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ABSTRACT: Civil wars of today have deep roots in political and religious history. We examine how a society's geographic distance to religious centers and the consequent historical differences between political rulers and religious segments of the population contributed to current levels of civil war. The theory is based on a political economy model that is centered on legitimizing function that religion plays for rulers vis-à-vis citizens. We test the resulting hypotheses using a new dataset that includes annual information on the religious and political histories of today's nations since the year 1000. The results show that civil wars in the post-1960 period have been more likely in societies that experienced higher incidents of historical differences between rulers and a significant religious group before 1960. The results hold when we control for the geographic, historical, and institutional characteristics of countries. We address endogeneity concerns between religious differences and civil wars by exploiting variation across countries in their geographic distance to religious "capitals" of the world. Instrumental variable analysis indicates that the presence of historical religious differences that could be exploited by rulers accounts for a substantial portion of civil wars between 1960 and 2014. The results reflect the deep root effects of religious differences on current conflict.

KEYWORDS: Civil war, conflict, religion, historical roots, political economy, grievance, geographic distance, religious difference

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RELIGIOUS DIFFERENCES AND CIVIL WAR

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1. INTRODUCTION

Although civil wars seem highly correlated with religion, the reasons for this association are far from clear. Many of the violent conflicts in modern times have been between parties that differ along religious lines or they involve groups that define themselves through religious affiliation in their opposition against rulers. Despite the seemingly obvious role of religious differences in these conflicts, researchers have struggled to determine how these differences lead to violence. We cannot simply attribute violence to religious beliefs because all major religions foster peace and cooperation in fundamental tenets and prescribe peaceful solutions as the preferred means of resolving conflicts. Since religious differences do not always result in violent conflicts, we need to delve deeper into this association to distinguish between those differences that result in violence and other differences that produce peaceful coexistence. As McBride and Richardson (2012: 118) note in their review of the literature on religion and conflict, “[m]ore work is warranted” to understand the religious roots of civil war.

This paper will argue that deep-rooted factors, determined many centuries earlier, caused some societies to accumulate historical religious grievances that formed the basis for current conflicts. We exploit variation in geographic distance to religious centers to estimate the effect of religious differences on civil wars. The basic argument is that the geographic distance of a society to religious “capitals” of the world affected its religious

market and the religious concentration of its population. In societies that consisted of more than one significant religious groups, political rulers could share religion with only one of these groups, a situation that could result in favoritism, grievances, and conflict.

To identify the historical roots of religious grievances that result in current conflicts, we adopt a political economy approach and focus on the relationship between the religion of political rulers and that of different segments of the population. We develop a model that includes a ruler and two types of citizens who differ based on their share of the population and whether or not they have the same religion (or sect) as the ruler. In this setting, the ruler derives legitimacy from support by religious authorities, which lowers his costs of tax collection. However, members of different religions may hold different views in this regard, which creates a situation in which the ruler may wish to favor one group over the other. This will be especially true if the ruler shares the religion of one group. The manner in which the ruler can bestow his favor is in the enactment of laws that limit the access of certain groups to employment or educational opportunities, or in the provision of public goods that are not fully available to the disfavored group(s). This differential treatment will influence the expected income of various groups in their competition for scarce resources, the effect of which will accumulate over time, potentially creating grievances that may lead to future conflicts.

To examine the model's implications empirically, we have developed a novel dataset comprising the religious and political histories of today's nations since the year 1000, including annual data on the religion of the political rulers and the main and second (significant) religions of the population. We use this information to construct indices of historical religious difference, based on the (weighted) fractions of time during which the

ruler's religion differed from the main and second religions. These indices will measure the historical roots of the grievances that these groups may have accumulated against government over time. The results show that the frequency of civil conflict in the post-1960 period has been significantly higher in societies that experienced a higher frequency of episodes during which the ruler's religion was the same as the main religion while a secondary significant religion existed, or it was the same as the secondary religion while differing from the main religion, during the period between 1000 and 1960. The results hold when we control for the geographic and characteristics of countries, income, and institutional variables such as social infrastructure and executive constraints. The results are also robust to different measures of civil conflict such as onset and incidence.

We address potential endogeneity between religious differences and civil wars by exploiting the geographic distance to religious capitals of the world as an exogenous source of variation. To identify the effect of religious differences on current civil wars, we generate a single index that measures historical differences between the rulers and the main and secondary religious groups, and instrument it through the ratio of the distances to the two closest religious centers. The results of two-stage least squares estimation show a substantial rise in the magnitude of the effect of religious differences on civil wars, indicating the presence of omitted variables, such as migration or conversion, which caused OLS method to underestimate the effect of these differences on civil wars.

Our analysis is closely related to the relative deprivation theory in sociology. According to this theory, individuals or social groups who may not be deprived in absolute terms may still feel deprived when their situation is worse compared to others, and their relative deprivation can accumulate grievances that may eventually fire up conflict.

Relative deprivations leading to grievances might stem from government policy, historical and cultural reasons that create a lack of economic, political and social rights for certain groups in society (Gurr 1970). Applying this framework to contemporary religious deprivations, Grim and Finke (2007) illustrate that government and social restrictions on religious freedom is positively correlated with religious persecution, a particular form of social conflict. Our results contribute to this literature by providing a specific mechanism for the source of those grievances and a way of measuring them through indices of religious difference.

Our analysis is also closely related to the economic literature on the relationship between diversity and conflict.¹ Researchers in this literature have shown how conflict in a diverse society arises out of the difficulty of reconciling the demands for public good provision of different groups under scarcity. If the demands of some groups are unsatisfied, they may develop grievances that may lead to civil war. These type of grievance-related explanations are empirically tested in the literature through measures of diversity, such as ethnic and religious fractionalization (large number of small groups), polarization (small number of large groups), and dominance (a large group together with significant small group), all of which are calculated from data on the religious distributions of population. The findings are mixed and largely inconclusive (Collier and Hoeffler 2004, Fearon and Laitin, 2003, Montalvo and Reynal-Querol, 2005, Esteban, Mayoral, and Ray, 2012, Arbatli et al 2015, Basedau et al 2016). By emphasizing the deep roots of the diversity and

¹ For reviews of this literature and examples, see Blattman and Miguel (2010), Garfinkel and Skaperdas (2009).

grievance between religious groups and political rulers, we contribute a new mechanism to this literature through which accumulated grievances may lead to violent conflicts.

The argument is also related to a body of literature that explains conflict through religion-based hatred and irreconcilable hostility between groups (Huntington 1996). Rather than consider the hatred and hostility as being a matter of current religious beliefs and preferences, however, we examine their historical roots. Using a political economy approach, we identify the source of the problem in the self-interested ruler who is trying to maximize his revenue. Going beyond general observations, we construct an index to measure the source and intensity of the grievance and to examine its effect on violence systematically.

Finally, our emphasis on the historical origins of conflict is consistent with the recent literature on the deep historical roots of economic growth and development.² In this literature, scholars have shifted emphasis from the proximate determinants of current outcomes to more fundamental factors that are deeply rooted in long-term history. We contribute to this literature by providing the first systematic analysis and empirical measure of the deep religious roots of current conflicts. In doing so, our approach is similar to Persson and Tabellini's (2009) analysis of how the accumulation of democratic capital contributes to economic development, and Bocksette et al (2002), and Depetris-Chauvin's (2015) study of how the accumulation of experience under a state-level governance affects economic growth and civil conflict.

² For a review of this literature, see Spolaore and Wacziarg (2013). For examples of historical, cultural and institutional factors, see Engerman and Sokolof (1997), Laporta et al. (1997), Acemoglu, Johnson and Robinson (2001), Nunn (2013).

2. THE MODEL

This section develops a grievance-based explanation of civil conflict following Cederman et al. (2013). In particular, the model shows how religious differences between rulers and citizens can eventually, over the long sweep of history, lead to income inequalities across religious groups that foster grievances and eventually develop into conflict. In the model, a self-interested ruler may discriminate against members of a different religious group by favoring the co-religionist group in resource competition in an effort to extract more revenue due to the higher legitimacy that works through citizens' tax compliance behavior. Over the long term, this creates income inequality between religious groups which, according to grievance-based explanations, may motivate the disfavored group to rebel against the ruler.³

To be specific, consider a society in which two religious groups compete for a fixed amount of resources, R .⁴ Following the literature on conflict (Garfinkel and Skaperdas, 2007), we suppose that each group acts collectively to maximize its net return by expending resources to increase its share of R . The expenditure by each group can be thought of as literally arming for a war, or, more commonly, as efforts to gain political or economic power (rent-seeking). Either way, the outcome of the contest will be determined by a success function that for group 1 takes the following form:

$$p_1 = \frac{\theta n_1 x_1}{\theta n_1 x_1 + (1 - \theta) n_2 x_2} \quad (1)$$

³ This formulation is consistent with Mitra and Ray's (2014) arguments about the Hindu-Muslim violence in India.

⁴ We abstract from productive investments since our interest is in competition between the groups.

where n_i is the membership of group i , x_i is the total amount group i spends on competition, $i=1,2$, and θ is a parameter reflecting the initial odds that group 1 will win, all else equal (more about θ later). The corresponding success function for group 2 is $p_2=1-p_1$. The p_i 's can be thought of as the probabilities of winning the competition, or more generally, as the shares of R over which group i gains control.

We assume that the government/ruler assesses a tax t on the gross income of the two groups. Thus, the problem for group i , acting collectively,⁵ is to choose x_i to maximize its net of tax income, given by

$$Y_i = (1-t)p_i R - x_i \quad (2)$$

The resulting first-order condition is

$$\frac{\theta(1-\theta)n_i n_j x_j}{\bar{X}^2} = \frac{1}{(1-t)R} \quad (3)$$

where $\bar{X} \equiv \theta n_i x_i + (1-\theta)n_j x_j$, $i,j=1,2$, $i \neq j$. Since this is symmetric for i and j , $x_i^* = x_j^* = x^*$; that is, both sides invest in equal effort.⁶ Making use of this observation to solve for x^* yields

$$x^* = \frac{\theta(1-\theta)n_i n_j}{[\theta n_i + (1-\theta)n_j]^2} (1-t)R \quad (4)$$

⁵ We abstract from collective action problems.

⁶ It may seem surprising that both sides invest the same amount, even if one side has an advantage in numbers or if $\theta \neq 1/2$. The reason is that there are offsetting effects. As θ increases, say, the marginal productivity of the favored side increases, which induces it to invest more, but the marginal productivity of the disfavored side decreases, which works in the opposite direction. Given the form of the conflict function, these two effects exactly offset.

which is increasing in R and decreasing in t . Substituting this expression into the p_i 's yields the equilibrium win probabilities:

$$p_1^* = \frac{\theta n_1}{\bar{n}}, \quad p_2^* = \frac{(1 - \theta)n_2}{\bar{n}} \quad (5)$$

where $\bar{n} \equiv \theta n_1 + (1 - \theta)n_2$ (thus, $p_1^* + p_2^* = 1$ as required). Note that the win probabilities therefore depend only on the initial odds, θ , and the “odds-adjusted” population shares, n_i/\bar{n} . Finally, substituting (4) and (5) into (2) yields the equilibrium expected returns of the two groups:

$$Y_1(\theta) = (1 - t)R\theta^2 \left(\frac{n_1}{\bar{n}}\right)^2 \quad (6)$$

$$Y_2(\theta) = (1 - t)R(1 - \theta)^2 \left(\frac{n_2}{\bar{n}}\right)^2 \quad (7)$$

The ruler chooses the tax rate t , and also the initial odds parameter, θ . The choice of θ , which is our primary focus, can be interpreted to reflect rules or laws that may differentially restrict access to certain resources, or to certain educational, occupational, or political opportunities, based on one's religious identity.⁷ It could also reflect public goods to which groups are allowed differential access. The reason it may be in the ruler's interest to favor one group over the other is that the cost of collecting taxes may vary by religion. This is based on the idea that religion can act as a device for legitimizing a ruler and

⁷ For a similar formulation in the context of legal capacity, see Besley and Persson (2010), who argue that government can differentially protect the legal rights of some favored groups.

thereby of lowering his cost of tax collection (Cosgel and Miceli, 2009). In particular, if the ruler is of the same religion as one of the groups, and the clergy or other religious authorities declare that the ruler is divine or divinely inspired, members of that religious group will see him as being more legitimate and will therefore be less resistant to paying taxes. At the same time, members of a different religious group may see him as less legitimate and will therefore be more resistant to paying taxes. It follows that, to the extent that the ruler can shift resources to the members of his own religion (or the one closest to his), his tax collection costs will fall and his net revenues will rise. This provides the basis for possibly setting θ above or below $1/2$.

To formalize this idea, we define δ_{ik} to be percentage loss in taxes collected from members of religion i when the ruler's (government's) religion is k . Now assume the following:

$$\delta_{ik} > \delta_{ii} \text{ for any } k \neq i \tag{8.1}$$

$$\delta_{ik} - \delta_{ii} > |\delta_{ik} - \delta_{jk}| \text{ and } \delta_{jk} - \delta_{jj} > |\delta_{ik} - \delta_{jk}| \text{ for any } i, j, k \tag{8.2}$$

Condition (8.1) says that members of religion i will view the ruler as more legitimate if they share the same religion. Condition (8.2) says that for any two religions i and j , the legitimacy differential between them when neither shares the ruler's religion is smaller than the differential when one has the same religion as the ruler. In other words, two religions subject to a common ruler are closer to each other (in a legitimacy sense) than two religions when one is of the same religion as the ruler and the other is not.

The impact of these assumptions on gross tax revenue is as follows. From above, group i pays tp_i^*R in taxes, while the government only receives $t(1-\delta_{ik})p_i^*R$. A fraction δ_{ik} is therefore dissipated in collection costs, the amount of which is decreasing as the ruler is seen as more legitimate. The ruler's aggregate tax revenue is therefore given by

$$T = tR[(1-\delta_{1k})p_1^* + (1-\delta_{2k})p_2^*]$$

where k equals 1 or 2 if the ruler shares the religion of one of the groups; otherwise $k \neq 1, 2$. Substituting for p_1^* and p_2^* from above yields

$$T = \frac{tR}{\bar{n}} [(1 - \delta_{1k})\theta n_1 + (1 - \delta_{2k})(1 - \theta)n_2] \quad (9)$$

Assuming that the ruler has the ability to discriminate between religious groups, he will choose θ to maximize T subject to the following participation constraints for members of each group:

$$Y_i(\theta) \geq \bar{Y}, \quad i = 1, 2 \quad (10)$$

These constraints reflect the ruler's desire to avoid revolt or migration by the disfavored group, where from (6) and (7) it is clear that $Y_1(\theta)$ is increasing and $Y_2(\theta)$ is decreasing in θ , reflecting their conflicting interests. Taking the derivative of (9) with respect to θ and rearranging the resulting expression yields

$$\frac{\partial T}{\partial \theta} = tR \frac{n_1 n_2}{\bar{n}^2} (\delta_{2k} - \delta_{1k}) \quad (11)$$

which is positive (negative) as $\delta_{2k} > (<) \delta_{1k}$. Thus, if $\delta_{2k} > \delta_{1k}$, θ should be raised to the point where $Y_2(\theta) = \bar{Y}$, whereas if $\delta_{2k} < \delta_{1k}$, θ should be lowered to the point where $Y_1(\theta) = \bar{Y}$.

Intuitively, the ruler maximizes tax revenue by favoring the group that views it as more legitimate. Given the assumptions in (8), the ruler will therefore always favor members of his own religious group against other groups. And if the ruler does not share the religion of either of the groups, he will favor the one “closer” to his in the legitimacy sense. In the case where two groups view the ruler as equally (il)legitimate, there is no grounds for favoritism, and hence no basis for setting θ different from $1/2$.⁸

2.1. Empirical Implications

In this theory, we posit that the emergence of contemporary conflict between groups has its origins in past discrimination, which manifests itself in income differences between those groups. From above we can compute

$$\frac{Y_1(\theta)}{Y_2(\theta)} = \frac{(\theta n_1)^2}{((1 - \theta) n_2)^2} \quad (12)$$

⁸ Our focus here is on the choice of θ , but the ruler would also have to choose the tax rate t . Suppose that $\delta_{2k} > \delta_{1k}$, so θ is raised to the point where $Y_2(\theta) = \bar{Y}$. This equation defines an implicit function $\theta^*(t)$, where $\partial \theta^* / \partial t < 0$ by (7). That is, as the tax rate is raised, the optimal θ must be reduced to ensure that the disfavored group’s participation constraint continues to hold. This creates an implicit cost of raising the tax rate. The optimal rate will just balance this cost against the marginal revenue as t is raised.

which shows that income will reflect the discriminatory actions of the ruler based purely on religious differences. If such discrimination persists, these differences are likely to accumulate, creating a legacy of grievances that may eventually lead to conflict according to the grievance-based theory.⁹ The theory further predicts that differences will be greatest when the ruling regime shared the religion of one of the groups, for then the gain from discrimination would have been greatest. Conversely, it will be smallest (and possibly non-existent) when the ruler did not share the religion of either of the groups.

3. DATA AND QUANTITATIVE ANALYSIS

To analyze the model's predictions empirically, we use cross-national data on civil wars as well as on other characteristics of countries that likely influenced the occurrence of wars. For data on civil wars, we use the most recent (v.4-2015) measures available in the UCDP/PRIO Armed Conflict Dataset (Gleditsch et al., 2002; Petersson and Wallensteen, 2015). This is a conflict-year dataset that has two versions: one containing conflict-level variables and another containing dyad-level variables (which record a separate count for each actor involved in an armed conflict). In both versions, an armed conflict is defined as "a contested incompatibility that concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related deaths."¹⁰ Consistent with the literature, we focus on civil wars in the post-1960 period, because most colonies obtained their independence by 1960.

⁹ See Yildirim (2016) for a model that formally shows the conditions under which conflict will emerge in a long run dynamic setting.

¹⁰ For the operationalization of the separate elements of this definition of conflict, see <http://www.pcr.uu.se/research/ucdp/definitions/>.

Based on our focus on the persistent influence of deep-rooted grievances on all types of civil wars by all groups, we use the total number of conflicts in the period between 1960 and 2014 in each country as the dependent variable in our baseline analysis. To check for the robustness of our results to this specification, we run the same regressions with the dependent variable defined at the conflict level (rather than dyad level). In addition, we differentiate between territorial and government conflicts, and we change the dependent variable to the incidence and onset measures of civil war to consider various other variables widely used in the literature.¹¹ Table 1 shows the means and standard deviations of these measures by continent.

We operationalize the model's implications by introducing three indices of historical religious difference between the ruler and segments of the population, which will measure the deep roots of the grievances that these segments have accumulated against rulers. Although contemporary rulers may not be the same as past rulers, the pent-up grievances reflect an animosity toward government in general which therefore could be directed at current regimes.

We construct these indices in two stages. First, using the basic structure of the model, we identify the main religion and the secondary religion if sufficiently significant, in each territory and time period, and determine whether these religions were different from that of the political rulers at the time. We treat different sects in Islam and Christianity as distinct religions because of the historical and current antagonisms between their adherents. To be more formal, let R_p , R_1 , and R_2 denote the religions of the political ruler,

¹¹ In general, the literature has focused on three dimensions of civil conflict: onset, duration and incidence. See Sambanis (2004) for a discussion.

the main religious group (highest percentage share of population), and the second significant religious group (if its population share exceeded ten percent) in a society. We define four dummy variables to mark the possible ways in which the political ruler's religion could differ from, or be the same as, the main and/or secondary religious groups in each period t :

$$d_{p,1}^t = 1 \text{ if } R_p \neq R_1 \text{ and a second significant religious group existed in period } t \text{ and } R_p = R_2$$

$$d_{p,2}^t = 1 \text{ if } R_p = R_1 \text{ and a second significant religious group existed in period } t \text{ and } R_p \neq R_2$$

$$d_{p,12}^t = 1 \text{ if } R_p \neq R_1 \text{ and } R_p \neq R_2, \text{ or } R_p \neq R_1 \text{ and no other significant group existed in period } t$$

$$s^t = 1 \text{ if } R_p = R_1 \text{ and no other significant second group existed in period } t$$

In the second stage we aggregate this information over time to calculate the corresponding indices of historical difference. Consider a time span of T periods. Using $s^t=1$ as the reference category, we define the indices of historical religious difference between the ruler and the main and secondary religious groups as follows:

$$HD(p, g) = \frac{1}{\alpha} \sum_{t=1}^T (1 + \rho)^{t-T} d_{p,g}^t \quad (13)$$

where $g = \{1, 2, 12\}$; α is a normalization parameter such that $\alpha = \sum_{t=1}^T (1 + \rho)^{t-T}$; and $d_{p,g}^t$ are as defined above. We consider the effect of time through ρ , a discount rate, such

that $\rho \geq 0$. If $\rho = 0$, $HD(p, g)$ puts equal weight on all historical periods, while $\rho > 0$ emphasizes the more recent periods. The resulting indices range from 0 to 1.¹²

To implement these indices, we use a unique dataset called “Historical Polities Data,” which includes historical information on the territories occupied by today’s nation states since the year 1000. Combing through a wide variety of sources, a team of research assistants gathered information regarding the basic characteristics of these territories during this time period, including the religion of political rulers and the main and secondary significant religions of the population. To identify significant religious groups in recent centuries, we used the estimates of population shares provided by Brown and James (2015), which in some cases goes back to 1700s. For earlier periods, we used historical sources to identify the main religion and to determine whether a significant second religion existed. In cases of conflicting information about a particular variable, we looked for consistency by giving priority to sources with comprehensive coverage, such as Encyclopædia Britannica, the “Country Studies” collection of the Library of Congress, and the book series “Cambridge Histories Online.” Rather than restrict the dataset to territories of certain size, duration, or type, we included all territories for which we could find complete information.¹³

In addition to key variables of interest, we included three sets of other variables in our baseline analysis to control for their possible influence on the occurrence of civil wars. The first set consists of standard geographical variables such as precipitation, temperature,

¹² See Yildirim (2016) for the original formulation of these indices. It is also a special case of the index proposed by Bar et al (2015) corresponding to the case of emphasizing the distance/difference between religious groups by assigning equal weight to their shares.

¹³ For a detailed description of the construction of this dataset, see Coşgel et al (2015).

elevation, and the percentage of arable land. The variables in the second set consider the historical characteristics of countries, such as settlement duration and the timing of Neolithic transition.¹⁴ Appendix A reports the summary statistics of these variables. Finally, we include dummy variables to control for systematic differences across continents.

4. RELIGIOUS DIFFERENCES ACROSS CONTINENTS AND OVER TIME

For a descriptive summary of the variables constructed from the Historical Polities Data, we show in Table 1 the means and standard deviations of the four indices of historical religious difference for each continent at $T=1960$ with $\rho = 0.001$. Although the dataset includes annual information on the religious and political histories of over 190 of today's nation states, the summary statistics are based on only those 172 states that are covered by the UCDP/PRIO Armed Conflict Dataset. As seen in the Table, the average values of the indices varied significantly across continents. For instance, the average fraction of time during which the ruler historically shared the same religion with the population ranged between 0.30 in Asia and 0.82 in Oceania. The average fraction of time when the ruler's religion was the same as the secondary significant group but differed from the main religion was the lowest in the Western Hemisphere (0.05) and highest in Asia (0.12). Whereas Oceania was the exception in terms of the average fraction of time during which the ruler shared the main religion but differed from the secondary significant group (the fraction was 0.02 in Oceania but varied between 0.11-0.27 in other continents), Asia stood

¹⁴ For the definitions, construction, and original sources of geographic and historical control variables, see Ashraf and Galor (2013a) and Ashraf and Galor (2013b).

out (0.31) at the high end of the fraction of time during which the ruler's religion differed from both the main and secondary significant religious groups.

To see how religious differences between rulers and religious groups changed over time, we calculated the world averages of the indices at fifty year intervals between 1000 and 2000. As seen in Figure 1, the averages changed little between the eleventh and sixteenth centuries. During this period, rulers shared the same religion as the general population in about 70 percent of the territories corresponding to today's nations (with a slight rise over time), and the proportion was about 6 percent (with a slight decline over time) for territories in which the ruler's religion differed from the main religion but was the same as that of a significant secondary group. The proportion of territories in which the ruler's religion was the same as the general population was about 12 percent until the sixteenth century, approximately the same proportion as those cases in which the ruler shared religion with a secondary significant group.

Figure 1 shows a significant transformation in how the religion of rulers compared to the general population after the sixteenth century. In this era of overseas colonization and expanding empires, the proportion of territories in which the rulers had a different religion than the population rose significantly, and the proportion correspondingly fell for territories in which the ruler had the same religion as the whole population. There was also a gradual rise through the end of this period in the proportion of territories in which the rulers shared religion with the main religious group but not with the whole population (i.e., at least one significant minority group existed).

5. HISTORICAL RELIGIOUS DIFFERENCES AND CIVIL WAR: CROSS-COUNTRY ANALYSIS

In this section we report the result of regression analysis aimed at investigating our hypotheses regarding the determinants of civil wars. For baseline analysis, we estimated the following equation:

$$\log(1 + CW_i) = \alpha + \beta_1 HD(p, 1)_i + \beta_2 HD(p, 2)_i + \beta_3 HD(p, 12)_i + X_i' \gamma + u_i$$

where CW_i is the total number of dyad-level conflicts in country i in the period between 1960 and 2014; $HD(p, \cdot)_i$ are the indices of historical religious difference between the ruler and the main and secondary religious groups, and the general population (with $T=1960$ and $\rho = 0.001$, as defined above); and X_i' is the vector of additional variables included to control for other heterogeneity across countries. Because CW_i is a count variable, we defined the dependent variable as $\log(1 + CW_i)$ and used OLS for estimation.¹⁵ To see how the coefficients and significance of the indices change based on different combinations of control variables, we estimated several versions of the equation, as seen in Table 2. Because the observations in our cross-country setting may be correlated within regional clusters, we clustered the errors at the level of UN regions. To check the robustness of our results to alternative specifications of the baseline model and other variables, in the next section we will re-run these regressions by changing the discount rates of difference indices, using alternative measures of civil war, and including additional variables.

¹⁵ To see the sensitivity of our results to using the OLS method, we estimated the same equations by running Poisson regressions, as reported in Appendix B. OLS is a more general framework than required by a Poisson regression, which depends on the restricting assumption that the mean and the variance are equal. Comparing the signs and significance of the coefficients of key variables of interest between Table 2 and Appendix B, we see that the results are generally consistent between the two methods.

The results of the baseline analysis in Table 2 clearly support our hypotheses regarding the way historical religious differences between rulers and religious groups affected current levels of civil conflict. We see in the first equation that the three indices alone explain about fifteen percent of the variation in the number of conflicts. The coefficient of the first index, measuring the fraction of time in a country's history when the ruler's religion was the same as the secondary but differed from the main religion, and the coefficient of the second index, measuring the fraction of time when the ruler shared the main religion but differed from a significant secondary group, are both positive and significant across equations. These reflect the accumulation of grievances when the ruler's religion differed from one of the significant groups.

The magnitude of the effects of the first two indices are high. Solving for the minimum and maximum possible values of these indices in the first equation, we would expect an additional 6.8 conflicts to occur in a country that continually had rulers that had the same religion as the secondary religion but differed from the main religion, as compared to a religiously homogenous country, during the period between 1960 and 2014. The magnitude of the second index was consistently lower than the first index across equations, indicating a predicted difference of about 3.1 conflicts between a continually homogenous country and one in which the rulers subscribed to the main religion while another significant religious group existed. The larger magnitude of the index reflecting the ruler's difference from the main religious group may reflect the idea that grievances will be more likely to persist when the relative size of the disfavored group is larger because it will be more likely to leave descendants who will perpetuate the resulting grievances.

The coefficient of the third index, corresponding to the fraction of time when the ruler's religion differed from the general population, is consistently negative but significant in only two equations (2 and 5, at the 10 percent level). Although one might have expected grievances to arise when the ruler's religion differed from the general population, the mixed significance of this index is in fact consistent with the model, given that rulers have no reason to systematically favor one or the other group in a setting where neither shares his religion. As a result, little or no basis for grievance is created during those periods of time.

In columns (2)-(5) we control for several other exogenous variables that may be expected to influence civil wars simultaneously. Column (2) includes historical factors, namely the timing of the transition to agriculture and duration of human settlement in the territory. These variables control for the effects of some of the well-known historical sources of comparative development. In the third column, we include variables regarding the geographic characteristics of territories. These variables can be grouped into three categories: those capturing the characteristics of the land (percent arable, suitability for agriculture, elevation), climate (temperature, precipitation), and location (migratory distance to East Africa and dummies for island and landlocked status). As seen in Table 2, the results are mostly consistent across equations (2) – (5) as we include historical and geographic variables separately, jointly, and in combination with continental variables. In particular, the effects on civil wars are consistently positive and significant for the percentage of arable land, mean elevation, and temperature; and negative and significant for landlocked status. With varying levels of significance, the coefficients are consistently

positive for precipitation and Neolithic transition timing, and negative for land suitability for agriculture, migratory distance from East Africa, and island status.

In addition to controlling for exogenous historical and geographic factors, some of these variables indirectly allow us to control for the effects of ethnic and linguistic diversity. We did not include measures of observed diversity in our analyses because of the potential for endogeneity between these variables and civil conflict. Recognizing the endogeneity, Arbatli, Ashraf, and Galor (2015) have recently examined the relationship between genetic diversity and civil conflict by investigating the deep historical roots of contemporary genetic diversity and using the migratory distance from East Africa for identification, a measure developed by Ashraf and Galor (2013a). By including this distance and various other geographic and historical variables recently used in the analyses of ethno-linguistic fractionalization, we mitigate an omitted variable bias regarding ethnic and linguistic diversity.¹⁶

6. ROBUSTNESS CHECKS

To see how our results change when we modify the specifications of the baseline analysis, we conduct a series of robustness checks by recalculating the indices of historical religious difference under different values of the parameter ρ , using alternative measures of civil wars as the dependent variable, and including additional controls on income and institutional variables such as infrastructure and executive constraints.

¹⁶ For the effects of geographic and historical factors on observed diversity, see Ahlerup and Olsson (2012), Collard and Foley (2002), Michalopoulos (2012). Empirical studies also establish that geographical factors that are related to temperature, disease environment and suitability for transportation matter for economic development. (Easterly and Levine, 2003; Olsson and Hibbs, 2005; Sachs and Warner, 2001).

a. Robustness to different weight parameters of the measures of historical religious difference

Consider first the sensitivity of our results to the value of the historical discount rate (ρ). We estimated the baseline model by specifying ρ to equal 0.001. If we raise this rate, we would be raising the effect of history relative to recent years, as indicated by the formula for the indices of historical religious difference. Table 4 shows how the magnitudes and significance of the estimated coefficients of these indices change with higher rates of discount, which we raised gradually from 0 to 0.005. To see the transformation with and without the effects of control variables, we report the estimates of equations with just the indices and with the full set of controls.

The results clearly show that the magnitude and significance of the effect of religious differences fall as we discount history at higher rates. As seen in Table 4, the absolute values of the indices in the first equation are the highest without any discounting ($\rho=0$), and they fall as the discount rate rises. The significance of coefficients fall with the rising discount rate. The coefficient of the difference index from the main group becomes insignificant when the discount rate becomes 0.005 and the significance of the difference from the general population disappears when the rate is 0.003.

A similar transformation can be seen when we compare the results of changing the discount rate in equations that include the full set of control variables. In these equations, the index of religious difference from the general population is not significant at conventional levels at any rate of discount. This comparison clearly shows the greater

importance of historical periods relative to proximate years in the way religious differences affected civil wars since 1960.

b. Robustness to alternative measures of civil war

Consider next the question of whether our conclusions are robust to using other measures of civil war as the dependent variable. In our baseline analysis, we defined the dependent variable as the total number of conflicts in the period between 1960 and 2014. To see the sensitivity of our results to this specification, we now consider four other measures of civil wars that are widely used in the literature. As seen in Tables 5 and 6, starting with the baseline specification of the first column, we change the dependent variable to the total number of conflict-dyads (rather than conflicts) in column (2). We next differentiate between the territorial and governmental subcategories of civil wars by considering them separately in columns (3) and (4). In the remaining four columns, we switch from measures that count the number of conflicts or conflict-dyads to those based on the numbers of years with conflicts. In column (5), we consider the incidence of civil wars by changing the dependent variable to the number of years with an active conflict. Finally, in columns (6) - (8) we consider the onset of civil wars by using measures that include only the number of years with a new conflict or new episodes of old conflicts at intervals of 2 and 5 years since the last conflict. Because each of these is a count variable, we transform them to $\log(1+\text{variable})$ form for OLS estimation. Table 5 shows the results for equations without any controls, and Table 6 for those with geographic, historical, and continental controls.

Our results are robust to some of the other measures of civil wars but not to all measures, as one would expect. They are clearly robust to changing the dependent variable from the total number of conflicts to the number of conflict-dyads and to measures of incidence and onset. The signs and significance of the coefficients of indices are consistent across equations (1)-(2) and (5)-(8). The results are mixed, however, when we consider territorial and governmental conflicts as dependent variables separately, as seen in equations (3) and (4). Whereas religious differences between the ruler and the main and secondary groups (the first two indices) continue to have a positive and significant effects on governmental conflicts, consistent with baseline results, their effect on territorial conflicts is not as uniformly significant. A similar inconsistency can be seen in the results regarding the coefficient of religious differences between the ruler and general population (third index), which is negative and significant in some cases but not uniformly so for both types of conflicts in Tables 5 and 6.

That the baseline results are more consistent with those in equation (4) than in equation (3) does not necessarily contradict our broad argument about the effect of religious differences on civil wars. Although the model did not distinguish between types of conflicts, one could argue that the favoritism and grievances emanating from religious differences apply more to government policies than territorial conflicts.

b. Robustness to including controls on income and institutional variables

We refrained from including income and institutional variables in the baseline analysis because of endogeneity concerns between them and civil wars. Another reason is the availability of reliable data on these variables for all countries included in our analysis.

The question remains, however, whether our results regarding historical religious differences will hold when we control for the effects of income and institutional factors. We address this question by including four additional variables in regression analysis, namely social infrastructure, democracy, executive constraints, and per capita income in the year 2000.¹⁷

As seen in Table 6, the number of observations drop substantially when we include these variables in regression analysis. Nonetheless, our results remain consistent. Interestingly, despite previous research regarding the important effects of income, democracy, and other social and institutional variables on civil wars (Blattman and Miguel, 2010), none of the coefficients of these variables are significant in our analysis. Therefore, their inclusion in equations (2) – (4) does not alter any of our broad results regarding the signs and significance of historical religious differences on civil wars.

7. DISTANCE TO RELIGIOUS CAPITALS: AN INSTRUMENTAL VARIABLE ANALYSIS

In the OLS regressions, we used indices of religious difference as key explanatory variables for civil wars. These indices, however, may suffer from an endogeneity problem if there are factors, such as past episodes of regional conflict and population movements, which have caused countries to experience historical religious differences as well as current civil wars. In that case, historical religious differences could partly reflect mechanisms such as mass conversions and migrations caused by historical events and processes that are also determinants of current civil conflicts. The results of OLS regressions

¹⁷ For the sources of these variables, see Ashraf and Galor (2013a, 2013b).

reported in Table 2, therefore, may underestimate the influence of religious differences on civil conflicts if the effect of these omitted events and processes on religious differences is negatively correlated with their effect on current civil wars.

We thus need to mitigate the omitted variable bias by employing a suitable instrument for historical religious differences. Although we were able to address some of the other endogeneity concerns (e.g., regarding genetic diversity) by including exogenous geographic variables (e.g., migratory distance to East Africa), we do not have reliable and comprehensive data on historical events and processes for inclusion in our analysis. For a suitable instrument, adopting a commonly used strategy (e.g., distance to nearest school as IV for education), we propose to exploit differences in the geographic distance of each country to the prominent religious “capitals” of the world. More specifically, we use the aerial distance to the centers or birthplaces of religions that have been prominent (main, second, or ruler’s religion) in any of the territories in our sample since the year 1000, the beginning of our period.¹⁸

Since we cannot use the same instrument for all indices of religious difference, we need to modify the baseline model by collapsing the four indices into two categories and include one of them in the regression analysis (the other being the reference category). We collapse the first two indices into a single category because they commonly mark historical episodes of rulers’ asymmetric relationship with the main and the secondary religious groups. In both indices, there is a group that shares religion with the ruler and another

¹⁸ These capitals are Amritsar, India (Sikhism), Bodh Gaya, India (Buddhism), Eisleben, Germany (Protestantism), Fenghao, China (Taoism); Mathura, India (Hinduism); Istanbul, Turkey (Orthodox Christianity), Jerusalem, Israel (Judaism, Christianity), Karbala, Iraq (Shia Islam); Mecca, Saudi Arabia (Islam); Muscat, Oman (Khawarij Islam); Qufu, China (Confucianism); Palitana, India (Jainism); Ulaanbaatar, Mongolia (Tengriism); and Vatican City (Catholicism).

group that does not, in contrast to the third and fourth indices that mark episodes of uniform similarity or uniform difference between the ruler and the general population. The collapsed indices will thus allow us to focus on situations of asymmetric sharing of religion between groups and the ruler, the setting that forms the principal basis for favoritism and grievances in our model. Although this transformation causes us to lose some information regarding the differential accumulation of grievances implied by two distinct indices, we gain an index that we can instrument. The summary statistics for the resulting index, basically the sum of first two indices, are reported in Appendix A.

Given that the new index, measuring historical differences between the rulers and the main or second religions, involves two religions, we need to control for both religions for an appropriate instrument for this index. For this purpose, we propose to use an instrumental variable that captures the relative proximity of the two closest religious capitals. More specifically, our instrument is the log of the ratio of the distance to the nearest capital over the distance to the second closest capital. In addition, since systematic topographic differences between continents may alter the effect of distance on religious differences, we use continent dummies as fixed effects and to generate interaction terms with the ratio of distances to the two closest religious capitals.

To meet the exclusion restriction, the proposed instruments must have no direct effect on civil wars other than through the channel of historical religious differences. We are not aware of any scholarly research arguing that religions were systematically born in locations that were already more (or less) prone to conflict or that a direct relationship somehow existed between a country's geographic distance to religious capitals and its vulnerability to civil wars. Although it is difficult to demonstrate the lack of a direct

relationship between geographic distance to religious capitals and civil wars, we believe that the exclusion restriction is satisfied.

The results of first stage analyses, reported in Table 7, show a strong relationship between the instrumental variables and historical religious differences. More specifically, instrumental variables alone explain about 19 percent of the religious variation between the rulers and the main and secondary religious groups (equation 1). Similarly, in the full model (equation 4), conditional on other controls, instrumental variables partially explain about 18 percent of the religious variation. The F-statistics range between 14.2 and 302, highly significant.

Table 8 shows the results of instrumental variable analyses for the basic model that includes only the index variable and for models that also include geographic and historical variables. Comparing the OLS and 2SLS results, we see little change in the overall explanatory power of the two equations, and the signs and significance of the coefficients of the index and control variables remain about the same. The magnitude of the effect of the index under the 2SLS method, however, is substantially higher in all models, over 60 percent, indicating that the original OLS regressions analyses underestimated the influence of religious differences on civil conflicts. Regarding marginal effects, solving for the minimum and maximum possible values of the index with 2SLS coefficients in all equations, we calculate estimates ranging between 9.5 and 14 as the expected number of additional conflicts to occur in a territory that continually experienced historical differences between the rulers and the main or second religions during our period as compared to ones that had rulers who either had the same religion as the general population or had no religious affiliation with any of the significant segments of the society.

The direction of the omitted variable bias indicates that it originates from factors whose effect on religious differences is negatively correlated with their effect on current civil wars. Although we do not have direct evidence regarding the bias, we surmise that it came from variables, such as past regional conflicts, that raised the likelihood of civil wars but reduced religious differences, or from other variables, such as the establishment of trade routes, that lowered conflicts but increased religious diversity. The mechanisms causing these variables to affect religious differences were probably conversion and migration. Past conflicts, for example, likely reduced religious differences in a territory as winners of these conflicts forced populations to convert or emigrate. Conversely, the establishment of trade routes, while enhancing cooperation and reducing conflicts, raised religious differences in a territory by exposing inhabitants to new religions and fostering conversion and migration, as was the case for the expansion of Islam in Asia (Michalopoulos, Naghavi, and Prarolo, 2015). In both scenarios, the effects of omitted variables on civil wars and on religious differences worked in opposite directions, combining for a significant negative bias on the coefficients estimated by the OLS method. By using an instrumental variable method, we are able to obtain unbiased and consistent parameter estimates of the true effect of historical religious differences on civil wars.

8. CONCLUSION

This paper studied the theoretical and empirical link between civil conflict and historical religious differences between rulers and segments of the population. We developed a political economy model in which the ruler's enactment of laws or allocation of public expenditures can potentially cause grievances to emerge in a religiously segmented society.

According to the model, differential treatment is most likely if the religion of the ruler is different from that of one group but the same as another, a situation that can cause him to favor the coreligionist group over other(s) in public policy. The persistence of this situation over time can cause the disfavored groups to accumulate grievances against the government and eventually resort to violence to seek redress or vengeance.

We tested the implications of the model by using cross-country data on civil conflict as well as data on geographical and historical characteristics of countries. In addition, we used a new dataset that contains information on the religious and political histories of each country since the year 1000. We specifically used this data to construct indices of historical religious differences between the ruler and segments of population, which then measured the deep roots of accumulated grievances. Empirical results showed that the frequency of civil wars in the post-1960 period has been significantly higher in societies that have historically had greater incidence of situations in which the religion of the ruler was the same as one of the groups but different from others, as compared to situations of religious homogeneity.

To address endogeneity concerns regarding omitted factors that may have caused historical religious differences as well as current civil wars, we exploited differences among societies in their geographic distance to religious capitals of the world. Focusing on historical differences between the rulers and the main or second religions, we instrumented for these differences by using a country's distance to the two closest religious capitals. The first stage regressions showed that the distance measures had a strong effect on historical religious differences. Using these instruments in regression analysis, we identified the effect of these differences on civil wars. The results indicated that the

presence of historical religious differences between rulers and segments of population in a society had a substantial direct and significant impact on current civil wars.

APPENDIX A
Summary Statistics

Variable	Mean	Std. Dev.	Min	Max
Total number of conflicts	10.42	24.88	0	213
Historical difference between ruler and main religion	0.09	0.16	0	0.71
Historical difference between ruler and second religion	0.18	0.26	0	1
Historical religious difference between ruler and general population	0.20	0.24	0	1
Historical religious homogeneity between ruler and general population	0.54	0.35	0	1
Percentage of arable land	15.20	13.88	0.04	62.1
Land suitability for agriculture	0.37	0.25	0	0.96
Total land area	759623.50	1950291.00	300	16400000.00
Absolute latitude	26.27	17.09	1	65
Mean elevation	0.53	0.48	0.00	2.67
Temperature	18.38	8.37	-7.93	28.64
Precipitation	90.85	63.29	2.91	284.00
Migratory distance from East Africa	8.53	6.97	0	26.77
Dummy for landlocked countries	0.23	0.42	0	1
Island nation dummy	0.05	0.22	0	1
Duration under foreign ruler	0.45	0.32	0	1
Neolithic transition timing (ancestry adjusted)	5426.73	2099.69	1356.99	10400
Settlement duration	6.24	4.88	0.12	16
Social infrastructure	0.47	0.25	0.11	1
Democracy	3.72	3.65	0	10
Executive constraints	3.87	2.00	1	7
Historical difference between ruler and main or second religion	0.26	0.30	0	1
Aerial distance to the closest religious capital	406.38	619.24	0	2742.88
Aerial distance to the second closest religious capital	2249.37	1866.94	252.16	7394.03

APPENDIX B
Poisson method of estimation

	(1)	(2)	(3)	(4)	(5)
Historical difference between ruler and main religion	2.437*** (0.890)	1.983*** (0.742)	2.309*** (0.367)	2.255*** (0.418)	2.402*** (0.350)
Historical difference between ruler and second religion	1.452*** (0.378)	0.993*** (0.366)	1.270*** (0.351)	1.051** (0.474)	1.092** (0.463)
Historical religious difference between ruler and general population	-0.956* (0.558)	-1.126** (0.524)	-1.008** (0.490)	-1.149** (0.515)	-1.132* (0.606)
Percentage of arable land			0.0281*** (0.00444)	0.0210*** (0.00592)	0.0239*** (0.00610)
Land suitability for agriculture			-0.618 (0.666)	-0.370 (0.626)	-0.820 (0.713)
Mean elevation			1.174*** (0.246)	1.199*** (0.279)	0.844*** (0.282)
Temperature			0.0942*** (0.0284)	0.110*** (0.0362)	0.0767* (0.0439)
Precipitation			0.00240 (0.00249)	0.00344 (0.00209)	0.00492* (0.00266)
Migratory distance from East Africa			-0.0295* (0.0160)	-0.0540* (0.0296)	-0.160** (0.0649)
Dummy for landlocked countries			-1.048*** (0.401)	-0.928** (0.376)	-0.794** (0.378)
Island nation dummy			0.653 (0.452)	0.571 (0.451)	0.937* (0.548)
Log [Neolithic transition timing (ancestry adjusted)]		0.675 (0.489)		0.361 (0.398)	-0.128 (0.330)
Settlement duration		0.0855* (0.0511)		-0.0162 (0.0584)	0.0372 (0.0787)
Africa					-0.404 (0.953)
Asia					0.801* (0.416)
Western Hemisphere					2.565** (1.132)
Oceania					0.225 (1.088)
Constant	1.855*** (0.334)	-4.124 (4.435)	-0.725 (0.695)	-3.827 (3.536)	1.034 (3.102)
Observations	172	143	140	140	140
Pseudo R-squared	0.151	0.168	0.440	0.448	0.474

Notes: The dependent variable is the total number of conflicts between 1960 and 2014. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

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TABLE 1
Civil wars and religious differences by continent
(Mean and standard deviation)

	Africa	Asia	Europe	Oceania	W. Hemisphere
Total number of conflicts	11.20 (18.97)	20.13 (39.83)	2.08 (5.50)	1.20 (2.68)	5.79 (11.61)
Total number of conflict-dyads	14.45 (24.58)	26.15 (49.29)	2.28 (5.79)	1.20 (2.68)	8.17 (19.39)
Total number of territorial conflicts	3.82 (14.21)	13.02 (33.19)	1.92 (5.41)	1.20 (2.68)	0.00 (0.00)
Total number of government conflicts	7.37 (10.30)	7.10 (11.18)	0.15 (0.43)	0.00 (0.00)	5.79 (11.61)
Total number of years with incidence of intrastate conflict	9.49 (12.64)	12.69 (16.49)	1.77 (5.05)	1.20 (2.68)	5.79 (11.61)
Total number of years that contain a new conflict	1.22 (1.14)	1.00 (1.58)	0.44 (0.94)	0.20 (0.45)	0.48 (0.51)
Total number of years with a new conflict or more than two years since the last observation of the conflict	2.08 (2.12)	2.56 (4.12)	0.51 (1.05)	0.20 (0.45)	0.93 (0.88)
Total number of years with a new conflict or more than five years since the last observation of the conflict	1.61 (1.71)	1.77 (2.64)	0.46 (0.97)	0.20 (0.45)	0.86 (0.88)
Historical difference between ruler and main religion	0.08 (0.17)	0.12 (0.19)	0.09 (0.16)	0.07 (0.07)	0.05 (0.10)
Historical difference between ruler and second religion	0.15 (0.30)	0.27 (0.30)	0.16 (0.21)	0.02 (0.04)	0.11 (0.17)
Historical religious difference between ruler and general population	0.20 (0.23)	0.31 (0.27)	0.18 (0.22)	0.09 (0.05)	0.05 (0.12)
Historical religious homogeneity between ruler and general population	0.56 (0.37)	0.30 (0.31)	0.57 (0.30)	0.82 (0.07)	0.79 (0.20)

TABLE 2
The effect of religious differences on Civil Wars

Baseline regressions

	(1)	(2)	(3)	(4)	(5)
Historical difference between ruler and main religion	2.059** (0.898)	1.850* (0.887)	2.114*** (0.721)	2.070** (0.735)	1.989** (0.710)
Historical difference between ruler and second religion	1.415*** (0.433)	1.106** (0.497)	1.182** (0.437)	1.091** (0.509)	1.049** (0.449)
Historical religious difference between ruler and general population	-0.642 (0.373)	-0.790* (0.418)	-0.396 (0.358)	-0.455 (0.362)	-0.683* (0.368)
Percentage of arable land			0.0250*** (0.00636)	0.0243*** (0.00676)	0.0271*** (0.00694)
Land suitability for agriculture			-0.975* (0.561)	-1.009* (0.544)	-0.884 (0.552)
Mean elevation			0.866*** (0.191)	0.827*** (0.206)	0.472** (0.164)
Temperature			0.0717*** (0.0193)	0.0692** (0.0243)	0.0400 (0.0301)
Precipitation			0.00256 (0.00254)	0.00302 (0.00257)	0.00404 (0.00267)
Migratory distance from East Africa			-0.0138 (0.0105)	-0.0124 (0.0222)	-0.0751 (0.0567)
Dummy for landlocked countries			-0.650*** (0.213)	-0.608** (0.225)	-0.587** (0.236)
Island nation dummy			-0.183 (0.517)	-0.106 (0.592)	-0.153 (0.628)
Log [Neolithic transition timing (ancestry adjusted)]		0.477 (0.390)		0.264 (0.351)	0.104 (0.288)
Settlement duration		0.103*** (0.0309)		0.0192 (0.0484)	0.0169 (0.0521)
Africa					0.620 (0.707)
Asia					1.030*** (0.258)
Western Hemisphere					1.698* (0.938)
Oceania					0.854 (1.001)
Constant	0.978*** (0.196)	-3.460 (3.426)	-0.619 (0.453)	-2.929 (3.012)	-1.203 (2.661)
Observations	172	143	140	140	140
R-squared	0.145	0.194	0.363	0.366	0.397

Notes: The dependent variable is log (1+total number of conflicts between 1960 and 2014). Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

TABLE 3
Robustness to discount rate

	(1)	(baseline)	(3)	(4)	(5)	(6)	(7)	(8)
Discount Rate	$\rho=0$	$\rho=0.001$	$\rho=0.003$	$\rho=0.005$	$\rho=0$	$\rho=0.001$	$\rho=0.003$	$\rho=0.005$
Historical difference between ruler and main religion	2.307** (0.915)	2.059** (0.898)	1.505* (0.812)	1.127 (0.741)	2.110*** (0.698)	1.989** (0.710)	1.634** (0.696)	1.357* (0.682)
Historical difference between ruler and second religion	1.520*** (0.491)	1.415*** (0.433)	1.189*** (0.343)	1.032*** (0.313)	1.058** (0.491)	1.049** (0.449)	1.034** (0.379)	1.045*** (0.359)
Historical religious difference between ruler and general population	-0.680* (0.384)	-0.642 (0.373)	-0.473 (0.372)	-0.304 (0.375)	-0.632 (0.425)	-0.683* (0.368)	-0.643* (0.341)	-0.583 (0.361)
Percentage of arable land					0.0266*** (0.00691)	0.0271*** (0.00694)	0.0282*** (0.00726)	0.0290*** (0.00774)
Land suitability for agriculture					-0.877 (0.567)	-0.884 (0.552)	-0.949* (0.536)	-1.022* (0.534)
Mean elevation					0.494** (0.174)	0.472** (0.164)	0.455*** (0.150)	0.454*** (0.145)
Temperature					0.0376 (0.0302)	0.0400 (0.0301)	0.0451 (0.0298)	0.0493 (0.0296)
Precipitation					0.00422 (0.00267)	0.00404 (0.00267)	0.00374 (0.00269)	0.00356 (0.00273)
Migratory distance from East Africa					-0.0834 (0.0565)	-0.0751 (0.0567)	-0.0607 (0.0567)	-0.0518 (0.0561)
Dummy for landlocked countries					-0.570** (0.225)	-0.587** (0.236)	-0.597** (0.250)	-0.587** (0.255)
Island nation dummy					-0.155 (0.594)	-0.153 (0.628)	-0.158 (0.659)	-0.174 (0.663)
Log [Neolithic transition timing (ancestry adjusted)]					0.158 (0.294)	0.104 (0.288)	0.0324 (0.290)	0.00299 (0.301)
Settlement duration					0.0181 (0.0493)	0.0169 (0.0521)	0.0171 (0.0552)	0.0192 (0.0561)
Africa					0.619 (0.700)	0.620 (0.707)	0.607 (0.722)	0.588 (0.734)
Asia					0.998*** (0.267)	1.030*** (0.258)	1.071*** (0.263)	1.092*** (0.279)
Western Hemisphere					1.863* (0.936)	1.698* (0.938)	1.429 (0.944)	1.273 (0.943)
Oceania					0.984 (0.952)	0.854 (1.001)	0.649 (1.070)	0.542 (1.089)
Constant	0.967*** (0.193)	0.978*** (0.196)	1.010*** (0.198)	1.026*** (0.200)	-1.612 (2.695)	-1.203 (2.661)	-0.700 (2.718)	-0.539 (2.842)
Observations	172	172	172	172	140	140	140	140
R-squared	0.163	0.145	0.104	0.074	0.395	0.397	0.394	0.390

Notes: The dependent variable is log (1+total number of conflicts between 1960 and 2014). Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

TABLE 4
Robustness to measures of conflict (without control variables)

	(baseline)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
							Years with new conflict or more than two year onset	Years with new conflict or more than five year onset
DEPENDENT VARIABLE	Number of conflicts	Number of conflict-dyads	Number of territorial conflicts	Number of government conflicts	Years with incidence of conflict	Years with a new conflict		
Historical difference between ruler and main religion	2.059** (0.898)	2.245** (0.967)	1.866** (0.739)	1.447 (0.841)	1.834** (0.812)	0.735** (0.310)	1.217** (0.431)	0.940** (0.362)
Historical difference between ruler and second religion	1.415*** (0.433)	1.486*** (0.459)	1.019** (0.393)	0.918*** (0.310)	1.303*** (0.421)	0.411*** (0.109)	0.560*** (0.171)	0.564*** (0.148)
Historical religious difference between ruler and general population	-0.642 (0.373)	-0.710* (0.394)	0.000324 (0.318)	-0.686** (0.326)	-0.658* (0.366)	-0.183 (0.135)	-0.333* (0.177)	-0.286 (0.169)
Constant	0.978*** (0.196)	1.041*** (0.214)	0.223* (0.122)	0.815*** (0.218)	0.971*** (0.195)	0.362*** (0.0627)	0.531*** (0.0899)	0.463*** (0.0859)
Observations	172	172	172	172	172	172	172	172
R-squared	0.145	0.145	0.113	0.108	0.138	0.119	0.144	0.143

Notes: The dependent variable is stated in the first row, calculated for the period between 1960 and 2014 and included as log (1+variable) in regression analysis. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE 5
Robustness to measures of conflict (with full set of control variables)

	(baseline)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Number of conflict-dyads	Number of territorial conflicts	Number of government conflicts	Years with incidence of conflict	Years with a new conflict	Years with new conflict or more than two year onset	Years with new conflict or more than five year onset
DEPENDENT VARIABLE	Number of conflicts							
Historical difference between ruler and main religion	1.989** (0.710)	2.194** (0.787)	1.758*** (0.569)	1.506* (0.784)	1.730** (0.688)	0.647*** (0.192)	1.149*** (0.370)	0.837*** (0.255)
Historical difference between ruler and second religion	1.049** (0.449)	1.085** (0.476)	0.668 (0.491)	0.696* (0.338)	0.943** (0.395)	0.341* (0.165)	0.335 (0.208)	0.425** (0.194)
Historical religious difference between ruler and general population	-0.683* (0.368)	-0.735* (0.378)	-0.606*** (0.165)	-0.439 (0.385)	-0.698* (0.363)	-0.102 (0.0962)	-0.293 (0.190)	-0.182 (0.151)
Percentage of arable land	0.0271*** (0.00694)	0.0267*** (0.00728)	0.0201** (0.00798)	0.0202*** (0.00621)	0.0236*** (0.00732)	0.0111*** (0.00329)	0.0113*** (0.00284)	0.0117*** (0.00254)
Land suitability for agriculture	-0.884 (0.552)	-0.957 (0.586)	-0.299 (0.555)	-1.079** (0.376)	-0.836 (0.553)	-0.354 (0.224)	-0.438 (0.350)	-0.315 (0.304)
Mean elevation	0.472** (0.164)	0.535*** (0.168)	0.0571 (0.179)	0.530*** (0.110)	0.414** (0.158)	0.101 (0.0644)	0.125* (0.0701)	0.155** (0.0673)
Temperature	0.0400 (0.0301)	0.0445 (0.0313)	0.0112 (0.0306)	0.0403** (0.0179)	0.0385 (0.0285)	0.00336 (0.0111)	0.0140 (0.0167)	0.00823 (0.0139)
Precipitation	0.00404 (0.00267)	0.00455 (0.00293)	0.000711 (0.00256)	0.00377 (0.00293)	0.00400 (0.00255)	0.00128 (0.000760)	0.00147 (0.00161)	0.00149 (0.00130)
Migratory distance from East Africa	-0.0751 (0.0567)	-0.0839 (0.0604)	-0.00813 (0.0479)	-0.0798 (0.0463)	-0.0699 (0.0514)	-0.0112 (0.0137)	-0.0253 (0.0314)	-0.00333 (0.0257)
Dummy for landlocked countries	-0.587** (0.236)	-0.585** (0.243)	-0.764*** (0.239)	-0.163 (0.178)	-0.503** (0.213)	-0.236*** (0.0791)	-0.212 (0.125)	-0.241** (0.0978)
Island nation dummy	-0.153 (0.628)	-0.151 (0.656)	0.173 (0.691)	0.232 (0.411)	-0.246 (0.592)	-0.0707 (0.217)	0.0207 (0.253)	-0.143 (0.280)
Log [Neolithic transition timing (ancestry adjusted)]	0.104 (0.288)	0.216 (0.317)	-0.104 (0.242)	0.181 (0.327)	0.102 (0.286)	0.192* (0.0951)	0.325** (0.138)	0.335*** (0.112)
Settlement duration	0.0169 (0.0521)	0.0119 (0.0549)	0.0641 (0.0433)	0.00244 (0.0384)	0.0104 (0.0480)	0.0181 (0.0134)	0.0287 (0.0212)	0.0166 (0.0163)
Africa	0.620 (0.707)	0.730 (0.729)	-0.390 (0.753)	0.727* (0.396)	0.687 (0.686)	0.468** (0.184)	0.466 (0.384)	0.641** (0.268)
Asia	1.030*** (0.258)	1.041*** (0.260)	0.702* (0.359)	0.653*** (0.204)	1.025*** (0.250)	0.227* (0.119)	0.413** (0.182)	0.354** (0.161)
Western Hemisphere	1.698* (0.938)	1.807* (0.984)	-0.114 (0.768)	2.076** (0.746)	1.616* (0.868)	0.396* (0.210)	0.762 (0.474)	0.422 (0.385)
Oceania	0.854 (1.001)	0.862 (1.024)	0.207 (1.156)	0.336 (0.691)	0.861 (0.919)	0.234 (0.289)	0.171 (0.478)	0.159 (0.414)
Constant	-1.203 (2.661)	-2.159 (2.878)	0.657 (2.372)	-1.962 (2.829)	-1.118 (2.597)	-1.732* (0.922)	-2.891** (1.328)	-3.127*** (1.071)
Observations	140	140	140	140	140	140	140	140
R-squared	0.397	0.392	0.320	0.410	0.387	0.368	0.401	0.396

Notes: The dependent variable is stated in the first row, calculated for the period between 1960 and 2014 and included as log (1+variable) in regression analysis. Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE 6
Robustness to additional controls: income and institutions

	(1)	(2)	(3)	(4)
Historical difference between ruler and main religion	2.059** (0.898)	2.058*** (0.698)	1.763* (0.951)	1.561 (0.960)
Historical difference between ruler and second religion	1.415*** (0.433)	1.249** (0.559)	1.274** (0.563)	1.019* (0.553)
Historical religious difference between ruler and general population	-0.642 (0.373)	-0.347 (0.376)	-0.144 (0.480)	-0.477 (0.584)
Percentage of arable land			0.0244* (0.0125)	0.0226 (0.0132)
Land suitability for agriculture			-1.355** (0.618)	-1.203* (0.617)
Mean elevation			1.233*** (0.294)	0.814** (0.310)
Temperature			0.0835** (0.0297)	0.0620** (0.0292)
Precipitation			0.00297 (0.00328)	0.00265 (0.00295)
Migratory distance from East Africa			-0.0271 (0.0304)	-0.0620 (0.0646)
Dummy for landlocked countries			-0.602* (0.307)	-0.448 (0.316)
Island nation dummy			-0.207 (0.680)	-0.240 (0.600)
Log [Neolithic transition timing (ancestry adjusted)]			0.240 (0.384)	0.0320 (0.439)
Settlement duration			-0.0279 (0.0551)	-0.0131 (0.0695)
Social infrastructure		-1.754 (1.096)	-1.631 (1.358)	-1.649 (1.216)
Democracy		0.0363 (0.149)	0.0672 (0.167)	0.0616 (0.154)
Executive constraints		-0.0332 (0.253)	0.0356 (0.259)	0.0844 (0.254)
Log [income per capita in 2000 CE]		-0.203 (0.164)	-0.0116 (0.212)	-0.0381 (0.199)
Africa				0.268 (0.865)
Asia				1.051** (0.426)
Western Hemisphere				1.105 (1.366)
Oceania				0.168 (1.068)
Constant	0.978*** (0.196)	3.632** (1.476)	-2.256 (4.251)	-0.0355 (4.622)
Observations	172	115	106	106
R-squared	0.145	0.306	0.450	0.478

Notes: The dependent variable is log (1+total number of conflicts between 1960 and 2014). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

TABLE 7
Instrumental variable analysis: First stage results

	(1)	(2)	(3)	(4)	Notes:
Ratio of distances to the two closest religious capitals (log first over second)	0.0189* (0.00951)	0.0155 (0.0122)	0.0189* (0.0106)	0.0116 (0.0149)	The
Ratio of distances to the two closest religious capitals (log first over second) * Africa	0.0338* (0.0178)	0.0427* (0.0219)	0.0412** (0.0185)	0.0511** (0.0222)	
Ratio of distances to the two closest religious capitals (log first over second) * Asia	-0.0219 (0.0163)	-0.0251 (0.0176)	-0.0291** (0.0128)	-0.0195 (0.0181)	
Ratio of distances to the two closest religious capitals (log first over second) * Oceania	-0.214** (0.0844)	-0.267 (0.338)	-0.505*** (0.106)	-0.147 (0.324)	
Ratio of distances to the two closest religious capitals (log first over second) * W. Hemisphere	0.265*** (0.0785)	0.459 (0.429)	0.200 (0.148)	0.334 (0.413)	
Africa	0.241** (0.108)	0.202 (0.146)	0.0954 (0.0893)	0.126 (0.127)	
Asia	0.0986*** (0.0283)	0.0247 (0.133)	0.0717 (0.0418)	0.00973 (0.134)	
W. Hemisphere	2.328*** (0.679)	3.678 (3.452)	1.759 (1.291)	2.632 (3.245)	
Oceania	-1.853** (0.688)	-2.609 (2.863)	-4.361*** (0.942)	-1.669 (2.770)	
Percentage of arable land		0.000678 (0.00243)		0.00120 (0.00222)	
Land suitability for agriculture		-0.0825 (0.111)		-0.138 (0.108)	
Mean elevation		0.0731 (0.0858)		0.0555 (0.0993)	
Temperature		0.00344 (0.00668)		6.08e-05 (0.00734)	
Precipitation		0.000645 (0.000489)		0.000709 (0.000551)	
Migratory distance from East Africa		0.0118 (0.0167)		0.0122 (0.0152)	
Dummy for landlocked countries		0.0307 (0.0804)		0.0281 (0.0725)	
Island nation dummy		0.0999 (0.113)		0.199 (0.158)	
Log [Neolithic transition timing (ancestry adjusted)]			-0.0363 (0.0948)	0.0368 (0.113)	
Settlement duration			0.0160 (0.0112)	0.0198 (0.0128)	
Constant	0.279*** (0.0139)	0.141 (0.161)	0.568 (0.846)	-0.200 (1.015)	
Observations	172	140	143	140	
F	302	14.2	35.8	21.8	
R-squared	0.192	0.264	0.236	0.279	

dependent variable is "Historical differences between the rulers and the main or second religions". Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

TABLE 8
The effect of religious differences on civil wars

Instrumental Variable Analysis

VARIABLES	(1)	(1)	(2)	(2)	(3)	(3)	(4)	(4)
	OLS	2SLS	OLS	2SLS	OLS	2SLS	OLS	2SLS
Historical difference between ruler and main or second religion	1.683*** (0.376)	2.717*** (0.940)	1.451*** (0.378)	2.349*** (0.603)	1.405*** (0.421)	2.455* (1.326)	1.400*** (0.439)	2.615** (1.035)
Percentage of arable land			0.0259*** (0.00736)	0.0248*** (0.00661)			0.0257*** (0.00748)	0.0258*** (0.00703)
Land suitability for agriculture			-1.038* (0.585)	-0.897 (0.581)			-1.072* (0.573)	-0.863 (0.599)
Mean elevation			0.888*** (0.188)	0.851*** (0.236)			0.858*** (0.210)	0.839*** (0.275)
Temperature			0.0719*** (0.0194)	0.0717*** (0.0194)			0.0691*** (0.0237)	0.0680*** (0.0226)
Precipitation			0.00227 (0.00257)	0.00199 (0.00264)			0.00256 (0.00256)	0.00163 (0.00292)
Migratory distance from East Africa			-0.00992 (0.00926)	-0.00477 (0.00883)			-0.00710 (0.0210)	0.00224 (0.0225)
Dummy for landlocked countries			-0.659*** (0.198)	-0.683*** (0.211)			-0.632*** (0.199)	-0.723*** (0.221)
Island nation dummy			-0.160 (0.505)	-0.279 (0.434)			-0.0958 (0.584)	-0.306 (0.552)
Log [Neolithic transition timing (ancestry adjusted)]					0.400 (0.415)	0.153 (0.518)	0.191 (0.350)	-0.120 (0.443)
Settlement duration					0.0946** (0.0337)	0.0783** (0.0390)	0.0169 (0.0460)	0.00637 (0.0460)
Constant	0.836*** (0.155)	0.562** (0.262)	-0.694 (0.428)	-0.965** (0.440)	-2.916 (3.636)	-1.002 (4.388)	-2.384 (2.989)	-0.0300 (3.535)
Observations	172	172	140	140	143	143	140	140
R-squared	0.130	0.081	0.352	0.315	0.176	0.129	0.354	0.291

Notes: The dependent variable is log (1+total number of conflicts between 1960 and 2014). Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

FIGURE 1
Religious Differences over Time

