δ*GDP* is an annual change of *GDP*; Relative accounts receivable (*ARR*) is calculated as the percentages of accounts receivable to total assets; relative accounts payable (*APR*) is calculated as the percentages of accounts payable to total assets; *PUBLIC* indicates the status of the firm being listed; *LNSALES* is a logarithm of a firm's sales; *GROWTH* is the annual growth-% of sales; *LNAGE* is a logarithm of a firm's age in years +1; LEVERAGE is measured as the percentages of noncurrent liabilities to total assets; return of assets (*ROA*) is calculated as (net income divided by total assets)×100 percent; *INVENTORY* is measured as the percentages of inventory to total assets; and *ZSCORE* is from Altman (1968) and Ohlson (1980), re-estimated by Begley *et al.* (1996) and designed to forecast firm bankruptcy. A lower score indicates the higher probability of insolvency

Table V.
OLS regression for the full sample

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Coef.	*t*	Coef.	*t*	Coef.	*t*	Coef.	*t*	Coef.	*t*	Coef.	*t*	Coef.	*t*
Panel A: dependent variable – ARR														
PUBLIC	*−9.689*	*−12.20*	*−7.162*	*−7.91*	*−6.704*	*−6.59*	*−7.330*	*−7.98*	*−7.249*	*−7.98*	*−7.165*	*−7.88*	*−7.259*	*−7.48*
LNSALES	0.613	1.36	*1.732*	*3.73*	*1.447*	*3.24*	*1.721*	*3.76*	*1.808*	*3.97*	*1.667*	*3.56*	*1.623*	*3.25*
GROWTH	*0.033*	*9.40*	*0.035*	*12.22*	*0.037*	*16.05*	*0.035*	*12.09*	*0.036*	*12.01*	*0.036*	*12.18*	*0.036*	*11.82*
LNAGE	*−0.654*	*−2.90*	*−0.554*	*−2.88*	*−1.174*	*−5.25*	*−0.561*	*−2.84*	*−0.646*	*−3.54*	*−0.648*	*−3.50*	*−0.794*	*−4.01*
LEVERAGE	*−0.263*	*−19.13*	*−0.230*	*−15.02*	*−0.246*	*−14.66*	*−0.233*	*−14.79*	*−0.237*	*−14.52*	*−0.236*	*−14.40*	*−0.232*	*−15.22*
ROA	*−0.248*	*−4.57*	*−0.157*	*−2.95*	*−0.110*	*−2.08*	*−0.162*	*−2.89*	*−0.160*	*−2.90*	*−0.158*	*−2.87*	*−0.157*	*−2.87*
INVENTORY	*−0.255*	*−3.62*	*−0.245*	*−3.24*	*−0.243*	*−2.92*	*−0.246*	*−3.23*	*−0.244*	*−3.22*	*−0.246*	*−3.21*	*−0.242*	*−3.17*
ZSCORE	*0.126*	*4.71*	*0.108*	*4.33*	*0.106*	*4.49*	*0.109*	*4.27*	*1.068*	*4.32*	*0.107*	*4.30*	*1.070*	*4.33*
LNGDP	−0.597	−0.96	*2.738*	*3.53*	*2.484*	*2.70*	*3.569*	*3.64*	*4.095*	*4.53*	*3.058*	*3.26*	*4.187*	*5.32*
ΔGDP	*−0.168*	*−6.83*	*−0.141*	*−6.54*	−0.047	−1.97	*−0.154*	*−6.92*	*−0.153*	*−6.89*	*−0.149*	*−6.98*	*−0.115*	*−4.05*
DCATHOLIC			*11.937*	*14.39*	*7.035*	*8.13*	*10.804*	*10.29*	*11.346*	*11.87*	*9.739*	*5.44*	*13.041*	*13.04*
BELIEF					*0.177*	*13.34*								
POWERD							*0.058*	*4.44*						
INDIV									*−0.068*	*−4.41*				
UNCERT											*0.056*	*2.29*		
EMBEDD													*−4.339*	*−4.49*
INTAUT													−2.507	−1.66
n	509,923		509,923		483,188		503,075		503,075		503,075		498,072	
Ajd. R^2	0.155		0.204		0.223		0.024		0.206		0.205		0.207	
Panel B: dependent variable – APR														
PUBLIC	*−6.968*	*−10.12*	*−5.490*	*−7.87*	*−5.095*	*−6.95*	*−5.699*	*−7.35*	*−5.281*	*−7.92*	*−5.457*	*−8.36*	*−6.083*	*−8.23*
LNSALES	*2.473*	*7.02*	*3.128*	*8.94*	*2.934*	*7.89*	*3.133*	*8.74*	*2.909*	*8.76*	*3.194*	*9.43*	*3.409*	*9.40*
GROWTH	*0.052*	*14.54*	*0.053*	*14.84*	*0.054*	*14.27*	*0.053*	*14.94*	*0.053*	*15.18*	*0.053*	*14.20*	*0.050*	*15.44*
LNAGE	*−1.285*	*−7.63*	*−1.227*	*−8.82*	*−1.169*	*−7.29*	*−1.256*	*−8.82*	*−1.025*	*−7.56*	*−1.073*	*−7.32*	*−1.176*	*−7.89*
LEVERAGE	*−0.170*	*−11.30*	*−0.150*	*−9.85*	*−0.151*	*−10.11*	*−0.151*	*−9.99*	*−0.142*	*−9.60*	*−0.146*	*−9.19*	*−0.140*	*−10.36*
ROA	*−0.221*	*−16.64*	*−0.168*	*−13.84*	*−0.131*	*−12.37*	*−0.172*	*−13.22*	*−0.165*	*−13.17*	*−0.168*	*−14.54*	*−0.192*	*−14.79*
INVENTORY	*0.104*	*7.62*	*0.110*	*8.33*	*0.098*	*7.24*	*0.108*	*8.06*	*0.104*	*7.76*	*0.108*	*8.22*	*0.104*	*7.88*
ZSCORE	*−0.107*	*−3.55*	*−0.118*	*−3.74*	*−0.122*	*−3.80*	*−0.115*	*−3.74*	*−0.114*	*−3.73*	*−0.116*	*−3.68*	*−0.109*	*−3.76*
LNGDP	*−3.962*	*−5.83*	*−2.012*	*−2.71*	−0.239	−0.31	−0.267	−0.51	*−4.939*	*−5.71*	*−2.463*	*−3.37*	*0.964*	*2.24*
ΔGDP	0.023	1.46	*0.039*	*2.49*	*0.090*	*6.27*	*0.031*	*2.20*	*0.068*	*4.51*	*0.057*	*3.71*	*−0.032*	*−4.08*

(*continued*)

Table V.

	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
	Coef.	*t*	Coef.	*t*	Coef.	*t*	Coef.	*t*	Coef.	*t*	Coef.	*t*	Coef.	*t*
DCATHOLIC			*6.982*	*23.37*	*5.125*	*14.42*	*5.079*	*8.76*	*8.207*	*28.66*	*10.587*	*22.28*	*7.683*	*21.62*
BELIEF					*0.082*	*9.23*								
POWERD							*0.104*	*3.92*						
INDIV									*0.149*	*13.01*				
UNCERT											*−0.094*	*−6.70*		
EMBEDD													*8.489*	*7.85*
INTAUT													*−5.001*	*−4.80*
n	509,923		509,923		483,188		509,923		503,075		503,075		498,072	
Ajd. R^2	0.163		0.188		0.190		0.191		0.204		0.193		0.203	

Notes: The dependent variable is *ARR* (Panel A) and *APR* (Panel B). Year and industry dummies are included in all models and standard errors are adjusted in SIC clusters. Significant coefficients are italic at the 5 percent level. Relative accounts receivable (*ARR*) is calculated as the percentages of accounts receivable to total assets; relative accounts payable (*APR*) is calculated as the percentages of accounts payable to total assets; *PUBLIC* indicates the status of the firm being listed; *LNSALES* is a logarithm of a firm's sales; *GROWTH* is the annual growth-% of sales; *LNAGE* is a logarithm of a firm's age in years +1; *LEVERAGE* is measured as the percentages of noncurrent liabilities to total assets; return of assets (*ROA*) is calculated as (net income divided by total assets)×100 percent; ; *INVENTORY* is measured as the percentages of inventory to total assets; and *ZSCORE* is from Altman (1968) and Ohlson (1980), re-estimated by Begley *et al.* (1996) and designed to forecast firm bankruptcy. A lower score indicates the higher probability of insolvency; *LNGDP* is natural logarithm of *GDP* per capita and Δ*GDP* is an annual change of *GDP*; *DCATHOLIC* is a dummy for a Catholic country and BELIEF is percentage share of people believing God; *POWERD INDIV* and *UNCERT* are measures for power distance, individualism and uncertainty, respectively, and are from the Hofstede Centre. *EMBEDD* and *INTAUT* are measures for embeddedness and intellectual autonomy and are from the Schwartz database

The result of the association between individualism and trade credit are in line with our expectations and indicate that firm managers in individualistic environments operate with lower levels of working capital. We argue that the relationship between individualism and trade credit is an outcome of efficient financial management, but may also be the result of a less concentrated banking sector in an individualistic environment (Malul and Shoham, 2008).

POWERD is positively associated with both *ARR* and *APR*. This is in line with our expectations and may be the consequence of a less concentrated banking industry where bank finance is less easily available and trade credit is used more (Malul and Shoham, 2008; Demirgüç-Kunt and Maksimovic, 1998).

UNCERT takes a positive and significant sign for *ARR* and significant negative sign for *APR*. This result supports our view that uncertainty avoidance drives managers to hold more funds in working capital and is in line with previous studies of uncertainty avoidance and cash holdings or dividend payouts (Chang and Noorbakhsh, 2009; Remirez and Tadesse, 2009; Bae *et al.*, 2012).

4.2.3 Schwartz cultural scores. In our full sample analysis, we find that *EMBEDD* is negatively associated with accounts receivable and positively associated with accounts payable. This is in line with our expectations, and we believe that the result supports the idea of a link between conservatism and effective financial management (Chui *et al.*, 2002).

INTAUT takes a negative sign for *APR* while the coefficient for *ARR* is not significant. The results are partly contrary to our expectations. We expect that as being contrary to conservatism, intellectual autonomy should be positively associated with accounts receivable and negatively associated with accounts payable. The negative association between *APR* indicates that the mechanism of this effect is likely to be connected with financial market structures. That is, although previous studies find that the financial markets are more market based in countries having a higher emphasis of intellectual autonomy, the influence of intellectual autonomy on accounts payable goes through the financial markets.

4.2.4 R^2 levels. One way to estimate the cultural effects on our working capital measures is to observe the change in R^2 statistics when adding the cultural variables into the regressions. In all models, the R^2 statistics increase when adding cultural variables into the model. This indicates that cultural factors are related to trade credit and can explain some of the variance not explained by the firm- and country-level controls. The R^2 level, for example, increases from 0.188 to 0.203 in the *APR* model (Table V, Panel B, models 2 and 7) when we add two Schwartz variables into the basic model. It is also notable that the levels of R^2 are relatively higher in the country-industry-level analysis (not tabulated). For example, the R^2 increases from 0.307 to 0.400 in the *ARR* model when adding the Hofstede *POWERD* variable.

4.2.5 Separate models for Catholic and Protestant countries. Because many of our cultural variables are strongly associated with religion, we run separate models for both country groups (Table VI). The models are the same as the ones reported previously, including all firm- and country-level control variables, and industry and year dummies.

The results indicate that the relationship between cultural variables and trade credit is very much associated with religion. In some cases, the coefficient takes an opposite sign in a different religious group. For example, the negative association between individualism and *ARR* is true only in the Catholic countries, whereas the association is positive in the Protestant ones. In the case of *APR*, the association remains positive in both country groups. A positive association between power distance and trade credit is significant only in Catholic countries. A positive relationship between uncertainty avoidance and *ARR* holds only for Catholic countries, whereas the relationship is negative in Protestant countries.

Table VI.
OLS regression with separate models for Protestant and Catholic countries

		Panel A: dependent variable – *ARR*						Panel B: dependent variable – *APR*					
		Protestant			Catholic			Protestant			Catholic		
Model		Coef	*t*	R^2	Coef	*t*	R^2	Coef	*t*	R^2	Coef	*t*	R^2
1	*POWERD*	−0.077	−0.94	0.124	*0.068*	*5.56*	0.179	−0.090	−1.64	0.156	*0.111*	*4.40*	0.177
2	*INDIV*	*0.206*	*7.65*	0.133	*−0.101*	*−5.90*	0.183	*0.194*	*9.51*	0.171	*0.154*	*12.61*	0.189
3	*UNCERT*	*−0.103*	*−3.70*	0.131	*0.149*	*8.03*	0.182	*−0.117*	*−11.33*	0.173	*−0.058*	*−2.38*	0.175
4	*EMBEDD*	*−7.893*	*−7.81*	0.131	*−6.663*	*−5.62*	0.182	*−5.701*	*−5.22*	0.173	*12.026*	*9.57*	0.192
	INTAUT	*−22.316*	*−5.14*		−1.519	−0.96		*−22.273*	*−9.61*		*−5.433*	*−5.15*	
5	*BELIEF*	−0.088	−1.59	0.126	*0.195*	*12.61*	0.202	*−0.138*	*−8.28*	0.164	*0.108*	*12.31*	0.181

Notes: The dependent variable is *ARR* (Panel A) and *APR* (Panel B). Year and industry dummies are included in all models and standard errors are adjusted in SIC clusters. Significant coefficients at 5 percent level are italic. Relative accounts receivable (*ARR*) is calculated as the percentages of accounts receivable to total assets; relative accounts payable (*APR*) is calculated as the percentages of accounts payable to total assets; *POWERD*, *INDIV* and *UNCERT* are measures for power distance, individualism and uncertainty, respectively, and are from the Hofstede Centre. *EMBEDD* and *INTAUT* are measures for embeddedness and intellectual autonomy and are from the Schwartz database. *BELIEF* is percentage share of people believing God. All firm and country-level control variables are included in models

EMBEDD takes opposite signs for *APR*; the coefficient is negative in Protestant countries and positive in Catholic ones. A negative association between intellectual autonomy and *ARR* is significant only in Protestant countries. Especially in terms of *ARR*, the observed effects of Hofstede's variables on trade credit in the full sample are true in Catholic countries and the effect of Schwarz's variables in Protestant ones. Although cultural dimensions have a different influence on trade credit in Catholic and the Protestant countries, they must have a special role in corporate decision making. Existing theories do not provide any explanations as to why cultural values would have a different influence on financial management policy in countries of different religions.

An additional interesting finding relates to religiosity. Belief in God is positively associated with trade credit only in Catholic countries, whereas the association in Protestant countries in less clear. One reason behind this finding could be that the variation in this variable is much higher in Catholic countries. The numbers indicate that the share of religious people varies from 18 to 44 percent in the Protestant countries and from 16 to 94 percent in Catholic countries. This suggests that Catholics are, on average, more religious and that the religion (Catholic vs Protestant), as such, could drive these results. In further analysis (Table VII), we split Catholic countries into two categories based on the value of believe in God. To be more precise, we take the Catholic countries where believe in God is more than 44 percent in the separate category(Catholic 2). As a result, we find that Belief in God is significant for ARR only in this group of countries. Intrestengly, effects of some of our cultural variables also differ between the two Catholic country groups. In the ARR models the Schwartz cultural variable *EMBEDDEDNESS* is postive and significant only in Cahtholic 1 countries while *INTAUT* is significantly positive only in Cahtolic 2 countries. In APR models, Hofstedes cultural variables

Model		Protestant Coef.	*t*	R^2	Catholic1 Coef.	*t*	R^2	Catholic2 Coef.	*t*	R^2
Panel A: dependent variable – ARR										
1	*POWERD*	−0.077	−0.94	0.124	*0.283*	*11.09*	0.218	*0.242*	*5.40*	0.185
2	*INDIV*	*0.206*	*7.65*	0.133	−0.014	−0.62	0.186	*−0.087*	*−5.52*	0.185
3	*UNCERT*	*−0.103*	*−3.70*	0.131	*0.256*	*14.29*	0.199	*0.181*	*7.66*	0.187
4	*EMBEDD*	*−7.893*	*−7.81*	0.131	*3.436*	*2.55*	0.182	3.626	1.81	0.192
	INTAUT	*−22.316*	*−5.14*		1.028	0.59		*−9.413*	*−4.44*	
5	*BELIEF*	−0.088	−1.59	0.126	−0.027	−0.84	0.186	*0.300*	*6.11*	0.195
Panel B: Dependent variable: APR										
1	*POWERD*	−0.090	−1.64	0.156	*0.334*	*15.97*	0.236	*−0.316*	*−8.24*	0.183
2	*INDIV*	*0.194*	*9.51*	0.171	*−0.114*	*−5.05*	0.179	*0.184*	*15.84*	0.200
3	*UNCERT*	*−0.117*	*−11.33*	0.173	*0.382*	*20.65*	0.215	*−0.230*	*−10.23*	0.188
4	*EMBEDD*	*−5.701*	*−5.22*	0.173	*4.695*	*3.42*	0.179	*26.516*	*19.74*	0.215
	INTAUT	*−22.273*	*−9.61*		2.071	1.93		*−12.982*	*−20.74*	
5	*BELIEF*	*−0.138*	*−8.28*	0.164	0.053	1.72	0.174	*0.659*	*29.61*	0.276
	n (Hofstede)	119,308			74,156			289,580		
	n (Schwartz)	119,277			74,156			282,610		

Notes: The dependent variable is *ARR* (Panel A) and *APR* (Panel B). Coefficient estimates, *t*-statistics and R^2-values. Firm- and country-level controls, constant, industry and year dummies are included in all models. Separate models for Protestant, Catholic 1 and Catholic 2 countries. Catholic 1 countries the share of people believing God is less than 45 percent and in Catholic 2 countries more than 45 percent. Relative accounts receivable (*ARR*) is calculated as the percentages of accounts receivable to total assets; relative accounts payable (*APR*) is calculated as the percentages of accounts payable to total assets; *POWERD, INDIV* and *UNCERT* are measures for power distance, individualism and uncertainty, respectively, and are from the Hofstede Centre. *EMBEDD* and *INTAUT* are measures for embeddedness and intellectual autonomy and are from the Schwartz database. *BELIEF* is percentage share of people believing God

Table VII.
OLS regression with separate models for Protestant and Catholic countries

take opposite signs for these Cahtolic country groups while the effect of Schwartz's intellectual autonomy is significant and positive only in Catholic 2 countries.

4.2.6 Other findings. Our control variable for Firm listing status has a negative effect on trade credit in both the asset and the liability side. This result does not follow the redistribution hypothesis in a sense that public firms having better access to capital markets would be more willing to extend trade credit. On the other hand, if public firms had better possibilities to use negotiation power in trading relationships, this should result in lower levels of receivables and also higher levels of payables.

4.3 Additional analysis

Previous studies suggest that a country's legal and financial environment is associated with trade credit (Demirgüç-Kunt and Maksimovic, 2001; Mättö and Niskanen, 2014) and strongly associated with national culture measures (Licht *et al.*, 2005). In our data, *LEGAL* and *SYSTEM* are highly correlated with some of the cultural scores. For example, the correlation between *LEGAL* and *POWERD* is −0.61, and the correlation between *SYSTEM* and *BELIEF* is −0.71 (not reported). In addition to the observed multicollinearity, one fact that makes controlling these elements difficult in our data are that the legal score is available for 15 countries, whereas the financial system score can be calculated for almost every country in our sample. As a robustness check, by using the data of 15 countries, we use an orthogonal method to evaluate the effects of cultural variables in the presense of legal and system environment.

In the first stage, *LEGAL* and *SYSTEM* are regressed on one of our culture variables. Now every effect that a culture variable may carry from *LEGAL* and *SYSTEM* is partial out and the disturbance term in the first-stage regression includes only a cultural effect without the influence of the legal and system. In the second stage, the residual from the first stage regression is used as a substitute for the original culture variable, which is free of the possible loadings from *LEGAL* and *SYSTEM*.

Our untabulated results indicate that some of the cultural variables are sensitive to this methodology. In ARR models for the Catholic countries many of cultural effect change their signs, whereas results in APR models mostly remain the same. The effect of *BELIEF* remains the same for both *ARR* and *APR*. We notice that in most cases, the residual from the first stage regression is not normally distributed. Due to the data available for LEGAL, these models are restricted to 15 countries. Based on these findings we cannot put much emphasis on these results.

Our sample period is from 2007 to 2011. To take into account the possibility that the financial crisis in 2008 influences our results, we run all regressions excluding years 2007–2008. All results remain the same indicating that while corporate financial situations and behavior has been influenced by financial crisis, the cultural and religional effects on trade credit behavior is similar in crisis years.

5. Conclusion

Previous studies suggest that national culture, in addition to the legal environment and the financial market system, can explain some of the cross-country differences in financial decision making. We use religion, several of Hofstede's national culture dimensions, and some additional cultural-orientation scores from Schwartz to explain the observed cross-country differences in trade credit in European countries. Using a sample of 126,593 SMEs from 35 European countries, we find that religion and national culture explain some of the cross-country variations in trade credit. We find that the levels of trade credit are higher in Catholic countries as opposed to those in Protestant countries. These results hold after we control for cultural values, the macroeconomic and legal environment and several firm-level factors.

We further measure people's religiosity with the share of people believing in God. The results suggest that religiosity has a positive influence on trade–credit levels only in Catholic countries.

Our findings on the association between cultural values and trade credit are ambiguous. Some cultural variables are sensitive to religion and/or the legal and financial environment. In our trade credit analysis, Hofstede's cultural dimensions are sensitive to the legal and financial environment, especially in the case of accounts receivables in Catholic countries. In our study, individualism, however, has a clear link to corporate finance. Managers in countries with high individualistic values are more likely to be performance driven in terms of working capital management. They more likely hold higher levels of accounts payables.

We make an interesting finding about Schwartz's cultural values. Their influence on trade credit is different in Catholic countries as opposed to Protestant ones. These results suggest that Schwartz's cultural values are strongly connected to national religion and that this connection should be considered when using these values in any analysis. Our analyses also show that Catholic countries should be studied in two separate groups based on religious level in a country. The effect of the share of religious people in the country on trade credit is the strongest in those Catholic countries where this religiousness is the strongest.

Our results suggest that relatively high cross-country differences in trade credit can be explained by company's cultural environment and especially by the main religion in the country the company operates in. The results also suggest that additional research is needed to discover the real mechanisms of the&& trade–credit relationship in Europe and what roles the country-specific factors play. Our results may have practical implications for companies engaged in international trade when they determine the terms of payments for customers or suppliers from different countries. The results may also have value for policymakers when they try to unify the terms of payments at the European level.

This study has some limitations. Our sample is large and a representative sample of the population, but includes only SMEs. The trade credit levels observed do not represent only the trade credit relationships within the sample. This makes the opposite results for receivables and payables somewhat difficult to interpret. Another concern relates to controlling the legal environment. In our sample of 35 countries, only 15 have score for the legal environment. When we control for the legislative development of a country, we lose an important part of our data.

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