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## **Religiosity and Cross-Country Differences in Trade Credit Use\***

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**Abstract:** Using the firm-level data over 1989-2012 from 53 countries, we find religiosity in a country is positively associated with trade credit use by local firms. Specifically, after controlling for firm- and country-level factors as well as industry and year effects, we show that trade credit use is higher in more religious countries. Moreover, both creditor rights and social trust in a country enhance the positive association between religiosity and trade credit use, while the quality of national-level disclosure mitigates the aforementioned positive association. These results are robust to alternative measures of religiosity, alternative sampling requirements, and potential endogeneity concerns.

**JEL Classification:** G31; G32

**Keywords:** Religiosity; Trade Credit Use; Cross-Country Differences; Creditor Rights; Social Trust

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## **Religiosity and Cross-Country Differences in Trade Credit Use**

### **1. Introduction**

Trade credit arises when suppliers deliver goods to customers who do not pay immediately but promise to pay later. It is an important type of informal financing offered by suppliers to their customers and is usually a part of the commercial condition of a sale (Petersen and Rajan, 1997; Demirgüç-Kunt and Maksimovic, 2001; Fisman and Love, 2003). Typically, there is no collateral standing behind the transaction and no guarantees from third parties or financial intermediaries. Trade credit is generally non-interest bearing, which is important for certain religions (e.g., Islam) that prohibit dealing with interest.<sup>1</sup> Like suppliers of institutional finance (e.g., banks), suppliers of trade credit face the future default risk of customers. As such, human belief is crucial in the decisions of granting and receiving trade credit.

In this study, we investigate whether religiosity explains cross-country variation in trade credit use. Religiosity refers to “customary beliefs and values” transmitted by religious groups from generation to generation (Guiso et al., 2006). Prior literature shows that religiosity influences economic outcomes through its impact on individuals’ values and beliefs (Barro and McCleary, 2003; McCleary and Barro, 2006). Given that religiosity is a major source of morality and ethical behavior (e.g., Grullon et al., 2010; Callen and Fang, 2015), we argue that religiosity constrains the opportunistic and default-prone behaviors of customers, which provides suppliers with higher incentives to supply trade credit. Additionally, prior literature documents that religiosity is positively associated with risk aversion behaviors (e.g., Hilary and Hui, 2009). As such, due to the presence of information asymmetry regarding the product quality, risk-averse

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<sup>1</sup> We thank an anonymous referee for making this excellent point.

customers tend to demand trade credit as an implicit assurance of product quality. Thus, we posit that religiosity in a country shapes the extent of trade credit use in that country.

We adopt the cross-country setting since such a setting provides more variation in religiosity across countries. Specifically, we use a sample of 248,824 firm-year observations over a maximum period of 1989-2012 from 53 countries and control for firm- and country-level factors as well as industry and year effects. We find that firms located in more religious countries tend to use more trade credit. Moreover, we find that stronger creditor rights in a country, as well as higher social trust in the country, enhance the positive association between religiosity and trade credit use, while better disclosure quality in a country mitigates the aforementioned positive association.

To mitigate the endogeneity concerns that our results may fail to control for institutional factors that determine both religiosity and trade credit use, we instrumentalize our religiosity measures with a country's shares of adherents to different religions in each country. The effect of religiosity on trade credit use continues to hold in the two-stage-least-squares (2SLS) regression. We further adopt an exogenous shock setting in a subsample analysis and obtain consistent results. Moreover, to distinguish firm-level from country-level effects, we conduct country-level regressions and find similar results. Finally, the results hold after we employ alternative measures of religiosity or after we make alternative sampling requirements.

Our paper contributes to several streams of research. First, our paper provides new evidence on the importance of religiosity in explaining economic decisions and outcomes, thus supporting the related work of Stulz and Williamson (2003) and McCleary and Barro (2006). Specifically, our paper documents a new factor determining firms' trade credit policies in a cross-country setting. Using the firm-level data, we contribute to this stream of literature by

showing that national religiosity, as an extra-legal country-level institution, is crucial in shaping trade credit use in our sample countries. The effect of religiosity on trade credit use is over and above that of the previously documented country- and firm-level determinants of trade credit use.

Second, our study complements the literature on the mechanisms that facilitate firms to access financing. Extra-legal institutions, such as social norms, culture, and governance mechanisms based on reputation and relationships, enable firms to overcome institutional barriers to various sources of funding, including informal financing such as trade credit (e.g., Fisman and Love, 2003; Cull et al., 2009; El Ghouli and Zheng, 2016). Our study shows that religiosity, as another extra-legal institution, fosters the prevalence of trade credit for firms that likely face restrictions in formal financing.

The remainder of the paper is organized as follows. Section 2 develops our main hypotheses. Section 3 discusses the data and variables. Section 4 presents the descriptive statistics and the main empirical analysis. Section 5 reports the results of the robustness tests. Section 6 concludes.

## **2. Hypotheses Development**

### **2.1 Effect of national religiosity on firms' trade credit use**

Trade credit is a short-term informal financing instrument used by suppliers and their customers. In this section, we argue that religiosity prompts suppliers to offer more trade credits to customers, and further, religiosity allows customers to pay off trade credits in a timely manner.

Recent literature links religious adherence to lower risk-taking (e.g., Hilary and Hui, 2009; McGuire et al., 2012; Noussair et al., 2013). For example, Bartke and Schwarze (2008)

show that religious people in Germany are less risk-tolerant than atheists. Using a sample of religious people from the Netherlands, Noussair et al. (2013) provide confirmatory evidence that religious people, as measured by church membership or attendance, are risk averse. Similarly, Hilary and Hui (2009) find that firms located in counties with higher levels of religiosity display lower degrees of risk exposure (as measured by variances in equity returns or in return on assets). The above studies suggest that customers from more religious countries demand more assurance of product quality when facing information asymmetry at the time of purchase. The risk-aversion tendency of customers motivates suppliers to offer more trade credits to provide implicit warranties on their products (Smith, 1987; Lee and Stowe, 1993; Long et al., 1993).

However, suppliers offering trade credits face the future default risk of customers. Unlike banks, suppliers typically have a relatively small number of customers and cannot easily diversify their risks. Furthermore, information asymmetry between suppliers and customers would potentially accentuate the default risk of customers (Aktas et al., 2012). When customers cannot pay their payables within the normal credit period, the payables become overdue. The subsequent default resulting from overdue payables indicates a violation of contract, in which ethical customers are less likely to engage. As a result, suppliers count on the ethics and honesty of their customers when offering trade credit (Petersen and Rajan, 1994; Guiso et al., 2004). In this regard, prior literature has confirmed that religiosity is a major source of morality and ethical behavior (see Vitell (2009) for a review of empirical literature). According to McGuire et al. (2012), when religion is central to a person's self-identity, ethically questionable behaviors generate higher levels of cognitive and emotional discomfort, which motivates religious adherents to align their behavior with role expectations. Hence, customers who receive trade credit in a more religious country are more likely to pay their payables in a timely manner.

Moreover, from the social norm perspective, religiosity, which serves as a form of social norm, constrains the opportunistic behaviors of customers who obtain trade credit. Stavrova and Siegers (2014) argue that people who behave in accordance with social norms may receive higher levels of social recognition and respect. Therefore, customers in a more religious country would be less likely to default on their trade credits because violating social norms would receive less social respect or additional social sanctions.

To summarize, customers in more religious countries have a stronger demand for trade credit given their risk aversion behaviors. Correspondingly, suppliers are more likely to supply trade credit to customers because religiosity constrains customers' defaulting tendency on accounts payables. Based on the above discussions, we hypothesize the following:

**H1:** *Ceteris paribus*, firms from more religious countries use more trade credit in transactions than firms from less religious countries.<sup>2</sup>

We acknowledge that the opposite prediction is also likely.<sup>3</sup> Since supplier firms too are risk averse, they are reluctant to offer trade credit to customers due to concerns about default risk. It is also possible that customers do not demand extensive trade credit as they are relatively confident that any product defaults can be dealt with swiftly by the suppliers in highly religious countries. Therefore, this prediction implies that trade credit is low in more religious countries due to trust about product quality. We retain the directional hypothesis above, and we explicitly test the role of trust in the subsequent section.

## 2.2 Moderating roles of institutional factors across countries

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<sup>2</sup> The word "use" relates to both demand for and supply of trade credits (i.e., offering credit to customers and demanding credit from suppliers).

<sup>3</sup> We thank an anonymous referee for making this excellent point.

The legal, political, social, and cultural environments of a country influence a firm's choice to demand cash payment upon delivery or to sell on credit (Demirgüç-Kunt and Maksimovic, 2001; Aggarwal and Goodell, 2009). We consider the following three country-level institutional factors. First, the quality of information disclosure affects trade credit use (Dai and Yang, 2015). Countries with stringent disclosure requirements provide an information level playing field for all parties. When there is less information asymmetry between suppliers and customers (Smith, 1987; Aktas et al., 2012), risk-averse customers do not demand as much trade credit as long as they can better assess the product quality. As such, religiosity will play a less significant role in explaining trade credit use.<sup>4</sup> Second, strong creditor rights in a country protect lenders from appropriations by borrowers. Furthermore, creditor rights are related to the power of secured lenders in the bankruptcy process granted by the laws and regulations of a country. Stiglitz (1999) points out that legal variables (e.g., creditor rights) and extra-legal variables (e.g., social trust) could be substitutes or complements. While stronger creditor rights drive the use of trade credit, it is unclear how creditor rights moderates the relation between religiosity and trade credit use. Similarly, while social trust may foster the prevalence of trade credit (Guiso et al., 2004; Wu et al., 2013), social trust may enhance or mitigate the influence of religiosity on trade credit. To summarize, we expect the disclosure requirement to mitigate that the relationship between trade credit use and religiosity. However, we do not have a directional prediction on how creditor rights (or social trust) affect the relationship between trade credit use and religiosity, so we leave the latter two hypotheses below in null forms. We hypothesize the following:

**H2a:** A high level of disclosure quality in a country mitigates the association between trade credit use and religiosity.

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<sup>4</sup> We thank an anonymous reviewer for making this point.



**H2b:** A high level of protection of creditor rights in a country does not affect the association between trade credit use and religiosity.

**H2c:** A high level of social trust in a country does not affect the association between trade credit use and religiosity.

### **3. Data and Research Design**

#### 3.1 Data and sample selection

We start with the international data on participation in formal religious services and personal prayer and on religious beliefs from the World Values Survey (WVS). There were five cross-country surveys carried out between 1981 and 2008, including 1981–84, 1990–93, 1995–97, 1999–2004, and 2005–2008 (Díez-Medrano, 2009). Next, we merge the above-mentioned religiosity data with firm-level financial data from Compustat Global and Compustat North America from 1989 to 2012.<sup>5</sup> Following Pevzner et al. (2015), we match the most recent religiosity values with our firm-level financial data. We further exclude firms with missing accounting and financial data, firms with missing Standard Industrial Classification (SIC) codes, and firms in financial service, mining, and utilities industries (i.e., SIC codes between 1000 and 1400, between 4900 and 4999, and between 6000 and 6999). We also remove all observations with foreign sales, as well as firms that are cross-listed in multiple countries. Finally, since the religiosity survey data are not available for all countries across all years, we restrict our sample to countries that have no less than 50 observations. These filters yield a sample of 248,824 firm-year observations across 53 countries over the period from 1989 to 2012.

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<sup>5</sup> Our analyses start at 1989 due to limited country coverage prior to 1989; as such, we do not utilize the 1981-82 WVS data. The time series in the panel data typically span twelve years, with a minimum of four years of data (for countries such as Bahrain, Kuwait, Qatar, and Tunisia), and a maximum of twenty four years of data (for countries including Chile and Mexico).

Definitions and sources for all the variables used in the main analyses and the robustness tests are summarized in the Appendix. We winsorize all continuous variables at the 1<sup>st</sup> and 99<sup>th</sup> percentiles to mitigate the influence of outliers.<sup>6</sup>

### 3.2 International data on religiosity

Following prior literature (Cornwall et al., 1986; Parboteeah et al., 2008; McGuire et al., 2012), we define religiosity by (1) its cognitive (knowing) element, which is related to religious beliefs or religious knowledge; (2) its affective (feeling) element, which motivates people to have emotional feelings about religion; and (3) its behavioral (doing) element, which emphasizes church attendance, personal prayer or regular religious donations. Accordingly, we use three different questions in the WVS: (1) Would you say you are a religious person? (2) How important is religion in your life? And (3) How often do you attend religious services? Using the data from the WVS, we construct country-level variables corresponding to the above three dimensions of religiosity. The variable *Belief* is the proportion of respondents who indicate their affiliations with religions. The variable *Important* is the proportion of respondents who indicate that the religion is important to them. And the variable *Attend* is the proportion of respondents who indicate that they attend religious services more than once a month. Our primary religiosity measure, *Religiosity*, is constructed following a factor analysis that combines the three dimensions of religiosity into one measure of the overall religiosity (McGuire et al., 2012). In Section 5, we present results using a number of alternative religiosity measures as the robustness check.

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<sup>6</sup> In untabulated robustness tests, we conduct all the tests again using the quantile regressions and obtain similar results.

### 3.3 Measures of trade credit use

To measure the extent of firm-level trade credit use, we adopt two proxies in the paper. First, following prior literature (e.g., Petersen and Rajan, 1997; Cunat, 2007), we use the variable, accounts receivable (*AR*), which is defined as trade receivable divided by total assets. Following Demirgüç-Kunt and Maksimovic (2001), we use the other variable, *ARTurnover*, which is defined as the ratio of total sales over accounts receivable.

### 3.4 Empirical models

Our multivariate OLS regression model testing the effect of religiosity on trade credit use is specified as follows:

$$\begin{aligned} Trade\ Credit_{i,k,t} = & \alpha_0 + \alpha_1 Religiosity_{k,t} + Firm\ Controls_{i,k,t} + Country\ Controls_{k,t} \\ & + Year + Industry + \varepsilon_{i,k,t} \end{aligned}$$

(1)

where the dependent variable, *Trade Credit*, is measured by accounts receivable (*AR*) or accounts receivable turnover (*ARTurnover*). To test H1, we analyze the coefficient on *Religiosity*. To the extent that managers of firms from countries with strong religion and social norms are more likely to extend/obtain trade credit, we expect a positive (negative) and significant coefficient on *Religiosity* when the dependent variable is *AR* (*ARTurnover*).

In addition to our variable of interest, we also control for factors that prior research (e.g., Petersen and Rajan, 1997; Aktas et al., 2012) suggests are associated with trade credit use. Specifically, we control for firm size (*Size*), which is defined as the natural logarithm of total assets. Larger firms have better management of their cash conversion cycle when compared with smaller firms and they also have better access to financial markets. Therefore, larger firms are able to demand less but extend more trade credit to customers (Petersen and Rajan, 1997;

Atanasova, 2007). We also control for several operating performance measures, including return on assets (*ROA*), the ratio of net sales over net fixed assets (*NSNFA*), sales growth rate (*SalesGrowth*). Inventory management is an important factor to influence trade credit. To reach an optimal inventory level and avoid the buildup of inventory, firms with cost advantages in financing receivables may find it optimal to extend additional credit to customers (Emery, 1987). Thus, we control for inventory turnover (*InvTurnover*). The decision to offer trade credit can also be motivated by product market competition; we control for industry-specific Herfindahl index based on firm sales (*HHI*). Moreover, over-levered or distressed firms tend to be financially constrained, thereby causing these firms to reduce investment in net trade credit by collecting accounts receivables, tightening credit terms, or stretching credit terms granted by suppliers (Molina and Preve, 2009). We therefore control for financial leverage (*Lev*), defined as the ratio of the sum of long-term debt and debt in current liabilities over total assets, and the cash ratio (*Cash*), defined as the ratio of cash and short-term investments over total assets. Finally, we include the variable *AP*, measured as the ratio of accounts payable to total liabilities.

In addition to firm-level control variables, we include country-level characteristics, including macroeconomic conditions and financial market environment, which prior research suggests are determinants of trade credit (Demirgüç-Kunt and Maksimovic, 2001). Following Beck et al. (2008), we include the development of private credit (*PrivCredit*), defined as the ratio of private credit to gross domestic product, where both values are at the country level. We also include the natural logarithm of real gross domestic product (GDP) per capita (*LnGDP*), as well as the growth rate of the real GDP per capita (*GDPGrowth*). Moreover, we control for an inflation rate of the GDP deflator (*Inflation*), and country-level openness (*Openness*), which is

defined as the ratio of the sum of exports and imports over GDP. All these annual data are obtained from the World Development Indicators.

The pooled OLS model includes industry and country fixed effects to account for heterogeneity in trade credit across industries and countries. We also include year fixed effects to control for macroeconomic effects. In addition, standard errors are adjusted for heteroskedasticity and clustered at the country and year levels (Petersen, 2009).

To examine the moderating effect of institutional factors across countries, we use the following three variables: *Disclosure*, *CreditorRights*, and *Trust*. To examine the impact of country-level disclosure quality on the relation between religiosity and trade credit use (H2a), We use the variable *Disclosure*, which is the index of accounting disclosure quality based on aggregate annual financial statement disclosure scores from the Center for International Financial Analysis and Research (CIFAR, 1995). We expect a negative and significant coefficient on the interaction term  $Disclosure \times Religiosity$  as predicted by H2a.

To test H2b, we introduce the variable *CreditorRights*, which measures the aggregate creditor rights for each country (Djankov et al., 2007).<sup>7</sup> We expect no significant loading on the interaction term  $CreditorRights \times Religiosity$ .

To test H2c, we add the variable *Trust*, which measures the extent of social trust in a country (Pevzner et al., 2015). According to H2c, we expect no significant loading on the interaction term  $Trust \times Religiosity$ .

## 4. Empirical Results

### 4.1 Descriptive statistics of the variables

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<sup>7</sup> Note that creditor rights data refer to the rights of secured creditors and the data are time-invariant.

Table I reports descriptive statistics of country and firm-level variables across the sample countries. The United States, with 65,831 observations, is the most widely represented country in the sample. Other countries have significantly fewer observations and combined they account for approximately 74% of the sample observations. Table I shows that on average approximately 52% of the population in each sample country are affiliated with religion; 81% report that religion is important in their daily life; and 10% attend religious services on a monthly basis. Based on the composite measure of religiosity (*Religiosity*), Nigeria, Morocco, Malaysia, Pakistan and Egypt are the most religious countries, while China, Japan, Estonia, Sweden and Germany are the least religious countries in our sample. For the full sample, the average fraction of accounts receivable on total assets is 20%. Mean values of accounts receivables as a percentage of total assets vary widely across countries, from 6% in Saudi Arabia to 37% in Morocco. Pakistan (Morocco) also holds the highest (the lowest) accounts receivable turnover ratios.

The country-level statistics in Table I further indicate unequal economic development across the sample. While Qatar has the highest GDP per capita ( $LnGDP = 11.26$ ) as well as the fastest GDP growth, India is the poorest country in terms of GDP per capita ( $LnGDP = 6.72$ ). Hong Kong's ratio of total import and export to its GDP ( $Openness = 4.06$ ) is nearly 17 times of Japan and United States ( $Openness = 0.24$ ). We also notice that the group of five most religious countries and the other group of five least religious countries exhibit certain distinct institutional factors. For example, the most religious countries have lower ratios of private credit to their economies (average  $PrivCredit = 0.508$  vs. 1.046 for the least religious countries). Those most religious countries have stronger creditor rights protection (average  $CreditorRights = 2.2$ ) compared to an average of 1.6 for the five least religious countries. However, we do not see a significant difference between the most religious countries and the least religious ones in terms

of disclosure quality and social trust.

Table II presents the descriptive statistics of the variables used in the main regression model. Standard deviations from Table II confirm the statistics from Table I that there are considerable variations for trade credit use and religiosity across countries. Moreover, the statistics show that accounts receivables on average account for 20% of total assets.

Table III reports Pearson pairwise correlation coefficients for all the variables used in the main regressions. Not surprisingly, *Belief*, *Important*, and *Attend* are highly correlated to one another. Panel A further shows that each component of religiosity is significantly correlated with the composite measure, *Religiosity*. Panel B shows that the two proxies for trade credit use (*AR* and *ARTurnover*) are negatively correlated with each other at the 1% level. We find that *AR* (*ARTurnover*) is positively (negatively) correlated with *Religiosity* at the 1% level. Moreover, *Religiosity* is negatively correlated with a country's protection of creditor rights but positively correlated with a country's disclosure quality.

#### 4.2 Multivariate regressions results

Table IV reports the coefficient estimates of regressing the trade credit proxies (*AR* and *ARTurnover*) on the composite religiosity measure, after controlling for various firm- and country-level characteristics. Models (1) and (2) present the multivariate results when accounts receivable turnover (*ARTurnover*) is the dependent variable while Models (3) and (4) use *AR* as the dependent variable. In Model (1), we find a significantly negative association between *Religiosity* and *ARTurnover* at the 10% level. The result supports that firms in more religious countries extend more trade credit to customers. In Model (2), we also find a significantly negative relation between *Religiosity* and *ARTurnover* at the 1% level, after controlling for the

additional country-level and firm-level variables. Models (3) and (4) yield significantly positive associations when *AR* is used as the dependent variable. These results support our first hypothesis that firms in countries with stronger religion and social norms use more trade credit. The effect of *Religiosity* is also economically sizable. According to Model (3), holding the other explanatory variables constant at their means, a one standard deviation increase in *Religiosity* would increase accounts receivables by about 1.7%. Thus the results from all models confirm our main hypothesis H1.

Across the four models, the firm-level control variables generally exhibit expected coefficient signs. The coefficient on *Cash* loads positively for *ARTurnover* while loading negatively for *AR* at the 1% significance level. The result is consistent with the notion that firms that extend more trade credit tend to be cash constrained. It also supports the notion that customers are reluctant to repay financially troubled suppliers (Giannetti et al., 2011). As expected, we find the coefficient on *InvTurnover* positive and significant across four models, consistent with the notion that suppliers push out inventory to customers and record higher level of accounts receivables. Moreover, firms' profitability (*ROA*) is positively associated with accounts receivables and accounts receivable turnover. Finally, higher leveraged firms have less use of credit uses.

Consistent with the results in Demirgüç-Kunt and Maksimovic (2001), we find that GDP per capita is significantly negatively associated with accounts receivable at the 1% levels, indicating that firms in less developed economies tend to sell more on credit. The coefficient on *PrivCredit* is negative at the 10% significance level for *AR*, suggesting that firms in countries with more developed financial markets provide less trade credit. This result supports the finding from prior literature that trade credit is complementary to bank credit (Biais and Gollier, 1997;



Demirgüç-Kunt and Maksimovic, 2001). The adjusted  $R^2$ s of all models are about 40%, suggesting good model fits.<sup>8</sup>

#### 4.3 The moderating effect of institutional factors

In Table V, we report the moderating effects of country-level characteristics on the relation between religiosity and trade credit use (including *AR* and *ARTurnover*). Panel B, Model (1) presents results when the country-level disclosure quality interacts with religiosity. Consistent with our prediction, the coefficient on *Disclosure*  $\times$  *Religiosity* is negative at the 1% level, suggesting that better disclosure quality mitigates the significance of religiosity in driving trade credit use.

Panel B, Model (2) examines the impact of the creditor protection on the relation between religiosity and trade credit, we include *CreditorRights* and its interaction term with Religiosity in Eq. (1). The interaction term *CreditorRights*  $\times$  *Religiosity* is positive and significant, indicating that creditor protection enhances the positive association between religiosity and trade credit use. Our H2c is tested in Panel B, Model (3). Specifically, we test the association between religiosity and trade credit proxies in the presence of social trust in each country. Results show that the higher level of trust enhances the positive association between religiosity and trade credit use.

Table V, Panel A presents the results when *ARTurnover* is the dependent variable. Across both panels, our previous findings on the relationship between religiosity and trade credit use remain unchanged, reducing concerns that our results are driven by the omission of country-level institutional factors.

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<sup>8</sup> We rerun all the regressions after excluding the U.S. firms from our sample and obtain the similar results.

## 5. Sensitivity Tests and Results

### 5.1 Tests addressing the omitted correlated variable issue

Our models and empirical results are likely to suffer from endogeneity issues. Roberts and Whited (2013) list three sources of endogeneity: simultaneity bias, measurement errors, and omitted explanatory variables. First, the simultaneity bias could occur if trade credit use and religiosity are determined in equilibrium, with trade credit policies influencing a country's religiosity. However, religiosity for a country should be relatively stable over time, with changes taking place on an order of centuries (North, 1991; Williamson, 2000). Hence, it is unlikely that trade credit decisions at the firm level drive national-level religiosity. Second, we will show in Sections 5.3 and 5.4 that our main findings are not sensitive to making alternative sampling requirements or using alternative measures religiosity. The remaining issue is about omitted explanatory variables, which we focus on in this section. We investigate whether the associations found in the previous sections are causally linked. In other words, does the religious make-up of the population cause firms to behave in a certain way, or do any omitted correlated variables explain the association between religiosity and trade credit use?

To answer this question, we conduct two different tests. First, we implement a two-stage-least-squares (2SLS) regression by including instrumental variables at the first-stage regression. This approach removes the estimation bias caused by an unspecified omitted correlated variable if the instruments are uncorrelated with this omitted variable and are sufficiently correlated with the endogenous elements of the variable of interest (e.g., Wooldridge, 2002). During the first stage, we follow Barro and McCleary (2003) and Durlauf et al. (2012) in choosing the first-stage instrument variables. These variables represent shares of adherence to different religions in each of our sample countries. The WVS includes data from censuses and

surveys in which people are asked to state the religion, if any, to which they adhere. The eight religious adherences are Catholic, Orthodox, Protestant (including Anglican), Jewish, Muslim, Hindu (including Jains and Sikhs), Buddhist; and other Christians.<sup>9</sup> For each religion, we extract the proportion of the population within each country who expressed adherence to the religion. In addition, following Durlauf et al. (2012), *StateReligion* equals to 1 if a state religion was present in a sample country in 1970; *RegulationReligion* captures the presence of state regulations on religions in 1970. *Pluralism* measures the religious pluralism and is calculated as one minus a Herfindahl index showing population fractions of adherents to nine different religions.

Table VI, Panel A reports the 2SLS regression results. Column (1) shows the first-stage regression results at the country levels. The coefficients for religious adherences are significant, confirming that the instrument variables are correlated with religiosity.<sup>10</sup> Overall, the significant coefficients on the variables suggest that our instruments satisfy the relevance requirement. The partial adjusted  $R^2$  attributed to our instruments is 93%, statistically significant at the 1% level. Untabulated tests further indicate that these instrument variables are not significantly correlated with the accounts receivable variables. The second stage regresses the proxies of trade credit use (*ARTurnover* and *AR*) on the predicted values of religiosity obtained from the first stage and other control variables. The results from the second stage regression are similar to those reported in Table IV. Specifically, the coefficients on the fitted religiosity measure bear significant and expected signs in both specifications. Overall, the results confirm that our model linking trade credit proxies and religiosity is robust to the issue of omitted explanatory variables.

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<sup>9</sup> Other Christians encompass independent Christian churches, unaffiliated Christians, and “marginal Christians”, such as Mormons and Jehovah’s Witnesses.

<sup>10</sup> We exclude the following four variables, including *Orthodox*, *Protestant*, *Muslim*, and *OtherChristians*, as instrument variables as the coefficients of these variables are insignificant in the first-stage regression.

Separately, we consider an exogeneous shock setting related to the fall of the Iron Curtain and subsequent collapse of the Soviet Union in early 1990s, after which many of the Central and Eastern European nations experienced upsurges in religious affiliations among their populations (Pew Research Center, 2017). We expect that exogenous shocks to religiosity will lead to significant increases in trade credit use. Due to the constraint of religiosity data availability, we focus on two specific countries, Bulgaria and Romania. According to the World Value Survey (WVS), religious believers in Bulgaria and Romania rose by 9% and 13%, respectively, from 1994 to 2004. We focus on the subsample of Bulgaria and Romania between 1994 and 2004. Table VI, Panel B shows that *Religiosity* is negatively associated with *ARTurnover* and positively associated with *AR*. Both coefficients are significant at the 10% levels, likely due to the much smaller subsample size. Thus, the subsample results based on the exogeneous shock setting are consistent with our main results as reported in Table IV.

## 5.2 Results from country-level regressions

In Table VII, we report the country-level regression results that test the relation between religiosity and trade credit use. The country-level regression utilizes aggregate values of firm-specific data in each country. Moreover, to proxy for the amount of domestic trade in a country, we multiply the aggregate accounts receivable by a local-trade weight, expressed as (1- exports to GDP ratio). Similarly, we multiple the aggregate total sales by the local-trade weight.<sup>11</sup> The results in Table VII remain substantially the same as the main results in Table IV.

## 5.3 Results of subsample analyses

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<sup>11</sup> We thank one reviewer for making this excellent point.

To test the sensitivity of our results, we repeat the main regressions on various subsamples. Table VIII, Panel A shows the regression results when observations from the United States or from countries with fewer than 1000 observations are excluded. Results remain substantially the same as the results in Table IV since the coefficients on *Religiosity* remain significant and consistent with predicted signs. In Table VIII, Panel B, we divide the sample based on whether the country has one or more than one survey data. As shown in Panel B, the religiosity data for most countries are time-variant. Again, we obtain consistent results from these subsample analyses.

#### 5.4 Results using alternative religiosity measures

We test the robustness of our results to alternative measures of religiosity. In Table IX, we report the results using a simple average of the three variables, including *Belief*, *Important* and *Attend* (McGuire et al., 2012), as well as each of the three components of religiosity. Most of the alternative measures of religiosity remain significantly associated with the proxies of trade credit use with the only exception by the variable *Attend*, which is negatively yet insignificantly associated with both measures of trade credit use.

Moreover, we test the role of different religious beliefs on trade credit use. We use the same religious adherence variables as in the 2SLS regressions. Results in Table X reveal that different religious adherences exhibit varying influence on trade credit use. Specifically, we find that the coefficients on both *Catholic* and *Orthodox* are negative and significant at the 1% levels when *ARTurnover* is the dependent variable, which is consistent with the notion that these religious customers are risk averse and Catholic and Orthodox suppliers are willing to offer trade credit (Stulz and Williamson, 2003; Kumar, 2009). In contrast, Jewish and Buddhist adherents

are less dependent on debt and thus are less willing to extend/obtain trade credit (Audretsch et al., 2013). Finally, consistent with Warner et al. (2011), and Baele et al. (2014), customers adhering to Muslim and Hindu religions are willing to use trade credit.<sup>12</sup> Overall, these results again confirm the effect of religiosity on trade credit use, although there appear to be significant differences across religions.

## **6. Conclusion**

Adopting country- and firm-level data from 53 countries, we find that national religiosity is an important driver for the cross-country variations of trade credit use. Specifically, after controlling for firm- and country-level factors as well as industry and year effects, we show that trade credit use is higher in more religious countries. Moreover, both creditor rights and social trust in a country enhance the positive association between religiosity and trade credit use, while national-level disclosure quality mitigates the aforementioned positive association. These results are robust to alternative measures of religiosity and trade credit use, and potential endogeneity concerns. Overall, our study shows that religiosity, as another extra-legal institution, fosters the prevalence of trade credit for firms that likely face restrictions in formal financing. It is important to note that the effect of religiosity on trade credit use is over and above that of the previously documented country- and firm-level determinants of trade credit use.

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<sup>12</sup> The non-interest-bearing feature makes it acceptable for Muslims to engage in trade credit.

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## Appendix: Variable Definitions

Variable	Description	Data source
<i>Measures of religion/religiosity</i>		
<i>Belief</i>	The proportion of respondents who indicate that they are affiliated with a religion based on the question in the WVS, “ <i>Would you say you are a religious person?</i> ”	World Value Survey
<i>Important</i>	The proportion of respondents who indicate that the religion is important to them based on the question in the WVS, “ <i>How important is religion in your life?</i> ”	World Value Survey
<i>Attend</i>	The proportion of respondents who indicate that they attend religious services more than once a month based on the question in the WVS, “ <i>How often do you attend religious services?</i> ”	World Value Survey
<i>Religiosity</i>	The principal component of the three religiosity variables <i>Belief</i> , <i>Important</i> , and <i>Attend</i> .	
<i>ReligiosityAvg</i>	The average value of the three religiosity variables <i>Belief</i> , <i>Important</i> , and <i>Attend</i> .	
<i>Catholic</i>	The proportion of respondents who indicate that they belong to Catholic based on the question in the WVS, “ <i>Do you belong to a religious denomination? In case you do, answer which one.</i> ”	World Value Survey
<i>Orthodox</i>	The proportion of respondents who indicate that they belong to Orthodox based on the question in the WVS, “ <i>Do you belong to a religious denomination? In case you do, answer which one.</i> ”	World Value Survey
<i>Protestant</i>	The proportion of respondents who indicate that they belong to Protestant based on the question in the WVS, “ <i>Do you belong to a religious denomination? In case you do, answer which one.</i> ”	World Value Survey
<i>OtherChristians</i>	The proportion of respondents who indicate that they belong to Other Christians based on the question in the WVS, “ <i>Do you belong to a religious denomination? In case you do, answer which one.</i> ”	World Value Survey
<i>Jewish</i>	The proportion of respondents who indicate that they belong to Jewish based on the question in the WVS, “ <i>Do you belong to a religious denomination? In case you do, answer which one.</i> ”	World Value Survey
<i>Muslim</i>	The proportion of respondents who indicate that they belong to Muslim based on the question in the WVS, “ <i>Do you belong to a religious denomination? In case you do, answer which one.</i> ”	World Value Survey
<i>Hindu</i>	The proportion of respondents who indicate that they belong to Hindu based on the question in the WVS, “ <i>Do you belong to a religious denomination? In case you do, answer which one.</i> ”	World Value Survey
<i>Buddhist</i>	The proportion of respondents who indicate that they belong to Buddhist based on the question in the WVS, “ <i>Do you belong to a religious denomination? In case you do, answer which one.</i> ”	World Value Survey

“Do you belong to a religious denomination? In case you do, answer which one.”

***Firm-level variables***

<i>AR</i>	Accounts receivable scaled by total assets.	Compustat
<i>ARTurnover</i>	The ratio of total sales over accounts receivable.	Compustat
<i>AP</i>	Accounts payable scaled by total liabilities.	Compustat
<i>Size</i>	Firm size, measured as the natural logarithm of total assets.	Compustat
<i>ROA</i>	Return on assets, measured as the ratio of net income to total assets.	Compustat
<i>NSNFA</i>	The ratio of net sales over net fixed assets.	Compustat
<i>InvTurnover</i>	Inventory turnover, measured as the ratio of total sales over total inventory.	Compustat
<i>Lev</i>	Financial leverage, measured as long-term debt plus debt in current liabilities, and then divided by total assets.	Compustat
<i>Cash</i>	Cash ratio, measured as the sum of cash and short-term investments, and then divided by total assets.	Compustat
<i>SalesGrowth</i>	Sales growth rate, measured as sales revenue minus sales revenue in a previous year, and then divided by sales revenue in a previous year.	Compustat
<i>HHI</i>	Herfindahl index, calculated as the sum of the squared market shares based on firm sales for each industry classified by 3-digit SIC codes.	Compustat

***Country-level variables***

<i>Openness</i>	The sum of exports and imports, then scaled by GDP.	World Development Indicators (2012)
<i>LnGDP</i>	Real GDP per capita, measured as the natural logarithm of GDP per capita in constant 2000 U.S. dollars.	World Development Indicators (2012)
<i>Inflation</i>	The inflation rate of the GDP deflator.	World Development Indicators (2012)
<i>PrivCredit</i>	The ratio of private credit by deposit money banks and other financial institutions to gross domestic product.	World Development Indicators (2012)

<i>GDPGrowth</i>	The growth rate of the real GDP per capita.	World Development Indicators (2012)
<i>CreditorRights</i>	Creditor rights index, which ranges from 0 to 4 and aggregates creditor rights in the following way: (1) the country imposes restrictions, such as creditors' consent or minimum dividends to file for reorganization; (2) secured creditors can gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending the resolution of the reorganization. The index ranges from 0 (weak creditor rights) to 4 (strong creditor rights). Missing values are supplemented with the sample mean.	Djankov et al. (2007)
<i>Disclosure</i>	Index of accounting disclosure quality, which is based on aggregate annual financial statement disclosure scores from the Center for International Financial Analysis and Research (CIFAR, 1995). Five aspects of corporate reporting are considered: (1) financial disclosure intensity, (2) governance disclosure intensity, (3) accounting principles used to measure financial disclosures, (4) timeliness of financial disclosures, and (5) audit quality of financial disclosures. The index ranges between 0 (lowest disclosure) to 1 (highest disclosure). Missing values are supplemented with the sample mean.	CIFAR (1995)
<i>Trust</i>	The proportion of respondents in each country year who agree on the question " <i>Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?</i> "	World Value Survey
<b><i>Additional variables used in the 1<sup>st</sup> stage regression in the 2SLS regressions</i></b>		
<i>StateReligion</i>	An indicator variable that equals 1 for the presence of state religion in 1970, and 0 otherwise.	Durlauf et al. (2012)
<i>RegulationReligion</i>	An indicator variable that equals 1 for the presence of state regulation in religion in 1970, and 0 otherwise.	Durlauf et al. (2012)
<i>Pluralism</i>	Religious pluralism, measured as one minus the Herfindahl index, which is the sum of the squares of the population fractions belonging to each of nine major categories: Buddhist, Catholic, Hindu, Jewish, Muslim, Protestant, other Eastern religions, Orthodox, and other religions.	Barro and McCleary (2003)

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**Table I. Descriptive Statistics of Country- and Firm-Level Characteristics across Sample Countries**

This table presents the mean values of country- and firm-level characteristics across sample countries. The variables are defined in the Appendix.

<i>Country/Region</i>	<i>N</i>	<i>% Religiosity</i>	<i>Belief</i>	<i>Important</i>	<i>Attend</i>	<i>AR-Turnover</i>	<i>AR</i>	<i>Openness</i>	<i>LnGDP</i>	<i>Inflation</i>	<i>Priv-Credit</i>	<i>GDP-Growth</i>	<i>Creditor-Rights</i>	<i>Dislosure</i>	<i>Trust</i>	
Argentina	750	0.30	1.03	0.75	0.87	0.07	6.60	0.19	0.32	8.88	0.16	0.15	0.03	1	0.68	0.73
Australia	4,714	1.89	0.74	0.49	0.69	0.04	10.87	0.18	0.41	10.66	0.04	1.16	0.03	3	0.80	0.90
Bahrain	51	0.02	1.22	0.76	0.97	0.33	9.05	0.12	1.22	9.96	0.02	0.69	0.03	0	0.72	0.93
Brazil	1,981	0.80	1.23	0.85	0.97	0.22	6.35	0.18	0.25	8.88	0.71	0.47	0.04	1	0.56	0.88
Bulgaria	62	0.02	0.87	0.57	0.84	0.01	7.74	0.18	1.12	8.51	0.08	0.50	0.07	2	0.72	0.80
Canada	5,495	2.21	1.01	0.72	0.88	0.07	10.86	0.16	0.73	10.35	0.03	1.47	0.03	1	0.75	0.90
Chile	1,683	0.68	0.99	0.63	0.92	0.08	5.34	0.18	0.66	8.92	0.06	0.80	0.04	2	0.78	0.83
China	22,635	9.10	0.43	0.16	0.53	0.01	9.21	0.17	0.50	7.85	0.04	1.18	0.10	2	0.72	0.97
Colombia	123	0.05	1.07	0.67	0.97	0.13	12.24	0.09	0.36	8.42	0.10	0.41	0.04	0	0.58	0.86
Cyprus	243	0.10	0.99	0.66	0.92	0.05	7.88	0.19	1.07	10.30	0.03	2.47	0.02	0	0.72	0.86
Egypt	179	0.07	1.31	0.94	1.00	0.24	14.08	0.12	0.59	7.28	0.09	0.49	0.06	2	0.72	0.77
Estonia	51	0.02	0.60	0.32	0.65	0.01	16.80	0.13	1.50	9.51	0.03	0.09	0.01	0	0.72	0.94
Finland	791	0.32	0.88	0.57	0.84	0.02	7.40	0.22	0.75	10.48	0.02	0.67	0.04	1	0.83	0.92
France	2,596	1.04	0.73	0.46	0.71	0.02	5.13	0.29	0.54	10.55	0.02	0.84	0.02	0	0.78	0.82
Germany	6,282	2.52	0.64	0.42	0.62	0.01	9.12	0.21	0.70	10.52	0.01	0.98	0.01	3	0.67	0.80
Hong Kong	7,109	2.86	0.69	0.24	0.84	0.05	9.13	0.17	4.06	10.33	0.01	1.61	0.05	4	0.73	0.90
Hungary	110	0.04	0.72	0.47	0.68	0.02	6.69	0.21	1.31	9.16	0.07	0.42	0.03	1	0.72	0.77
India	25,306	10.17	1.11	0.73	0.94	0.18	9.12	0.21	0.41	6.72	0.06	0.41	0.07	2	0.61	0.88
Indonesia	1,895	0.76	1.21	0.73	1.00	0.30	12.12	0.16	0.61	7.06	0.13	0.24	0.05	2	0.72	0.94
Italy	1,031	0.41	1.13	0.85	0.93	0.07	3.52	0.28	0.52	10.46	0.02	0.76	0.01	2	0.66	0.88
Japan	53,168	21.37	0.54	0.22	0.65	0.02	10.14	0.24	0.24	10.49	-0.01	1.93	0.01	2	0.71	0.91
Jordan	701	0.28	1.22	0.87	1.00	0.16	8.22	0.16	1.30	8.02	0.06	0.80	0.06	1	0.72	0.86
Korea	7,026	2.82	0.81	0.33	0.83	0.19	6.92	0.18	0.87	9.85	0.02	1.27	0.04	3	0.68	0.91
Kuwait	156	0.06	1.02	0.66	1.00	0.00	8.80	0.16	0.96	10.66	0.05	0.68	0.02	3	0.72	0.86
Malaysia	6,643	2.67	1.32	0.73	1.00	0.51	6.12	0.21	1.79	8.93	0.05	1.07	0.05	3	0.79	0.93
Mexico	1,445	0.58	1.09	0.72	0.96	0.13	9.40	0.14	0.53	8.85	0.10	0.20	0.03	0	0.71	0.81
Morocco	378	0.15	1.36	0.86	1.00	0.45	3.42	0.37	0.76	7.85	0.02	0.59	0.05	1	0.72	0.84
Netherlands	922	0.37	0.68	0.48	0.60	0.03	8.84	0.21	1.32	10.79	0.02	1.16	0.01	3	0.74	0.90
New Zealand	533	0.21	0.72	0.44	0.68	0.05	14.81	0.16	0.59	10.26	0.03	1.32	0.02	4	0.80	0.93
Nigeria	223	0.09	1.52	0.96	0.99	0.64	15.83	0.17	0.57	7.05	0.28	0.18	0.06	4	0.70	0.92
Norway	589	0.24	0.74	0.43	0.76	0.01	7.47	0.22	0.71	10.82	0.05	0.72	0.03	2	0.75	0.97
Pakistan	1,323	0.53	1.31	0.94	0.99	0.25	19.79	0.14	0.32	6.73	0.13	0.21	0.03	1	0.73	0.85

Peru	731	0.29	1.15	0.82	0.97	0.12	9.09	0.15	0.46	8.08	0.03	0.24	0.05	0	0.72	0.77
Philippines	639	0.26	1.19	0.80	1.00	0.17	9.24	0.15	0.83	7.34	0.05	0.34	0.04	1	0.64	0.94
Poland	2,755	1.11	1.16	0.88	0.96	0.07	6.59	0.26	0.80	9.30	0.03	0.42	0.04	1	0.72	0.91
Qatar	68	0.03	1.19	0.94	1.00	0.00	8.43	0.10	0.92	11.26	0.02	0.43	0.12	0	0.72	0.97
Romania	215	0.09	1.15	0.87	0.97	0.05	7.19	0.17	0.71	8.89	0.11	0.33	0.02	0	0.72	0.85
Russia	931	0.37	0.86	0.59	0.80	0.01	9.64	0.16	0.53	9.08	0.14	0.38	0.04	2	0.72	0.81
Saudi Arabia	117	0.05	1.07	0.64	1.00	0.14	10.94	0.06	0.67	9.07	0.05	0.28	0.04	3	0.72	0.88
Singapore	2,122	0.85	0.95	0.51	0.94	0.12	8.89	0.21	3.69	10.77	0.01	1.04	0.06	3	0.79	0.98
Slovenia	186	0.07	0.86	0.64	0.75	0.02	5.11	0.17	1.25	9.96	0.03	0.67	0.02	3	0.72	0.86
South Africa	2,418	0.97	1.18	0.81	0.97	0.18	8.81	0.24	0.57	8.53	0.07	1.38	0.03	3	0.79	0.91
Spain	1,640	0.66	0.81	0.53	0.75	0.05	5.11	0.23	0.52	10.01	0.03	1.22	0.02	2	0.72	0.85
Sweden	2,697	1.08	0.62	0.32	0.69	0.01	8.12	0.22	0.85	10.76	0.02	1.05	0.02	1	0.83	0.94
Switzerland	1,742	0.70	0.87	0.60	0.78	0.03	7.81	0.19	0.94	10.81	0.01	1.50	0.02	1	0.80	0.90
Thailand	3,366	1.35	0.91	0.34	0.99	0.19	10.28	0.19	1.32	8.33	0.03	1.10	0.04	2	0.66	0.87
Trinidad and Tobago	77	0.03	1.17	0.81	0.98	0.16	10.15	0.16	1.00	9.70	0.07	0.33	0.02	0	0.72	0.88
Tunisia	87	0.03	1.20	0.65	0.99	0.38	8.36	0.21	1.03	8.34	0.04	0.71	0.02	0	0.72	0.75
Turkey	1,578	0.63	1.14	0.79	0.97	0.13	7.90	0.23	0.50	8.92	0.20	0.34	0.04	2	0.58	0.83
U.K.	4,984	2.00	0.78	0.47	0.75	0.07	10.77	0.20	0.55	10.66	0.03	1.66	0.02	4	0.85	0.86
U.S.	65,831	26.46	1.11	0.77	0.93	0.13	14.81	0.17	0.24	10.53	0.02	1.66	0.03	1	0.76	0.92
Venezuela	74	0.03	1.12	0.80	0.95	0.09	6.36	0.11	0.47	8.26	0.34	0.12	-0.01	3	0.72	0.83
Vietnam	372	0.15	0.74	0.38	0.81	0.02	12.60	0.20	1.51	6.90	0.16	0.81	0.06	1	0.72	0.97
Total/Average	248,824	100.0	0.87	0.52	0.81	0.10	10.69	0.20	0.59	9.62	0.03	1.35	0.04	1.84	0.73	0.91

**Table II. Descriptive Statistics of the Variables for the Full Sample**

This table presents the descriptive statistics for the variables used in the main tests. For each variable, we report the mean, standard deviation, 1<sup>st</sup> quantile, median, and 3<sup>rd</sup> quantile. The variables are defined in the Appendix.

Variable	Obs.	Mean	S.D.	Q1	Median	Q3
<b><i>Measures of trade credit use</i></b>						
<i>AR</i>	248,512	0.196	0.137	0.094	0.175	0.271
<i>AR_Turnover</i>	247,644	10.691	19.510	3.647	5.564	8.791
<b><i>Firm-level characteristics</i></b>						
<i>Size</i>	248,824	7.370	3.049	5.107	7.107	9.659
<i>ROA</i>	248,824	-0.005	0.198	-0.002	0.027	0.065
<i>NSNFA</i>	248,824	10.173	22.023	1.885	3.758	8.216
<i>InvTurnover</i>	248,824	11.247	34.623	1.485	2.667	5.849
<i>Lev</i>	248,824	0.236	0.195	0.063	0.212	0.365
<i>Cash</i>	248,824	0.120	0.134	0.027	0.076	0.162
<i>SalesGrowth</i>	248,824	0.192	0.697	-0.030	0.074	0.226
<i>AP</i>	248,824	0.120	0.103	0.046	0.092	0.164
<i>HHI</i>	248,824	0.157	0.201	0.035	0.077	0.187
<b><i>Measure of religiosity</i></b>						
<i>Religiosity</i>	248,824	0.866	0.288	0.564	0.949	1.133
<i>ReligiosityAvg</i>	248,824	0.477	0.162	0.307	0.526	0.626
<i>Belief</i>	248,824	0.521	0.262	0.218	0.556	0.754
<i>Important</i>	248,824	0.808	0.159	0.657	0.875	0.951
<i>Attend</i>	248,824	0.100	0.108	0.017	0.094	0.135
<b><i>Country-level characteristics</i></b>						
<i>Openness</i>	248,824	0.586	0.746	0.232	0.329	0.579
<i>LnGDP</i>	248,824	9.621	1.410	8.732	10.360	10.554
<i>Inflation</i>	248,824	0.033	0.299	0.006	0.021	0.039
<i>PrivCredit</i>	248,824	1.346	0.561	1.028	1.395	1.824
<i>GDPGrowth</i>	248,824	0.038	0.035	0.018	0.033	0.053
<i>CreditorRights</i>	248,119	1.842	0.855	1.000	2.000	2.000
<i>Disclosure</i>	247,288	0.835	0.202	0.800	0.800	1.000
<i>Trust</i>	248,534	0.908	0.046	0.878	0.909	0.945

**Table III. Pairwise Correlation of the Variables for the Full Sample**

This table presents the correlation matrices of the variables used in the main tests. Panel A presents the Pearson correlations among the religiosity measures. Panel B presents the Pearson correlations among the main test variables. The variables are defined in the Appendix. The correlation coefficients in **bold** are statistically significant at the 0.01 levels or better.

**Panel A: Pairwise Correlation of Religiosity Measures**

	<i>Religiosity</i>	<i>ReligiosityAvg</i>	<i>Belief</i>	<i>Important</i>
<i>Religiosity</i>				
<i>ReligiosityAvg</i>	<b>0.99</b>			
<i>Belief</i>	<b>0.97</b>	<b>0.96</b>		
<i>Important</i>	<b>0.95</b>	<b>0.95</b>	<b>0.88</b>	
<i>Attend</i>	<b>0.76</b>	<b>0.77</b>	<b>0.61</b>	<b>0.67</b>



**Panel B: Pairwise Correlation of the Main Test Variables**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
1 <i>ARTurnover</i>	<b>1.00</b>																			
2 <i>AR</i>	<b>-0.37</b>	<b>1.00</b>																		
3 <i>Religiosity</i>	<b>-0.05</b>	<b>0.08</b>	<b>1.00</b>																	
4 <i>Size</i>	<b>-0.03</b>	0.00	<b>-0.44</b>	<b>1.00</b>																
5 <i>ROA</i>	<b>0.04</b>	<b>0.07</b>	<b>-0.05</b>	<b>0.24</b>	<b>1.00</b>															
6 <i>NSNFA</i>	0.01	<b>0.27</b>	0.01	<b>-0.16</b>	<b>-0.02</b>	<b>1.00</b>														
7 <i>InvTurnover</i>	<b>0.04</b>	<b>0.04</b>	<b>-0.03</b>	<b>-0.03</b>	-0.01	<b>0.14</b>	<b>1.00</b>													
8 <i>Lev</i>	<b>0.02</b>	<b>-0.08</b>	<b>0.02</b>	<b>0.18</b>	<b>-0.08</b>	<b>-0.13</b>	<b>-0.04</b>	<b>1.00</b>												
9 <i>Cash</i>	0.00	<b>-0.11</b>	<b>-0.22</b>	<b>-0.11</b>	<b>-0.10</b>	<b>0.14</b>	<b>0.08</b>	<b>-0.36</b>	<b>1.00</b>											
10 <i>SalesGrowth</i>	<b>0.03</b>	<b>-0.02</b>	<b>0.07</b>	<b>-0.10</b>	<b>-0.02</b>	<b>0.05</b>	<b>0.04</b>	<b>-0.03</b>	<b>0.05</b>	<b>1.00</b>										
11 <i>AP</i>	-0.01	<b>0.48</b>	<b>-0.14</b>	<b>0.09</b>	<b>-0.06</b>	<b>0.22</b>	<b>-0.03</b>	<b>-0.05</b>	<b>-0.07</b>	-0.01	<b>1.00</b>									
12 <i>HHI</i>	0.01	<b>-0.04</b>	<b>0.06</b>	0.01	<b>0.04</b>	-0.01	<b>0.05</b>	0.01	<b>-0.10</b>	0.00	<b>-0.03</b>	<b>1.00</b>								
13 <i>Openness</i>	<b>-0.05</b>	<b>-0.02</b>	0.00	<b>-0.07</b>	<b>0.02</b>	<b>0.02</b>	0.01	<b>-0.05</b>	<b>0.05</b>	<b>0.02</b>	<b>-0.06</b>	<b>0.17</b>	<b>1.00</b>							
14 <i>LnGDP</i>	<b>0.06</b>	0.01	<b>-0.15</b>	<b>-0.04</b>	<b>-0.13</b>	<b>0.12</b>	<b>0.07</b>	<b>-0.12</b>	<b>0.14</b>	<b>-0.06</b>	<b>0.02</b>	<b>-0.04</b>	0.00	<b>1.00</b>						
15 <i>Inflation</i>	-0.01	<b>-0.02</b>	<b>0.07</b>	<b>0.02</b>	0.01	-0.01	-0.01	0.00	<b>-0.03</b>	<b>0.04</b>	<b>-0.02</b>	<b>0.07</b>	0.00	<b>-0.09</b>	<b>1.00</b>					
16 <i>PrivCredit</i>	<b>0.06</b>	0.00	<b>-0.38</b>	<b>0.15</b>	<b>-0.09</b>	<b>0.06</b>	<b>0.04</b>	<b>-0.08</b>	<b>0.20</b>	<b>-0.07</b>	<b>0.06</b>	<b>-0.29</b>	<b>-0.11</b>	<b>0.75</b>	<b>-0.09</b>	<b>1.00</b>				
17 <i>GDPGrowth</i>	<b>-0.03</b>	<b>-0.04</b>	<b>0.04</b>	<b>-0.11</b>	<b>0.09</b>	<b>-0.08</b>	<b>-0.06</b>	<b>0.03</b>	-0.01	<b>0.10</b>	<b>-0.03</b>	<b>-0.03</b>	<b>0.14</b>	<b>-0.62</b>	<b>0.04</b>	<b>-0.48</b>	<b>1.00</b>			
18 <i>CreditorRights</i>	<b>-0.07</b>	<b>0.05</b>	<b>-0.35</b>	<b>0.19</b>	<b>0.04</b>	0.00	<b>0.03</b>	0.01	<b>0.05</b>	-0.01	<b>0.03</b>	<b>0.12</b>	<b>0.55</b>	<b>-0.10</b>	<b>-0.02</b>	<b>-0.04</b>	<b>0.09</b>	<b>1.00</b>		
19 <i>Disclosure</i>	<b>0.07</b>	<b>-0.08</b>	<b>0.18</b>	<b>-0.14</b>	<b>-0.09</b>	0.01	-0.01	<b>-0.02</b>	<b>0.04</b>	0.01	<b>-0.07</b>	<b>-0.36</b>	<b>0.09</b>	<b>0.22</b>	<b>-0.09</b>	<b>0.41</b>	-0.01	<b>-0.02</b>	<b>1.00</b>	
20 <i>Trust</i>	<b>0.04</b>	<b>-0.05</b>	<b>-0.15</b>	<b>0.00</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.03</b>	<b>-0.05</b>	<b>0.16</b>	0.01	0.00	<b>-0.26</b>	0.00	<b>0.06</b>	<b>-0.05</b>	<b>0.27</b>	<b>0.18</b>	<b>-0.09</b>	<b>0.32</b>	<b>1.00</b>

**Table IV. The Effect of Religiosity on Trade Credit Use**

This table presents the regression results of religiosity on trade credit use. Columns (1) and (2) use *AR* as the dependent variables, and Columns (3) and (4) use *ARTurnover* as the dependent variables. All variables are defined in the Appendix. P-values based on robust t-statistics with standard errors adjusted for heteroskedasticity and clustering at country and year levels are reported in the parentheses below coefficient estimates. \*\*\*, \*\* and \* indicate that a coefficient is statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

Variable	(1) Dept. Var. = <i>ARTurnover</i>	(2) Dept. Var. = <i>ARTurnover</i>	(3) Dept. Var. = <i>AR</i>	(4) Dept. Var. = <i>AR</i>
<b><i>Religiosity</i></b>	-1.381* (0.088)	-2.409*** (0.002)	0.017*** (0.006)	0.012* (0.069)
<i>Size</i>	-0.283*** (0.000)	-0.286*** (0.000)	-0.007*** (0.000)	-0.006*** (0.000)
<i>ROA</i>	4.131*** (0.000)	4.143*** (0.000)	0.081*** (0.000)	0.081*** (0.000)
<i>NSNFA</i>	0.011* (0.054)	0.011* (0.053)	0.001*** (0.000)	0.001*** (0.000)
<i>InvTurnover</i>	0.013*** (0.000)	0.013*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
<i>Lev</i>	1.136** (0.040)	1.153** (0.038)	-0.025*** (0.000)	-0.025*** (0.000)
<i>Cash</i>	5.217*** (0.000)	5.204*** (0.000)	-0.162*** (0.000)	-0.161*** (0.000)
<i>SalesGrowth</i>	0.782*** (0.000)	0.781*** (0.000)	-0.003*** (0.000)	-0.003*** (0.000)
<i>AP</i>	2.104* (0.066)	2.079* (0.069)	0.517*** (0.000)	0.517*** (0.000)
<i>HHI</i>	-5.456*** (0.000)	-5.425*** (0.000)	0.014*** (0.001)	0.014*** (0.002)
<i>Openness</i>		0.327 (0.517)		0.004 (0.277)
<i>LnGDP</i>		0.883*** (0.001)		-0.008*** (0.000)
<i>Inflation</i>		0.733*** (0.000)		-0.000 (0.864)
<i>PrivCredit</i>		-0.744* (0.071)		-0.005** (0.022)
<i>GDPGrowth</i>		-2.526 (0.127)		0.007 (0.559)
<i>Constant</i>	14.138*** (0.000)	7.014** (0.025)	0.108*** (0.000)	0.188*** (0.000)

Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Observations	242,485	242,485	243,326	243,326
Adjusted R <sup>2</sup>	0.396	0.396	0.442	0.442

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**Table V. The Moderating Effect of Country-Level Characteristics on the Relation between Religiosity and Trade Credit Use**

This table presents the regression results of the moderating effects of country-level characteristics, including disclosure quality, creditor rights, and social trust on the relation between religiosity and trade credit use. In Panel A, the dependent variable is *ARTurnover*; in Panel B, the dependent variable is *AR*. Firm and country characteristics are included in the regressions as in Eq. (1). All variables are defined in the Appendix. P-values based on robust t-statistics with standard errors adjusted for heteroskedasticity and clustering at country and year levels are reported in the parentheses below coefficient estimates. \*\*\*, \*\* and \* indicate that a coefficient is statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

**Panel A: Dept. Var. = *ARTurnover***

Variable	(1) Country Characteristic = <i>Disclosure</i>	(2) Country Characteristic = <i>CreditorRights</i>	(3) Country Characteristic = <i>Trust</i>
<i>Country Characteristic</i> × <i>Religiosity</i>	2.835** (0.017)	-0.317* (0.075)	-4.694* (0.070)
<i>Country Characteristic</i>	-5.823 (0.274)	3.596*** (0.000)	0.807 (0.647)
<i>Religiosity</i>	-2.283** (0.011)	-2.518*** (0.008)	-2.541*** (0.006)
Firm characteristics	Yes	Yes	Yes
Country characteristics	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
Observations	241,008	241,780	242,195
Adjusted R <sup>2</sup>	0.397	0.396	0.397

**Panel B: Dept. Var. = AR**

Variable	(1) Country Characteristic = <i>Disclosure</i>	(2) Country Characteristic = <i>CreditorRights</i>	(3) Country Characteristic = <i>Trust</i>
<b><i>Country Characteristic</i> × <i>Religiosity</i></b>	-0.078*** (0.000)	0.020*** (0.000)	0.098*** (0.000)
<i>Country Characteristic</i>	0.030 (0.355)	0.010* (0.080)	0.002 (0.727)
<i>Religiosity</i>	0.015*** (0.006)	0.003 (0.550)	0.001 (0.985)
Firm characteristics	Yes	Yes	Yes
Country characteristics	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes
Observations	241,790	242,621	242,389
Adjusted R <sup>2</sup>	0.443	0.442	0.443

**Table VI. The Effect of Religiosity on Trade Credit Use – Addressing the Endogeneity Concern**

This table presents the regression results that address the endogeneity concern. Panel A presents the 2-Stage Least Squares regression of religiosity on trade credit use. Column (1) reports the results for the 1<sup>st</sup> stage country-level regression. Columns (2) and (3) report the results for the 2<sup>nd</sup> stage regression using *ARTurnover* and *AR* as the dependent variables, respectively. Panel B reports the regression results based on a country-specific exogenous shock setting. All variables are defined in the Appendix. P-values based on robust t-statistics with standard errors adjusted for heteroskedasticity and clustering at country and year levels are reported in the parentheses below coefficient estimates. \*\*\*, \*\* and \* indicate that a coefficient is statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

**Panel A: 2-Stage Least Squares Regressions**

Variable	Stage 1 Model		Stage 2 Model	
	(1) Dept. Var. = <i>Religiosity</i>	Variable	(2) Dept. Var. = <i>ARTurnover</i>	(3) Dept. Var. = <i>AR</i>
<i>LnGDP</i>	0.020* (0.074)	<i>Religiosity</i>	-5.805*** (0.010)	0.048*** (0.002)
<i>Pluralism</i>	0.660*** (0.000)	<i>Size</i>	-0.299*** (0.000)	-0.006*** (0.000)
<i>StateReligion</i>	-0.281*** (0.000)	<i>ROA</i>	4.207*** (0.000)	0.082*** (0.000)
<i>RegulationReligion</i>	0.104*** (0.002)	<i>NSNFA</i>	0.011* (0.069)	0.001*** (0.000)
<i>Catholic</i>	0.167** (0.049)	<i>InvTurnover</i>	0.013*** (0.000)	0.000*** (0.000)
<i>Jewish</i>	2.775** (0.020)	<i>Lev</i>	1.218** (0.034)	-0.025*** (0.000)
<i>Hindu</i>	0.879*** (0.000)	<i>Cash</i>	5.433*** (0.000)	-0.163*** (0.000)
<i>Buddhist</i>	0.599** (0.018)	<i>SalesGrowth</i>	0.768*** (0.000)	-0.003*** (0.000)
		<i>AP</i>	2.123* (0.074)	0.517*** (0.000)
		<i>HHI</i>	-5.593*** (0.000)	0.015*** (0.001)
		<i>Openness</i>	-1.027** (0.048)	0.021*** (0.000)
		<i>LnGDP</i>	0.432 (0.135)	-0.004* (0.058)
		<i>Inflation</i>	0.711*** (0.000)	0.000 (0.925)
		<i>PrivCredit</i>	-0.569	-0.010***

			(0.173)	(0.000)
		<i>GDPGrowth</i>	-2.000	-0.007
			(0.260)	(0.599)
<i>Constant</i>	0.744***	<i>Constant</i>	3.579	0.200***
	(0.000)		(0.287)	(0.000)
Year FE	Yes		Yes	Yes
Industry FE	No		Yes	Yes
Country FE	Yes		Yes	Yes
Observations	481		228,611	229,447
Adjusted R <sup>2</sup>	0.934		0.401	0.446

**Panel B: Tests utilizing an exogenous shock setting from Bulgaria and Romania**

Variable	(1) Dept. Var. = <i>ARTurnover</i>	(2) Dept. Var. = <i>AR</i>
<b><i>Religiosity</i></b>	-4.005*	0.244*
	(0.089)	(0.060)
Firm characteristics	Yes	Yes
Country characteristics	Yes	Yes
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Observations	277	277
Adjusted R <sup>2</sup>	0.067	0.383

**Table VII. The Effect of Religiosity on Trade Credit Use – Country-Level Regressions**

This table presents the country-level regression results of religiosity on trade credit use. Country-aggregate firm and country characteristics are included in the regressions as in Eq. (1). Both *ARTurnoverTotal* and *ARTotal* are the aggregate values of *ARTurnover* and *AR* in each country. All variables are defined in the Appendix. P-values based on robust t-statistics with standard errors adjusted for heteroskedasticity and clustering at the year level are reported in the parentheses below coefficient estimates. \*\*\*, \*\* and \* indicate that a coefficient is statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

Variable	(1) Dept. Var. = <i>ARTurnoverTotal</i>	(2) Dept. Var. = <i>ARTurnoverTotal</i>	(3) Dept. Var. = <i>ARTotal</i>	(4) Dept. Var. = <i>ARTotal</i>
<b><i>Religiosity</i></b>	-15.350*** (0.000)	-5.001** (0.022)	0.051** (0.028)	0.046** (0.033)
Aggregate firm characteristics	No	Yes	No	Yes
Country characteristics	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Observations	631	631	631	631
Adjusted R <sup>2</sup>	0.256	0.783	0.631	0.827



**Table VIII. The Effect of Religiosity on Trade Credit – Subsample Analyses**

This table presents the regression results of religiosity on trade credit use in various subsamples. All variables are defined in the Appendix. P-values based on robust t-statistics with standard errors adjusted for heteroskedasticity and clustering at country and year levels are reported in the parentheses below coefficient estimates. \*\*\*, \*\* and \* indicate that a coefficient is statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

**Panel A: Subsamples that exclude either U.S. or countries having less than 1,000 observations**

Variable	(1)	(2)	(3)	(4)
	Dept. Var. = <i>ARTurnover</i>	Dept. Var. = <i>ARTurnover</i>	Dept. Var. = <i>AR</i>	Dept. Var. = <i>AR</i>
	Sample with U.S. excluded	Sample with Countries having less than 1,000 observations excluded	Sample with U.S. excluded	Sample with Countries having less than 1,000 observations excluded
<b><i>Religiosity</i></b>	-2.827*** (0.000)	-2.359*** (0.004)	0.017** (0.017)	0.013* (0.064)
Firm characteristics	Yes	Yes	Yes	Yes
Country characteristics	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes
Observations	178,850	233,195	178,982	233,970
Adjusted R <sup>2</sup>	0.301	0.401	0.437	0.443

**Panel B: Subsamples based on countries that were surveyed multiple times or once only**

	(1)	(2)	(3)	(4)
	Dept. Var. = <i>ARTurnover</i>	Dept. Var. = <i>ARTurnover</i>	Dept. Var. = <i>AR</i>	Dept. Var. = <i>AR</i>
Variable	Sample with countries surveyed more than once	Sample with countries surveyed once only	Sample with countries surveyed more than once	Sample with countries surveyed once only
<b><i>Religiosity</i></b>	-2.611*** (0.001)	-3.624*** (0.006)	0.016** (0.012)	0.049*** (0.000)
Firm characteristics	Yes	Yes	Yes	Yes
Country characteristics	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Country fixed effects	Yes	No	Yes	No
Observations	231,280	11,205	232,061	11,265
Adjusted R <sup>2</sup>	0.404	0.061	0.442	0.383

**Table IX. The Effect of Religiosity on Trade Credit Use – Using Alternative Measures of Religiosity**

This table presents the regression results of religiosity on trade credit use using alternative measures of religiosity. The alternative measures include *ReligiosityAvg*, *Belief*, *Important*, and *Attend*. All variables are defined in the Appendix. P-values based on robust t-statistics with standard errors adjusted for heteroskedasticity and clustering at country and year levels are reported in the parentheses below coefficient estimates. \*\*\*, \*\* and \* indicate that a coefficient is statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

Variable	(1) Dept. Var. = <i>ARTurnover</i>	(2) Dept. Var. = <i>ARTurnover</i>	(3) Dept. Var. = <i>ARTurnover</i>	(4) Dept. Var. = <i>ARTurnover</i>	(5) Dept. Var. = <i>AR</i>	(6) Dept. Var. = <i>AR</i>	(7) Dept. Var. = <i>AR</i>	(8) Dept. Var. = <i>AR</i>
<b><i>ReligiosityAvg</i></b>	-3.995*** (0.006)				0.021* (0.079)			
<b><i>Belief</i></b>		-3.089** (0.015)				0.022** (0.030)		
<b><i>Important</i></b>			-4.652*** (0.001)				0.017* (0.051)	
<b><i>Attend</i></b>				-0.115 (0.914)				0.015** (0.036)
<b><i>Constant</i></b>	7.615** (0.015)	7.371** (0.018)	8.438*** (0.009)	7.183** (0.020)	0.253*** (0.000)	0.254*** (0.000)	0.260*** (0.000)	0.255*** (0.000)
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	242,485	242,485	242,485	242,485	243,326	243,326	243,326	243,326
Adjusted R <sup>2</sup>	0.134	0.134	0.134	0.134	0.360	0.360	0.360	0.360

**Table X. The Effect of Different Religious Beliefs on Trade Credit Use**

This table presents the regression results of different religious beliefs on trade credit use. Columns (1) and (2) use *ARTurnover* and *AR* as the dependent variables, respectively. Firm and country characteristics are included in the regressions as in Eq. (1). All variables are defined in the Appendix. P-values based on robust t-statistics with standard errors adjusted for heteroskedasticity and clustering at country and year levels are reported in the parentheses below coefficient estimates. \*\*\*, \*\* and \* indicate that a coefficient is statistically significant at the 0.01, 0.05 and 0.10 levels, respectively.

Variable	(1) Dept. Var. = <i>ARTurnover</i>	(2) Dept. Var. = <i>AR</i>
<i>Catholic</i>	-8.692*** (0.000)	0.045*** (0.000)
<i>Orthodox</i>	-41.066*** (0.000)	0.092 (0.252)
<i>Protestant</i>	-0.416 (0.751)	-0.002 (0.825)
<i>Jewish</i>	34.218*** (0.000)	-0.065 (0.282)
<i>Muslim</i>	-20.940*** (0.000)	-0.097* (0.053)
<i>Hindu</i>	-20.815*** (0.001)	-0.193*** (0.000)
<i>Buddhist</i>	15.565*** (0.000)	0.027 (0.173)
<i>OtherChristians</i>	184.987** (0.023)	1.702** (0.035)
<i>Constant</i>	4.078 (0.197)	0.288*** (0.000)
Firm characteristics	Yes	Yes
Country characteristics	Yes	Yes
Year fixed effects	Yes	Yes
Industry fixed effects	Yes	Yes
Country fixed effects	Yes	Yes
Observations	242,210	243,051
Adjusted R <sup>2</sup>	0.396	0.442