

# Ancestral Belief Systems and Armed Conflict

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## Abstract

Does religion cause violent conflict? This research attempts to answer this question using geo-referenced data on violence and traditional religions at the sub-national level for Africa. Moralizing gods, which prescribe fixed laws of morality, are found to drive violence at the local level. The share of the population with ancestral traditions of moralizing gods is instrumented with ancestral settlement size and the distance to the point of origin of the nearest moralizing god. The instrumental variables estimates suggest that moralizing gods increase conflict casualties by a factor of 2.2 to 2.8 approximately.

**JEL Classification:** D74, O55, Z12

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## 1 Introduction

The role of religion as a cultural institution which helps shape economic development has long been the subject of scholarly attention. In *The Protestant Ethic and the Spirit of Capitalism*, Max Weber (1930) contends that Protestantism, by promoting a strong work ethic as its central social institution, leads to greater capital accumulation than Catholicism. Religion and development in the long-term have also been the subject of some recent studies (see for example Michalopoulos, Naghavi and Prarolo 2015, Becker and Woessmann 2009, Botticini and Eckstein 2007, and Augenblick, Cunha, Dal Bo and Rao 2012). At the same time, a vast amount of scholarly work has been dedicated to understanding armed conflict, which imposes enormous economic costs. Many developing countries suffer from ongoing violent conflicts which considerably hold back economic development and worsen poverty, which in turn may trigger more violence and hold countries in conflict traps (Collier *et al.*, 2003).

To date, however, few empirical studies have examined the link between religion and violent conflict. This study seeks to fill this gap, and contributes to the literature in the following ways. First, I document the novel empirical pattern that traditional religion, a historically inherited cultural institution, affects armed conflict all the way to the present. This finding contributes to the recent literature in comparative development on the long shadows of historical institutions, which has produced many results that shed light on our understanding of how deeply rooted, stark differences in contemporary cross-country

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development came to arise. Recent research has documented, for example, that modern-day fertility and attitudes to gender roles have been shaped by centuries-old division of labor (Alesina, Giuliano and Nunn, 2011, 2013), that more democratic contemporary institutions are well-explained by the traditional political accountability of local chiefs (Gennaioli and Rainer, 2007), that a history of political centralization is associated with better development outcomes (Michalopoulos and Papaioannou, 2013), that the origins of modern distrust and underdevelopment in Africa can be traced back to the slave trade that began in the 16th century (Nunn, 2008; Nunn and Wantchekon, 2011), and, more generally, that culture matters for economic growth (Gorodnichenko and Roland, 2011). In examining the legacy of historical belief systems, which are cultural institutions, on contemporary armed conflict, this study attempts to help fill a gap in our knowledge of what causes conflict. In doing so, this research is most closely related to the work of Besley and Reynal-Querol (2014), who find that a history of conflict at the regional level in Africa is associated with more modern-day conflict.

Second, the use of instrumental variables for causal inference in this paper improves upon the empirical approach used in most papers in this literature. While the body of knowledge about the long shadows of history has grown enormously in recent years, causal interpretations have remained elusive. Implementing appropriate quasi-experimental methods in historical context that are robust enough to attenuate endogeneity concerns has, so far, proven difficult. With the notable exceptions of Nunn (2008) and Nunn and Wantchekon (2011), who devise identification strategies relying on external instruments, many of the papers above regress a contemporary outcome variable  $Y$  on a key right-hand side regressor  $X$  that is determined in the distant past. This approach has been hugely beneficial in learning about the consequences of historical factors, since the determination of  $X$  in the distant past means simultaneity concerns are unlikely to be severe. On the other hand, the presence of confounding biases remains a potential concern. Although their results are remarkably robust, Michalopoulos and Papaioannou (2013, p. 148) discuss this point explicitly, and acknowledge the lack of exogenous variation in the data. In this paper, because we cannot rule out that the emergence of moralizing gods and violence in the modern era are both driven by some unobservable variable, ordinary least squares (OLS) estimates of the effect of ancestral religions on modern conflict may be biased and inconsistent. The identification strategy in this paper therefore relies on two variables as instruments for the emergence of moralizing gods at the local level: these are ancestral settlement size and the distance to the point of origin of the nearest moralizing god. The idea behind the first instrument is that small settlements, which function as tight-knit communities, can successfully enforce cooperative norms of behavior without the need for a moralizing god. In these tight-knit communities, an agent who deviates from the cooperative norm pays a hefty reputational penalty, because the small community size means her transgression becomes common knowledge. In larger settlements, the reputation mechanism may no longer be an effective commitment device, which introduces the need for moralizing gods as enforcement agents. The second instrument used is the log distance to the point of origin of the nearest moralizing god. This instrument is motivated by the idea that close geographic proximity to areas with moralizing gods should increase the likelihood of diffusion of belief systems which subscribe to moralizing gods. At the same time, the emergence of moralizing gods in neighboring areas should be orthogonal to the characteristics of the local area. The principal appeal of using both these instruments jointly, beyond facilitating testing of overidentifying restrictions, is that each instrument speaks to one of the most compelling reasons why we would expect moralizing gods to emerge. The first of those reasons is the need for a coordination device that depends solely on an area's own characteristics; the second is the expectation that ideas, and technology broadly construed, diffuse locally in concentric patterns. This argument builds upon the work of Becker and Woessman (2009), Dittmar (2011), Nunn (2008) and Nunn and Wantchekon (2011). The rationales for both instruments,

and whether they are likely to satisfy their exclusion restrictions, are discussed in more detail below.

Third, this paper provides a reduced form test of the commitment problem theory. The commitment problem is one of the two main rational theories of conflict, which are both rooted in contract theory. The first one, termed *asymmetric information*, conceptualizes conflict as the failure to reach a bargaining solution. Agents engage in violence based on overestimation of their probability of winning and military strength (Blattman and Miguel, 2010). But for the presence of asymmetric information across actors, the bargaining solution should be reached. The *commitment problem*, on the other hand, emerges where one or more agents cannot credibly commit to peace (Blattman and Miguel 2010; Fearon 1995), such that peace contracts become unenforceable and conflict ensues.<sup>1</sup> Surprisingly, the commitment problem theory has been the subject of very little empirical testing; indeed, Blattman and Miguel (2010) deem it one of the most crucial areas of research for conflict scholars. Motivated by this insight, this study uses religion as an impediment to credible commitment to test the commitment problem theory. The central idea to this test is that societies with a tradition of a moralizing god are less likely to be willing to compromise away from their beliefs than societies without such a tradition, no matter how small the deviation (Sinnott-Armstrong, 2013). One of the potential reasons why the commitment problem has been on the receiving end of very little empirical testing is the lack of a suitable naturally occurring setting. In an effort to solve this empirical puzzle, I exploit spatial data on ancestral belief systems in Africa from Murdock’s (1967) *Ethnographic Atlas* along with geo-coded conflict data from the Uppsala Conflict Data Project (UCDP, 2013).

Fourth, this study addresses another critical need in the conflict literature: the necessity for research on the causes of armed conflict at the subnational level (Blattman and Miguel 2010, p. 8, term subnational-level work the “most promising avenue for new empirical research”). While the number of studies using within-country evidence is growing, few studies so far have used empirical specifications that include units of observation taken at the sub-national level across many countries. Some of these studies are Besley and Reynal-Querol (2014); Hodler and Raschky (2014), who find that economic shocks increase the likelihood of conflict at the regional level; Almer, Laurent-Lucchetti and Oechslin (2014), who provide theory and evidence on the role of agricultural shocks in triggering riots at the regional level; and Michalopoulos and Papaioannou (forthcoming), who uncover the effect of improper border design during the Scramble for Africa on conflict at the regional level. This study takes a step in that direction: throughout this article, the empirical work is conducted at the grid-cell level, where each cell extends over approximately 100 km by 100 km (0.9 \* 0.9 degrees). Crucially, all empirical specifications in this paper include country fixed effects. Combining data at the subnational level with country fixed effects is helpful in several ways (Michalopoulos and Papaioannou, 2013). The use of subnational units across countries is less subject to the external validity criticism than within-country evidence. In addition, country fixed effects will account for all country-specific factors that have been shown to affect conflict in the existing literature, including state capacity, ethnic polarization and ethnic fractionalization, which are well-known conflict predictors, as well as colonial history and other factors. As such, this approach constitutes a useful step towards more disaggregated research, as it allows for the commitment problem theory to be tested at the local level while maintaining the flexibility to control for country-specific causes of conflict.

The remainder of this paper is organized as follows. Section 2 provides some background, including contrasting arguments as to the effect of religion on conflict. In Section 3, the empirical approach and

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<sup>1</sup>A third cause termed *issue indivisibility* is also mentioned sometimes in the literature and refers to issues that, “by their very natures, simply will not admit compromise” (Fearon 1995, p. 382). However, Robert Powell (2006) contends that this is a special case of the commitment problem, as issues that accept no compromise are essentially issues upon which actors cannot credibly commit to peace.

data are presented, including the instrumental variables, their motivation, and whether they are likely to satisfy their exclusion restrictions. Section 4 shows and discusses the empirical results and Section 5 offers some concluding remarks.

## 2 Religion and Conflict: Contrasting Arguments

Many religions, around the world and across time, have been characterized by the presence of a moralizing god. However, belief systems without moralizing gods are also commonplace. The raw data used in this study shows that approximately 70% of ethnic groups in the sample (154 of 224) did not have moralizing gods in the pre-colonial era. These data, compiled by Murdock (1967), reflect the body of knowledge collected by explorers and anthropologists in numerous field studies. Because Murdock (1967) explicitly set out to capture the characteristics of ethnic groups prior to contact with Europeans and colonization, these data are taken to reflect the evolutionary patterns that unfolded for each ethnic group in long time horizons leading up to colonization.

*Moralizing gods* are referred to as such because they provide moral rules as to what humans should and should not do. Because of this, moralizing gods can turn mundane issues into sacred ones (Atran and Ginges, 2012) and can therefore make compromise impossible on issues deemed sacred (Sinnott-Armstrong, 2013). Yet, because moralizing gods can enhance cooperation, the relationship between moralizing gods and violence is complex to disentangle. As Atran and Ginges (2012) point out, “sacred values act as moral imperatives that inspire nonrational sacrifices in cooperative endeavors **and** war” (Atran and Ginges 2012, p. 855, emphasis added). Moralizing gods therefore elicit behavior, with reasons that are not immediately apparent, in both cooperation *and* conflict. Thus, the overall effect of the presence of a moralizing god on violent conflict is ambiguous and remains an open empirical question. This section briefly reviews the literature around both arguments.

### 2.1 Moralizing Gods and Violence

Casual observation would suggest that few things galvanize a willingness to kill or be killed like a moralizing god. Atran and Ginges (2012, p. 855) discuss the role of moralizing gods in triggering “intractable conflicts.” History is replete with examples of violent conflict with at least some level of religious overtones. One needs only consider the expansion of Islam through war or Pope Urban II’s call to the crusaders, among many other examples. More recently, Catholics and Protestants have been at war in many instances, perhaps most notably in the Irish Civil war. The rise of ISIS is a further testament to the fact that religion has been associated, at least to some extent, with warfare. What is striking is that even religions that are associated with more peaceful behavior, at least in the popular perception, can display evidence of violent conduct. For example, in both Burma and Sri Lanka, Buddhist monks have recently attacked Muslim civilians, which Strathern (2013) describes as the result of the “overriding moral superiority of (one’s) worldview.”

The idea that moralizing gods may be associated with conflict receives support from several fields of inquiry. In the following parable, philosophy scholar Walter Sinnott-Armstrong (2013) discusses how religions with moralizing gods can make compromise impossible. A tree on Eve’s property is struck by lightning and threatens to collapse on Adam’s neighboring house. At first, Adam asks Eve to cut the tree down, but Eve refuses, because she enjoys sitting in the shade from the tree. Adam then offers to cut the tree himself and replace it with a new one at his own cost, to which Eve agrees. However, one of Eve’s three brothers objects to this compromise, fearing that the young tree would not provide enough

shade. Adam convinces him to accept this compromise, pointing out that if the tree were to fall on Adam's house, Eve's family would be legally liable for all repair costs. Another of Eve's brothers is not swayed by Adam's argument, but is eventually convinced as Adam reminds him of their past friendship. Sinnott-Armstrong's (2013) contention is that, as long as no element of sacredness enters the problem, a compromise is reasonably likely to be reached. To illustrate this point, we turn to the role of Eve's third and last brother in this parable. He rejects all forms of compromise because, although he is aware of the legal liability and of their cordial relationships as neighbors, he thought God was declaring the tree sacred when he struck it with lightning. No earthly consequence, no matter how grave, would be enough to accept having the tree removed and thereby incurring the wrath of God; therefore, no compromise is possible. Cooperation has effectively broken down, no bargaining solution can be reached, and conflict is likely to ensue.

In the political science literature, Hassner (2003) identifies the unwillingness to compromise on sacred issues to be a critical aspect of many conflicts, including Hindu-Muslim tensions in India and the Israel-Palestine conflict. Hassner cites the example of the failed peace talks between Israel and Palestine at Camp David in July 2000, which he ascribes to the two parties' inability to agree on a compromise for a particular religious site in Jerusalem that is sacred to both religions. Hassner also discusses many other historical instances of different religions reaching impasses over sacred sites. In ancient Greece, four wars were fought over the shrine of Apollo. In Independence, Missouri, two churches that broke away from the Church of Jesus Christ of Latter Day Saints fought for an empty lot which is deemed by the Mormon doctrine to be the site of the Temple of Christ, to be built upon his second coming. In India, the Babri mosque in Ayodhya was destroyed in 1992 by militant Hindu nationalists, triggering some of the most deadly riots in India's history. The mosque's demolition was seen as retribution for the supposed destruction of a Hindu temple by a Muslim ruler more than 400 years prior, on the site of the Babri mosque (Hassner 2003, pp. 16-18).

Psychology scholars have tested the notion that some moralizing god-religious scriptures can contain justifications for aggression. In particular, Bushman *et al.* (2007) report on experiments on religious beliefs and aggression. Participants were first asked to read a violent passage and were told the passage came from either the Bible or an ancient scroll. Then, participants were paired and made to compete on a task in which the winner receives the option to engage in aggression, by playing a loud noise in the loser's headphones. Religious participants were significantly more likely to exercise the aggressive option, especially when the violent passage was said to be from the Bible. Bushman *et al.* (2007) conclude that scriptural violence sanctioned by moralizing gods significantly increases aggression, especially in believers. Relying on social identity theory, which predicts that conflicts escalate across groups with different cultural identities, Seul (1999) documents how powerful religious ideologies are at creating group identities, through the provision of a comprehensive set of beliefs and "cosmologies, moral frameworks, institutions, rituals (and) traditions" (Seul, 1999, p. 1).

The notion of limited morality (see Tabellini, 2008) also helps explain why rigid beliefs can result in violence, even if violence is notionally prohibited in some parts of the religious texts. Limited morality refers to one's willingness to set aside their moral compass when dealing with groups who subscribe to different belief systems. Gorodnichenko and Roland (2011, p. 1) describe limited morality as follows: "Limited morality (...) views given norms of morality valid only within a given group such as the extended family, the clan or the tribe. When interacting with people outside one's extended family, these social norms do not apply and opportunistic and amoral behavior is considered morally acceptable and justified."

## 2.2 Moralizing Gods and Cooperation

Despite the abundance of historical examples linking religion and violence, Philips and Axelrod (2007) find religious issues to be behind only a small fraction of all-out conflicts. The argument that moralizing gods can be expected to decrease violence is simple, yet very compelling. It is well-known in the social sciences that, in order to elicit cooperative behavior and collective action, the likelihood of free riding must be reduced (Olson, 1965). A moralizing god, with the ability to punish transgressions and deviations from cooperative behavior even if no human is watching, is therefore an extremely powerful commitment device. Because moralizing gods can function as commitment devices and enhance cooperation, it would be reasonable to expect moralizing gods to be negatively correlated with violence.

In economics, Michalopoulos, Naghavi and Prarolo (2015) illustrate this argument by documenting a robust pattern for the adoption of Islam. As a set of rules that provides binding (enforceable) agreements, Islam, with its moralizing god, has been adopted more heavily in desert areas, where the need for such a commitment device is comparatively greater. Several studies in evolutionary biology and psychology also explore this theme. Watts *et al.* (2015) discuss the argument that moralizing gods have been able to deter free-riding enough to allow for the formation of the complex societies that characterize modern humans. Laurin *et al.* (2012) examine the argument that moralizing gods emerged as a way to augment earthly punishment in societies where other means of effective policing were not directly available. Finally, Norenzayan (2013) and Norenzayan and Shariff (2008) show that the threat of supernatural punishment by moralizing gods has helped societies reduce the free rider problem and overcome limited policing capacity.

## 3 Empirical Approach and Data

### 3.1 Econometric Framework

Consider the following structural equation:

$$\ln(Fatalities)_g = \alpha_c + \beta_1 Moralizing\ God_g + \beta_2 PD_g + \beta_3 Pop_g + \mathbf{X}_g \delta + u_g \quad (1)$$

where *Fatalities* is the number of conflict fatalities in grid-cell  $g$ , *Moralizing God* denotes the share of the population in grid-cell  $g$  whose ancestors belonged to ethnic groups with moralizing gods in the pre-colonial era, *PD* and *Pop* control for population density and population size,  $\mathbf{X}$  denotes other grid-cell level controls,  $\alpha_c$  is a vector of country dummies, and  $u$  is a stochastic error term. In each grid-cell, *Fatalities* is the aggregate number of conflict deaths from the UCDP/GED dataset over the full observation period, from 1989 to 2013. Following the convention in the conflict literature, conflict-free areas are not included in the analysis.

Estimating (1) via OLS is likely to yield biased and inconsistent estimates for  $\beta_1$ , the causal effect of interest. Even after controlling for an extensive set of economic, geographic, and cultural variables, it is entirely plausible that some unobserved grid-cell specific factor affects both the likelihood that a moralizing god emerges and contemporary violence. In order to reliably estimate  $\beta_1$ , we therefore need to isolate a source of variation in *Moralizing God* that affects *Fatalities* only through its effect on *Moralizing God*. Ancestral settlement size and the distance to the point of origin of the nearest moralizing god, which are discussed in more detail below, are likely to satisfy this exclusion restriction. The first-stage equation is then:

$$\text{Moralizing } God_g = \alpha_c + \gamma_1 \text{Settl Size}_g + \gamma_2 \ln(\text{MoralDist}) + \gamma_3 PD_g + \gamma_4 Pop_g + \mathbf{X}_g \phi + \epsilon_g \quad (2)$$

In the econometric specification, the use of data at the sub-national level in conjunction with country fixed effects yields several benefits (Michalopoulos and Papaioannou, 2013). Taken together, these benefits allow for fine-grain empirical testing at the local level while maintaining the flexibility to control for country-specific causes of conflict. The use of country fixed effects in the empirical specification is crucial. From the previous literature, we know that many causes and correlates of conflict arise at the country level. Many of these factors may also be correlated with religion, which is why it is important to include country dummies in the regressions. First, a key country characteristic that is expected to impinge on conflict is the rule of law. Where policing is adequate, the likelihood of conflict should diminish. In this sense, state capacity is a potentially severe confounder and needs to be accounted for, which will be adequately accomplished by including country dummies in all empirical specifications. Second, colonial history has recently been shown to be a key determinant of conflict. Michalopoulos and Papaioannou (2015) exploit the arbitrary partitioning of Africa at the eve of colonization to show that the location of country borders affects conflicts. Country dummies will control for this, along with all other colonial history aspects and history at large. Third, many studies (see for example Montalvo and Reynal-Querol, 2005) investigate the effects of ethno-religious diversity, fractionalization and polarization on conflict. These factors, along with culture, geography, structural aspects, and all other country-specific conflict predictors which also correlate with religion, will be absorbed by country fixed effects as long as they are time-invariant or approximately so.

Because grid-cells which are clustered together geographically tend to be similar in many other regards, it is important to adequately account for spatial correlation. All specifications therefore use Conley’s (1999) standard errors for cross-sectional spatial dependence of an unknown form. Conley standard errors model spatial dependence as a decaying function of geographic distance and assume no spatial correlation past a specified cutoff distance. The cutoff distance is set at 1000 km here, although the results (available upon request) are robust to alternate cutoffs.

## 3.2 Main Variables

### *Location of Ethnic Homelands*

Table 1 presents some summary statistics of the variables used in this paper. First, in order to locate the ethnic homeland of each African society in the *Ethnographic Atlas*, I use Nunn and Wantchekon’s (2011) digitized map of the *Human Relations Area Files* project (Murdock, 1959). How confident can we be that ancestral ethnic homelands give any indication on the current location of ethnicities across countries? Nunn and Wantchekon (2011), using data from the Afrobarometer survey for 2005, find a 0.55 correlation between the usual place of residence of survey respondents and the spatial location of their ethnicity’s traditional ethnic homeland, which suggests that ancestral ethnic homelands do reflect the current location of ethnic groups. Figure 1 shows the Nunn-Wantchekon HRAF map.

### *Conflict Data*

Africa is divided into grid-cells of 0.9 by 0.9 degrees, which is approximately 100 km \* 100 km at the equator. The gridded map of Africa is then intersected with conflict data from the UCDP/GED dataset (Uppsala Conflict Data Project Georeferenced Event Dataset, Sundberg and Melander, 2013; Sundberg,

Table 1: Summary Statistics.

<i>Variable</i>	Obs.	Mean	Std. Dev.	Min.	Max.
Moralizing God	496	0.43	0.49	0	1
Ancestral Settlement Size	496	0.18	0.36	0	1
Moral Dist	496	442.15	486.02	6.21	2074.11
Agricultural Suitability	496	0.30	0.27	0	0.99
Disease Suitability	496	0.32	0.29	0	1
Ruggedness	496	0.16	0.18	0	1
Extended Family	496	0.45	0.47	0	1
Early Intensive Agriculture	496	0.42	0.48	0	1
Early Political Centralization	496	0.28	0.42	0	1
% Christian	478	0.24	0.33	0	1
% Muslim	478	0.13	0.29	0	1

*Notes.* Each observation corresponds to a 100 km \* grid-cell. *Moral Dist* is measured in km. *Moralizing God*, *Ancestral Settlement Size*, *Extended Family*, *Early Intensive Agriculture* and *Early Political Centralization* represent the share of the population in each grid-cell whose ethnic ancestors displayed the relevant characteristic. *Agricultural Suitability*, *Disease Suitability* and *Ruggedness* are indexes normalized between 0 and 1.

Lindgren and Pads kocimaite, 2010). UCDP/GED, the longest geo-referenced time-series conflict dataset, is a comprehensive dataset of all occurrences of armed conflict across all African countries between 1989 and 2013. GED monitors and reports all occurrences of civil conflict. Each event is spatially referenced by latitude and longitude to a point location on a Geographic Information System (GIS) shapefile. GED also provides information on the number of fatalities, the participants, and several other variables. Each conflict event is assigned to a grid-cell based on geographic location. The main alternative to GED is the ACLED dataset (ACLED, 2013), but this research uses the GED data because of its longer time span (ACLED coverage only begins in 1997) and because recent research has uncovered concerns with the quality of the geocoding in ACLED (Eck, 2012). Figure 2 displays the raw data for conflict locations in the GED dataset.

Because civil conflicts often cluster at the country level, and because many ethnicities are partitioned into two or more countries, it is crucial to include country fixed effects in all specifications. I therefore use information on the locations of national boundaries from the Digital Chart of the World (ESRI, 2015). Once country borders are intersected with the gridded map of Africa, I generate country dummies at the grid-cell level. Specifically, the country dummy  $\alpha_c$  is equal to 1 in grid-cell  $g$  if any part of the territory of country  $c$  falls in grid-cell  $g$ .

Although the boundaries of ethnic groups in Murdock (1967) are likely to have been drawn with some degree of imprecision, the correlation between conflict events and ethnic homelands is visible in the data. Figure 3 shows the homeland of the Songhai ethnic group in Mali: despite the likely mapping error, it is apparent that conflict events cluster along a thin strip of the Songhai’s ancestral homeland.

### *Ancestral Religion*

The data on ancestral religions is constructed from the pioneering ethnographic work of Yale University anthropologist George Peter Murdock (1959, 1967). In two major ethnographic projects, Murdock provides a spatial mapping of 834 ethnicities in Africa through the *Human Relations Area Files* (Mur-





Figure 1: Ancestral Ethnic Homelands.  
Source: Nunn and Wantchekon (2011)

dock, 1959) and detailed socio-cultural characteristics of these ethnicities in the *Ethnographic Atlas* (Murdock, 1967). The original *Atlas* was published in 29 installments by the *Ethnology* journal between 1962 and 1967 and subsequently revisited by J. Patrick Gray for the *World Cultures Journal* in 1986. In the *Atlas*, Murdock compiles data from individual anthropological studies that attempt to capture ethnicity-level characteristics before European colonization. For Africa, these data provide uniquely accurate insights into the ancestral characteristics of indigenous societies before colonization. In particular, the Murdock (1967) data contain detailed information about the degree of religiosity for 224 ancestral ethnicities, which I use to construct the key independent variable of interest in this paper. The original “High Gods” variable in Murdock (1967) is ordered from 0 to 3, where 0 means a god is explicitly absent from the belief systems or not “reported in substantial descriptions of religious beliefs”; 1 means a high god is present but not concerned with human affairs; 2 means a god is present and involved in human affairs but not supportive of human morality; and 3 denotes a god that is both involved in human affairs and supportive of human morality (Murdock, 1967, p. 17). This last type of higher power is what the evolutionary biology literature refers to as a moralizing god (Roes and Raymond 2003; Roes 2009, 2014; Laurin *et al.* 2012; Peoples and Marlowe 2012; Johnson 2005). Because moralizing gods prescribe fixed positions with respect to certain issues, the religious adherents can be unwilling to deviate from the prescribed position, no matter how small the deviation (Sinnott-Armstrong, 2013). Among other studies, Roes (2009), Roes and Raymond (2003) and Johnson (2005) all use the “High Gods” variable from Murdock (1967) or its equivalent in the smaller Standard Cross Cultural Sample (Murdock and White, 1969), another well-known ethnographic database, as their measure of religious beliefs. Based on this variable, I construct *Moralizing God* at the grid-cell level as the share of the population in each grid-cell whose ethnic ancestors had moralizing god traditions.

### *Population*

All specifications include controls for population density and population size. Following the evolutionary biology literature (see for example Roes and Raymond, 2003), population density accounts for



Figure 2: Conflict Locations.  
Source: UCDP/GED



Figure 3: Conflict Events on the Songhai Ethnic Homeland.  
Source: author's calculations based on UCDP/GED and Nunn and Wantchekon (2011)

the intensity of competition over resources, which is a conflict risk factor. Since scale factors matter for the number of conflict fatalities, I also control for population size directly and for area size indirectly, with the latter being accomplished by including both population size and density in the regressions. Data on population counts and population density are taken from the Gridded Population of the World dataset v3 (Center for International Earth Science Information Network, 2015). I calculate population size and density at the grid-cell level.

### 3.3 Instrumental Variables

#### *Ancestral Settlement Size*

The ancestral settlement size instrument is derived from Murdock (1967). The original series denotes whether the representative settlement in each ethnic group comprised of fewer than 50 inhabitants, 50 to 100, some intermediate categories, 1,000 to 5,000, 5,000 to 50,000, with the largest category coding settlements inhabited by more than 50,000 people. At the ethnicity level, the ancestral settlement size

instrument is a dummy variable set equal to 1 if settlement size exceeds 5,000 and 0 otherwise. The rationale behind this instrument is the following. In small communities, cooperation can be enforced through reputation mechanisms. Contract theory suggests that, where two parties interact in an infinitely repeated game, incentives to cooperate emerge. That is, a local farmer who breaks a verbal contract does so at the cost of worsened reputation, which involves future losses. This is the case because the community is small enough to approximate perfect information, so the treachery of the contract-breaker becomes common knowledge. A small community size is then strong enough a binding mechanism to maintain a certain degree of cooperation. In this sense, this instrument exploits the stylized fact that larger cities provide anonymity: in larger communities, the reputational penalty that contract-breakers face is comparatively smaller, because it is relatively unlikely that news of the contract-breaking would become common knowledge. Incentives to deviate from cooperative norms therefore emerge. Unless some other coordination mechanism is binding, cooperation is expected to break down. This is where moralizing gods provide a solution. All-knowing gods with moral values emerge as a solution to the commitment problem and contracts can be enforced despite the lack of a reputation-based mechanism. The choice of 5,000 as a cutoff is motivated by the search of a sensible delimitation. It is unlikely that towns inhabited by nearly 50,000 would manage to maintain strong reputation-based coordination mechanisms, while it is also not very plausible that towns with fewer than 5,000 would provide enough anonymity for the emergence of incentives to cheat and for cooperation to break down.

Lending validation to this instrument, a real-world example is discussed by Wade (2015). The Hadza, an ethnic group of approximately 1,000 people in north-central Tanzania, do not believe in a moralizing god. They worship the sun and the moon, but without any moral dimension whatsoever. Despite the absence of a moralizing god, the Hadza are nevertheless very cooperative in everyday life, as they do not “need a supernatural force to encourage this, because everyone knows everyone else in their small bands. If you steal or lie, everyone will find out — and they might not want to cooperate with you anymore” (Wade, 2015, p. 20).

This instrument is rooted in early seminal research as well as recent findings in the social sciences. In *The Logic of Collective Action*, Mancur Olson (1965) explicitly mentions that the size of the community increases the free-rider problem. Both the studies of Laurin *et al.* (2012) and Watts *et al.* (2015) deal with the argument that free-riding is worse in large groups. In this context, Norenzayan (2013) describes anonymity as the enemy of cooperation, which reinforces the idea that ancestral settlement size is a potentially good instrument for the emergence of moralizing gods. For ancestral settlement size to be a valid instrument for *Moralizing God*, the exclusion restriction states that ancestral settlement size must only influence contemporary conflict outcomes through its effect on the emergence of moralizing gods. Although it would be difficult to test this formally, the exclusion restriction is likely to be fulfilled, as it is not clear how settlement size in the distant past would affect contemporary conflict through channels other than the emergence of moralizing gods.

#### *Distance to the Point of Origin of the Nearest Moralizing God*

To construct the second instrument, I first identify the centroid of each grid-cell as well as the centroid of each ethnic homeland that subscribes to moralizing gods. The distance instrument is then calculated, using the haversine formula, as the great-circle distance between the centroid of each grid-cell and the centroid of the nearest ethnic homeland with a moralizing god. This instrument exploits two plausible sources of exogeneity. First, the gridding process performed with GIS software is arbitrary, such that the location of each grid-cell centroid is exogenously given by the grid, regardless of local characteristics. Second, and most importantly, the emergence of cultural norms in general, and of moralizing gods in

particular, is likely to be orthogonal to the characteristics of neighboring areas. As such, the likelihood of religion appearing in a neighboring region should depend on that neighboring region’s characteristics, rather than on the home region’s features.

The identifying assumption behind this instrument is that the diffusion of technology, broadly construed, follows a concentric pattern from the point of origin. As such, geographic proximity to a society with a moralizing god is a source of exogenous variation in the likelihood of emergence of a moralizing god in the home region. For this reason, the distance to the point of origin of the nearest moralizing god is likely to be a suitable instrument for the purposes of this research. This idea is supported by Watts *et al.*’s (2015) view that moralizing gods diffused through cultural exchanges between societies.

This instrument is closely related to instruments used in several recent contributions in the literature. Nunn (2008) and Nunn and Wantchekon (2011) respectively use the distance to the coast and the distance to major slave destinations as instruments for the intensity of raids and captures of people who were then sold as slaves. Becker and Woessman (2009) use the distance to Wittenberg, the point of origin of the Protestant Reformation, as an instrument for Protestantism. Dittmar (2011) uses distance from Mainz, the birthplace of printing, as an instrument for the adoption of the printing press. Because the *homo sapiens* species originated in the horn of Africa, Ashraf and Galor (2013) use the distance to Addis Ababa as an instrument for genetic diversity. Lastly, Akçomak, Webbink and ter Weel (2015) use the distance to Deventer, where Geert Groote founded the Brethren of the Common Life (BCL), as an instrument for the presence of the BCL. The critical assumption behind the identification strategy used in these studies is that the locations of the point-of-origins they use are exogenous. In this study, this particular assumption is likely to be true, as previous research (Botero *et al.*, 2014; Michalopoulos, 2012) has shown that the emergence of moralizing gods and ethnic groups, respectively, is well-explained by local geographic factors. This lends support to the view that the emergence of moralizing gods is likely to be orthogonal to the features of neighboring areas, which is consistent with the exclusion restriction for this instrument.

## 3.4 Control Variables

### 3.4.1 Accounting for Geographic Features

To ensure some local features other than religiosity are not driving the results, a set of geographic variables that are likely to affect both religiosity and violence, measured at the grid-cell level, are included in the empirical work. These variables are soil suitability for agriculture, suitability for infectious disease spread, and terrain ruggedness.

#### *Soil Suitability for Agriculture*

Soil suitability for agriculture ostensibly has a direct impact on violence, although the theoretical direction of the effect is unclear. A more fertile land means a more generous resource constraint, which should result in less fighting. However, fighting could also increase as the returns to owning the more fertile land are higher. Crucially, a more fertile land, and favorable economic conditions in general, can affect conflict by making the adoption of a moralizing god less appealing. There is considerable evidence in the literature that religiosity is affected by economic conditions. For example, Norris and Inglehart (2006, p. 223) write: “The seminal social thinkers of the nineteenth century – Auguste Comte, Herbert Spencer, Emile Durkheim, Max Weber, Karl Marx and Sigmund Freud – all believed that religion would gradually fade in importance and cease to be significant with the advent of industrial society.” Iannacone and Berman (2006) find that adverse economic conditions facilitate recruitment into more

extreme religious systems. Because soil suitability for agriculture can also impact fighting through belief systems, the omission of this variable from the model would result in parameter estimates on *Moralizing God* that are biased and inconsistent. The soil suitability for agriculture data comes from the Atlas of the Biosphere (Ramankutty et al., 2002) and is measured on a 0 (least suitable) to 1 (most suitable) scale.

#### *Suitability for Infectious Disease Spread*

This variable is the malaria suitability index from Kiszewski *et al.* (2004), and captures the average suitability of a region for the spread of infectious diseases. It is calculated based on critical determinants of pathogen transmission, including the proportion of blood meals taken from humans, survival rates of the transmission vector (mainly mosquitoes), and duration of the incubation period and transmission season. Kiszewski *et al.* (2004) report that these characteristics are robust predictors of the intensity of malaria transmission. Infectious disease suitability is another factor that can affect conflict both directly and through belief systems: Fincher and Thornhill (2010) show that the spread of infectious diseases triggers the emergence of ethnocentric cultural norms and in turns causes intrastate conflict. This variable is rescaled between 0 and 1, where 0 means an area is least suitable for infectious disease spread and 1 means an area is most suitable.

#### *Terrain Ruggedness*

Finally, terrain ruggedness can affect conflict and belief systems simultaneously. Cultural norms may be affected by ruggedness because of the increased isolation and difficulty of access from the outside. Ruggedness also has a direct effect on armed conflict (see Fearon and Laitin, 2003). Using raw data on elevation from the National Oceanic and Atmospheric Administration’s (1999) GLOBE Digital Elevation Model, terrain ruggedness is computed as the average change in elevation across the geographic area of each grid-cell, following Riley *et al.* (1999). The ruggedness in grid-cell  $k$  is the sum change in elevation between  $k$  and its eight adjacent grid-cells:

$$Ruggedness_k = \left( \sum_{j=1}^8 (x_j - x_k)^2 \right)^{0.5} \quad (3)$$

where  $x_k$  is the elevation of cell  $k$  and  $x_j$  is the elevation of cell  $j$  which is adjacent to cell  $k$ . The results are then normalized between 0 and 1, with larger values denoting more rugged terrain.

### **3.4.2 Ethnic Characteristics**

In addition to the geographic variables above, I also include a set of ancestral ethnographic characteristics that may confound the estimates if they affect both conflict outcomes and the likelihood of emergence of moralizing gods. These ethnographic variables are family structure, early economic development, and early political centralization. They are constructed from Murdock’s (1967) *Ethnographic Atlas* and indicate societal characteristics as observed prior to European colonization.

#### *Family Structure*

First, I control for family structure with a variable that reflects the share of the population whose main mode of family organization, in pre-colonial times, was the extended family. The inclusion of this variable is justified by evidence of two-way causality between family structure and religious values

(Arland, 1985). Also, societies characterized by extended families often have clan-like structures where between-clan violence is a frequent occurrence (Reilly, 2001).

#### *Economic Development in Pre-Colonial Times*

Second, I control for economic development in pre-modern times. Since conflict is affected by poverty (Blattman and Miguel, 2010), it is likely that more historically affluent societies have evolved social norms that are traditionally less tolerant of violence. The adoption of productivity-enhancing agricultural innovations and shifts towards intensive agricultural regimes triggered economic development (see for example Biggs, 1990). Because of historical affluence, societies with a history of intensive agriculture are also less likely to hold rigid belief systems. The measure of early economic development is the share of the population whose ethnic ancestors practiced intensive agriculture in the pre-colonial era.

#### *Early Political Centralization*

Third, and finally, I include a control for early political centralization, following the influential work of Jared Diamond (1997). The inclusion of this control is motivated by the idea that state and religion have frequently emerged jointly in many locations throughout history. In fact, religion can be used as a coordination device to advance the state's interests. At the same time, weaker (less centralized) states have a poor record of maintaining order, such that the correlation observed between between conflict and ancestral religion could be driven by omitted state capacity.

### **3.4.3 Contemporary Religion**

Another important issue is that we cannot entirely rule out the possibility that, if religion does cause conflict, then the results may be driven by current rather than traditional belief systems. It is indeed plausible that, in trying to understand current violence, we may be better off looking at current beliefs rather than ethnic ancestors' beliefs in the pre-colonial era. Religious fractionalization at the country level is, as discussed above, already accounted for by the country fixed effects. Clearly however, if we believe that pre-colonial religions are correlated with contemporary religions, the absence of the latter from the empirical specifications would cause the coefficient on *Moralizing God* to be biased. To attend to this concern, I compute measures of contemporary religiosity (percentage Christian and percentage Muslim) at the grid-cell level.

The raw data for contemporary religion is available at the country-ethnicity level from Joshua Project. Joshua Project is a religious organization which collects data on ethnic groups around the world in an effort to spread Christianity. Detailed religion data is available from Joshua Project on a point shapefile for 3,413 country-ethnicities in Africa. I intersect this point shapefile with the Murdock ethnic homelands shapefile. Then, percentage Muslim and Christian for ethnic homeland  $X$  are calculated as the average of percentage Muslim and Christian in the Joshua Project points which fall on ethnic homeland  $X$ . The grid-cell level variables therefore simply reflect the percentage Muslim and Christian in each grid-cell.

## **4 Results**

### **4.1 OLS Results**

Table 2 presents the results of estimating equation (1) with OLS. There is a strong correlation across the board between the number of conflict fatalities and the share of the population with a moralizing

Table 2: Spatial Correlation-Corrected OLS Estimates. Dep. Var.:  $\ln(\text{Fatalities})$ .

<i>Independent Variables</i>	(1)	(2)	(3)	(4)
Moralizing God	0.198*** (0.041)	0.164*** (0.039)	0.367*** (0.047)	0.197*** (0.063)
Agricultural Suitability		0.601*** (0.169)	0.594*** (0.132)	0.530*** (0.143)
Terrain Ruggedness		2.011*** (0.203)	1.977*** (0.194)	2.442*** (0.181)
Infectious Disease Suitability		-0.0722*** (0.003)	-0.773*** (0.152)	-0.814*** (0.161)
Early Political Centralization			-0.648*** (0.072)	-0.697*** (0.063)
Early Intensive Agriculture			0.077 (0.052)	-0.016 (0.063)
Early Extended Family			0.174*** (0.067)	0.199*** (0.063)
% Christian				-0.437*** (0.049)
% Muslim				-0.166 (0.220)
Population	Yes	Yes	Yes	Yes
Pop. Density	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes
Observations	496	496	496	478
R-squared	0.36	0.38	0.37	0.39

*Notes.* OLS estimates with spatial dependence-corrected standard errors following Conley (1999) in parentheses. All specifications include a constant (not shown). \*\*\*, \*\* and \* denote significance at the 1, 5 and 10% levels respectively.

god tradition. This result holds even after controlling for differences in geography, ethnic characteristics, contemporary religions, spatial correlation, and country fixed effects. Overall, a switch from 0 to 1 in the share of the population with a moralizing god is correlated with an increase in conflict deaths between 16 and 37% approximately. It is interesting to note that both the reduced form in column (1) and the specification with the full set of controls in column (4) estimate the effect of *Moralizing God* at about 20%. Of course, these OLS estimates, although they control for a variety of factors, cannot be interpreted as causal. It is plausible that an unobserved, grid-cell specific variable that correlates with both *Moralizing God* and conflict fatalities is driving the results. The following section therefore turns to the instrumental variables estimates.

## 4.2 Instrumental Variables Results

Table 3 presents the results of the 2SLS-IV regressions. The top panel displays second stage results, the middle panel presents first stage results, and the lower panel displays the number of observations and specifies the inclusion of population size, population density, and country dummies in all specifications. As in the OLS regressions, the 2SLS-IV regressions also use Conley (1999) standard errors to account for spatial dependence.

Column (1) presents reduced-form estimates, without any control variables. In the first stage, the ancestral settlement size instrument is strongly significant and is of the expected sign. A switch from 0 to 1 in the share of the population with ancestral settlement sizes over 5,000 increases the share of the population with moralizing god traditions by 12%, suggesting that larger settlements have indeed historically been associated with moralizing gods. The second instrument for *Moralizing God*, the distance to the point of origin of the nearest moralizing god, also strongly predicts the share of the population in each grid-cell whose ancestors subscribed to a moralizing god. A 1% increase in the distance between the grid-cell centroid and the centroid of the nearest ethnic homeland with moralizing god decreases the share of the population with a tradition of a moralizing god by 0.23 approximately. This relationship is also statistically significant at the 1% level. These instruments appear to be strong, as the first stage F-test of excluded instruments is 106.7, which is much larger than the Stock and Yogo (2005) critical value of 19.93. The instruments also appear to be valid, since the p-value from Sargan’s test for overidentifying restrictions is very large (0.86). This indicates that the exclusion restriction for  $\ln(\text{Moralizing Dist})$  and *Ancestral Settlement Size* is likely to be satisfied.

The magnitude of the coefficient on *Moralizing God* in the second stage is much larger than in the OLS results, indicating the latter results suffer from a severe downward bias. Grid-cells where all inhabitants have traditional moralizing gods (that is, where the share of *Moralizing God* is 1) have 143% more conflict casualties than grid-cells where none of the inhabitants have traditional moralizing gods. This means that, after taking into account population density, population size, spatial correlation, and all country characteristics including, most importantly, ethno-religious fractionalization and political institutions, moralizing gods are found to increase conflict casualties by a factor of 2.43. The identification strategy indicates that this relationship is causal, which will be true if the distance to the nearest moralizing god and ancestral settlement size only affect conflict outcomes through their effect on the emergence of moralizing gods.

The magnitude of the first stage  $R^2$  is informative as well. Although this statistic is by no means a panacea, the first stage results suggest that 84% of the variance in the share of the population with moralizing god traditions is explained by the variables included in the regression. This provides support for the idea that the two IVs are reasonably successful at capturing the bulk of the historical processes



behind the emergence of moralizing gods.

Column (2) introduces soil suitability for agriculture, terrain ruggedness and infectious disease suitability as control variables. The coefficient on *Moralizing God* decreases slightly in magnitude, but remains significant at the 1% level in the second stage. The p-value on Sargan’s test for overidentifying restrictions again fails to reject the null that the instruments are valid. Both IVs remain significant at the 1% level in the first stage. All three geographic characteristics correlate strongly with conflict. A switch from least suitable to most suitable soil for agriculture almost doubles conflict casualties (92% increase). This corroborates the findings of Roes and Raymond (2003); an increase in the size of the economic pie at stake increases the rent to controlling the pie, which affects conflict casualties positively. Terrain ruggedness is found to have a positive effect on violence, which is in line with Fearon and Laitin’s (2003) well-known result that mountainousness increases the risk of insurgency. Finally, the infectious disease suitability index is negatively correlated with conflict fatalities. A possible interpretation of this result is a Malthusian phenomenon: deaths due to infectious diseases could reduce the resource pressure and therefore lead to fewer casualties from armed conflict.

The three ethnographic controls, namely early political centralization, intensive agriculture and extended family are introduced as additional controls in column (3). Early political centralization, an indicator of state capacity, is strongly negatively associated with armed conflict fatalities, suggesting that states with a long history of political centralization are better at preventing violence. This is consistent with the consensus in the literature that conflicts are much more likely to occur when state capacity is low (see for example Blattman and Miguel, 2010; Bates 2001, 2008; and Herbst, 2000). Early economic development, which is proxied by the presence of intensive agriculture in pre-colonial times, is associated with less violence, consistent with the view that conflict is associated with poverty (Hodler and Raschky, 2014; Blattman and Miguel, 2010).

There is weak evidence in column (4) that the share of the population with traditions of extended family is correlated with conflict, which partially corroborates Reilly (2001). Most importantly, column (4) adds percentage Christian and percentage Muslim to account for contemporary religiosity. There is some evidence that Christianity is negatively correlated with violence, but this effect is only significant at the 10% level. Percentage Muslim is found to be insignificant. Hence, the results confirm that traditions of religion are likely to cause violence, even after we control for contemporary religious affiliation.

Across all specifications, the coefficients of interest, which are the parameter estimates on the instrumental variables in the first stage regressions and the coefficient on *Moralizing God* in the second stage, are all significant at the 1% level. First stage F-tests and Sargan tests also confirm that instruments are strong and valid across the board. Moreover, it is interesting to note that the coefficients of interests are stable: the coefficient on *Moralizing God* ranges from 1.2 to 1.8 approximately, indicating that conflict casualties are approximately 2.2 times to 2.8 times larger. The first stage coefficients on each IV are also very stable: the parameter on each of *Ancestral Settlement Size* (between 0.11 and 0.12) and  $\ln(\text{Moral Dist})$  (between -0.23 and -0.22) remain virtually unchanged throughout. This suggests that these relationships are estimated robustly and are therefore rather credible.

## 5 Concluding Remarks

This research has attempted to answer the question of whether religion causes violence, using georeferenced data for Africa. Traditions of belief in a moralizing god at the grid-cell level were instrumented with (1) ancestral settlement size, which reflects the idea that large settlements are more likely to adopt

Table 3: Spatial Correlation-Corrected 2SLS Estimates. Dep. Var.: ln(Fatalities).

	(1)	(2)	(3)	(4)
<i>2SLS Results</i>	Dependent Variable: ln(Fatalities)			
Moralizing God	1.430*** (0.189)	1.217*** (0.143)	1.822*** (0.156)	1.882*** (0.203)
Agricultural Suitability		0.916*** (0.179)	1.084*** (0.138)	1.045*** (0.145)
Terrain Ruggedness		1.737*** (0.186)	1.689*** (0.173)	2.087*** (0.162)
Infectious Disease Suitability		-0.688*** (0.155)	-0.754*** (0.163)	-0.881*** (0.156)
Early Political Centralization			-0.886*** (0.083)	-0.990*** (0.079)
Early Intensive Agriculture			-0.102** (0.046)	-0.241*** (0.058)
Early Extended Family			0.094 (0.071)	0.131* (0.071)
% Christian				-0.103* (0.060)
% Muslim				-0.359 (0.232)
Sargan p-value	0.86	0.20	0.66	0.91
R-squared	0.33	0.36	0.33	0.35
<i>First Stage Results</i>	Dependent Variable: Moralizing God			
Ancestral Settlement Size	0.121*** (0.014)	0.161*** (0.009)	0.113*** (0.008)	0.117*** (0.010)
ln(Moral Dist)	-0.234*** (0.009)	-0.232*** (0.009)	-0.219*** (0.009)	-0.219*** (0.010)
F-test of excluded instruments	106.7	118.6	96.1	86.0
R-squared	0.84	0.86	0.85	0.87
Observations	496	496	496	478
Population	Yes	Yes	Yes	Yes
Pop. Density	Yes	Yes	Yes	Yes
Country FE	Yes	Yes	Yes	Yes

*Notes.* 2SLS estimates with spatial dependence-corrected standard errors following Conley (1999) in parentheses. All specifications include a constant. Second stage regressors are also included in first stage regressions. \*\*\*, \*\* and \* denote significance at the 1, 5 and 10% levels respectively.

a moralizing god as a way to solve the collective action problem described by Olson (1965), and (2) the distance to the point of origin of the nearest moralizing god, which captures the historical diffusion of ideas in a concentric pattern, decaying with distance from their point of origin.

Ancestral settlement size and the distance to the point of origin of the nearest moralizing gods have allowed us to isolate variation in the emergence of moralizing gods that is highly unlikely to be caused or confounded by some unobservable variable. The instrumental variables results above lend strong credence to the notion that religion may be causally linked to violence and to the commitment problem hypothesis. Because of the novelty of this study, it is difficult to find external validation for the magnitude of this effect. However, we do know from Chen (2007) that ethno-religious violence is the main component of inter-group violence. Chen's data shows that 68% of inter-group conflict casualties during the Indonesian Financial Crisis can be traced back to ethno-religious divides. In this light, perhaps it is not too surprising that the estimated magnitude of religiosity is quite large in the empirical specifications.

This study has contributed to the emerging body of literature on armed conflict at the subnational level. As Blattman and Miguel (2010) point out, more studies are needed to understand the micro-level causes of conflict. This study has also contributed to the recent literature on the persistence of cultural traits in comparative development (see for example Alesina, Giuliano and Nunn 2013), from which we have learned that culture is extremely persistent. But what are the determinants of cultural persistence? Also, beyond existing theories of religious adherence, can the observed conflict intensity reflect a lack of peacekeeping and conflict resolution institutions? It is plausible that individual belief systems have established conflict resolution procedures for within-group conflict, where, to a first-order approximation, all parties to the conflict adhere to the same set of beliefs. However, it is also possible that ancestral societies characterized by a strong sense of the moral superiority of their beliefs have failed to develop conflict resolution institutions for inter-group disputes over time, resulting in deadlier violence today. I leave these questions open for future research.

Finally, it is important to caution against an overreaching interpretation of the results in this paper. While the results do suggest that religion is causally associated with violence in today's world, it is not suggested that the world as a whole would have been a better place if moralizing gods had never appeared at all. In fact, Norenzayan's (2013) work suggests it is difficult to conceive of successful, cooperative large-scale societies emerging without a moralizing god providing an overarching commitment device. It is conceivable that moralizing god societies may have been more successful at building up state capacity. Once cooperation can be policed with state capacity, moralizing gods become unnecessary, falling victims to their own success.<sup>2</sup> In Norenzayan's (2013) words, "societies with atheist majorities - some of the most cooperative, peaceful, and prosperous in the world - climbed religion's ladder, and then kicked it away." From a peacekeeping perspective, the major policy implication is therefore that building state capacity is a likely way to reduce violence. But of course, such a task demands a large amount of resources, and opens up its own agency problems, which I leave as avenues for future research.

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<sup>2</sup>This is not to say that religion will ever become extinct. It has been argued that the inclination to believe in the supernatural is a byproduct of evolutionary processes.

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