In the Name of God!
Religiosity and the Transition to Modern Growth

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Abstract

We test the impact of religiosity on the transition to modern economic growth. In lack of surveys, we develop a novel measure of religiosity based on the idea that given names reveal preferences and identities of parents, including their religious identity. For validity, we document that individuals who share first name with a major religious figure engage in more religious behaviors, reflected in their choice of studies and professions, loyalty towards the church, and their response to natural disasters. We do so using data for 10,000s of university students in the Holy Roman Empire and 100,000s of authors active during the past 700 years. We proceed to document that individuals with religious first names are less likely to become engineers, doctors, and scientists, and to move on to advanced studies. In line with a literature on the role of science and knowledge for the transition to modern growth, we last document that cities across Europe inhabited by more religious individuals grew slower than other cities. To establish causality, we rely on the fact that parental naming practices are independent of choices made by their offspring later in life and we compare very similar individuals (authors or medieval university students), born in the same year and area. Our results contribute to a growing literature on societal impacts of religiosity.

JEL codes: E02, O3, O47, A13, I25, Z12.

Keywords: Science, economic growth, progress, knowledge, human capital, religion, religiosity.

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1 Introduction

Within the past centuries, the world has been transformed from thousands of years with close-to stagnant living standards to modern economic growth and prosperity. This change occurred at different points in time for different societies and has yet to take place for some. The differential timing explains an important part of current divergence in living standards, and understanding what got some out of the trap is fundamental for explaining contemporary economic differences.[1] A central event was the Enlightenment, where an increased focus on reason and knowledge facilitated the technological innovations necessary for the onset of the industrial revolution (Mokyr, 2010). This process may have been influenced by religion. On the one hand, religion may have slowed down the process. For instance, Mokyr (2016, 17) reasons that "If the culture is heavily infused with respect and worship of ancient wisdom so that any intellectual innovation is considered deviant and blasphemous, technological creativity will be similarly constrained." Examples abound of clashes between religion and science throughout history, perhaps the most famous being the trial of Galilei by the Catholic church. On the other hand, several early inventions and universities were established by monks, and thus the impact of religiosity on growth is ambiguous a priori. We contribute with econometric tests of the matter.

Early scholars argued that certain *types* of religion are more beneficial to growth than others, the most famous being Max Weber and his Protestant Ethic (Weber, 1905).[2] Instead, we focus on the impact of *religiosity*, ie. the intensity of peoples' beliefs or the role of religion in their lives, independent of the type of God they worship. Religiosity receives increasing attention in economic research, as it potentially explains a large share of global differences comparable to hitherto dominating explanations, such as institutions.[3] Research has shown that school curriculum was less technical in more religious districts in France during its second industrial revolution (Squicciarini, 2020), that innovation rates are lower among more religious societies across the globe (Bénabou *et al.*, forthc), and that science fell behind in medieval Islamic societies with stronger religious institutions (Chaney, 2016). We test whether religiosity played an important role in the spread of intellectual production throughout Western Europe in the centuries leading up to the

[1] Acemoglu *et al.* (2005); Clark (2008); Galor (2011); Mokyr (2010).

[2] Much research has later investigated the theory empirically, e.g. Becker & Woessmann (2009); Cantoni (2015); Andersen *et al.* (2017). See also a review by Becker *et al.* (2016).

[3] Cf reviews by Iannaccone (1998); Iyer (2016); Bentzen (2021). Global variation in religiosity is not explained by types of religion. For instance, Bentzen (2019b) finds that the major denominations explain only 3.4% of the global variation in religiosity.

industrial revolution and beyond.

As our analysis goes back to a point in history where surveys were not yet conducted, we construct a novel measure of religious intensity based on parents' naming practices. Parents name their children after grandparents, persons in popular culture, kings, or other factors. Many of these factors do not reveal anything about the parents, but on average and across large samples of names, our names signal the identity and preferences of our parents, including their religious identity and preferences (Main, 1996). Existing research has shown that given names reveal parental individualism (Knudsen, 2019), ethnicity (Fryer Jr & Levitt, 2004; Andersen, 2021), and nationalism (Jurajda & Kovač, 2021; Assouad, 2020). We will use individuals' first names to infer the extent to which religion played an important role in the lives of their parents. Our main testing ground is historical Europe and thus we focus on Christianity. We define an individual as having had a more religious upbringing if he or she shared name with a major Christian figure. Different personalities were considered important within Protestantism and Catholicism and we will define a name as religious if it was shared by either a major biblical figure or a major saint. Our results are robust to using these names simultaneously or separately.

We hypothesize that parents for whom religion was important are more likely to base their naming choice on their religion rather than their nationality, ethnicity, or personal identity, for instance. The measure is arguably subject to measurement error and we will test its' validity based on predictions from the literature and other measures of past religiosity in subsamples of the data. We perform our tests in two independent historical datasets of 47,000 university students in the Holy Roman Empire and 468,000 authors born in Europe between 1300 and 1940, both of which have information on names, location, and various outcomes. We document that students who shared name with a major patron saint were more likely to study theology rather than medicine or law and more likely to study church law rather than the more secular Roman law. In addition, we find that authors born after earthquakes were more likely to be given a religious name, in line with previous research documenting rising religiosity in the aftermath of earthquakes.[4] Furthermore, we document that clergymen in French districts populated by more authors who shared name with a patron saint were more likely to reveal loyalty towards the church in the 18th century. Last, we find that authors with religious names were more likely to be priests and theologians. These results give confidence that religion played a larger role in the life of the parents who chose a religious name for their child.

[4]Bentzen (2019a); Sibley & Bulbulia (2012).

Potential confounders are reduced substantially, as we analyse individuals that are already extremely similar - medieval university students or authors -, and the detail of the data further allows us to compare these individuals born within 100x100 km grid cells in the same year. The size of the impacts are sizable. For instance, sharing name with a patron saint raises the probability of studying theology by 20% of the mean.

The names-based measure of religious upbringing has certain advantages to other potential candidates. First, naming our offspring is a universal human endeavor and nearly everyone throughout the history of modern humans had a first name. Second, compared to survey-based measures, the names-based measure solves two major problems: It reveals the actual preferences of parents instead of their stated preferences and is not subject to non-response bias. Third, since first names reflect the religiosity of the previous generation, we can treat it as pre-determined relative to our outcomes. Fourth, names are less influenced by economic status than other potential measures, such as - for instance - church density. Most large churches were built as a status symbol to express wealth and power. In fact, Buringh *et al.* (2020) use church construction as a measure of economic prosperity and technological progress. Fifth, the names-based measures allow individual-level analysis of the impact of religiosity. Sixth, the names-based measure can be computed for samples of very similar individuals, as opposed to surveys or other measures that rely on samples of more diverse individuals. Thus, while various factors - including social status - arguably influence the naming of children, we can limit the variation in these factors substantially when constructing the measure. For instance, university students or authors are rather similar in terms of social status, meaning that social status would not explain a large part of any variation among them, including their names. Seventh, this focus on similar individuals further facilitates computing comparable regional-level religiosity measures. This method mimics that by Hofstede *et al.* (2005) who computed cultural differences among IBM software programmers to construct cultural dimensions that were comparable across countries.

Our religiosity measure also has obvious limitations. First is the measurement error discussed above, which however is not large enough to mask the significant correlations with other religious behaviors. Any potentially systematic part of the measurement error is further limited by the restriction to similar individuals. Despite this similarity, one may be concerned that our measure captures other things, such as the normality of a name. To account for this, we control for the normality of a person's name throughout. We also show results for two alternative religiosity measures. One accounts implicitly for the normality of the name and the other is instead based on the names of students choosing theology studies. Second, what categorizes a name as religious differs across types of religions. Our analysis, therefore, will exclusively compare the religiosity of individuals from the same religion.[5] The same critique applies to the commonly used survey-based measures. Third, names vary across languages. We will solve this issue by reducing all names to their common etymological name branch, which is language independent.

We proceed to determine the impact of religiosity on outcomes relevant for the transition to modern growth by first documenting that authors who share name with a major religious figure are less likely to be doctors, engineers, and scientists. Also, religiously raised university students were less likely to proceed with advanced university studies, compared to other students. The difference between being raised more or less religiously explains 14% of the mean likelihood of proceeding with advanced studies, a substantial and meaningful effect.

Particularly engineers were highlighted by Mokyr (2010) as drivers of the transition to modern growth. For instance, (Mokyr & Voth, 2009, 29) conclude that "The technological changes of the nineteenth century created a demand for highly skilled mechanics and engineers in the upper tail of the distribution". In the last step of our analysis, we examine the impact of religiosity on city-level growth rates across Europe, using urbanization rates as is standard in the literature.[6] We compute religiosity at the city-level as the share of religiously-named authors (or university students) born within 100 km of a city center in a given century or half-century. We find that cities with a larger share of religiously raised authors (or university students) grew slower compared to other cities. The association increases in size and significance over time and especially as we move beyond the Enlightenment, consistent with the literature emphasizing the potential limiting effect of religion on knowledge production.[7]

While the focus on similar individuals limits the set of confounding factors that can explain our results, this sample selection poses other concerns, particularly when constructing city-level religiosity measures. First, university students and authors may not be representative for the population at large. Since the purpose of our analysis is to investigate the impact of religiosity on the behavior of potential knowledge producers, a sample

[5]The measures can be extended to other religions than Christianity. As pendents to the Catholic saints, the Jewish tzadik, the Islamic walī, the Hindu rishi or Sikh guru, the Shintoist kami, and the Buddhist arhat or bodhisattva are also referred to as saints. The pendent to Biblical figures would be central figures in the Quran, Torah, etc.

[6]Acemoglu *et al.* (2005); Bosker *et al.* (2013); Dittmar (2011); Nunn & Qian (2011).

[7]Squicciarini & Voigtländer (2015); Mokyr (2010).

of university students is better than many alternatives. Second, there are reasons to believe that the proposed setup is useful for analyzing the impact of differences in religiosity among the general population. The assumption in such an analysis is that the general population of cities with more religious university students or authors is more religious on average compared to cities with fewer religious students or authors, an assumption akin to Hofstede *et al.* (2005)'s IBM workers. As a signal of the representativeness of the authors, Chaney (2020) finds that a growing number of authors correlates with general population growth. Also, our result that average religiosity based on author-names correlates with district-level loyalty towards the church in France further makes probable that this measure may reflect general relative religiosity.

We contribute to research examining the consequences of differences in religiosity reviewed in Section 3. More broadly, we relate to a literature which has grouped the deep determinants of economic outcomes into geographic factors (Diamond, 1997; Dell *et al.*, 2012), cultural values (Giuliano & Nunn, 2021), and institutions (Acemoglu *et al.*, 2001). Religion may belong with the cultural values and/or the sets of institutions. A related literature has examined the causes of the transition to modern economic growth across Europe more specifically. Important causes are an intensified cultural appreciation of knowledge and reason which eventually led to the Enlightenment (Mokyr, 2010); the rise of property rights institutions, in part facilitated by transatlantic trade (Acemoglu *et al.*, 2005); falling fertility and rising human capital caused by a gradual rise in technological progress (Galor, 2011); a growing number of individuals with cultural values conducive to growth, set-off by a Malthusian selection process (Clark, 2008); and the Protestant Reformation (Weber, 1905).

The paper is structured as follows. The novel measure of religiosity is introduced and its' validity is checked across the two independent historical datasets in Section 2. Thereafter, Section 3 first reviews the literature within the economics of religion field to set up predictions about the impact of religiosity on knowledge production and economic growth. Next, we proceed to test the impact of religiosity on upper-tail knowledge production and the transition to modern growth in the same two datasets.

2 Measuring historic religiosity

We set out to measure the intensity of religious beliefs at a point in time where religion was at the center of most aspects of human life. Although belief in a higher Deity was nearly universal, the role of religion differed across individuals. While Machiavelli (1469-1527) famously declared that all religions are manmade and denied the biblical belief in a divine creation of the world, Isaac Newton (1642-1727) spent more time on Bible study than math and physics. We suggest a measure capturing how much personal importance and identity individuals found in religious belief.

Even though names are grammatically without any semantic content, social anthropologists have long identified significant patterns in naming practices.[8] When naming their children, parents are inspired by tradition (such as the tradition of naming after parents or grandparents), people in popular culture, aesthetic preferences, and by feelings of identity. On average, the name that parents choose for their children reveals something about the identity and preferences of the parent.[9] This identity can relate to ethnicity, ideology, religion or a combination. Studies of colonial American child-naming patterns suggest that parents invested a great deal of thought into naming their children, and that their choices reflected attitudes about themselves and the underlying values of society.[10] Often these reasons for naming will be in conflict with one another. For instance, a parent would have to choose between naming their child after ancestors, religious or political figures. The final choice can thus be viewed as an expression of the relative importance of these different identities to the parent. If parents are very nationalistic they are likely to give their children a name of national significance. If, on the other hand, religion is crucial for them, they are more likely to give their children a name of religious significance. If this is the case, it should be possible to use such naming patterns as a proxy of the average religiosity of parents. In many traditions, grandparents were the main inspiration for naming practices, which means that ones' name instead reflects the religiosity of grandparents, great grandparents, etc. This practice means that we can proxy religiosity even further back in time.

Scholars before us have used first names to proxy worldviews that are otherwise difficult to measure. Knudsen (2019) documents that the relative scarcity of first names

[8] Regarding the former, Mill (1874) went as far as defining names as "meaningless markers". Regarding the latter, see Edwards & Caballero (2008); vom Bruck & Bodenhorn (2006); Carsten *et al.* (2004).

[9] Edwards & Caballero (2008); Smith (1994). Analyzing naming patterns in 18th century New England, Smith (1994) notes that it was also common to perpetuate the names of deceased siblings.

[10] Main (1996); Smith (1984, 1985); Tebbenhoff (1985); Zelinsky (1970).

can approximate individualism. Fryer Jr & Levitt (2004) used the "blackness" of first names as an indicator of the strength of black ethnic identity. Andersen (2021) generalizes the method to proxy ethnic identities across Europe. Assouad (2020) use first names to examine the impact of Atatürk's nation-building efforts. Our hypothesis that first names may signal the strength of religiosity of the parent has been previously elaborated and used in statistical work. Demographic historian Hacker (1999) assumes a relation between children's biblical names and the religiosity of parents to estimate an impact of religiosity on marital fertility in 19th century America.

We define a name as signifying higher religiosity of parents if it is shared by a religious figure that was considered sufficiently central within that religion.[11] As our place of analysis is historic Europe, we restrict our measure to Christian names.[12] Which figures were considered significant differed across Protestants and Catholics. In particular, Saints are notably important to Catholics, while Protestants are more concerned with central figures in the Bible. There is a large overlap between the two, as many Biblical figures became Saints, such as Peter, John, and Paul.

Within Catholicism, we define a name as signaling higher religiosity of the parents if it was shared by a major saint. We define major saints as those to which large European medieval churches were dedicated.[13] Catholic churches were generally dedicated to so-called patron saints and the rationale is that if a saint was important enough for a large church to be named after him/her, this indicates that the saint was a central religious figure. Choosing all churches throughout Europe would not generate much variation in our religiosity measure, as the vast majority of names would be represented in these churches. Instead, we exploit a dataset of 1,695 major churches across an area extending from the Mediterranean to the North Sea built between year 700 and 1500. The data was collected by Buringh *et al.* (2020) and includes information on the patron saint to which the church was dedicated for the largest 24% of present-day churches located

[11] An alternative argument could be that parents inspired by "minor" religious figures were particularly religious as they knew about the particular figure. However, the pool of less religious individuals accidentally choosing one of these names would rise and make the measure more noisy than the measure based on "major" religious figures. Instead, our conjecture is that the probability that the inspiration was religious is higher when the religious figure is major.

[12] We will exclude Muslim majority countries from the main samples and account for ethnicity, by controlling for names that are more prevalent among different ethnics groups. Besides the large linguistics groups such as the Slavic, Germanic, and Romance speakers, we also control for a series of smaller linguistic groups, where the Semitic speaking groups are of particular interest because of the sizable Jewish minority across Europe at the time.

[13] We refrain from conducting the simpler exercise of using all saints names as signaling important religious figures, as the number of saints is so large that their names span close to the entire set of names in the sample. Such a measure would define all names as religious. In addition, a large number of saints were rather local and would not have been inspiration for child names throughout Europe.

in urban areas of eight countries of present-day Italy, France, Switzerland, Germany, Luxembourg, Belgium, the Netherlands, and Great Britain. Buringh *et al.* (2020) chose these countries due to data availability and stress that they were all, to varying degrees, active participants in the commercial revolution of the 12th and 13th centuries. These countries were also central in terms of religious influence. For instance, the Pope being located in Italy and the Protestant Reformation starting in Germany. Buringh *et al.* (2020) further restricted data collection to urban areas as their focus was on churches of greatest economic significance. Even if rural churches were available to us, adding them would probably not improve our measure as the large churches already in the sample most likely span close to the entire set of major patron saints.

Names may differ across countries, even though they refer to the same saint. To eliminate differences caused by language and spelling differences, we reduce the first names of patron saints to their etymological branch, meaning their original form, relying on the online etymology database www.behindthename.com, containing a total of 23,938 names which may be reduced to 7,606 name branches.[14] As an example, John, Jean, and Giovanni are all versions of the same name - Yahweh - which was the name of God in ancient Israel and one of the names of God in the Old Testament.

The 1,695 churches represent a total of 136 different name branches of patron saints.[15] The top-10 name branches are shown in Figure 1. 27% of the churches were dedicated to a central religious figure within Catholicism, Virgin Mary. This saint, however, will not have inspired the naming of most of the individuals in the samples, as they are mainly male. After Mary comes Peter and Yahweh - of which John is the dominating name -, both apostles of Jesus.[16]

[14]Most names have several name branches, much like a family tree. We reduce all names to their deepest-rooted name branch.

[15]One particularly central saint is Jesus Christ, which has the name branch Jesus. Even though Christ is not his first name (rather it is the title of Jesus), we add the name branch of Christ - Christos - to the list of name branches of patron saints and central biblical figures.

[16]The name branch Mars covers exclusively the name Martin.

Table 1: Top-10 name branches of patron saints to which medieval churches were dedicated

Saint	Share
Mary	0.27
Peter	0.09
Yahweh	0.06
Mars	0.05
Paul	0.04
Nicholas	0.04
Stephen	0.03
Jacob	0.02
Michael	0.02
Francis	0.02
Remaining 126 saints	0.34

The frequencies of the name branches of major patron saints among 1,695 major churches in medieval Europe.

Our main measure of Catholic religiosity takes the value one if a person shared name with one of these major patron saints in the sample, zero otherwise. We do not distinguish between where these churches were located, since the patron saints to which the church was dedicated are exclusively meant to capture the significance of the religious figures in general. Furthermore, exploiting the European average rather than local patron saints ensures that our definition of important religious figures is not impacted by local economic factors that we will later have as our dependent variable. Also, some saints were likely chosen in response to local competition from other religions (Barro & McCleary, 2016), which reduces the usefulness of local saints names further.

Within Protestantism, we define a name as signaling higher religiosity of the parents if it was shared by major biblical figures as done in earlier studies (Hacker, 1999). These figures include Jesus and his relatives and apostles.[17] When analyzing data beyond the Protestant Reformation, we define a name as religious if it is shared by a major patron saint or major biblical figure. The measures based on either patron saints alone or this composite measure including also major biblical figures are highly correlated (rho=0.926), as most of the figures in the Bible were also Sanctified.[18] A concern is whether our measure captures mostly Protestant or Catholic religiosity and thus that the estimates on outcomes mainly reflect denominational differences. We do not find support for this, as results are similar when using either saints - or biblical names (Tables 5 and A16).

Another concern is that names that are more normal for their time are more likely to end up as the name of saints and everyone else, just because they are normal. For

[17] The list of their name branches include Andrew, Jacob, Judah, Peter, Philip, Simon, Talmai, Thomas, Barnabas, Paul, Yahweh, Cleopatra, Jesus, Christos, Joseph, Mary, and Simon. Again, we add the name branch Christos to the list, as it is an obvious reference to Jesus, even though it is not formally the first name of Jesus.

[18] In the sample of university students before the Protestant Reformation, the two measures are close to identical (rho=0.998), which corresponds well with the idea that the Protestant Reformation came with renewed interest in other Biblical figures.

this reason, we will check our measure relative to alternative religious behaviors of either parents or child in the following section. In addition, we control for the normality of the name using a measure of the name frequency throughout, capturing the share of the sample with the particular name branch. Furthermore, the results are robust to two alternative names-based measures. First, a "normality adjusted" measure of religiosity, which we call the Religious Name Index (RNI). The idea, inspired by the seminal work of Fryer Jr & Levitt (2004), is that by comparing how often a church is named after a saint with a given name to how often a person in the sample have that name, we can estimate to what degree the name is religious using the formula:

$$RNI_i = \frac{Pr(name_i|Church)}{Pr(name_i|Church) + Pr(name_i|Person)}, \tag{1}$$

where $Pr(name_i|Church)$ is the percentage of churches that bear name i and $Pr(name_i|Person)$ is the percentage of people with the same name. The highest possible value for the index is 1, which means that only churches have the name and the lowest possible value is 0, indicating that no churches had the name. If the name is equally common among people and churches the RNI takes the value 0.5. Results are robust to using this measure.[19]

Second, we show robustness to an additional religiosity measure based on a behavior that is potentially more religious; studying theology. Here, we define a name as religious if students of theology had it and calculate a measure akin to the RNI based on this.[20]

2.1 Validity

We proceed to validate the name-based religiosity measure viz-a-viz alternative behaviors typically associated with religiosity. Using the two independent datasets introduced below, we check the validity by comparing with religious behaviors of the child (study or profession choices), the parent (religious response to earthquakes), or the surrounding region (alternative measures of religious behavior in 18th century France).

The two datasets are chosen for the broad coverage across time and space and obviously for the availability of information on individual names. The first dataset covers uniquely the period before the Protestant Reformation and the second has a wide spatial and temporal spread. We commence with the former.

[19]Robustness is documented for the first validity check in Table A3 and for all checks of outcomes in Section 3 (Tables A12 and A16). Results for the remainder of the validity checks are also robust and available upon request.

[20]For details, see Appendix A.5. The measure is defined only within the dataset on university students and robustness is shown in Table A14 within this sample. The choice of study may depend on other characteristics of the child than religious upbringing, and we regard the measure based on major religious figures as more exogenous to other individual characteristics and thus preferred to the alternative.

2.2 Medieval university students

The first dataset consists of 61,573 students at universities in the Holy Roman Empire in years 1250-1550, digitized by the Repertorium Academicum Germanicum (RAG) project. The database contains information on the field and level of study, student names, and the year and birthplace for 47,251 of these students, including geocodes. In the medieval European university one would first take a master at the arts faculty consisting of 3-4 years of liberal arts, including grammar, logic, and rhetoric (corresponding to a bachelor), followed by 2-3 years of arithmetic, geometry, music, and astronomy. After completing a master, one could go on to study in the higher faculties of law, medicine or theology. The RAG database encompasses students who either graduated as masters or at one of the higher faculties (law, theology or medicine) as well as all nobles who attended university, even if they did not finish their degree.[21] Our names-based religiosity measure is useful only after the majority of the populations were Christianized. Studying names in Medieval Bavaria, Sargent (1990) documents that Christian names did not gain widespread popularity among German-speakers before the middle of the thirteenth century. We will therefore restrict analysis to students born after year 1300.

To construct the religiosity measure, we first identify the etymological origin (name branch) of the first names using the behindthename database. We are able to identify the etymological origin of the name of 44,379 out of 47,251 students. The RAG database contains 543 distinct first names, which are rooted in 356 original name branches. We next define a dummy variable equal to one if the student's name branch is also the name branch of one of the major patron saints. 70% of the students share first name with a major patron saint according to our definition (cf. Figure A1). Table 2 shows the top-10 names among the university students that are shared with a major religious figure and the top-10 that are not. A third of the students with names of religious figures have a name derived from the name Yahweh, of which the vast majority are called Johannes, the main German version of the name John. The popularity of the name John refers back to John the Apostle and John the Baptist, both of whom where important early Christian figures. Thereafter comes Nicholas, referring to St Nicholas, a central saint who later became part of the basis for Santa Claus. Next comes Peter, arguably the most prominent of the apostles of Jesus and according to tradition the first leader of the Catholic church. Of the students with non-religious names, 17% carry names originating in the name Henry

[21]The database thus does not include students at the arts faculties who did not graduate (scholares simplices), nor graduates with lower degrees (baccalaurii artium). 17% of the sample are from the nobility, whereof the vast majority (83%) did not proceed with advanced studies. The results are robust to excluding the nobles.

(primarily the German Heinrich), which was a common name for rulers of Germanic kingdoms in the middle ages, especially following the reign of Henry the Fowler (876 – 936). After Henry comes William, which exploded in popularity throughout Europe following William the Conqueror (1028-1087) and the Norman conquest of England. The results are robust to excluding the five most frequent names defined as religious and the five most frequent names defined as less religious, cf. Table A1.[22]

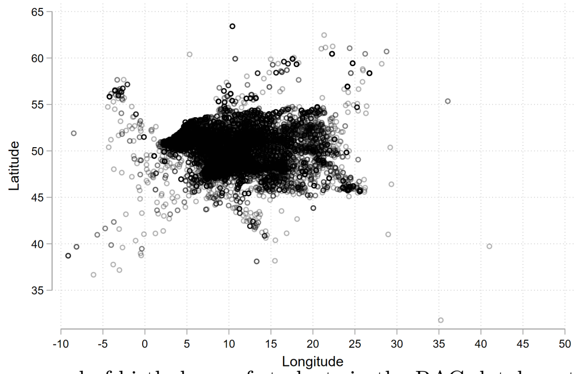
Table 2: Top-10 religious and non-religious name branches among university students

Religious names		Non-religious names	
Name	Share	Name	Share
Yahweh	0.37	Henry	0.18
Nicholas	0.06	William	0.08
Peter	0.06	Conrad	0.07
Jacob	0.05	Theodoric	0.06
George	0.04	Herman	0.05
Christos	0.03	Gerard	0.05
Mars	0.03	Arnold	0.04
Andrew	0.02	Frederick	0.03
Michael	0.02	Jasper	0.03
Wolfgang	0.02	Jerome	0.02
Remaining names	0.30	Remaining names	0.39

The frequencies of top-10 most common religious and non-religious name branches among the university students.

Figure 1 shows the spread of the birthplaces of our main sample of students throughout Europe. The vast majority are born in the Holy Roman Empire.

Figure 1: Birthplaces of the students



The map shows the spread of birthplaces of students in the RAG database throughout Europe.

As a first validity check, we exploit information on the students' field of study to test the hypothesis that individuals whose parents are more religious are more likely to study theology, compared to the two alternative degrees, medicine or law. Note that studying medicine or law was far from irreligious at the time. In fact, the studies included several religious ideas and practices, such as morning prayer (Friedman, 2021). We pursue the hypothesis that the *average* theology student had more religious parents than the average medicine or law student. The effect may run either through religious parents choosing

[22]The remainder of the results are also robust and available upon request.

their children's field of study or through the child being raised more religiously and thus more likely to choose theology. There are reasons to believe that religiosity is passed on from parent to child. Indeed, parents naturally pass on their believed truth about the world, but religion may also have benefits that parents would like to pass on to their children. Research shows that religious individuals have better mental health (Miller *et al.*, 2014; Park *et al.*, 1990), higher life satisfaction (Ellison *et al.*, 1989; Campante & Yanagizawa-Drott, 2015), are better at coping with adversity (Clark & Lelkes, 2005), and more likely to refrain from deviant behavior (Lehrer, 2004).

We will first test whether our names-based religiosity measure correlates with studying theology by restricting the sample to the 16,764 students who took an advanced degree and running regressions of the form:[23]

$$theology_{irt} = \alpha + \beta relname_{irt} + \gamma_r + \gamma_t + \kappa t_r + \omega X_{irt} + \varepsilon_{irt} \quad (2)$$

where $relname_{irt}$ measures whether or not student i born in region r shared first name with a major patron saint. $theology_{irt}$ measures whether or not the same student studied theology rather than law or medicine. γ_r are 1x1 degree grid cell effects, amounting to approximately 100x100 km at Equator.[24] γ_t are year-fixed effects, and t_r are grid-cell specific year-trends. Control variables at the individual level are included in X_{irt}. Scholars argue that the two main signals revealed by a name is the individuality or group identity of the parents.[25] As individualism has been documented to impact all sorts of factors, we would want to control for this dimension of names throughout (Gorodnichenko & Roland, 2011; Knudsen, 2019). We therefore include a control for the frequency of the particular name as a share of the total number of individuals, as documented by Knudsen (2019) to proxy for collectivism. This also accounts for the concern that some names are simply more popular in general and therefore more often the names of prominent saints. Other control variables include students' nobility status, gender, ethnicity, and the latitude and longitude of place of birth. ε_{irt} is an error term capturing all other factors that determine study choice. As long as these are not correlated with the religiosity level of parents approximately 20 years earlier, a significant and positive estimate of β indicates that an individual with a religious name was more likely to study theology than medicine or law, compared to other students. Since the sample is limited to a narrow group of individuals, university students at medieval universities, many of the usual potential confounders,

[23] Of those that took advanced degrees, 14% took a degree in medicine, 68% in law, and 23% in theology. These sum to more than 100% because some students graduate in multiple subjects. We define anyone with a theology degree as having studied theology, including those that also took other degrees.

[24] The sample is spread across 191 grid cells of this size.

[25] Finch (2008); vom Bruck & Bodenhorn (2006); Davidoff *et al.* (1999); Main (1996).

such as social status, income, and education, are already quite fixed. We cluster the standard errors at the 1x1 degree grid cell level.

Table 3 shows the correlation between studying theology and sharing name with a prominent saint. Column (1) shows the simple correlation: Students who share name with a prominent saint are 4.6 percentage points more likely to study theology than medicine or law, compare to students without such names. As 24% of the students studied theology, this is a substantial and meaningful effect. In column (2), we add a control for the frequency of the name as a share of all names. Name frequency is positively correlated with the likelihood of having a religious name, but it does not impact the choice of studying theology and thus its inclusion does not influence the estimate of interest. We further rule out that results are driven by some general normality of religious names by showing that results are robust to using instead the Religious Names Index (RNI), which measures the normality of the name among churches, relative to the population at large (Table A3). Adding a year trend measuring the year of birth, column (3) reveals that the share of theology students falls over time. Inclusion of the trend raises the correlation between names and theology choice, due to a simultaneous rising share of religious names throughout the sample period (cf. Figure A1). Column (4) adds a dummy equal to one if the person was a noble. Apparently, nobles were less likely to study theology (of those who went on to advanced studies, the vast majority studied law), but accounting for the fact does not change the estimate on religious names. Column (5) adds a dummy for whether the student was male. 98% of the sample were male, so it is of no surprise that this adds nothing to the model. Column (6) adds year fixed effects with no change to the results. To account for geographic differences, column (7) first includes controls for the latitude and longitude of birthplace. Students born further to the South and East are more likely to study theology, much like the spatial distribution of religiosity today. The correlation between names and theology falls again, as the spread of religious names has the same pattern.

Table 3: Religious names and studying theology

Dependent variable: Theology student dummy	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Religious name	0.048***	0.044***	0.059***	0.057***	0.057***	0.059***	0.036***	0.029***	0.028***
	(0.008)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.008)	(0.007)	(0.007)
Name frequency		4.58	-0.68	-1.73	-1.92	-2.20	2.01	2.72	2.93
		(4.113)	(4.411)	(4.487)	(4.403)	(4.535)	(4.242)	(3.888)	(3.875)
Year (1000s)			-0.99***	-0.96***	-0.96***				
			(0.154)	(0.153)	(0.154)				
Noble				-0.13***	-0.13***	-0.14***	-0.16***	-0.16***	-0.17***
				(0.014)	(0.014)	(0.012)	(0.012)	(0.012)	(0.013)
Male					0.018	0.0080	0.013	0.012	0.017
					(0.030)	(0.030)	(0.031)	(0.031)	(0.031)
Latitude (100s)							-1.50***	-3.64**	-3.84**
							(0.373)	(1.561)	(1.641)
Longitude (100s)							0.99***	-0.36	-0.32
							(0.177)	(1.201)	(1.251)
R-squared	0.0027	0.0027	0.013	0.020	0.020	0.025	0.038	0.059	0.070
Observations	15693	15693	15693	15693	15693	15673	15673	15664	15664
Mean dep var	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Year FE	N	N	N	N	N	Y	Y	Y	Y
1x1 grid FE	N	N	N	N	N	N	N	Y	Y
Grids x year trends	N	N	N	N	N	N	N	N	Y
Number grids	191	191	191	191	191	191	191	182	182

OLS regressions across students with an advanced degree. The controls measure the frequency of the name as a share of all names, a year trend for the year of birth, a dummy for nobility status, a dummy for whether the student was male, year fixed effects, birthplace latitude and longitude, 1x1 degree grid cell dummies, and 1x1 degree grid cell specific year trends. Robust standard errors clustered at the 1x1 grid cell level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.
Result: Students who shared name with a major religious figure were 12-25% of the mean more likely to study theology.

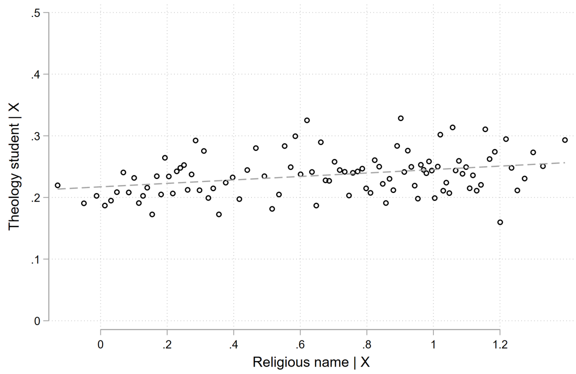
To further account for geographic and location-specific differences, column (8) adds a set of 1x1 degree fixed effects.[26] This specification thus compares individuals born within the same 100x100 km grids and significance stays well below the 1% level. Column (9) adds grid-cell specific trends. The positive correlation remains throughout: Students who shared name with a major patron saint were more likely to study theology.

The correlation is highly homogeneous across students. Figure 2 shows the added variables plot for the result in column (9), where all baseline controls are included and observations binned into 100 equally sized bins.[27] The high precision and homogeneity of the estimated relation signifies that no particular group of students, locations, or names explain results. The latter is confirmed also in Table A1, which excludes the top-5 most represented religious names and top-5 most represented non-religious names one at a time with no change to the conclusion. We further check robustness of the results by including controls for ethnicities in Table A2. To compute a proxy for the ethnicity of the individuals, we follow Andersen (2021) and first calculate the frequency of each name branch within the major European languages spoken, using the Ancient Genome Atlas by (Nørtoft & Schroeder, 2020). We then define a person as belonging to ethnicity x if his/her name is more frequent within that particular language group, compared to the sample at large (see Appendix A.5 for more details). The result is unchanged.

[26] 11 of these grids were birthplace to only one student, which means that these students drop out when adding the fixed effects.

[27] Even without all the fixed effects, the result is quite homogeneous, cf Figure A2.

Figure 2: Religious names and studying theology

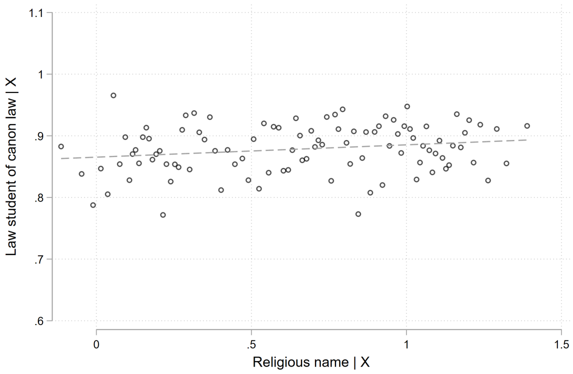


Binned added variables plot where observations are binned into 100 equally sized bins. The line represents the OLS estimate of β in Equation (2) across the 15,664 students, including baseline controls for the frequency of the name as a share of all names, dummies for nobility status and gender, year fixed effects, birthplace latitude and longitude, 1x1 degree grid cell dummies, and 1x1 degree grid cell specific year trends.. The results correspond to those in column (9) of Table 2.

The RAG database contains another piece of information which is potentially associated with religiosity; whether the law students studied canon or civil law. Canon law is a set of ordinances and regulations made by ecclesiastical authority (church leadership) for the government of a Christian organization or church and its members. Civil law is the secular Roman law. If sharing name with a major religious figure reflects a more central role of religion in the lives of these families, we expect the students to be more likely to chose canon law. To investigate, we restrict the sample to law students with information on the type of law and estimate Equation (2) with a dummy equal to one if the person studied canon law as the dependent variable, zero otherwise. Figure 3 shows the specification including the baseline controls (as in column (9) of Table 3). Even for this very similar set of individuals, the association between sharing name with a religious figure and studying canon law is positive and significant at the 10% level. The result does not depend on any of the controls, cf Table A4, including controls consecutively.[28]

[28]The results are also robust to including controls for ethnicity and removing the top and bottom religious names. The results maintain significance only at the 15% level when using the religious name index (RNI). Results available upon request.

Figure 3: Religious names and studying canon law



Binned added variables plot where observations are binned into 100 equally sized bins. The line represents the OLS estimate of β in Equation (2) across the 5,944 students, including baseline controls for the frequency of the name, nobility status, a male dummy, year of birth dummies, birthplace latitude and longitude, 1x1 degree grid cell fixed effects, and 1x1 degree grid cell specific year trends. The results correspond to those in column (9) of Table A4.

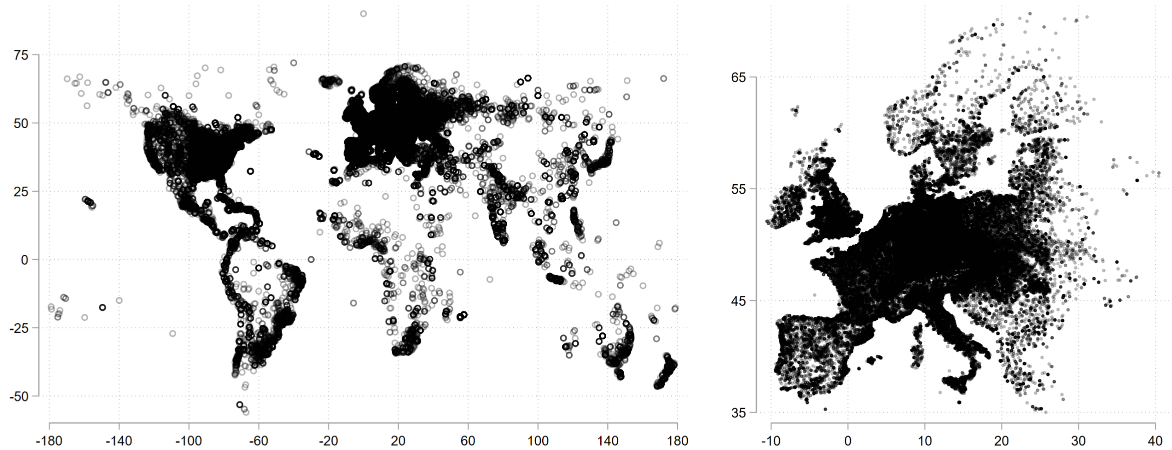
2.3 Authors across Europe

Results so far document that medieval university students who shared name with a major patron saint were more likely to study theology and canon law in a large sample of homogeneous individuals measured before the onset of modern growth. To eventually estimate the impact of religiosity on the transition to modern growth, we need a more recent sample of comparable individuals. For this, we use information for 4.1 million authors contained in the Virtual International Authority File (VIAF) (www.viaf.org). The database contains information on all recorded name variants of authors of books in libraries across the globe, including the birth and death year of the authors and a unique identifier of the authors that can be matched to other databases. The contributors to the database are national libraries, cultural agencies, and other major institutions from more than 40 organizations in more than 30 countries around the world. The database is used for research by other scholars (Chaney, 2020). To obtain geocodes for the birthplace of authors, we cross-reference the unique author identifier with the German National Library (DNB) and with Wikipedia, resulting in geocodes for the birthplace of 1.16 mio. of the authors.[29] Figure 4 shows the spread of these authors across the globe in panel a and across Europe in panel b.

[29]For 798,930 authors, we identified the birthplace geocodes from the DNB database and for 462,405 authors from Wikipedia. When both sources are available, we choose DNB. See Appendix A.5 for more detailed description of the process.

Figure 4: Birthplaces of authors

(a) Full sample (b) Sample for analysis



The map shows the spread of birthplaces of authors from the VIAF database throughout the world.

As our definition of a religious figure is defined only within Christianity and since our aim is to investigate the transition to modern growth, we restrict the sample to Europe. Extending to Christian societies beyond Europe would be inferior as Christian names outside Europe could also indicate European decent, independent of the role played by religion in these families. We further restrict the sample to authors born after 1300 when Christian names dominated Germanic Europe (Sargent, 1990) and before 1940 when most potential authors registered in libraries at the time of download (April 2021) had been born.[30] These data, consisting of 468,015 authors born in Europe between 1300 and 1940, are depicted in panel (b) of Figure 4. We last remove Muslim majority countries.[31]

Table 4 shows the top-10 author name branches shared with either one of the major patron saints or the Biblical significant figures. Three names enter both lists: Yahweh (consisting mainly of the name John), Jacob, and Paul, all of which are borne by prominent disciples of Jesus: John the Apostle, John the Baptist, James the Great, and Paul the Apostle.

[30]The oldest authors in 2021 thus reached an age at which most would have published.

[31]Based on contemporary numbers, the three Muslim majority countries in Europe are Albania, Bosnia and Herzegovina, and Kosovo. With 209, 498, and 89 authors born in these countries, respectively, this restriction of the data means nothing for the results.

Table 4: Top-10 patron saint - and Bible name branches among authors

Patron saints		Biblical figures	
Name	Share	Name	Share
Yahweh	0.22	Yahweh	0.48
Charles	0.09	Joseph	0.12
Francis	0.05	Peter	0.08
George	0.04	Paul	0.07
Ludwig	0.04	Christos	0.06
Peter	0.04	Jacob	0.06
Paul	0.03	Mary	0.05
Anthony	0.03	Andrew	0.04
Christos	0.03	Thomas	0.02
Jacob	0.03	Philip	0.02
The rest	0.40	The rest	0.02

Top-10 most common author names shared by patron saints and biblical figures among persons with names defined as religious in the two groups.

60% of the authors share name with either a major patron saint or biblical figure. The share remained around 75% between 1300 and 1750, where-after it declined towards 50% in 1900 (Figure A3). The share fluctuates until around 1450, reflecting that very few authors in the sample are born at this time (Figure A4).

We proceed to check the validity of the names-based measure using the database of authors. In the first check, we exploit the oldest measure of historic religiosity that we know of: A measure of (Catholic) religiosity across regions in France measured in 1791, used by Squicciarini (2020). During the French revolution, the government asked all French clergy to swear an oath of allegiance to the Civil Constitution in an attempt to restructure the church (Tackett, 1986). Squicciarini argues that the clergymen voted to please their local community, meaning that the oath signals local religiosity. 31,441 of our authors were born in France between 1300 and 1940. As France was predominantly Catholic during the period, we use the definition of a religious name based on patron saints. Since we are not concerned with the causal direction and since the measure of refractory clergy varies only at the departmental level, our preferred specification has the religious name dummy as the dependent variable and the standard errors clustered at the departmental level:

$$relname_{id} = \alpha + \beta clergy_d + \gamma_r + \gamma_t + \kappa t_r + \omega X_{id} + \varepsilon_{id}, \quad (3)$$

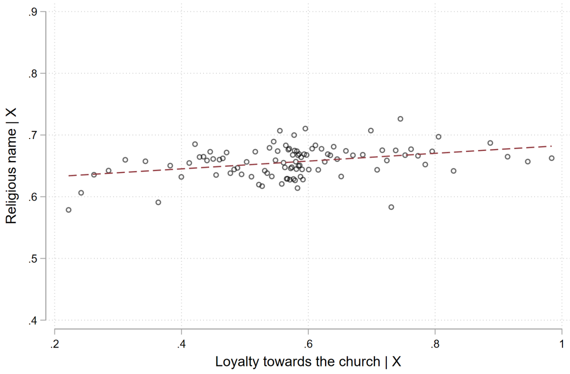
where $relname_{id}$ is a dummy equal to one if author i born in department d shared name with a major patron saint, zero otherwise. $clergy_d$ measures the share of clergymen in department d who swore an oath of loyalty towards the church. γ_r are 5x5 degree grid-cell fixed effects, which corresponds to 500x500 km at Equator.[32] γ_t are year of birth fixed

[32]France spans seven of such grid cells. As the explanatory variable, refractory clergy, varies only

effects and t_r measures grid-cell specific year trends. Control variables X_{id} include name frequency and birthplace latitude and longitude.

Figure 5 shows the binned added variables plot of the baseline regression. The estimate on refractory clergy is positive, highly significant, and amounts to 10% of the mean of the dependent variable. The estimate reflects that departments in France with more refractory clergy in 1791 were also inhabited by more authors who shared name with major religious figures during the period 1300-1940. The results are not sensitive to any of the controls, nor to using different time periods, or to aggregating the author data to the departmental level (Table A5 and Figure A5).

Figure 5: Religious names and clergy loyal towards the church



Binned added variables plot where observations are binned into 100 equally sized bins. The line represents the OLS estimate of β in Equation (3) across the 28,762 authors, including controls for name branch frequency, birthplace latitude and longitude, year and 5x5 grid cell fixed effects, and grid cell specific trends, corresponding to column (7) of Table A5.

As our next validity check of the religiosity measure, we exploit research documenting that religiosity rises after earthquakes.[33] The reason for this phenomenon is that a non-negligible share of (religious) individuals tend to use their religion to cope with uncertainty and adversity (Pargament, 2001). Survey-based measures of religiosity rise in the short term after earthquakes and this increased religiosity is transmitted across generations (Bentzen, 2019a). The impact persists for areas that are not physically hit, meaning that individuals use their religion to cope *emotionally* with the experience. If religious names capture the religiosity of parents, we expect that more individuals are given religious names when a major earthquake hit in the vicinity of their birthplace.

To investigate, we examine earthquakes from the Significant Earthquake Database created by the National Oceanic and Atmospheric Administration (NOAA), a global listing of significant earthquakes from 2,100 BC to the present.[34] As there are very few

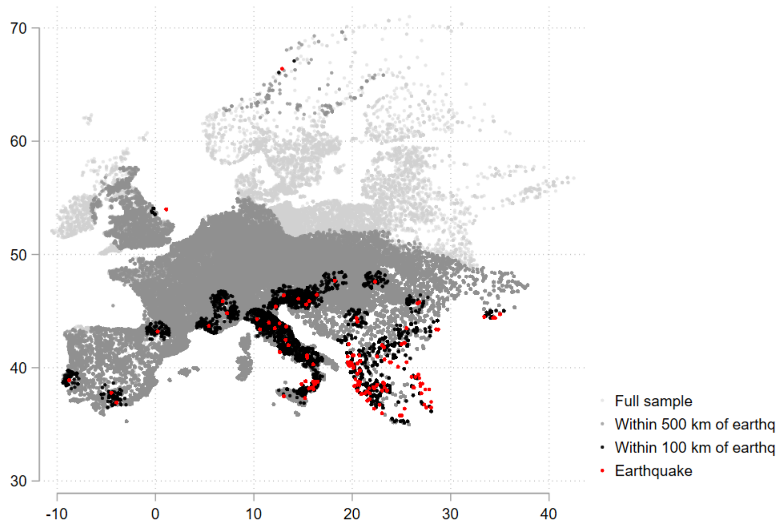
across 82 departments, including more detailed spatial fixed effects as in the analysis across students would remove most of the variation.

[33]Belloc *et al.* (2016); Bentzen (2019a); Sibley & Bulbulia (2012).

[34]A significant earthquake is defined in the database as one that meets at least one of the following

earthquakes early in the sample and as earthquake detection technology improves greatly over time, we restrict the sample to earthquakes that hit after 1700, and we account for year fixed effects and location-specific time-trends throughout. We further restrict the sample to earthquakes of magnitude 5 or larger, following Bentzen (2019a). 369 such earthquakes hit Western or Central Europe, of which 125 stroke between 1700 and 1940. We define a birthplace as having been hit if an earthquake hit within 100 km of that location, following Bentzen (2019a). 8,991 of the authors in the sample were born within 30 years after such an earthquake. In the baseline analysis, we restrict the comparison group to individuals who were born within 60 years and 500 km of one or more earthquakes.[35] Figure 6 depicts the 125 earthquakes and the distribution of treated and untreated authors. The majority hit Southeastern Europe where only few authors were born, meaning that these earthquakes will not influence the analysis much. Results are robust to restricting to the 48 major earthquakes that hit Europe to the West of longitude 20 (Table A6).[36]

Figure 6: Distribution of authors and earthquakes



Grey or black dots indicate author birthplaces. Red dots mark earthquakes.

To estimate the impact of earthquakes on the likelihood of naming ones child after a

criteria: caused deaths, caused moderate damage (approximately $1 million or more), magnitude 7.5 or greater, Modified Mercalli Intensity (MMI) X or greater, or the earthquake generated a tsunami.

[35]Results are robust to defining the control group as authors born within 200 km of one or more earthquakes (Figure A6). And also to refraining from this restriction.

[36]Results are also robust to excluding the two earthquakes that hit to the North of latitude 50 (Table A6). One of these earthquakes was the 5.8 magnitude Luroy earthquake that hit Northern Norway in 1819, known as the largest historical earthquake that hit Fennoscandia. The earthquake was felt throughout a large district in Norway, especially at Salten and Helgeland in the province of Nordland (Mallet & Mallet, 1858). The other was the largest known earthquake in the North Sea region, a 6.0 magnitude earthquake that hit the Dogger Bank area in the open North Sea. It was felt throughout the UK, Belgium, the Netherlands, northern France and Germany, southwestern Norway, and Denmark (Yalçıner, 2009).

major religious figure, we estimate equations of the form:

$$relname_{irt} = \alpha + \sum_{x=5}^{90} \beta_x earthquake_{rt-x} + \sum_{x=5}^{60} \delta_x earthquake_{rt+x} + \gamma_R + \gamma_T + \kappa t_r + \omega X_{irt} + \varepsilon_{irt} \quad (4)$$

where $relname_{irt}$ is a dummy equal to one if author i born in year t in location r shared name with a major patron saint or biblical figure, zero otherwise. $earthquake_{rt-x}$ is a dummy equal to one if an earthquake hit within 100 km of an birthplace within x years before birth, during the birth year or within one year after the birth of individual i. $earthquake_{rt+x}$ is a dummy variable equal to one if an earthquake hit within one plus x years after a person's birth. These earthquakes should not matter for name giving and serve as a placebo check. Choosing intervals x is a weighing between getting as close to the year of birth as possible, obtaining long enough placebo intervals, and ensuring that one or more earthquakes hit within the intervals. We choose intervals 5, 10, 20, 30, 60, and 90 years prior to birth and post birth intervals up to 60 years after birth.[37] γ_R are dummies for 5x5 degree location fixed effects.[38] γ_T are birth year fixed effects. t_r are 2x2 degree grid-cell specific trends and X_{irt} are baseline control variables for name frequency, latitude, and longitude for birthplace. Standard errors are clustered at the 2x2 degree grid-cell level.[39]

One concern is that the impact of earthquakes is biased due to the staggered design of treatment (De Chaisemartin & d'Haultfoeuille, 2020; Callaway & Sant'Anna, 2021). Since already-treated observations enter the control-group, the estimate of the treatment effect may be biased towards zero if the impact of treatment falls over time and away from zero if the impact rises with time since treatment. The problem is larger the more persistent the treatment effect and the larger the share of the sample that ends up being treated. In our case, we expect the impact of treatment to be larger in close vicinity

[37]If we expect that treatment occurs during the 30 years leading up to ones' birth, this setup leaves us with 60 years before treatment and 60 years after treatment.

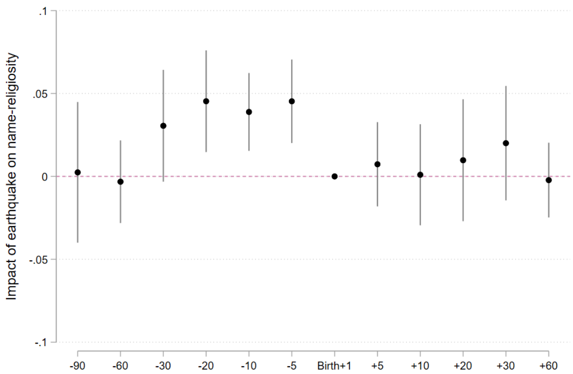
[38]As we define earthquake impact within circles of 200 km in diameter, we would not want to restrict comparison to 100x100 km grid cells as otherwise done in the analysis of students, since earthquake impact does not vary much within most of these grids. Instead, we compare impact within 500x500 km grids, where variation in earthquake impact exists. The sample spans 36 such grid cells.

[39]Note that the dependent variable - sharing name with a religious figure - does not vary over time, meaning that we have only one observation per author. The time-variation in earthquakes instead produces variation across the variables measuring the timing of earthquakes relative to the timing of author birth. An alternative data structure where information for each author was artificially replicated 240 or 87600 times (the number of years/days between 1700 and 1940) and regressed on a yearly or daily earthquake dummy is less attractive for two reasons. First, how to construct the dependent variable containing the naming decision is ambiguous and second, such a specification would produce estimates biased towards zero, akin to any other regression where the dependent variable is more aggregated than the explanatory variable.

of the treatment, which means that our estimates are potentially biased towards zero. However, since the impact of treatment is expected to be rather short-lasting and since the vast majority of our control-group remains untreated, we judge this bias to be small.

Figure 7 shows the estimates of Equation (4), revealing that parents who experienced an earthquake within 5 years prior to giving birth are more likely to name their child after a religious figure. Likewise for earthquakes that hit up to 20 (and partly up to 30) years before birth, which are most likely earthquakes within the lifespan of the parents.[40] Reassuringly, earthquakes more than 30 years prior to birth did not influence name giving and neither did earthquakes up to 60 years after birth. These results are consistent with the idea that earthquakes strengthened the role of religion in the lives of the parents beyond other considerations, such as nationalism or individualism.

Figure 7: Religious names and earthquakes



Estimates of Equation (4) across 261,636 authors born within 500 km of an earthquake. Each dot reflects the impact of earthquakes in the particular time-period on the likelihood that the person's first name is shared by a major religious figure. The vertical lines reflect the 95% confidence intervals, clustered at the 2x2 grid cell level. Control variables include namefrequency, latitude and longitude of birthplace, 5x5 degree birthplace fixed effects, birth year fixed effects, and 2x2 degree birthplace specific time-trends.

Figure 7 includes baseline controls for name frequency, birthplace latitude and longitude, year fixed effects, 5x5 degree grid-cell fixed effects, and 2x2 degree grid-cell specific trends. Results are not sensitive towards the inclusion of controls (Table A6). Even the raw correlation is positive and significant at the 1% level for most time-intervals before birth. Figure A6 documents that the results are not driven by a few observations and are robust to restricting the control group to 200 km.

One concern is that the estimated impact covers some spurious effect of the economic damage of earthquakes. We do not find evidence for this; including a dummy equal to one if an earthquake hit within 30 years of birth and within 20 km of birthplace does

[40]The slight (insignificant) rise in the estimate moving from 10 to 20 years before birth may reflect earthquakes that hit just before the parents were born and thus may reflect grandparents' naming decisions rather than parental naming decisions.

not alter the estimate of interest (Table A6).[41] Neither does excluding these severely hit locations. That the impact is not explained by material damage by earthquakes is consistent with the idea that a significant share of people cope emotionally with disaster by using their religion as also confirmed by Bentzen (2019a).

The dataset on authors enable one last validity check based on their professions. We relegate this to the analysis in Section 3.1, as this is a relevant outcome in itself.

3 Religiosity and the transition to modern growth

Equipped with this measure of historic religiosity that has passed a range of validity checks, we proceed to test its impact on the transition to modern growth. To shape expectations, we first review existing research, which find both positive and negative effects of religiosity. The main divider is the focus on science and innovation, which are seemingly negatively impacted by religiosity. We commence with the first social scientist to argue for a link between religion and economic growth.

Weber (1905) famously argued that capitalism was rooted in the so-called Protestant ethic. His book, "The Protestant Ethic and the Spirit of Capitalism", is still one of the most important works in sociology. Weber argued that the Protestant Reformation profoundly affected the view of work, dignifying even the most mundane professions as adding to the common good and thus blessed by God. As a result, he argued, Protestants - Calvinists in particular - became particularly hard working and thrifty compared to their Catholic neighbors. This he termed the Protestant ethic. To substantiate, he observed that Protestant societies were richer in the region Baden in Germany in year 1900. While the technology at the time of Max Weber did not allow econometric testing, numerous scholars have put his theory to the test in recent years (see review by Becker *et al.* (2016)). Weber's thesis is often used as an example of the positive effects of religion, but that of course depends on whose lens you view through. The opposite side of the coin is that Catholic regions experienced lower economic prosperity. While Max Weber's theory compared socioeconomic outcomes of Protestants and Catholics, other theories and econometric studies emerged to compare for instance Muslims and Christians (see review by Kuran (2018)). Yet others examined the impact of Judaism, Hinduism or Buddhism on outcomes.[42]

Turning to studies on religiosity, the first to identify an empirical impact on cross-country growth was Barro & McCleary (2003) who combined measures of religiosity

[41] 667 authors in the sample were born at such a time, of which the majority were born in Italy (243), Greece (165), and Austria (145).

[42] Botticini & Eckstein (2012); Iyer (2016); Becker *et al.* (2021).

from the World Values Survey with GDP per capita and other measures of economic outcomes. Across up to 59 countries, they found that GDP per capita is lower in countries with higher church attendance or more intense religious beliefs, measured by beliefs in heaven or hell. However, for given church attendance levels, intensified religious beliefs increase economic development, whereas for given levels of religious beliefs, additional church attendance continued to decrease economic development.[43] The authors theorized that religious beliefs sustain aspects of individual attitudes and behavior that enhance productivity, while additional church attendance reflects increased resource use by the religion sector, which may dampen growth.

Across Indonesian villages, Bryan *et al.* (2021) documented that exogenously induced higher Protestant religiosity increased household income but had no statistically significant effect on total labor supply, consumption, food security, or life satisfaction, and it decreased perceptions of relative economic status. Bryan, Choi, and Karlan further showed that the rise in income was caused by increased grit, which may be understood within the framework by Weber: Believers who more strongly believe their work effort to be rewarded in afterlife are more likely to engage in hard labor, ceteris paribus.

Another behavior beneficial to growth and potentially influenced by religiosity is cooperation. Theories suggest that beliefs in punishing gods may have solved the problem of free-riding in pre-modern societies before the emergence of modern institutions; God was believed to punish deviants, thus inducing cooperation (Norenzayan, 2013). In support, experiments have shown that beliefs in punishing gods induce prosocial behavior (Purzycki *et al.*, 2016; Henrich *et al.*, 2010). Inhabitants of societies that developed punishing gods may have been better able to cooperate, and thus more likely to survive and multiply. Eventually, evolution selected societies that held beliefs in punishing gods. Over time, the invention of formal policing institutions reduced the need for God as such an institution. Accordingly, this theory predicts that a stronger role of religion may have been good for growth in our distant past or in societies with malfunctioning institutions.

So far, we focused on the literature pointing towards aspects of religiosity that may be growth enhancing. These positive effects may arise when religion encourages individual behavior into endeavors believed to be blessed by God. When these endeavors are simultaneously good for the economy, this may result in societal-wide economic gains. Another positive impact arises due to the potential stress-relieving effects of religion which may or may not influence economic growth (Pargament, 2001). For instance, Campante &

[43] A later econometric scrutiny of this research by Durlauf *et al.* (2012) could not replicate the positive effects of religious beliefs on growth. Only the negative effect of church attendance survived replication.

Yanagizawa-Drott (2015) documents both positive and negative effects of religiosity by studying a specific religious practice; the Ramadan. Exploiting exogenous variation in the length of daily fasting due to the rotating Islamic calendar, they find that longer fasting depresses production and thus economic growth, but at the same time increases happiness and life satisfaction.

Focusing on the link between science, innovation, and religion, other research documents more negative effects of religiosity on growth.[44] For instance, the emphasis on tradition in most religions may discourage certain behaviors such as innovation and creativity, which are otherwise beneficial to economic growth (Bénabou *et al.*, forthc). Bénabou, Ticchi, and Vindigni illustrate the potential contesting between the worldviews of science and religion in a theoretical model, where the recurrent arrival of scientific discoveries generate productivity gains, but at the same time threaten to erode religious beliefs by contradicting aspects of religious doctrines. As a result, religious elites have incentives to curb the development of science and new ideas. Examples abound of such conflicts, from the trial of Galilei in 1633 to President George W. Bush's restrictions on federal funding for embryonic stem-cell research. In support of the model, Benabou, Ticchi, and Vindigni uncover that contemporary countries or US states that are more religious have fewer patents per capita. An alternative model may explain the same tendency with substitution between religion and science; if intellectual resources can be used for either religious or scientific studies, religiously interested individuals may be more inclined to engage in religious studies, thus crowding out the study of science. The proposition is not that religion and science cannot go hand-in-hand. Indeed, there are several examples of great contributors to science who were deeply religious - perhaps most famously Sir Isaac Newton (1642-1727). Also, some of Europe's largest universities - Bologna and Oxford for instance - were established by monasteries. Thus, it remains a matter of empirical testing whether religion and science contested or complemented one another.

Other studies have investigated the impact of religiosity on science or knowledge production econometrically. Squicciarini (2020) documented that French areas that were more religious in the late 19th century were less likely to introduce new technical curriculum in schools, thus forgoing skills essential for experiencing the second industrial revolution in France. The Catholic Church was promoting a conservative, anti-scientific program that hindered the introduction of technical curriculum, while pushing for reli-

[44]Another line of literature documenting more negative effects of religiosity deals with the idea that religion can be used as a tool to legitimize power with potential consequences for the development of democracy. See for instance books by Rubin (2017); Platteau (2017) and empirical examination by Bentzen & Gokmen (2020).

gious education. This research is consistent with the ideas of Mokyr (2010), who considers culture as one of the key drivers of the Enlightenment. According to Mokyr, a cultural appreciation of knowledge and reason emerged during the 17th century and took over from the traditional worship of ancient wisdom. Intellectual innovation and technological progress propelled as a result, but may have been held back in areas with a culture of ancient worship and tradition.

Along the same lines, Cantoni & Yuchtman (2013) argue that the introduction of a new, productive form of human capital, such as the emergence of modern science, depends on whether the government or church see the new knowledge as threatening to their position of power. The authors argue that Islamic elites who controlled educational institutions in the Middle Ages initially promoted the study of logic and science, because the gains from spreading these skills (more converts to Islam) outweighed the costs (potential criticism of the religious elites). This period of elite support for scientific study saw the flourishing of Islamic society. However, as Islam took over in the Middle East, the gains to elites from the study of logic and science declined. Elites started to oppress the study of science, and the Muslim world fell behind. Chaney (2016) provides econometric support for these ideas. He links the decline in scientific and technological production in the Muslim world in the late Medieval period to the extensive spread of madrasas, educational centers where Islamic law was taught. Using data on book production during the period 800-1800, Chaney documents a sharply rising trend in the proportion of religious books written, accompanied by a drop in original and scientific-technical books. With our data, we can test empirically whether something similar occurred within Europe.

Based on the reviewed literature, we set up the following expectations. If certain behaviors that are beneficial to growth are seen as "blessed" or if people fear divine punishment from behavior that is (incidentally) bad for growth, we should expect more religious societies to perform better economically. On the other hand, if religion and science often come into conflict, institutionally or theoretically, we might expect knowledge production and technological growth to be retarded in religious societies. While both mechanisms may have been present throughout history, the latter is most likely after the Enlightenment, where-after upper-tail knowledge became increasingly important for generating economic growth (Mokyr, 2010). We thus expect an progressively negative impact of religiosity on growth as upper-tail knowledge becomes more important.

3.1 Knowledge production

To investigate whether religiosity influenced knowledge accumulation throughout Europe, we exploit individual-level information available in the two examined datasets. While students and authors are already knowledge-producers, we can examine the intensity and type of knowledge that they produce. For the university students, we exploit information on whether or not they proceeded with advanced studies. For the authors, we use information on their professions. We commence with the latter.

Information on the professions of the authors is available from the German National Library (DNB) for 281,188 of the authors in our main sample. The authors enter our database if they wrote a text that ended up in a library, but they are not necessarily authors as their main occupation. In either case, it is very likely that whatever they wrote their books on is related to their profession, which means that we can asses the type of knowledge they spread through their books. The authors have between 1 and 21 professions, but more than 99% have six professions or less. The average (median) number of professions is 1.9 (2). The most frequent professions are doctors and lawyers, held by 9.1 and 7.6% of the authors, respectively.

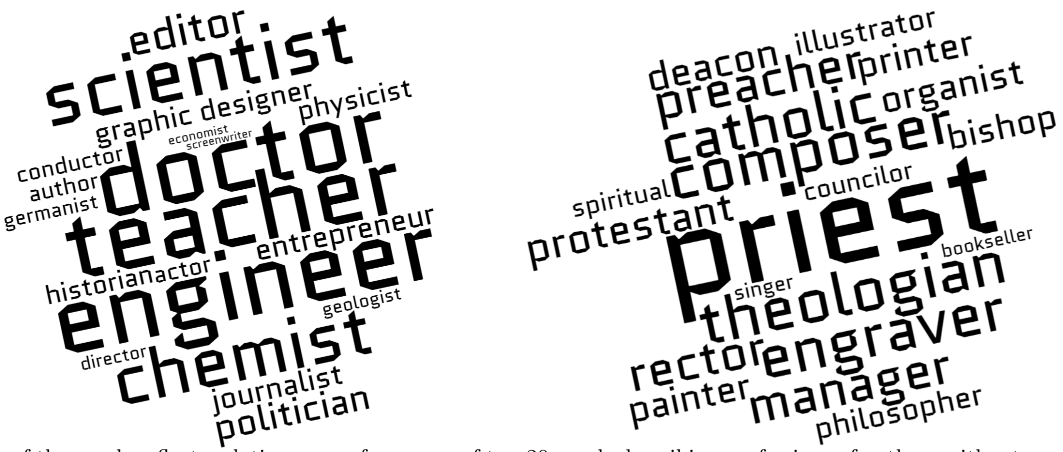
As a first illustration, we conduct a semantic analysis of the words describing author professions. We compare the relative frequencies of words describing professions across authors who share name with a religious figure and for those who do not. For instance, 4.2% of the words describing professions of authors with religious names is "priest", compared to 2.4% for the authors without religious names. Priests are therefore 1.8 percentage points more frequent among the religious authors. This relative excess frequency is visible in panel (b) of Figure 8 which depicts the top-20 words describing professions that occur more frequently among authors with religious names relative to authors without religious names. Panel (a) shows the words scaled by the excess frequencies for those without religious names relative to those with religious names.

The figure reveals clear differences in professions across the two author types. Religious authors are more likely to have professions associated with religion, while the non-religious authors are more likely to have professions that relate more to knowledge production, such as doctors, teachers, engineers, scientists, and chemists.[45] This is consistent with previous research by Squicciarini (2020) documenting less technical school curriculum in religious areas in France.

[45]Due to different levels of aggregation in the original description of professions, some professions, such as scientist and chemist, overlap.

Figure 8: Differences in professions based on religiosity

(a) Professions of non-religious authors (b) Professions of religious authors



The size of the words reflects relative excess frequency of top-20 words describing professions of authors without a religious name, relative to those with a religious name in panel (a) and across authors with religious names, relative to those without religious names in panel (b).

A potential concern is that professions that are on the decline appear more religious as the share of religious names is also declining. In general, Figure 8 visualizes mere correlations. To identify formally whether the figure reflects real differences between author types, we estimate regressions in Table 5 similar to those performed in Equation (2). The dependent variables are dummies equal to one for each of the top-5 words in panel (a) in columns (1)-(5) and for each of the top-5 words in panel (b) in columns (6)-(10). The set of controls includes all baseline controls: name frequency, birthplace latitude and longitude, 1x1 degree location fixed effects, year fixed effects, location-specific trends plus one additional control: total number of professions. The main explanatory variable in Panel A is a dummy equal to one if the author shared name with a major patron saint or biblical figure. The sign of the estimate on the religious name dummy is as we would have expected from Figure 8 for all ten words and significantly different from zero for seven of them. Non-religious authors are more likely to be doctors, engineers, scientists, and chemists, while religious authors are more likely to be priests, theologians, and their description of profession is more likely to include a mention of Catholic. Note that such a mention is not a good proxy for whether or not the person was Catholic: 1% of the authors have a mention of Catholic, and we find it more plausible that this mention indicates higher (Catholic) religiosity.

Nevertheless, a concern may be that our results are specific to Catholics or other groups. We address these concerns in four ways. First, since 1x1 degree grid cell fixed effects are accounted for throughout, much of the variation across religious denominations is removed. Second, we construct two new religiosity dummies based on the insight that names shared by saints may indicate primarily Catholic religiosity, while names shared by biblical figures may indicate Protestant religiosity. Panel B shows results using a dummy equal to one if the person shares name with a saint, Panel C using a dummy equal to one if the person shares name with a biblical figure.[46] The results hold for both groups: Authors with either biblical or saints names are more likely to have a profession including religious topics and less likely to be a doctors, engineers, scientists, or chemists. If anything, the estimates are slightly larger in absolute size for the authors with biblical names, which indicates that Catholics are not driving results.

Table 5: Religiosity and professions of authors

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Panel A. Dep var:	doctor	teacher	engineer	scientist	chemist	priest	theologian	composer	engraver	catholic
Religious name	-0.0037***	-0.0026	-0.0053***	-0.0017**	-0.0034***	0.0025**	0.0024***	0.00085	0.00030	0.0038***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
R-squared	0.049	0.092	0.0090	0.019	0.0047	0.14	0.058	0.045	0.053	0.027
Observations	281101	281101	281101	281101	281101	281101	281101	281101	281101	281101
Mean dep var	0.091	0.13	0.022	0.025	0.016	0.067	0.044	0.035	0.0061	0.0095
Panel B.										
Saints name	-0.0038***	-0.0029*	-0.0050***	-0.0016**	-0.0032***	0.0018*	0.0020**	0.00014	0.00033	0.0032***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)
R-squared	0.049	0.093	0.0092	0.019	0.0046	0.15	0.059	0.044	0.053	0.028
Observations	274995	274995	274995	274995	274995	274995	274995	274995	274995	274995
Mean dep var	0.092	0.13	0.022	0.025	0.016	0.067	0.044	0.034	0.0061	0.0091
Difference p-value	0.95	0.86	0.65	0.98	0.80	0.55	0.62	0.29	0.93	0.23
Panel C.										
Biblical name	-0.0040*	-0.0018	-0.0072***	-0.0023**	-0.0054***	0.0098***	0.0054***	0.0011	0.0016**	0.0054***
	(0.002)	(0.003)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.049	0.093	0.0086	0.020	0.0038	0.16	0.064	0.046	0.055	0.031
Observations	195621	195621	195621	195621	195621	195621	195621	195621	195621	195621
Mean dep var	0.094	0.13	0.023	0.025	0.017	0.071	0.045	0.034	0.0060	0.0086
Difference p-value	0.90	0.76	0.081	0.58	0.028	0.00084	0.034	0.87	0.11	0.076

OLS regressions across authors. The dependent variables are dummies equal to one if the profession of the author includes the particular word. The measure of religiosity is a dummy equal to one if the name is shared by a major saint or biblical figure in Panel A, a saint in Panel B, or a biblical figure in Panel C. All regressions include controls for the frequency of the name as a share of all names, birthplace latitude and longitude, number of professions, year fixed effects, 1x1 degree grid cell fixed effects, and 1x1 degree grid cell specific trends. The "Difference p-value" is the p-value of the test that the estimates are the same as those in Panel A. Robust standard errors clustered at the 1x1 grid cell level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Result: Authors who share name with a major religious figure are less likely to be doctors, engineers, scientists, and chemists, and more likely to be priests, theologians, and have Catholic mentioned in their description of professions. The results hold for the composite religiosity measure and for saints and biblical names, separately.

Remaining robustness checks will focus on the seven significant variables from Table 5. As a third check of whether certain groups drive the results, we add controls for ethnicity in Table A8. The results are unchanged. Fourth, we test the heterogeneity of the results based on the authors' country of birth. The majority of the authors with information on professions are born in Germany (50%). Thereafter comes Poland (8.8%), the Czech Republic (8.2%), Austria (6.8%), and France (3.4%). Table A9 shows that each of the significant parameter estimates in Table 5 hold when excluding these countries, except that the negative estimate on scientists turns insignificant when excluding Germany.[47]

The effects in Table 5 are large, but not implausibly large. For instance, having a religious name reduces the likelihood of being a doctor by 4.1% of the mean or the likeli-

[46]From the control-group, we exclude saints (biblical) names when using the biblical (saints) measure, unless the name was also the name of a major patron saint (biblical figure). This ensures that religious Catholics (Protestants) are not included in the control group when using the biblical (saints) based measure, unless they are also the name of a major biblical figure (saint).

[47]Significance is retained if aggregating the different sub-categories of scientists, such as chemists.

hood of being an engineer by 24% of the mean. At the same time, these individuals are 3.7% of the mean more likely to be priests or 5.4% of the mean more likely to be theologians. Again, the estimates are not driven by few observations. Instead, observations are distributed smoothly around the estimation line (Figures A7). In addition, we find that results are robust to using the religious names index (RNI) as an alternative religiosity measure independent of the normality of names in general.[48]

We interpret the estimated effects as causal. As we estimate the impact of parental religiosity on profession choice of the child, reverse causality issues are not a concern. Omitted confounders impacting both parental religiosity and child profession choices are limited substantially in this sample of highly similar individuals in terms of socio-economic status and age; European-born authors. By further adding a rather fine-masked grid of 653 location fixed effects, name frequency as a proxy for collectivism, number of professions, birthplace latitude and longitude, year fixed effects, grid cell specific trends, and controls for ethnicity, we are able to account for a large set of potentially confounding factors within this already very similar group of individuals.

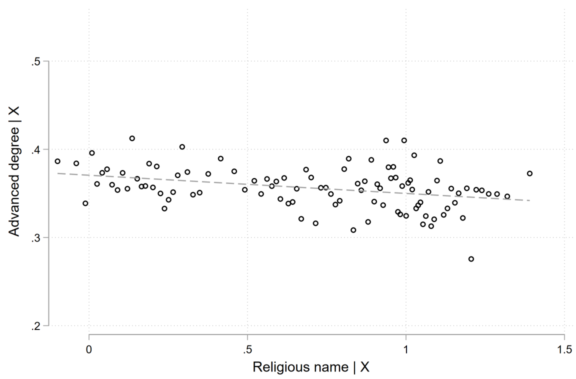
The RAG database on medieval university students allows an additional direct test of knowledge accumulation at the individual level. We test whether the likelihood of continuing with advanced studies depended on religious upbringing. Some 36% of the university students in our sample went on to finish an advanced degree. The previous estimation of Equation (2) excluded the remaining 64% to give the choice of theology studies a meaningful interpretation. To examine the impact of religiosity on the likelihood of proceeding with advanced studies, we estimate equations otherwise identical to Equation (2), but where the sample includes both master students and advanced students. The dependent variable is now a dummy equal to one if the student proceeded from the master program to advanced studies within either medicine, law, or theology. We again define a name as religious if it is shared by a major patron saint in these data before the Protestant reformation.

Figure 9 shows the binned added variables plot of the estimation including baseline controls: name frequency, nobility and male dummies, year fixed effects, birthplace latitude and longitude, 1x1 degree grid cell fixed effects, and 1x1 degree grid cell specific year trends. Individuals who shared name with a patron saint were less likely to move on to advanced studies, compared to students with other names. Again, the effect is remarkably stable across observations. The difference in probability of proceeding to ad-

[48]Again, the significance of scientist falls to the 20% level.

vanced studies between individuals with and without religious names is two percentage points, which is substantial compared to the mean of 35%. The result does not depend on any of the controls added (cf. Table A10 where controls are included consecutively). The impact is driven exclusively by these individuals being less likely to proceed with advanced law studies (Table A11). Results are robust to accounting for ethnicity (Table A13), excluding most dominant countries (Table A15), using instead the continuous RNI measure adjusted for the normality of names (Table A12), and to using the alternative definition on religious names based instead on names of theology students (Table A14).

Figure 9: Religiosity and taking an advanced degree



Binned added variables plot where observations (44,217 university students) are binned into 100 equally sized bins. The line represents the OLS estimate of the religious name dummy, including controls corresponding to column (9) of Table A10: name frequency, nobility status, gender, 195 1x1 grid cell fixed effects, year of birth fixed effects, 1x1 grid cell specific year trends.
Result: Authors who share name with a patron saint are less likely to proceed with advanced studies.

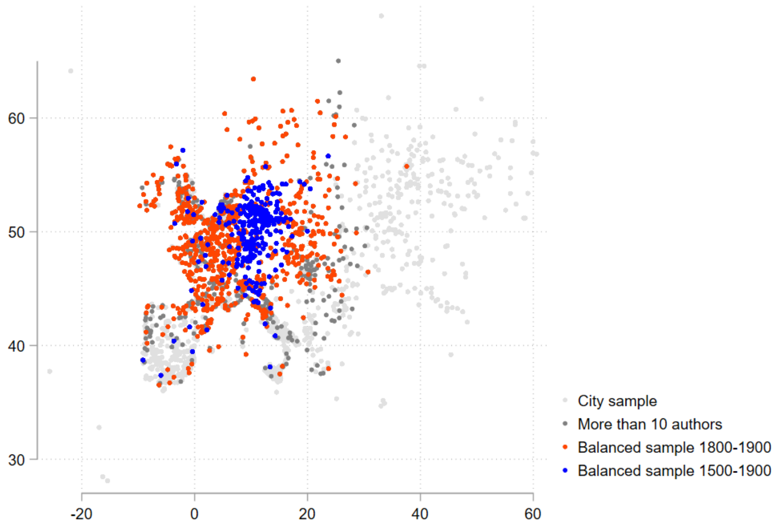
Like with the professions, we interpret the estimated effects as causal, since the measure of religiosity is predetermined and since we limit comparisons to individuals that are highly similar. They are similar from the outset - medieval university students - but in addition, the detail of the data allows us to restrict comparison to students within 100x100 km grids, with the same name normality, nobility status, and gender.

3.2 Economic growth

So far, our results document that individuals characterized by a more religious upbringing were less likely to engage in certain types of knowledge production historically; proceeding with advanced university studies and having professions relating to important sectors of science and knowledge production. If this type of knowledge was important for the take-off to modern economic growth as argued by previous scholars (Mokyr, 2010), we expect that areas inhabited by more religious individuals grew slower than others, on average. If, on the other hand, the virtues encouraged by religion as argued by some scholars (e.g., Weber (1905)) are sufficiently growth promoting, we would expect that areas with higher shares of religious individuals grow faster. We now set out to examine this empirically.

A widely used measure of past economic prosperity is urbanization rates.[49] We use the most recent comparable dataset of past European city sizes constructed by Buringh (2021), an updated version of the standard dataset by Bairoch *et al.* (1988).[50] As a proxy for the religiosity of a city in a given time-period, we compute the share of authors with religious names within 100 km of each city center within each of the time-periods 1500-99, 1600-99, 1700-49, 1750-99, 1800-49, 1850-99 and match this to the city population numbers for years 1600, 1700, 1750, 1800, 1850, and 1900, respectively.[51] The cities in the original data are shown in Figure 6. We restrict our analysis to cities with at least 10 authors in each time-interval, which leaves us with a total of 1258 cities, of which 251 have information for each of the periods.[52] This balanced set of 251 cities form our first sample for analysis (blue dots). As the dataset includes more authors born in the later time-intervals, we will also conduct analysis for cities with at least 10 authors in each of the latter two time-periods (blue or red dots). Our balanced samples consist of cities spread across the entire Western Europe, but more concentrated in the central part.

Figure 10: Cities for analysis



Blue dots indicate cities where at least 10 authors were born within 100 km of a city center for each of the six time-periods between 1500 and 1900. Red dots indicate additional cities with at least 10 authors born within the two time periods between 1800 and 1900. Dark grey dots indicate additional cities with at least 10 authors born at any point in time. Light grey dots indicate additional cities included in the dataset by Buringh (2021), but which were not within 100 km of a birthplace of at least 10 authors.

[49] Acemoglu *et al.* (2005); Bosker *et al.* (2013); Dittmar (2011); Nunn & Qian (2011).

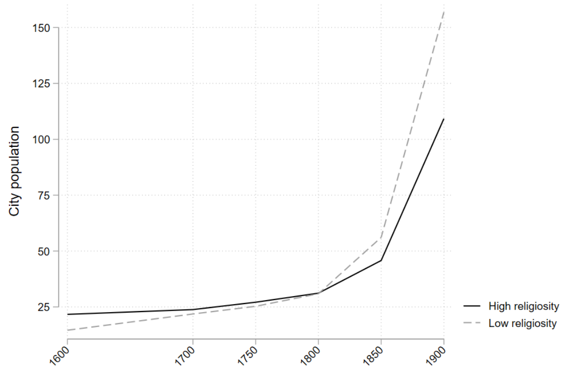
[50] The original dataset by Bairoch *et al.* (1988) includes 2,200 European cities that inhabited a minimum of 5,000 inhabitants between 800 and 1800. The population numbers are measured in centuries between 800 and 1700 and half centuries thereafter. Buringh (2021) extended the dataset with an additional 62 cities that had reached 100,000 inhabitants by the year 2000 and included additional years 700, 1100, 1550, 1650, 1900, 1950, and 2000.

[51] Much fewer authors were born in the early periods and we therefore let these periods span 100 years, following Acemoglu *et al.* (2005).

[52] This means that our sample is biased towards including the larger cities in the original data. The cities that could be matched to at least 10 authors are inhabited by an average of 49,500 inhabitants, compared to 14,100 inhabitants in cities located too far from authors' birthplaces.

As a first illustration of the results, we split the 251 cities in two groups based on the median level of religiosity in the period 1600-99. For each time-period, we calculate the average city size for the two groups and depict these averages in Figure 11. The groups were similar in terms of average city size in the beginning of the period. If anything, religious areas were slightly larger in year 1600, which could be support of research documenting positive effects of religiosity on certain outcomes. However, throughout the period, the less religious areas experienced higher growth rates, which particularly took off from 1800 on-wards. This take-off coincides with the increased importance of upper-tail knowledge in production.[53] It is also consistent with the previous research documenting that economic growth in historical France was lower in more religious areas after technical skills became increasingly important for production (Squicciarini, 2020).

Figure 11: Religiosity and the Transition towards Modern Growth



Average city size over time. The 251 cities were split in two by the median level of religiosity in the 17th century.

Since religiosity is measured before most population measures in Figure 11, we are not concerned about reverse causality, but the pattern may be caused by other factors that correlate with religiosity. To estimate causal effects, we turn to estimations of the form:[54]

$$citysize_{ct} = \alpha + \sum_{t=1600}^{1900} \beta_t relname_{ct} + \gamma_c + \gamma_t + \lambda t_c + \omega X_{ct} + \varepsilon_{ct} \quad (5)$$

where $citysize_{ct}$ is the logarithm of the population size of city c in century or half-century t. $relname_{ct}$ is the share of authors who share name with a major religious figure and who were born within 100 km of city c in the century or half-century leading up to time t. We interpret this as a proxy for the religiosity of the city. We commence with the data on authors to approximate religiosity, but will also show that results are robust to using university students (Table A22 and Figure A9). γ_c are city fixed effects, γ_t are

[53] Mokyr (2010); Squicciarini & Voigtländer (2015).

[54] This specification is similar to that by Acemoglu *et al.* (2005) estimating the impact of transatlantic trade between 1300 and 1850 or Nunn & Qian (2011) estimating the effect of the arrival of the potato on urbanization rates in the same panel.

century or half-century fixed effects, and t_c are city-specific time-trends. X_{ct} are sets of control variables measured for city c in the particular time-period, including the average frequency of names among the authors born within 100km of a city and their proxied ethnicities. We cluster standard errors at the city level. We allow the impact of parental religiosity and main controls to vary over time, indicated by β_t.

Table 6 shows results in the sample of all cities with at least 10 authors (column 1), the balanced sample of cities with at least 10 authors in each of the intervals between 1500 and 1900 (columns 2-9), and in the sample of cities with at least 10 authors in the two half centuries between 1800 and 1900. Columns (1) and (2) show the simple correlations, revealing that the religiosity proxy alone explains 6.1-7.3% of the variation in city sizes across historical Europe. Observing purely changes within cities by adding city fixed effects in column (3), we find that city growth follows falling religiosity. Adding a year trend in column (4), time fixed effects in column (5), and city-specific time trends in column (6) discloses that a large share of the raw correlation is due to the fact that cities are growing and religiosity is falling over time. These trends in the two variables may or may not be causally associated and we remove them to be conservative. A significant negative correlation remains. Column (7) adds the control for name frequency with no change to the conclusion. Next, columns (8)-(10) allow the correlation between religiosity and city growth to vary over time. Consistent with what Figure 11 indicated, the negative correlation increases over time. While column (8) controls for name frequency linearly, column (9) allows the impact of name frequency to vary over time in the same way as the religiosity measure. Last, since the main impact of religiosity is found in the later periods, which also have more authors associated with them, we can increase the spatial spread of cities, thus facilitating tests of generalizability, by restricting analysis to these periods in column (10). This more than triples the number of included cities to 912 and raises the number of countries represented in the sample from 30 to 40. The precision of the estimates increases, and the parameter estimate in the period 1850-1900 remains unchanged, while the estimate in the earlier period falls and becomes insignificant.[55] It thus seems that the negative impact of religiosity emerged towards the end of the 19th century throughout Western Europe, but may have been somewhat slower to arise in some parts. This indicates that the effect coincides with the second industrial revolution, which is also sometimes called the technological revolution. Theses results are consistent with the findings of Squicciarini (2020), who also found that a significant divergence between

[55]Table A17 shows that these results do not depend on any of the added controls.

more or less religious departments in France began in this period. We will investigate these potential heterogeneities further below.

Table 6: Religiosity and economic growth

Dependent variable: (log) City population size	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Religious name share	-1.68***	-2.21***	-3.28***	-1.64***	-0.41***	-0.26***	-0.31***			
	(0.130)	(0.237)	(0.129)	(0.109)	(0.128)	(0.100)	(0.111)			
Year				0.0034***						
				(0.000)						
Name frequency							1.07	1.87*		
							(1.033)	(1.028)		
Religious name 1500-99 x 1600								-0.31	-0.40	
								(0.300)	(0.301)	
Religious name 1600-99 x 1700								-0.49**	-0.39*	
								(0.206)	(0.217)	
Religious name 1700-49 x 1750								-0.13	-0.15	
								(0.140)	(0.142)	
Religious name 1750-99 x 1800								-0.18	-0.20	
								(0.161)	(0.160)	
Religious name 1800-49 x 1850								-0.78***	-0.87***	-0.19
								(0.180)	(0.203)	(0.142)
Religious name 1850-99 x 1900								-0.90***	-1.08***	-1.12***
								(0.313)	(0.324)	(0.151)
R-squared	0.061	0.073	0.83	0.89	0.92	0.96	0.96	0.96	0.97	0.89
Observations	3910	1506	1506	1506	1506	1506	1506	1506	1506	1824
Mean dep var	2.75	2.77	2.77	2.77	2.77	2.77	2.77	2.77	2.77	3.11
Balanced sample	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
City FE	N	N	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	N	N	N	N	Y	Y	Y	Y	Y	Y
City-trends	N	N	N	N	N	Y	Y	Y	Y	N
Time-varying controls	N	N	N	N	N	N	N	N	Y	Y
Number cities	1227	251	251	251	251	251	251	251	251	912

OLS estimates across cities and time. The sample in column (1) includes the full unbalanced sample of cities with at least 10 authors born within 100 km of the city center. Columns (2)-(9) includes the balanced sample of 251 cities for which at least 10 authors were born within 100 km of the city center in each of the six periods. Column (10) includes the balanced sample of 912 cities for which at least 10 authors were born within 100 km of the city center in the periods 1800-49 and 1850-99. The time-varying controls included in columns (9) and (10) is the name frequency interacted with the time-periods. Robust standard errors clustered at the city level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.
Result: Cities that were more religious experienced slower growth rates, particularly from 1800 or 1850 onward.

Taking the estimate on religiosity in the late 1800s in column (9) at face value, -1.08, moving from a city with no authors who share name with a major religious figure to a city with a full population of religious authors nearly cuts city size in half compared to the mean, which at first seems unreasonably large.[56] This is an implausibly large change in religiosity, though.[57] If we instead move from the 1st to the 3rd quartile in the religiosity distribution, meaning increasing the share of authors with religious names from 59% to 80%, this leads to a fall in city population by 26%.[58] Thus, the impact is substantial, but not implausibly large.

The estimates in Table 6 are not driven by few observations. Figure A8 shows that observations are distributed smoothly around the regression line in all time-periods. Reverse causality is again not an issue as we proxy the religiosity of parents during the

[56] (exp(1.08)-1)x100=192%.

[57] Note that the previous estimates covered a change in the religiosity of a name of one person, while this theoretical change involves changing the religiosity of names for all persons in the sample. Also, there is no city with 0% authors with religious names. 25% of the authors have religious names in the city with lowest religiosity in the sample.

[58] (0.80-0.59)x1.08 = 0.23 and (exp(0.22)-1)x100=26%.

century or half-century leading up to the measure of city size, meaning that religiosity is measured around 25-70 years prior to the measure of city size.[59] However, religiosity and city size are both rather persistent phenomena and may correlate with various confounders not accounted for. These confounders were limited substantially in the analysis above. First, religiosity is measured in a sample of rather similar individuals - authors - and thus socio-economic confounders are reduced substantially to begin with. Furthermore, we estimate the impact of *changes* in parental religiosity on *changes* in city sizes (cf. inclusion of city fixed effects), comparing only cities growing with the same general trend (inclusion of city-specific trends), with the same share of frequent names, and measured in the same century or half century. In addition, if not for the increased importance of human capital in production, an alternative explanation would have to explain why the growth-reducing impact of religiosity rises steeply in magnitude after 1800. To further substantiate that results are not caused by certain groups, we show robustness to adding controls for ethnicity (Table A18), and to excluding the countries in the sample with most authors (Table A19). However, significance falls to the 20% level when excluding Germany in the sample of 251 countries, which is unsurprising when observing the over representation of Germany in this sample (Figure 10). The size of the estimate and significance level is maintained when excluding Germany in the large sample.

A concern is that results are specific to Catholics or Protestants. As before, we split the religiosity measure into names shared with saints or biblical figures separately (Table A16). The results are similar when using either of the measures. The same table shows that results are robust to using the continuous religious names index.

A concern, inspired by the analysis of earthquakes, is that our religiosity measure (and any other measure of religiosity) is merely a proxy for disasters. In that case, it is the detrimental impact of disasters we are capturing, not religiosity. We do not find support for this: Accounting for earthquakes within 100 km of the city center has no impact on the effect of religiosity (Table A20).

Another concern, inspired by our main paper used for the econometric specification (Acemoglu *et al.*, 2005), is that Atlantic trade may somehow be correlated city growth and religiosity in a way that produces spurious correlations between the two. This does not explain our results. First, any effects that do not vary over time, such as location effects, are captured in our location fixed effects. However, the impact of location may change over time. To examine the impact of Atlantic trade, we add dummies interacted with

[59] In the half-century (full century) periods, religiosity is measured during the 50 (100) prior years, on average 25 (50). If the measure captures parental religiosity, we may add 20 years to the time-span.

time for cities located within 100 km of the Atlantic ocean, any ocean, or what Acemoglu *et al.* (2005) define as Atlantic traders (Table A21). Our results are unchanged. In fact, being an Atlantic trader is not important for economic growth in our samples towards the end of the 20th century.

As a last exercise, we use the sample of medieval university students to measure religiosity as the share of university students born within 100 km of a city center who shared name with a major patron saint in the 14th and 15th centuries. We restrict to cities with at least 10 university students in each of the centuries. Although results are less significant, we find that cities with a larger share of university students with religious names grew slower than the rest (Table A22 and Figure A8). The negative impact again strengthens over time.

4 Concluding Remarks

The intensity of religious beliefs of our ancestors can be proxied by the names they gave their children. We find support for this across two large and independent historical datasets of university students and authors observed up to 700 years ago. We document that individuals with religious names are more likely to study theology rather than medicine or law and to study church law rather than Roman law, that parents were more likely to give their children religious names in the aftermath of earthquakes, that authors who shared names with religious figures were more likely to be born in areas with more clergy swearing loyalty to the Catholic church in France, and that these authors were more likely to by priests and theologians.

Our datasets of highly similar individuals - either medieval university students or European-born authors - enable us to construct measures of religiosity that are unusually comparable across societies and to mute many otherwise unobservable factors that typically obstruct these types of analyses. Furthermore, we can treat the name given at birth as pre-determined compared to activities later in life. Equipped with these measures of religious upbringing, we proceed to document effects on science and knowledge production. We find that religiously raised individuals were less likely to become doctors, engineers, scientists, and chemists, and less likely to proceed with advanced studies.

Consistent with a literature emphasizing the importance of science and knowledge for the transition to modern growth, we last document that cities populated with more religious individuals grew slower, particularly after 1800, coinciding with the point in time where upper-tail knowledge production became increasingly important.

While religion may come with potential benefits for the individual, such as happiness and improved ability to cope with stress, this research shows that religion may have posed substantial economic costs at societal-level. Indeed, early universities and many early inventions were often linked to monasteries, but over time religion became a stumbling block for the emergence and spread of knowledge useful for the takeoff to modern growth.

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Appendix

A Data and Methodology

A.1 University students

Our data on university students comes from the Repertorium Academicum Germanicum (RAG) project. The RAG-project seeks to digitize social, cultural and biographical data on university students in the Holy Roman Empire in the years 1250-1550. The dataset has information on 61,573 students, whereof 44,379 have information on year and place of birth. The dataset only includes students who finished a degree at the masters level (or higher), except for nobles who are included, even if they did not finish their studies. There are 5,927 nobles in the main sample.

15,731 students in the sample completed an advanced degree, with 10,626 completing an advanced degree in law, 2,212 in medicine, and 3,719 in theology. Of the 15,731 students who finished an advanced degree 773 finished their studies in multiple subject, which is the reason that the above numbers do not sum to 15,731.

A.2 Authors

The main database of authors consists of all authors in the VIAF database, which we scraped on April 5 2020. In order to find the birthplace of authors we use the unique identifiers from the VIAF database to connect to the Deutsche Nationalbibliothek (or the German National Library), DNB-database (dnb.de), and to Wikidata.[60] Of the 4.1 million authors in the VIAF database we were able to uniquely identify the location and date of birth for 798,930 of them in the DNB database and for 462,405 in Wikipedia. If data on birth dates are available directly from VIAF we use these. Otherwise, we use the DNB data first and then data from Wikipedia. With regard to geocodes we use those provided by DNB if available and otherwise we use data from Wikipedia. We restricted the sample to authors born in Europe, before 1940 to make sure that the sample includes all authors that could have potentially been born within the sample window. We further restrict the sample to authors born after 1300, at which point in time it is reasonable to assume that Christian names were widespread in Germanic Europe (Sargent, 1990). This leaves us with 468,015 authors. In this reduced dataset, information on birthdates are from VIAF in 177,378 cases, from DNB in 264,798 cases and from Wikipedia in 34,237 cases. For 319,859 of our authors the data on birthplace is from DNB and the remaining

[60]These two sources are the two main geo-referencing sources used by Chaney (2020) and the only two where exact geocodes for birthplace are available. Chaney uses five additional sources, based on libraries or catalogs in France, the US, Italy, and the descriptions in the VIAF clusters themselves. However, these sources do not have direct information on birthplace and/or do not include the geocodes. As is visible from panel (b) of Figure 4, we get a rather detailed representation of Europe by using the two main geo-referencing sources.

cases (148,156) are from Wikipedia. The two overlap for 55,547 authors. The correlation between the latitudes (longitudes) is 0.935 (0.901).

A.3 Etymological origin of names

We identify the etymological origin of names using the website www.behindthename.com, which contains 23,938 names certified by the website. In addition, the website includes a number of user submitted names, which are not certified by the website and which we do not use. The database contains information on the etymology of all names included which allows us to identify the name branch of each name. The 23,938 names can be reduced to a total of 7,606 name branches.

To understand what a name branch is and how it might work, consider the following. The name Jeanet is the Danish version of the French name Jeannette, which is itself a diminutive of the name Jeanne. Jeanne is the modern French form of the old French name Jehanne, which in turn was the feminine form of the name Iohannes. Iohannes has many versions and is by far the most common name in all our databases on personal names. Iohannes also comes in the forms John, Jon, Johan, Hans, Jean, Johnny etc. Ultimately Iohannes derives from the name Yahweh which is the name of the Christian god. This means that Jeanet, Jeannette, Jeanne, Iohannes, John, Jon, Johan, Hans, Jean, Johnny, and Yahweh are all in the same name branch, which we name after its deepest root Yahweh.

A.4 Earthquakes

The data on earthquakes is downloaded from the National Oceanic and Atmospheric Administration (NOAA)'s National Centers for Environmental Information (`https://www.ngdc.noaa.gov/`). The database is a global listing of significant earthquakes from 2,100 BC to the present. A significant earthquake is defined in the database as one that meets at least one of the following criteria: caused deaths, caused moderate damage (approximately $1 million or more), magnitude 7.5 or greater, Modified Mercalli Intensity (MMI) X or greater, or the earthquake generated a tsunami. We restrict the sample to earthquakes of magnitude 5 or larger.

A.5 Variable descriptions

Advanced studies dummy: Dummy variable taking the value 1 if the person is recorded to have finished an advanced degree and 0 otherwise.

(log) City population size: The natural logarithm of the amount of people estimated to be a living in the city in the period. Data is taken from Buringh (2021).

Ethnicity: Dummy variables for the likely ethnicity of the particular name, constructed using a mixture of linguistic and naming patterns, following the approach laid out in Andersen (2021). The basic idea, based on the original paper by Fryer Jr & Levitt (2004) is to measure how normal a name is among a specific ethnicity compared to the rest of the sample of people. We first compute the frequency of the name branches of authors born within a given language group, based on the novel Ancient Genome Atlas constructed by (Nørtoft & Schroeder, 2020), which provides shapefiles for the main languages spoken across time. The main language groups include Armenian, Greek, Celtic, Italic, Baltic, Slavic, Germanic, Semitic, Uralic, Turkic, and Basque. Thus, for each name branch, we know how frequent the name is within each of the language groups. For each of the language groups, we next compute a dummy variable equal to one if a particular name branch is more common within the particular language group than in the entire pool of name branches.

Latitude (100s): Latitude of the birthplace (scaled in hundreds).

Longitude (100s): Longitude of the birthplace (scaled in hundreds).

Male: Dummy variable taking the value 1 if the person is recorded to be male in the RAG database and 0 otherwise.

Name frequency: The percentage of people in the given sample who have a name in the same name branch as a the person.

Noble: Dummy variable taking the value 1 if the person is recorded to be noble in the RAG database and 0 otherwise.

Profession: Dummy variable equal to one for each of the most frequent words describing author professions visual in Figure 8. Information on professions is available from the DNB database for a total of 281,188 authors. Each of the authors have 1-21 professions listed, but more than 99% of the authors have six professions or less. The average (median) number of professions is 1.9 (2). The most frequent professions are doctors and lawyers, held by 9.1 and 7.6% of the authors, respectively. Some professions are more detailed than others and we aggregate these in an attempt to obtain a similar level of disaggregation across professions.

Refractory Clergy share: Percentage of priests in the department of France who refused to swear an oath to the civil constitutions of the clergy. This variable has been used in other research to indicate the general level of religiosity in the department (Squicciarini, 2020).

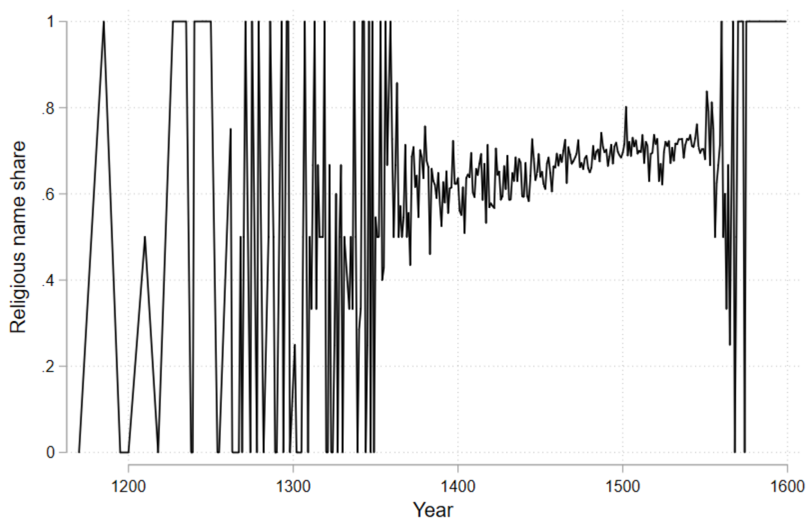
Religious name: In individual-level analyses, this variable is a dummy variable taking the value of 1 if the person in question has a religious name and 0 otherwise. Religious names are defined as those that are shared with a the patron saint of Church in the Buringh *et al.* (2020) dataset in the analysis based on university students, which are observed before the Protestant Reformation. For the analysis using authors, a religious name is defined as one that is either shared by one of the patron saints or central figures in the Bible. In analyses aggregated to the district- or city-level, the variable measures the share of individuals with religious names within the particular district or within 100 km radius of the particular cities.

Religious Name index, RNI: Index from 0 to 1 constructed using the following formula formula (1).
Studying theology dummy: Dummy variable taking the value 1 if the person is recorded to have finished an advanced degree in theology and 0 otherwise. The variable is missing for students who did not finish their advanced studies.
Studying canon law dummy: Dummy variable taking the value 1 if the person is recorded to have finished an advanced degree in canon law in the RAG database and 0 otherwise. The variable is missing for students who did not study law.
Theology name index: Version of the RNI, where ”religious names” are defined as those carried by people who finished an advanced degree in theology in the RAG dataset and ”non-religious names” are defined as those carried by people who finished an advanced degree in something other than theology (namely medicine or law).
Year (1000s): The earliest year (scaled in thousands) recorded in the RAG database for each person. Typically the birth year or the year the person started their studies (which was often in the early teen years).

B Additional Figures and Tables

B.1 Robustness checks of validity tests

Figure A1: Share of university students who share name with a prominent religious figure over time



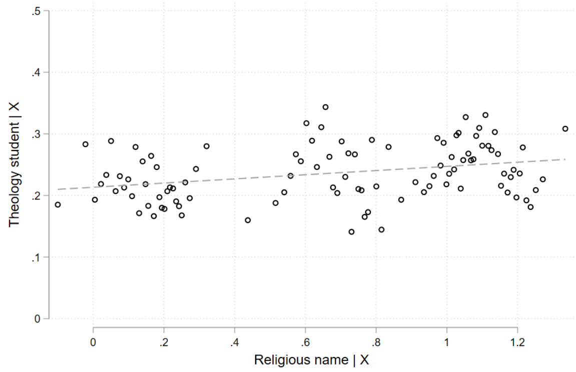
Share of students with a name shared with a prominent religious figure throughout the sample period. The year reflects the year of birth.

Table A1: Religious names and studying theology excluding top-names

Dependent variable: Studying theology dummy	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Religious name	0.031***	0.028***	0.030***	0.028***	0.028***	0.031***	0.027***	0.026***	0.027***	0.028***
	(0.007)	(0.007)	(0.008)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
R-squared	0.068	0.067	0.072	0.070	0.071	0.072	0.070	0.071	0.071	0.070
Observations	11526	15088	14982	15080	15263	14731	15195	15246	15351	15369
Excluded religious name rank	Yahweh	Nicholas	Peter	Jacob	George					
Excluded non-religious name rank						Henry	William	Conrad	Theodoric	Herman

OlS regressions of the association between sharing name with a major religious figure and studying theology, excluding the top religious names one at a time in columns (1)-(5) and the top non-religious names in columns (6)-(10). The top-names are described in Table 2. The sample is medieval university students who proceeded with advanced studies. All baseline controls are included throughout (corresponding to those in column (8) of Table 3): Name frequency, nobility status, 1x1 degree grid cell fixed effects, year fixed effects, and 1x1 degree grid cell specific time-trends. Robust standard errors in parentheses clustered at the 1x1 degree grid cell level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.
Result: The main result is not driven by most frequent names.

Figure A2: Religious names and studying theology without fixed effects



Binned added variables plot where observations are binned into 100 equally sized bins. The line represents the OLS estimate of β in Equation (2) across the 15,664 students, including controls for the frequency of the name, a year trend for the year of birth, birthplace latitude and longitude, a dummy for nobility status, and a dummy for whether the student is male. The results correspond to those in column (5) of Table 2.

Table A2: Religious names and studying theology accounting for ethnicity

Dependent variable: Studying theology dummy	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Religious name	0.029***	0.028***	0.029***	0.023**	0.026***	0.028***	0.026***	0.030***	0.028***	0.035***	0.028***
	(0.008)	(0.007)	(0.007)	(0.010)	(0.010)	(0.007)	(0.009)	(0.008)	(0.007)	(0.010)	(0.007)
Ethnicity	0.0022	-0.0034	-0.014	0.0093	0.0029	0.16	0.0037	-0.017	0.0071	-0.020*	-0.26***
	(0.009)	(0.009)	(0.009)	(0.011)	(0.010)	(0.277)	(0.011)	(0.016)	(0.029)	(0.012)	(0.036)
R-squared	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070
Observations	15665	15665	15665	15665	15665	15665	15665	15665	15665	15665	15665
Ethnicity accounted for	germanic	celtic	italic	slavic	baltic	basque	uralic	greek	turkic	semitic	armenian

OlS regressions corresponding to column (9) of Table 3, accounting for different ethnicities. All baseline controls are included throughout: Name frequency, nobility status, gender, 1x1 degree grid cell fixed effects, year fixed effects, and 1x1 degree grid cell specific time-trends. Robust standard errors in parentheses clustered at the 1x1 degree grid cell level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.
Result: The main result is robust to accounting for ethnicity.

Table A3: Religious name index (RNI) and studying theology

Dependent variable: Studying theology dummy	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Religious name index	0.13***	0.11***	0.13***	0.12***	0.12***	0.12***	0.084***	0.061**	0.044*
	(0.030)	(0.032)	(0.031)	(0.030)	(0.030)	(0.030)	(0.027)	(0.024)	(0.024)
Name frequency		8.72**	5.89	4.85	4.73	4.57	5.77	6.15	6.80*
		(3.996)	(4.177)	(4.238)	(4.175)	(4.242)	(3.958)	(3.726)	(3.701)
Year (1000s)			-0.93***	-0.89***	-0.89***				
			(0.151)	(0.150)	(0.150)				
Noble				-0.14***	-0.14***	-0.14***	-0.16***	-0.16***	-0.17***
				(0.014)	(0.014)	(0.012)	(0.012)	(0.012)	(0.013)
Male					0.012	0.0020	0.010	0.0087	0.013
					(0.031)	(0.031)	(0.031)	(0.032)	(0.032)
Latitude (100s)							-1.57***	-3.68**	-3.87**
							(0.368)	(1.557)	(1.639)
Longitude (100s)							1.02***	-0.36	-0.32
							(0.176)	(1.209)	(1.259)
R-squared	0.0014	0.0018	0.011	0.018	0.018	0.023	0.038	0.059	0.069
Observations	15693	15693	15693	15693	15693	15673	15673	15664	15664
Mean dep var	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
Year FE	N	N	N	N	N	Y	Y	Y	Y
1x1 grid FE	N	N	N	N	N	N	N	Y	Y
Grids x year trends	N	N	N	N	N	N	N	N	Y
Number grids	191	191	191	191	191	191	191	182	182

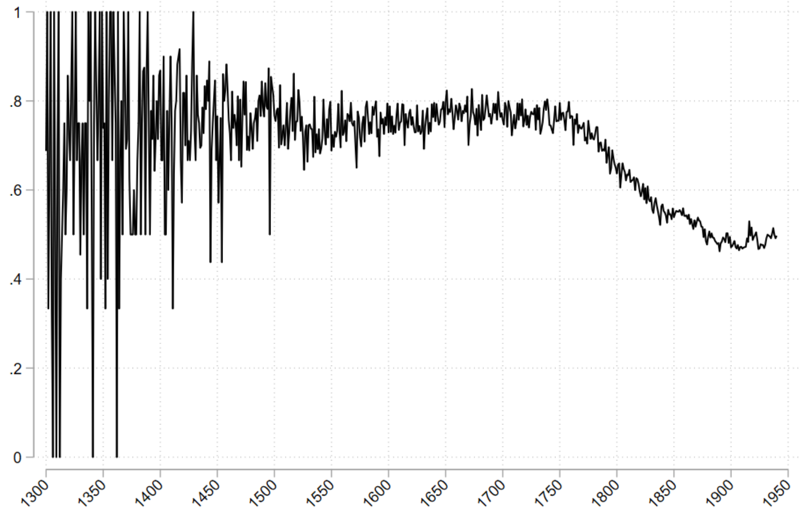
Replication of Table 3 using the continuous religious name index instead of the religious name dummy.
Result: The main result is robust to using the continuous religious name index.

Table A4: Religious names and studying canon law

Dependent variable: Studying canon law dummy	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Religious name	0.019*	0.021*	0.022*	0.022*	0.021*	0.022**	0.012	0.016+	0.020*
	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)	(0.011)	(0.010)	(0.011)	(0.011)
Name frequency		-2.24	-2.39	-2.13	-1.49	-2.81	-0.45	-0.0054	-0.13
		(4.851)	(4.993)	(4.962)	(4.944)	(4.540)	(4.338)	(4.822)	(5.056)
Year (1000s)			-0.024	-0.039	-0.043				
			(0.107)	(0.108)	(0.108)				
Noble				0.027*	0.027*	0.015	-0.0010	-0.0085	-0.018
				(0.014)	(0.014)	(0.016)	(0.016)	(0.016)	(0.018)
Male					-0.056**	-0.041+	-0.043*	-0.054*	-0.036
					(0.028)	(0.026)	(0.025)	(0.029)	(0.031)
Latitude (100s)							0.038	1.77	2.33+
							(0.314)	(1.405)	(1.534)
Longitude (100s)							1.21***	-1.58	-1.58
							(0.153)	(1.348)	(1.426)
R-squared	0.00063	0.00050	0.00034	0.00079	0.00095	0.015	0.032	0.039	0.042
Observations	5944	5944	5944	5944	5944	5925	5925	5900	5900
Mean dep var	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Year FE	N	N	N	N	N	Y	Y	Y	Y
1x1 grid FE	N	N	N	N	N	N	N	Y	Y
Grids x year trends	N	N	N	N	N	N	N	N	Y
Number grids	179	179	179	179	179	178	178	153	153

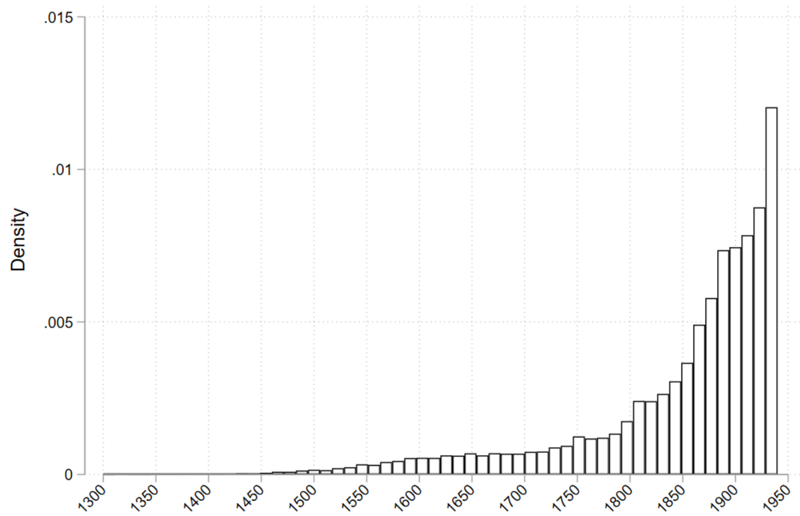
OLS regressions across students with an advanced degree. The controls measure the frequency of the name as a share of all names, a year trend for the year of birth, a dummy for nobility status, a dummy for whether the student was male, year fixed effects, the latitude and longitude of the student's birth town, 1x1 degree grid cell dummies, and 1x1 degree grid cell specific year trends. Robust standard errors clustered at the 1x1 grid cell level in parentheses. +, *, **, and *** indicate significance at the 15%, 10%, 5%, and 1% level.
Result: Law students who shared name with a major religious figure were more likely to study canon law.

Figure A3: The share of authors who share name with a major religious figure over time



The share of authors with a name shared with a prominent religious figure throughout the sample period. The year refers to their birth year.

Figure A4: The distribution of birth years among the authors



The distribution of birth years for the 467,360 authors in the sample.

Table A5: Religious names and refractory clergy

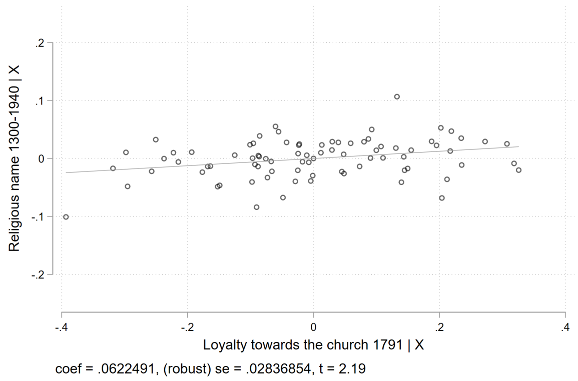
Dependent variable: Religious name dummy	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Refractory clergy share	0.076***	0.077***	0.076***	0.069***	0.072***	0.063***	0.063***
	(0.015)	(0.015)	(0.016)	(0.015)	(0.016)	(0.021)	(0.021)
Name frequency		7.04***	6.90***	6.72***	6.73***	6.73***	6.74***
		(0.145)	(0.144)	(0.139)	(0.139)	(0.140)	(0.141)
Year (1000s)			-0.31***				
			(0.037)				
Latitude (100s)					0.23**	0.25	0.26
					(0.106)	(0.219)	(0.220)
Longitude (100s)					-0.033	0.15	0.16
					(0.165)	(0.288)	(0.289)
R-squared	0.0011	0.14	0.15	0.15	0.15	0.15	0.15
Observations	28762	28762	28762	28704	28704	28704	28704
Mean dep var	0.66	0.66	0.66	0.66	0.66	0.66	0.66
Year FE	N	N	N	Y	Y	Y	Y
5x5 degree FE	N	N	N	N	N	Y	Y
Grid-cell specific trends	N	N	N	N	N	N	Y
Departments	82	82	82	82	82	82	82

OLS regressions across authors in France 1300-1940. The controls measure the frequency of the name as a share of all names, year of birth fixed effects, 5x5 degree grid cell fixed effects, and grid-cell specific year trends. Robust standard errors in parentheses clustered at the departmental level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

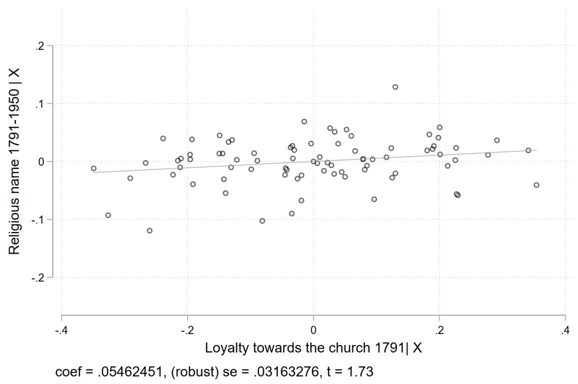
Result: The likelihood that the clergy are loyal to the church is higher in districts with more authors who share name with a central religious figure.

Figure A5: Religious names and refractory clergy

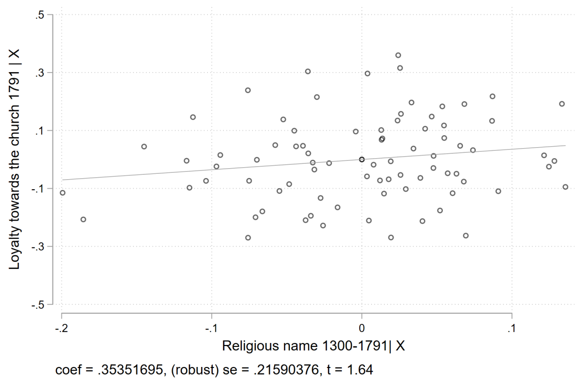
(a) Religious names 1300-1940



(b) Religious names 1791-1940



(c) Religious names 1300-1791



Panel a replicates the specification in column (7) of Table A5 aggregated to the departmental level based on the full sample of authors born during 1300-1940, panel b restricts the sample to only authors born between 1791 and 1940. Panel c has instead the share of refractory clergy as dependent variable and restricts the sample to authors born between 1300 and 1791. The regressions include controls for average name frequency, year of birth, latitude and longitude of birth, 5x5 degree grid cell fixed effects, and grid-cell specific trends.

Result: The relation between the share of authors with religious names and refractory clergy is robust to aggregating to the department level and to calculating the share of religious authors in different time periods.

Table A6: Religious names and earthquakes

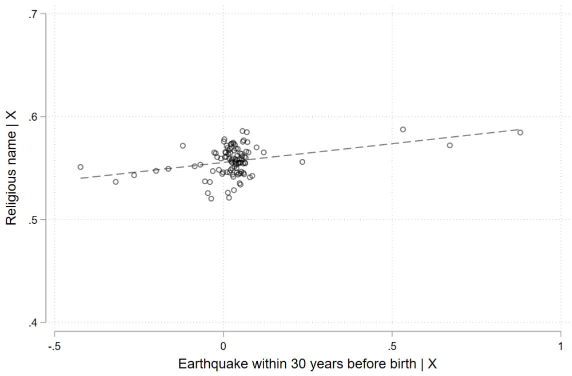
Dependent variable: Religious name	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Earthq within 100 km 60-90 years before birth	0.072***	0.025	0.020	-0.018	-0.0030	-0.0038	-0.0038	-0.0038	-0.0041	-0.0038
	(0.023)	(0.020)	(0.019)	(0.023)	(0.021)	(0.021)	(0.021)	(0.021)	(0.021)	(0.024)
Earthq within 100 km 30-60 years before birth	0.071***	0.012	0.00089	-0.017	-0.00091	-0.0016	-0.0016	-0.0018	0.00014	0.00022
	(0.026)	(0.019)	(0.017)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)	(0.014)
Earthq within 100 km 20-30 years before birth	0.078***	0.071**	0.037*	0.030	0.030*	0.030*	0.030*	0.029*	0.032*	0.039**
	(0.025)	(0.028)	(0.022)	(0.023)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.018)
Earthq within 100 km 10-20 years before birth	0.059***	0.076***	0.046**	0.053***	0.044***	0.043***	0.043***	0.044***	0.044***	0.056***
	(0.021)	(0.022)	(0.020)	(0.020)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Earthq within 100 km 5-10 years before birth	0.044**	0.063***	0.043***	0.049***	0.034***	0.033***	0.033***	0.032***	0.033***	0.042***
	(0.019)	(0.018)	(0.016)	(0.014)	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)	(0.013)
Earthq within 100 km 5 years before birth	0.038**	0.051***	0.036**	0.042***	0.041***	0.041***	0.041***	0.042***	0.038***	0.045***
	(0.018)	(0.018)	(0.016)	(0.014)	(0.012)	(0.012)	(0.013)	(0.013)	(0.013)	(0.014)
Earthq within 100 km 5 years after birth	-0.018	0.011	0.00092	0.0074	0.011	0.011	0.011	0.011	0.0092	0.018
	(0.017)	(0.016)	(0.016)	(0.016)	(0.012)	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Earthq within 100 km 5-10 years after birth	-0.010	0.012	-0.0036	0.0024	0.000054	-0.00083	-0.00083	0.0012	-0.0062	-0.000043
	(0.021)	(0.019)	(0.019)	(0.018)	(0.015)	(0.016)	(0.016)	(0.016)	(0.016)	(0.017)
Earthq within 100 km 10-20 years after birth	0.0091	0.036	0.016	0.012	0.0077	0.0070	0.0069	0.0087	0.0079	0.014
	(0.024)	(0.028)	(0.028)	(0.023)	(0.018)	(0.019)	(0.019)	(0.019)	(0.020)	(0.020)
Earthq within 100 km 20-30 years after birth	0.028*	0.065***	0.042*	0.025	0.019	0.018	0.018	0.019	0.019	0.020
	(0.015)	(0.022)	(0.024)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.017)	(0.018)
Earthq within 100 km 30-60 years after birth	-0.042	0.00050	-0.00014	-0.0033	-0.0025	-0.0036	-0.0036	-0.0035	-0.0055	-0.0032
	(0.029)	(0.023)	(0.018)	(0.013)	(0.011)	(0.011)	(0.011)	(0.011)	(0.013)	(0.012)
Namefrequency					9.31***	9.31***	9.31***	9.31***	9.05***	9.26***
					(0.171)	(0.169)	(0.169)	(0.170)	(0.224)	(0.179)
Latitude						-0.0073	-0.0073	-0.0074	0.0015	-0.0080
						(0.008)	(0.008)	(0.008)	(0.010)	(0.009)
Longitude						0.0080	0.0080	0.0080	0.0048	0.0079
						(0.007)	(0.007)	(0.007)	(0.009)	(0.008)
Earthquakes within 20 km 30 years before birth							-0.00098			
							(0.016)			
R-squared	0.0011	0.031	0.042	0.049	0.22	0.22	0.22	0.22	0.20	0.22
Observations	261641	261641	261641	261636	261636	261636	261636	260969	177508	247967
Mean dep var	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.56	0.59	0.56
Year FE	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
5x5 grid FE	N	N	Y	Y	Y	Y	Y	Y	Y	Y
Grid-cell trends	N	N	N	Y	Y	Y	Y	Y	Y	Y
Number 2x2 grids	196	196	196	191	191	191	191	191	131	138
Number 5x5 grids	44	44	44	44	44	44	44	44	26	31
Sample	Full	Full	Full	Full	Full	Full	Full	Ex hit	$< lat50$	$< lon20$

OLS regressions across authors. The sample includes authors born within 500 km of an earthquake within 60 years before or after their birth. Column (8) excludes authors born within 20 km of an earthquake that hit within 30 years before their birth. Column (9) excludes earthquakes that hit above latitude 50, while column (10) excludes earthquakes that hit beyond longitude 20. Robust standard errors clustered at the 2x2 grid cell level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

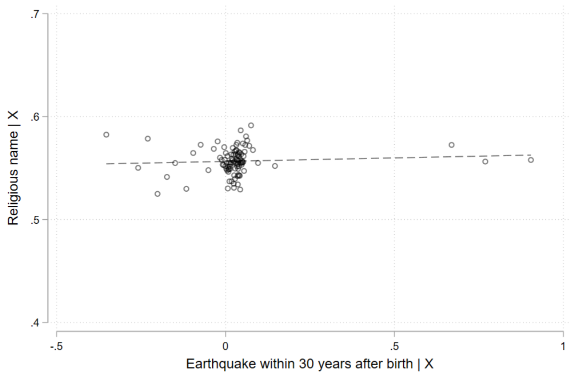
Result: More authors are named after a religious figure when born after earthquakes. Before the inclusion of time-fixed effects, the impact of earthquakes persists back towards 90 years before birth, but this is exclusively due to the simultaneous trend in earthquakes and religiosity (cf inclusion of year fixed effects in column 2). The same seems to be the explanation for the seemingly positive impact of earthquakes 20-30 years after birth, which falls when 2x2 grid cell specific trends are included in column (4).

Figure A6: Religious names and earthquakes

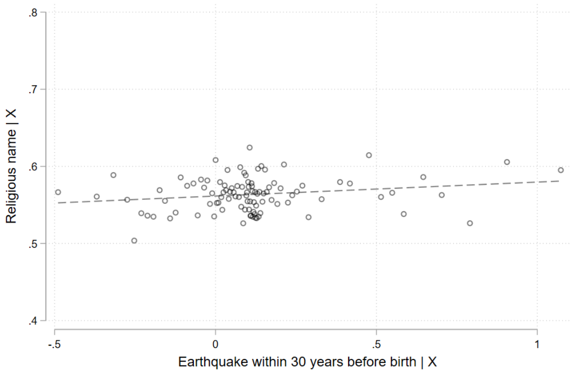
(a) Comparison group within 500 km



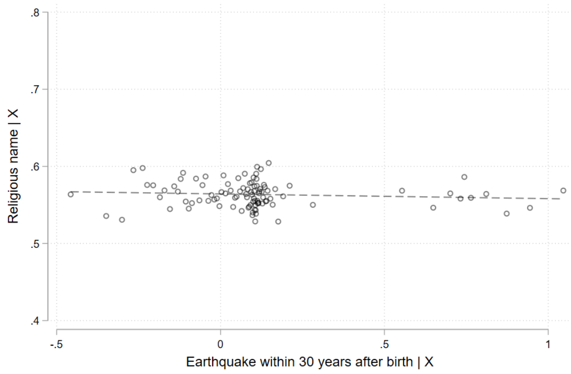
(b) Placebo within 500 km



(c) Comparison group within 200 km



(d) Pacebo within 200 km



Estimates of the impact of earthquakes within 100 km within 30 years before birth in the right panels and after birth in the left panels. The comparison group is authors born within 500 km of an earthquake in panels a and b and within 200 km in panels c and d. Control variables include namefrequency, latitude and longitude of birthplace, 5x5 degree birthplace fixed effects, year fixed effects, and 2x2 degree birthplace specific time-trends. **Result**: Individuals born after earthquakes are more likely to share name with a religious figure. Earthquakes after birth have no influence on name-giving.

B.2 Robustness checks of outcomes

Table A7: Professions and the religious names index (RNI)

Dep var:	doctor	teacher	engineer	scientist	chemist	priest	theologian	composer	engraver	catholic
Religious names index	-0.0092***	-0.0021	-0.0079***	-0.0016	-0.0049***	0.0097***	0.0070***	-0.0016	0.0017*	0.0040***
	(0.002)	(0.003)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
R-squared	0.049	0.092	0.0090	0.019	0.0047	0.14	0.058	0.045	0.053	0.027
Observations	281101	281101	281101	281101	281101	281101	281101	281101	281101	281101
Mean dep var	0.091	0.13	0.022	0.025	0.016	0.067	0.044	0.035	0.0061	0.0095

Replication of Table 5 using instead the continuous religious names index (RNI). All baseline controls included throughout: Name frequency, 1x1 degree fixed effects, year fixed effects, latitude and longitude of birthplace, location specific time-trends. Robust standard errors clustered at the 1x1 grid cell level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Result: Results are robust to using the religious names index, except that significance of scientists fall to the 20% level and significance of engraver rise to the 10% level.

Table A8: Professions and religiosity of authors accounting for ethnicity

Ethnicity:	Germanic (1)	Celtic (2)	Italic (3)	Slavic (4)	Baltic (5)	Basque (6)	Uralic (7)	Greek (8)	Turkic (9)	Semitic (10)	Armenian (11)
Dep var: doctor											
Religious name	-0.0034***	-0.0036***	-0.0029**	-0.0037***	-0.0037***	-0.0036***	-0.0037***	-0.0036***	-0.0037***	-0.0045***	-0.0045***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ethnicity	0.00075	0.0073***	-0.0031***	0.00040	0.00015	-0.0049***	0.00033	-0.00062	-0.00047	-0.0042**	-0.0053**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)
R-squared	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049	0.049
Dep var: engineer											
Religious name	-0.0055***	-0.0053***	-0.0054***	-0.0054***	-0.0055***	-0.0053***	-0.0054***	-0.0048***	-0.0053***	-0.0064***	-0.0060***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ethnicity	-0.00059	0.0019***	0.00055	-0.0021***	-0.0024***	0.00018	-0.0030***	-0.0023***	-0.0017**	-0.0061***	-0.0050***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.0090	0.0091	0.0090	0.0091	0.0091	0.0090	0.0091	0.0091	0.0090	0.0092	0.0091
Dep var: scientist											
Religious name	-0.0014**	-0.0016**	-0.0014**	-0.0016**	-0.0017***	-0.0016**	-0.0017**	-0.0016**	-0.0017**	-0.0019***	-0.0018***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ethnicity	0.00067	0.0011**	-0.0011	0.00056	-0.00082	-0.00040	-0.0011	-0.00046	0.000052	-0.0013	-0.0012
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019	0.019
Dep var: chemist											
Religious name	-0.0034***	-0.0034***	-0.0032***	-0.0034***	-0.0035***	-0.0034***	-0.0035***	-0.0029***	-0.0034***	-0.0043***	-0.0041***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ethnicity	-0.000057	0.0015***	-0.00089	-0.0011*	-0.00087	-0.0010*	-0.0030***	-0.0022***	-0.0023***	-0.0051***	-0.0048***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.0047	0.0047	0.0047	0.0047	0.0047	0.0047	0.0048	0.0048	0.0048	0.0048	0.0048
Dep var: priest											
Religious name	0.0028**	0.0025**	0.0026**	0.0028**	0.0025**	0.0026**	0.0026**	0.0022**	0.0025**	0.0025**	0.0019
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ethnicity	0.00088	0.0012	-0.00047	0.0062***	0.00013	-0.0035***	0.0047**	0.0012	0.00094	0.000078	-0.0043**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)	(0.002)	(0.002)
R-squared	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Dep var: theologian											
Religious name	0.0017**	0.0024***	0.0022***	0.0025***	0.0024***	0.0025***	0.0024***	0.0022**	0.0024***	0.0020**	0.0018**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ethnicity	-0.0019**	-0.0010	0.00074	0.0019*	-0.0010	-0.0020**	0.00029	0.0012	0.00062	-0.0024**	-0.0045***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.058
Dep var: catholic											
Religious name	0.0022***	0.0038***	0.0031***	0.0037***	0.0036***	0.0038***	0.0037***	0.0032***	0.0038***	0.0035***	0.0035***
	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Ethnicity	-0.0042***	-0.0017***	0.0024***	-0.0017***	-0.0023***	0.00037	-0.0022***	0.0025***	-0.00046	-0.0018***	-0.0019***
	(0.001)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
R-squared	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.027
Observations	281101	281101	281101	281101	281101	281101	281101	281101	281101	281101	281101

Replication of six main estimates in Table 5, accounting for 11 different ethnicities. All baseline controls included throughout: Name frequency, 1x1 degree fixed effects, year fixed effects, latitude and longitude of birthplace, location specific time-trends. Robust standard errors clustered at the 1x1 grid cell level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Result: The sign of the estimate on the religious name measure is kept in tact in all 66 replications. Significance is kept below the 10% level in 64 out of 66 replications.

Table A9: Professions and religiosity of authors heterogeneity across countries

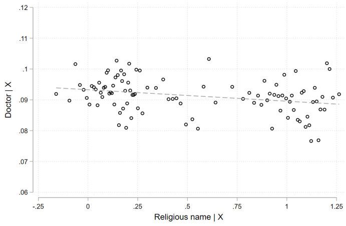
Excludes:	None (1)	Germany (2)	Poland (3)	Czech (4)	Austria (5)	Belgium (6)	France (7)
Dep var: doctor							
Religious name	-0.0037***	-0.0046***	-0.0041***	-0.0037***	-0.0033***	-0.0037***	-0.0038***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.049	0.047	0.047	0.049	0.050	0.048	0.049
Dep var: engineer							
Religious name	-0.0053***	-0.0051***	-0.0049***	-0.0053***	-0.0053***	-0.0054***	-0.0054***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.0090	0.0035	0.0087	0.0090	0.0092	0.0091	0.0094
Dep var: scientist							
Religious name	-0.0017**	-0.00096	-0.0016**	-0.0017**	-0.0017**	-0.0016**	-0.0017**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.019	0.018	0.020	0.019	0.019	0.019	0.020
Dep var: chemist							
Religious name	-0.0034***	-0.0025***	-0.0034***	-0.0034***	-0.0035***	-0.0034***	-0.0034***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.0047	-0.00048	0.0047	0.0047	0.0048	0.0048	0.0049
Dep var: priest							
Religious name	0.0025**	0.0032***	0.0024**	0.0025**	0.0024**	0.0020*	0.0026**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.14	0.095	0.14	0.14	0.14	0.15	0.14
Dep var: theologian							
Religious name	0.0024***	0.0021*	0.0025***	0.0024***	0.0023***	0.0024***	0.0024***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.058	0.059	0.058	0.058	0.058	0.059	0.058
Dep var: catholic							
Religious name	0.0038***	0.0031***	0.0038***	0.0035***	0.0036***	0.0033***	0.0035***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
R-squared	0.027	0.037	0.027	0.027	0.028	0.027	0.026
Observations	281101	139284	256250	281101	261969	267364	271467

Replication of Table 5, removing major countries one-by-one. All baseline controls included throughout: Name frequency, 1x1 degree fixed effects, year fixed effects, latitude and longitude of birthplace, location specific time-trends. Robust standard errors clustered at the 1x1 grid cell level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

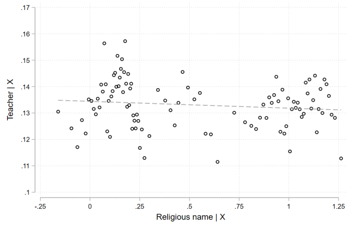
Result:

Figure A7: Religiosity and Economic growth

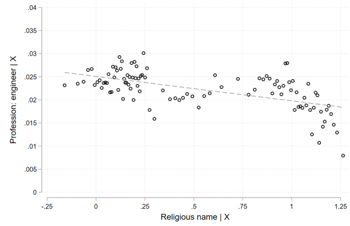
(a) Doctor



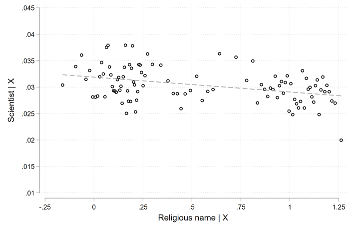
(b) Teacher



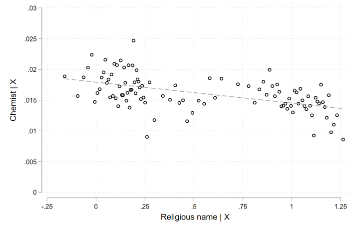
(c) Engineer



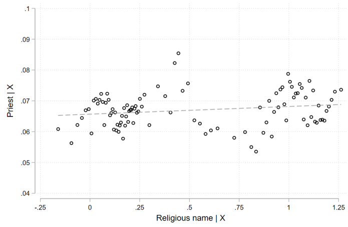
(d) Scientist



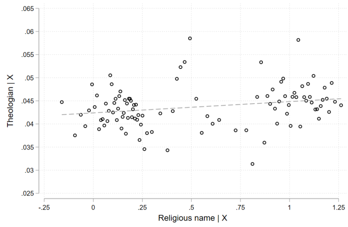
(e) Chemist



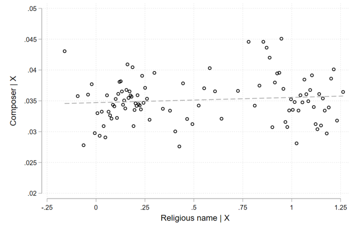
(f) Priest



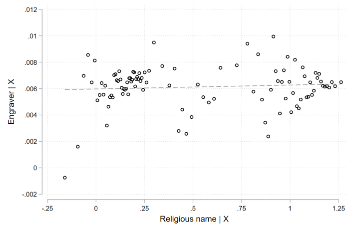
(g) Theologian



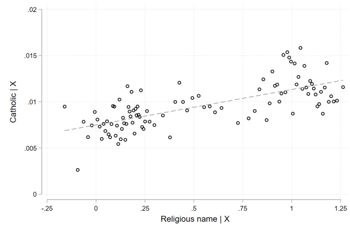
(h) Composer



(i) Engraver



(j) Catholic



Binned added variables plots corresponding to Panel A of Table 5.

Table A10: Religiosity and taking an advanced degree

Dependent variable: Advanced degree dummy	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Religious name	-0.050***	-0.060***	-0.053***	-0.057***	-0.055***	-0.052***	-0.040***	-0.022***	-0.021***
	(0.009)	(0.011)	(0.010)	(0.010)	(0.010)	(0.009)	(0.008)	(0.006)	(0.006)
Name frequency		12.1***	9.65***	8.28***	7.07**	6.17**	3.56	-0.78	-0.93
		(3.592)	(3.254)	(3.182)	(3.160)	(3.075)	(2.976)	(2.592)	(2.557)
Year (1000s)			-0.68**	-0.51*	-0.50				
			(0.279)	(0.308)	(0.306)				
Noble				-0.17***	-0.17***	-0.17***	-0.16***	-0.16***	-0.18***
				(0.017)	(0.017)	(0.016)	(0.015)	(0.015)	(0.013)
Male					0.078***	0.073***	0.082***	0.070***	0.052***
					(0.020)	(0.018)	(0.019)	(0.019)	(0.017)
Latitude (100s)							-0.37	-1.40	-1.45
							(0.357)	(1.573)	(1.394)
Longitude (100s)							-0.83***	0.25	0.28
							(0.187)	(1.413)	(1.156)
R-squared	0.0022	0.0028	0.0068	0.020	0.021	0.049	0.055	0.086	0.11
Observations	44239	44239	44239	44239	44239	44220	44220	44217	44217
Mean dep var	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Year FE	N	N	N	N	N	Y	Y	Y	Y
1x1 grid FE	N	N	N	N	N	N	N	Y	Y
Grids x year trends	N	N	N	N	N	N	N	N	Y
Number grids	198	198	198	198	198	198	198	195	195

OLS regressions across university students. The controls measure the frequency of the name as a share of all names, a year trend for the year of birth, a dummy for nobility status, a dummy for whether the student was male, year fixed effects, the latitude and longitude of the student's birth town, 1x1 degree grid cell fixed effects, and 1x1 degree grid cell specific year trends. Robust standard errors clustered at the 1x1 grid cell level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.
Result: Students who share name with a major religious figure are less likely to proceed with advanced studies.

Table A11: Religious names and advanced degree for particular fields of study

Dependent variable:	Adv deg	Law	Medicine	Theology
	(1)	(2)	(3)	(4)
Religious name	-0.021***	-0.028***	0.00026	0.0030
	(0.006)	(0.006)	(0.003)	(0.004)
R-squared	0.11	0.12	0.045	0.064
Observations	44217	38444	30295	31734

Replication of Table A10, column (9), where the dependent variable is a dummy equal to one if the student studied law (column 2), medicine (column 3), or theology (column 4), zero otherwise. Throughout, controls for the frequency of the name, nobility status, male, year fixed effects, birthplace latitude and longitude, 1x1 degree grid cell fixed effects, and grid cell specific trends are included. Robust standard errors in parentheses clustered at the 1x1 degree grid cell level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.
Result: Students who were raised religiously were less likely to proceed with advanced studies in law. The likelihood of proceeding with advanced studies in medicine or theology were no different from students with a less religious upbringing.

Table A12: Religious name index (RNI) and advanced studies

Dependent variable: Advanced studies dummy	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Religious name index	-0.12***	-0.13***	-0.13***	-0.16***	-0.15***	-0.14***	-0.11***	-0.058***	-0.036*
	(0.028)	(0.030)	(0.029)	(0.028)	(0.028)	(0.028)	(0.024)	(0.020)	(0.021)
Name frequency		6.35**	4.96*	3.87	2.72	1.88	0.47	-2.69	-3.44
		(2.934)	(2.822)	(2.759)	(2.762)	(2.776)	(2.722)	(2.299)	(2.274)
Year (1000s)			-0.73**	-0.56*	-0.55*				
			(0.280)	(0.306)	(0.304)				
Noble				-0.17***	-0.17***	-0.17***	-0.16***	-0.16***	-0.18***
				(0.017)	(0.017)	(0.016)	(0.015)	(0.015)	(0.013)
Male					0.082***	0.078***	0.085***	0.072***	0.056***
					(0.020)	(0.019)	(0.020)	(0.019)	(0.018)
Latitude (100s)							-0.30	-1.37	-1.43
							(0.356)	(1.573)	(1.393)
Longitude (100s)							-0.87***	0.23	0.27
							(0.188)	(1.413)	(1.157)
R-squared	0.00095	0.0011	0.0057	0.020	0.020	0.048	0.054	0.086	0.11
Observations	44239	44239	44239	44239	44239	44220	44220	44217	44217
Mean dep var	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35	0.35
Year FE	N	N	N	N	N	Y	Y	Y	Y
1x1 grid FE	N	N	N	N	N	N	N	Y	Y
Grids x year trends	N	N	N	N	N	N	N	N	Y
Number grids	198	198	198	198	198	198	198	195	195

Replication of Table A10 using the continuous religious name index instead of the religious name dummy. Robust standard errors clustered at the 1x1 grid cell level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.
Result: The main result is robust to using the continuous religious name index.

Table A13: Religious names and proceeding with advanced studies accounting for ethnicity

Dependent variable: Advanced studies dummy	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Religious name	-0.024***	-0.022***	-0.021***	-0.022***	-0.023***	-0.022***	-0.021***	-0.023***	-0.023***	-0.023***	-0.022***
	(0.007)	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.007)	(0.007)	(0.006)	(0.007)	(0.006)
Ethnicity	-0.0041	0.0087	-0.0093*	0.00044	0.0016	0.55***	-0.0035	0.0092	0.019	0.0015	0.0061
	(0.006)	(0.007)	(0.005)	(0.007)	(0.006)	(0.057)	(0.006)	(0.010)	(0.018)	(0.007)	(0.123)
R-squared	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
Observations	44220	44220	44220	44220	44220	44220	44220	44220	44220	44220	44220
Ethnicity accounted for	germanic	celtic	italic	slavic	baltic	basque	uralic	greek	turkic	semitic	armenian

OlS regressions corresponding to column (9) of Table A10, accounting for different ethnicities. The sample is medieval university students who proceeded with advanced studies. All baseline controls are included throughout (corresponding to those in : Name frequency, nobility status, male student, 1x1 degree grid cell fixed effects, year fixed effects, and 1x1 degree grid cell specific trends. Robust standard errors in parentheses clustered at the 1x1 degree grid cell level. *, **, and *** indicate significance at the 10%, 5%, and 1% level.
Result: The main result is robust to accounting for ethnicity.

Table A14: Theology name index and taking an advanced degree

Dependent variable: Advanced degree dummy	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Theology name index	-0.096**	-0.10***	-0.11***	-0.13***	-0.14***	-0.13***	-0.063**	-0.024	-0.025
	(0.038)	(0.038)	(0.038)	(0.037)	(0.037)	(0.034)	(0.026)	(0.021)	(0.021)
Name frequency		2.83	1.60	0.13	-0.48	-0.94	-2.81	-4.78**	-4.70**
		(2.697)	(2.632)	(2.632)	(2.637)	(2.672)	(2.684)	(2.349)	(2.305)
Year (1000s)			-0.72**	-0.56*	-0.55*				
			(0.282)	(0.309)	(0.307)				
Noble				-0.17***	-0.17***	-0.17***	-0.15***	-0.16***	-0.18***
				(0.017)	(0.017)	(0.016)	(0.015)	(0.015)	(0.013)
Male					0.075***	0.065***	0.067***	0.049***	0.033*
					(0.021)	(0.019)	(0.020)	(0.018)	(0.018)
Latitude (100s)							-0.27	-1.65	-1.79
							(0.360)	(1.666)	(1.468)
Longitude (100s)							-0.87***	0.29	0.36
							(0.192)	(1.437)	(1.175)
R-squared	0.00028	0.00029	0.0049	0.018	0.019	0.048	0.053	0.086	0.11
Observations	44090	44090	44090	44090	44090	44069	44069	44066	44066
Mean dep var	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36
Year FE	N	N	N	N	N	Y	Y	Y	Y
1x1 grid FE	N	N	N	N	N	N	N	Y	Y
Grids x year trends	N	N	N	N	N	N	N	N	Y
Number grids	198	198	198	198	198	198	198	195	195

The table replicates Table A10, but instead of measuring religiosity of a name based on major religious figures, the religiosity of a name is measured based on the degree to which it is more common among theology students compared to the rest of the students.
Result: Students who share name with those who study theology are less likely to proceed with advanced studies. The result holds across grid cells, but not across students within the same grid cell.

Table A15: Religious name and taking an advanced degree excluding top-countries

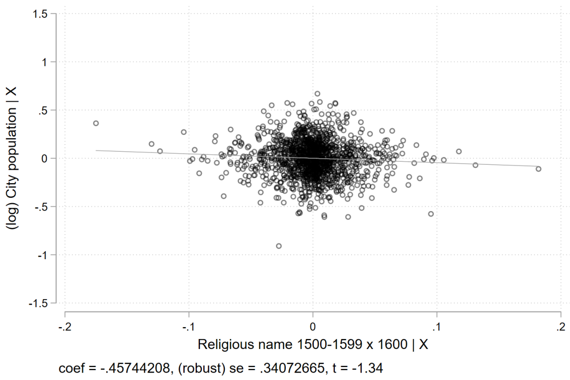
Dependent variable: Advanced degree dummy					
	(1)	(2)	(3)	(4)	(5)
Religious name	-0.017*	-0.018***	-0.023***	-0.020***	-0.020***
	(0.009)	(0.007)	(0.007)	(0.006)	(0.006)
R-squared	0.15	0.085	0.11	0.11	0.11
Observations	23043	35693	40398	40631	41999
Excluded country	Germany	Belgium	Netherlands	Czech Rep.	Austria

The table replicates column (9) of Table A10, excluding the top-countries with most students one at a time.

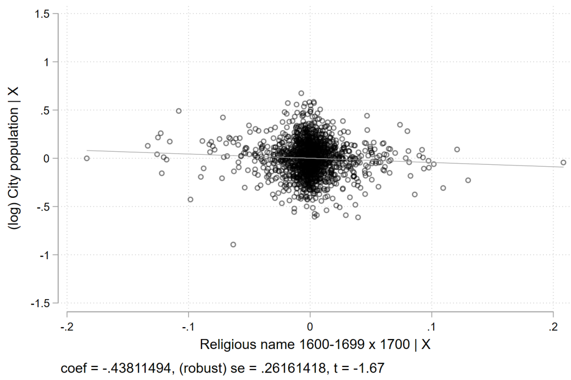
Result: The result is robust to excluding top-countries one at a time.

Figure A8: Religiosity and Economic growth

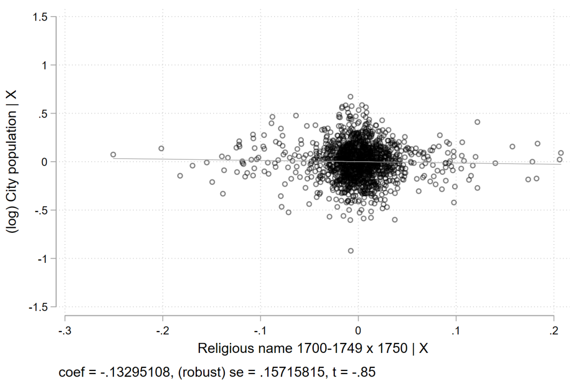
(a) 1500-1599, 251 cities



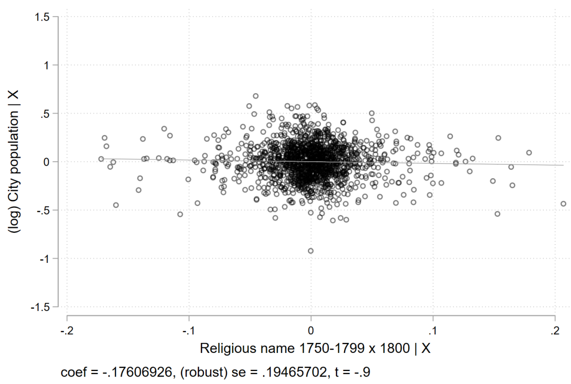
(b) 1600-1699, 251 cities



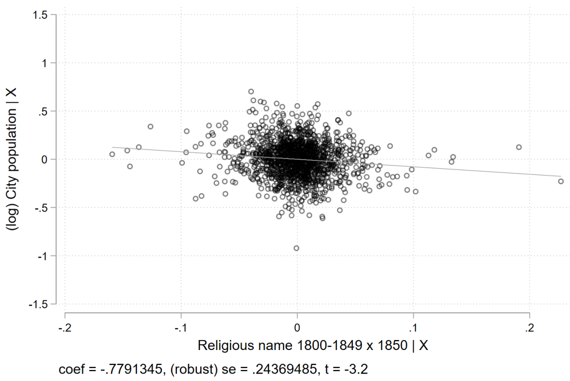
(c) 1700-1749, 251 cities



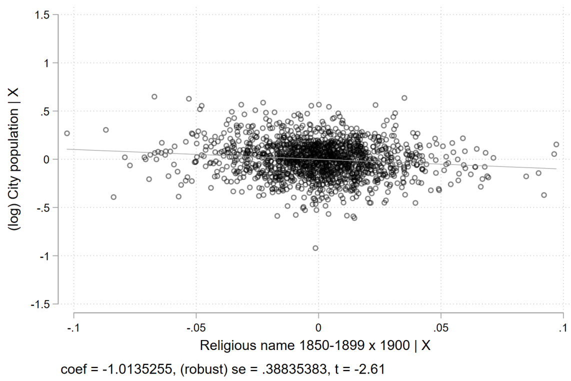
(d) 1750-1799, 251 cities



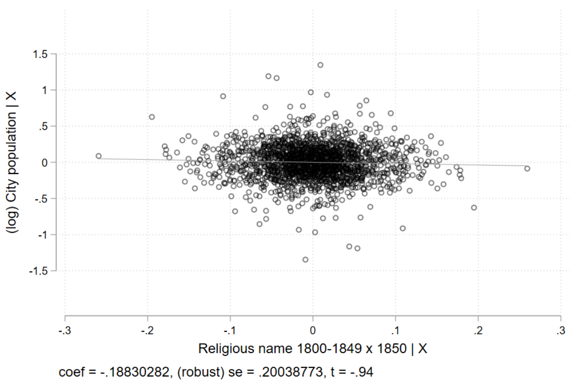
(e) 1800-1849, 251 cities



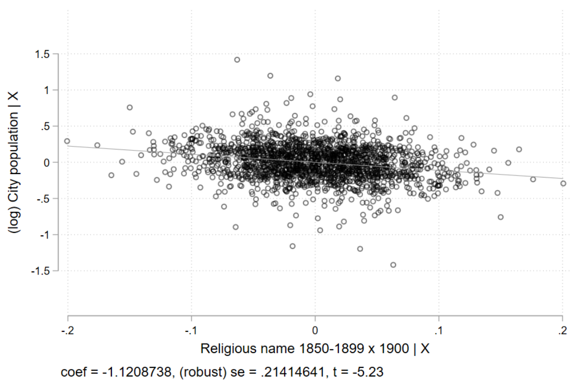
(f) 1850-1899, 251 cities



(g) 1800-1849, 912 cities



(h) 1850-1899, 912 cities



Added variables plots corresponding to column (9) of Table 6 in panels a-f and corresponding to column (10) of Table 6 in panels g and h.

Table A16: Religiosity and economic growth among Catholics vs Protestants

Dependent variable: (log) City population size	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Religious name based on:	Saints+Bible	Saints	Bible	RNI	Saints+Bible	Saints	Bible	RNI
Religious name 1500-99 x 1600	-0.40	-0.38	-0.075	-0.43				
	(0.301)	(0.292)	(0.235)	(0.403)				
Religious name 1600-99 x 1700	-0.39*	-0.37*	-0.36**	-0.41				
	(0.217)	(0.213)	(0.165)	(0.319)				
Religious name 1700-49 x 1750	-0.15	-0.11	-0.13	0.17				
	(0.142)	(0.147)	(0.122)	(0.233)				
Religious name 1750-99 x 1800	-0.20	-0.16	-0.22*	-0.052				
	(0.160)	(0.166)	(0.123)	(0.253)				
Religious name 1800-49 x 1850	-0.87***	-0.87***	-0.60***	-1.10***	-0.19	-0.079	0.042	0.28
	(0.203)	(0.207)	(0.151)	(0.325)	(0.142)	(0.143)	(0.112)	(0.214)
Religious name 1850-99 x 1900	-1.08***	-1.13***	-1.24***	-2.09***	-1.12***	-1.06***	-0.91***	-1.40***
	(0.324)	(0.339)	(0.323)	(0.570)	(0.151)	(0.154)	(0.124)	(0.224)
R-squared	0.97	0.97	0.97	0.97	0.89	0.89	0.89	0.89
Observations	1506	1506	1506	1506	1824	1824	1824	1824
Mean dep var		2.77	2.77	2.77	3.11	3.11	3.11	3.11

Replication of column (9) of Table 6 in column (1) and column (10) of Table 6 in column (4). A name is defined as religious if it is shared by either a major patron saint or biblical figure (columns 1 and 3), if it is shared by a major patron saint alone (columns 2 and 4), or if it shared by a major biblical figure alone (columns 3 and 6). Controls included throughout: name frequency interacted with time, city fixed effects, time fixed effects, and columns (1)-(3) also accounts for city-specific trends. Robust standard errors clustered at the city level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Result: The negative impact of religiosity on city growth persists when restricting to either Catholic or Protestant names.

Table A17: Religiosity and economic growth after 1800

Dependent variable: (log) City population size	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Religious name share	-0.98***	-1.03***	-2.17***	-0.58***	-0.58***	-0.58***		
	(0.169)	(0.192)	(0.169)	(0.112)	(0.112)	(0.124)		
Year				0.012***				
				(0.000)				
Name frequency						0.014	0.33	
						(2.082)	(2.068)	
Religious name 1800-49 x 1850							-0.21	-0.19
							(0.138)	(0.142)
Religious name 1850-99 x 1900							-1.11***	-1.12***
							(0.151)	(0.151)
R-squared	0.016	0.016	0.74	0.89	0.89	0.89	0.89	0.89
Observations	2132	1824	1824	1824	1824	1824	1824	1824
Mean dep var	3.09	3.11	3.11	3.11	3.11	3.11	3.11	3.11
Balanced sample	N	Y	Y	Y	Y	Y	Y	Y
City FE	N	N	Y	Y	Y	Y	Y	Y
Year FE	N	N	N	N	Y	Y	Y	Y
Time-varying controls	N	N	N	N	N	N	N	Y
Number cities	1220	912	912	912	912	912	912	912

Replication of column (10) of Table 6, including controls consecutively. As there are only two-time-periods, city-specific trends cannot be included as was otherwise done in column (5) of Table 6. Robust standard errors clustered at the city level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Result: More religious cities experienced slower growth rates in this sample of 912 cities with data after 1800.

Table A18: Religiosity and economic growth accounting for ethnicity

Dependent variable: (log) City population size											
Ethnicity:	Germanic	Celtic	Italic	Slavic	Baltic	Basque	Uralic	Greek	Turkic	Semitic	Armenian
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Panel A: 1500-1900											
Religious name share	-0.31**	-0.32***	-0.32***	-0.33***	-0.32***	-0.32***	-0.29**	-0.31***	-0.30***	-0.34***	-0.33***
	(0.120)	(0.112)	(0.117)	(0.111)	(0.111)	(0.115)	(0.115)	(0.120)	(0.113)	(0.113)	(0.111)
Ethnicity	0.017	-0.059	0.037	-0.21**	-0.12	0.098	-0.33*	0.00011	-0.14	-0.33	-0.41
	(0.108)	(0.130)	(0.110)	(0.103)	(0.129)	(0.116)	(0.179)	(0.124)	(0.141)	(0.266)	(0.390)
R-squared	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Observations	1506	1506	1506	1506	1506	1506	1506	1506	1506	1506	1506
Panel B: 1800-1900											
Religious name share	-0.46***	-0.57***	-0.53***	-0.59***	-0.59***	-0.59***	-0.55***	-0.64***	-0.60***	-0.42***	-0.46***
	(0.130)	(0.124)	(0.125)	(0.125)	(0.124)	(0.123)	(0.124)	(0.133)	(0.124)	(0.129)	(0.128)
Ethnicity	0.33**	0.30**	-0.20*	0.096	0.17	0.11	0.42**	0.18	0.26*	0.72***	0.70***
	(0.129)	(0.127)	(0.115)	(0.136)	(0.181)	(0.134)	(0.205)	(0.138)	(0.154)	(0.209)	(0.230)
R-squared	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Observations	1824	1824	1824	1824	1824	1824	1824	1824	1824	1824	1824

Replication of column (7) of Table 6 in Panel A and column (6) of Table A17 in Panel B accounting for ethnicity. Included controls: name frequency, city fixed effects, time fixed effects, and city-specific trends. The latter is only included in Panel A. Robust standard errors clustered at the city level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Result: The negative impact of religiosity on city growth is not caused by ethnicity.

Table A19: Religiosity and economic growth testing for heterogeneity across countries

Dependent variable: (log) City population size						
Excluded country:	None (1)	Germany (2)	France (3)	UK (4)	Italy (5)	Poland (6)
Panel A: 1500-1900						
Religious name share	-0.46***	-0.22	-0.35***	-0.30***	-0.37***	-0.30***
	(0.142)	(0.161)	(0.114)	(0.112)	(0.119)	(0.113)
R-squared	0.92	0.97	0.96	0.96	0.96	0.97
Observations	1506	624	1428	1464	1368	1410
Difference, p-value		0.14	0.36	0.17	0.46	0.16
Panel B: 1800-1900						
Religious name share	-0.58***	-0.53***	-0.46***	-0.62***	-0.58***	-0.57***
	(0.124)	(0.127)	(0.156)	(0.132)	(0.133)	(0.125)
R-squared	0.89	0.90	0.89	0.88	0.88	0.89
Observations	1824	1364	1422	1658	1682	1704
Difference, p-value		0.67	0.43	0.77	1.00	0.93

Replication of column (7) of Table 6 in Panel A and column (6) of Table A17 in Panel B, excluding cities from the five most well-represented countries one-by-one across columns. The "Difference p-value" is the p-value of the test that the parameter estimate on the religious name share is equal to the estimate in the full sample in column (1). Included controls: name frequency, city fixed effects, time fixed effects, and city-specific trends. The latter is only included in Panel A. Robust standard errors clustered at the city level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Result: The negative impact of religiosity on city growth persists when excluding the five countries inhabited by most authors one at a time, except when excluding Germany in the 1500-1900 sample where the impact turns insignificant, but remains negative.

Table A20: Religiosity and economic growth accounting for earthquakes

Dependent variable: (log) City population size	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Religious name 1500-99 x 1600	-0.40	-0.41	-0.40	-0.39	-0.39					
	(0.301)	(0.299)	(0.296)	(0.299)	(0.301)					
Religious name 1600-99 x 1700	-0.39*	-0.36	-0.37*	-0.39*	-0.37*					
	(0.217)	(0.218)	(0.217)	(0.215)	(0.218)					
Religious name 1700-49 x 1750	-0.15	-0.14	-0.15	-0.13	-0.13					
	(0.142)	(0.145)	(0.144)	(0.142)	(0.142)					
Religious name 1750-99 x 1800	-0.20	-0.21	-0.22	-0.24	-0.22					
	(0.160)	(0.161)	(0.159)	(0.160)	(0.163)					
Religious name 1800-49 x 1850	-0.87***	-0.87***	-0.89***	-0.88***	-0.86***	-0.19	-0.20	-0.19	-0.19	-0.19
	(0.203)	(0.206)	(0.206)	(0.205)	(0.204)	(0.142)	(0.143)	(0.143)	(0.144)	(0.144)
Religious name 1850-99 x 1900	-1.08***	-1.09***	-1.10***	-1.04***	-1.03***	-1.12***	-1.13***	-1.12***	-1.12***	-1.13***
	(0.324)	(0.325)	(0.322)	(0.317)	(0.322)	(0.151)	(0.153)	(0.153)	(0.153)	(0.153)
Earthquakes x 1600		-0.38***	-0.19	0.12	0.11					
		(0.102)	(0.216)	(0.225)	(0.208)					
Earthquakes x 1700		-0.0089	0.026	0.056	0.040					
		(0.086)	(0.072)	(0.062)	(0.058)					
Earthquakes x 1750		0.027	0.0018	-0.032	0.0024					
		(0.059)	(0.058)	(0.050)	(0.055)					
Earthquakes x 1800		0	0.34***	0.20**	0.13					
		(.)	(0.022)	(0.088)	(0.138)					
Earthquakes x 1850		-0.15	-0.22***	-0.18**	-0.11		0.098	-0.18	-0.16	-0.083
		(0.139)	(0.066)	(0.068)	(0.093)		(0.344)	(0.169)	(0.118)	(0.091)
Earthquakes x 1900		-0.32	-0.51***	-0.34	-0.16		0.13	0.0074	-0.013	0.056
		(0.284)	(0.171)	(0.249)	(0.225)		(0.137)	(0.098)	(0.103)	(0.093)
R-squared	0.97	0.97	0.97	0.97	0.96	0.89	0.89	0.89	0.89	0.89
Observations	1506	1500	1500	1500	1500	1824	1816	1816	1816	1816
Earthquakes during past x years		10	30	60	90		10	30	60	90

Column (1) replicates column (9) of Table 6, column (6) replicates column (10) of Table 6. Thereafter controls for earthquakes are included: Dummies equal to one if one or more earthquakes hit 10-90 years prior to 1600, 1700, 1750, 1800, 1850, and 1900 in columns (2)-(5) and prior to 1850 and 1900 in columns (7)-(10). The full set of controls is included throughout: name frequency interacted with time dummies, and city and time fixed effects, and in columns (1)-(5) city-specific time-trends are also included. Robust standard errors clustered at the city level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.

Result: The main result is unchanged after accounting for earthquakes.

Table A21: Religiosity and economic growth accounting for Atlantic trade

Dependent variable: (log) City population size	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Religious name 1500-99 x 1600	0.017	0.038	-0.075	-0.32	-0.34	-0.43			
	(0.255)	(0.258)	(0.255)	(0.284)	(0.288)	(0.277)			
Religious name 1600-99 x 1700	-0.34	-0.34	-0.35	-0.34	-0.33	-0.33			
	(0.269)	(0.272)	(0.272)	(0.214)	(0.215)	(0.217)			
Religious name 1700-49 x 1750	-0.14	-0.15	-0.14	-0.13	-0.14	-0.081			
	(0.146)	(0.149)	(0.146)	(0.143)	(0.144)	(0.142)			
Religious name 1750-99 x 1800	-0.29*	-0.31*	-0.33**	-0.18	-0.22	-0.15			
	(0.161)	(0.163)	(0.165)	(0.156)	(0.159)	(0.160)			
Religious name 1800-49 x 1850	-1.09***	-1.08***	-1.14***	-0.89***	-0.88***	-0.79***	-0.16	-0.070	-0.043
	(0.226)	(0.224)	(0.233)	(0.199)	(0.202)	(0.206)	(0.143)	(0.142)	(0.141)
Religious name 1850-99 x 1900	-1.45***	-1.40***	-1.47***	-1.09***	-1.04***	-0.81**	-1.12***	-1.02***	-0.79***
	(0.339)	(0.343)	(0.381)	(0.309)	(0.321)	(0.338)	(0.150)	(0.152)	(0.158)
Coast 1600-99 x 1700	0.052	-0.13	0.19**						
	(0.058)	(0.152)	(0.073)						
Coast 1700-49 x 1750	0.00097	-0.11	0.21**	-0.071	0.055	-0.082			
	(0.071)	(0.177)	(0.091)	(0.056)	(0.092)	(0.065)			
Coast 1750-99 x 1800	0.037	-0.048	0.21*	-0.040	0.18	-0.19			
	(0.081)	(0.158)	(0.110)	(0.092)	(0.212)	(0.117)			
Coast 1800-49 x 1850	-0.034	-0.14	0.25*	-0.15	0.12	-0.26*			
	(0.099)	(0.205)	(0.143)	(0.125)	(0.237)	(0.157)			
Coast 1850-99 x 1900	-0.14	-0.59**	0.14	-0.27*	-0.28	-0.51***	-0.11***	-0.27***	-0.21***
	(0.121)	(0.267)	(0.182)	(0.159)	(0.340)	(0.196)	(0.032)	(0.049)	(0.033)
R-squared	0.92	0.92	0.92	0.97	0.97	0.97	0.89	0.89	0.90
Observations	1506	1506	1506	1506	1506	1506	1824	1824	1824
City fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y	Y
City trends	N	N	N	Y	Y	Y	N	N	N
Namefrequency x time	Y	Y	Y	Y	Y	Y	Y	Y	Y
Coastline accounted for	all	atlantic	atlantic2	all	atlantic	atlantic2	all	atlantic	atlantic2

Replication of parts of Table 6 including the following controls for coastlines: A dummy equal to one for all cities located within 100 km of any ocean (columns 1, 4, 7), a dummy equal to one for cities located within 100 km of the Atlantic ocean (columns 2, 5, 8), and a dummy equal to one for Atlantic traders (Britain, the Netherlands, France, Spain, and Portugal). The full set of controls is included throughout: name frequency interacted with time dummies, and city and time fixed effects, and in columns (4)-(6) city-specific time-trends are also included. Robust standard errors clustered at the city level in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% level.
Result: The main result is unchanged after accounting for coastlines. Being oriented towards the coast is apparently not good for economic growth towards the end of the 20th century.

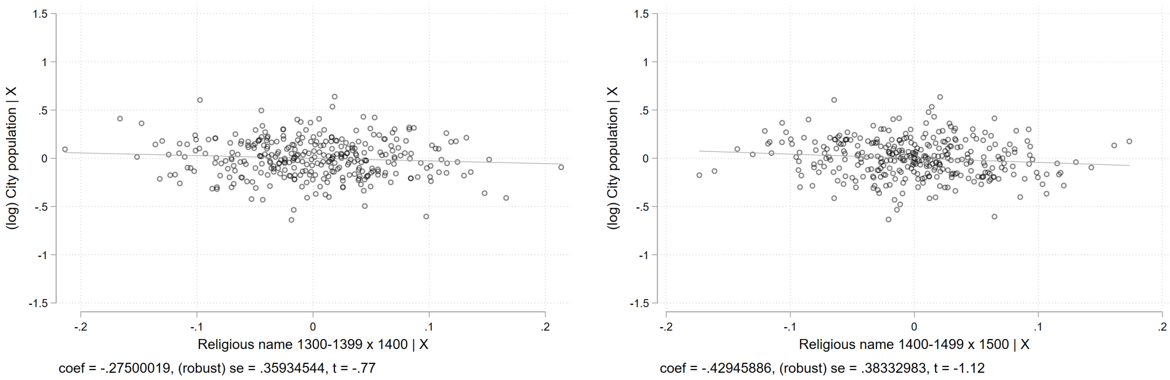
Table A22: Religiosity and economic growth prior to 1500

Dependent variable: City population	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Religious name share	-0.0029	0.20	0.028	-0.15	-0.30			
	(0.183)	(0.254)	(0.267)	(0.184)	(0.218)			
Religious name 1300-99 x 1400						-0.25	-0.23	-0.21
						(0.229)	(0.232)	(0.236)
Religious name 1400-99 x 1500						-0.43*	-0.44*	-0.39+
						(0.238)	(0.238)	(0.243)
Namefrequency					1.45	1.40	1.34	
					(1.239)	(1.253)	(1.254)	
Noble							0.17	
							(0.210)	
Namefrequency 1300-99 x 1400								1.83
								(1.388)
Namefrequency 1400-99 x 1500								-0.098
								(1.798)
Noble 1300-99 x 1400								0.36
								(0.271)
Noble 1400-99 x 1500								0.020
								(0.223)
R-squared	-0.0016	-0.00042	0.041	0.87	0.87	0.87	0.87	0.87
Observations	645	352	352	352	352	352	352	352
Mean dep var	1.54	1.71	1.71	1.71	1.71	1.71	1.71	1.71
Balanced sample	N	Y	Y	Y	Y	Y	Y	Y
City FE	N	N	N	Y	Y	Y	Y	Y
Year FE	N	N	Y	Y	Y	Y	Y	Y

OLS regressions across cities, where the religious name share is calculated based on the university students instead of authors. The sample includes the full sample of cities with at least 10 university students in column (1) and the sample with at least 10 university students in each of the two time-periods.
Result: Cities in areas with more university students with a religious name grew slower than other cities during 1300-1500, and increasingly so over time, although the impact is only significant at the 10-15% level.

Figure A9: Religiosity and economic growth prior to 1500

(a) 1300-1399 (b) 1400-1499



Added variables plots corresponding to column (8) of Table A22.