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"And forgive US our debts": Do Christian moralities influence over-indebtedness of individuals?

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‘And Forgive Us Our Debts’: Do Christian Moralities Influence Over-indebtedness of Individuals?

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‘And Forgive Us Our Debts’: Do Christian Moralities Influence Over-indebtedness of Individuals?*

Abstract

This paper analyses whether Christian moralities and rules formed differently by Catholics and Protestants impact the likelihood of households to become over-indebted. We find that over-indebtedness is lower in regions in which Catholics outweigh Protestants, indicating that Catholics’ forgiveness culture and a stricter enforcement of rules by Protestants serve as explanations for our results. Our results provide evidence that religion affects the financial situations of individuals and show that even 500 years after the split between Catholics and Protestants, the differences in the mind-sets of both denominations play an important role for situations of severe financial conditions.

Keywords: over-indebtedness, religion, forgiveness, enforcement

JEL classification: D12, G11, Z12

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1. Introduction

In this paper we focus on individuals' over-indebtedness, i.e., the situation in which a debtor is not able to settle the sum of outstanding debt in the foreseeable future. Over-indebtedness is usually attributed to unemployment, low education, financial illiteracy, or advanced age. We emphasize an additional determining characteristic of over-indebtedness: cultural norms. According to Guiso et al. (2006), culture comprises "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation." Hence, Culture is an important factor in explaining economic growth (see, for example, Guiso et al., 2006; Jiang et al., 2017, and the references therein). In our analysis, we focus on religion as a specific aspect of culture and investigate whether different cultural norms formed by Christian standards of morality affect the likelihood that households will become over-indebted. The role of attitudes towards debtors in severe financial conditions is of general interest. It is important to gain a better understanding of factors that drive individuals to a situation of being over-indebted. Religion and its incorporated attitudes should thereby be regarded as deep parameters with potential time invariance (Becker, 1996, page 16).

Over many centuries, religion has been of great importance in forming rules of behavior and corresponding norms for persons who do not comply with them. While Catholicism is usually characterized by diverse moral standards, indicating a distinct forgiveness culture, Protestants are typically regarded as people for whom rules are important, thus establishing a more distinct enforcement culture. Moreover, handling debt in a responsible manner, i.e., without becoming delinquent and/or ending in (private) insolvency, has constituted a challenge for mankind for many millennia. In Biblical times, for example, questions concerning debt, and arguments about debt, were important aspects of everyday life. In Christian writings, debt is repeatedly associated with guilt and sin, although today it is difficult to believe that being in debt should always be considered equivalent to being a sinner. However, the issue might be of importance in specific adverse cases, i.e., if a debt must be repaid but the debtor is unable to do so. In this situation the debtor has breached a cultural norm and thus is considered a "sinner." A central tenet of organized religion has been to form behavioral rules and corresponding norms for sinners, i.e., persons who do not comply with established rules. Thus, if these rules of morality are influential, they should impact the behavior of persons who find themselves in a situation of being unable to repay a debt.

Important differences exist, however, among the various Christian denominations concerning the issue of grace. Catholicism is characterized by more diverse mores, stemming from the

significant role of the Catholic Church as an institution over time and the traditions generated therefrom, resulting in a fine-tuning of moral standards. The latter is exemplified by Catholic priests, who, within the confines of the confessional, have flexibility in assessing the degree of penalty for a confessed sin. The resulting forgiveness culture contrasts with certain aspects of Protestantism. During the Reformation, Protestants aimed to establish a reduced role for clerical institutions, emphasizing a concentration on original writings. Thus, Protestant moralities tend to be characterized by more uniform standards, care more about rules; a characteristic that is accompanied by a more distinct enforcement culture.

Our results indicate that religious affiliation indeed contributes to individual over-indebtedness, but the effect is opposite for the two denominations. If Catholics outnumber Protestants in a certain region, the proportion of persons who are over-indebted in that area decreases significantly. Our robust findings take a whole range of control variables into account. Our results remain intact for alternative specifications of religion and in instrumental variable regressions, whereby we use distances to important Catholic or Protestant churches and the religion of a territorial lord in 1624 as instruments. We provide evidence that Catholicism reduces the number of persons who are over-indebted, whereas Protestantism exhibits a tendency toward promoting over-indebtedness. Our results corroborate the notion that Catholicism promotes a forgiveness culture, whereas Protestantism leads to an enforcement culture that regards creditor rights more highly (Stulz and Williamson, 2003).

We address studies that investigate general effects between religion and economic outcomes, and contribute to several strands of literature. According to Guiso et al. (2003) and McCleary and Barro (2006), Christianity in general and/or religious beliefs are typically associated with higher economic outcomes such as per capita income and growth. However, studies have also investigated whether (regional) economies that are dominated by a specific Christian denomination perform better or worse in terms of economic outcomes. The working hypothesis for such studies comes from Max Weber's notion that Protestants have a higher appreciation of hard work. Cantoni (2015) investigated predominantly Protestant cities in Germany between 1500 and 1900 and provided evidence that they did not perform better economically than predominantly Catholic cities. In a related study, Becker and Woessmann (2009) come to a different conclusion for Protestant regions in 1871 and find evidence for a specific channel that relates to education. Their conclusion is that the major factor for economic growth is not different work ethics between Protestants and Catholics but the fact that Protestants care more about education and schooling. Since one of Luther's motivations for translating the Bible into common German was that the masses could then understand

the texts by themselves, Protestants' motivation for general education of the population was the major driver for better performance. Moreover, Andersen et al. (2017) show that the Catholic Order of Cistercians, whose most salient feature is austerity in all areas of life, had a long-lasting influence on productivity growth starting in the 13th century in England. The positive effects even remained when the Order was dissolved after 1530, which made it a potential source for Protestant ethics after the Reformation. Our results augment this stream of literature by showing that different religious approaches to dealing with rule enforcement makes the financial situation of households significantly more severe. Given the current debate about household debt and its impact on consumption and economic growth (e.g., Mian et al., 2013), our findings that religion plays a role here are very important for policy makers and regulators.

Another strand of literature deals with the effects of religion on the financial decision-making of households and firms. For example, Renneboog and Spaenjers (2012a,b) find that Catholics in the Netherlands are more risk averse (and therefore are less likely to invest in the stock market), while Protestants seem to make financial decisions with greater responsibility. In a similar vein, Hilary and Hui (2009) find that firms in more religious counties in the United States are less risky, invest less, and achieve lower growth levels. On the other hand, market reactions to new investment announcements are more positive. Related to corporate governance and financing, McGuire et al. (2011) show that financial reporting irregularities and accrual manipulations are less likely in firms located in regions with strong religious social norms. The positive nexus between a more intense religious background and firms' corporate governance also materializes in higher firm credit ratings and lower costs of debt, as shown by Jiang et al. (2017). We add to this literature by showing that religion also plays a role in financial decision-making at the household level and that there are major differences even within Christianity when it comes to a tougher or laxer enforcement of creditor rights and rules.

2. Catholics, Protestants, and too much debt

There is a notable similarity between religious terminology and the language used in finance. In English the word guilt and guilders (a former Dutch currency) is an example. Redemption and Redeemer qualifies as a second example. In German there is a close connection between the word for guilt and that for debt: the former is Schuld and the latter is Schulden. Yet, the notion of debt as something that is worthy of blame is also observable in English religious texts. The Lord's Prayer, of central importance in Christian worship, illustrates this in a clear manner. In the traditional version the text reads: "And forgive us our debts, as we forgive our debtors." In the modern version these lines have changed to: "Forgive us our sins, as we

forgive those who sin against us.”¹ However, these linkages should not come as a surprise. The mention of issues concerning debt might well reflect happenings at the time the Holy Bible, the central source of Christian belief, was written. In this context, Wright (2012, p.347) reports that “Debt was quite a major problem in first-century Palestine.”² Graeber (2011, p.80) states that “[t]he question of debt, and arguments about debt, ran through every aspect of the political life of the time.” Indeed, the Bible contains passages that deal with situations of indebted people. The parable of the unforgiving servant in Mt 18, 23-35 or Lk 7, 41-42 is such an example. Moreover, related to the downside-risk of debt, the issue of usury receives broad attention.³ Ingham (2004, as quoted by Graeber (2011)), notes that words for debt are synonymous with those for sin or guilt in all Indo-European languages. However, of greater significance is the fact that religiously educated people are strongly familiarized with issues of sin and guilt, as the passages from the Lord’s Prayer has shown. Such a religious education is often concurrently accompanied by a calling for grace, which can be understood as a demand for concession toward or forgiveness of a sinner. Of special interest in the economic context, grace can also be defined as a behavior or attitude whereby an exception to a rule is weighted higher than adherence to the rule.

Together with insights from psychology (e.g., Jordan et al., 2015), which show that the awareness of guilt also supports readiness to forgive, these issues raise the question as to whether religiously educated people behave differently if one partner within a financial contract does not comply with a rule.⁴ Of additional importance, however, is the existence of differences regarding grace and salvation between the two main Christian denominations (in Western Europe): Catholicism and Protestantism. Together with differences concerning the role of the church in people’s lives, they offer preconditions that impact economic outcomes. Indeed, the literature provides ample evidence suggesting that, in general, differences between Catholics and Protestants are significant. These differences concern characteristics and behavior such as work ethics, trust, contribution to the public and a good attitude toward private ownership (Traunmuller, 2010; Guiso et al., 2003; Renneboog and Spaenjers, 2012a; Benjamin et al., 2016).⁵ Could such differences also be relevant with respect to

¹ The traditional version stems from King James’ Bible, the modern version goes back to the English Language Liturgical Consultation (1988).

² Josephus (75) in this context gives insights. He writes about the wars against the Jews in 66 AD and reports that rebels burnt the contracts belonging to their creditors to dissolve their obligations for paying their debts. He states that this was done in order to gain the multitude of those who had been debtors, indicating that the group of indebted people had to be large.

³ This is the case in: Exodus 22:25; Psalms 15:5, 54:12; Jeremiah 9.6; Nehemiah 5:11; Deuteronomy 23:19-20.

⁴ Expecting an impact of religion on debt-behavior is not exceptional. Indeed, in its core it seems to have been kind of a common knowledge before. For example, Barro (1999, p.1137) already mentions a causal relationship. Without providing further details or references, he mentions parenthetically that “religious principles are dedicated, in part, toward curbing lavish expenditures and excessive debt.”

⁵ Moreover, Becker and Woessmann (2009) indicate differences in literacy between Catholics and Protestants in Prussia around 1871. However, education today is organized by the state and, hence, the church’s role in literacy is not as dominant.

financial behavior? In the following we provide insights into theological foundations of these differences and derive their potential of having an impact on private over-indebtedness. We provide a graphical overview in Figure 1. Central to Martin Luther's conflict with the Catholic Church was his critique on the selling of indulgences. In the following process of separation from the Catholic Church after 1517, he and other reformers established their basic principles of the Reformation, the four solae: sola gratia, sola fide, solus Christus and sola scriptura.

- Figure 1 about here -

Sola gratia thereby declares that salvation is possible by grace alone. Similarly, sola fide emphasizes the importance of faith in gaining salvation. Both contrast to Catholic views, according for whom, salvation must be gained within a process of becoming sinless. Hence, besides faith, Catholics must accomplish meritorious works (e.g., the fulfillment of the seven sacraments). Protestantism also contains stronger elements of predestination. This difference is illustrated in theological norms such as confession and purgatory, as well as in cultural traditions like carnival. The possibility and duty of oral confession of sins to a priest exists only in the Catholic Church. According to Arrunada (2010) this confession of sins makes moral standards subject to fine-tuning by priests. Often sins are directly forgiven or there are degrees of freedom in negotiating compensatory work. Purgatory, an intermediate state after death, highlights again the need for meritorious works in the process of becoming sinless. Carnival is also a Catholic peculiarity. The reformers regarded fasting and the fasting period as redundant. Thus also the celebration of the preceding carnival, a time often associated to excess and sin, became redundant. These illustrations give indication of more diverse moral standards among Catholics, which can be subsumed under the term "forgiveness culture."

Solus Christus assigns a stronger role to Christ (relative to clerical institutions) as he should be regarded as the only mediator between God and men. Similarly, sola scriptura declares the Bible to be the central reference and attaches to believers the ability to understand the writings. This contrasts to Catholicism, which emphasizes the singular ability of the Catholic Church to interpret the Bible appropriately.

According to Arrunada (2010), Protestantism is hence characterized by a debasement of moral enforcement conducted through the church. This debasement, however, is balanced by a stronger enforcement through legal, rather than moral, institutions. The result is that Protestants care more about rules and emphasize the importance of a legal enforcement culture. There is evidence strengthening the existence and relevance of such different

Christian moralities. Arrunada (2010) examines survey data and shows that Protestants have indeed developed more reliable institutions for legal enforcement and are more willing to spend resources on monitoring and punishing other members of the community. These findings are also in line with a statement by Martin Luther, who argued that: “The world needs a strict, hard, temporal government that will compel and constrain the wicked [. . .] to return what they borrow, even though a Christian ought not to demand it, or even hope to get it back.” (Luther, 1524).

The above considerations result in the following empirically testable hypothesis:

Hypothesis: *Catholic and Protestant affiliation influences over-indebtedness of individuals. The more an area is dominated by Catholicism relative to Protestantism the smaller is the ratio of over-indebted persons.*

We assume that it is mainly the creditor side that drives the findings of an effect of denomination on over-indebtedness. We expect that a debtor who is delinquent (and hence near to or already “de facto” over-indebted) has a higher likelihood of passing the threshold and enter the status of “de jure” over-indebted if the creditor is Protestant. The reason for this is, again, the more distinct familiarization of the Protestant creditor within the enforcement culture, relative to the Catholic forgiveness culture. The fact that the two most important lenders in Germany are by law (savings banks) or by choice (cooperative banks) locally-focused (e.g., Koetter et al., 2018) further supports this creditor channel.

However, the effect could also stem from the debtor side. One possible alternative narrative would then be that a Catholic debtor fears the stigma of being over-indebted more than does a Protestant debtor. Consistent with this narrative we would expect Catholics ex ante to accrue less debt than Protestants. Yet, an examination of micro data from the German Socio-Economic Panel study (SOEP) does not lead to this conclusion. Based on 15,000 observations from 2012, we find that the non-religious have a debt ratio of about 20.3%. The ratio for Protestants is lower with 14.7% and basically equal to the number for Catholics (13.4%).

Another possible effect from the debtor side could stem from anticipation mechanisms. Accordingly, a debtor would rationally optimize the potential forgiveness culture of his creditor. We regard this as unlikely; being over-indebted leads to strong adverse consequences. For example, such a person is marked negatively within the credit reference agencies records, which severely impedes access to future financial contracts (e.g., for a car or real estate). Thus, we strongly assume that all recorded over-indebted persons within our data sample had the intention to avoid being placed in the de jure status of over-indebtedness, but, were somehow hit by a negative shock that put them “over the edge.” We

conclude, that, even though our data do not allow for an exact disentangling, logical considerations indicate that the effect of religious denomination on over-indebtedness is driven mainly by the creditor and less by the debtor side.

3. Data and Methodology

Data. Germany is an ideal region for our research for several reasons. First, the laws on credit and bankruptcy are uniform across all German regions; hence issues that arise in the context of inter-country studies are not of concern. Second, Germany is the homeland of Martin Luther, from whom Protestantism spread around the globe 500 years ago. Third, Germany is a large country with 80 million inhabitants, where freedom of religion is granted under the constitution. Fourth, Protestants, Catholics and others who are non-affiliated with a religious denomination are in roughly equal proportion. Fifth, due to the long tradition of credit reference agencies in Germany, the data on over-indebtedness is solidly founded and reliable.⁶ Sixth, because of its rich religious history, Germany is home to many cathedrals and churches, which we use within our instrumental variable approach. Ideally, we would like to collect information on an individual's (externally defined) state of over-indebtedness and her/his religiosity. Yet, such data, if they exist, are not publicly available. The only source of which we are aware that provides data on religiosity on an individual level in Germany is the German Socio-Economic Panel (SOEP). However, since this source does not provide information on over-indebtedness, the SOEP has not been used in this study. Instead we conduct our analysis at the most disaggregated level where both data on over-indebtedness and data on religiosity were available in 2011, i.e., the 402 German counties. This is in line with previous studies on economic effects of religiosity using either country or state data (Lipford et al., 1993; Grier, 1997; Porta et al., 1997; Lipford and Tollison, 2003; Acemoglu et al., 2005; McCleary and Barro, 2006) or county data (Hull and Bold, 1995; Hull, 2000; Becker and Woessmann, 2009, 2010; Adhikari and Agrawal, 2016; Spenkuch and Tillmann, 2015).

In the following, we describe our regression framework and the origin and details of the data and their significance in the context of our empirical study. We present descriptive statistics and details for the variables in Table 1.

– Table 1 about here –

Regression analysis. To obtain first insights as to whether a correlation exists between the regional importance of Catholicism relative to that of Protestantism vis-a-vis household

⁶ The credit reference agency source for our data was founded in 1871; the annual publication of over-indebtedness per county goes back to 2006.

over-indebtedness (OI), we run a simple OLS-regression of the difference between Catholics and Protestants per county on the counties' share of over-indebted residents, as expressed in our baseline regression specification:

$$OI_k = \alpha_s + \beta \Delta Religion_k + \sum_m \gamma_m x_{mk} + \varepsilon_k. \quad (1)$$

Main variables. Equation (1) explains the variation of OI, which is the share of over-indebted inhabitants per county k in 2011. The data for our dependent variable come from the credit reference agency Creditreform, which collects micro data on consumer over-indebtedness. Following their definition, over-indebtedness occurs if a debtor is unable to settle the sum of all accounts due for payment in the foreseeable future and no private wealth or credit opportunity is available to cover the outstanding debt (Verband der Vereine Creditreform e.V., 2014). According to this source at least one of the following three criteria must be fulfilled to determine a person as over-indebted. First, the person must be recorded on the official list of debtors (amtliches Schuldnerverzeichnis). This list covers individuals that are serving a prison sentence, affirmation in lieu of oath (Eidesstattliche Versicherung) or who are in private insolvency. Second, the person is indicted in an undisputed private collection case (unstrittiger Inkassofall). Third, sustained delinquencies (nachhaltige Zahlungsstörungen) of private individuals, defined as at least two vain dunning letters (vergebliche Mahnungen) are recorded. The microdata are private; however, within yearly reports the statistics for the counties are reported. Accordingly, the ratio of over-indebted persons relative to the population above 18 years of age is available for each county.

Our main explanatory variable on the right-hand side of Equation (1) is $\Delta Religion$, which measures the differences in the proportion between Catholics and Protestants per county k . Data on religious affiliation is taken from the nationwide census that took place in 2011. Survey participants were asked: "Are you member of one of the following public-law religious societies?" Among the options for answers were "Roman Catholic Church" and "Evangelical Church." The census was only conducted in 2011 and hence does not provide data on religion for other years. Note, that in contrast to McCleary and Barro (2006) our variable for religion is mainly capturing belonging and not believing per se into account.

Controls. Since our main variable of interest $\Delta Religion$ is measured on the county level for our cross section from 2011, we cannot saturate our model with many fixed effects. Therefore, we are left with α_s , which introduces (federal) state effects for 16 states (Bundesländer) to control for any constant differences between the counties that are due to state differences. Those effects

will, for example, capture regional politics, which are also an important factor in our analysis, since it might relate to economic as well as educational policies.

Next, we introduce a battery of m control variables on the county level k (x_{mk}). First, another answer that was available in the census survey from 2011 was “No member of a church,” which we use to construct our control variable for the ratio of non-religious residents (NR). Catholics, Protestants and the non-religious constitute the three big religious groups in Germany. Other religions or denominations, i.e., Jewish (Orthodox or Reform) or Free Evangelicals are of very small number. Muslim was not available as an answer and, hence, believers in Islam might have grouped themselves either in “No member of a church” or “Others.”⁷

We further control for differences that vary on the county level. It is well documented that unemployment, which we measure as the unemployment rate (UR), is a major cause of over-indebtedness. Additionally, we include real GDP per capita (GDP) to test to what degree economic wealth can explain over-indebtedness. We also control for the management of public debt or the need of the local government to issue new debt by introducing debt as a control variable. Debt is the amount of county-level public debt per inhabitant. We also expect that income distribution has a positive effect on over-indebtedness. Specifically, a high number of low-income residents could lead to a higher ratio of debt-troubled people per county. Hence, the numbers of persons earning less than 400 Euros per month, the so-called mini-jobbers, are included as an explanatory variable (Low). We further introduce SE, which indicates the share of people per county who are more inclined to assume credit to, for example, finance an investment on their own. We also include the share of highly qualified people (HQ) to control for the fact that individuals with work skills attained by education are better able to handle financial contracts (Lusardi and Tufano, 2015; Campbell, 2006; Disney and Gathergood, 2013). Verband der Vereine Creditreform e.V. (2014) stresses that divorced people often run into debt problems; hence, their ratio per county is added as another control (Divorced).⁸ Verband der Vereine Creditreform e.V. (2011) states that over-indebtedness among people of middle age and elderly people are declining, whereas there is a tendency for greater over-indebtedness among young people. The occurrence of demographic effects on household finance is also acknowledged by Campbell (2006). Thus, we included Age as an explanatory variable. Verband der Vereine Creditreform e.V. (2014) also reports that women

⁷ Muslim was not available as an answer in 2011 as there was no nation-wide religious Muslim organization that was accepted by the state as a public-law religious society.

⁸ However, divorce is itself influenced by religion. In the Catholic Church marriage (matrimony) is one of the seven sacraments, which distinguishes it from the Protestant Church. Statistics show that Catholics are less likely to be divorced than Protestants.

have a lower likelihood than men of becoming over-indebted. Therefore, we include the variable *Women* as the ratio of women per county in the regression. Furthermore, as emphasized by Gali (1994), the situation of persons in relationships influences consumption behavior. Therefore, peer effects can provoke incentives to consume more expensive products to keep up with persons close to oneself. The more urban an area is, the more consumption possibilities exist. Moreover, the greater the density of population, the more opportunities there are to be acquainted with people of different consumption behaviors and living styles, which can, in turn, induce a stronger desire to consume a wider spectrum or higher quality of products. Our regression model thus incorporates urbanization-dummies to identify whether the area is a major city, an urban county, a rural county with agglomerations or only sparsely populated. Finally, historical events, such as the former division into East and West Germany, might have still an effect both on religion and on consumption behavior. Therefore, we include a dummy variable (*East*) that separates data between Western and Eastern Germany.

4. Correlation Analysis

Main results. Table 2 shows our baseline results for OLS regressions of Equation (1). Our sample is based throughout on the 402 counties available to us; however, we consider a different setup for our regressions in Columns (1) and (2), as opposed to our baseline setup from Equation (1) in Columns (3) to (5).

– Table 2 about here –

We start with Column (1), which shows regression results when we augment our cross section from 2011 with data from the period 2008-2010. To do that, we use the value from 2011 for $\Delta\text{Religion}$, *NR*, and *Divorced*, since we only have information from 2011 for these variables. In detail, Column (1) show regression results when using $\Delta\text{Religion}$ and state and year fixed effects on the right-hand side. Note that we cluster the standard errors on the county level in all our regressions. The simple regression in Column (1) depicts a highly significant negative effect for our main variable of interest. It states that if (the proportion of) Catholics outnumber (the proportion of) Protestants by an additional 13.5 percentage points (roughly one half of the standard deviation of $\Delta\text{Religion}$), then the proportion of over-indebted persons in this county decreases by 0.21 percentage points, which mirrors a decrease of 8 percent in the standard deviation of the over-indebtedness ratio. This result is thus in line with our deliberations and the resulting hypothesis, presented above in Section 2, indicates that a dominance of Catholics over Protestants in a region makes individuals' over-indebtedness less likely.

The regression in Column (1) also comprises federal state and year fixed effects, and can explain 47 percent of the variation in the per-county proportion of over-indebted persons. However, it is clear that many inter-county differences also affect this ratio. Thereby, Column (2) adds all other control variables to our regression framework. Importantly, we find that out main effect of $\Delta\text{Religion}$ stays negative and significant. Furthermore, the explanatory power of Column (2) is high, with an r-squared of about 86 percent.

As stated above, we have data for $\Delta\text{Religion}$ only for 2011. Therefore, we turn to the cross-section of 2011 in Column (3). We find that, when we use only variables for 2011 and additional state fixed effects, our regression can still explain 85 percent of the variation in the proportion of over-indebted persons. This result is almost equal to the value from Column (2) and indicates that we do not lose much power in going from data that cover the period 2008-2011 to the cross section of 2011. Moreover, Column (3) also shows that the impact of $\Delta\text{Religion}$ remains negative and significant and is again comparable in size to the coefficient from Column (2). Furthermore, most of the control variables in Column (3) come out as expected. For the non-religious proportion, we find a non-statistically significant relation. Furthermore, the higher the number of unemployed and/or low-qualified persons per county, the higher is the share of over-indebtedness. The ratio of highly-qualified persons, or, average age and the ratio of women, in turn, have a negative and significant impact in our regression. The effect of GDP, public debt, low-income and self-employed persons, however, turns out to be insignificant. We also find that counties characterized as urban, rural, and sparsely populated have significantly fewer over-indebted inhabitants than those classified as major cities. Lastly, the coefficient for Eastern Germany is insignificant, showing that there is no additional effect from the division into Eastern versus Western German counties.

A control variable that deserves special emphasis is the ratio of divorced persons per county. It is known that becoming divorced is often connected with facing adverse financial situations, which is well reflected in our analysis given that the variable turns out positive and highly significant. However, there is also the issue that Catholics have a lower probability of being divorced than Protestants, most likely because marriage (matrimony) is one of the seven sacraments in the Catholic Church.⁹ Protestant Church, on the other hand, has only three sacraments and marriage is not one of them. A statistical pattern in line with these explanations is that there is a strong statistically and highly significant negative correlation (about -0.32) between the relative dominance of Catholicism in an area and the ratio of divorced persons. Hence, it must be stressed that part of the effect that runs from the

⁹ A sacrament is a Christian rite recognized as being of accentuated importance and significance.

wedge between Catholics and Protestants on over-indebtedness is captured by Divorce. In our view, thus, the effect of $\Delta\text{Religion}$ must be understood as measuring the lower bound of the aggregate effect of local denomination on over-indebtedness.

How big is the effect of $\Delta\text{Religion}$ in terms of economic significance in our baseline setup? If we increase $\Delta\text{Religion}$ by half the standard deviation (13.5 percentage points), we find that the ratio of indebted-persons decreases by 0.07 percentage points, which accounts for only 2.7 percent of the standard deviation of this ratio. However, more importantly, we must evaluate these effects in contrast to the other variables in the regression. Therefore, in Table 3, we provide standardized beta coefficients for the regression in Column (3) of Table 2. For this regression, we subtract from each variable the sample mean of the variable from 2011 and divide it by the corresponding standard deviation. We find that the effect of $\Delta\text{Religion}$ is as important as the effect of the Women ratio, but accounts for only 14 percent of the effect of the two most important variables: the unemployment rate and the divorce ratio. In conclusion, the coefficients show that different Christian moral standards and rules are important factors for personal finance. However, the economic effects of factors such as unemployment and divorce, which have very significant effects on an individual's personal life, are still larger.

– Table 3 about here –

The last two columns of Table 2 show that our main effect remains significant when we use different subsets of our control variables. Both regressions again show that we capture around 75 to 80 percent of the distribution of the share of indebted persons per county and indicate that our results do not hinge on a specific set of control variables. We also find that, in a regression without control variables and any fixed effects, with $\Delta\text{Religion}$ being the only explanatory variable, the r-squared is 15 percent.¹⁰ This result corroborates our conjecture that religious differences are an important variable, because they already explain 18 percent (15/85) of the explained variation of over-indebtedness of households in our main regression.

Alternative definitions of religion and channels. This section examines whether our main findings are robust to alternative specifications of including and measuring religion. First, we test whether a looser definition of local denomination can still replicate our main findings. Accordingly, we use first a dummy variable that equals one if Catholics outnumber Protestants and zero otherwise. Column (1) in Table 4 reveals the robustness of this simplification. If a county has a Catholic majority, then, on average the ratio of over-indebted

¹⁰ Results will be provided upon request.

person decreases by 0.34 percentage points. Next, we disentangle $\Delta\text{Religion}$ into its components by using the pure share of Catholics (Column 2) or Protestants (Column 3) instead. The results in Columns (2) and (3) confirm the findings that local Catholicism is correlated with lower over-indebtedness, whereas Protestantism has a tendency to promote over-indebtedness. This is an important finding, since it directly relates to our discussion of the different mores of Catholics and Protestants in Section 2. Thereby, our results corroborate our conjectures, that i) Catholics, as opposed to Protestants, operate in a “forgiveness culture,” which makes them more likely to forgive debt before the debtor becomes delinquent, and ii) that Protestants believe more in rules and the enforcement thereof, which make them tougher on debtors. Which religious denomination has better economic outcomes is not within the scope of our paper. However, Cantoni (2015) does not find evidence that Protestant cities in Germany showed higher economic growth than Catholic ones between 1500 and 1900. In contrast, Becker and Woessmann (2009) find evidence that Protestant regions in 1871 were economically more successful than their Catholic counterparts. Becker and Woessmann (2009) explain this disparity in terms of different levels of education, since Protestant regions supported schooling for the general population much earlier. They conclude, therefore, that it is not differences in beliefs between Catholicism and Protestantism, but the Protestant stance in favor of more modern thinking towards education that made those regions fare better economically. Since we can assume that basic education standards are similar for all regions in Germany in 2011, our results add to the literature the fact that differences between the two major Christian denominations that shape the behavior of their respective members towards debt (and sins) still impact the daily financial life of individuals, in addition to all the other sociology-economic factors (including education) in our regression.

Our results also address some issues related to the discussion as to whether different degrees of risk aversion can be observed between Catholics and Protestants. The evidence in the literature, however, is mixed. Renneboog and Spaenjers (2012a) find evidence for the Netherlands that Catholic households are less likely to invest in stocks and are more risk-averse. Kumar et al. (2011) and Shu et al. (2012), in turn, find for the United States that Catholics (or firms in Catholic regions) exhibit less risk aversion than do Protestants. The issue can also be regarded in relation to the theological considerations discussed above in Section 2. Under such conditions, we would expect that Catholics would be less risk-averse and, hence, end up being more over-indebted than Protestants since they tend to have more diverse moral standards. However, our results show the opposite effects, thus indicating that creditor risk aversion is either not existent or is massively outweighed by the Catholic debtor forgiveness culture.

Another issue concerns the definition and measurement of the followers of Protestantism per county. In Germany, the vast majority of Protestants are affiliated with the Evangelische Kirche; however, some Protestants belong to the Evangelical Free Churches. Their number is rather small (0.78 percent on average per county) and their followers are spread heterogeneously across the country. Consistent with our approach to tackle endogeneity, which we discuss in the following section, we do not consider the members of this branch of Protestantism explicitly in our baseline regression setup, but it is still necessary to examine whether or not Evangelical Free Church membership impacts our findings. Column (4) shows that the effect of Protestantism is basically unchanged if they are included in the measurement of it.

– Table 4 about here –

History reveals a further issue about religion in Germany that deserves additional attention: The post-World War II division into East and West and its consequences. From 1945 and 1990, the role and development of the Catholic and Protestant Churches greatly diverged between West Germany (i.e., the Federal Republic of Germany [FRG]) and East Germany (i.e., the German Democratic Republic [GDR]). Many Christians were opponents of the Nazi regime and reduced their political activities during that period. Since the war, Christian institutions have played a big role in reestablishing democracy in the FRG. Religion has also been positively referenced in the constitution, and the state established a service to collect obligatory church taxes. Thereby, for example Barro and McCleary (2005) consider Germany as having a state religion. Many social institutions such as hospitals, kindergartens, and schools have been run by religious institutions. In the GDR, however, the situation was totally different. The communist regime fought against religious institutions in many ways, and there is less religious pluralism (Barro et al., 2010) and fewer persons with religious affiliation in the areas of the former GDR compared to those within the boundaries of the former FRG. We hypothesize that the effect of local church membership should be more prevalent in the area of the former FRG, since local social capital should there have been more influenced by the inhabitants' respective religious attitudes.

To conduct a further analysis, we introduce the interaction between $\Delta\text{Religion}$ and the dummy variable East. We find in Column (1) of Table 5 that the coefficient of the single term $\Delta\text{Religion}$ remains negative and significant, whereas the interaction term with East is negative but insignificant. This result shows that the effect of our religion variable on over-indebted households is significant for counties in West Germany. At the bottom of Table 5, we also provide the effect for counties in East Germany as well, where we find a negative

effect that is not significant. In addition to the non-significant interaction effects, this result tells us that, on a statistical basis, there is no difference between East and West German counties. However, three factors may explain why we are not able to find significant effects for East German counties. First, the general lower rate of religious affiliation in the East makes a measurement that already takes place on the county level more likely to blur. Moreover, since only 13 percent of German counties are located in the former GDR, a statistical analysis is less precise. Second, a less diversified religious affiliation pattern in the East is especially marked by the dominating strong unimportance of Catholicism in nearly all counties. Third, the previous argument is amplified by the fact that our regression setup constitutes a within-state, between-county analysis. Since the 76 counties in the East are located within six states, exogenous variation might be less distinct.

– Table 5 about here –

Column (2) of Table 5 checks whether our results are driven by counties with a larger proportion of older people. We therefore include the interaction between $\Delta\text{Religion}$ and the dummy variable Age (D), which is 1 for counties that are above the median of the distribution of age over all counties in 2011, and zero otherwise. This channel is motivated by the observation that younger generations in modern societies are less likely to be affiliated with religious organizations. The interaction between the age dummy and our religion variable reveals that counties with higher proportions of older inhabitants are those that drive the negative effect of the difference between Catholics and Protestants on over-indebted households. The single term of $\Delta\text{Religion}$ turns insignificant and the interaction term shows that the difference in the effect between “younger” and “older” counties is significant. Taken at face value, our results here imply that the financial-discipline effect from a dominance of Catholics in German counties decreases with the loss of a significant number of older (more mature) residents. Additionally, in Column (3) of Table 5 we contrast our main effect of $\Delta\text{Religion}$ for counties that include major cities or that are urban (Urban (D) equals one) with counties that are rural or sparsely populated (Urban (D) equals zero). This exercise also touches upon the discussion as to whether there are feedback effects from the economy to religious participation and controls more strongly for potential interaction between both. As an example, Gruber and Hungerman (2008) find that when U.S. states allowed for more retail activity on Sundays, church attendance and donations as well as spending decreased significantly.¹¹ We find that, first, the effect for more urban counties remains negative but turns insignificant; second, that the effect for more rural areas is negative and significant;

¹¹ They also show that drug abuse and heavy drinking of affected individuals increased due to the change in law.

and third, that the difference in the effects between both types of counties is not significant. This result tells us that we are more likely to find a burden-lifting effect from Catholicism in more rural areas, which is not surprising since, religious affiliations and traditions in such areas very likely play a more important role than in cities and urban areas, where other set of rules are potentially more dominant and outweigh the role of religious affiliation.

5. Instrumental Variable Regression

Instruments and methodology. In this section we conduct further analyses in which we apply instrumental variables in the vein of McCleary and Barro (2006), Spenkuch (2017), and Cantoni (2012) to approach two central threats to the internal validity of our research design. The first issue we address is a potential simultaneity bias: Not only might religious affiliation influence over-indebtedness, but being over-indebted might impact an individual's choice of religious affiliation (or lack thereof) for several reasons. Since being over-indebted leads to many and very severe complex problems causing stress and frustration.¹² Second, an omitted variable bias might be present. A decision not to join a religious denomination and the situation of being over-indebted might be caused by inability (or unwillingness) to adjust to rules, be they formal or informal. The latter would constitute a factor that should be expected to be correlated with religion. However, it is unobserved and is difficult to measure.¹³

To account for the endogeneity problem and to eliminate the resulting bias, we use an instrumental variable approach. To qualify as valid, the instruments are expected to fulfill the two conditions of relevance and exogeneity. Accordingly, we use variables that have explanatory power for the proportion of persons with religious affiliation across German counties in the year 2011 and are not influenced by over-indebtedness of the same year. We use two types of instruments, one that derives from history and one that makes use of geography. The first instrument is the religion of a territorial lord in 1624, which was originally introduced by Spenkuch (2017).¹⁴ The background is as follows. The beginning of the Reformation by Luther in 1517 led to increasing conflicts between territorial lords, their inhabitants and among both groups. Therefore, in 1555 an Imperial Diet in Augsburg was organized that led to the Peace of Augsburg. Concerning religion, two resolutions were

¹² A further argument for reverse causality can be made from a macroeconomic perspective. According to the theory of secularization, the importance of religion decreases with economic development (Hoehener and Schaltegger, 2012). Hence, under the assumption that economic development is correlated with financial intermediation, areas with higher credit interactions would exhibit looser religious affiliations.

¹³ A further threat to internal validity might exist: error in measurement. In general, the data for religion are regarded to be of good quality, yet they are based on surveys and projections thereof. It might be that religious persons have a diverging probability of being sampled, if they stay at home more or less often. It might also be that affiliates of specific persuasions are less keen to answer questions about religiosity. Therefore, religious affiliation might be measured with error.

¹⁴ It has also been applied by Spenkuch and Tillmann (2015).

crucial: the *ius reformandi* and the *ius emigrandi*. The first one established the principle “*Cuius regio, eius religio*,” which decreed that the religion of territorial lord was the official religion in his state and hence of all its inhabitants. The second resolution gave each inhabitant of a different religion the right to emigrate. Consequently, the unity of religion within individual regions was strengthened, while at the same time a religious fragmentation of the German Lands took place (Spenkuch, 2017). Yet, the Thirty Years’ War (1618-1648) led to area conquests and losses and hence to shifts of borders. To establish stability and a new status quo, the Peace of Westphalia was signed in 1648. It defined Catholic and Protestant territories according to the situation that prevailed in 1624. A geographical overview of the situation around that time is given in Figure 2. It depicts the religion of territorial lords in 1624 mapped onto German counties of 2011. Counties are either classified as Catholic, Protestant, or as mixed if composed of former territories of non-uniform religion.

– Figure 2 about here –

According to Cantoni (2012) the following decades saw no denominational changes for the vast majority of the territories; hence the status of religion of a territorial lord was predominantly the same.¹⁵ Thus, reflecting the fact that religion is often “inherited” from parents, it is reasonable to expect that the religion of a territorial lord in 1624 still influences the current proportion of Protestants and Catholics across German counties, which classifies the instrument as potentially relevant. Cantoni (2012) again provides insights regarding the exogeneity of the instrument. He shows that neither commercial activity, nor wealth, nor strength of a territory (factors that would be candidates for omitted variables) predicted whether a territory adopted the Reformation. In our later analysis, we use Protestant 1624, which is a dummy variable indicating whether the region’s religion in 1624 was Protestant.

The instrument described above has one potential shortcoming, however. It has only two main parameter values (Catholic and Protestant), whereas the proportion of religious people of the different denominations is a continuous variable ranging from low to very high percentages. Therefore, we use a second instrument that has a wider range of parameter values. This instrument is distance to important churches. Its choice reflects and combines the ideas of Becker and Woessmann (2009) and Falck et al. (2011), and Cantoni (2012). For

¹⁵ Further, Barro and McCleary (2016) investigate one potential source of competition between religions: saint-making. They document that in terms of saint-making there was not much of competition between Catholics and Protestants at that time. Also, the Peace of Westphalia brought not much of a change here which further corroborates that our instruments do not hinge on a particular year after the Peace of Westphalia.

example, Becker and Woessmann (2009) used the distance to Wittenberg as an instrument for Protestantism in nineteenth-century Prussia. They argue that the Reformation spread concentrically around the place where Luther proclaimed his 95 Theses. As main reasons for a circular dispersion around the religious center, they cite the costs of traveling and of information diffusion through geographical space. Accordingly, “there is a tendency for the impact to diminish with distance” and “the propensity to come to Wittenberg to listen to Luther and his successors likely declined with distance to Wittenberg” (Becker and Woessmann, 2009, p.557-558). However, political developments in the following centuries, especially the division of Germany after World War II, led to a hindered accessibility and declining importance of Wittenberg for the spread of Protestantism.¹⁶ However, there are other religious centers that play an outstanding role for the dispersion of belief: cathedrals and churches. Each municipality is home to a church; however, their relative importance varies, depending on the historical significance of a specific church, the dimensions of the parish, and the quality of its leaders. Some have gained special attention in terms of attendance numbers at worship services, of size, and/or dedicated staff. These important churches have played a crucial and persistent role when it comes to spreading and renewing belief. Indeed, the importance might be valid both spiritually and administratively.

We apply four, non-mutually exclusive criteria to determine whether a church qualifies as important. We characterize a church as important if it is named Dom, Muenster, cathedral, or a bishop sermon church. Applying these criteria yields a list of 110 Catholic churches and 89 Protestant churches, which we list in Tables OA1 and OA2 in the Online Appendix, and where we also provide more details concerning the matching of churches to specific counties. Figure 3 maps the municipalities that are home important churches.

– Figure 3 about here –

Following the argumentation of Becker and Woessmann (2009), we argue that there is a tendency for the importance to diminish with geographical distance. Accordingly, areas for which the distance to an important church is high should experience a lower share of persons bring affiliated to the corresponding denomination. Concerning the computation of the distances, we follow Falck et al. (2011), who were interested in the topic of each German county’s distance to the nearest opera house. Following their procedure, three steps are required. First, by using latitude and longitude data, each county’s geographical center is

¹⁶ This is reflected in the fact that Wittenberg County, with a 19.3 % share of Protestants, ranked only 274 of all 402 German counties in 2011. We received a comment to nevertheless test the explanatory power of distance to Wittenberg for present-day Protestantism. The coefficient turns out statistically insignificant thus affirming its declining importance.

determined, after which the distance in kilometers to the closest important church can be derived.¹⁷ Finally, the distance of counties that are home to an important church is defined as zero. We report statistics of the computation at the bottom of Figure 4.

– Figure 4 about here –

We use the information from Figure 4 to calculate Distance Protestant and Distance Catholic which represent the county's distance to the closest important Protestant or Catholic Church, respectively. The instruments allow us to establish our new regression setup.

$$\begin{aligned} 1st\ stage: \Delta Religion_k &= \delta_1 Protestant\ 1624_k + \delta_2 Distant\ Protestant_k + \delta_3 Distant\ Catholic_k \\ &+ \alpha_s + \sum_m \gamma_m x_{mk} + \xi_k \end{aligned} \quad (2)$$

$$2nd\ stage: OI_k = \alpha_s + \lambda \widehat{\Delta Religion}_k + \sum_m \gamma_m x_{mk} + \varrho_k$$

The first stage in Equation (2) aims to partial out any endogenous variation in $\Delta Religion$, since it is only explained by the three instruments and the other k control variables. To recap, the three instruments are: 1) a dummy for whether the religion of a territorial lord in 1624 was Protestant; 2) the county's geographical distance to the closest important Protestant church; and 3) the county's geographical distance to the closest important Catholic Church. $\Delta Religion$ in the second stage is the predicted version of $\Delta Religion$ from the first stage, which makes λ our coefficient of interest here. We again control for state fixed effects in our regression.

Results. Column (1) of Table 6 presents the results for the regression framework from Equation (2) with all three instruments. We find that the effect of $\Delta Religion$ on over-indebtedness is again negative and significant, indicating that a larger dominance of Catholics over Protestants leads to fewer over-indebted households. In terms of economic importance, the effect is larger than in the simple OLS regression from Table 2, Column (3). Again, our results indicate that, if Catholics outweigh Protestants by 13.5 percentage points, the share of over-indebted people decreases by 0.1 percentage points. Importantly, the instruments turn out to be significant, which indicates their relevancy. In terms of direction, they show that if a regional lord in 1624 was Protestant, the proportion of Catholic inhabitants of a county today is, on average, 34 percentage points lower than that

¹⁷ An exemplary graphical illustration of the procedure is presented in Figure OA1 in the Online Appendix.

of Protestants. Additionally, for each kilometer a county's distance to the closest important Protestant church increases, $\Delta\text{Religion}$ becomes larger by around 0.20 percentage points. Also, for each kilometer a county's distance to the closest important Catholic Church increases, $\Delta\text{Religion}$ drops by around 0.24 percentage points. Thereby, all three instruments are valid, since they show that if a region was Protestant around 400 years ago, the county is still more likely to be dominated by Protestants. Further, distances to important churches make the share of the respective religious groups smaller (and thereby the wedge between both smaller and larger groups, respectively). In terms of regression diagnostics, the p-value of the Hansen test indicates that we cannot reject the null hypothesis of the validity of the over-identifying restrictions, which supports our belief that the instruments are valid and exogenous. Moreover, the F-statistics are far above ten, affirming that the instruments are not weak. Furthermore, the corresponding p-values of the test of under identification (which examines whether the excluded instruments are correlated with the endogenous regressors) are far below the standard significant a level, the null hypothesis of the equation being under identified, is rejected.

- Table 6 about here -

The remaining two columns of Table 6 check our results for different sets of instruments. In Column (2) we leave out Distance Catholics and in Column (3) we do the same for Distance Protestants. Our results from both columns corroborate our previous findings and show that our results do not hinge on a specific set of instruments.

- Table 7 about here -

In a final robustness check, we rerun the instrumental variable regression from Equation (2) with our set of alternative variables for religious affiliation that we presented in Table 4. Again we find, in Column (1) that using a dummy for Catholic dominance in a county makes over-indebtedness significantly less likely. Similarly, Columns (2) and (3) show that a larger share of Catholics (Protestant) significantly decreases (increases) over-indebtedness. The last column corroborates the findings from Column (3) by showing that our effect remains intact when we add the free evangelical churches to the Protestant proportion. In terms of regression diagnostics, we find, once again, that our setup provides relevant and valid instruments that help to filter out any remaining endogenous variation from the religion variables

7. Conclusion

The strong growth of financial institutions and contracts and their beneficial presence in modern everyday life have been important developments over recent decades. However, an inherent feature of each financial contract is the possibility that a debtor will be unable to provide the promised repayment to the creditor. Recent developments such as global financial and public debt crises indicate that if such situations occur in significant numbers severe economic ramifications are not only possible but likely. It is hence of great importance to examine mechanisms that have the potential to avoid or preclude situations of over-indebtedness *ex ante*. Central to these issues is the development of legal rules and institutions. This paper analyzes an additional, to date less examined factor, i.e., attitudes towards forgiveness and enforcement originating from a cultural (religious) context. More precisely, we exploit the fact that two major Christian denominations in Western Europe, Catholicism and Protestantism, are characterized by disparate attitudes concerning moral standards and the importance assigned to adherence to rules.

Using data for German counties, we find that counties dominated by Catholics have, on average, a lower share of over-indebted households. With even stronger support, we find that the over-indebtedness of households is higher if the proportion of Protestants in a county is larger. Our findings are very robust to many control variables, different definitions of religion and the use of time-invariable factors such as the religious affiliation of local lords in 1624 or within-county distances to important churches.

To conclude, our results indicate that the division between Catholics and Protestants that took place 500 years ago led to major differences in their respective behaviors towards forgiveness, rules, and enforcement, and still plays a significant role today when it comes to dealing with situations of too much debt. Understanding how societies deal with over-indebtedness is an important issue in a time when many developed countries run very high debt ratios. Therefore, policy makers should take deep parameters such as religious imprint into account.

References

- Acemoglu, D., Johnson, S., Robinson, J., 2005.** The rise of Europe: Atlantic trade, institutional change, and economic growth. *American Economic Review*, 546–579.
- Adhikari, B. K., Agrawal, A., 2016.** Does local religiosity matter for bank risk-taking? *Journal of Corporate Finance* 38, 272–293.
- Andersen, T. B., Bentzen, J., Dalgaard, C.-J., Sharp, P., 2017.** Pre-reformation Roots of the Protestant Ethic. *The Economic Journal* 127, 1756–1793.
- Arrumada, B., 2010.** Protestants and Catholics: Similar work ethic, different social ethic. *The Economic Journal* 120, 890–918.
- Barro, R. J., 1999.** Ramsey meets Laibson in the neoclassical growth model. *Quarterly Journal of Economics*, 1125–1152.
- Barro, R., Hwang, J., McCleary, R., 2010.** Religious conversion in 40 countries. *Journal for the Scientific Study of Religion*, 49, 15–36.
- Barro, R. J., McCleary, R. M., 2005.** Which countries have state religions?. *The Quarterly Journal of Economics*, 120, 1331–1370.
- Barro, R. J., McCleary, R. M., 2016.** Saints Marching In, 1590–2012. *Economica*, 83, 385–415.
- Becker, G., 1996.** Preferences and values. Harvard University Press.
- Becker, S. O., Woessmann, L., 2009.** Was Weber wrong? A human capital theory of Protestant economic history. *The Quarterly Journal of Economics* 124, 531–596.
- Becker, S. O., Woessmann, L., 2010.** The effect of Protestantism on education before the industrialization: Evidence from 1816 Prussia. *Economics Letters* 107, 224–228.
- Benjamin, D. J., Choi, J. J., Fisher, G., 2016.** Religious identity and economic behavior. *Review of Economics and Statistics* 98, 617–637.
- Campbell, J. Y., 2006.** Household finance. *The Journal of Finance* 61, 1553–1604.
- Cantoni, D., 2012.** Adopting a New Religion: The Case of Protestantism in 16th Century Germany. *The Economic Journal* 122, 502–531.

- Cantoni, D., 2015.** The economic effects of the Protestant Reformation: Testing the Weber hypothesis in the German Lands. *Journal of the European Economic Association* 13, 561-598.
- Disney, R., Gathergood, J., 2013.** Financial literacy and consumer credit portfolios. *Journal of Banking and Finance* 37, 2246-2254.
- Falck, O., Fritsch, M., Heblich, S., 2011.** The phantom of the opera: Cultural amenities, human capital, and regional economic growth. *Labour Economics* 18, 755-766.
- Gali, J., 1994.** Keeping up with the Joneses: Consumption externalities, portfolio choice, and asset prices. *Journal of Money, Credit and Banking* 26, 1-8.
- Graeber, D., 2011.** *Debt - The First 5,000 Years*. Melville House.
- Grier, R., 1997.** The effect of religion on economic development: a cross national study of 63 former colonies. *Kyklos* 50, 47-62.
- Gruber, J., Hungerman, D. M., 2008.** The church versus the mall: What happens when religion faces increased secular competition? *The Quarterly Journal of Economics* 123, 831-862.
- Guiso, L., Sapienza, P., Zingales, L., 2003.** People's opium? Religion and economic attitudes. *Journal of Monetary Economics* 50, 225-282.
- Guiso, L., Sapienza, P., Zingales, L., 2006.** Does Culture Affect Economic Outcomes? *Journal of Economic Perspective* 20, 23-48.
- Hilary, G., Hui, K. W., 2009.** Does religion matter in corporate decision making in America? *Journal of Financial Economics* 93, 455-473.
- Hoheisel, E., 2015.** Die evangelischen Bischofskirchen in Deutschland. <https://sites.google.com/site/sobottamagdeburg/Home/zusatz-gastbeitraege-von-erwin-hoheisel/evangelische-bischofskirchen-in-deutschland>, retrieved in July 2015.
- Hoehener, J., Schaltegger, C. A., 2012.** Religionsoekonomie: eine Uebersicht. *Perspektiven der Wirtschaftspolitik* 13, 387-406.
- Hull, B. B., 2000.** Religion still matters. *The Journal of Economics* XXVI, 35-48.
- Hull, B. B., Bold, F., 1995.** Preaching matters: replication and extension. *Journal of Economic Behavior & Organization* 27, 143-149.

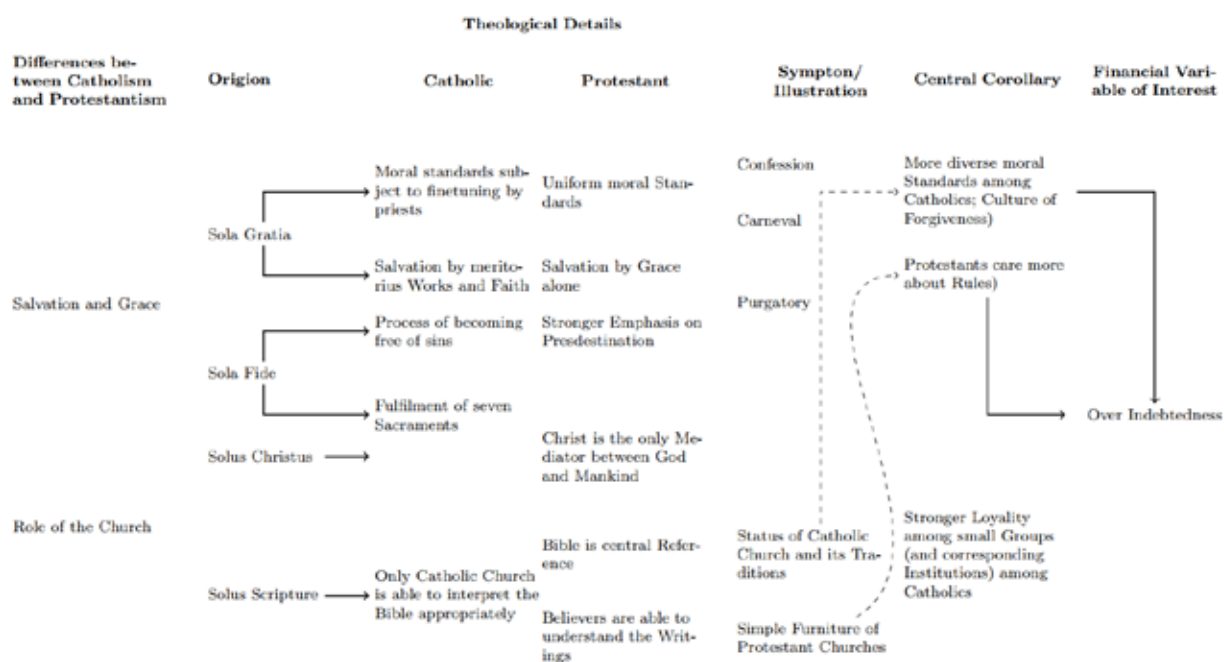
- Imhof, M., Kunz, T., 2008.** Deutschlands Kathedralen: Geschichte und Baugeschichte der Bischofskirchen vom fruehen Christentum bis heute.
- Ingham, G., 2004.** The Nature of Money. Cambridge: Polity Press.
- Jiang, F., John, K., Li, C. W., Qian, Y., 2017.** Earthly reward to the religious: Religiosity and the cost of public and private debt. Journal of Financial and Quantitative Analysis, forthcoming.
- Jordan, J., Flynn, F. J., Cohen, T. R., 2015.** Forgive them for I have sinned: The relationship between guilt and forgiveness of others' transgressions. European Journal of Social Psychology 45, 441–459.
- Josephus, F., 75.** The Wars of the Jews; or The History of the Destruction of Jerusalem.
- Koetter, M., Müller, C., Noth, F., Fritz, B. 2018.** May the Force Be with You: Exit Barriers, Governance Shocks, and Profitability Sclerosis in Banking. Deutsche Bundesbank Discussion Paper No. 49.
- Kumar, A., Page, J. K., Spalt, O. G., 2011.** Religious beliefs, gambling attitudes, and financial market outcomes. Journal of Financial Economics 102, 671–708.
- Lipford, J., McCormick, R. E., Tollison, R. D., 1993.** Preaching matters. Journal of Economic Behavior & Organization 21, 235–250.
- Lipford, J. W., Tollison, R. D., 2003.** Religious participation and income. Journal of Economic Behavior & Organization 51, 249–260.
- Lusardi, A., Tufano, P., 2015.** Debt literacy, financial experiences, and overindebtedness. Journal of Pension Economics and Finance 14, 332–368.
- Luther, M., 1524.** Von Kaufshandlung und Wucher. Dr. Martin Luthers Werke.
- McCleary, R. M., Barro, R. J., 2006.** Religion and economy. The Journal of Economic Perspectives, 49–72.
- McGuire, S. T., Omer, T. C., Sharp, N. Y., 2011.** The impact of religion on financial reporting irregularities. The Accounting Review 87, 645–673.
- Mian, A., Rao, K., Sufi, A., 2013.** Household balance sheets, consumption, and the economic slump. The Quarterly Journal of Economics 128, 1687–1726.
- Porta, R. L., Lopez-De-Silanes, F., Shleifer, A., Vishny, R. W., 1997.** Trust in large organizations. American Economic Review Papers and Proceedings 87, 333–338.

- Renneboog, L., Spaenjers, C., 2012a.** Religion and finance. *Socially Responsible Finance and Investing: Financial Institutions, Corporations, Investors, and Activists*, 143–160.
- Renneboog, L., Spaenjers, C., 2012b.** Religion, economic attitudes, and household finance. *Oxford Economic Papers* 64, 103–127.
- Shu, T., Sulaeman, J., Yeung, P. E., 2012.** Local religious beliefs and mutual fund risk-taking behaviors. *Management Science* 58, 1779–1796.
- Spenkuch, J. L., 2017.** Religion and work: Micro evidence from contemporary Germany. *Journal of Economic Behavior & Organization* 135, 193–214.
- Spenkuch, J. L., Tillmann, P., 2015.** Religion, economics, and the electoral success of the Nazis. MPRA Paper 54909.
- Stulz, R. M., Williamson, R., 2003.** Culture, openness, and finance. *Journal of Financial Economics* 70, 313–349.
- Traunmueller, R., 2010.** Moral communities? Religion as a source of social trust in a multilevel analysis of 97 German regions. *European Sociological Review* 27, 346–363.
- Verband der Vereine Creditreform e.V., 2011.** Schuldner-Atlas Deutschland 2011. Verband der Vereine Creditreform e.V.
- Verband der Vereine Creditreform e.V., 2014.** Schuldner-Atlas Deutschland 2014. Verband der Vereine Creditreform e.V.
- Wikipedia, 2015a.** Dome, Muenster und Kathedralen in deutschsprachigen Laendern.
https://de.wikipedia.org/wiki/Dome,_M%C3%BCnster_und_Kathedralen_in_deutschsprachigen_L%C3%A4ndern, retrieved in January 2018.
- Wikipedia, 2015b.** Liste der Kathedralen in Deutschland.
https://de.wikipedia.org/wiki/Liste_der_Kathedralen_und_Bischofskirchen_in_Deutschland, retrieved in January 2018.
- Wright, T., 2012.** *Jesus and the Victory of God*. Vol. 2. SPCK.

Figures and Tables

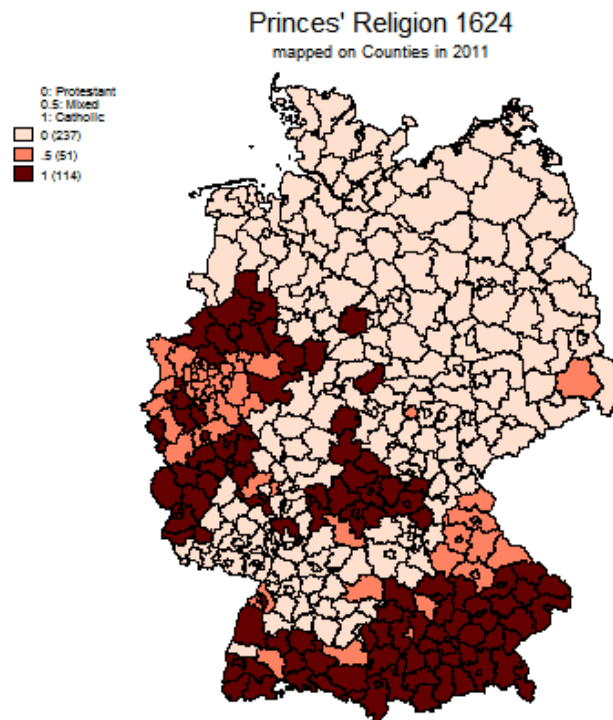
This section provides the figures and table mentioned in the main text.

Figure 1: Differences between Catholicism and Protestantism and Effects on Over-Indebtedness



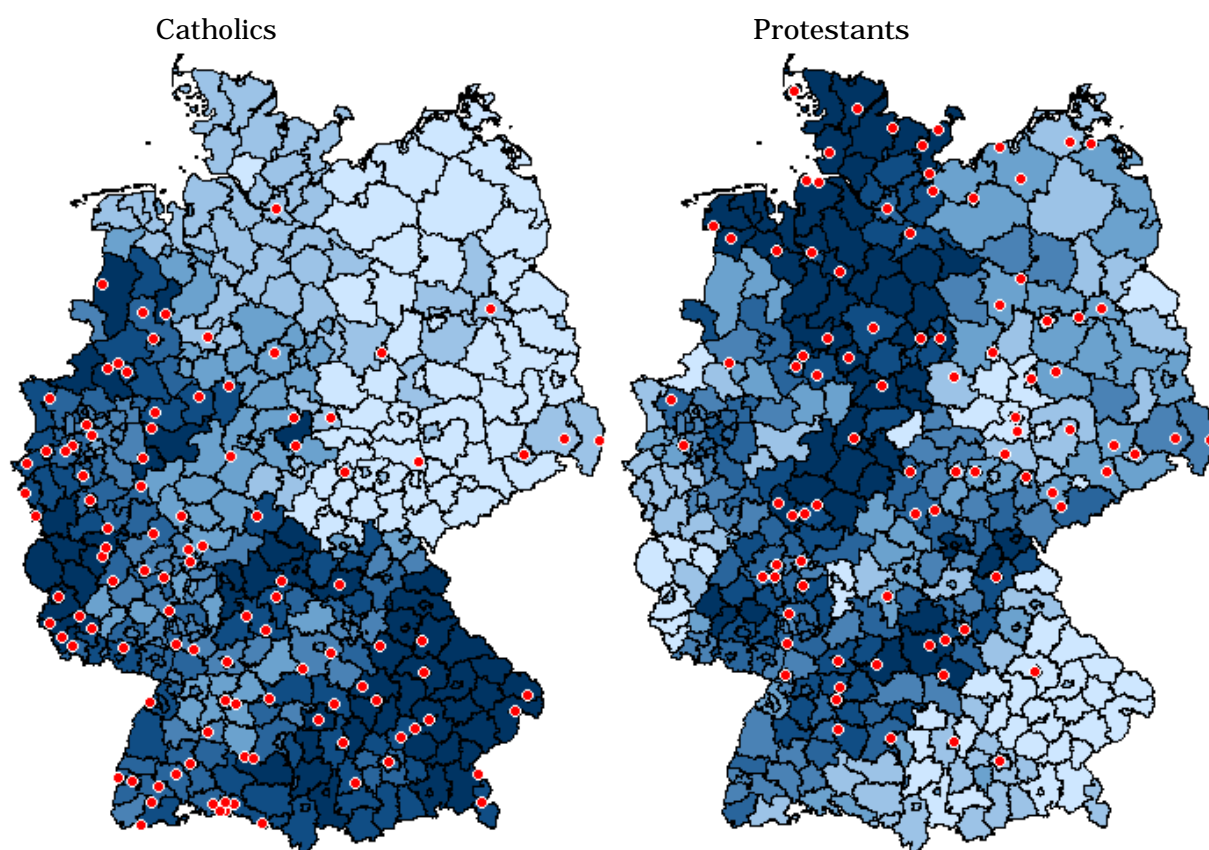
Notes: Own illustration, based on findings by Arrunada (2010).

Figure 2: Religion of a territorial lord in 1624



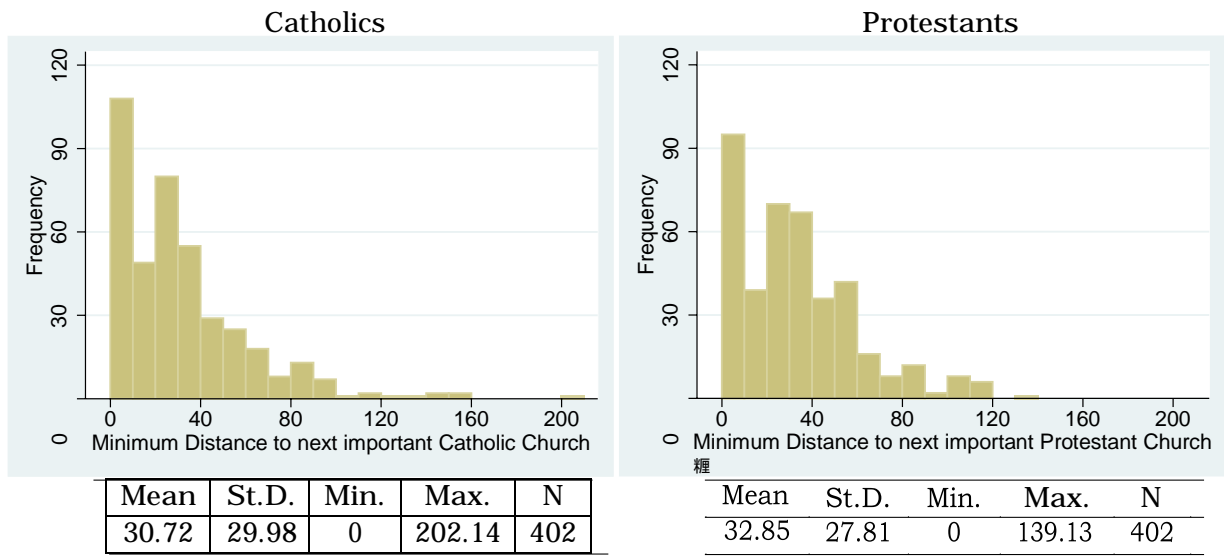
Notes: This figure shows the religion of the territorial lord in 1624 mapped on the 402 existing counties in 2011. In 1624 more than a thousand independent territories were in existence. Accordingly, counties that are composed of territories of non-uniform religion are classified as mixed. For further details the interested reader is referred to Spenkuch (2017).

Figure 3: Important Churches



Notes: This figure maps the municipalities that are home to an important church within the German counties. For Catholics there are 110 important churches in 105 municipalities in 95 counties. For Protestants 89 important churches in 83 municipalities in 77 counties have been identified. The shading reflects the share of persons belonging to the respective persuasion. The darker the shading, the higher is the population with a Catholic or Protestant affiliation.

Figure 4: Distance to Important Churches



Notes: These graphs show the distribution of the distances between counties and Protestant and Catholic churches. We apply a measurement procedure for geographical distances similar to Falck et al. (2011), the distance of each of the 402 counties' centroid to the nearest important church (Dom, Muenster, cathedral, bishop sermon church) is computed.

Table 1: Summary statistics and variable definition

	Mean	SD	1st	99th	Description and source
OI	9.03	2.48	4.94	16.17	%-share of over-indebted persons relative to the population above 18 years. Source: Creditreform.
Main explanatory variables:					
Δ Religion	1.60	37.05	-63.29	74.94	Difference per county in the %-shares of Catholic and Protestant inhabitants. Source: Zensus 2011.
Catholic (D)	0.46	0.50	0.00	1.00	Indicator whether Catholicism is the main religion in a county. Source: Zensus 2011.
Protestant (D)	0.54	0.50	0.00	1.00	Indicator whether Protestantism is the main religion in a county. Source: Zensus 2011.
Catholic	33.33	24.85	2.38	83.35	%-share of Catholic inhabitants per county. Source: Zensus 2011.
Protestant	31.73	17.51	7.48	70.43	%-share of Protestant inhabitants per county. Source: Zensus 2011.
Protestant free churches	32.49	17.85	7.62	71.14	%-share of Protestant inhabitants and members of free churches per county. Source: Zensus 2011.
Instruments:					
Protestant 1624	0.65	0.44	0.00	1.00	%-share of Protestant inhabitants per county in 1624.
Distance Protestant	32.85	27.81	0.00	116.97	Distant to next major Protestant church in kilometer.
Distance Catholic	30.72	29.98	0.00	141.65	Distant to next major Catholic church kilometer. Source: Zensus 2011.
Control variables:					
NR	30.65	22.50	6.15	83.16	%-share of non-religions inhabitant per county.
UR	6.39	3.13	2.00	14.20	Unemployment ratio is the rate of unemployed persons relative to 100 inhabitants of working age. Source: DeStatis.
GDP	22.48	9.16	11.95	59.29	Real GDP per 1,000 inhabitants. Source: DeStatis.
Debt	9.69	4.38	2.94	19.18	Public debt per 1,000 inhabitants. Is is the sum of tho kinds of debt: municipal, i.e., the mean across all municipalities within the county, and of the Bundesland. Source: Statistik über Schulden des Bundes und der Länder and Source: DeStatis.
Divorced	6.89	1.20	4.50	10.10	Divorce ratio is the share of divorced people per county. Source: DeStatis.
Age	41.52	1.69	38.40	45.65	Average age is computed by multiplying the ratio of inhabitants that belong to the available age groups 18-25, 25-30, 30-50, 50-65, older than 65 with the respective mean of these age groups. Source: Fortschreibung des Bevölkerungsstandes des Bundes und der Länder.
Women	51.14	0.66	49.93	53.07	Women ratio is the %-share of women per county. Source: DeStatis.
SE	11.77	2.80	6.18	18.63	Self-employed is defined as self-employed persons per 100 inhabitants of working age. Source: Arbeitskreis Erwerbstätigenrechnung des Bundes und der Länder and Source: Eurostat Regio Datenbank.
HQ	4.71	3.67	1.10	18.40	High- qualified workers' ratio is defined as graduates from universities and applied universities per 1,000 employees who are subject to mandatory social insurance contribution. Source: Beschäftigtenstatistik der Bundesagentur für Arbeit.
Low	91.14	24.67	47.00	159.30	Mini-jobbers ratio is defined as persons earning less than 400 Euro per month per 1,000 inhabitants of working age. Work that is done while making an apprenticeship is thereby excluded. Source: Beschäftigtenstatistik der Bundesagentur für Arbeit.
LQ	7.18	3.27	2.60	17.40	Workers without apprenticeship. This variable is provided as relative to 100 employees who are subject to mandatory social insurance contribution. Source: Beschäftigtenstatistik der Bundesagentur für Arbeit.
City	0.17	0.37	0.00	1.00	Indicator whether county is classified a as major city.
Urban	0.34	0.47	0.00	1.00	Indicator whether county is classified as urban.
Rural	0.25	0.43	0.00	1.00	Indicator whether county is classified as rural.
Sparsely	0.24	0.43	0.00	1.00	Indicator whether county is classified as sparsely populated.
East	0.13	0.34	0.00	1.00	Indicate whether county is in Eastern Germany.

Table 2: Baseline results

	(1)	(2)	(3)	(4)	(5)
Δ Religion	-0.0156*** (0.0032)	-0.0040** (0.0019)	-0.0047** (0.0020)	-0.0051** (0.0020)	-0.0045* (0.0024)
NR		-0.0023 (0.0104)	-0.0159 (0.0101)		-0.0136 (0.0132)
UR		0.3723*** (0.0432)	0.4058*** (0.0498)	0.6390*** (0.0608)	
GDP		0.0240* (0.0143)	0.0214 (0.0142)	0.0178* (0.0093)	
Debt		0.1255** (0.0606)	0.0900 (0.0680)	0.1435 (0.0874)	
Divorced		1.1101*** (0.0964)	1.1000*** (0.1038)		1.5150*** (0.1185)
Age		-0.3400*** (0.0620)	-0.2953*** (0.0668)		-0.1473* (0.0791)
Women		-0.2375** (0.1145)	-0.2769* (0.1442)		-0.3679** (0.1677)
SE		0.0135 (0.0333)	0.0026 (0.0357)		-0.1055*** (0.0406)
HQ		-0.1935*** (0.0370)	-0.1939*** (0.0365)		-0.2229*** (0.0345)
Low		0.0008 (0.0043)	-0.0017 (0.0046)		-0.0044 (0.0057)
LQ		0.0934*** (0.0341)	0.1157*** (0.0384)		0.1164*** (0.0447)
Urban		-0.8336*** (0.2265)	-0.8147*** (0.2441)	-0.4506 (0.2790)	-1.6014*** (0.2890)
Rural		-0.7177*** (0.2569)	-0.7419*** (0.2728)	-0.4677 (0.2959)	-1.3109*** (0.3295)
Sparsely		-0.8526*** (0.2796)	-0.8593*** (0.2926)	-0.7349** (0.3112)	-1.2528*** (0.3519)
East		0.0285 (0.5461)	0.1633 (0.6794)	1.1861 (0.7667)	-0.5328 (0.7208)
Observations	1608	1608	402	402	402
Regions	402	402	402	402	402
Adjusted R2	0.47	0.86	0.85	0.76	0.80
State FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	No	No

Notes: This table presents regression results for Equation (1) based on the sample of 402 counties. Column (1) display results when we augment our cross-section from 2011 with data from year between 2008-2010. Note, that we do not have additional information for the years for Δ Religion, NR, and Divorced. Instead, we use the value from 2011 for all other years as well. In detail, Column (1) show regression results when use Δ Religion and state and year fixed effects on the right-hand side. Column (2) adds all other control variables. Column (3) to (5) use only the 2011 cross-section for regression with different sets of control variables and state fixed effects. In each regression we cluster the standard errors on the county level. Descriptive statistics and explanations for all variables are in Table 1. ***, ** and * indicate significant coefficients at the 1%, 5%, and 10% levels, respectively.

Table 3: Standardized coefficients

	(1)	(2)
ΔReligion	-0.0710**	(0.0297)
NR	-0.1448	(0.0914)
UR	0.5125***	(0.0630)
GDP	0.0790	(0.0524)
Debt	0.1593	(0.1205)
Divorced	0.5347***	(0.0505)
Age	-0.2013***	(0.0455)
Women	-0.0743*	(0.0387)
SE	0.0030	(0.0403)
HQ	-0.2874***	(0.0540)
Low	-0.0165	(0.0454)
LQ	0.1527***	(0.0506)
Urban	-0.1562***	(0.0468)
Rural	-0.1301***	(0.0479)
Sparsely	-0.1487***	(0.0506)
East	0.0223	(0.0930)
Observations	402	
Regions	402	
Adjusted R2	0.85	
State FE	Yes	

Notes: This table presents standardized beta coefficients for the regression results for Equation (1) from Column (3) in Table 2. We report clustered standard errors on the county level in parentheses in the second column. Descriptive statistics and explanations for all variables are in Table 1. ***, ** and * indicate significant coefficients at the 1%, 5%, and 10% levels, respectively.

Table 4: Robustness

	(1)	(2)	(3)	(4)
Catholic (D)	-0.3417**			
	(0.1605)			
	(0.6803)	(0.6775)	(0.6809)	(0.6806)
Catholic		-0.0098**		
		(0.0039)		
Protestant			0.0091**	
			(0.0041)	
Protestant free churches				0.0089**
				(0.0040)
Observations	402	402	402	402
Regions	402	402	402	402
Adjusted R2	0.85	0.85	0.85	0.85
State FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes

Notes: This table presents regression results for Equation (1) based on the sample of 402 counties using different main explanatory variables. Column (1) display results when we use a dummy variable that indicates whether or not Catholicism is the major religion in a county. Columns (2) and (3) use the share of Catholics and Protestants in a region, respectively. Column (4) augments the Protestant share by member of free churches. We include all other control variables mentioned in Equation (1) in all regression but do not show estimates. In each regression we cluster the standard errors on the county level. Descriptive statistics and explanations for all variables are in Table 1. ***, ** and * indicate significant coefficients at the 1%, 5%, and 10% levels, respectively.

Table 5: Channels

	(1)	(2)	(3)
Δ Religion	-0.0046** (0.0020)	-0.0017 (0.0021)	-0.0019 (0.0029)
East * Δ Religion	-0.0048 (0.0072)		
Age (D)* Δ Religion		-0.0082*** (0.0024)	
Urban (D) * Δ Religion			-0.0032 (0.0029)
East	0.1102 (0.6818)		
Age (D)		0.0780 (0.1513)	
Urban (D)			-0.0171 (0.1513)
Observations	402	402	402
Regions	402	402	402
Adjusted R2	0.85	0.86	0.85
State FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes
MFx for Δ Religion and interaction variable equal to one	-0.0094	-0.0099	-0.0051
p-Value	0.1876	0.0002	0.0124

Notes: This table presents regression results for Equation (1) based on the sample of 402 counties using three interaction variables with our main explanatory variable Δ Religion. Column (1) shows results for an interaction with East. Column (2) reports results for an interaction with a dummy, which separates counties at the median of the age of the population. Column (3) shows results for an interaction with a dummy, that separates between urban (major city and urban counties) and rural (rural and sparsely populated counties) counties. We include all other control variables mentioned in Equation (1) in all regression but do not show estimates. In each regression we cluster the standard errors on the county level. Descriptive statistics and explanations for all variables are in Table 1. ***, ** and * indicate significant coefficients at the 1%, 5%, and 10% levels, respectively.

Table 6: IV regression

	(1)	(2)	(3)
Δ Religion	-0.0072** (0.0032)	-0.0067** (0.0032)	-0.0073** (0.0034)
First stage results:			
Protestants 1624	-34.4288	-37.1949	-39.3990
	0.0000	0.0000	0.0000
Distance Protestant	0.1952	0.1957	
	0.0002	0.0004	
Distance Catholic	-0.2364		-0.2369
	0.0000		0.0000
Observations	402	402	402
Regions	402	402	402
Adjusted R2	0.85	0.85	0.85
Hansen(p)	0.91	0.93	0.66
Cragg-Donald Wald F statistic	87.80	113.75	116.37
Kleibergen-Paap LM statistic	88.79	74.81	84.18
State FE	Yes	Yes	Yes
Controls	Yes	Yes	Yes

Notes: The top panel of this table shows regression results for the second stage of an instrumental variable regression displayed in Equation (2). Below, we report estimates for the instruments (a dummy whether the religion of a territorial lord in 1624 was Protestant; the county's geographical distance to the next important Protestant church; the county's geographical distance to the next important Catholic church) used in the first stage (and p-values below). In Column (1) we use all three instruments, while Columns (2) and (3) presents results for sets of only two instruments. We include all other control variables mentioned in Equation (1) in all regression but do not show estimates. In each regression we cluster the standard errors on the county level. Descriptive statistics and explanations for all variables are in Table 1. ***, ** and * indicate significant coefficients at the 1%, 5%, and 10% levels, respectively.

Table 7: IV regression with alternative religion variables

	(1)	(2)	(3)	(4)
Catholic (D)	-0.5381**			
	(0.2514)			
Catholic		-0.0143**		
		(0.0067)		
Protestant			0.0148**	
			(0.0069)	
Protestant free churches				0.0145**
				(0.0068)
First stage results:				
Protestant 1624	-0.5408	-20.0759	19.3231	19.7676
	0.0000	0.0000	0.0000	0.0000
Distance Protestant	-0.0027	-0.1188	0.1181	0.1203
	0.0001	0.0000	0.0000	0.0000
Distance Catholic	-0.0052	-0.6730	-0.3820	-0.3711
	0.0883	0.0000	0.0001	0.0002
Observations	402	402	402	402
Regions	402	402	402	402
Adjusted R2	0.85	0.85	0.85	0.85
Hansen(p)	0.60	0.66	0.67	0.67
Cragg-Donald Wald F statistic	84.67	116.76	114.74	115.60
Kleibergen-Paap LM statistic	73.79	84.44	83.59	84.03
State FE	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes

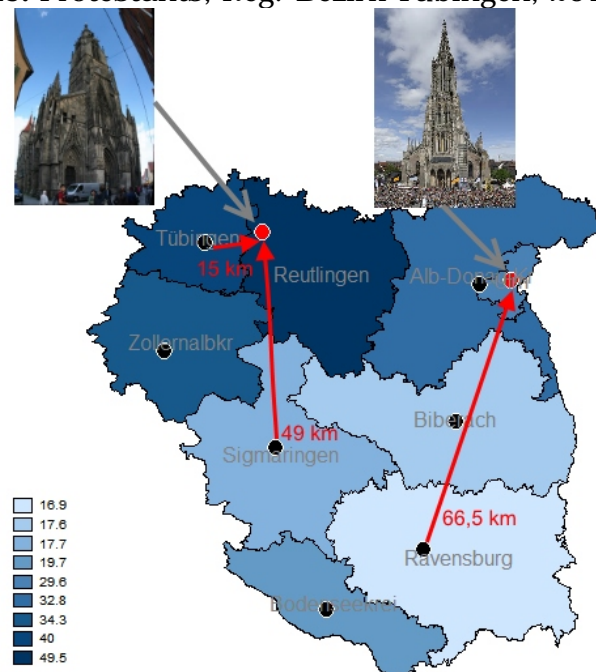
Notes: The top panel of this table shows regression results for the second stage of an instrumental variable regression displayed in Equation (2). Below, we report estimates and p-values for the instruments used in the first stage. In each column, we use all three instruments (a dummy whether the religion of a territorial lord in 1624 was Protestant; the county's geographical distance to the next important Protestant church; the county's geographical distance to the next important Catholic Church). Column (1) display results when we use a dummy variable that indicates whether or not Catholicism is the major religion in a county. Columns (2) and (3) use the share of Catholics and Protestants in a region, respectively. Column (4) augments the Protestant share by member of free churches. We include all other control variables mentioned in Equation (1) in all regression but do not show estimates. In each regression we cluster the standard errors on the county level. Descriptive statistics and explanations for all variables are in Table 1. ***, ** and * indicate significant coefficients at the 1%, 5%, and 10% levels, respectively.

Online Appendix

This Appendix is for Online Publication and provides further details on the data and results of the article.

Important churches. A church is defined as an important church if at least one of the following four criteria is fulfilled: i) church is a Dom ii) church is a Munster " iii) church is a Catholic bishop seat and hence a Kathedrale or Konkathedrale iv) Church is a sermon place of a Protestant Bishop. Data for Dome, Münster and Kathedralen are from Wikipedia (2015a) and Wikipedia (2015b) and have been as far as possible cross-checked by other sources like Imhof and Kunz (2008). The origin of sermon places of a Protestant Bishop is Hoheisel (2015). Only sermon churches that have beard this name after 1950 have been included. Concerning Dome, only those churches have been included that have still been actively used as church in the years after 1950. Concerning Münster, churches that where pure monastery churches have not been considered.

Figure OA1: Example: Protestants, Reg.-Bezirk Tübingen, 2011



Notes: This figure shows the two important Protestant churches in the Regierungsbezirk Tübingen (Marienkirche Reutlingen, Ulmer Münster) and the share of Protestants in 2011 in the corresponding counties. The darker the shading, the higher is the population with a Protestant affiliation. Moreover, exemplary the distance (in kilometers) from a counties centroid to the next important church is illustrated.

Table OA1: Catholic churches

2000	Hamburg	Neuer Mariendom	Dom, Cathedral
3152	Duderstadt	Eichsfelder Dom	Dom
3254	Hildesheim	Hildesheimer Dom	Dom, Cathedral
3404	Osnabrück	Dom St. Peter	Dom, Cathedral
3454	Haren (Ems)	Emsland-Dom	Dom
3459	Ankum	Artländer Dom St. Nikolaus	Dom
3460	Damme	Dammer Dom	Dom
5111	Düsseldorf	Rather Dom	Dom
5113	Essen	Essener Münster	Münster, Cathedral
5116	Mönchengladbach	Münster St. Vitus	Münster
5158	Velbert-Nevigés	Nevigeser Wallfahrtsdom	Dom
5162	Neuss	Quirinusmünster Neuss	Münster
5170	Xanten	St. Viktor	Dom
5314	Bonn	Bonner Münster	Münster
5315	Köln	Kölner Dom	Dom, Cathedral
5334	Aachen	Aachener Kaiserdom	Dom, Cathedral
5334	Kalterherberg	Eifeldom, "Kaffeedom"	Dom
5370	Heinsberg	Selfkantdom	Dom
5515	Münster (Westfalen)	St.-Paulus-Dom	Dom, Cathedral
5558	Billerbeck	Ludgerus-Dom	Dom
5566	Altenberg (Bergisches Land)	Altenberger Dom, Bergischer Dom	Dom
5762	Marienmünster in Westfalen	Abtei Marienmünster	Münster
5770	Minden	Mindener Dom	Dom
5774	Paderborn	Dom St. Liborius	Dom, Cathedral
5958	Neheim	Sauerländer Dom (Neheim)	Dom
5966	Attendorn	Sauerländer Dom	Dom
5974	Soest	St.-Patrokli-Dom	Dom
6412	Frankfurt	Kaiserdom St. Bartholomäus	Dom
6434	Bad Homburg-Kirdorf	Taunusdom	Dom
6439	Geisenheim (Hessen)	Rheingauer Dom	Dom
6440	Ilbenstadt	Dom der Wetterau: Basilika Maria St. Petrus u. Paulus	Dom
6532	Wetzlar	Wetzlarer Dom	Dom
6533	Limburg an der Lahn	Limburger Dom	Dom, Cathedral
6631	Fulda	Fuldaer Dom	Dom, Cathedral
6634	Fritzlar	Fritzlarer Dom	Dom
7132	Niederfischbach	Siegerländer Dom	Dom
7135	Karden	"Moseldom"	Dom
7137	Andernach	Mariendom: Maria Himmelfahrt	Dom
7137	Münstermaifeld	Münster St. Martin und Severus	Münster
7140	Ravengiërsburg	Hunsrückdom	Dom
7211	Trier	Trierer Dom	Dom, Cathedral
7315	Mainz	Mainzer Dom	Dom, Cathedral
7315	Mainz-Gonsenheim	Rheinhessendom	Dom
7318	Speyer	Speyerer Kaiserdom	Dom, Cathedral

7319	Worms	Wormser Kaiserdom	Dom
7340	Waldfischbach	Westpfälzerdom St. Joseph	Dom
8111	Stuttgart	Domkirche St. Eberhard	Dom, Cathedral
8116	Esslingen am Neckar	Münster St. Paul	Münster
8121	Heilbronn	Deutschordensmünster St. Peter und Paul	Münster
8128	Bad Mergentheim	Münster St. Johannes Baptist	Münster
8136	Schwäbisch Gmünd	Heilig-Kreuz-Münster	Münster
8216	Münster Schwarzach		Münster
8225	Hardheim	Erftalldom: römisch-katholische Pfarrkirche St. Alban	Dom
8226	Rauenberg	Dom des Angelbachtals	Dom
8311	Freiburg im Breisgau	Freiburger Münster	Münster, Cathedral
8315	Breisach	Münster St. Stephan	Münster
8315	Neustadt im Schwarzwald	Neustädter Münster	Münster
8325	Rottweil	Heiligkreuz-Münster	Münster
8326	Villingen	Liebfrauenmünster	Münster
8335	Insel Reichenau (Bodensee)	Marienmünster	Münster
8335	Konstanz	Konstanzer Münster Unserer Lieben Frau	Münster
8335	Radolfzell am Bodensee	Münster Unserer Lieben Frau	Münster
8337	Bad Säckingen	Münster St. Fridolin Fridolinsmünster	Münster
8337	St. Blasien	Schwarzwälder Dom	Dom
8415	Zwiefalten	Münster Unserer Lieben Frau	Münster
8416	Rottenburg am Neckar	Rottenburger Dom St. Martin	Dom, Cathedral
8425	Obermarchtal	Münster St. Peter und Paul	Münster
8435	Salem (Baden)	Salemer Münster	Münster
8435	Überlingen	Überlinger Münster	Münster
9161	Ingolstadt	Münster Zur Schönen Unserer Lieben Frau	Münster
9162	München	Dom zu Unserer Lieben Frau	Dom, Cathedral
9172	Bad Reichenhall	Münster St. Zeno	Münster
9176	Eichstätt	Dom St. Salvator und St. Willibald	Dom, Cathedral
9178	Freising	Freisinger Dom	Dom, Cathedral
9178	Freising	St. Andrä	Münster
9178	Moosburg an der Isar	Kastulismünster	Münster
9181	Dießen am Ammersee	Marienmünster Dießen	Münster
9189	Fridolfing	"Dom vom Salzachtal": Pfarrkirche Mariä Himmelfahrt	Dom
9261	Landshut	Münster St. Martin	Münster
9262	Passau	Passauer Dom	Dom, Cathedral
9272	Waldkirchen	"Bayerwalddom" oder "Dom des Bayerischen Waldes": St. Peter und Paul	Dom
9362	Regensburg	Niedermünster Regensburg	Münster
9362	Regensburg	Regensburger Dom	Dom, Cathedral
9373	Neumarkt in der Oberpfalz	Münster St. Johannes der Täufer	Münster
9376	Schwandorf	Marienmünster auf dem Kreuzberg	Münster
9461	Bamberg	Bamberger Dom (Kaiserdom)	Dom, Cathedral

9571	Dinkelsbühl	Münster St. Georg	Münster
9571	Wolframs-Eschenbach	Liebfrauenmünster	Münster
9663	Würzburg	Neumünster St. Johannes Evangelist	Münster
9663	Würzburg	Würzburger Dom	Dom, Cathedral
9679	Hausen bei Würzburg	Münster Fährbrück	Münster
9761	Augsburg	Augsburger Dom	Dom, Cathedral
9773	Dillingen an der Donau	St. Peter	Konkathedrale
9776	Lindau (Bodensee)	Münster Unserer Lieben Frau	Münster
9779	Donauwörth	Liebfrauenmünster	Münster
10041	Püttlingen	Köllertal-dom	Dom
10042	Mettlach	Liutwinusdom	Dom
10044	Dillingen	Saardom	Dom
10046	Bliessen	Bliestaldom: St. Remigiuskirche	Dom
10046	Nonnweiler	Hochwalddom	Dom
10046	St. Wendel	Wendelsdom	Dom
11000	Berlin (D)	St. Hedwigs-Kathedrale	Kathedrale
14612	Dresden	Kathedrale St. Trinitatis (Katholische Hofkirche)	Kathedrale
14625	Bautzen	Dom St. Petri	Dom, Cathedral
14626	Görlitz	Kathedrale St. Jakobus	Kathedrale
15003	Magdeburg	Sankt-Sebastian-Kirche	Kathedrale
15084	Zeitz	Zeitzer Dom	Dom
16051	Erfurt	Erfurter Dom	Dom, Cathedral
16061	Effelder	Eichsfelder Dom	Dom
16062	Nordhausen	Nordhäuser Dom	Dom

Notes: This table shows the matching of important Catholic churches to the counties. For Catholics 110 important churches in 105 municipalities in 95 counties could be identified.

Table OA2: Protestant churches

1002	Kiel	Nikolaikirche, Nikolaidom	Dom, Bishop sermon place
1003	Lübeck	Lübecker Dom	Dom, Bishop sermon place
1051	Meldorf	Meldorfer Dom	Dom
1053	Ratzeburg	Ratzeburger Dom	Dom
1054	Insel Föhr	Friesendom: Pfarrkirche St. Johannis in Nieblum	Dom
1055	Eutin	Ehem. Kollegiatsstiftskirche St. Michaelis	Bishop sermon place
1055	Oldenburg in Holstein	St.-Johannis-Kirche, Oldenburger Dom	Dom
1059	Schleswig	Schleswiger Dom	Dom, Bishop sermon place
2000	Hamburg	Hauptkirche St. Michaelis	Bishop sermon place
3101	Braunschweig	Dom, ehem. Kollegiatsstiftskirche SS. Blasius, Johannes der Täufer und Thomas Becket	Dom, Bishop sermon place
3154	Königsutter	Kaiserdom	Dom
3155	Einbeck	Münsterkirche St. Alexandri	Münster
3241	Hannover	Marktkirche SS. Jakobi und Georgii	Bishop sermon place
3252	Hameln	Münster St. Bonifatius	Münster
3257	Bückeburg	Stadtkirche	Bishop sermon place
3352	Cuxhaven	Altenbruch: Bauerndom St. Nicolai	Dom
3352	Cuxhaven	Lüdingworth: Bauerndom St. Jacobi	Dom
3352	Otterndorf	Bauerndom St. Severi	Dom
3355	Bardowick bei Lüneburg	Dom zu Bardowick St. Peter und Paul	Dom
3361	Verden	Verdener Dom	Dom
3402	Emden	Grosse Kirche SS. Cosmas und Damian	Bishop sermon place
3403	Oldenburg	St. Lambertikirche	Bishop sermon place
3457	Leer	Grosse Kirche	Bishop sermon place
4011	Bremen	Dom, ehem. Kathedrale St. Petri	Dom, Bishop sermon place
5111	Düsseldorf	Johanneskirche	Bishop sermon place
5170	Wesel	Willibrordi-Dom	Dom
5566	Altenberg (Bergisches Land)	Altenberger Dom, Bergischer Dom	Dom
5711	Bielefeld	Neustädter Marienkirche, Ravensberger Dom	Dom, Bishop sermon place
5758	Herford	Herforder Münster	Münster
5766	Detmold	Erlöserkirche (bis 1947 St. Vitus geweiht)	Bishop sermon place
6411	Darmstadt	Pauluskirche	Bishop sermon place
6411	Darmstadt	Stadtkirche St. Maria	Bishop sermon place
6412	Frankfurt Am Main	St. Katharinenkirche	Bishop sermon place
6414	Wiesbaden	Marktkirche (ehem. St. Mauritius), Nassauischer Landesdom	Dom, Bishop sermon place
6431	Lampertheim (Hessen)	Dom des Rieds	Dom
6531	Giessen	Johanneskirche	Bishop sermon place
6531	Londorf (Hessen)	Dom der Rabenau	Dom
6532	Herborn	Stadtkirche	Bishop sermon place
6532	Wetzlar	Wetzlarer Dom	Dom

6611	Kassel	Ehem. Stiftskirche SS. Martin und Elisabeth, Martinsdom	Dom, Bishop sermon place
7315	Mainz	Altmünster	Münster
7315	Mainz	Christuskirche, Evangelischer Dom	Dom, Bishop sermon place
7318	Speyer	Protestations-Gedächtniskirche	Bishop sermon place
7339	Ingelheim	"Selztal-dom": evangelische Pfarrkirche im Stadtteil Großwinternheim	Dom
8111	Stuttgart	Ehem. Stiftskirche Hl. Kreuz	Bishop sermon place
8118	Ludwigsburg	Stadtkirche	Bishop sermon place
8121	Heilbronn	Kilianskirche	Bishop sermon place
8127	Schwäbisch Hall	Stadtpfarrkirche St. Michael, Münster	Münster, Bishop sermon place
8212	Karlsruhe	Stadtkirche, Cathedrale des Landes Baden	Bishop sermon place
8415	Reutlingen	Marienkirche	Bishop sermon place
8421	Ulm	Münster (ehem. Unserer Lieben Frau)	Münster, Bishop sermon place
9162	München	St. Matthäuskirche	Bishop sermon place
9362	Regensburg	Dreieinigkeitskirche	Bishop sermon place
9462	Bayreuth	Stadtkirche Hll. Dreifaltigkeit	Bishop sermon place
9561	Ansbach	St. Gumbertuskirche	Bishop sermon place
9564	Nürnberg	St. Lorenzkirche	Bishop sermon place
9571	Heilsbronn	Münster Heilsbronn	Münster
9577	Heidenheim (Mittelfranken)	Münster St. Wunibald	Münster
9663	Würzburg	St. Johanniskirche	Bishop sermon place
9761	Augsburg	St. Ulrichskirche	Bishop sermon place
1100 0	Berlin	Kaiser-Wilhelm-Gedächtniskirche	Bishop sermon place
1100 0	Berlin	St. Marienkirche	Bishop sermon place
1100 0	Berlin (D)	Oberpfarr- und Domkirche zu Berlin (Berliner Dom)	Dom
1205 1	Brandenburg	Dom St. Peter und Paul	Dom
1300 4	Schwerin	Dom, ehem. Kathedrale SS. Maria und Johannes Evangelist	Dom, Bishop sermon place
1307 2	Bad Doberan	Doberaner Münster	Münster
1307 2	Güstrow	Güstrower Dom	Dom
1307 3	Grimmen	Marienkirche	Bishop sermon place
1307 5	Greifswald	Dom, ehem. Kollegiatsstiftskirche St. Nikolai	Dom, Bishop sermon place
1452 1	Schneeberg	Bergmannsdom: St.-Wolfgangskirche	Dom
1452 2	Freiberg	Freiberger Dom Sankt Marien	Dom
1452 4	Zwickau	Marienkirche	Dom
1461 2	Dresden	Kreuzkirche	Bishop sermon place
1462 5	Bautzen	Dom St. Petri	Dom
1462 6	Görlitz	Hauptstadtpfarrkirche St. Peter und Paul	Bishop sermon place
1462	Meißen	Meißner Dom auf der Albrechtsburg	Dom, Bishop sermon

7			place
1472 9	Wurzen	Stiftskirche (Dom) St. Marien	Dom
1500 1	Dessau	St. Johanniskirche	Bishop sermon place
1500 1	Dessau	Stadtkirche St. Marien	Bishop sermon place
1500 2	Halle (Saale)	Hallescher Dom	Dom
1500 3	Magdeburg	Dom St. Mauritius und Katharina	Dom, Bishop sermon place
1508 4	Naumburg	Naumburger Dom	Dom
1508 5	Halberstadt	Dom zu Halberstadt	Dom
1508 8	Merseburg	Merseburger Dom	Dom
1509 0	Havelberg	Havelberger Dom	Dom
1509 0	Stendal	Dom St. Nikolaus	Dom
1605 2	Gera	Johanniskirche	Bishop sermon place
1605 5	Weimar	Stadtkirche St. Peter und Paul, Herderkirche	Bishop sermon place
1605 6	Eisenach	Georgenkirche	Bishop sermon place

Notes: This table shows the matching of important Protestant churches to the counties. For Protestants, 89 important churches in 83 municipalities in 77 counties could be identified.

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