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Abstract

Few theories in the social sciences have gained more widespread acceptance than Max Weber's *The Protestant Ethic and the Spirit of Capitalism*—despite a lack of conclusive empirical evidence. At the core of Weber's theory lies a connection between Protestantism and attitudes toward work. Using micro-data from contemporary Germany, this paper investigates the impact of Protestantism on economic outcomes and whether any such connection still exists. To break the endogeneity in religious affiliation the paper exploits the fact that the geographic distribution of Catholics and Protestants is an artifact of a provision in the Peace of Augsburg in 1555. Reduced form and instrumental variable estimates indicate that, even today, Protestantism leads to higher earnings through increased hours of work, and substantially more self-employment. Institutional factors, or differences in human capital acquisition cannot account for this effect. Instead, the data point to an explanation based on individual values akin to a Protestant Ethic.

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1 Introduction

Throughout most of the history of the Western world working hard was considered to be a curse rather than a virtue (Lipset 1992). In classical Greek and Roman societies labor was regarded as degrading. Free men were to pursue the arts, large-scale commerce, or warfare (Rose 1985). Medieval Christian scholars followed the ancient Hebrews in viewing work as God's punishment. In condemning the accumulation of wealth for reasons other than charity the Catholic Church went even beyond Greek and Roman disdain (Tilgher 1930, Rose 1985).

In *The Protestant Ethic and the Spirit of Capitalism* Max Weber (1904/05) contended that Protestantism, in particular Calvinism, promoted a new attitude emphasizing diligence, thrift, and a person's calling. The Protestant Ethic, Weber famously argued, was the decisive factor in the emergence of capitalism.[1]

There has been controversy about the impact of Protestantism ever since the publication of Weber's essays. Critics doubt his reading of Calvinist and Lutheran teachings, and argue that the rise of capitalism occurred independent of the Reformation, or even spurred the latter (e.g. Sombart 1913, Brentano 1916, Tawney 1926, Samuelsson 1961). However, the correlation between nations' wealth and Protestantism alluded to by Weber can still be found in recent data. Figures 1A and 1B illustrate this point. Both plot GDP per capita against the share of Protestants for majoritarian Christian countries. Figure 1A does so for the year 1900—shortly before the publication of the *Protestant Ethic*—and Figure 1B depicts the situation in 2000.

Yet, even ignoring institutional factors and other sources of omitted variables bias, there may not necessarily exist a causal link between Protestantism and economic well-being. Economic theory predicts that more successful individuals, i.e. those with the highest opportunity cost of time, select "less costly" religions, or choose to participate less intensely (cf. Azzi and Ehrenberg 1975, Iannaccone 1992). Therefore, religious choices are likely endogenous,

[1]The exact content of Weber's claim is still disputed. It is uncontroversial, however, that Weber posited a difference between Catholic and Protestant, especially Calvinist, doctrines with a wide-reaching impact on economic outcomes.

and the observed correlations could be entirely spurious.[2]

Using micro-data from contemporary Germany this paper investigates the causal effect of Protestantism. In several ways Germany is ideally suited for such an analysis. There exist only two major religious blocks, namely Catholics and Protestants.[3] Each comprises approximately 35-37% of the population, while atheists account for c. 19% (Barrett et al. 2001).[4] Moreover, the German population is relatively homogenous, and institutional differences within Germany are minor compared to those in a cross-country setting.

As predicted by theory, the raw data suggest that the economically most successful are also most likely to select out of religion. Therefore, ordinary least squares estimates show only a modest correlation between Protestantism and proxies of economic success, but are likely downward biased.

To break the endogeneity in religious affiliation this paper exploits the fact that the geographic distribution of Catholics and Protestants can be traced back to the Reformation period, in particular the Peace of Augsburg in 1555. Ending more than two decades of religious conflict, the peace treaty established the *ius reformandi*. According to the principle *cuius regio, eius religio* ("whose realm, his religion") the religion of a territorial lord became the official religion in his state and, therefore, the religion of *all* people living within its confines. While the Peace of Augsburg secured the unity of religion within individual states, it led to religious fragmentation of the German Lands, which at this time consisted of more than a thousand independent territories.[5]

Figure 2A depicts the religious situation as it developed after the Peace of Augsburg, and Figure 2B shows the geographic distribution of Catholics and Protestants within the

[2]Heaton (2006), for instance, casts doubt on a crime-reducing effect of religiosity (cf. Freeman 1986, among others).

[3]In contrast to the US, there exist only a few Protestant denominations in Germany. Moreover, the Lutheran, Reformed and United state churches are united in the *Evangelical Church in Germany*. Its member churches share full pulpit and alter fellowship, and individual members usually self-identify only as "Protestant."

[4]The remaining 8-10% are mainly, but not exclusively, accounted for by Muslims. For simplicity this paper refers to individuals not affiliated with any denomination as atheists, recognizing that the former are a superset of the latter.

[5]Not until the Peace of Westphalia in 1648 were subjects formally free to choose their own religion.

boundaries of modern day Germany. Evidently the distribution today still resembles that at the beginning of the 17th century. This is also borne out in the data. Even today individuals living in "historically Protestant" areas are much more likely to self-identify as Protestantthan residents of "historically Catholic" regions.[6] [7]

Although both sets of counties appear broadly similar in terms of observable aggregate characteristics, reduced form estimates reveal important micro-level differences. Compared to residents of historically Catholic regions, individuals living in historically Protestant areas are more likely to be self-employed and work approximately one hour more per week, which also increases their earnings. Institutional features or other observable county characteristics cannot account for these differences. Therefore, the reduced form correlations point to a direct effect of Protestantism.

This is explored further using princes' religion in the aftermath of the Peace of Augsburg as an instrumental variable (IV) for whether individuals today self-identify as Protestant. For territories' official religion in the beginning of the 17th century to be a valid instrument for that of contemporary Germans living in the respective areas, it must be the case that princes' religion are uncorrelated with unobserved factors determining economic outcomes today. This assumption is not directly testable. Historians, however, have analyzed princes' decisions in great detail and isolated two main factors, both of which are plausibly uncorrelated with factors determining economic success today (see, for instance, Lutz 1997, and Dixon 2002): Most rulers were deeply religious and not only concerned about their own salvation, but also about that of their subjects. Thus, their religious conscience often dictated a particular choice. Moreover, politics of the day, such as existing feuds or alliances, played an important role (Scribner and Dixon 2003). The fact that states' official religion often

[6] An important exception is Eastern Germany, where most people self-identify as atheist. In other where neither Catholics nor Protestants constitute the absolute majority it is usually the case that a relative majority identifies with the territory's official religion before the Thirty Years' War.

[7] In classifying areas as "historically Protestant" or "historically Catholic" the paper relies on detailed historic accounts to create a mapping between present day counties and the religion of the princes who reigned over the corresponding territories in the aftermath of the Peace.

changed with successive rulers highlights the importance of idiosyncratic factors.[8] [9]

The preceding arguments suggest that territories' official religion in the aftermath of 1555 may indeed satisfy the exogeneity assumption required for a valid instrument. If one accepts this assumption, then instrumental variable estimates are consistent and have a causal interpretation. Taking the two-stage least squares point estimates at face value, Protestantism induces individuals to work approximately three hours—or one quarter of a standard deviation—more per week, thereby raising earnings by thirteen percent. Protestants are also roughly twice as likely to be self-employed compared to Catholics. The point estimates are in most cases statistically significant and generally robust to varying the set of covariates as well as to the inclusion of state fixed effects.[10]

Regarding the mechanism through which the effect of Protestantism operates, the available evidence suggests a values-based explanation along the lines of a Protestant Ethic. A literal interpretation of Weber's theory formalized as an overlapping generations model, in which altruistic parents pass their religion on to their children and Protestants exhibit less of a "taste for leisure," yields several predictions confirmed by the data. Moreover, a single proxy for an individual's work ethic, i.e. how many hours he would *like* to work if he had free choice and his income adjusted accordingly, can account for most of the estimated effect of Protestantism. Competing explanations, such as a human capital theory of Protestantism (Becker and Wößmann 2009), i.e. that Protestantism induces individuals to invest more in education, are not supported by the data.

As in recent years economists have regained interest in the macro- and micro-effects of re-

[8] For instance, Calvinist princes often sent their offspring to Jesuit schools, which were of superior quality. Having been educated by devout Catholics many of these children later re-instated Catholicism as the official religion in their state (Zeeden 1998).

[9] In independent research Cantoni (2009) also recognizes that the Peace of Augsburg introduced geographic variation in the distribution of religious affiliation. Using historical data on 272 cities he finds no evidence that pre-existing differences determined official religions. Although Protestant cities were significantly smaller than their Catholic counterparts in 1300, by 1400 the difference had largely disappeared. He also argues that Catholic and Protestant cities did not diverge after the Peace of Augsburg.

[10] By including state fixed effects the impact of Protestantism is estimated using only within state variation in economic outcomes and rulers' religion. Since counties within a state are, due to their geographic proximity, likely more similar on unobservables, including state fixed effects mitigates this potential source of bias. However, this comes at the price of discarding much useful variation.

ligion (e.g., Barro and McCleary 2003, 2006), the analysis presented in this paper can build upon a sizeable literature investigating the link between religion and individual economic outcomes (see Iannaccone 1998, or Lehrer 2009 for reviews).[11] Despite the size of this literature questions of causality have so far remained mostly unanswered. One notable exception are Gruber and Hungerman (2008), who show that declines in religious participation caused by increased secular competition are closely associated with increases in drinking and drug usage. In a similar vein, Gruber (2005) provides evidence that among Americans higher religious market density leads to increased levels of religious participation and improved outcomes, such as levels of education, income, and marital stability.

To the extent that religion shapes social norms and customs this paper also contributes to the growing literature on their importance for economic outcomes (for theoretical analyses see Akerlof and Kranton 2000, Bernheim 1994, or Austen-Smith and Fryer 2005). Fernandez (2007), for instance, shows that tradition influences women's labor supply and fertility decisions; and Tabellini (2010) argues that cultural heritage affects economic development. Closely related to the results presented in this paper is the finding that Christian religions—especially Protestantism—are closely associated with attitudes conducive to economic growth (Guiso et al. 2003).

Related are also studies testing Weber's theory about the impact of Protestantism on economic development using aggregate historical data. While Delacroix and Nielsen (2001) and the careful investigation by Cantoni (2009) reject Weber's claim, Becker and Wößmann (2009) report that in late nineteenth-century Prussia Protestantism was associated with greater affluence. They argue, however, that the effect of Protestantism operates through the acquisition of human capital, i.e. literacy, as opposed to a Protestant work ethic.[12] More

[11]There also exists a large literature focusing on religious market structure and competition. See, for instance, Ekelund et al. (2006), Barro and McCleary (2005), Finke and Stark (2005), and the studies cited in Iannaccone (1998).

[12]In an addendum, Becker and Wößmann (2009) also relate Protestantism to labor income and education of Germans today, but argue that education can fully account for the 5% earnings gap in the raw data. They do not consider hours worked, or self-employment. Although the results of this paper do not directly speak to the effect of Protestantism on economic development or industrialization, they show that a human capital theory of Protestantism alone cannot explain religious differences in economic outcomes found in present

generally, by relating the princely Reformation to contemporary outcomes the paper fits into a nascent but growing literature on the economic impact of historical events (e.g., Dell 2010, Nunn 2008, 2010, and Nunn and Quian 2010, among others).

The remainder of the paper proceeds as follows. Section 2 provides a brief overview of the religious landscape in Germany and its historic determinants. Section 3 describes and summarizes the data, followed by the main results presented in Section 4. Section 5 interprets the results through the lens of economic theory, and tests mechanisms through which the effect of Protestantism might operate. Section 6 concludes. A Data Appendix with the precise definitions and sources of all variables used in the analysis is also provided.

2 Germany's Religious Landscape and its Historic Determinants

As Figure 2B demonstrates, the religious landscape in contemporary Germany is far from homogenous. With the exception of East Germany, where atheists constitute the overwhelming majority (due to half a century of Communist rule), the population in most counties adheres predominantly to either Catholicism or Protestantism. This section briefly reviews the historic causes for this pattern, which date back to the Reformation period.[13]

At the beginning of the sixteenth century the German Lands were fragmented into more than a thousand independent (secular and ecclesiastical) territories and free Imperial Cities. Although formally governed by an emperor, political power within the Holy Roman Empire lay for the most part with its territorial lords.

Despite widespread discontent about matters of church organization and abuses of power by the clergy, the religious monopoly of the Roman Catholic Church remained essentially unchallenged until the 'Luther affair' starting in 1517.[14] What those in power initially

day Germany. The available evidence points to an explanation based on individual values instead.

[13]The following summary draws heavily on historical accounts by Lutz (1997), Dixon (2002), Scribner and Dixon (2003), as well as Nowak (1995).

[14]Martin Luther was by no means the first to voice discontent about the state of the Catholic Church.

perceived as a dispute among clergymen quickly spread to the urban (and later rural) laity and became a mass movement. Notwithstanding Luther's excommunication in 1521 and the Edict of Worms, in which Emperor Charles V outlawed Luther as well as the reading and possession of Luther's writings, popular support for the Reformation remained strong until the Peasant War in 1525.

After Diet of Speyer in 1526 the German princes assumed leadership of the Reformation movement. The Diet instituted that until a synod could settle the religious dispute, territorial lords should proceed in matters of faith as they saw fit under the Word of God and the laws of the Empire. Princes who had privately converted to Lutheranism took this as an opportunity to proceed with church reform in their state. As a devout Catholic, Emperor Charles V was determined to defend the (old) Church. However, his attempts to undo the Reformation and enforce the Edict of Worms led ultimately to the Schmalkaldic War.

Ending more than two decades of religious conflict, the Peace of Augsburg in 1555 established princes' constitutional right to introduce the Lutheran faith in their state (*ius reformandi*). According to the principle *cuius regio, eius religio* ("whose realm, his religion"), the religion of a lord became the official faith in his territory and, therefore, the religion of *all* people living within its confines.[15] Only ecclesiastical rulers were not covered by the *ius reformandi* (*reservatum ecclesiasticum*). A (Catholic) bishop or archbishop would lose his office and the possessions tied to it upon conversion to another faith. Ordinary subjects refusing to convert were, conditional on selling all property, granted the right to emigrate (*ius emigrandi*). The overwhelming majority of subjects, however, were serfs who could not afford to pay for their own freedom.

According to Dixon (2002, p. 18), "In the final decades of the fifteenth century the state of the Church had become a matter of great urgency." Being deeply concerned about his own salvation and the spiritual welfare of parishioners, Luther's initial intention was simply to alert the archbishop of Mainz to the abuse of the indulgence trade—not to cause a schism of the Church. However, Luther's doctrine of salvation through faith alone (*sola fide*) "challenged the basis of the Church as it then was" (Scribner and Dixon 2003, p. 14), which made Luther a heretic in the eye of the papacy. Only after his excommunication in 1521 did he ultimately break with the Catholic Church.

[15] In contrast to the Lutheran faith (*Confessio Augustana*), neither Calvinism nor Anabaptism was protected under the Peace of Augsburg. Nevertheless, a non-negligible number of territories underwent a Second Reformation, in which Calvinism became the official religion.

Only about 10% of the population ever showed a lasting interest in the ideas of the Reformation, but as much as 80% adhered to a Protestant religion at the end of the sixteenth century (Scribner and Dixon 2003). Therefore, most conversions must have occurred involuntarily. There exists, indeed, ample evidence that the *ius reformandi* was strictly enforced at least until the beginning of the seventeenth century.[16] Even residents of Imperial Cities—although formally free—were often forced to adopt a particular faith. In these towns political power often lay in the hands of local elites who would virtually impose the Reformation (Dixon 2002).

Rulers' choices of religion depended on multiple factors. Most lords were deeply religious and not only concerned about their own salvation but also about that of their subjects (Dixon 2002). Moreover, political considerations, such as ties between noble families, and the formation of alliances with or against the Catholic emperor, contributed to the decision (see, for instace, Lutz 1997). On one hand, any converted territory or Imperial City had to fear loss of support from the Emperor, or hostilities from a neighboring state. On the other hand, rulers also stood to gain from introducing the Reformation, as it allowed them to take possession of church property as well as assert their independence.[17] The fact that territories' official religion often changed more than once, especially when a new generation of princes took reign toward the end of the sixteenth century, suggests that idiosyncratic factors also played an important role.[18]

Historians refer to the period from the Peace of Augsburg to the Peace of Westphalia in 1648 as the Age of Confessionalization.[19] It is during this time and through the process

[16]For instance, 'heretics', i.e. those who did not adhere to the official state religion, faced the death penalty in the Duchy of Upper Saxony (Lutz 1997).

[17]Formally a reformed lord was head of the Protestant church in his state. Of course, this did not apply to Catholic rulers, who nevertheless often behaved "like popes in their lands" (Dixon 2002, p. 117).

[18]Testing the *reservatum ecclesiasticum* Archbishop Gebhard Truchseß von Waldburg, for instance, converted to the Lutheran faith in order to be allowed to marry a Protestant canoness. He thereby started the Cologne War (1582/83).

[19]Ending the Thirty Years' War, the Peace of Westphalia (1648) also ended princes' right to determine the religion of their subjects (although the *ius reformandi* remained formally in place). A territory's official Church was guaranteed the right to publicly celebrate mass etc. (*exercitium publicum religionis*), but individuals were allowed to choose and privately practice another faith (*devotio domestica*). In contrast to the Peace of Augsburg, the Peace of Westphalia did not only protect the Catholic and Lutheran denomi-

of princely reformation that states developed a religious identity, and that the geographic distribution of Protestants and Catholics was determined (Eyck 1998).

Although individuals were formally free to choose their own faith after 1648, most territories of the Holy Roman Empire remained religiously uniform until the *Reichsdeputationshauptschluss* in 1803. This piece of legislation enacted the secularization of ecclesiastical territories and the mediatization of small secular principalities. That is, ecclesiastical territories, Imperial Cities, and other small entities were annexed by neighboring states, thereby reducing the number of independent territories from over a thousand to slightly more than thirty states and forty-eight Imperial Cities (Nowak 1995). Due to the *Reichsdeputationshauptschluss*, Protestants and Catholics have lived in religiously "mixed" states for at least two hundred years.

On a very local level, however, most areas remained religiously homogenous until the mass migrations associated with Word War II. In 1939, for instance, Protestants or Catholics respectively comprised more than 90% of the population in each of 247 counties.[20] By 1946 this number had dropped to 82 (Nowak 1995). Nevertheless, as Figures 2A and 2B illustrate, the geographic distribution of Catholics and Protestants today can still be traced back to the religion of territorial lords during the Age of Confessionalization.

3 Data Sources and Summary Statistics

In creating a mapping between present day counties and the religion of the princes who reigned over the corresponding areas in the aftermath of the Peace of Augsburg this paper relies on several historical accounts. In particular the regional histories by Schindling and Ziegler (1992a, 1992b, 1993a, 1993b, 1995, 1996) contain the most detailed available information on the territories of the Holy Roman Empire for the period from 1500 to 1650.

nations, but also Calvinists. Regarding disputes about ecclesiastical properties the peace treaty stipulated the 'normal year' 1624. That is, ecclesiastical territories should remain with the side that controlled them in January 1624.

[20] At this time the Third Reich consisted of almost 900 counties.

The mapping created with this information is based on the religious situation around 1624—the 'normal year' set in the Peace of Westphalia.[21] Although there existed notable differences between and within different reformed faiths, as a whole the teachings of Lutherans, Calvinists, and Zwinglians were generally much closer to each other than to the doctrines of the Catholic Church (Dixon 2002). Moreover, most Protestant denominations today are united in the *Evangelical Church in Germany*. Therefore, the mapping abstracts from differences between reformed denominations, and differentiates only between Protestant and Catholic territories.

Only in a few instances does the border of a county or county equivalent today correspond exactly to the border of some state at the beginning of the seventeenth century. Whenever Catholic and Protestant princes reigned over different parts of a county's area, or whenever that area encompassed an Imperial City or an ecclesiastical territory, the religion assigned to this county is the likely religion of the majority of subjects. Since population estimates for the period are often not available, relative populations are gauged by comparing the size of the areas in question (assuming equal densities). In cases in which this procedure yields ambiguous results, the respective counties are classified as neither "historically Protestant" nor "historically Catholic", but as "mixed".[22] The Data Appendix provides additional detail regarding the construction of the mapping.[23]

Information on counties' institutional features and infrastructure today, such as number of schools and colleges, sectoral composition of the workforce, number of firms, etc., is taken from *Statistik regional 2007*. *Statistik regional* is an annual publication of the German Federal Statistical Office and the statistical offices of the Länder containing data on various characteristics of administrative units in Germany.

[21] Since territories' official religion was not constant in the aftermath of the Peace of Augsburg, there exists the possibility that the results depend on the choice of base year. To rule this out, a second mapping based on the situation directly after the Peace of Augsburg in 1555 has been created. The results reported in this paper are qualitatively robust to using this alternative mapping instead.

[22] This is the case for 53 counties. The results are robust to classifying these counties as either Protestant or Catholic.

[23] Also, Table A.1 in the Data Appendix displays the religion assigned to each county.

Table 1A displays summary statistics for observable county characteristics. While counties classified as mixed are more densely settled and feature more industry, historically Protestant counties do not appear to systematically outperform historically Catholic ones.[24] [25]

The primary data set used in this paper is the restricted-use version of the German Socio-Economic Panel Study (SOEP).[26] The SOEP is a representative longitudinal data set of private households in Germany. Starting in 1984 with 5,921 households containing 12,245 individuals living in the Federal Republic of Germany (FRG) the SOEP has collected data on a wide range of subjects in every year thereafter. Covered topics include household composition, employment status, occupational and family biographies, time allocation, personality traits, as well as physical and mental health, among others.

A random sample of 2,179 households with 4,453 members living in the German Democratic Republic (GDR) was added in 1990—preceding the Reunification; and an immigrant sample was introduced in 1994/95. As in all longitudinal data, some respondents could not be located or contacted after repeated attempts, refused to participate, or were unable to do so.[27] In order to maintain, or even expand, the size of the surveyed population, additional samples were drawn in 1998, 2000, 2002, and 2006.[28] Sample weights, which are supplied with all waves, attempt to correct for unequal sampling probabilities as well as observed

[24] As some cities, e.g. Erfurt or Speyer, were divided into ecclesiastical districts and ones ruled by a secular authority, and given that it has been much more difficult to determine the likely religion of subjects in cases in which the territory in question contained an Imperial City, it is not surprising that "historically mixed" counties appear to be more urban.

[25] After controlling for whether a county is located within the area of the former German Democratic Republic (GDR) differences in means are jointly significant in three cases (and without this control variable in five). At least in principle these differences could be a direct effect of princes' decisions during the Age of Confessionalizaion. Yet, given the sign pattern and the fact that historically Protestant and historically Catholic areas have in most cases been governed by common authorities for the last two hundred years, such a conclusion seems unlikely. In any case, the results in this paper do not depend on the inclusion of county level controls.

[26] The restricted-use version differs from the public-use one in that it contains sensitive regional information, such as county identifiers, and that data files containing sensitive information can only be accessed remotely or on-site in Berlin. Researchers who are interested in using either version may apply to the DIW Berlin for access.

[27] After 15 (25) years approximately 50% (25%) of the original sample still participated in the SOEP. Panel attrition is overwhelmingly due to refusal to reply.

[28] Their respective sizes are 1,910, 10,890, 2,671, and 2,616 individuals. The 2002 sample added an overrepresentation of high-income households.

patterns of non-response, and are used throughout the analysis.

Since there is little variation in religious affiliation over time (and the existing variation is likely endogenous), theoretical gains from exploiting the full panel structure of the data are limited. Hence, the analysis in this paper uses cross-sectional information contained in the 2000-2006 waves—the period during which the sample has been the largest. To increase precision and minimize the effect of measurement error all available information on time varying variables, such as income, wages, or hours worked, has been combined by taking means.

Individuals who were not between 25 and 60 years old in 2003, or were born abroad have been excluded from the analysis. Furthermore, the paper restricts attention to self-identified Catholics, Protestants, and atheists for a final sample of 11,364 observations. The Data Appendix contains additional information on the data and sample construction procedures. It also names the exact source of each variable used throughout the paper.

Summary statistics by religion for all individual level variables are presented in Table 1B. The table also differentiates between individuals who grew up in the former GDR and those who grew up in West Germany, thereby highlighting existing differences in religious affiliations and economic outcomes.[29] Among either group Protestants are a little older than Catholics, and slightly more likely to be female. In terms of economic success Protestants do not fare better than Catholics by most measures, if at all. By contrast, atheists are much more likely to be male, rear fewer children, and divorce more frequently. They are also more likely to live in urban environments. Most importantly though, atheists are more educated and display dramatically better economic outcomes than both Catholics and Protestants. Atheists have also been disproportionately raised by Protestant parents.[30]

[29]As East Germans identify overwhelmingly as atheist or Protestant, the communist history of East Germany with its implications for economic outcomes and attitudes (see Alesina and Fuchs-Schündeln 2007) constitutes a potential confounding factor. To eliminate this source of omitted variable bias the empirical work in this paper controls for whether an individual grew up in the former GDR. Moreover, the results are robust to excluding East Germans from the sample.

[30]Raw differences between Protestants and Catholics are somewhat larger in earlier waves of the SOEP and in the German General Social Survey (ALLBUS). The ALLBUS, however, does not contain regional identifiers below the state level, and does therefore not permit the use of geographic variation introduced

One possible explanation for the observed pattern is self-selection. Consistent with a simple price theory model in which religious participation imposes a time cost, the economically most successful individuals choose to affiliate with no religious group (see the model in Section 5, or Iannaccone 1992 for a similar argument).

4 Estimating the Effect of Protestantism

4.1 Least Squares Estimates

Although the preceding discussion has hinted at selection effects, the summary statistics also reveal that Protestants, Catholics, and atheists differ on several observable characteristics known to correlate with economic success. It is therefore desirable to explore to what extent differences in outcomes by religion depend on these covariates. To this end consider the following linear model:

$$y_i = \beta_P PROTESTANT_i + \beta_A ATHEIST_i + \mathbf{X}_i'\boldsymbol{\gamma} + \mathbf{Q}_c'\boldsymbol{\lambda} + \mu_s + \epsilon_i, \tag{1}$$

where y_i denotes the outcome of interest for individual i, and $PROTESTANT_i$ and $ATHEIST_i$ are mutually exclusive identifiers of religious affiliation. $\mathbf{X}_i$ and $\mathbf{Q}_c$ are vectors of individual and county level covariates, respectively; while μ_s marks a state fixed effect. The error term is given by ϵ_i. Since the sample is restricted to individuals who identify as Catholic, Protestant, or atheist, β_P and β_A identify mean differences in outcomes (conditional on covariates) relative to Catholics.

In all instances is equation (1) estimated by weighted least squares, with weights corresponding to the cross-sectional sampling weights provided in the SOEP. Standard errors are clustered on the county level to allow for arbitrary patterns of correlation in the error terms of individuals within the same county.

through the process of princely reformation.

Since religion potentially influences a wide range of individual decisions, e.g. regarding education or fertility, one must be cautious not to control for endogenous variables. By fully controlling for these characteristics the resulting estimates would no longer reflect the full effect of religion. Hence, the baseline regressions use a parsimonious set of covariates. More specifically, $\mathbf{X}_i$ includes gender, age, and distance to the nearest city, which proxies for economic conditions related to urban environments. To be as non-parametric as possible age and distance to nearest city are each divided into multiple categories and included in the regressions as indicator variables. Yet, regional characteristics beyond the control of the individual are also likely to influence outcomes. To account for these factors the vector $\mathbf{Q}_c$ contains all county characteristics shown in Table 1A.[31] As demonstrated in Section 4.4, which explores issues of robustness across different sets of covariates and subsamples of the data, the qualitative results of this paper do not hinge on the inclusion of specific controls.

Table 2 presents a series of estimates of religious differences in three economic outcomes. The dependent variable in columns (1)–(6) is the natural logarithm of monthly earnings, while that in columns (7)–(12) is weekly hours of work. An indicator for being self-employed serves as dependent variable in columns (13)–(18). The vector of included covariates varies across columns. Moving from left to right within each group of regressions the set of controls steadily grows. The last specification for each outcome adds state fixed effects.

Columns (1), (7), and (13) show mean differences by religion, not including any covariates. These results simply reflect the raw gaps reported in Table 1B. The next specification adds an indicator variable for having grown up in East Germany. Not surprisingly, this variable is strongly correlated with both economic outcomes and religious affiliation. Controlling for an individual's exposure to communism more than triples the difference between Catholics and atheists in income, and reduces the difference in Hours Worked by more than half an hour. Changes in estimated differences between Catholics and Protestants are much smaller.

Controls for gender and age are added next. Both covariates are important predictors of

[31] Of course county characteristics may be endogenous, too. Yet, as choices of a single individual have little effect on those aggregate variables, the degree of endogeneity is likely small.

economic success, as evidenced by the size of the corresponding coefficients and the increase in R^2. While controlling for gender and age leaves the coefficients on Protestant almost unaffected, the gaps between atheists and Catholics narrow substantially, but remain large and statistically significant. Controlling for distance to the nearest city as well as county characteristics has very little effect on the point estimates. The same is true for including state fixed effects.

By including state fixed effects only within state variation identifies the coefficients. This removes any potential bias from unobservables that exhibit geographic variation at the state level. Although there does remain variation in princes' religion within today's states (cf. Figures 2A and 2B), including state fixed effects comes at the cost of discarding some otherwise useful information resulting in less precise point estimates.

For all three outcomes the same picture as in the raw data emerges. Protestants and Catholics are statistically indistinguishable. Although the former work somewhat more and are more likely to be self-employed, large standard errors prevent sharp conclusions. Atheists, however, fare substantially better than either group. Even after controlling for observable characteristics they are more likely to be self-employed, work longer hours, and have much higher earnings. The difference between atheists and Catholics is statistically significant in every specification.

Yet, there exist a priori reasons to caution against a causal interpretation of the point estimates. For the least squares estimates of β_P and β_A to identify causal effects of religion it must be the case that an individual's choice of religious affiliation is uncorrelated with unobservable factors determining economic success. This condition is unlikely to hold. As mentioned before, religion is a choice variable and economic theory predicts individuals with higher opportunity cost of time to choose "less costly" forms of religion, or opt out of religion altogether.[32] This introduces correlation between an individual's religion and the error term,

[32]See, for instance, the model in Section 5, Azzi and Ehrenberg (1975), or Iannaccone (1992). The SOEP data provides some suggestive evidence in favor of these models. Catholics spend significantly more time in church than Protestants; and both of these groups are more likely to attend mass than atheists.

and thereby biases the least squares estimates against detecting differences between religious groups.

4.2 Reduced From Relationships

Estimation of the true effect of religion requires exogenous variation in individuals' choices of religion. The historical review in Section 2 suggests that the peculiar determinants of the geographic distribution of Catholics and Protestants might constitute a source of such variation.

Table 3 demonstrates that the princely reformation in the aftermath of the Peace of Augsburg does, indeed, introduce variation in the religion of contemporary Germans. The estimates in this table correspond to the linear model:

$$\begin{aligned} PROTESTANT_i &= \delta_P HIST\_PROTESTANT_c + \delta_M HIST\_MIXED_c \\ &\quad + \mathbf{X}_i'\boldsymbol{\vartheta} + \mathbf{Q}_c'\boldsymbol{\varsigma} + \iota_s + \upsilon_i, \end{aligned} \tag{2}$$

where is $HIST\_PROTESTANT_c$ an indicator for whether county c is historically Protestant, and $HIST\_MIXED_c$ marks counties whose area was not religiously uniform after the Peace.

The results indicate that individuals living in historically Protestant counties self-identify much more often as Protestant than those living in counties which are historically Catholic. The predictive power of $HIST\_MIXED_c$, however, is much smaller. After including state fixed effects it ceases to be significant.

Since princes' religious choices introduce variation in the religion of Germans today, one would also expect princes' religion and individual level economic outcomes to be correlated if Protestantism were to have a causal effect. Table 4 explores this issue by estimating the

reduced form relationship

$$y_i = \varphi_P HIST\_PROTESTANT_c + \varphi_M HIST\_MIXED_c + \mathbf{X}_i'\boldsymbol{\theta} + \mathbf{Q}_c'\boldsymbol{\psi} + \tau_s + \eta_i. \quad (3)$$

The layout of the table mirrors that of Table 2.

According to the reduced form point estimates individuals living in historically Protestant counties work almost one hour more per week, and have between 1% and 3% higher earnings than their counterparts in historically Catholic areas. While only the former effect is statistically significant, both sets of point estimates are economically meaningful. Moreover, as columns (13)–(18) show, a larger fraction of the population in historically Protestant counties is self-employed. Given a sample mean of 7.5%, the point estimate of circa 1.5 percentage points is not only marginally significant in a statistical sense, but is large in an economic sense as well.

Outcomes in counties whose area was not religiously uniform in the aftermath of the Peace are not statistically distinguishable from those in historically Catholic ones. Not only is φ_M estimated imprecisely, it is also much smaller than φ_P.

One possible explanation for the findings in Table 4 is that historically Protestant territories differ systematically from historically Catholic ones. For instance, the former might have developed different institutions, or invested in infrastructure particular conducive to economic success. In such a case the reduced form estimates might simply reflect these differences. A priori the explanatory power of this argument seems limited though. At least since the creation of a unified German Empire in 1871, but more likely since the *Reichsdeputationshauptschluss* in 1803, did formal and informal institutions converge between traditionally Protestant and Catholic areas. Today formal institutions, such as the legal or tax system, are virtually identical across counties. Only the educational system exhibits some variation at the state level. To the extent that observable county characteristics proxy for existing differences in institutions or infrastructure, one would also expect the estimates of φ_P to

decline notably with the inclusion of county level controls. This is not the case. Moreover, note that the point estimates change only slightly with the inclusion of state fixed effects, which should absorb most, if not all, institutional variation across counties.

4.3 Two-Stage Least Squares Estimates

The preceding discussion has established a relationship between princes' religion around 1624 and the religion of contemporary Germans, as well as a correlation between princes' religion and economic outcomes today. It also appears that differences in county characteristics cannot explain the reduced form estimates. Together these results point to a direct effect of Protestantism. In what follows this effect is examined more rigorously using princes' religion in the aftermath of the Peace of Augsburg as an instrumental variable for whether individuals today self-identify as Protestant.

For territories' official religion in the aftermath of the Peace to be a valid instrument for that of contemporary Germans living in the corresponding areas, it must be the case that princes' religion is uncorrelated with unobserved factors determining economic success. Unfortunately, this assumption is not directly testable.

Historians, however, assert that rulers chose a religion mainly based on their own conscience, and considerations concerning political alliances, but not according to the wishes of their subjects (e.g., Lutz 1997, Dixon 2002). Consequently a significant fraction was forced to convert—some more than once (Scribner and Dixon 2003). The fact that states' official religion often changed with successive rulers suggests that idiosyncrasies also played an important role. Cantoni (2009) investigates to which extent official religions during the Age of Confessionalization correlated with proxies of economic growth and development. He finds no evidence for pre-existing differences in development and argues that Protestant and Catholic cities did not diverge after the Peace of Augsburg.

These arguments suggest that a territory's official religion in the aftermath of the Peace stands a reasonable chance of satisfying the exogeneity assumption required for a valid

instrument. If one accepts this assumption, instrumental variable estimates are consistent and have a causal interpretation. The effect of Protestantism can then be estimated by two-stage least squares, treating whether an individual self-identifies as Protestant as endogenous and the variables included in $\mathbf{X}_i$ and $\mathbf{Q}_c$ as exogenous.

The particular form of the equation to be estimated is:

$$y_i = \beta_P PROTESTANT_i + \mathbf{X}_i'\boldsymbol{\gamma} + \mathbf{Q}_c'\boldsymbol{\lambda} + \mu_s + \epsilon_i, \tag{1'}$$

with the first stage given by

$$PROTESTANT_i = \delta_P HIST\_PROTESTANT_c + \mathbf{X}_i'\boldsymbol{\vartheta} + \mathbf{Q}_c'\boldsymbol{\varsigma} + \iota_s + \upsilon_i. \tag{2'}$$

All symbols are as defined above.

In estimating (1′) and (2′) the sample has been restricted to self-identified Protestants and Catholics. This restriction is necessitated by the lack of a credible instrument for individuals' choice of atheism.[33] [34]

Taking the two-stage least squares point estimates at face value, the results presented in Table 5 indicate that Protestantism induces individuals to work approximately 3 hours—or one quarter of a standard deviation—more per week, and raises their earnings by c. 13%. While both effects are economically very large, only the former one is statistically significant at the 5%-confidence level. Moreover, Protestantism increases self-employment by almost 5 percentage points, implying that Protestants are approximately twice as likely to be self-employed than Catholics.[35]

[33] Lifting this restriction leaves the results qualitatively unaffected (see Table 6B).

[34] $HIST\_MIXED_c$ is not used as an instrument, as it would be a weak instrument according to the critical values in Stock and Yogo (2005). Becker and Wößmann (2009) as well as Cantoni (2009) instrument with distance to the city of Weimar—the origin of the Reformation movement. In the present setting this instrument turns out to be weak, too.

[35] Upon controlling for state fixed effects the estimated impact of Protestantism on all three outcomes increases substantially, but is estimated much less precisely. The fact that a lot less variation is used to identify the effect can explain why its standard error increases, and might also contribute to the increase in the point estimates.

Since the effect of religion on economic outcomes is likely not homogenous in the population, the instrumental variable estimates should be interpreted as local average treatment effects (Imbens and Angrist 1994). That is, even if the exogeneity assumption is satisfied, β_P in equation $(1')$ indentifies the causal impact of Protestantism only for those individuals who would be affiliated with a another religion had the ruler of the area in which they live chosen differently in the aftermath of the Peace of Augsburg. In a sense these are the individuals who are the most likely to be rooted in tradition. It is perhaps not surprising that the effect for this particular group is estimated to be very large.

However, there is also reason to caution against a causal interpretation of the instrumental variables estimates. Since the instrument exhibits only county level variation, estimation by two-stage least squares implicitly rules out any peer or spillover effects as well as complementarities in production within counties.[36] As any such effects will be falsely attributed to an individual's religion, the two-stage least squares estimates might be more appropriately interpreted as upper bounds (with lower bounds given by the reduced from ones). If, for example, individuals' leisure activities are complements, then one would expect Catholics in historically Protestant counties to work harder than those in historically Catholic ones simply because they interact more with Protestants. In such a case how hard one works depends not only on one's own work ethic, but also on that of the people with whom one interacts. Yet, estimates based on an instrument exhibiting only county level variation will falsely attribute the endogenous peer effect to an individual's religious affiliation. Therefore, positive spill over effects will introduce upward bias into the two-stage least squares point estimates.

4.4 Sensitivity and Robustness

Tables 6A and 6B explore the sensitivity of the reduced form and two-stage least squares estimates across different specifications and subsamples of the data. Only estimates of φ_P

[36] For formal models of peer and spillover effects see Akerlof (1997), Bénabou (1993), or Cicala, Fryer, and Spenkuch (2010).

and β_P together with the associated standard errors are reported. The first row in the upper panel displays the baseline results, i.e. those from columns (4), (10), and (16) in Tables 4 and 5. Successive rows expand the set of covariates to include potentially endogenous controls, such as indicator variables for marital status, health, or educational attainment. The lower panel in each table displays results obtained by estimating models analogous to those in columns (5), (11), and (17) in Tables 4 and 5 on different subsamples of the data.

Of the 105 coefficient estimates displayed in Tables 6A and 6B only 4 do not carry the expected sign, i.e. are negative.[37] While the inclusion of additional covariates does reduce the point estimates relative to Tables 4 and 5, the estimated effects for Hours Worked and Self-Employed remain economically large and statistically significant. The point estimates for these two outcomes are also robust across different samples. To a lesser extent this holds for the effect of Protestantism on earnings as well.

Although large standard errors prevent sharp conclusions, there is some suggestive evidence that the effect on income and Hours Worked is stronger for females than for males. The reverse seems to be true for the impact of Protestantism on self-employment.

4.5 Additional Evidence on the Impact of Protestantism

The preceding sensitivity analysis shows that the effects of Protestantism weaken, but do not disappear, upon controlling for educational attainment. This hints at an independent effect of Protestantism on education, as proposed by Becker and Wößmann (2009). Moreover, the sensitivity analysis also suggests that Protestantism might induce especially females to work harder. Table 7 explores these issues further. It reports reduced form and two-stage least squares estimates of the effect of Protestantism on two additional outcomes: obtaining a

[37] Under the assumption that all coefficients are independently distributed—which is an obvious oversimplification—the probability that 4 or fewer of them would be negative is effectively zero if Protestantism had no effect on these outcomes. Thus, one would reject the null that the effect Protestantism is non-positive. To see this, note that if the effect of Protestantism on these outcomes is zero, then the probability of one coefficient being negative is one half, and the probability of any number of them being negative is binomially distributed. The probability that 4 or fewer of them are negative is given by $\Pr[\# \leq 4] = \sum_{j=0}^{4} B(j, .5)$, where $B(j, .5)$ denotes the binomial probability mass function for successes given the respective number of tries and a success probability of .5.

college degree, and females' propensity to take up full-time employment. Although the point estimates are not very precisely estimated (and are thus only marginally significant at best), they do line up with the conclusions drawn so far and should be regarded as one more piece of evidence pointing to an economically non-trivial effect. However, supplementary results (available from the author upon request) indicate no effect of Protestantism on wages, despite its bearing on education. Hence, the primary channel through which Protestantism raises income appears to be the number of hours worked.[38]

5 Interpreting the Evidence through the Lens of Economic Theory

Broadly summarizing, the results presented above suggest that Protestantism has a positive effect on economic outcomes, as indicated by longer hours worked, higher earnings, and more education. In the raw data, however, this effect is muted. Self-identified atheists, the majority of whom have been raised by Protestant parents, are economically much more successful than self-identified Protestants and Catholics. This section demonstrates that a simple formalization of Weber's *Protestant Ethic* as reducing the "taste for leisure" is capable of explaining the impact of Protestantism (see Doepke and Zilibotti 2008 for a similar model), while competing explanations receive much less empirical support.

Consider a population of two overlapping generations—parents and children. For simplicity, each parent is assumed to have exactly one child. Parents maximize their dynasty's utility; i.e. they are altruistic towards their child, where $\beta \in (0,1)$ denotes the degree of altruism. To improve their offspring's expected well being parents invest in the human capital of their children, $h \in H$, incurring a cost of $f(h)$. $f : H \to \mathbb{R}_+$ is strictly increasing, convex and twice continuously differentiable on the compact set H. Alternatively, parents

[38] Some simple algebra shows this conclusion to be roughly consistent with the point estimates reported in Tables 4 and 5.

can choose to spend their full income $w \in \mathbb{R}_{++}$ on consumption, c, or engage in leisure, $l \in [0,1]$, both of which are normal goods. Utility is assumed to be additively separable in consumption, $u(c)$, and leisure, $\delta v(l)$, where $\delta \in \mathbb{R}_{++}$ denotes a dynasty's "taste for leisure". Children inherit δ from their parents.[39] Both $u : \mathbb{R}_+ \to \mathbb{R}$ and $v : [0,1] \to \mathbb{R}$ are strictly increasing, concave, and twice continuously differentiable.

What sets agents apart—besides their taste for leisure—is that they can initially be either religious, R, or atheist, A. Religious agents choose whether to participate in church related activities, $r \in \{0,1\}$. Doing so yields payoff $\alpha \in \mathbb{R}_{++}$, but requires a time commitment of $\chi \in (0,1)$. If they choose to participate, that is if $r^* = 1$, their offspring grows up to be religious as well. Otherwise, the child is raised as atheist, and the parent is said to opt out of religion. Atheist parents do not engage in religious activities, i.e. $r^* = 0$, and raise atheist children.

Letting $\mathbb{E}_{\tilde{w}|h}$ denote the expectation operator over a child's wage conditional on human capital level h, the value function of atheist parents can be written as[40]

$$V_A(w) = \max_{c,l,h,r} u(c) + \delta v(l) + \beta \mathbb{E}_{\tilde{w}|h} \left[V_A(\tilde{w}) \right],$$

and that for a religious a parent is given by

$$V_R(w) = \max_{c,l,h,r} u(c) + \delta v(l) + r \left(\alpha + \beta \mathbb{E}_{\tilde{w}|h} \left[V_R(\tilde{w}) \right] \right) + (1-r) \beta \mathbb{E}_{\tilde{w}|h} \left[V_A(\tilde{w}) \right].$$

Both are subject to the budget constraint: $c + f(h) = w(1 - l - \chi r)$.

In this model, but also more generally, there are several ways through which the effect of Protestantism might operate. If Protestantism reduces dynasties' taste for leisure (see Doepke and Zilibotti 2008 for a micro-model justifying this assumption), then the model

[39] Doepke and Zilibotti (2008) present a model of preference formation with endogenous taste for leisure. Their model can explain why the Industrial Revolution coincided with the rise of a new work ethic, and why the landowning aristocracy was replaced by capitalists rising from modest backgrounds.

[40] To guarantee existence, a child's expected wage is assumed to be bounded for every level of human capital. Also, expected wages are assumed to be increasing and concave in h.

above can be interpreted as a formalization of Weber's (1904/05) hypothesis about the Protestant Ethic. Moreover, the model can rationalize the facts described in the previous section.

Provided the marginal utility of income does not decrease too fast, the economically most successful individuals, i.e. those with the highest opportunity cost of time, will select out of religion. Consistent with the results in Table 2 this selection effect mutes observed differences in economic outcomes between self-identified Protestants and self-identified Catholics, despite a causal effect of Protestantism.

By reducing the taste for leisure Protestantism induces individuals to work longer hours, i.e. it decreases l^*. The causal impact on earnings is twofold: There is a primary effect by which the increase in market time raises earnings as well as a secondary effect operating through human capital acquisition. As Protestant children spend more time working, Protestant parents invest more in the human capital of their offspring, thereby raising w (on average). Table 7 shows that Protestants are indeed more likely to graduate from college than their Catholic counterparts.[41] Given a positive second order effect of Protestantism on education (and the positive third order effect on wages), selection might also explain why the parents of atheists are disproportionately Protestant.

An alternative mechanism would operate through the cost side. All else equal, Protestantism might simply require a smaller time commitment than Catholicism. If $\chi_P < \chi_C$, then the model would yield predictions similar to those outlined above—in particular that Protestant work longer hours—even without differences in δ.

Another theory which is potentially able to rationalize the data emphasizes human capital investment (cf. Becker and Wößmann 2009). That is, Protestants might have a higher intrinsic incentive to invest in education, or they might be able to do so more efficiently (i.e. $f_P(h) < f_C(h)$); and more educated individuals can be expected to earn higher wages and

[41] Supplementary results (available from the author upon request), however, do not show wage differences favoring Protestants. Given that the model postulates only a third order effect of Protestantism on wages this may not be too surprising.

to work longer hours (if the substitution effect outweights the income effect).

Table 8 attempts to distinguish between these competing explanations. In particular, it tests the crucial assumption underlying the model in this section, i.e. that the effect of Protestantism operates through reducing individuals' taste for leisure (or equivalently by reducing their disutility from work). The estimates presented in Table 8 correspond to φ_P and β_P in reduced form and two-stage least squares models analogous to equations (3) and (1'), respectively. In addition to $\mathbf{X}_i$ and $\mathbf{Q}_c$ the regressions also include a proxy for an individual's work ethic, i.e. how many hours he would like to work if he had free choice and his income adjusted proportionately, as well as controls for educational attainment and time spent in church.[42]

As the first column demonstrates, there exists a notable religious gap in Desired Hours of Work. All else equal, Protestants would work longer hours than Catholics. The next three columns show that controlling for this single proxy reduces the estimated effects on earnings, hours worked, as well as the impact of Protestantism on women's full-time employment rates substantially. The point estimate of the last effect even changes sign. While the difference in earnings and Hours Worked narrows somewhat after controlling for educational attainment as well, the gap in female full-time employment remains essentially unaffected. That is, even conditional on education, Protestants have higher incomes, work longer hours, and Protestant females are more likely to be employed full-time than their Catholic counterparts. Similarly, controlling for Time in Church has almost no effect on the point estimates[43] It therefore appears that the data favor a values-based explanation for the impact of Protestantism on economic outcomes.

[42]The 2003 wave of the SOEP contains the question, "If you could choose your own number of working hours, taking into account that your income would change according to the number of hours: How many hours would you want to work?" The proxy for an individual's work ethic corresponds to the answer to this question.

[43]It ought to be noted that the estimated effect of Protestantism on being self-employed is robust to controlling for all three explanatory factors.

6 Conclusion

Ever since Weber's (1904/05) *The Protestant Ethic and the Spirit of Capitalism* has there been controversy about the effect of religion on economic growth and development. Even contemporary data feature a correlation between religious affiliation and economic success. Religious choices, however, are likely endogenous, and observed correlations might, therefore, be spurious.

This paper presents estimates of the effect of Protestantism using micro data from present day Germany. It exploits the fact that the geographic distribution of Catholics and Protestants is an artifact of a provision in the Peace of Augsburg in 1555 and plausibly exogenous to unobservable factors determining economic outcomes. More specifically, it uses princes' religion in the aftermath of the Peace of Augsburg as an instrumental variable for the religion of individuals living in the respective areas today. Both reduced form and instrumental variables estimates indicate that Protestantism increases hours worked—raising earnings in the process—and leads to more self-employment. The two-stage least squares point estimates suggest that the effect of Protestantism is potentially very large.

Neither institutional factors, nor differences in human capital acquisition can account for this effect. Instead, the available evidence points to a values-based explanation along the lines of a *Protestant Ethic*. It appears that religion shapes social norms and customs, which in turn have important consequences for economic outcomes. Therefore, the consequences of princes' choice in the aftermath of the Peace of Augsburg are still detectable in micro-data.

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Data Appendix to "The Protestant Ethic and Work: Micro Evidence from Contemporary Germany"

This appendix provides a description of all data used in the paper as well as precise definitions together with the exact sources of all variables.

A Mapping Territories' Official Religion after the Peace of Augsburg into Today's Counties

In creating a mapping between present day counties and the religion of the prince who reigned over the corresponding area in the aftermath of the Peace of Augsburg this paper relies on several historical accounts (e.g., Lutz 1997, Dixon 2002). The primary source of information, however, are Schindling and Ziegler (1992a, 1992b, 1993a, 1993b, 1995, 1996), which summarize the available research on each of the territories of the Holy Roman Empire for the period from 1500 to 1650. While the work of Schindling and Ziegler (1992a, 1992b, 1993a, 1993b, 1995, 1996) is based on a comprehensive body of historical research, the Reformation period has been studied more extensively for some regions than others. Consequently, information on some small independent territories, such as Isenburg, Hoya, or Barby, is relatively scarce.

The primary mapping used in this paper is based on the religious situation around 1624—the 'normal year' for territories' official religion set in the Peace of Westphalia, which ended princes' influence over the religion of their subjects. Since territories' official religion has not been constant from 1555 until 1624, there exists the possibility that the results depend on the choice of base year. To mitigate this possibility a secondary mapping based on the situation directly after the Peace of Augsburg in 1555 has been created as well. The results of the paper are qualitatively robust to using this alternative mapping instead.

Despite notable differences between and within different Protestant denominations, i.e. Lutherans, Calvinists, and Zwinglians, as a whole their teachings were generally much closer to each other than to the doctrines of the Catholic Church. Moreover, most Protestant

denominations today are united in the *Evangelical Church in Germany*. Therefore, the mapping abstracts from differences between reformed denominations and differentiates only between Protestant and Catholic territories.

In only a few instances does the border of a county or county equivalent today correspond exactly to the border of some state at the beginning of the seventeenth century. Moreover, until the secularization in 1803 abbots and bishops were not only religious but also worldly rulers in the Holy Roman Empire. This entails that a handful of cities were divided between a religious and worldly lord. Multiple rulers make it, of course, more difficult to determine an "official religion," and necessitate the use of guidelines by which to assign a religion to the county corresponding to a given area.

Whenever Catholic and Protestant lords reigned simultaneously over different parts of a county's area, or whenever this area contained an Imperial City, the religion assigned to this county corresponds to the likely religion of the majority of subjects. Population estimates, however, are often not available for this time period. In cases in which relative populations cannot be determined with certainty, they are gauged by comparing the size of the areas in question assuming equal population densities. In 53 instances this procedure yielded ambiguous results. The counties in question are all classified as neither historically Protestant nor historically Catholic, but as "mixed". The results are robust to classifying all of these counties as either historically Protestant or historically Catholic.

Table A.1 shows the religion assigned to all German counties by each of the two mappings. Territories that used to belong to the Holy Roman Empire, but lie outside of the borders of the Federal Republic of Germany today, such as Austria, Belgium, the Czech Republic, or parts of Italy, have not been considered.

B County Level Data

Information on counties' institutional features and infrastructure is taken from *Statistik regional 2007*. *Statistik regional* is an annual publication of the German Federal Statistical Office and the statistical offices of the Länder containing data on various characteristics of 437 counties and county equivalents.

Below follows a description of all county level variables used throughout the analysis.

Total Population is defined as a county's average population (in thousands) during the calendar year 2005. This variable has been taken from *Statistik regional 2007* without changes.

Population per Square Kilometer is defined as a county's average population (in thou-

sands) per square kilometer during the calendar year 2005. This variable has been derived by dividing Total Population by a county's area as of December 2005.

Number of Establishments is defined as the number of firms per thousand residents in the manufacturing sector (including mining) as of September 2005. This variable has been derived by dividing the number of firms, as given in the data, by a county's population.

Employment by Sector is defined as the average number of employees during the calendar year in a given sector as percentage of all employees in that county. The sectors considered in this paper are manufacturing (including construction) and services.[1] The variables have been derived by dividing the number of employees in each sector by the total number of employees in all sectors. The necessary information is contained in the raw data.

Hospitals is defined as the number of hospitals in a county per thousand residents. This variable has been derived by dividing the number of hospitals in that county as of December 2005 by Total Population.

Welfare Recipients is defined as the number of recipients of *Hilfe zum Lebensunterhalt* per thousand residents. The variable has been derived by dividing the total number of recipients as of December 2005 by Total Population. In contrast to the US welfare system, eligibility for *Hilfe zum Lebensunterhalt* does not vary by state, but is determined on the basis of federal legislation.

Educational Institutions is defined as the number of schools of a given kind per thousand residents. The kinds of schools considered in this paper are: pre-schools (*Vorschulen*), elementary schools (*Grundschulen*), and academic high schools (*Gymnasien*). Each variable has been derived by dividing the total number of the respective kind of school as contained in *Statistik regional 2007* by Total Population.

C German Socio-Economic Panel Study (SOEP)

All individual level data used in this paper is from the restricted-use version of the German Socio-Economic Panel Study (SOEP) as of wave Y (2008). The restricted-use version differs from the public-use one in that it contains sensitive regional information, such as county identifiers, and that data files containing sensitive information can only be accessed remotely

[1] The overwhelming majority of employees outside these two sectors work in farming and forestry.

or on-site in Berlin. Researchers interested in using either version must apply to the DIW Berlin for access. The analysis in this paper has been carried out on SOEPremote.

The SOEP is a representative longitudinal data set of private households in Germany. Starting in 1984 with 5,921 households containing 12,245 individuals living in the Federal Republic of Germany, the SOEP has collected data on a wide range of subjects in every year thereafter. Covered topics include household composition, employment status, occupational and family biographies, time allocation, personality traits, as well as physical and mental health, among others.

A random sample of 2,179 households with 4,453 members living in the German Democratic Republic (GDR) was added in 1990—preceding the Reunification; and an immigrant sample with 552 households containing 1,078 individuals was introduced in 1994/95. As in all longitudinal data, some respondents could not be located or contacted after repeated attempts, refused to participate, or were unable to do so. Attrition in the SOEP is rather low, however. After 15 (25) years approximately 50% (25%) of the original sample still participated in the SOEP. Overwhelmingly attrition is due to refusal to reply. In order to maintain, or even expand, the size of the surveyed population, additional samples were drawn in 1998, 2000, 2002, and 2006. Their respective sizes are 1,910, 10,890, 2,671, and 2,616 individuals, with the 2002 sample oversampling high-income households. The 2003 sample weights, which are supplied with the data and attempt to correct for unequal sampling probabilities as well as observed patterns of non-response, are used throughout the analysis. Additional information on the SOEP, its sample design and size, how to obtain access, etc., can be found in Frick (2006), Haisken-DeNew and Frick (2005), Göbel et al. (2008), or on the SOEP website.[2]

Individuals who were less than 25 or more than 60 years old in 2003, or were born outside of Germany have been excluded from the analysis. Furthermore, the paper restricts attention to self-identified Catholics, Protestants, and atheists; for a final sample of 11,364 observations with non-missing information on at least one of the three main outcomes variables used in the paper.

The following individual level variables are used throughout the analysis:

Religion is defined as the respondent's self-identified religious affiliation. In 2003 (wave T) the SOEP asked, "Do you belong to a church or religious community? If yes, are you ..." The set of possible answers was: "catholic", "evangelical" (i.e. Protestant), "member of another Christian community", "member of another religious community", "No, nondenominational". The relevant variable is contained in the file *TP*. This paper restricts attention to individuals who identify either as Catholic, Protestant, or check "No, nondenominational".

[2]The SOEP website is currently located at <http://www.diw.de/en/soep>.

Female is defined as an indicator variable equal to one if the respondent is female. The SOEP staff cleans the answers to all waves, and makes information on gender available in the file *PPFAD*.

Age is defined as the respondent's age in 2003. It has been constructed based on his year of birth. The SOEP staff cleans the answers to all waves, and makes information on year of birth available in the file *PPFAD*.

Number of Children is defined as the total number of children identifiable within SOEP by merging all available data. The SOEP staff creates this variable and makes it available in the files *BIOBIRTH* and *BIOBIRTHM* for female and male respondents, respectively.

Marital Status is defined as the respondent's marital status as of 2003. For each wave the SOEP staff generates this variable. For 2003 it is contained in the file *TPGEN*, and differentiates between "married", "married, but separated", "single", "divorced", and "widowed". Each possibility has been recoded into an indicator variable, combining the first two categories.

Distance to Nearest City is defined as the distance to the center of the nearest city from the respondent's place of residence. The variable used in this paper is based on the answer to the corresponding question on the Household Questionnaire in 2004, which is contained in the file *UH*. The original answer choices were: "Residence is in the city center", "under 10 km", "10 to under 25 km", "25 to under 40 km", "40 to under 60km", and "60 km or more". Each successive pair of answer choices has been recoded into an indicator variable.

Labor Income is defined as the mean of monthly gross labor income in Euros during 2000-2006. Based on information in the Individual Questionnaire the SOEP staff generates variables indicating the monthly gross labor income of the respondent in each year. These variables are contained in the files **PGEN*, where * is a placeholder for the respective wave. The variable used in this paper averages all non-missing values for the years 2000 to 2006.

Hours Worked is defined as the mean of actual weekly time spent working (including overtime) during 2000-2006. Based on information in the Individual Questionnaire the SOEP staff generates variables indicating actual weekly working hours of the respondent for each year. These variables are contained in the files **PGEN*, where *

is a placeholder for the respective wave. The variable used in this paper averages all non-missing values for the years 2000 to 2006.

Hourly Wage is defined as the ratio of Labor Income to Hours Worked.

Self-Employed is defined as the mean of seven indicator variables equal to one if the respondent reports to have been self-employed in a given year during 2000-2006. On the Individual Questionnaire the respondent is asked to indicate his current position or occupation. For each wave the SOEP staff recodes occupations into Erikson, Goldthorpe Class Categories (IS88), and makes the resulting variable available in the files **PGEN*, where * is a placeholder for the respective wave. Whenever a respondent has been classified as "self-employed with employees" or as "self-employed without employees" according to the Erikson, Goldthorpe Class Categories, he is considered to be self-employed for the purposes of this paper. That is, the indicator variable for the respective year is coded as one, and as zero otherwise.

Educational Attainment encompasses six indicator variables for the highest academic (as opposed to vocational) degree completed by the respondent as of 2003. The five categories considered in this paper are: Drop Out, Lower Secondary School (*Hauptschulabschluss*; usually 9 years of schooling), Intermediate Secondary School (*Realschulabschluss*; usually 10 years of schooling), Academic Secondary School (*Abitur* or *Fachabitur*; usually 12-13 years of schooling), and College/University. The SOEP staff combines the information on education from all waves and makes it available in the file *TPGEN*.

Years of Schooling is defined as the amount of education and further training (in years) at the time of the survey in 2003. In contrast to Educational Attainment, Years of Schooling also includes formal vocational schooling and training. The variable used in the paper has been generated by SOEP staff, and can be found in the file *TPGEN*.

Religion of Father is defined as the religious affiliation of the respondent's father. This information is provided by the respondent himself in the Biography Questionnaire, or the Youth Questionnaire. Possible answer choices are: Catholic, Protestant, Other Christian Denomination, Islamic Denomination, Other Denomination, No Denomination. The SOEP staff combines the relevant information from all waves and makes it available in the file *BIOPAREN*.

Religion of Mother is defined as the religious affiliation of the respondent's mother. This information is provided by the respondent himself in the Biography Questionnaire or

the Youth Questionnaire. Possible answer choices are: Catholic, Protestant, Other Christian Denomination, Islamic Denomination, Other Denomination, No Denomination. The SOEP staff combines the relevant information from all waves and makes it available in the file *BIOPAREN*.

Health Status is defined as a dichotomous variable indicating whether the respondent is in 'good' or 'poor' health at the time of the survey in 2003. In every year the SOEP elicits the respondent's health status. The set of possible answer choices is: "very good", "good", "satisfactory", "poor", and "bad". The variable used in this paper combines the first three categories to mean that the respondent is in 'good' health, and the latter two categories to indicate that he is in 'poor' health. Information on the respondent's health status in contained in the file *TP*.

Desired Hours of Work is defined as the answer to the following question asked in 2003: "If you could choose your own number of working hours, taking into account that your income would change according to the number of hours: How many hours would you want to work?" The relevant information is contained in the file *TP*.

Time in Church is defined as the answer to the following item in 2003: "Please indicate how often you take part in each activity." The set of possible answer choices is: "daily", "at least once a week", "at least once a month", "seldom", and "never". The variables used in this paper correspond to five indivator variables equal to one if the respective choice was selected and zero otherwise. The relevant information is contained in the file *TP*.

D Cross-Country Data

Figures 1A and 1B are based on country level data contained in Maddison (2006) and Barrett et al. (2001). Maddison (2006) estimates GDP, GDP per capita, etc. for up to 179 countries and blocks of countries at various points in history.[3] Barrett et al. (2001) is a reference work providing detailed information on major and minor religions in 239 countries and regions around the world starting in 1900. The information contained therein is based on official government statistics, where available, church records, and estimates of the authors. It has been found to be highly correlated with that published elsewhere (cf. Hsu et al. 2008).

The set of countries depicted in Figures 1A and 1B are all countries with available information on GDP per capita in 1900 or 2000, respectively, and which are majoritarian

[3]Maddison's data are also available online at <http://www.ggdc.net/maddison/>.

Catholic and Protestant at this point in time. That is, those countries for which the combined share of Catholics and Protestants exceeds 50%. This set contains 29 observations for the year 1900, and 63 observations in 2000.

The definition of Protestant used in this paper includes Anglicans, and in the case of the US those Christians classified as "Independents" by Barrett et al (2001). The correlations depicted in Figures 1A and 1B are robust to excluding Anglicans and Independents, and to using different cut off levels. The correlations are also robust to excluding all African countries.

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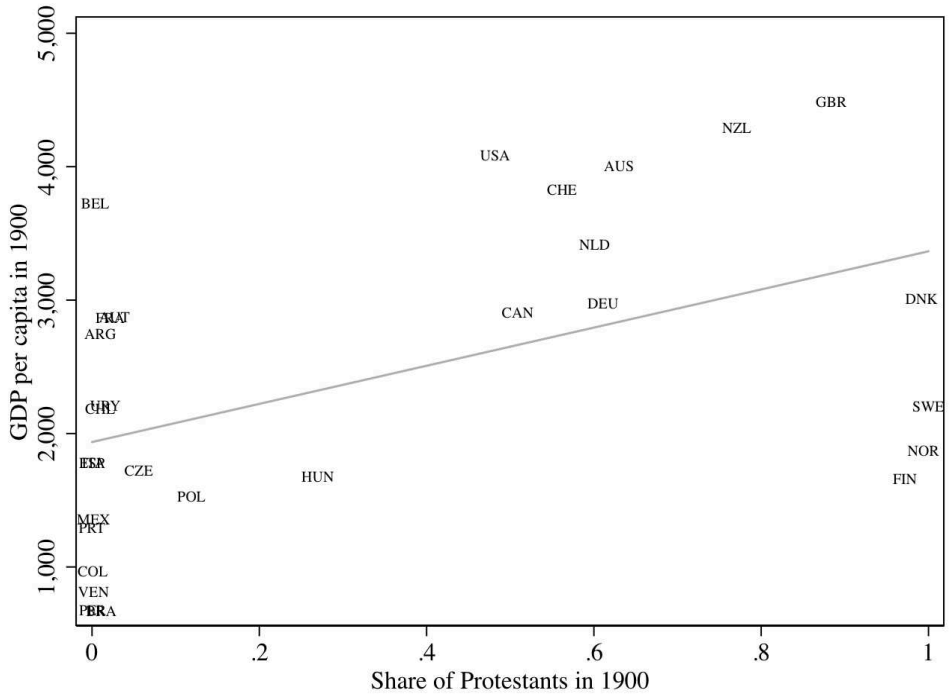
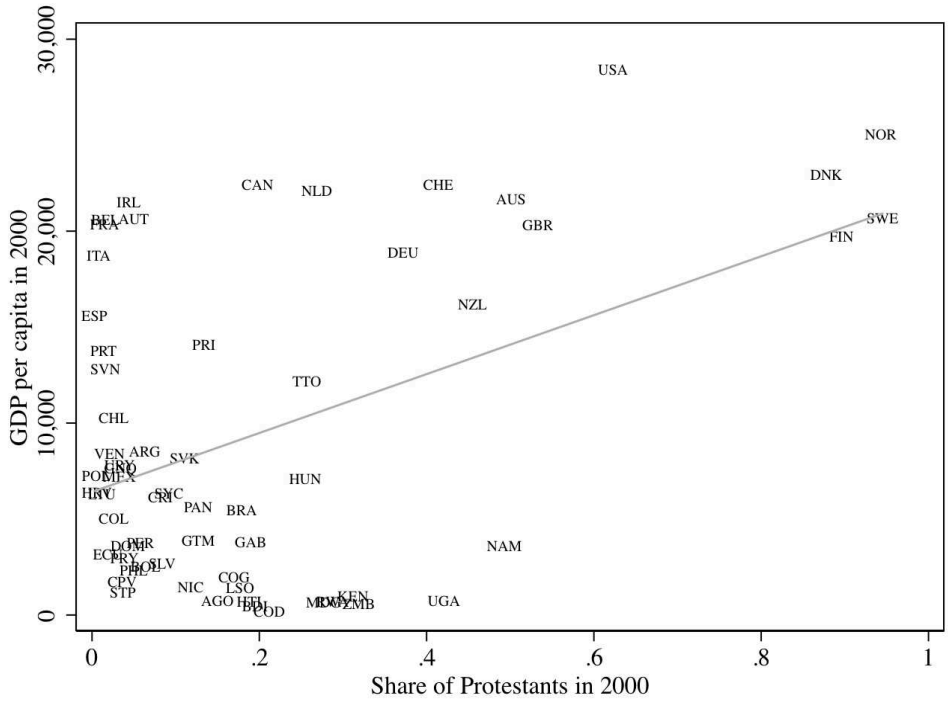
Figure 1A: The Correlation between GDP per Capita and Share of Protestants in 1900



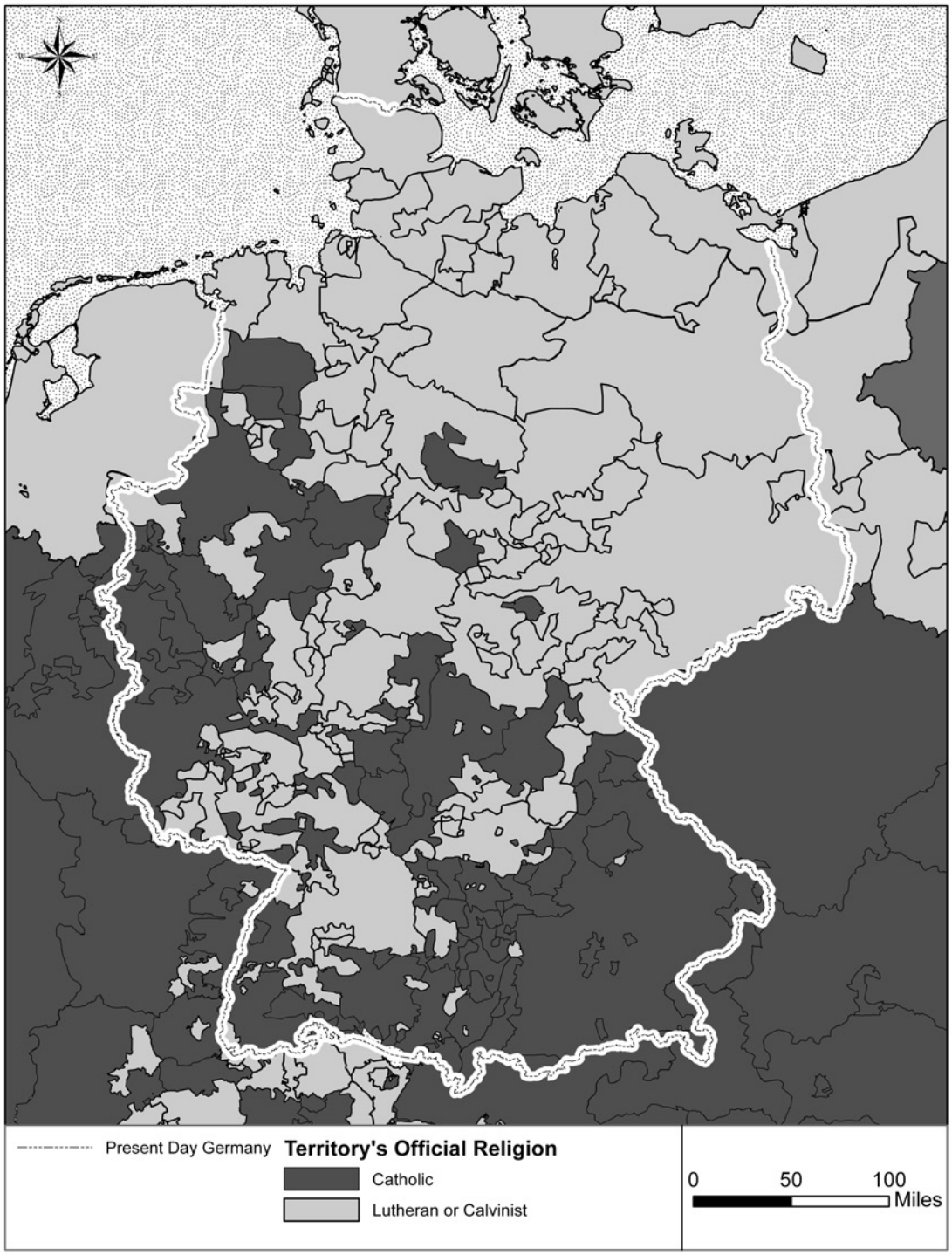
Notes: GDP per capita is measured in 1990 International Geary-Khamis dollars. The sources of GDP per capita and Share of Protestants are Maddison (2006) and Barrett et al. (2001), repsectively. See also Becker and Wößmann (2009). The Data Appendix provides further detail.

Figure 1B: The Correlation between GDP per Capita and Share of Protestants in 2000



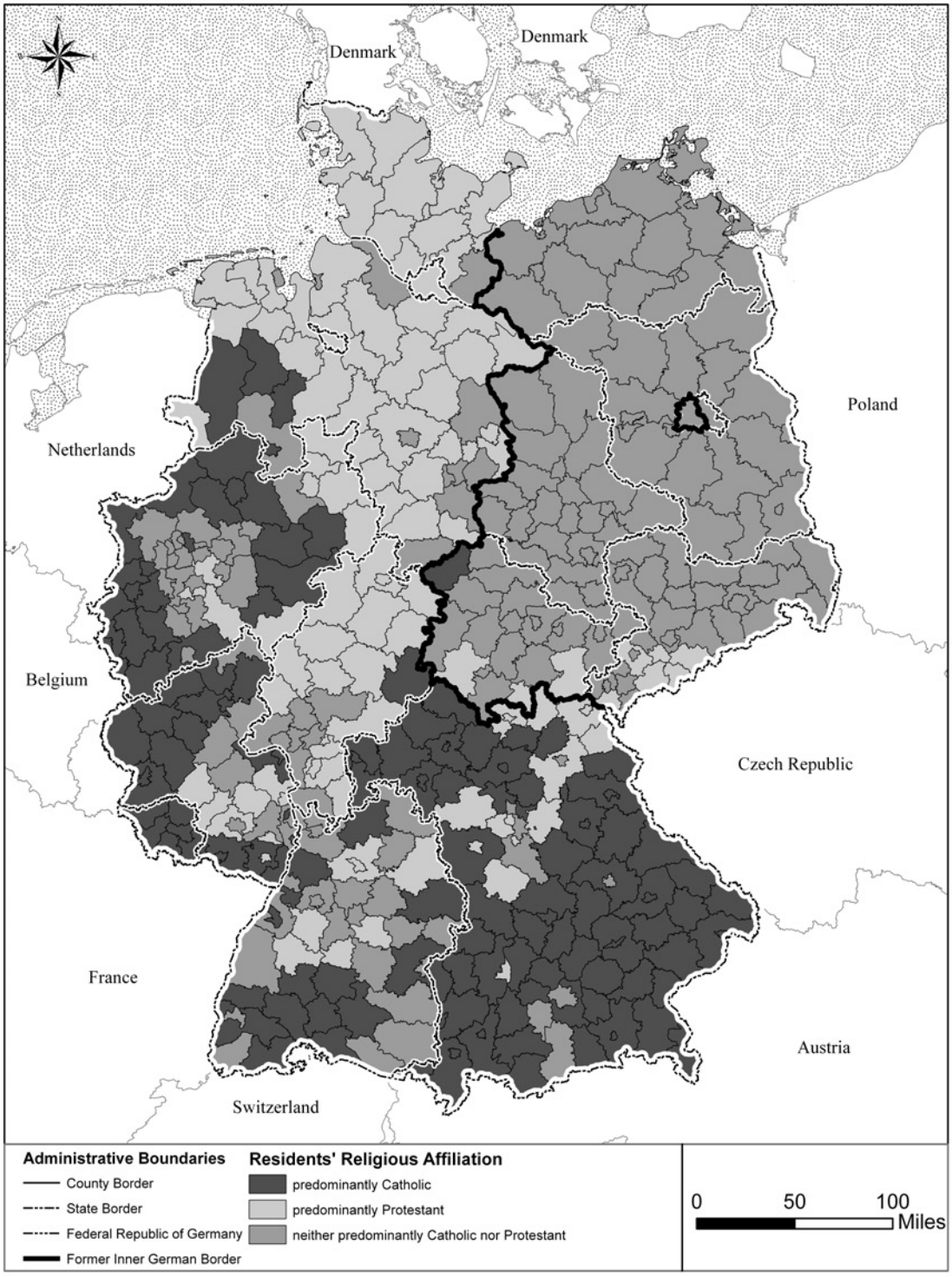
Notes: GDP per capita is measured in 1990 International Geary-Khamis dollars. The sources of GDP per capita and Share of Protestants are Maddison (2006) and Barrett et al. (2001), repsectively. See the Data Appendix for further detail.

Figure 2A: The Religious Situation in the Holy Roman Empire Before the Thirty Years' War



Sources: Based on Kunz (1996) and the information in Schindling and Ziegler (1992a, 1992b, 1993a, 1993b, 1995, 1996)

Figure 2B: The Religious Situation in Present Day Germany



Sources: Author's calculations based on SOEP data and Statistsiches Bundesamt (1990)

Table 1A: County Level Summary Statistics

		Official Religion in 1624:		
Dependent Variable	Full Sample	Catholic	Protestant	Mixed
Total Population (in 1,000)	163.066	175.137	145.240	228.480
	(140.926)	(164.892)	(123.379)	(150.278)
Population per Square Kilometer (in 1,000)	.462	.427	.414	.789
	(.621)	(.625)	(.536)	(.880)
Number of Establishments (per 1,000 Residents)	1.718	1.768	1.488	2.788
	(7.514)	(8.105)	(5.219)	(13.749)
Employment by Sector (percent):				
Manufacturing	28.241	29.540	27.406	29.740
	(8.674)	(8.480)	(8.700)	(8.571)
Services	68.588	66.911	69.430	67.859
	(9.389)	(9.604)	(9.161)	(9.716)
Hospitals (per 1,000 Residents)	.067	.069	.062	.083
	(.264)	(.297)	(.235)	(.320)
Welfare Recipients (per 1,000 Residents)	7.058	6.474	6.584	10.725
	(27.708)	(25.801)	(19.113)	(55.595)
Educational Institutions (per 1,000 Residents):				
Pre-Schools	.031	.016	.042	.007
	(.078)	(.042)	(.094)	(.015)
Elementary Schools	.565	.637	.519	.644
	(2.032)	(2.677)	(1.559)	(2.557)
High Schools (*Gymnasien*)	.099	.076	.093	.182
	(.423)	(.210)	(.302)	(.961)
Universities	.003	.002	.003	.002
	(.016)	(.007)	(.019)	(.008)
Number of Observations	437	113	271	53

Notes: Entries are unweighted means and standard deviations of county level data for those counties with non-missing information. See the Data Appendix for the precise definition and source of each variable.

Table 1B: Individual Level Summary Statistics

		West Germans			East Germans		
Variable	Full Sample	Catholics	Protestants	Atheists	Catholics	Protestants	Atheists
Demographics:							
Female	.496	.508	.518	.397	.541	.568	.497
	(.500)	(.500)	(.500)	(.489)	(.500)	(.496)	(.500)
Age	42.756	42.379	42.710	44.092	41.066	43.647	42.278
	(9.470)	(9.346)	(9.493)	(8.840)	(10.059)	(10.142)	(9.680)
Number of Children	1.420	1.483	1.500	1.094	1.672	1.565	1.409
	(1.128)	(1.157)	(1.170)	(1.089)	(1.146)	(1.051)	(1.044)
Marital Status:							
Single	.206	.195	.195	.218	.270	.182	.228
	(.405)	(.397)	(.396)	(.413)	(.446)	(.386)	(.420)
Married	.683	.715	.715	.629	.680	.709	.636
	(.465)	(.452)	(.451)	(.483)	(.468)	(.455)	(.481)
Divorced	.095	.074	.074	.142	.049	.091	.117
	(.293)	(.262)	(.261)	(.349)	(.217)	(.288)	(.322)
Widowed	.016	.015	.016	.011	.000	.018	.019
	(.124)	(.123)	(.126)	(.103)	(.000)	(.134)	(.136)
Residence:							
Distance to Nearest City:							
less than 10 km	.337	.314	.342	.451	.284	.235	.316
	(.473)	(.464)	(.474)	(.498)	(.453)	(.424)	(.465)
10 km to 40 km	.438	.462	.450	.421	.259	.438	.417
	(.496)	(.499)	(.498)	(.494)	(.440)	(.497)	(.493)
more than 40 km	.224	.224	.208	.128	.457	.327	.268
	(.417)	(.417)	(.406)	(.334)	(.500)	(.469)	(.443)
County's Official Religion in 1624:							
Catholic	.247	.498	.205	.269	.262	.033	.038
	(.431)	(.500)	(.404)	(.443)	(.442)	(.180)	(.192)
Protestant	.604	.275	.635	.542	.680	.894	.919
	(.489)	(.447)	(.482)	(.498)	(.468)	(.308)	(.274)
Mixed	.149	.227	.160	.190	.057	.073	.043
	(.357)	(.419)	(.367)	(.392)	(.234)	(.260)	(.203)
Economic Outcomes:							
Employed Full-Time	.611	.597	.574	.713	.516	.565	.624
	(.487)	(.491)	(.495)	(453)	(.502)	(.496)	(.484)
Labor Income (EUR)	2,511	2,555	2,553	3,473	1,874	1,842	1,974
	(2,294)	(2,298)	(2,342)	(2,934)	(1,314)	(1,296)	(1,676)
Hours Worked	38.181	35.972	36.278	40.630	39.756	39.796	41.143
	(12.632)	(13.636)	(13.547)	(11.453)	(10.606)	(11.336)	(10.139)
Hourly Earnings (EUR)	15.829	16.808	16.689	20.458	11.402	11.393	11.852
	(12.250)	(11.071)	(15.118)	(13.655)	(6.048)	(6.343)	(7.758)
Self-Employed	.072	.065	.076	.094	.097	.070	.061
	(.232)	(.222)	(.237)	(.262)	(.270)	(.226)	(.216)
Desired Hours of Work	35.076	33.426	33.486	36.215	37.261	36.928	37.877
	(10.552)	(11.617)	(11.286)	(10.210)	(7.893)	(8.126)	(7.899)
Educational Attainment:							
Drop Out	.010	.014	.011	.010	.000	.005	.006
	(.099)	(.115)	(.103)	(.101)	(.000)	(.068)	(.075)
Lower Secondary School	.274	.371	.338	.261	.148	.136	.133
	(.446)	(.483)	(.473)	(.439)	(.356)	(.343)	(.340)
Intermediate Secondary School	.351	.276	.283	.277	.516	.523	.515
	(.477)	(.447)	(.450)	(.448)	(.502)	(.500)	(.500)
Academic Secondary School	.106	.109	.126	.147	.107	.070	.062
	(.308)	(.312)	(.331)	(.354)	(.310)	(.256)	(.242)
University Degree	.253	.222	.236	.299	.230	.265	.280
	(.435)	(.415)	(.425)	(.458)	(.422)	(.441)	(.449)
Other	.006	.008	.006	.006	.000	.002	.004
	(.077)	(.091)	(.079)	(.078)	(.000)	(.039)	(.062)
Years of Schooling	12.709	12.500	12.671	13.139	12.684	12.641	12.749
	(2.708)	(2.763)	(2.819)	(2.878)	(2.223)	(2.280)	(2.482)
Religion of Parents:							
Father:							
Catholic	.363	.863	.122	.318	.803	.039	.043
	(.481)	(.344)	(.327)	(.466)	(.401)	(.193)	(.204)
Protestant	.441	.117	.818	.501	.113	.790	.242
	(.497)	(.322)	(.386)	(.500)	(.318)	(.408)	(.428)
Atheist	.182	.015	.046	.144	.085	.142	.706
	(.386)	(.123)	(.210)	(.351)	(.280)	(.350)	(.454)
Mother:							
Catholic	.365	.923	.080	.324	.812	.025	.040
	(.481)	(.267)	(.271)	(.468)	(.394)	(.157)	(.196)
Protestant	.462	.064	.888	.538	.101	.862	.287
	(.499)	(.246)	(.316)	(.499)	(.304)	(.345)	(.452)
Atheist	.164	.010	.025	.110	.087	.103	.666
	(.370)	(.100)	(.157)	(.312)	(.284)	(.305)	(.472)
Number of Observations	11,364	3,146	3,106	1,667	122	660	2,663

Notes: Entries are unweighted means and standard deviations of individual level data for those individuals with non-missing information. See the Data Appendix for the precise definition and source of each variable.

Table 2: OLS Estimates of the Correlation between Religion and Work Related Outcomes

	Log Labor Income						Hours Worked						Self-Employed					
Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Individual's Religion:																		
Protestant	-.017	.017	.008	.004	-.007	.008	.826	.705	.606	.581	.573	.589	.014	.015	.015	.016	.014	.013
	(.025)	(.025)	(.024)	(.024)	(.025)	(.027)	(.373)	(.379)	(.343)	(.343)	(.359)	(.378)	(.007)	(.007)	(.007)	(.007)	(.007)	(.007)
Atheist	.081	.267	.180	.167	.150	.162	4.748	4.102	2.673	2.599	2.618	2.589	.019	.026	.022	.023	.021	.022
	(.027)	(.029)	(.029)	(.029)	(.030)	(.030)	(.374)	(.462)	(.432)	(.441)	(.452)	(.466)	(.007)	(.010)	(.009)	(.009)	(.010)	(.010)
East German		-.365	-.308	-.294	-.271	-.215		1.268	2.137	2.195	2.081	2.589		-.015	-.011	-.013	-.013	-.034
		(.027)	(.028)	(.028)	(.028)	(.047)		(.403)	(.443)	(.455)	(.465)	(.466)		(.010)	(.009)	(.009)	(.010)	(.016)
Female			-.677	-.678	-.680	-.680			-12.516	-12.516	-12.509	-12.489			-.033	-.033	-.033	-.032
			(.026)	(.026)	(.026)	(.026)			(.417)	(.417)	(.417)	(.414)			(.006)	(.006)	(.006)	(.006)
Age:																		
30 to 40			.118	.122	.122	.128			-.477	-.452	-.408	-.392			.021	.021	.021	.021
			(.035)	(.035)	(.035)	(.034)			(.576)	(.574)	(.573)	(.573)			(.010)	(.010)	(.010)	(.010)
40 to 50			.193	.198	.198	.204			-.196	-.146	-.109	-.117			.026	.025	.025	.025
			(.034)	(.035)	(.035)	(.034)			(.578)	(.577)	(.578)	(.579)			(.010)	(.010)	(.010)	(.010)
50 to 60			.152	.157	.153	.162			-1.290	-1.234	-1.206	-1.227			.014	.014	.013	.013
			(.036)	(.036)	(.036)	(.036)			(.580)	(.577)	(.576)	(.574)			(.010)	(.010)	(.010)	(.010)
Distance to Nearest City:																		
10 km to 40 km				-.054	.013	.010				-.660	-.416	-.380				.002	.002	.002
				(.021)	(.024)	(.023)				(.357)	(.412)	(.425)				(.007)	(.009)	(.008)
> 40 km				-.119	-.026	-.031				-.618	-.459	-.547				.014	.014	.012
				(.028)	(.030)	(.030)				(.414)	(.510)	(.520)				(.009)	(.010)	(.010)
Constant	7.466	7.474	7.677	7.726	5.714	5.672	35.824	35.796	42.499	42.882	50.022	49.767	.056	.056	.054	.051	-.177	-.098
	(.018)	(.018)	(.037)	(.042)	(.613)	(.651)	(.269)	(.268)	(.615)	(.678)	(9.926)	(11.355)	(.005)	(.005)	(.009)	(.010)	(.177)	(.195)
County Level Controls	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
State Fixed Effects	No	No	No	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	No	Yes
R-Squared	.003	.032	.230	.232	.239	.245	.028	.030	.280	.281	.283	.286	.001	.002	.009	.009	.010	.014
Number of Observations	10,818	10,818	10,818	10,818	10,818	10,818	10,778	10,778	10,778	10,778	10,778	10,778	11,310	11,310	11,310	11,310	11,310	11,310

Notes: Entries are coefficients and standard errors from estimating equation (1) by weighted least squares. The respective dependent variables are listed at the top of each column. Heteroskedasticity robust standard errors are clustered by county and reported in parentheses. In addition to the variables shown in the table, indicator variables for missing values on each covariate are also included in the regressions. See the Data Appendix for the precise definition and source of each variable.

Table 3: Territories' Religion in 1624 and Protestantism Today

	Protestant					
Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)
County's Religion in 1624:						
Protestant	.166	.268	.268	.270	.249	.211
	(.031)	(.033)	(.033)	(.032)	(.035)	(.036)
Mixed	.074	.085	.086	.089	.088	.059
	(.031)	(.035)	(.035)	(.035)	(.034)	(.031)
East German		-.320	-.321	-.323	-.301	-.210
		(.027)	(.027)	(.026)	(.026)	(.031)
Female			.042	.042	.041	.043
			(.011)	(.011)	(.011)	(.011)
Age:						
30 to 40			-.028	-.029	-.030	-.031
			(.023)	(.023)	(.023)	(.023)
40 to 50			-.020	-.022	-.019	-.014
			(.023)	(.022)	(.023)	(.022)
50 to 60			-.007	-.008	-.008	-.006
			(.022)	(.022)	(.023)	(.021)
Distance to Nearest City:						
10 km to 40 km				.027	.013	.019
				(.023)	(.025)	(.019)
> 40 km				.033	.020	.012
				(.027)	(.026)	(.023)
Constant	.231	.246	.243	.222	-.916	-1.067
	(.024)	(.025)	(.031)	(.033)	(.606)	(.553)
Countly Level Controls	No	No	No	No	Yes	Yes
State Fixed Effects	No	No	No	No	No	Yes
R-Squared	.023	.096	.099	.100	.111	.149
Number of Observations	11,364	11,364	11,364	11,364	11,364	11,364

Notes: Entries are coefficients and standard errors from estimating equation (2) by weighted least squares. Heteroskedasticity robust standard errors are clustered by county and reported in parentheses. In addition to the variables included in the table, indicator variables for missing values on each covariate are also included in the regressions. See the Data Appendix for the precise definition and source of each variable.

Table 4: Reduced Form Estimates of the Effect of Religion on Work Related Outcomes

	Log Labor Income						Hours Worked						Self-Employed					
Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
County's Religion in 1624:																		
Protestant	-.041	.028	.023	.016	.011	.031	2.131	1.151	1.118	1.049	1.027	.801	.014	.017	.017	.017	.015	.011
	(.030)	(.031)	(.033)	(.031)	(.027)	(.028)	(.366)	(.369)	(.373)	(.363)	(.367)	(.450)	(.007)	(.008)	(.008)	(.007)	(.008)	(.010)
Mixed	.014	.021	.013	.001	-.008	.013	.871	.761	.652	.548	.550	.681	-.004	-.004	-.005	-.004	-.005	-.003
	(.044)	(.043)	(.042)	(.040)	(.034)	(.036)	(.596)	(.570)	(.505)	(.490)	(.460)	(.477)	(.009)	(.009)	(.009)	(.009)	(.009)	(.009)
East German		-.221	-.211	-.202	-.187	-.137		3.151	3.211	3.258	3.175	1.208		-.010	-.009	-.010	-.010	-.027
		(.022)	(.022)	(.022)	(.023)	(.044)		(.348)	(.384)	(.395)	(.434)	(.688)		(.009)	(.008)	(.008)	(.008)	(.014)
Female			-.690	-.690	-.691	-.691			-12.686	-12.683	-12.678	-12.655			-.034	-.034	-.034	-.033
			(.026)	(.026)	(.026)	(.026)			(.417)	(.418)	(.416)	(.415)			(.006)	(.006)	(.006)	(.006)
Age:																		
30 to 40			.129	.133	.132	.138			-.340	-.311	-.267	-.256			.023	.022	.022	.022
			(.035)	(.035)	(.035)	(.034)			(.576)	(.575)	(.576)	(.574)			(.010)	(.010)	(.010)	(.010)
40 to 50			.203	.209	.207	.213			-.068	-.011	.014	.014			.027	.026	.026	.026
			(.035)	(.035)	(.035)	(.035)			(.584)	(.585)	(.585)	(.584)			(.010)	(.010)	(.010)	(.010)
50 to 60			.161	.167	.161	.170			-1.178	-1.115	-1.097	-1.112			.015	.014	.014	.014
			(.036)	(.036)	(.036)	(.037)			(.583)	(.581)	(.580)	(.576)			(.010)	(.010)	(.010)	(.010)
Distance to Nearest City:																		
10 km to 40 km				-.063	.012	.012				-.744	-.375	-.327				.001	.002	.003
				(.022)	(.024)	(.023)				(.362)	(.411)	(.423)				(.007)	(.008)	(.008)
> 40 km				-.138	-.033	-.034				-.852	-.514	-.585				.012	.014	.013
				(.029)	(.030)	(.030)				(.421)	(.508)	(.517)				(.009)	(.010)	(.010)
Constant	7.510	7.520	7.702	7.760	5.774	5.679	36.387	36.244	42.604	43.100	51.165	49.191	.059	.060	.058	.055	-.194	-.107
	(.025)	(.025)	(.039)	(.042)	(.628)	(.674)	(.285)	(.280)	(.588)	(.649)	(10.463)	(11.939)	(.005)	(.005)	(.009)	(.010)	(.176)	(.195)
Countly Level Controls	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
State Fixed Effects	No	No	No	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	No	Yes
R-Squared	.001	.014	.221	.225	.233	.239	.006	.016	.275	.276	.278	.281	.001	.002	.009	.009	.010	.013
Number of Observations	10,818	10,818	10,818	10,818	10,818	10,818	10,778	10,778	10,778	10,778	10,778	10,778	11,310	11,310	11,310	11,310	11,310	11,310

Notes: Entries are coefficients and standard errors from estimating equation (3) by weighted least squares. The respective dependent variables are listed at the top of each column. Heteroskedasticity robust standard errors are clustered by county and reported in parentheses. In addition to the variables shown in the table, indicator variables for missing values on each covariate are also included in the regressions. See the Data Appendix for the precise definition and source of each variable.

Table 5: 2SLS Estimates of the Effect of Protestantism on Economic Outcomes

	Log Labor Income						Hours Worked						Self-Employed					
Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
Individual's Religion:																		
Protestant	.070	.134	.143	.134	.139	.188	3.378	2.822	3.004	2.889	3.002	3.465	.049	.048	.049	.050	.047	.061
	(.072)	(.078)	(.078)	(.074)	(.084)	(.113)	(1.054)	(1.131)	(1.043)	(1.014)	(1.201)	(1.948)	(.020)	(.022)	(.022)	(.022)	(.026)	(.045)
East German		-.252	-.232	-.220	-.214	-.297		2.197	2.589	2.710	2.625	-.535		.004	.005	.002	.008	-.005
		(.044)	(.047)	(.046)	(.051)	(.078)		(.706)	(.743)	(.740)	(.811)	(1.166)		(.016)	(.016)	(.016)	(.018)	(.029)
Female			-.803	-.804	-.806	-.806			-14.453	-14.468	-14.470	-14.459			-.030	-.031	-.031	-.030
			(.028)	(.028)	(.028)	(.028)			(.433)	(.434)	(.434)	(.435)			(.007)	(.007)	(.007)	(.007)
Age:																		
30 to 40			.060	.064	.063	.064			-1.624	-1.588	-1.543	-1.593			.026	.025	.024	.024
			(.042)	(.042)	(.042)	(.042)			(.705)	(.707)	(.707)	(.703)			(.011)	(.011)	(.011)	(.011)
40 to 50			.130	.137	.140	.139			-1.225	-1.112	-1.089	-1.152			.031	.030	.030	.030
			(.043)	(.044)	(.044)	(.044)			(.693)	(.696)	(.693)	(.699)			(.011)	(.011)	(.011)	(.011)
50 to 60			.070	.080	.078	.081			-2.369	-2.234	-2.209	-2.223			.011	.009	.009	.010
			(.042)	(.043)	(.042)	(.043)			(.660)	(.664)	(.659)	(.663)			(.011)	(.011)	(.011)	(.011)
Distance to Nearest City:																		
10 km to 40 km				-.073	-.015	-.014				-1.291	-.793	-.803				.001	.002	-.001
				(.029)	(.033)	(.038)				(.437)	(.512)	(.521)				(.008)	(.010)	(.010)
> 40 km				-.116	-.040	-.037				-1.132	-.632	-.649				.030	.033	.030
				(.035)	(.039)	(.038)				(.536)	(.652)	(.665)				(.011)	(.013)	(.013)
Constant	7.420	7.405	7.721	7.779	5.952	5.880	34.487	34.619	43.086	43.944	42.271	46.216	.037	.037	.031	.027	-.345	-.141
	(.039)	(.041)	(.052)	(.055)	(.740)	(.872)	(.584)	(.590)	(.767)	(.816)	(9.912)	(12.199)	(.010)	(.010)	(.012)	(.014)	(.209)	(.240)
County Level Controls	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes
State Fixed Effects	No	No	No	No	No	Yes	No	No	No	No	No	Yes	No	No	No	No	No	Yes
First Stage F-Statistic	144.63	121.39	121.57	121.04	88.70	44.84	142.92	119.58	119.76	119.23	87.61	43.63	148.42	124.24	124.40	124.13	92.25	44.17
Number of Observations	6,756	6,756	6,756	6,756	6,756	6,756	6,726	6,726	6,726	6,726	6,726	6,726	6,989	6,989	6,989	6,989	6,989	6,989

Notes: Entries are coefficients and standard errors from estimating equation (1') by weighted two-stage least squares. The respective dependent variables are listed at the top of each column. Individuals' self-identified religion is instrumented for by the official religion in their county of residence in 1624. Heteroskedasticity robust standard errors are clustered by county and reported in parentheses. In addition to the variables shown in the table, indicator variables for missing values on each covariate are also included in the regressions. The sample has been restricted to individuals who self-identify as Protestant or Catholic. See the Data Appendix for the precise definition and source of each variable.

Table 6A: Sensitivity Analysis of Reduced Form Estimates

Specification / Sample	Log Labor Income	Hours Worked	Self-Employed
Controls:			
Baseline Individual Controls	.016	1.049	.017
	(.031)	(.363)	(.007)
Baseline Individual Controls, Education,	.003	.937	.016
	(.025)	(.337)	(.001)
Baseline Individual Controls, Education, Marital Status	.003	.947	.016
	(.025)	(.325)	(.007)
Baseline Individual Controls, Education, Marital Status, Number of Children	.003	.936	.016
	(.024)	(.323)	(.007)
Baseline Individual Controls, Education, Marital Status, Number of Children, Health	.001	.938	.016
	(.024)	(.322)	(.007)
Baseline Individual Controls, Education, Marital Status, Number of Children, Health County Charateristics	.001	.970	.014
	(.023)	(.328)	(.008)
Baseline Individual Controls, Education, Marital Status, Number of Children, Health County Charateristics, State Fixed Effects	.031	.828	.013
	(.023)	(.401)	(.010)
Sample:			
Unweighted	.005	.918	.003
	(.023)	(.270)	(.007)
West Germans	.021	.987	.016
	(.029)	(.407)	(.009)
Parents Protestant or Catholic	-.001	.877	.014
	(.032)	(.472)	(.009)
By Gender:			
Males	-.011	.820	.027
	(.030)	(.435)	(.012)
Females	.033	1.192	.001
	(.049)	(.655)	(.009)
By Age:			
< 35	-.038	.964	.016
	(.046)	(.761)	(.015)
35 to 50	.022	1.199	.009
	(.034)	(.520)	(.011)
> 50	.022	.311	.026
	(.057)	(.786)	(.017)
By Region:			
Northwest	.044	1.198	.011
	(.048)	(.592)	(.012)
Southwest	.056	.789	.011
	(.036)	(.580)	(.013)

Notes: Entries are coefficients and standard errors on 'Protestant' from estimating the reduced form model, i.e. equation (3), by weighted least squares. Heteroskedasticity robust standard errors are clustered by county and reported in parentheses. The upper panel varies the set of covariates, with the respective controls indicated on the left of each row. The lower panel reports estimates for different subsets of the data (using the baseline individual and county level controls). The respective sample restriction is indicated on the left of each row. All specifications include indicator variables for missing values on each covariate. See the Data Appendix for the precise definition and source of each variable.

Table 6B: Sensitivity Analysis of 2SLS Estimates

Specification / Sample	Log Labor Income	Hours Worked	Self-Employed
Controls:			
Baseline Individual Controls	.134	2.889	.050
	(.074)	(1.014)	(.022)
Baseline Individual Controls, Education,	.092	2.488	.049
	(.064)	(.952)	(.021)
Baseline Individual Controls, Education, Marital Status	.096	2.588	.049
	(.063)	(.941)	(.021)
Baseline Individual Controls, Education, Marital Status, Number of Children,	.096	2.598	.049
	(.063)	(.944)	(.021)
Baseline Individual Controls, Education, Marital Status, Number of Children, Health	.088	2.564	.049
	(.062)	(.942)	(.021)
Baseline Individual Controls, Education, Marital Status, Number of Children, Health County Charateristics	.100	2.760	.046
	(.071)	(1.106)	(.025)
Baseline Individual Controls, Education, Marital Status, Number of Children, Health County Charateristics, State Fixed Effects	.175	3.441	.063
	(.098)	(1.825)	(.043)
Sample:			
Unweighted	.143	2.938	.006
	(.074)	(.948)	(.021)
West Germans	.143	3.195	.045
	(.085)	(1.227)	(.026)
Including Atheists	.063	3.724	.078
	(.110)	(1.675)	(.034)
Parents Protestant or Catholic	.013	2.183	.052
	(.103)	(1.578)	(.030)
By Gender:			
Males	.023	1.492	.074
	(.084)	(1.324)	(.035)
Females	.228	4.826	.012
	(.160)	(2.302)	(.033)
By Age:			
< 35	-.012	2.029	.035
	(.144)	(2.499)	(.050)
35 to 50	.195	3.732	.036
	(.118)	(1.667)	(.037)
> 50	.164	1.628	.082
	(.151)	(2.144)	(.041)
By Region:			
Northwest	.166	3.242	.033
	(.130)	(1.776)	(.042)
Southwest	.170	2.356	.060
	(.129)	(1.907)	(.043)

Notes: Entries are coefficients and standard errors on 'Protestant' from estimating equation (1') by weighted two-stage least squares. Individuals' self-identified religion is instrumented for by the official religion in their county of residence in 1624. Heteroskedasticity robust standard errors are clustered by county and reported in parentheses. The sample has been restricted to individuals who self-identify as Protestant or Catholic, except when otherwise noted. The upper panel varies the set of covariates, with the respective controls indicated on the left of each row. The lower panel reports estimates for different subsets of the data (using the baseline individual and county level controls). The respective sample restriction is indicated on the left of each row. All specifications include indicator variables for missing values on each covariate. See the Data Appendix for the precise definition and source of each variable.

Table 7: Additional Evidence on the Effects of Protestantism

A. Reduced Form Estimates

Outcome	
College Graduate	.025
	(.017)
Employed Full-Time | Female	.019
	(.026)

B. 2SLS Estimates

Outcome	
College Graduate	.090
	(.054)
Employed Full-Time | Female	.158
	(.081)

Notes: Entries are coefficients and standard errors on 'Protestant' from estimating the reduced form model by weighted least squares (upper panel), and equation (1') by two-stage least squares (lower panel), using the baseline individual and county level controls. The respective dependent variable is indicated on the left of each row. Heteroskedasticity robust standard errors are clustered by county and reported in parentheses. All specifications include indicator variables for missing values on each covariate. See the Data Appendix for the precise definition and source of each variable.

Table 8: Estimates of the Effect of Protestantism Controlling for Wages, Education, Time in Church, and a Proxy for Work Ethic

A. Reduced Form Estimates

Controls	Desired Hours of Work	Log Labor Income	Hours Worked	Employed Full-Time | Female
Baseline	.534	.011	1.027	.019
	(.360)	(.027)	(.367)	(.026)
Baseline, Hourly Wage	.550	.018	1.069	.022
	(.359)	(.019)	(.358)	(.024)
Baseline, Education	.492	.003	.960	.020
	(.360)	(.023)	(.342)	(.025)
Baseline, Time in Church	.462	.010	.926	.017
	(.353)	(.027)	(.363)	(.026)
Baseline, Desired Hours of Work	---	-.003	.801	-.018
		(.026)	(.350)	(.020)
Baseline, Desired Hours of Work, Hourly Wage	---	.006	.832	-.015
		(.019)	(.344)	(.020)
Baseline, Desired Hours of Work, Hourly Wage, Education, Time in Church	---	.000	.684	-.013
		(.018)	(.323)	(.020)

B. 2SLS Estimates

Controls	Desired Hours of Work	Log Labor Income	Hours Worked	Employed Full-Time | Female
Baseline	2.032	.139	3.002	.158
	(1.207)	(.084)	(1.201)	(.081)
Baseline, Hourly Wage	1.929	.110	3.003	.161
	(1.207)	(.065)	(1.183)	(.080)
Baseline, Education	1.774	.105	2.661	.152
	(1.204)	(.072)	(1.120)	(.044)
Baseline, Time in Church	1.991	.148	3.004	.166
	(1.249)	(.085)	(1.183)	(.085)
Baseline, Desired Hours of Work	---	.058	1.805	-.012
		(.076)	(1.016)	(.058)
Baseline, Desired Hours of Work, Hourly Wage	---	.044	1.852	-.007
		(.058)	(1.005)	(.057)
Baseline, Desired Hours of Work, Hourly Wage, Education, Time in Church	---	.030	1.572	.005
		(.058)	(.988)	(.060)

Notes: Entries are coefficients and standard errors on 'Protestant' from estimating the reduced form model by weighted least squares (upper panel), and equation (1') by two-stage least squares (lower panel). The respective dependent variable is indicated at the top of each column, and the set of included controls is listed on left of each row. Heteroskedasticity robust standard errors are clustered by county and reported in parentheses. All specifications include indicator variables for missing values on each covariate. See the Data Appendix for the precise definition and source of each variable.

Table A.1: Present Day Counties and Official Religion of the Corresponding Territory in the Aftermath of the Peace of Augsburg

County:	Territory's Official Religion 1555	1624
Baden-Württemberg:		
Stuttgart	Protestant	Protestant
Böblingen	Protestant	Protestant
Esslingen	Protestant	Protestant
Göppingen	Protestant	Protestant
Ludwigsburg	Protestant	Protestant
Rems-Murr-Kreis	Protestant	Protestant
Heilbronn	Protestant	Protestant
Heilbronn	Protestant	Protestant
Hohenlohekreis	Protestant	Protestant
Schwäbisch Hall	Protestant	Protestant
Main-Tauber-Kreis	mixed	mixed
Heidenheim	Protestant	Protestant
Ostalbkreis	mixed	mixed
Baden-Baden	mixed	Catholic
Karlsruhe	Protestant	Protestant
Karlsruhe	Protestant	Protestant
Rastatt	mixed	mixed
Heidelberg	Protestant	Protestant
Mannheim	Protestant	Protestant
Neckar-Odenwald-Kreis	Protestant	Protestant
Rhein-Neckar-Kreis	Protestant	Protestant
Pforzheim	Protestant	Protestant
Calw	Protestant	Protestant
Enzkreis	Protestant	Protestant
Freudenstadt	Protestant	Protestant
Freiburg im Breisgau	Catholic	Catholic
Breisgau-Hochschwarzwald	Catholic	Catholic
Emmendingen	Protestant	Protestant
Ortenaukreis	Catholic	Catholic
Rottweil	Catholic	Catholic
Schwarzwald-Baar-Kreis	mixed	mixed
Tuttlingen	Catholic	Catholic
Konstanz	mixed	Catholic
Lörrach	Protestant	Catholic
Waldshut	Catholic	Catholic
Reutlingen	Protestant	Protestant
Tübingen	Protestant	Protestant
Zollernalbkreis	Catholic	Catholic
Ulm	Protestant	Protestant
Alb-Donau-Kreis	Protestant	Protestant
Biberach	mixed	mixed
Bodenseekreis	Catholic	Catholic
Ravensburg	Catholic	Catholic
Sigmaringen	Catholic	Catholic
Bavaria:		
Ingolstadt, Stadt	Catholic	Catholic
München, Landeshauptstadt	Catholic	Catholic
Rosenheim, Stadt	Catholic	Catholic
Altötting	Catholic	Catholic
Berchtesgadener Land	Catholic	Catholic
Bad Tölz-Wolfratshausen	Catholic	Catholic
Dachau	Catholic	Catholic
Ebersberg	Catholic	Catholic
Eichstätt	Catholic	Catholic
Erding	Catholic	Catholic
Freising	Catholic	Catholic
Fürstenfeldbruck	Catholic	Catholic
Garmisch-Partenkirchen	Catholic	Catholic
Landsberg am Lech	Catholic	Catholic
Miesbach	Catholic	Catholic
Mühldorf a.Inn	Catholic	Catholic
München	Catholic	Catholic
Neuburg-Schrobenhausen	mixed	mixed
Pfaffenhofen a.d.Ilm	Catholic	Catholic
Rosenheim	Catholic	Catholic
Starnberg	Catholic	Catholic
Traunstein	Catholic	Catholic
Weilheim-Schongau	Catholic	Catholic
Landshut, Stadt	Catholic	Catholic
Passau, Stadt	Catholic	Catholic
Straubing, Stadt	Catholic	Catholic
Deggendorf	Catholic	Catholic
Freyung-Grafenau	Catholic	Catholic
Kelheim	Catholic	Catholic
Landshut	Catholic	Catholic
Passau	Catholic	Catholic
Regen	Catholic	Catholic
Rottal-Inn	Catholic	Catholic
Straubing-Bogen	Catholic	Catholic
Dingolfing-Landau	Catholic	Catholic
Amberg, Stadt	Protestant	mixed
Regensburg, Stadt	Protestant	Protestant
Weiden i.d.OPf., Stadt	Protestant	mixed
Amberg-Sulzbach	Protestant	mixed
Cham	Protestant	mixed
Neumarkt i.d.OPf.	Protestant	mixed
Neustadt a.d.Waldnaab	Protestant	mixed
Regensburg	mixed	mixed
Schwandorf	Protestant	mixed
Tirschenreuth	Protestant	mixed
Bamberg, Stadt	Catholic	Catholic
Bayreuth, Stadt	Protestant	Protestant
Coburg, Stadt	Protestant	Protestant
Hof, Stadt	Protestant	Protestant
Bamberg	Catholic	Catholic
Bayreuth	Protestant	Protestant
Coburg	Protestant	Protestant
Forchheim	Catholic	Catholic
Hof	Protestant	Protestant
Kronach	Protestant	Protestant
Kulmbach	Protestant	Protestant
Lichtenfels	Catholic	Catholic
Wunsiedel i.Fichtelgebirge	Protestant	Protestant
Ansbach, Stadt	Protestant	Protestant
Erlangen, Stadt	Protestant	Protestant
Fürth, Stadt	Protestant	Protestant
Nürnberg, Stadt	Protestant	Protestant
Schwabach, Stadt	Protestant	Protestant
Ansbach	Protestant	Protestant
Erlangen-Höchstadt	Protestant	Protestant
Fürth	Protestant	Protestant
Nürnberger Land	Protestant	Protestant
Neustadt a.d.Aisch-Bad Windshei	Protestant	Protestant
Roth	Protestant	Protestant
Weissenburg-Gunzenhausen	Protestant	Protestant
Aschaffenburg, Stadt	Catholic	Catholic
Schweinfurt, Stadt	Protestant	Protestant
Würzburg, Stadt	Catholic	Catholic
Aschaffenburg	Catholic	Catholic
Bad Kissingen	Catholic	Catholic
Rhön-Grabfeld	Catholic	Catholic
Hassberge	Catholic	Catholic
Kitzingen	Catholic	Catholic
Miltenberg	Catholic	Catholic
Main-Spessart	Catholic	Catholic
Schweinfurt	Catholic	Catholic
Würzburg	Catholic	Catholic
Augsburg, Stadt	Protestant	mixed
Kaufbeuren, Stadt	mixed	mixed
Kempten (Allgäu), Stadt	Protestant	Protestant
Memmingen, Stadt	Protestant	Protestant

Table A.1 (continued)

County:	Territory's Official Religion 1555	1624
Aichach-Friedberg	Catholic	Catholic
Augsburg	Catholic	Catholic
Dillingen a.d.Donau	Catholic	Catholic
Günzburg	Catholic	Catholic
Bremen:		
Bremen, Stadt	Protestant	Protestant
Bremerhaven, Stadt	Protestant	Protestant
Hanburg:		
Hamburg, Freie und Hansestadt	Protestant	Protestant
Hesse:		
Darmstadt, Wissenschaftsstadt	Protestant	Protestant
Frankfurt am Main, Stadt	Protestant	Protestant
Offenbach am Main, Stadt	Protestant	Protestant
Wiesbaden, Landeshauptstadt	Protestant	Protestant
Bergstrasse	Protestant	Catholic
Darmstadt-Dieburg	Protestant	Protestant
Gross-Gerau	Protestant	Protestant
Hochtaunuskreis	Protestant	Protestant
Main-Kinzig-Kreis	Protestant	Protestant
Main-Taunus-Kreis	mixed	mixed
Odenwaldkreis	Protestant	Protestant
Offenbach	Protestant	Protestant
Rheingau-Taunus-Kreis	mixed	mixed
Wetteraukreis	Protestant	Protestant
Giessen	Protestant	Protestant
Lahn-Dill-Kreis	Protestant	Protestant
Limburg-Weilburg	Protestant	Protestant
Marburg-Biedenkopf	Protestant	Protestant
Vogelsbergkreis	Protestant	Protestant
Kassel, Stadt	Protestant	Protestant
Fulda	Catholic	Catholic
Hersfeld-Rotenburg	Protestant	Catholic
Kassel	Protestant	Protestant
Schwalm-Eder-Kreis	Protestant	Protestant
Waldeck-Frankenberg	Protestant	Protestant
Werra-Meissner-Kreis	Protestant	Protestant
Lower Saxony:		
Braunschweig, Stadt	Protestant	Protestant
Salzgitter, Stadt	Catholic	Protestant
Wolfsburg, Stadt	Protestant	Protestant
Gifhorn	Protestant	Protestant
Göttingen	Protestant	Protestant
Goslar	Protestant	Protestant
Helmstedt	Catholic	Protestant
Northeim	Protestant	Protestant
Osterode am Harz	Protestant	Protestant
Peine	mixed	Protestant
Wolfenbüttel	Catholic	Protestant
Hannover, Stadt	Protestant	Protestant
Region Hannover	Catholic	Protestant
Diepholz	Protestant	Protestant
Hameln-Pyrmont	Catholic	Protestant
Hannover, Land	Catholic	Catholic
Hildesheim	mixed	Catholic
Holzminden	Catholic	Protestant
Nienburg (Weser)	Catholic	Protestant
Schaumburg	Catholic	Protestant
Celle	Protestant	Protestant
Cuxhaven	Protestant	Protestant
Harburg	Protestant	Protestant
Lüchow-Dannenberg	Protestant	Protestant
Lüneburg	Protestant	Protestant
Osterholz	Protestant	Protestant
Rotenburg (Wümme)	Protestant	Protestant
Soltau-Fallingbostel	Protestant	Protestant
Stade	Protestant	Protestant
Uelzen	Protestant	Protestant
Verden	Protestant	Protestant
Delmenhorst, Stadt	Catholic	Protestant
Emden, Stadt	Protestant	Protestant
Oldenburg (Oldenburg), Stadt	Protestant	Protestant
Osnabrück, Stadt	mixed	Catholic
Wilhelmshaven, Stadt	Protestant	Protestant
Ammerland	Protestant	Protestant
Aurich	Protestant	Protestant
Cloppenburg	Protestant	Protestant
Emsland	Protestant	Protestant
Friesland	Protestant	Protestant
Grafschaft Bentheim	Protestant	Protestant
Leer	Protestant	Protestant
Oldenburg	Protestant	Protestant
Osnabrück	mixed	Catholic
Vechta	Protestant	Protestant
Wesermarsch	Protestant	Protestant
Wittmund	Protestant	Protestant
North Rhine-Westphalia:		
Düsseldorf, Stadt	mixed	mixed
Duisburg, Stadt	mixed	mixed
Essen, Stadt	mixed	mixed
Krefeld, Stadt	Catholic	Catholic
Mönchengladbach, Stadt	Catholic	Catholic
Mülheim an der Ruhr, Stadt	mixed	mixed
Oberhausen, Stadt	mixed	mixed
Remscheid, Stadt	mixed	mixed
Solingen, Stadt	mixed	mixed
Wuppertal, Stadt	mixed	mixed
Kleve	mixed	mixed
Mettmann	mixed	mixed
Rhein-Kreis Neuss	Catholic	Catholic
Viersen	mixed	mixed
Wesel	mixed	mixed
Aachen, Stadt	Catholic	Catholic
Bonn, Stadt	Catholic	Catholic
Köln, Stadt	Catholic	Catholic
Leverkusen, Stadt	Catholic	Catholic
Aachen	Catholic	Catholic
Düren	mixed	mixed
Rhein-Erft-Kreis	Catholic	Catholic
Euskirchen	mixed	mixed
Heinsberg	mixed	mixed
Oberbergischer Kreis	mixed	mixed
Rheinisch-Bergischer Kreis	mixed	mixed
Rhein-Sieg-Kreis	mixed	mixed
Bottrop, Stadt	mixed	mixed
Gelsenkirchen, Stadt	mixed	mixed
Münster, Stadt	mixed	Catholic
Borken	Catholic	Catholic
Coesfeld	Catholic	Catholic
Recklinghausen	Catholic	Catholic
Steinfurt	Catholic	Catholic
Warendorf	Catholic	Catholic
Bielefeld, Stadt	mixed	Protestant
Gütersloh	Catholic	Catholic
Herford	mixed	Protestant
Höxter	Catholic	Catholic
Lippe	Protestant	Protestant
Minden-Lübbecke	Protestant	Protestant
Paderborn	Catholic	Catholic
Bochum, Stadt	mixed	mixed
Dortmund, Stadt	mixed	mixed
Hagen, Stadt	mixed	mixed
Hamm, Stadt	mixed	mixed

Table A.1 (continued)

County:	Territory's Official Religion 1555	1624
Herne, Stadt	mixed	mixed
Ennepe-Ruhr-Kreis	mixed	mixed
Hochsauerlandkreis	Catholic	Catholic
Märkischer Kreis	mixed	mixed
Olpe	mixed	mixed
Siegen-Wittgenstein	Protestant	Protestant
Soest	mixed	mixed
Unna	mixed	mixed
Rhineland-Palatinate:		
Koblenz, Stadt	Catholic	Catholic
Ahrweiler	Catholic	Catholic
Altenkirchen (Westerwald)	Catholic	Catholic
Bad Kreuznach	Protestant	Protestant
Birkenfeld	Protestant	Protestant
Cochem-Zell	Catholic	Catholic
Mayen-Koblenz	Catholic	Catholic
Neuwied	Catholic	Catholic
Rhein-Hunsrück-Kreis	Protestant	Protestant
Rhein-Lahn-Kreis	Catholic	Catholic
Westerwaldkreis	Catholic	Catholic
Trier, Stadt	Catholic	Catholic
Bernkastel-Wittlich	Catholic	Catholic
Bitburg-Prüm	Catholic	Catholic
Daun	Catholic	Catholic
Trier-Saarburg	Catholic	Catholic
Frankenthal (Pfalz), Stadt	Protestant	Protestant
Kaiserslautern, Stadt	Protestant	Protestant
Landau in der Pfalz, Stadt	Protestant	Protestant
Ludwigshafen am Rhein, Stadt	Protestant	Protestant
Mainz, Stadt	Catholic	Catholic
Neustadt a. d. Weinstrasse, Stadt	Protestant	Protestant
Pirmasens, Stadt	Protestant	Protestant
Speyer, Stadt	Protestant	Protestant
Worms, Stadt	Protestant	Protestant
Zweibrücken, Stadt	Protestant	Protestant
Alzey-Worms	Protestant	Protestant
Bad Dürkheim	Protestant	Protestant
Donnersbergkreis	Protestant	Protestant
Germersheim	Protestant	Protestant
Kaiserslautern	Protestant	Protestant
Kusel	Protestant	Protestant
Südliche Weinstrasse	Protestant	Protestant
Ludwigshafen	Protestant	Protestant
Mainz-Bingen	Catholic	Catholic
Südwestpfalz	Protestant	Protestant
Saarland:		
Stadtverband Saarbrücken	Protestant	Protestant
Merzig-Wadern	Catholic	Catholic
Neunkirchen	Protestant	Protestant
Saarlouis	Protestant	Protestant
Saarpfalz-Kreis	Protestant	Protestant
St. Wendel	Catholic	Catholic
Schleswig-Holstein:		
Flensurg, Stadt	Protestant	Protestant
Kiel, Landeshauptstadt	Protestant	Protestant
Lübeck, Hansestadt	Protestant	Protestant
Neumünster, Stadt	Protestant	Protestant
Dithmarschen	Protestant	Protestant
Herzogtum Lauenburg	Protestant	Protestant
Nordfriesland	Protestant	Protestant
Ostholstein	Protestant	Protestant
Pinneberg	Protestant	Protestant
Plön	Protestant	Protestant
Rendsburg-Eckernförde	Protestant	Protestant
Schleswig-Flensburg	Protestant	Protestant
Segeberg	Protestant	Protestant
Steinburg	Protestant	Protestant
Stormarn	Protestant	Protestant

Counties in former German Democratic Republic:

County:	Territory's Official Religion 1555	1624
Berlin:		
Berlin, Stadt	Protestant	Protestant
Brandenburg:		
Brandenburg an der Havel, Stadt	Protestant	Protestant
Cottbus, Stadt	Protestant	Protestant
Frankfurt (Oder), Stadt	Protestant	Protestant
Potsdam, Stadt	Protestant	Protestant
Barnim	Protestant	Protestant
Dahme-Spreewald	Protestant	Protestant
Elbe-Elster	Protestant	Protestant
Havelland	Protestant	Protestant
Märkisch-Oderland	Protestant	Protestant
Oberhavel	Protestant	Protestant
Oberspreewald-Lausitz	Protestant	Protestant
Oder-Spree	Protestant	Protestant
Ostprignitz-Ruppin	Protestant	Protestant
Potsdam-Mittelmark	Protestant	Protestant
Prignitz	Protestant	Protestant
Spree-Neisse	Protestant	Protestant
Teltow-Fläming	Protestant	Protestant
Uckermark	Protestant	Protestant
Mecklenburg-West Pomerania:		
Greifswald	Protestant	Protestant
Neubrandenburg	Protestant	Protestant
Rostock	Protestant	Protestant
Schwerin	Protestant	Protestant
Stralsund	Protestant	Protestant
Wismar	Protestant	Protestant
Bad Doberan	Protestant	Protestant
Demmin	Protestant	Protestant
Güstrow	Protestant	Protestant
Ludwigslust	Protestant	Protestant
Mecklenburg-Strelitz	Protestant	Protestant
Müritz	Protestant	Protestant
Nordvorpommern	Protestant	Protestant
Nordwestmecklenburg	Protestant	Protestant
Ostvorpommern	Protestant	Protestant
Parchim	Protestant	Protestant
Rügen	Protestant	Protestant
Uecker-Randow	Protestant	Protestant
Saxony:		
Chemnitz, Stadt	Protestant	Protestant
Plauen, Stadt	Protestant	Protestant
Zwickau, Stadt	Protestant	Protestant
Annaberg	Protestant	Protestant
Chemnitzer Land	Protestant	Protestant
Freiberg	Protestant	Protestant
Vogtlandkreis	Protestant	Protestant
Mittlerer Erzgebirgskreis	Protestant	Protestant
Mittweida	Protestant	Protestant
Stollberg	Protestant	Protestant
Aue-Schwarzenberg	Protestant	Protestant
Zwickauer Land	Protestant	Protestant
Dresden, Stadt	Protestant	Protestant
Görlitz, Stadt	Protestant	Protestant
Hoyerswerda, Stadt	Protestant	Protestant
Bautzen	mixed	mixed
Meissen	Protestant	Protestant
Niederschles. Oberlausitzkreis	Protestant	Protestant
Riesa-Grossenhain	Protestant	Protestant
Löbau-Zittau	Protestant	Protestant

Table A.1 (continued)

County:	Territory's Official Religion 1555	1624
Sächsische Schweiz	Protestant	Protestant
Weisseritzkreis	Protestant	Protestant
Kamenz	Protestant	Protestant
Leipzig, Stadt	Protestant	Protestant
Delitzsch	Protestant	Protestant
Döbeln	Protestant	Protestant
Leipziger Land	Protestant	Protestant
Muldentalkreis	Protestant	Protestant
Torgau-Oschatz	Protestant	Protestant
Saxony-Anhalt:		
Dessau, Stadt	Protestant	Protestant
Anhalt-Zerbst	Protestant	Protestant
Bernburg	Protestant	Protestant
Bitterfeld	Protestant	Protestant
Köthen	Protestant	Protestant
Wittenberg	Protestant	Protestant
Halle (Saale), Stadt	Protestant	Protestant
Burgenlandkreis	Protestant	Protestant
Mansfelder Land	Protestant	Protestant
Merseburg-Querfurt	Protestant	Protestant
Saalkreis	Protestant	Protestant
Sangerhausen	Protestant	Protestant
Weissenfels	Protestant	Protestant
Magdeburg, Landeshauptstadt	Protestant	Protestant
Aschersleben-Stassfurt	Protestant	Protestant
Bördekreis	Protestant	Protestant
Halberstadt	mixed	Protestant
Jerichower Land	Protestant	Protestant
Ohrekreis	Protestant	Protestant
Stendal	Protestant	Protestant
Quedlinburg	Protestant	Protestant
Schönebeck	Protestant	Protestant
Wernigerode	Protestant	Protestant
Altmarkkreis Salzwedel	Protestant	Protestant
Thuringia:		
Erfurt, Stadt	mixed	mixed
Gera, Stadt	Protestant	Protestant
Jena, Stadt	Protestant	Protestant
Suhl, Stadt	Protestant	Protestant
Weimar, Stadt	Protestant	Protestant
Eisenach, Stadt	Protestant	Protestant
Eichsfeld	mixed	Catholic
Nordhausen	Protestant	Protestant
Wartburgkreis	Protestant	Protestant
Unstrut-Hainich-Kreis	Protestant	Protestant
Kyffhäuserkreis	Protestant	Protestant
Schmalkalden-Meiningen	Protestant	Protestant
Gotha	Protestant	Protestant
Sömmerda	Protestant	Protestant
Hildburghausen	Protestant	Protestant
Ilm-Kreis	Protestant	Protestant
Weimarer Land	Protestant	Protestant
Sonneberg	Protestant	Protestant
Saalfeld-Rudolstadt	Protestant	Protestant
Saale-Holzland-Kreis	Protestant	Protestant
Saale-Orla-Kreis	Protestant	Protestant
Greiz	Protestant	Protestant
Altenburger Land	Protestant	Protestant

Notes: Entries are counties and county equivalents (sorted by state) and the official religion of the corresponding area in the reference year assigned to them by each mapping. The reference years of the mappings are 1555 and 1624, respectively. Section A in the Data Appendix describes the construction of the mappings.