The Power of Religion*

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Abstract

This paper examines to what extent religion has been used for power purposes throughout the world and its influence on current institutions. Historically, some rulers have used religion to legitimize their power, while others relied on more democratic means. This tendency, termed divine legitimization, incentivized rulers to embed religion into institutions. We illustrate with a simple framework that the use of religion for power purposes and its consequent institutionalization may lead to the persistence of religion and religious institutions despite modernization. To test empirically, we combine data on pre-modern religious beliefs across 1265 ethnographic societies and current data on the prevalence of religious laws in 176 countries. We provide evidence in support of divine legitimization and the resulting institutionalization of religion. For identification, we exploit exogenous variation in the incentives to employ religion for power purposes. We further document that countries that relied on divine legitimization are more autocratic today and their populace more religious. These results contribute to our understanding of the persistence of religious as well as autocratic institutions.

Keywords: Religion, Institutionalization of Religion, Autocracy, Religious Laws, Religious Legitimization, Stratification, High Gods, Religiosity.
JEL codes: Z12, P48, O1, Z13.

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1 Introduction

The Code of Hammurabi –one of the first written legal documents– opens with the Gods designating Hammurabi as the ruler and their representative on earth. This is an example of divine legitimization through which rulers can refer to intervening and moralizing gods to justify their authority and facilitate ruling.[1] It also illustrates how rulers can embed religion into institutions by transcribing it into the law. In modern times, the Sharia law exemplifies an extreme case of religion penetrating the state apparatus. Less extreme examples abound, such as official government departments of religion in the USA, Russia and Cambodia, or inheritance laws based on religion in the Philippines, India, and Senegal. Several researchers have argued that institutionalization of religion has far-reaching consequences for socio-economic and political outcomes.[2] Yet, we don't know much about the roots of the institutionalization and persistence of religion, and its potential impact on autocratic institutions.

We study why religion continues to play such a central role in some societies, instead of dying out as the secularization hypothesis suggests,[3] and whether religion's position may explain the prevalence of autocracies. We argue that the use of religion for power purposes could be one explanation. Rulers using religion for power purposes have incentives to secure the continuation of religion's focal position, thus entrenching religion and its institutionalization. Weber's (1922) stylized theory of legitimization suggests that rulers can legitimize their power through either democracy, aristocracy, or religion. When the choice falls upon religious legitimization, the likelihood of legitimizing power through democracy will be lower, all other things equal.

To test whether the use of religion for power legitimization has systematically occurred on a global scale, one would ideally need data on the use of divine legitimization in the

[1] Morris (2015); Platteau (2008); Harari (2014); Cronk (1994); Irons (2001).

[2] Rubin (2017); Kuran (2012); Platteau (2017); Iyer (2016); Becker et al. (2016); Kuran (2018); Putnam and Campbell (2012); Finke and Stark (2005); Djupe and Calfano (2013); Hertzke et al. (2018); Jelen (2006).

[3] Marx (1844); Weber (1905); Durkheim (1912); Freud (1927). We are not the first to show results contradicting the secularization hypothesis. See Stark and Finke (2000), Glaeser and Sacerdote (2008), and Iannaccone (1998) for discussions.

past. These data do not exist. Instead, we exploit insights from the literature on what factors shaped the *incentives* for divine legitimization –rather than democracy for instance– and which types of gods were more useful for divine legitimization. These two pieces of information form the basis of our first test of the extent to which societies across the globe historically used religious legitimization. Second, we test whether countries with a past of divine legitimization are more likely to have religion embedded in their current institutions as part of state laws. Third, we test whether the use of religion for power legitimization has led to more autocratic regimes and kept countries from democratizing.

To test the extent of divine legitimacy and its importance for the persistence of religion, we form testable predictions based on the literature (see Section 2 for details). First, rulers of stratified societies have stronger incentives to use religion to legitimize their power, compared to rulers of egalitarian societies where democracy is more likely to be a sufficient legitimization tool (Weber, 1922; Platteau, 2017).[4] Even though democracy is less costly than other forms of legitimization, democratic rule does not maximize the ruler's likelihood of maintaining power in societies based on unequal power structures. Second, not all types of belief systems are useful for power purposes. Being in control of spirits that are indifferent to human affairs would not legitimize earthly powers. Instead, rulers choosing divine legitimacy have incentives to prop the development of religious systems with the so-called high gods, i.e. interventionist and moralizing gods who punish non-compliers.[5] Third, rulers opting for religion as a means to legitimize their power have incentives to set up institutions that support these particular belief systems, which leads to institutionalization of religion. These predictions can be set up schematically:

$$\text{Stratification} \Rightarrow \text{Religion with moralizing high gods} \Rightarrow \text{Religious institutions}$$

These predictions form the first two hypotheses that we set out to test empirically.

[4]Stratification can be any type of hierarchy between people based on their wealth, social class, hereditary aristocracy, or resources.

[5]Others also pointed out the link between high gods and the historical trajectories and complexity of societies (Norenzayan, 2013; Whitehouse et al., 2019; Beheim et al., 2019).

Hypothesis 1: Stratified societies are more likely to develop religions based on moralizing high gods as a means of divine legitimization.

Hypothesis 2: The societies that used religion for legitimacy in their past are more likely to have religion embedded in their institutions today.

The third hypothesis relates to the link to democracy.

Hypothesis 3: Societies that used religion for legitimacy in the past are less likely to become democracies.

We combine data on religions in 1265 pre-modern societies across the world from Murdock's (1965) Ethnographic Atlas with current data on the prevalence of religious laws in 176 countries constructed by ARDA. We first document that stratified societies were more likely to develop and maintain belief systems based on intervening and punishing gods. The data allow us to compare societies belonging to the same language group, of the same complexity level, subsistence method, development level, and based in the same continent. Thus, even for societies of similar culture, subsistence method, geographic location, and development stage, we find that the prevalence of high gods goes hand-in-hand with stratification. Intervening and moralizing gods are 11 percent more likely to be present in stratified societies compared to unstratified ones (30 percent of the mean of the dependent variable).

One may conjecture that societies with high gods have been more likely to develop stratification, in which case the results are mere correlations. For example, Norenzayan (2013) and Beheim et al. (2019) argue for a link running from high gods to complexity. Instead, to identify the causality running from stratification to the development of belief systems based on high gods, we exploit a quasi-natural experiment that exogenously allocated varying degrees of stratification across societies. Most historical societies were agricultural, and research shows that past agricultural societies based on irrigation were more likely to develop into stratified societies compared to those with rain-fed agriculture (Bentzen et al., 2017b). The reasoning is based on Wittfogel's (1957) hypothesis that control of vital water

resources gave rulers immense power, and thus, rulers in societies reliant on irrigation had a much stronger power position compared to rulers in societies where agriculture was based on rain. Following Bentzen et al. (2017b), we employ irrigation potential –based on soil and climatic characteristics– to capture exogenous variation in societal stratification. Both reduced form and IV results are consistent with the baseline findings. Societies with greater irrigation potential in their past –hence greater stratification– are more likely to have had belief systems based on moralizing high gods compared to more egalitarian societies.

In keeping with our *Hypothesis 2*, we find that a past where religion was exploited for power purposes ultimately translated into a larger likelihood of religion-based state laws across countries today. Examples of such laws are restrictions of interfaith marriages, blasphemy laws, religious inheritance laws, and restrictions on women. Today, countries with a history of intervening gods are 42 percent more likely to have a state law that is religious. Again, this result holds when comparing rather similar societies within the same continent, of similar development levels, and where the populations belong to similar religious denominations. Our findings are consistent with the hypothesis that certain rulers have historically employed religion as a tool to legitimize power, and, as a consequence, religion has become more embedded in the institutions of those societies. Thus, while most previous research has focused on Islam when discussing the use of religion for power purposes, our results document that conclusions can be generalized to the world.[6]

We proceed to document two implications of the institutionalization of religion. First, we document that societies where religion was used more extensively as a power tool are more autocratic today. This is consistent with Weber's (1922) theory that religion and democracy are two distinct tools of legitimization. We also show that stratification leads to autocracy only in those societies with greater divine legitimization –high gods. Second, we show that contemporary populations of countries with a greater share of religious laws and

[6]E.g., Rubin (2017); Kuran (2012); Platteau (2017).

a history of divine legitimization are more religious. This is consistent with the idea that the institutionalization of religion may explain its persistence.

Our results firstly contribute to our understanding of the causes and consequences of divine power legitimization. Across 122 medieval Italian cities, Belloc et al. (2016) show that an increase in the authority of religious leaders influenced political authority. Chaney (2013) finds that Egypt's highest ranked religious authority was less likely to be replaced in periods of social unrest. However, evidence of the actual use of religion for power purposes is scant. Other research has argued for the use of religion for power purposes within Islam (Kuran, 2012; Rubin, 2017; Platteau, 2017). We provide empirical evidence on the use of religion for power purposes on a global scale within all major religions.

Our framework also contributes to the understanding of the persistence of religion. Religion persists if it continues to provide benefits to its users: the religious populace or the rulers. Benefits from religion for the religious populace could be education (Becker and Woessmann, 2009), pro-social behavior (Norenzayan et al., 2016),[7] or religious coping (Bentzen, 2019; Pargament, 2001). However, other scholars have emphasized various costs of religion such as lower innovation (Bénabou et al., 2015), lower growth (Barro and McCleary, 2003; Campante and Yanagizawa-Drott, 2015), or less technical curriculum in schools (Squicciarini, 2019).[8] The insight that religion is costly may have led to the prediction by early philosophers that religion would eventually die out.[9] The existence of these costs, thus, poses a puzzle as to why religion persists nevertheless. To provide an answer, instead of focusing on the potential benefits of religion for the populace, we focus on the potential benefits to the *rulers* in terms of power legitimization. Rulers from Hammurabi to Mugabe benefited from religion to legitimize their power (see, e.g., Foster (2002); Kirch (1989); Trigger (1993); Wright (2010); Rubin (2017); Kuran (2012)). Power legitimization may therefore be one reason why religion has continued to play such a large role throughout human history and in

[7]See also Purzycki et al. (2016) and Enke (2019) for a discussion of the relationship between religion, kinship structure and prosociality.

[8]See also Iannaccone (1998) and Iyer (2016) for reviews of the literature.

[9]Marx (1844); Weber (1905); Durkheim (1912); Freud (1927).

many contemporary societies, despite modernization. However, the roots of the persistence and institutionalization of religion have received little attention in the empirical literature.[10] To our knowledge, we are the first to provide empirical evidence of divine legitimization across the globe.

Our framework also helps explain why some societies have democratized while others remain autocracies. Previous research has examined the roots of democracy. Modernisation theory, arguably the dominant perspective on the causes of democracy, holds that participatory government is a by-product of economic development (Schumpeter, 2013; Lerner, 1958; Lipset, 1959). Other research has linked differences in contemporary democracy to factors in our past, such as medieval constitutionalism (Downing, 1989), precolonial state development (Hariri, 2012), indigenous democratic practices (Bentzen et al., 2017a), or various geographic or climatic factors (Wittfogel, 1957; Haber and Menaldo, 2010; Welzel, 2014; Bentzen et al., 2017b). We contribute to this literature by empirically showing how divine legitimization relates to contemporary democracy.[11] Furthermore, the literature so far has focused on divine legitimization within Islam or Christianity. We instead test whether the theory holds more generally, which has important implications for drawing normative conclusions.

The following section lays out the background based on the literature to form our hypotheses and provides a simple theoretical framework to guide our thinking. Section 3 describes the data and the empirical specification. Section 4 provides the results. Section 5 concludes.

[10] In fact, the topic of religion remained marginal for a long time in various fields, e.g. in political science or economics (Wald and Wilcox, 2006; Kettell, 2012; Iyer, 2016).

[11] Other scholars theoretically hinted at such a relationship (Rubin, 2017; Kuran, 2012).

2 Background and framework

Hammurabi was not the only ruler in history who instrumentalized religion as a means to legitimize his power. The Divine Right of Kings doctrine in medieval Europe proclaimed that God had bestowed earthly powers onto the king. Consequently, any attempt to go against the king runs contrary to the will of the God. This helps place some fundamental laws beyond challenge (Harari, 2014). Divine kings are not unique to Europe, Christianity, or to a specific time period. They existed in Ancient Egypt, the Sumerian Kingdom, Japan, Tibet, Thailand, and within the Roman, Inca, and Aztec Empires, among other places.[12] Indeed, most states and chiefdoms have been found to justify political power through divine authority.[13] Some scholars even go as far as arguing that gods were originally developed to extend the notion that some have greater rights than others to design and enforce rules furthering the interest of one group at the expense of others (Alexander, 1987).[14]

More recently, the inscription by the Russian Tsar Nicholas II on an imperial one-ruble silver coin exemplifies how institutionalized religion was at the time. The coin dated 1898 reads "by the grace of God, Nicholas II, Emperor and Autocrat of All the Russias." Today, the inscription "In God we trust" still appears on American currency, and the official title of the Queen of the United Kingdom is still "Elizabeth II, by the Grace of God".

The idea that religion could be instrumentalized to legitimize power enters Max Weber's legitimacy theory, according to which leaders can gain legitimacy through legal authority (e.g., democracy), traditional authority (e.g., monarchy), or charismatic authority. Charismatic authority –such as divine legitimization– gives the leader the right to lead by virtue of prophecies, magical powers, or heroism (Weber, 1922).

[12] Foster (2002); Kirch (1989); Trigger (1993).

[13] Shermer and McFarland (2004); Wright (2010).

[14] For instance, it is worth to note that the church had blessed the arrangement between the elite and the laymen as ordained by god in many parts of Medieval Europe, as well as other parts of the world such as India with the Caste system. Serfs and agricultural labourers worked for the nobles with no rights and no way of ever changing their lives, as God made them high or lowly and ordered their estate (Holloway, 2016).

Given that beliefs in certain gods provided benefits in the form of power legitimization, the rulers had incentives to institutionalize religion to gain control over it and maintain these beliefs (Cronk, 1994). They could gain such control via co-opting and/or dominating the religious clergy, wielding religious authorities to coordinate beliefs about divine legitimacy, appealing to religious symbols and rituals, having laws prescribed by gods, or simply declaring themselves as God.[15] There are numerous examples where the ruling class and the state actively influence the content of religion and the intensity of its dogmas.[16] Bisin et al. (2019) formally model religious legitimacy as a phenomenon inducing change in the power balance between political elite, religious clerics, and civil society. They argue that "clerics exercise this power by providing religious goods and services in larger quantities, which then favors religious practices and activities, propagating beliefs within the population that in turn justify the ruling of the political elite". We set out to test whether this tendency holds empirically across the globe and over time.

A priori, the influence of religion might *not* necessarily persist over time. For instance, beliefs in high gods might have facilitated cooperation among strangers in past societies that lacked modern institutions (Norenzayan, 2013). These societies could prosper and develop modern institutions faster than others, thus replacing the need for religion over time. Also, the costs associated with religion, such as lower innovation, growth, and technical schooling, predict no persistence. However, religion persists in places where the benefits from religion outweigh the costs. Thus, when religion is used to the benefit of the ruler and becomes institutionalized, the influence of religion is more likely to be perpetuated to current day, ceteris paribus. Take one widely used method of divine legitimization, transcribing religion into formal laws, as did Hammurabi. Since laws are rather persistent over time, societies with more religion-based laws in the past will most likely also top the rankings today with

[15] Morris (2015); Cronk (1994); Rubin (2017).

[16] Aldashev and Platteau (2014); Rubin (2017); Belloc et al. (2016); Chaney (2013).

comparatively many religious laws.[17] Other things equal, we expect religion to be more institutionalized today in societies with a past of divine legitimization.

2.1 Testable predictions

We set out to test empirically whether divine legitimization a) was used to such an extent that it has left its footprint on societal level outcomes, b) can explain the institutionalization and persistence of religion, and c) can explain the persistence of autocracy. To do so, we would ideally need data on the extent of divine legitimization throughout history. Such data do not exist. Instead, we base our predictions on i) the *incentives* to use divine legitimacy instead of other means for power legitimization, such as democracy, and ii) the type of religious beliefs useful for power legitimacy.

In stratified societies, where democratic legitimacy was too costly to the ruler, rulers had stronger incentives to use religion to legitimize their power (Swanson, 1960; Weber, 1922). Platteau (2017) argues that when power and wealth are concentrated in the hands of the few, the legitimacy of the regime cannot rest on the principles of democracy, and therefore, needs to rely on other sources. He continues to argue that religious legitimacy was particularly widespread in traditional societies where religious authorities had the monopoly over the transmission of knowledge. Peoples et al. (2016) go as far as arguing that the absence of high gods in early human societies is an indication of the egalitarian nature of hunter-gatherers. Other scholars have also noted the link between stratification and divine legitimization.[18] For instance, the Kuna people of Central America had a well-developed hierarchical class system as well as moralizing gods engaged in human affairs (Swanson, 1960). Additionally, monotheism with its unique god above all other gods emerged in a time when political leadership had become highly hierarchical (Bottéro, 2000). Other examples are the stratified societies based on irrigation systems in the Mexican highlands, coastal

[17] Literature emphasizes institutions in general as a rather persistent component of societies (Acemoglu et al., 2001; Rubin, 2011).

[18] Marlowe (2010); Marshall (1962); Norenzayan (2013); Watts et al. (2015); Swanson (1960).

Peru, Egypt, the Indus Valley, the Middle East, and China. These societies were highly stratified and their leaders would gain the most from moral conventions enforced by high gods and their supernatural punishment (Winzeler, 2012). In contrast, the gods of egalitarian hunter-gatherer societies of Kung bushmen and the Hadza people of Tanzania were morally indifferent to human affairs (Marshall, 1962; Marlowe, 2010). Thus, we predict that rulers of stratified societies faced greater incentives to instrumentalize religion for power purposes.

Not all religions can be used for power purposes. Gods can be apt for legitimization of power only if they interfere in human affairs and punish misbehavior. Animistic spirits are indifferent to human affairs and do not punish misconduct.[19] Therefore, an association between Hammurabi and the spirits would not necessarily compel the Babylonians to obey his rules. Instead, Hammurabi and other rulers had incentives to support the development of intervening and moralizing high gods who punish non-compliers.[20] A high god is defined as a "spiritual being who is believed to have created all reality and/or to be its ultimate governor" (Swanson, 1960). Moralizing high gods interfere in human affairs by telling us what we should and should not be doing and by punishing misbehavior. Thus, divine legitimacy is more auspicious when endorsed by moralizing high gods.

Monotheism is one type of religion with a moralizing god that might aid rulers establish power. Indeed, across 277 civilizations, Iyigun (2007) finds that civilizations that adhered to monotheistic religions lasted longer and ruled over larger geographic areas due to a symbiosis between centralized government and organized religion. Also, the Egyptian pharaoh, Amenhotep IV, is noted for abandoning traditional Egyptian polytheism and introducing worship centered on the high God Aten (Allen, 2005). The pharaoh declared that Aten was not merely the supreme God, but the only God, and that he, the pharaoh, was the only intermediary between Aten and his people.

[19] Animism is the oldest known belief system adhered by hunter-gatherer societies (Peoples et al., 2016), suggesting that objects, places, and creatures possess a distinct spiritual essence (Stringer, 1999).

[20] Morris (2015); Platteau (2008); Harari (2014); Cronk (1994); Irons (2001).

2.2 A Simple Theoretical Model

To formalize these predictions, we present a simple theoretical framework based on the decision tree in Figure 1. The game starts at a point in time when all societies were unstratified and had belief systems based on animism. This assumption of course does not fit with all societies, but fits well with the state of most societies before the arrival of agriculture (Peoples et al., 2016). Next, nature randomly allocates stratification to some societies. In our empirical analysis, we exploit a natural experiment that distributed more stratified agriculture to some societies, mimicking a random allocation by nature.

Thereafter, ruler A chooses whether to legitimize his power through divine legitimization or democratic means (high gods or no high gods).[21] The former involves supporting the development of intervening high gods, while choosing democracy does not necessitate high gods and is indicated in the figure by "No high gods".[22] The cost of no high gods to rulers is normalized to zero in unstratified societies and δ in stratified societies.[23] Divine legitimization costs γ, which can be thought of as co-opting or giving off some power to the religious clergy, appealing to religious symbols, or staging the ruler as god. The cost of divine legitimization is lower than δ, but larger than zero.

Next, ruler B decides whether or not to institutionalize religion based on the form of power legitimization chosen by the previous ruler. Institutionalization of religion costs $\tau > 0$. Rulers obtain utility u if they manage to legitimize their power, zero otherwise ($u > \tau$). Ruler A can obtain legitimacy by divine legitimization or democracy, but the costs of these differ across stratified and unstratified societies. In a society with divine legitimization, ruler B

[21] The original argument by Weber (1922) contains the third option of traditional authority, such as aristocracy. Also, one can think of coercion as another option for the ruler. We add both in the Appendix Figure A.2 with no change to the conclusions. We address these additional options in the empirical section.

[22] We confirm empirically that punishing and intervening gods are necessary if the ruler wishes to exploit them to legitimize their power, while indifferent gods are just as useless for power purposes as having no high gods at all, see columns 7 and 8 of Table 3.

[23] This assumption is based on Weber's (1922) arguments that democracy was the cheapest option for power legitimization in egalitarian societies, as well as Platteau (2017) and others' arguments that democracy was too costly in highly stratified societies.

can only obtain legitimacy if he institutionalizes religion, while his legitimacy is independent of institutionalization of religion in democracies.

Solving the game by backward induction, ruler B will not institutionalize religion in democracies (indicated by no high gods in the tree) as this includes a cost without benefits. When power legitimization is based on the divine, however, ruler B will choose to institutionalize religion as this is the only way to obtain legitimization. Ruler A will choose divine legitimization (high gods) in stratified societies and democracy (no high gods) in unstratified societies, as this grants him the highest payoff. Since divine legitimization is not possible without intervening high gods, this also means that high gods will occur in stratified societies and to a lesser extent in unstratified societies. Then, the equilibria of the game will be prevalence of high gods and institutionalized religion in stratified societies, and no high gods (democratic legitimization) and no institutionalized religion in unstratified societies (as circled in Figure 1). The purpose of our empirical setup is to test these predictions.

This framework illustrates the mechanisms of causal direction from stratification to the persistence of high gods. By doing so, we do not take a stance on whether stratification or high gods came first.[24] Crucially, in the empirical section, we can let nature randomly distribute stratification across societies to test the direction of causality.[25]

[24]For this discussion, see Norenzayan (2013) and Whitehouse et al. (2019).

[25]Note also that we have left out the third legitimization option emphasized by Weber (1922): traditional authority (e.g. monarchy). Also, rulers might opt for another option altogether: coercing the populace. Including either option leaves the above predictions unaltered as long as these alternative options incur some positive cost, cf. Figure A.2. Rulers of unstratified societies will continue to choose democracy, while rulers of stratified societies will now choose either divine legitimization or coercion/monarchy, depending on the costs. Furthermore, rulers in coercive states or monarchies will not institutionalize religion when divine legitimization is not chosen in the previous period.

3 Empirical analysis

3.1 Data

We measure the extent of historic stratification and belief in moralizing high gods using data on 1265 pre-industrial societies across the globe from the Ethnographic Atlas (Murdock, 1965).[26] The Ethnographic Atlas includes information gathered by ethnographers on various characteristics of societies measured before European contact. Our main dependent variable measures the degree to which high gods moralized people's conduct and interfered in worldly human affairs.[27] The original measure ranges from 1 to 4, which we rescale into 0-1 to ease interpretation. It takes the value zero when high gods were absent (277 societies), 0.33 when a high god was present but not concerned with human affairs (248 societies), 0.66 when a high god was present and active in human affairs but not offering positive support to human morality (42 societies), and 1 when a high god was present, active, and specifically concerned with human morality (181 societies). Our variable of interest measures whether the society was stratified. The variable takes the value one if the society was stratified in any way (532 societies), and zero when unstratified (551 societies).[28]

We measure current institutionalization of religion with the extent to which religion enters current laws. Data on religious laws are available for 176 countries from the Association of Religion Data Archives (ARDA). The database includes information on whether a given country had each of 51 different religious laws over the 1990-2014 period. Examples of such religious laws are the presence of an official government department for religion, official government positions for clergy, religion-based laws on inheritance, restrictions on women, and the censorship of the press. We use the 51 laws both separately and as an index of the degree to which a country's laws are influenced by or based directly on religious code. The

[26]The Ethnographic Atlas is increasingly used in recent empirical research of historical nature. E.g. Alesina et al. (2013); Giuliano and Nunn (2013); Nunn and Wantchekon (2011).

[27]v34 in the Atlas.

[28]Stratification can be based on an elite in control of land or other resources, hereditary aristocracy, social classes, or wealth. v66 in the Atlas.

latter variable takes the value 0 if "No religious laws are legislated as law", 0.33 if "Most aspects of law are secular, but there are isolated instances of religious legislation", 0.66 if "Substantial portion of laws are religious, or state law based in great part on religious law but is not 100 percent religious law", 1 if "State law is religious law".[29]

3.2 Empirical Specification

To test formally whether historically more stratified societies were more likely to have intervening high gods, we estimate the following specification at the ethnographic society level:

$$High\ God_s = a + \beta Stratified\ society_s + \sum_k \alpha_k X_s^k + \gamma_l + \gamma_t + \varepsilon_s, \tag{1}$$

where $High\ God_s$ measures belief in interfering and moralizing high gods and $Stratified\ society_s$ captures stratification in society s, based on either social stratification or the exogenous measure of potential for stratification captured by irrigation potential. X_s^k is a k dimensional vector of controls. γ_l and γ_t are language group and time fixed effects.[30] ε_s is the robust error term clustered at the language group level.

To test whether societies with a past of divine legitimization are more likely to have religion embedded in current institutions, we estimate the following specification:

$$Religious\ Laws_c = a + \beta High\ Gods_c + \sum_k \alpha_k X_c^k + \gamma_{cont} + \varepsilon_c, \tag{2}$$

where $Religious\ Laws_c$ measures the share of state laws that are based on religious laws in country c, and $High\ Gods_c$ is the measure of high gods from the Ethnographic Atlas

[29]The coding of this variable was done by Fox (2011).

[30]The time fixed effects correspond mostly to decades. To construct the time fixed effects, we form time-intervals of at least 30 societies. When less than 30 societies are measured in a particular decade, we increase the time-period until 30 societies or more fall within the time-frame.

aggregated to the country level.[31] X_c^k is a k-dimensional vector of controls. γ_{cont} are continent fixed effects. ε_c is a robust error term.

4 Results

We first test the prediction that intervening gods were more prevalent in stratified societies. Panel A of Table 1 confirms this across the ethnographic societies. The Ethnographic Atlas covers the entire globe and societies may differ in various dimensions. We show that the results are unchanged when comparing only societies within the same continent, within the same language group, and measured within the same decade. Adding these fixed effects across the columns in Table 1, our specification explains 50 percent of the total variation in the spread of high gods. The empirical setup thus enables us to compare rather similar societies, despite their global spread.

Nevertheless, societies might differ along important dimensions that bias our results. For instance, recent research suggests that complex societies might have preceded moralizing gods (Whitehouse et al., 2019). Our results are robust to controlling for various measures of societal complexity, agricultural activity, and geographic confounders.[32] None of the controls change the estimate on *Stratified society* significantly, indicating that the relation between stratification and high gods is unaffected by observed confounders (columns 3 to 8). Thus, even for societies of rather similar culture, subsistence methods, and development stages, we find that prevalence of high gods goes hand-in-hand with being stratified. The degree of belief in high gods is 11 percent higher in stratified societies compared to unstratified ones. This amounts to about 30 percent of the mean of the dependent variable.

[31] We aggregate to the country level by averaging over the $High\ Gods$ variable across ethnographic societies within country c: $High\ Gods_c = \frac{1}{N}\sum_{s=1}^{N} High\ Gods_{sc}$. Results are robust to other aggregation techniques (Table A.3).

[32] For details of the variables, see the Data Appendix.

4.1 Robustness and identification

Our findings so far are not driven by individual observations (Figure A.1).

The baseline results are also robust to including additional geographic and societal development controls, such as the variance of agricultural suitability, arable land, distance to the ocean, cereal as the major crop, agricultural dependence, agricultural intensity, animal husbandry dependence, hunting-gathering dependence, whether or not the local headman was elected, the degree of jurisdictional hierarchy beyond the local community level, and the size of the community (Table 2).

The results are not sensitive to different categorizations of the high gods measure and are robust to throwing away top or bottom categories (Table 3). Moreover, an essential prediction from our framework is that gods that interfere with human affairs can be used for power purposes, while indifferent gods cannot be. To test this, we first exclude from the sample all societies with gods that intervene and punish, and run a regression of an indicator equal to one for societies with high gods that are not active in human affairs and zero if high gods are absent (column 7 of Table 3). We find that absence of high gods and beliefs in inactive high gods are equally likely in stratified or unstratified societies. Second, we create an active gods indicator that takes the value one when the gods are active in human affairs (moralizing or not), and takes zero when high gods are either absent or inactive in human affairs. We find that active and intervening gods are more prevalent in stratified societies (column 8 of Table 3). These results are consistent with our hypothesis that only beliefs in intervening and punishing gods are useful for power purposes.

When determining whether societal stratification *led to* a belief system based on intervening high gods, we face two major problems. First, causality may run from beliefs in high gods to societal stratification, e.g. through societal complexity (Norenzayan, 2013; Norenzayan et al., 2016). Second, omitted factors may have simultaneously influenced the development of both high gods and societal stratification. To address these issues, we exploit a quasi-natural experiment that exogenously allocated higher stratification to some areas

and lower to others. Most historic societies were agricultural, and accordingly, controlling water supplies was a crucial source of power (Wittfogel, 1957). In support of the famous hypothesis by Karl Wittfogel, recent research shows that historical agricultural societies were more stratified if they were based on irrigation agriculture compared to rain-fed agriculture (Bentzen et al., 2017b). Therefore, we exploit the degree to which agriculture was irrigation based or rain-fed to obtain exogenous variation in societal stratification. We cannot employ actual measures of irrigation, since these would suffer from similar endogeneity problems as those we set out to resolve. Instead, we generate an exogenous measure of potential for irrigation based exclusively on climatic and soil characteristics and use it as a measure of exogenous stratification.

Our exogenous measure of irrigation potential is based on data from the Food and Agriculture Organization's (FAO) global Agro-Ecological Zones (GAEZ) 2002 database. FAO divides the globe into 0.083x0.083 grid cells (9x9 km at the equator). For each grid cell, FAO calculates how much an unlimited supply of water (i.e., irrigation agriculture) could potentially increase yields in addition to what could have been achieved under the assumption that rain is the only source of water (i.e., rainfed agriculture). We construct the *Irrigation Potential* variable which measures the land area where agriculture is impossible without irrigation as a share of total arable land (under either irrigation or rain-fed conditions). Past agricultural societies with an irrigation potential equal to one were very likely to have relied on irrigation, since these areas had no rain, but had the proper soils suitable for irrigation. Likewise, societies with an irrigation potential of zero most likely relied on rain-fed agriculture.

When we employ the measure of irrigation potential as an exogenous measure of potential stratification (Panel B of Table 1), we find that higher irrigation potential increases the extent of intervening high gods, even within this sample of agricultural societies. This indicates that societies with a more stratified form of agriculture, irrigation, were more likely to develop intervening high gods, compared to more egalitarian societies based on

rain-fed agriculture. Alternatively, we instead use irrigation potential as an instrument for stratification. The results are similar and stratification instrumented by irrigation potential predicts greater prevalence of high gods (Table A.1).[33]

An alternative means of legitimization could be coercion. Using a measure of slavery from the Atlas to capture coercion (v77), we show that slavery is correlated with stratification, but there is no significant causal impact of our exogenous stratification measure (irrigation potential) on the extent of slavery. Importantly, the effect of stratification on high gods remains significant when controlling for slavery with no significant slavery effect (Table 4). These results imply that divine legitimization is less costly to rulers of stratified societies than coercion. Thus, the results are consistent with the idea that the elite chooses to refer to God for his rule rather than opting for coercion.

The results so far are consistent with the prediction that rulers in more stratified societies were more likely to support the development of beliefs in intervening high gods that moralize and punish people who do not obey. While the results are not a direct test of divine legitimization, they are certainly consistent with its existence: the type of gods that were useful for power purposes (intervening high gods) emerged in areas where religion was a useful tool for power legitimization (stratified areas).

4.2 Current institutionalization of religion

We next turn to the prediction that divine legitimization persisted to date through the institutionalization of religion. Since intervening high gods were more useful for religious power legitimization than gods or spirits that did not intervene in human affairs, we expect that societies with a history of high gods over time developed institutions to support this form of power legitimization.

[33]As a simple placebo, when we split societies into stratified and unstratified, we find that irrigation potential predicts greater prevalence of high gods only in stratified societies and not in unstratified ones (Table A.2).

We find that countries with a history of intervening gods are more likely to have religious laws in their state apparatus today (Figure 2 and Table 5).[34] The results in Table 5 hold up to including continent fixed effects, absolute latitude, and year of measurement controls (columns 2-4). Perhaps, more advanced societies were more likely to believe in high gods, and later on, to rely on religiously based laws for other reasons. We account for this by controlling for past development measured by reliance on agriculture, current development, and whether the country is communist (columns 5-7). Last, to check whether our results are driven by Muslim countries, we add a dummy for Muslim majority countries, column 8. Islam accounts for half of the observed impact of high gods on the prevalence of religious laws, which squares well with the fact that Allah is a moralizing and intervening god and Islam is a legalistic religion. A positive and significant association between high gods and religious laws remains though, indicating that the theory extends beyond Islam. This conclusion is supported by Figure 2, which shows that the relation between a past of high gods and the degree of religious laws is not driven by specific countries.[35] On average, societies with a history of intervening gods are 42 percent more likely to have a state law that is religious law today compared to societies with a past of less intervening gods and spirits.

Figure 3 provides estimates from separate regressions of each law on high gods. For 46 out of 51 laws, the likelihood of having religious laws today is significantly higher with the presence of a high gods heritage. Thus, the tendency for greater reliance on religious laws in societies with a history of high gods is not driven by a few laws. The most affected laws are concerned with restrictions on interfaith marriages, blasphemy laws, religious inheritance laws, restrictions on women, official government positions for the clergy, and anti-religious press censorship (Figure 3 and Table A.5).

[34]Results are robust to various aggregation methods (Table A.3).

[35]Results are robust to controlling for other denominations and various geographic measures (Table A.4).

4.3 Implications for autocracy and religiosity

We investigate two implications of institutionalized religion: lower democratization and strengthened religious beliefs. If divine legitimization was chosen by early rulers, this could crowd out democracy; and subsequent rulers with a strong divine legitimacy are more likely to be able to fend off later waves of democratization. Other scholars have also noted a link between religion and institutions. Across 122 medieval Italian cities, Belloc et al. (2016) show that an increase in the authority of religious leaders reduced the likelihood of transition from feudal authoritarianism to a communal civic system. Chaney (2013) finds that Egypt's highest ranked religious authority was less likely to be replaced in periods of social unrest. We test whether these examples generalize to the globe and persist to current day.[36]

To investigate democratic implications, we use the polity2 measure from the Polity IV Project, ranging from -10 (autocratic) to 10 (democratic). To avoid short spells of regime instability, we average the democracy score over 1990-2010. Panel A of Table 6 shows the impact of each link in our hypothesis on the extent of democracy across countries. We control for continent fixed effects and the Muslim majority dummy (the only significant control in Table 5). Columns 1 and 2 show that societies with more religious laws are more autocratic today. Moving from a country where no state laws are based on religion to a country where the state law is religious law reduces average democracy by 7 units (more than twice mean democracy).

Columns 3 and 4 show that countries with a past of high gods are more likely to have become autocracies today. The estimate on *High Gods* turns insignificant when adding the Muslim majority dummy, which reflects the fact that Allah is one high god accounting for half of the effect. The Sobel-Goodman mediation test suggests that religious laws account for 51 percent of the impact of belief in high gods on autocracy. Columns 5 and 6 document that higher irrigation potential reduces the likelihood of democracy. The Sobel-Goodman

[36] Admittedly, the explorations in this section are not necessarily causal and should be interpreted with caution. They, nevertheless, provide thought-provoking correlations.

mediation test shows that 22-33 percent of this effect likely runs through religious laws. Instead, columns 7 and 8 show that irrigation potential increases the likelihood of autocracy only in societies with a past of high gods.[37] This is consistent with the argument that rulers in stratified societies had incentives to support the development of high gods, which in turn gave them greater powers to rule.[38]

We finally turn to implications for religious beliefs. Religious beliefs are a prerequisite for the system of divine legitimization to continue to function. To refer to gods for power purposes, the populace must believe in their existence, which is in turn perpetuated by the elite (the ruler and the clergy). For instance, Aldashev and Platteau (2014) note that some states intentionally choose to influence the contents of religion and the intensity of its dogmas. The empirical question then is whether these elevated beliefs persist to current day. To evaluate the impact of divine legitimacy on the general importance of religion among the broader population, we use data from the pooled World Values Survey and European Values Study. These surveys hold data on demographics, socio-economic characteristics, and various dimensions of cultural values and religiosity for 505,048 individuals from 109 countries interviewed over the period 1981-2014. Panel B of Table 6 shows regressions with the question available for most countries, namely, "How important is God in your life?"[39] We find that religiosity is higher in countries with a higher share of religious laws and a greater prevalence of high gods in the past. These results are not only driven by Muslim countries. Also, past stratification captured by irrigation potential still has an effect on religiosity, which is mostly explained by religious laws (70%) and driven by Muslim majority countries. This high explanatory power of religious laws coincides well with the fact that

[37]Irrigation potential is marginally good for democracy in 10 countries without a history of high gods (China, Fiji, South Korea, Laso, Lesotho, Nepal, New Zealand, the Solomon Islands, Sri Lanka, and Vietnam). This positive effect is mainly due to increased prosperity in irrigation societies: the estimate on irrigation potential turns insignificant when accounting for the complexity of the historic societies or current GDP per capita.

[38]One concern is that high gods is a function of irrigation potential, and thus, the interaction simply signals some non-linear effect of irrigation potential. This does not seem to be driving the results. Adding a squared term or the logarithm of irrigation potential does not alter the results.

[39]There are various questions on religiosity, but Inglehart et al. (2003) single out six questions that capture the global variation in religiosity (all six are shown in Table A.6).

there is no other theory of a direct link between irrigation potential and current religiosity, to our knowledge. As a further validation check, the interaction between irrigation potential and high gods in columns 7 and 8 is insignificant and the impact of irrigation potential is purely driven by the extent of high gods. These results are consistent with the idea that a past of high gods and institutionalized religion translate into more religious populations today.

5 Conclusion

Historical examples abound of rulers using religion to gain unchallenged authority. We document that this tendency, termed divine legitimacy, can explain why religion still plays a major role in many contemporary societies despite modernization. Rulers that legitimize their power by referring to the divine have incentives to institutionalize religion, which makes religion more likely to persist to current days. Divine legitimacy may ultimately lead to the persistence of autocracy through two channels. First, choosing divine legitimacy is an alternative to democracy, thus mechanically lowering the likelihood of democracy. Second, rulers relying on divine legitimacy have incentives to set up institutions to support religion, in turn strengthening the use divine legitimacy and autocracy.

Lacking direct data on divine legitimacy, we rely on the historical narrative and the literature to set up the following predictions: a) Rulers have incentives to refer to God to legitimize their power, particularly so in stratified societies, b) Gods that interfere in human life are useful for legitimizing power, while indifferent spirits are not, c) Rulers have incentives to institutionalize religion if they base their legitimacy on the divine. In line with the predictions, we document empirically that pre-modern societies with a more unequal distribution of resources are more likely to develop interfering and punishing Gods and less likely to develop indifferent spirits that cannot be exploited for power purposes. We proceed to show that these societies today are more likely to have state laws prescribed by gods,

hence religion in institutions. Last, we document that societies that used divine legitimacy in their past and where religion enters state laws are more autocratic and their populations are more religious.

In a world where religion and populist policies are gaining increasing support in some societies, it is worthwhile to understand the roots of such tendencies and disentangle different mechanisms. While religion surely may bring positive deeds, such as stress-relief, it may also bring costs, such as potential support for autocracy.

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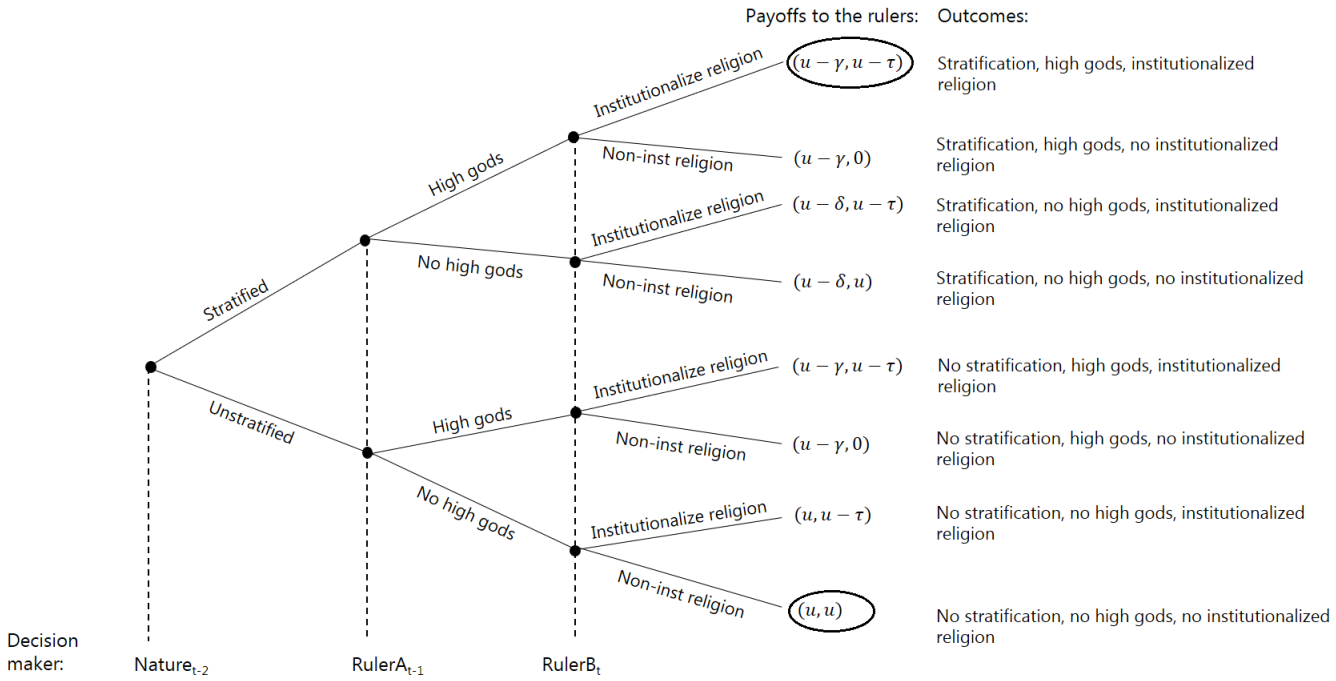
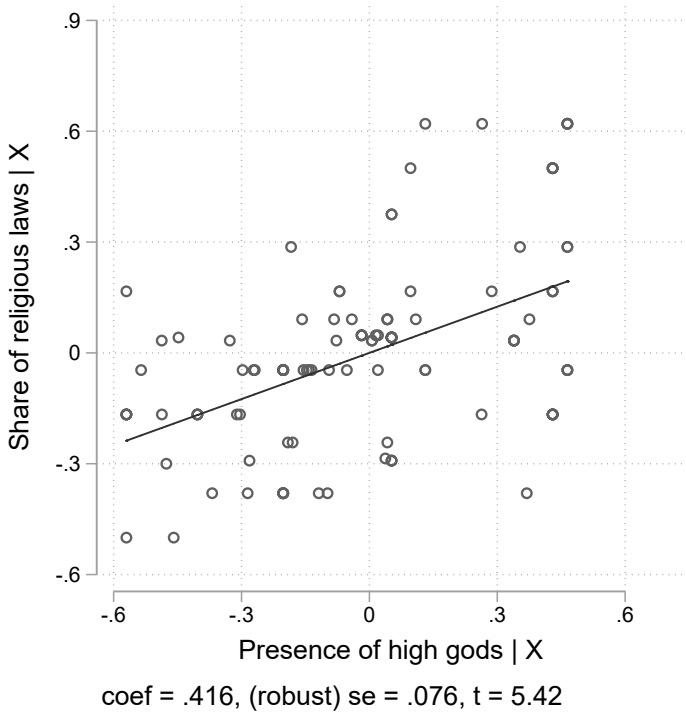
Figure 1 The predictions of the framework in a decision tree



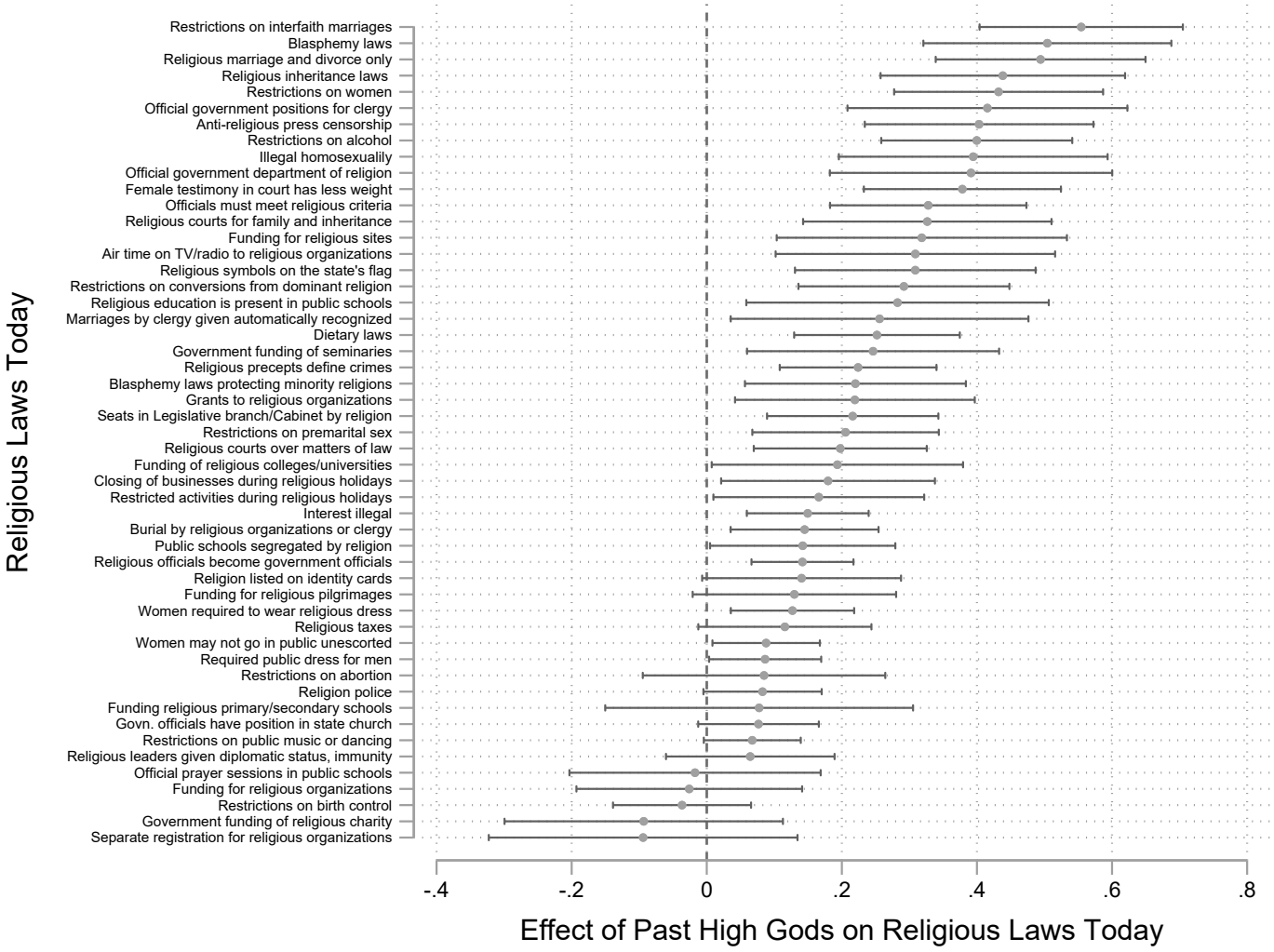
Notes: This figure presents the narrative in Section 2 in a decision tree, where nature first randomly distributes stratification across societies. Next, ruler A decides whether to support the development of high gods or not. Last, ruler B decides whether to institutionalize religion or not. The payoffs are indicated in the second-to-last column, where ruler A obtains the first set of payoffs and ruler B the second set. The equilibria of the game are the circled payoffs.

Figure 2 Degree of religion based laws today and past high gods



Notes: This figure presents the added variables plot of the relationship between past High Gods and the Share of Religious Laws as part of state laws today, conditional on continent fixed effects. The plot corresponds to the regression in column (2) of Table 5.

Figure 3 Persistent influence of past high gods on the likelihood of various religious laws today



Notes: This figure presents the effect of past High Gods on the likelihood of 51 different religious laws being present today across countries, conditional on continent fixed effects. The parameter estimates are shown together with 90% confidence intervals.

Table 1 Stratification and intervening high gods across ethnic societies, OLS

Dep. Var. High Gods	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Stratification measured by societal stratification								
Stratified society	0.21**	0.15***	0.11***	0.10***	0.11***	0.11***	0.11***	0.11***
	(0.08)	(0.06)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
Absolute latitude				0.00				
				(0.00)				
Agr suitability mean					-0.05			
					(0.12)			
Temperature						5.54		
						(5.26)		
Precipitation						-1.50***		
						(0.45)		
Soil constraints (%)						0.15		
						(0.13)		
Agriculture							0.12**	
							(0.06)	
Settlement complexity								-0.00
								(0.07)
Observations	697	696	680	680	680	649	680	680
R-squared	0.07	0.29	0.50	0.51	0.50	0.52	0.50	0.50
Mean Dep Var	0.378	0.377	0.376	0.376	0.376	0.384	0.376	0.376
Panel B: Potential Stratification measured by irrigation potential								
Irrigation potential (%)	0.31**	0.35***	0.28***	0.21***	0.23***	0.16*	0.28***	0.28***
	(0.15)	(0.11)	(0.07)	(0.05)	(0.07)	(0.08)	(0.07)	(0.06)
Observations	560	560	543	543	543	543	543	543
R-squared	0.07	0.27	0.47	0.50	0.48	0.49	0.47	0.47
Mean Dep Var	0.449	0.449	0.446	0.446	0.446	0.446	0.446	0.446
Continent FE	N	Y	N	N	N	N	N	N
Decade FE	N	Y	Y	Y	Y	Y	Y	Y
Language FE	N	N	Y	Y	Y	Y	Y	Y

Robust standard errors clustered at the language group level are in parentheses. The control variables in Panel B are the same as those in Panel A. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table 2 Stratification and belief in high gods, robustness to additional controls

Dep. Var. High Gods	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Stratified society	0.11***	0.11***	0.10***	0.10***	0.11***	0.11***	0.10***	0.08***	0.11***	0.09**	0.08**	0.07*	0.10***	0.08**
	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.03)	(0.03)
Agr suitability variance		-0.00												
		(0.23)												
Arable land			-0.13											
			(0.10)											
Distance to the ocean				-0.06										
				(0.05)										
Cereal major crop					0.16***									0.13***
					(0.04)									(0.04)
Agriculture dependence						0.00								
						(0.01)								
Agriculture intensity							0.06							
							(0.04)							
Animal husbandry dependence								0.05***						0.04***
								(0.01)						(0.01)
Fishing dependence									-0.02**					0.00
									(0.01)					(0.01)
Hunting-gathering dependence										-0.03**				-0.01
										(0.01)				(0.01)
Local headman											0.02			
											(0.04)			
Jurisdictional hierarchy												0.16		
beyond local community												(0.11)		
Community size													0.00	
													(0.00)	
Observations	680	648	651	680	680	680	680	680	680	680	559	662	680	680
R-squared	0.50	0.50	0.50	0.50	0.52	0.50	0.50	0.52	0.50	0.51	0.48	0.50	0.50	0.54
Language and decade FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Robust standard errors are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table 3 Robustness to alternative measures of high gods

Dep. Var. Alternative measures of High Gods	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Stratified society	0.11***	0.19***	0.10***	0.20***	0.06**	0.26***	0.03	0.14***
	(0.03)	(0.06)	(0.03)	(0.06)	(0.03)	(0.10)	(0.03)	(0.04)
Observations	680	409	680	409	680	680	482	680
R-squared	0.50	0.51	0.46	0.43	0.41	0.49	0.40	0.43
High Gods measure	Baseline	Ex cat 1	Cat 3+4	Col 2+3	Cat 2+3+4	Cat 1+2	Ex cat 3+4	Active god
Language and decade FE	Y	Y	Y	Y	Y	Y	Y	Y

Column (1) reproduces the baseline result with all four categories. Other columns include the following categories while constructing the dependent variable. Column (2) excludes category 1. Column (3) lumps categories 3 and 4 into one category. Column (4) is columns 2+3. Column (5) lumps categories 2, 3 and 4 into one category. Column (6) lumps categories 1 and 2 together. Column (7) excludes categories 3 and 4. Column (8) is an active god dummy lumping categories 3 and 4 together, and categories 1 and 2 together. Robust standard errors clustered at the language group level are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table 4 Alternative legitimization methods

	(1)	(2)	(3)	(4)
Dep. var.	Slavery		High gods	
Stratified society	0.17***		0.09**	
	(0.05)		(0.04)	
Irrigation potential (%)		0.05		0.16**
		(0.07)		(0.06)
Slavery			0.07	0.12***
			(0.05)	(0.04)
Observations	1,003	760	636	481
R-squared	0.49	0.43	0.51	0.50
Language and decade FE	Y	Y	Y	Y

Robust standard errors clustered at the language group level are in parentheses. All regressions include language and decade fixed effects. The sample is restricted to agricultural societies in columns (2) and (4). $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table 5 Share of religious laws and historic high gods across countries, OLS

Dep. Var. Religious Laws	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
High Gods	0.29***	0.42***	0.42***	0.43***	0.40***	0.41***	0.42***	0.22***
	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)
Year of ethnographic measure			-0.00					
			(0.00)					
Absolute latitude				-0.00				
				(0.00)				
Avg agriculture suitability					-0.09			
					(0.10)			
Communist dummy						-0.05		
						(0.15)		
(log)Real GDP/cap, 2000							0.03	
							(0.02)	
Muslim majority								0.23***
								(0.07)
Observations	119	119	119	118	118	119	118	119
R-squared	0.16	0.33	0.33	0.33	0.34	0.33	0.34	0.40
Continent FE	N	Y	Y	Y	Y	Y	Y	Y
Mean Dep Var	0.375	0.375	0.375	0.379	0.379	0.375	0.376	0.375

Robust standard errors are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table 6 Additional outcomes of democracy and religiosity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Dep. Var. Average Democracy (1990-2010)								
Religious laws	-6.98***	-4.48**						
	(1.47)	(1.73)						
High Gods			-4.24***	-1.97			-0.14	0.47
			(1.37)	(1.77)			(1.73)	(1.88)
Irrigation potential (%)					-5.79***	-3.55**	8.90*	8.71*
					(1.31)	(1.55)	(4.68)	(4.70)
Irrigation potential × High Gods							-16.50***	-15.53***
							(5.55)	(5.68)
Muslim majority		-2.91***		-2.69**		-2.87***		-1.18
		(1.11)		(1.35)		(1.10)		(1.42)
Observations	160	160	115	115	160	160	115	115
R-squared	0.47	0.49	0.43	0.45	0.48	0.50	0.49	0.49
Continent FE	Y	Y	Y	Y	Y	Y	Y	Y
Mean Dep Var	2.875	2.875	2.827	2.827	2.862	2.862	2.827	2.827
Sobel Goodman (religious laws) share			0.51	0.51	0.33	0.22	NA	NA
Panel B: Dep. Var. Importance of God in People's Lives								
Religious laws	0.37***	0.22**						
	(0.08)	(0.09)						
High Gods			0.35***	0.23***			0.28***	0.21**
			(0.07)	(0.08)			(0.09)	(0.09)
Irrigation potential (%)					0.26***	0.04	-0.25	-0.26
					(0.08)	(0.09)	(0.28)	(0.27)
Irrigation potential × High Gods							0.38	0.26
							(0.32)	(0.31)
Muslim majority		0.18***		0.16***		0.26***		0.17**
		(0.06)		(0.06)		(0.06)		(0.07)
Observations	101	101	70	70	104	104	69	69
R-squared	0.58	0.63	0.65	0.69	0.52	0.60	0.66	0.69
Continent FE	Y	Y	Y	Y	Y	Y	Y	Y
Mean Dep Var	0.666	0.666	0.702	0.702	0.669	0.669	0.705	0.705
Sobel-Goodman (religious laws) share			0.34	0.24	0.70	NA	NA	NA

Robust standard errors are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Online Appendix for

"The Power of Religion"

A Data Appendix

For the ethnic society level analysis, we employ the Ethnographic Atlas with information on a broad set of characteristics for 1265 ethnographic societies located within 148 modern countries (Murdock, 1965). The original coding is based on the ethnographic sources listed in the notes to each issue of *Ethnology*. The data are meant to reflect the earliest date for which satisfactory ethnographic data were available or could be reconstructed before any contact with Europeans (Murdock, 1965). Each ethnographic society is measured only once, but different societies are not necessarily measured at the same point in time.

The *High Gods* variable captures the degree to which a society believes in a moralizing high god, and that the high god interfers in and commands over human affairs. This is variable v34 in the Ethnographic Atlas. A high god is defined as a "spiritual being who is believed to have created all reality and/or to be its ultimate governor, even though his sole act was to create other spirits who, in turn, created or control the natural world." The *High Gods* variable is available for 748 societies. It takes the values: 0 when a high god is absent or not reported in substantial descriptions of religious beliefs (277 societies); 0.33 when a high god is present but otiose or not concerned with human affairs (248 societies); 0.66 when a high god is present and active in human affairs but not offering positive support to human morality (42 societies); and 1 when a high god is present, active and specifically supportive of human morality (181 societies).

Stratified society is based on the measure of primary sources of class stratification. This is variable v66 in the Ethnographic Atlas. On a categorization scale of five, stratification in a society might be: i. absent, ii. based on wealth, iii. based on an elite in control of land

or other resources, iv. based on hereditary aristocracy, or v. based on social classes. We construct an indicator variable that takes the value one when the society is stratified in any way (ii-v), and zero when the society is not stratified (i).

Spatial data of any kind (both ethnographic and country level) are calculated as spatial averages within a 200 km buffer around the society centre for ethnographic societies and within the country borders for countries. Agricultural suitability is based on Ramankutty (2002)'s map of agricultural suitability (Ramankutty et al., 2002). We take the averages across pixels. Temperature is the average annual temperature over the period 1901–2000 (Mitchell et al., 2004). Precipitation is the average annual precipitation over the period 1901–2000 divided by 1,000 (Mitchell et al., 2004). Soil constraints measures how much crop yields are reduced by soil constraints compared to "perfect" soil, calculated from data on soil depth, fertility, drainage, texture, chemicals, and terrain slope constraints. Source: Plate 27 of FAO GAEZ 2002 database, www.iiasa.ac.at/Research/LUC/SAEZ/. Agriculture is captured by a dummy indicating whether the society engaged in agriculture or not based on v28 from the Atlas. A measure of the complexity level of the society ranging from nomadic or fully migratory to complex settlements is based on variable v30 from the Atlas.

The irrigation potential variable is based on data from the Food and Agriculture Organization's (FAO) global Agro-Ecological Zones (GAEZ) 2002 database. FAO divides the globe into 0.083x0.083 (latitude-by-longitude) grid cells, corresponding to 9x9 km at the equator. For each grid cell, they calculate how much an unlimited supply of water (i.e., irrigation agriculture) could potentially increase yields in addition to what could have been achieved under the assumption that rain is the only source of water (i.e., rainfed agriculture). Following (Bentzen et al., 2017b), we construct the *Irrigation Potential* variable which measures the land area where agriculture is impossible without irrigation as a share of total arable land (under either irrigation or rainfed conditions):

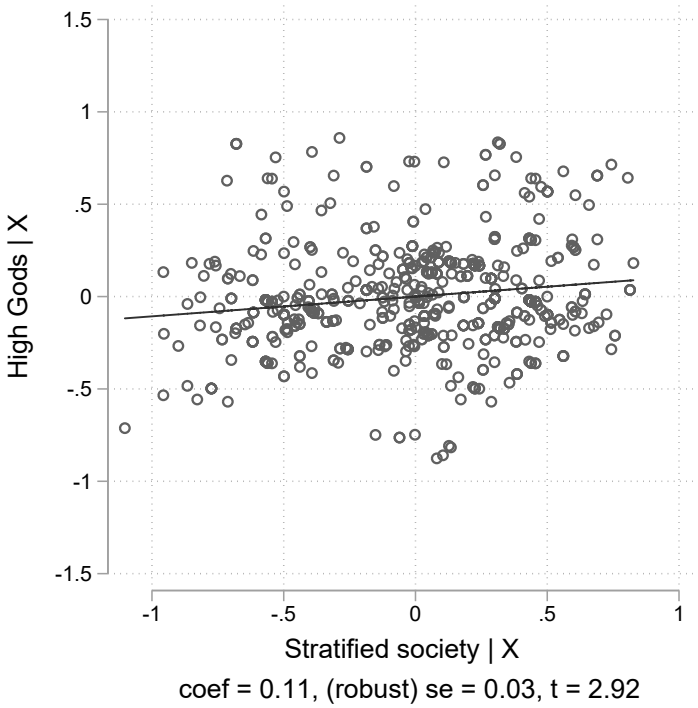
$$Irrigation\,Potential = \frac{land\,only\,arable\,with\,irrigation}{land\,suitable\,for\,agriculture} \tag{3}$$

Irrigation potential consequently ranges from 0 to 1. For example, countries with irrigation potential equal to 1 include Egypt and Mongolia, while countries with irrigation potential equal to 0 include Hungary, Laos, and Gabon, and countries with intermediate levels of irrigation potential include Argentina (0.42), Jordan (0.54), and Namibia (0.56). In this analysis, we restrict the sample to agricultural societies. Information on subsistence method is available for 1162 societies in the Ethnographic Atlas. Of these, 930 societies relied on agriculture.

In the cross-country analysis, the index on religious laws is the degree to which a country's laws in 1990-2014 were influenced by or based directly on religious code. The variable takes the value 0 if "No religious laws are legislated as law", 0.33 if "Most aspects of law are secular, but there are isolated instances of religious legislation", 0.66 if "Substantial portion of laws are religious, or state law based in great part on religious law but is not 100 percent religious law", 1 if "State law is religious law'. This index is constructed as part of the Religion and State Project Round 2 at the Association of Religion Data Archives (Fox, 2011). Available at www.thearda.com. Dataset: ARDA National Profiles, 2011 Update: Religion Indexes, Adherents and Other Data, variable rslegis. It consists of the factor components of 51 different laws (Fox, 2011). These are laws on dietary rules, personal status defined by religion, restrictions on interfaith marriage, inheritance laws, censorship of the press, government funding of religious education and official government positions. Descriptions of each of the 51 laws available at: http://www.thearda.com/ras/downloads/. The individual laws are variables L01x-L51x, where x refers to years 1990-2014.

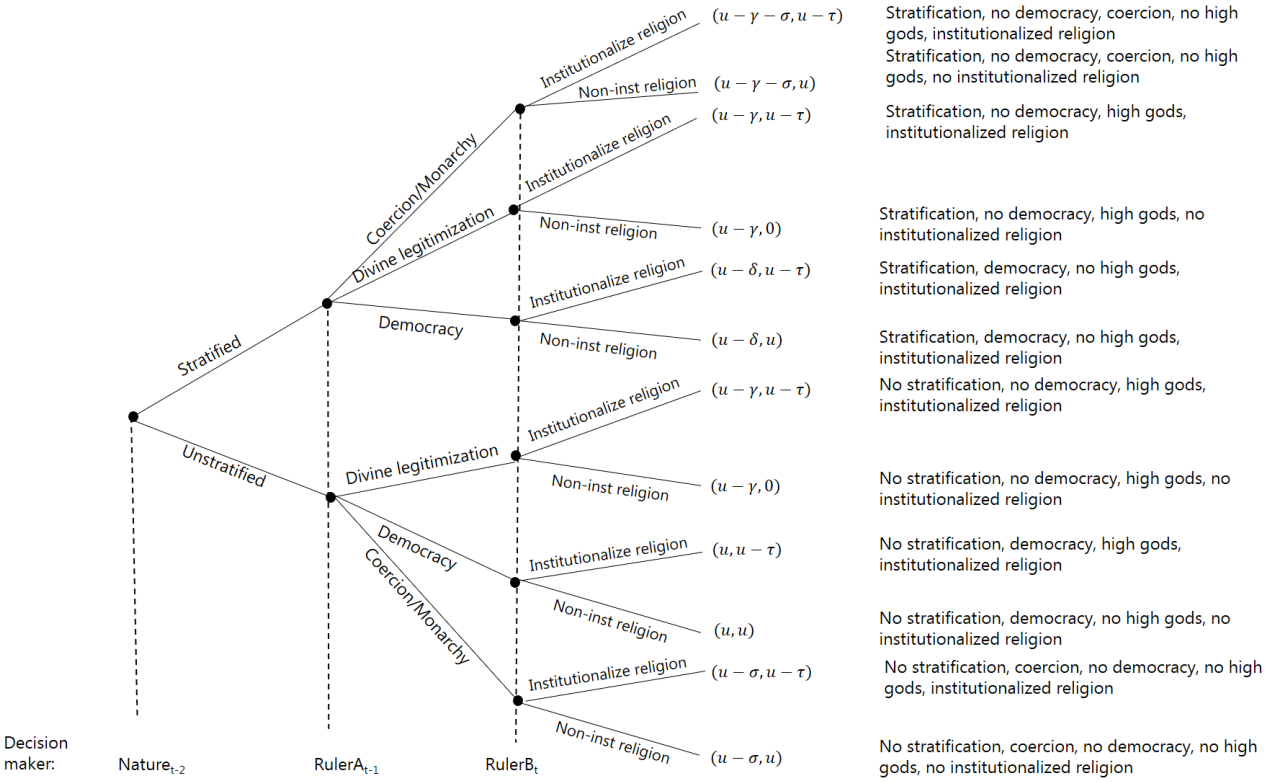
B Appendix Figures and Tables

Figure A.1 High gods and stratification



Notes: This figure presents a partial regression plot from a regression of High Gods on Stratified society, controlling for decade and language fixed effects. The plot corresponds to column (3) of Table 1.

Figure A.2 Model including coercion



Notes: This figure presents the same sequential game as in Figure 1, but now including the third option for ruler: coercion.

Table A.1 Prevalence of high gods on stratification instrumented with irrigation potential

Dep. Var. High Gods	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Stratification (instrumented)	8.26	2.67**	1.30***	1.39**	0.91***	0.86**	1.18***	1.00***
	(31.48)	(1.23)	(0.45)	(0.62)	(0.29)	(0.34)	(0.40)	(0.31)
Absolute latitude				-0.00				
				(0.01)				
Avg agriculture suitability					-0.14			
					(0.11)			
Temperature						6.40		
						(8.51)		
Precipitation						-0.65		
						(0.64)		
Soil constraints (%)						0.49**		
						(0.20)		
Agriculture							-0.01	
							(0.01)	
Settlement complexity								-0.19*
								(0.10)
Observations	497	497	497	497	497	497	497	497
Continent FE	N	Y	N	N	N	N	N	N
Decade FE	N	Y	Y	Y	Y	Y	Y	Y
Language FE	N	N	Y	Y	Y	Y	Y	Y
Kleibergen Paap F	0.0533	2.725	25.39	14.31	21.41	4.062	20.88	42.87
A-Rubin p-value	0.0528	0.000863	3.97e-05	0.000449	0.00369	0.0739	5.29e-05	2.72e-05

Robust standard errors clustered at the language group level are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.

Table A.2 Correlation between high gods and irrigation potential, reduced form placebo exercise

	(1)	(2)
	High Gods	
Irrigation Potential	0.51***	-0.07
	(p=0.00)	(p=0.28)
Sample:	Stratified Societies (Obs. 309)	Unstratified Societies (Obs. 204)

This tables reports the simple unconditional correlations from regressions of High Gods on Irrigation Potential when the societies are Stratified or Unstratified.

Table A.3 Religious laws and pre-historic belief in high gods across countries, robustness to other aggregation methods

Dep. var. Religious Laws	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Average high gods	0.139***	0.308***	0.114***	0.249**	0.132***	0.278**	0.120***	0.221**
	(0.023)	(0.110)	(0.023)	(0.103)	(0.023)	(0.108)	(0.024)	(0.106)
Observations	119	118	108	107	119	118	117	116
R-squared	0.330	0.403	0.276	0.360	0.309	0.397	0.276	0.401
Aggregation	Avg	Avg	Sizew	Sizew	Complexw	Complexw	Capitalw	Capitalw
Continent FE	Y	Y	Y	Y	Y	Y	Y	Y
Controls	N	Y	N	Y	N	Y	N	Y

High gods are averaged as follows: unweighted country average in columns (1) and (2), weighted by the size of the society in columns (3) and (4), weighted by the level of societal complexity in columns (5) and (6), and weighted by one over the distance to the current capital city in columns (7) and (8).

Table A.4 Religious laws and pre-historic belief in high gods across countries, further robustness

Dep. var. Religious Laws	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
High Gods	0.42***	0.38***	0.43***	0.42***	0.42***	0.42***	0.38***	0.42***	0.36***	0.42***	0.42***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)	(0.07)	(0.08)	(0.07)	(0.07)
Christian majority		-0.12*									
		(0.06)									
Buddhist majority			0.06								
			(0.10)								
Hindu majority				0.02							
				(0.17)							
Agr suitability variance					-0.10						
					(0.23)						
Temperature						0.01					
						(0.00)					
Precipitation							-0.04				
							(0.04)				
Soil constraints (%)								0.04			
								(0.30)			
Arable land (%)									-0.11		
									(0.07)		
Distance to ocean										-0.02	
										(0.07)	
Cereal suitability											0.03
											(0.07)
Observations	119	119	119	119	118	118	118	118	118	119	119
R-squared	0.33	0.35	0.33	0.33	0.33	0.35	0.34	0.33	0.35	0.33	0.33
Continent FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Table A.5 Regressions of individual laws on irrigation potential and high gods

	Effect of Irrigation Potential		Effect of High Gods	
Dep. Var. Religious Laws as Below	Coefficient	Std. Error	Coefficient	Std. Error
Restrictions on interfaith marriages	0.70***	0.08	0.55***	0.09
Laws of inheritance defined by religion	0.65***	0.09	0.43***	0.11
Marriage and divorce can only occur under religious auspices	0.59***	0.09	0.49***	0.09
Female testimony in court is given less weight than male testimony	0.57***	0.07	0.37***	0.09
Restrictions or prohibitions on the sale of alcoholic beverages	0.56***	0.08	0.39***	0.09
Blasphemy laws, or any other restriction on speech about majority religion	0.54***	0.10	0.50***	0.11
Official government positions/salaries/other funding for clergy excluding salary	0.53***	0.11	0.41***	0.13
Presence of religious courts with jurisdiction over family law and inheritance	0.50***	0.10	0.32***	0.11
Restrictions on women other than those listed elsewhere in this list	0.50***	0.08	0.43***	0.09
Censorship of press or other publications on grounds of being anti-religious	0.44***	0.09	0.40***	0.10
Dietary laws (restrictions on the production, import, selling, or consumption of certain goods	0.38***	0.07	0.25***	0.07
Restrictions on conversions away from the dominant religion	0.38***	0.08	0.29***	0.09
Some or all government officials must meet certain religious requirements	0.36***	0.09	0.32***	0.09
Funding for building, maintaining, or repairing religious sites	0.35***	0.12	0.31**	0.13
Restrictions on premarital sex	0.34***	0.07	0.20**	0.08
Laws which specifically make it illegal to be a homosexual	0.33***	0.11	0.39***	0.12
Presence of an official government ministry or department dealing with religious affairs	0.30**	0.12	0.39***	0.13
Other restrictions on activities during religious holidays	0.30***	0.09	0.16*	0.09
Religious precepts used to define crimes or set punishment for crimes	0.26***	0.06	0.22***	0.07
Religious education is present in public schools	0.25**	0.12	0.28**	0.14
Presence of religious courts with jurisdiction over matters of law other than family law	0.23***	0.07	0.19**	0.08
The presence of religious symbols on the state's flag	0.23**	0.11	0.30***	0.11
Funding or other government support for religious pilgrimages	0.22***	0.08	0.13	0.09
Government funding of religious education in colleges or universities	0.21*	0.11	0.19**	0.11
Blasphemy laws protecting minority religions or religious figures	0.21**	0.10	0.22**	0.10
Government funding of seminary schools	0.20*	0.10	0.24**	0.11
Mandatory closing of some/all businesses during religious holidays	0.19**	0.09	0.17*	0.10
Direct general grants to religious organizations	0.16	0.11	0.21**	0.11
The charging of interest is illegal or significantly restricted	0.15***	0.04	0.14***	0.05
Free air time on television or radio is provided to religious organizations	0.15	0.12	0.30**	0.13
Government collects taxes on behalf of religious organizations (religious taxes)	0.15*	0.08	0.12	0.08
Marriages performed by clergy of at least some religions are given automatic civil recognition	0.12	0.12	0.25*	0.13
Religion listed on state identity cards or other government documents	0.11	0.08	0.14	0.09
Seats in Legislative branch/Cabinet are by law or custom granted	0.1	0.07	0.21***	0.08
Public schools are segregated by religion or separate public schools exist for major religions	0.1	0.08	0.14*	0.08
Burial is controlled by religious organizations or clergy	0.1	0.07	0.14**	0.07
Certain religious officials become government officials by virtue of their religion	0.09**	0.05	0.14***	0.05
Women may not go out in public unescorted	0.06*	0.04	0.08*	0.05
Certain government officials are also given an official position in the state	0.05	0.05	0.08	0.05
Required public dress or modesty laws for men	0.04	0.05	0.08*	0.05
Government funding of religious primary/secondary schools or religious education	0.04	0.13	0.08	0.14
Prohibitive restrictions on abortion	0.04	0.10	0.08	0.11
Women are required to wear some form of religious dress	0.04	0.05	0.12**	0.06
Significant restrictions on public music or dancing other than the usual zoning	0.04	0.03	0.07	0.04
Funding for religious organizations or activities other than those listed above	0.02	0.10	-0.03	0.10
Presence of a police force or other government agency which exists solely to enforce religion	0.02	0.05	0.08	0.05
Restrictions on access to birth control	-0.01	0.05	-0.04	0.06
Government funding of religious charitable organizations including hospitals	-0.04	0.11	-0.09	0.13
Some religious leaders are given diplomatic status, diplomatic passports, or immunity	-0.06	0.07	0.06	0.08
A registration process for religious organizations exists	-0.06	0.13	-0.09	0.14
Presence of official prayer sessions in public schools	-0.17	0.10	-0.02	0.11

This table reports regressions of each individual law on Irrigation Potential and High Gods seperately controlling for continent fixed effects.

Table A.6 Implications for additional strengths of beliefs

Dep var:	(1) Importance of god	(2) Religious service	(3) Religious person	(4) Believe in god	(5) Believe in afterlife	(6) Comfort in god
			Panel A. Religious laws			
Religious laws	0.37***	0.11*	0.19***	0.25***	0.33***	0.37***
	(0.08)	(0.07)	(0.07)	(0.08)	(0.10)	(0.10)
Observations	101	99	101	90	78	80
R-squared	0.58	0.41	0.28	0.27	0.41	0.41
			Panel B. High gods			
High Gods	0.35***	0.02	0.24***	0.34***	0.22**	0.38***
	(0.07)	(0.06)	(0.06)	(0.07)	(0.10)	(0.08)
Observations	70	69	69	62	53	55
R-squared	0.65	0.48	0.42	0.44	0.39	0.53
Sobel-Goodman (religious laws) share	0.34	NA	0.05	0.15	0.48	0.27
			Panel C. Irrigation potential			
Irrigation potential	0.26***	-0.07	0.10	0.18**	0.33***	0.24**
	(0.08)	(0.06)	(0.06)	(0.08)	(0.09)	(0.11)
Observations	104	102	104	93	80	82
R-squared	0.52	0.38	0.22	0.24	0.44	0.35
Sobel-Goodman (religious laws) share	0.70	NA	NA	0.53	0.40	0.75

All regressions include continent fixed effects. The dependent variable is country-averages of answers to the question "How important is God in your life?" in column (1), "How often do you attend religious services?" in column (2), "Are you a religious person?" in column (3), "Do you believe in God?" in column (4), "Do you believe in an Afterlife?" in column (5), and "Do you find comfort in God?" in column (6). Robust standard errors are in parentheses. $*p < 0.10, **p < 0.05, ***p < 0.01$.