

# Persistence of religious states

Oláyínká Oyèkólá

E-mail: [o.oyekola@exeter.ac.uk](mailto:o.oyekola@exeter.ac.uk)

URL: <https://www.olayinkaoyekola.com>

INTO University of Exeter, Stocker Road, Exeter, EX4 4PY, UK

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## ABSTRACT

The relationship between state and religion has deep roots in history, being recognised as one of the oldest alliances, or antagonists, known to mankind. Recent evidence suggests that a wall of separation between the two have become widespread. Yet, among our sample of 147 countries, 56 had state religion in 2000. This paper offers an inquiry into why—despite modernity, diversity, etc.—religious states persist in some countries, and not in others, to the present. Our work establishes two reasons. First, a state may act as an ‘institutional carrier’ of the history of being a religious state, which we see as a *necessary* condition. Second, a state may act as an ‘institutional barrier’ to the potential discontinuity of this history, which we view as a *sufficient* condition. Our analysis construes these ‘carrier’ and ‘barrier’ functions of a state as producing a *reinforcement bias* and we operationalise them by exploiting cross-national disparities in the stock of state history. Consistent with this understanding that longer state history upholds the persistence of religious states, we obtain a remarkably robust positive link between our indicators of state history and religious states, even after controlling for a broad set of probable confounders (e.g., legal origins, colonial heritage, geographic controls, continent dummies, and measures of economic development, political ideology and religious heterogeneity). Finally, by highlighting the significant role of historical processes in determining the formation and persistence of religious states, our results also underline state history to be a prototypical source of cross-national differences in other proxies for socio-institutional qualities.

*JEL codes:* H10, H11, L51, N4, Z12

*Keywords:* State history, state capacity, state religion, state regulation of religion

## 1. Introduction

The relationship between state and religion is deeply rooted in history; see Barro and McCleary (2005), Coşgel et al. (2018), Johnson and Koyama (2013), Stark (2007), and Vaubel (2017), amongst others. Vaubel (2017) surveys the conditions that were conducive for introducing thirty-one episodes of state religion dating back from 1871 AD, the rule of Emperor Meiji in Japan, to 2630 BC, the reign of Pharaoh Djoser in Egypt. Barro and McCleary (2005) suggest that the motives behind the decision by rulers to establish religious states centuries, or millennia, ago are somewhat dissimilar to the societal forces at work, as we stepped into the 21<sup>st</sup> century. Relatedly—and in so far as it involves a nation’s most dominant religion—the political economy and rational choice equilibrium signalled by Adam Smith’s assertions concerning the self-interests and objectives of both the monarchs and clergies, subject to their respective constraints, is a reciprocal outcome where states make religion and religion makes states.<sup>1</sup> Despite this, an abundance of methodical analyses exist that predominantly engage with concurrent events involving the authorities or institutions of both state and religion. Meanwhile the effects of ancient state structures on modern religion market organisations, especially the persistence of religious states in today’s world, has received rare attention. In light of these observations, this paper asks a critical question: Are modern-day choices of state religion sustained by historical experiences of statehood?

Our goal in this paper is to answer this question, with a view to contributing to the budding literature at the intersection of state capacity and the regulation of the religious market. The literature on state capacity has substantially increased, and become vibrant, in the last 25 years, yet, for a long time, said very little about state control of the religion market. We assert that there is good reason to consider whether capable states, both past and present, may be a leading factor for analysing the continuing existence of state-run religions. Following in the wake of a well-developed comparative political science literature on developmental states (see, e.g., Evans et al. 1985; Evans 1995; Evans and Rauch 1999; Tilly 1975, 1990), Buckley and Mantilla (2013), for instance, claim that “bringing the state back in” to the politico-economy scholarship of state regulation of religion will drive theorising in new directions. Casting state as the main protagonist in a methodical assessment of the determinants of religion market regulation, they argue that their analysis goes beyond conventional wisdom provided by the existing theories of religion.

By and large, the state capacity literature maintains that larger, stronger and more centralised states are invaluable for explaining observed cross-national differences in economic prosperity (e.g., Acemoglu and Robinson 2012; Besley and Persson 2010; Rothstein 2011), susceptibility to economic crises (e.g., Acemoglu et al. 2003; Du 2010), civil war onset and internal conflicts (e.g., Blattman and Miguel 2010; Fearon and Laitin 2003; Hendrix 2010), experiences of poverty (e.g., Chong and Calderon 2000; Tebaldi and Mohan 2010), and health and education outcomes (e.g., Dawson 2010; Rajkumar and Swaroop 2008)

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<sup>1</sup> This is contrary to Karl Marx’s one-way causal theory that states produce religion (Marx [1844] 2002).

to mention but a few.<sup>2</sup> Naturally, one might expect this to extend to religion, as is rightly posited by Buckley and Mantilla (2013). However, they only centre on the role of present-day state capacity on governmental regulation of the religion market.

We recognise that longer state history can no longer be ignored (see, e.g., Bockstette et al. 2002; Chanda and Putterman 2007; Chhibber 1997; Johnson and Koyama 2017) and propose it as a suitable candidate to account for why religious states persist in some countries today. According to Bockstette et al. (2002), for instance, historical states engender higher quality formal bureaucracies and create strong administrative capabilities due to the ‘learning by doing’ phenomenon.<sup>3</sup> What has so far received scant attention in the empirical literature is a methodical evaluation of the historical state roots of the persistence of religious states in modern times. We argue that state antiquity is a *two-edged* instrument that confers early start proclivities on historic states, which continue to shape subsequent economic, institutional, and religious development. This perspective implies that, on average, experienced nations “do what they do better than do newly formed” ones (Bockstette et al. 2002), such that, *ceteris paribus*, the same state apparatuses appropriated to pursue economic and political expansions may be plied to undermine religious liberty or to perpetuate state monopoly of religion (Geloso and Salter 2020; Hendrickson et al. 2018; Hirshleifer 2001; Johnson and Koyama 2017).

Researchers are indeed beginning to unearth the origins of historic state-religion interactions that may be decisive for the way states influence the religion market today (e.g., Barro and McCleary 2005; Coşgel et al. 2018; Johnson and Koyama 2013). Our efforts complement these projects, particularly the work of Coşgel et al. (2018), who study the long uneasy relationship between state and religious actors, using a novel and meticulously collected annual cross-national dataset for the period ranging from 1000 to 2000 AD. Specifically, they show that the disestablishment of state religions is amongst the most far-reaching institutional reforms of the past one thousand years. Empirically, they find religion market concentration and historical state inertia to be significant predictors of whether a country becomes a secular or religious state. Whilst we are in agreement with Coşgel et al. (2018) that an understanding of the *emergence* of secular states is salient, perhaps more pertinent is a need to comprehend the *persistence* of religious states. In focussing on the existence of state religion, our empirical work is comparable to the contributions of Barro and McCleary (2005) and Coşgel and Miceli (2009).

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<sup>2</sup> Tabellini (2005) gives a review of the literature on the role of state in aiding economic development. A more recent review of the impacts of state capacity on economic growth, national income levels, and other development outcomes can be found in Savoia and Sen (2015); they also give an appraisal of the current thinking on the origins of state capacity. Along similar lines, Bardhan (2016) contains a reappraisal survey of the current literature on the association between state and development.

<sup>3</sup> Bockstette et al. (2002) construct an index of state antiquity and found that it is materially related to indicators of institutional quality and both per capita income in 1995 and economic growth over the 1960-95 period. Besides, their index of statehood depth has been utilised extensively, either in its original form or in adjusted forms, in several studies that cuts across different areas of socio-economic and comparative political science research—see, for example, Ahlerup and Olsson (2012), Ang (2013), Borcan et al. (2018), Ertan et al. (2016), and Hariri (2012), amongst others.

Identifying that state-run religion is undoubtedly the single most important form of state monopoly of a market over the past two-thousand years, Barro and McCleary (2005) examined the factors determining the likelihood of state religion among nearly 200 countries in 1970 and 2000, emphasising the importance of the adherence rate of main religion, market size, and political environment. In a similar fashion, Coşgel and Miceli (2009) investigated causes influencing a government's choice of state monopoly of religion or state regulation of religion in the early 2000s, while stressing the relevance of market competition and democratic polity, as in Barro and McCleary (2005), as well as considering religious loyalty as a main factor. However, both works have left largely unidentified the role of pre-20<sup>th</sup> century evolution of state capacity as a primary determinant of post-20<sup>th</sup> century religion market outcome. We therefore argue that the history of state-religion alliances around the world offers us an opportunity to methodically assess our query and opt to use the length of statehood experience as a “carrier of [this] history” of crown-clergy determinism of equilibrium observed in the religion market today (David 1994; North 1991).

We evaluate our claim by regressing a measure of the persistence of religious states on an indicator of the length of statehood experience, exploiting a core econometric framework where the former is likewise modelled as a function of legal origins, colonial heritage, geographic controls and continent dummies. We provide results using linear probability models for ease of interpretation. Our regression analysis establishes a robust, positive and significant relationship between lengthier experience of statehood and persistence of religious states. We note that the result prevails after we carry out a number of robustness checks, including employing: alternative estimation techniques (e.g., probit, logit, and two-stage least squares regressions—the latter is done to ease problems relating to endogeneity, reverse causation and measurement error by using biogeography as an instrument for state history, as in Ertan et al. (2016)), alternative definitions of core variables and model specification (e.g., using the 1970 instead of the 2000 coding of religious states and varying the decay rates for state history from the 5% used for the baseline analysis), different sample compositions and classification (e.g., excluding outlying observations), and controlling for other variables (e.g., including other historical and contemporary factors that may affect religion).

This paper contributes to a mountain of theoretical and empirical work on the sociology, history, and economics of religion, which acknowledges that the secular (state) and the sacred (religion) are inherently interwoven and seeks to use this state-religion nexus as a basis for explaining trends in religious markets. Whilst the bulk of earlier studies in these areas were coetaneous and devoted, wittingly or not, to discovering which of Smith's postulations regarding the crown-clergy relations, demand-side *vs* supply-side theories, is supreme for elucidating the modes and extents of state interactions with religion,<sup>4</sup> recent

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<sup>4</sup> Smith (1776 [1908]) argued that state monopoly of religion is promoted when clergies of the most populous religious sect curry favour from the crown's magistrate against the remaining sects, while in return political rulers call on clergies to further their self-interest. Based on this foundation, both the demand-side and the supply-side perspectives have received additional

research has broadened the scope to include tracing the political origins of this relationship, determining how it has trended over time, and gauging whether its effects are long-lasting (e.g., Barro and McCleary 2005; Coşgel and Miceli 2009; Coşgel et al. 2018; Gill 2008; Johnson and Koyama 2013). Our focus on the persistence of religious states in the current period that may be due to historic state capacity makes our work to fit better with the latter group. Hence, our study signifies that ancient co-evolution of state-religion has generated cultural effects that leave lasting legacies to the present.

Our paper is thus also related to the literature focussing on the parts that historical processes play in causing durable cross-national disparities in the levels and diffusions of contemporary institutional, socio-economic and human development (e.g., Acemoglu et al. 2001; Ashraf and Galor 2013; Comin et al. 2010; Diamond 1997; Easterly and Levine 2016; Engerman and Sokoloff 1997; Hibbs and Olsson 2004; Jones 2013; La Porta et al. 1998; North 1991; Nunn 2009, 2014; Olsson and Paik 2016; Oyèkólá 2021; Spolaore and Wacziarg 2013). In all these projects, the results indicate that history matters, setting societies on divergent development paths with long-term ramifications. In this paper, we argue that the manner in which primitive state institutions and religious bodies interacted can play a part in how they presently relate, with discernible consequences for current religion market outcomes.

We organise the remainder of the paper as follows. Section 2 situates our hypothesis within the present body of work by using a non-exhaustive review of the literature and historical/current analysis. Section 3 presents a description of the main variables used in core regression analysis. Section 4 documents our main findings along with several robustness tests. Section 5 closes the paper with comments on the wider implications of our study for countries that are religious states.

## **2. Why some states still provide religious goods: hypothesis and related literature**

Secular states have gradually evolved across most of the world over time; nonetheless, religious states have remarkably persisted in some nations to the present. Indeed, little is known of the institutionalisation of religion amongst primitive band. However, the received wisdom is that, in antiquity, *state religiosity* (where the ruler is also the priest, so that there is no wall between the state and the sacred) was high while *state secularism* (where the ruler and the priest are different individuals, so that there is a wall of separation between the state and the sacred) was low; see, for example, Stark (2007). As discussed above, the thesis of Coşgel et al. (2018) deals with explaining the rise of secular states—that is, why did secular states emerge. In contrast, this paper examines what Stark (2007, p. 97) refers to as “the triumph of tradition”—that is, why did religious states persist.

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expositions, resulting, respectively, in the now commonly referred to secularisation hypothesis and the religious marketplace model. Gorski and Altinordu (2008), Iannaccone (1998), Iyer (2016) and Philpott (2009) provide comprehensive reviews of this literature.

Our work can thus be partially read as providing a theory for why the number of religious states cannot be zero in equilibrium. Towards this end, we propose that state antiquity, a measure of the historical state capacity, acts both as an *institutional carrier* of the history of religious states, leading to path-dependency, and as an *institutional barrier* to the rise of secular states, resulting from context-dependency. Moreover, we envision that a state's function as an institutional carrier is a *necessary* condition, while its role as an institutional barrier is a *sufficient* condition. When both conditions are present, we opine that states often get enmeshed in what we term as *reinforcement bias*, which, in this study, is for perpetuating the status quo of religious states. The rest of this section very briefly discusses the building blocks of this hypothesis.

We begin by looking at the notion of path-dependency in a state's behaviour. As we noted before, the majority of current scholarship on state capacity has focussed on its role for enhancing market conditions, which are conducive for attaining and sustaining the variegated landscape of development (Besley and Persson 2011; Dincecco 2017; Johnson and Koyama 2017). State capacity, however, has multitudes of connotations.<sup>5</sup> In our context, we view it as reflecting "the ability [of states] to implement official goals, especially over the actual or potential opposition of powerful social groups" (Skocpol 1985, p. 9) and "the manner in which [a state's] power is exercised in the management of a country's economic and social resources" (World Bank 1992, p. 1). This position is indispensable to our argument, because the state is recognised as the dominating entity and our hypothesis that historical state capacity matters (necessary condition) for the persistence of religious states rests on this conception.<sup>6</sup>

Besides, it has also been established that strong states can develop predatory capabilities that may impede progress due to the 'incentive problem' (e.g., Geloso and Salter 2020; Johnson and Koyama 2017; Piano 2019). Admittedly, this appears easily resolved and has been well-illuminated in the state capacity literature. However, having added the 'knowledge problem' as a second reason to be sceptical about the preeminent role that state capacity may have in explaining long-run outcomes, Geloso and Salter (2020, p. 375), for instance, note that: "Strong states may contribute to economic growth, so long as states are *constrained* [...]. But state capacity itself cannot be the *main* source of the constraint." This interpretation is in stark contrast to the pro-state capacity literature, which takes it, as given, that political rulers seeking state-building will tend to naturally possess the requisite stronger incentives to solve the 'commitment problem' by also strengthening the constraints on themselves (e.g., Acemoglu 2005; Dincecco 2009, 2015; Fukuyama 2004; North and Weingast 1989; Weingast 1995). Even if the incentive problem is accepted as reconciled, the question still remains about the knowledge problem. We however do not think that this

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<sup>5</sup> Standard definitions are based around the ability (or lack thereof) of states to levy taxes and spend its proceeds efficiently (*bureaucratic and administrative capacity*), formulate and enforce the rule of law (*legal capacity*), geographical coverage of formulated policies (*infrastructural capacity*), generate tax revenues (*fiscal capacity*), and defend its authority against foes, both foreign and local (*military capacity*); see, e.g., Bardhan 2016, Hendrix 2010, and Savoia and Sen 2015.

<sup>6</sup> This is comparable to its part in Barro and McCleary (2005) and Coşgel and Miceli (2009). See instead Coşgel et al. (2020) and Ferrero (2013) for the analyses of cases when religion dominates the state (theocracy).

causes any concern in our case because we postulate a theory that accentuates a possible predatory behaviour<sup>7</sup> on the part of ruler.

We are certainly not the first to recognise the long historical union between state and religion, and how this has evolved over time to birth the legitimacy effects given to, or refused, bureaucratic monarchies and political rulers by religious leaders or elites of other social groups with vested interests. Hitherto, the literature investigating the likelihood of religious states has fixated on what seems to us like the negotiable elements of the state-religion interplay described by Barro and McCleary (2005, p. 1332) to be: “a political calculus that involves interactions between the government and the religion sector.” Yet, there abounds many recorded accounts, which demonstrate that state rulers have notoriously usurped their authority and the state apparatuses to sequester the wealth of religious institutions: Akhenaten of Egypt, Nabonidus of Babylon, Gustaf Vasa of Sweden, Henry VIII of England, and Louis XIV of France provide just a few examples of rulers, who confiscated assets of *rival* religions during their reigns (e.g., Vaubel 2017). In all these cases, *state strength* means that the ruler involved did not need consultation for obtaining legitimacy (e.g., prestige, wealth, territorial control, etc.), he simply relies on the power of coercion for procuring it, while demanding absolute loyalty to the privileged religion from all the other religious authorities and the polity’s citizenries.

Like all institutions, and in line with North (1981, 1991), we expect the institutions of the established state religions to persist, regardless of whether they were put in place through *contractual* agreements or *predatory* expropriations. Coupled with historical processes, the role of state in religion further manifests an astounding degree of persistence, which has altered the trajectory of the religion market organisations in many nations from ancient time to the present day. Along similar lines, David (1985, 1994) argues that, once procedures and duties are learned, refinements of such conventions, values and laws via repeated usage are preferred, given the cost and the difficulty of convincing societies with deep-seated interests of the significance of any proposed changes to the contours of the received institutional practices. Further, Stark (2007) writes of how once the “complexity of the body of knowledge” is learned, priests in ancient Sumer and Egypt opted for “freezes” to additional changes in the religious culture, such that religious innovations were seen as heretical.

This path-dependency created through the history between the institutions of both state and religion is thus one of the reasons for us submitting that the equilibrium level of religious states will always be greater than zero. On this matter, Coşgel et al. (2018, p. 23) correctly note that:

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<sup>7</sup> According to North (1981, p. 22), predation by a state indicates that “a set of property rights that maximized the revenue of the group in power, regardless of its impact on the wealth of the society as a whole” is in operation within a polity. Although our results do not hinge on this perspective, we think that coercive appropriation on the part of a state, especially when it is historic, strengthens our argument. As we show in the text, the method adopted for the formation of strong states have learning elements to it, which, due to the historical process, can persist from antiquity to modernity (Guiso et al. 2016; Tabellini 2010).

...deeper rooted states have deeper rooted institutions, implying the further back we go the tougher the distinction between function and tradition. This becomes significant with respect to religion and its institutions, which also solve coordination games among large networks. If these standards enhance the legal apparatus, they are absorbed, as was often the case in areas like taxation and education. This causes religious authorities to align with political rulers in preserving tradition.

This links nicely with our second point: context-dependency in cultural evolution. If we claim that the equilibrium quantity of religious states of zero is intrinsically not viable, then we need to explain why (not). Perhaps this is even more pertinent in light of the recent evidence of longer declining trend in the number of religious states (Coşgel et al. 2018). More specifically, they show that the fraction of territories under religious states fell from 86% in the year 1000 AD to 23% in 2000 AD. Are we then saying that there is a lower bound on this ‘fraction’ that is not zero? Our answer is yes. Albeit we do not, nor do we need to, have a predicted equilibrium figure to recommend. That said, we have an exegesis that, as we suggested earlier, gives a sufficient condition for the persistence of religious states. We expound this argument in two ways.

First, the literature on the importance of culture, in general, and religion, in particular, has established their impactful multifarious influences in determining both cross-national and cross-regional distinctions in numerous areas, such as conflict, demographic, developmental, educational, financial, institutional and socio-economic outcomes (see, e.g., Becker and Pascali 2019; Benabou et al. 2015; Chaudhary and Rubin 2016; Popova 2014; Nunn 2012; Stultz and Williamson 2003; Tabellini 2008, 2010). One of the most valuable lessons learnt from the present literature is that cultural values and norms can be tremendously persistent (e.g., Alesina et al. 2013; Buggle 2020; Giavazzi et al. 2019; Guiso et al. 2006; Nunn 2012; Stark 2007; Voigtländer and Voth 2012). Relatedly, Bisin and Verdier (2001) show that one channel through which culture may be long abiding is through transmitted beliefs, identities, and values across generations from parents to their children. Although used conversely, we believe that the following inference of Franck and Iannaccone (2014, p. 386) is particularly suitable for our setting:

...religious capital [are] accumulated through experience, instruction, and interactions. Where you stand depends largely on where you have been sitting, and with whom. And most youthful sitting occurs in schools. The principal policy lessons should not surprise public choice researchers: schools are instruments of indoctrination, both religious and secular; competing interests battle endlessly over every aspect of education; and no institution wields more power in modern nations than the centralized state.

The need to protect a particular religious order has persisted for thousands of years. Additionally, the state serves as a deviser of school curriculum in many nations, especially in religious states. Hence, in such contexts, the state and the society (a continuum of parents and wards) are complements in ensuring that each generation is furnished with a consistent religious culture/content.<sup>8</sup> This thinking fits well with our notion of reinforcement bias. State and religion went hand in hand in ancient civilizations. Therefore, religious states emerged in most city-states in antiquity because of the synergistic association between rulers and priests. Meanwhile, once a ruler moved to impose a state religion and was successful, the defence of such established religion generally rested with the clergies and not the crown (Stark 2007). We submit that religious states will persist in contexts where the strength of the society to enforce the customary, inherited religion is greater than the alternatives, including when a present-day government seeks to reform the religion market structure.

Second, this argument is applied to Turkey (Coşgel and Miceli 2009).<sup>9</sup> Before becoming a republic in the 1920s, the Turkish Ottoman Empire had been a Muslim state for hundreds of years, having first come into contact with the religion in the 10<sup>th</sup> century (Barrett et al. 2001; Riches and Palmowski 2016). Hence, the new constitutional provisions empowering secularism at the expense of Islamism appeared doomed from inception.<sup>10</sup> Despite the constitutionally proclaimed intentions of the government to decrease the effects of Islamic religion in both political and public life in the country and to increase the impacts of Western secularism, the enormous oppositions from those—traditional religious factions and possibly most of the Muslim-majority populace—with vested interests has meant that the state continued to provide religious goods. Appointment of clerics and payments of their salaries, maintaining old mosques and financing the construction of new ones, and funding the design of religious curriculum in public schools are just a few examples of how the government of Turkey has remained deeply involved in the provision of religious goods, especially since the death of the secularization reformer Mustafa Kemal Atatürk in 1938.

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<sup>8</sup> To study religious decline in ten Western democracies during the 20<sup>th</sup> century, Franck and Iannaccone (2014) consider instead a case where the state and the society are substitute providers of religious goods.

<sup>9</sup> In a parallel exposition, Coşgel and Miceli (2009, pp. 414-415) use Turkey's experience to provide further supports for why some nations still have state-run religions. We however stress divergent arguments. Coşgel and Miceli (2009) write of rulers using religion to legitimise their reigns, while we focus on the citizens using the state to perpetuate their religions. Although we do not disagree with Coşgel and Miceli's interpretation, we purely observe that Turkey's case lends itself well to our notion of reinforcement bias.

<sup>10</sup> See, for example, Barro and McCleary (2005), who classified Turkey as having a state religion in 1900 but as a secular state in both 1970 and 2000. Although technically, Turkey is a secular state, it, in practice, acts like a religious state. One reason for this is that, while Article 2 of the 1961 constitution declares the country to be a secular state, with Articles 12, 19, and 20 all guaranteeing equality before the law and freedoms over many personal, political, and social areas (including religion), there also exist numerous criminal codes against proselyting (Barrett et al. 2001). As we discuss in Section 3 below in relation to what constitute religious states, the president of the Republic of Turkey names and removes the president of the Diyanet. Besides, the expanded duties of the Presidency of Religious Affairs, as provided for in Law 6002, published in 2010, is paid for budget from state budget.

Based on Barrett et al. (2001), 77% of the Turkish population was Muslim in 1900; whereas the corresponding number a hundred years later in the year 2000 is 97%. In support of our argument, therefore, the unofficial state religion now has more adherents than when Turkey was officially a religious state, thereby affirming the intransigent nature of cultural endowment.<sup>11</sup> Thus, it is not surprising that Coşgel and Miceli (2009) characterise Turkey’s experience since the 1920s as an “anomalous scenario.” In any case, the reason that we have for this is that history constraints our contemporary generation of Turks through inculcated religion to continue to demand that the government upholds their venerable religious identity. We argue that this creates a conspicuous disincentive for other religious states, whether it be Iran or Israel, from pursuing any modernity agenda that may interfere with the prevailing religious conditions. The hypothesis that we espouse here supplements the well-known result that cultural persistence in the process of historical development is a powerful mechanism for explaining why reforms work in some nations, but fail in others (e.g., Alesina and Giuliano 2015; Greif 1994; Tabellini 2008). Besides, our explanation also sits well with why the transplantation of institutions (legal, political, and religious) may produce varied results (Acemoglu and Robinson 2016; Johnson and Koyama 2017).

### **3. Description of core measures**

To examine the hypothesis that longer statehood experience makes the persistence of religious states more probable, we need appropriate empirical indicators for these variables and other relevant covariates that have been used in related literature, and which are employed in our regression analyses. In this section, we present a description of the data sources and definitions of the main measures used to generate the core results documented in Section 4. The description of other variables used in generating empirical estimates is included as they arise in the remainder of the paper; see also the note attached to Table A1.

#### *3.1. Dependent variable—persistence of religious states*

As our empirical pursuit was initiated to provide an historical explanation for the continuing choice of official state religions in our modern-day world, the dependent variable is thus an all-or-nothing indicator, reflecting whether, or not, a government dictates a religion which its citizens must follow. For this reason, the persistence of religious states is coded using a de facto measure of whether a country has a state religion (or not) and is taken from Barro and McCleary (2005). This measure of a state’s co-optation of the religion market was compiled for three dates (1900, 1970 and 2000) based on one primary data

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<sup>11</sup> We recognise that a major reason for the share of the Muslim population rising while those of other religions, in particular Christianity, which made up around 21% of the population in 1900 but is a negligible 0.6% in 2000, is the massacre of hundreds of thousands of Armenians and Chaldeans by the Turks during the first World War, with hundreds of thousands more Armenians deported, and subsequent forced/voluntary emigrations of at least an extra million afterwards, especially since the Treaty of Lausanne in 1923 (Barrett et al. 2001; Riches and Palmowski 2016). Nevertheless, our stance is still valid and perhaps more so in these contexts.

source: the first and second editions of *World Christian Encyclopedia* (Barrett 1982; Barrett et al. 2001).<sup>12</sup> Designating a country as having a state religion may, for instance, entail any (a combination, or all) of: (i) declaring an official religion in the country's constitution; (ii) instituting of bureaus for religious affairs; (iii) engaging in religious favouritism through subsidies (or taxes) to a particular religious group; and (iv) compulsory teaching of a specific religious content in public schools. Classifying a country's state religion status is, however, less straightforward for some countries.<sup>13</sup> In any case, we use the information in Table 1 of Barro and McCleary (2005, pp. 1336-1339) to create a binary indicator for the persistence of religious states (religious state = 1 for the presence of an official state religion, = 0 otherwise). We use as our main outcome variable the coded values for the year 2000. For robustness tests, we also use the 1970 values as an alternative dependent variable. This serves as a helpful first approach to deal with the potential misclassification of Italy, Portugal and Spain in the year 2000.

For expository purpose, we also create an additional indicator, which has value ranges from 0 to 3. A value of 0 suggests that state religion did not exist in a country in any of the three years for which data was gathered, while a value of 3 indicates that it had state religion in place on all of those dates. In Figure 1a, we map this international pattern of state religion for the 188 countries for which Barro and McCleary (2005) report a classification for the year 2000. It is evident that this adapted state religion displays a wide cross-national dispersion, which we note to be correspondingly true when using the 1900, 1970, or 2000 values to represent state religion. Although there was a sharp decrease in the number of religious states in our sample of 147 countries between 1900 and 1970, the number increased slightly between 1970 and 2000.<sup>14</sup> Figure 1a reveals that the persistence of religious states are more clustered around South America (Catholic-majority nations), North Africa and the Middle East (Muslim-majority nations), while the Western offshoots (Australia, Canada, New Zealand, and the United States) are amongst those that never instituted state religion.

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<sup>12</sup> This dichotomous measure of religious states has also been used in Barro and McCleary (2006) in their political economy investigation of international determinants of religiosity. Other commonly utilized databases for religious studies include: The Religion and State (RAS) dataset that was assembled by Fox and Sandler (2005) and the annual International Religious Freedom (IRF) Reports prepared by the US State Department once the International Religious Freedom Act (1998) was passed. These sources, although, very comprehensive are less suitable to our analysis, which seeks to determine the persistence of religious states, rather than the form or degree of state interference in religion. On this basis, we use a similar coding approach to Coşgel et al. (2018), their focus being on the emergence of secular states. Hence, their secular states capture a reverse coding of our religious states.

<sup>13</sup> See Barro and McCleary (2005) for a more detailed discussion on issues relating to, for example, Bulgaria, Cambodia, Italy, Portugal, Spain and Sweden. For our baseline regression analysis, we follow Barro and McCleary in using the corrections made to Bulgaria, Cambodia, and Sweden along with Barrett et al.'s original classification for Italy, Portugal, and Spain, while as a test of robustness of the main results, we recode the cases for Italy, Portugal, and Spain. Also interesting is the case of Turkey, which, as we explained in the previous section, has all the attributes of religious states and yet is coded as a secular state. We, however, did not pursue this case empirically.

<sup>14</sup> Specifically, the number of religious states fell from 88 to 53 between 1900 and 1970 but increased by 3 to go up to 56 in 2000. This indicates that there is a certain level of persistence in which countries have state religion.

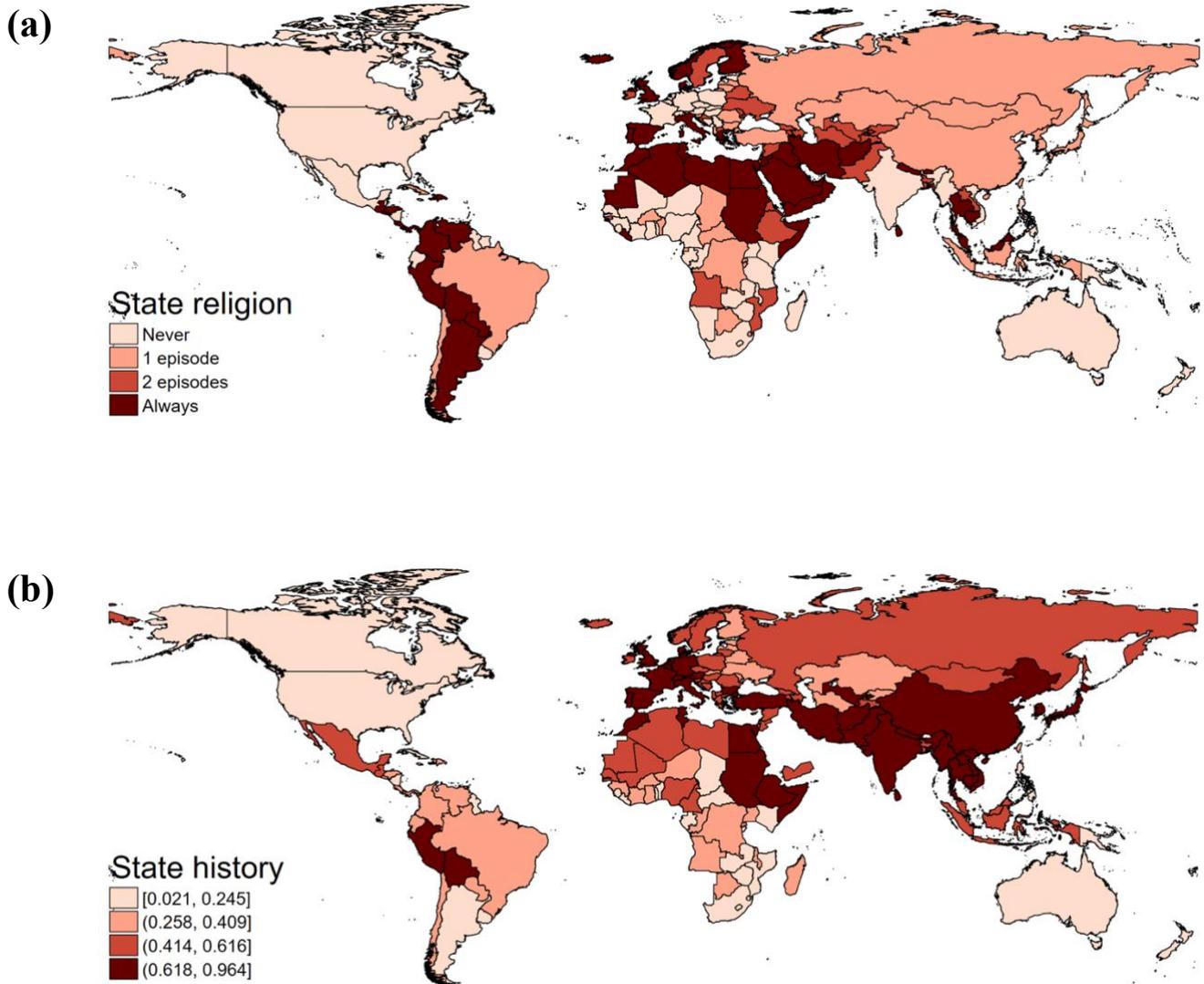


Figure 1: Persistence of religious states and length of state history around the world

Note: In panel (a), the map shows the distribution of religion market monopoly by a state across the world based on composite data for 1900, 1970 and 2000 for 188 countries. Darker regions (i.e., the higher values—the adapted state religion indicator ranges from 0 to 3) signify countries with more persistent religious states. The data for state religion is taken from Barro and McCleary (2005) and is based on Barrett 1982 and Barrett et al. (2001). In panel (b), the map shows the distribution of the length of state history measured over 1-1950 AD based on State Antiquity Index (Statehist) Dataset, Version 3.1 for 151 countries. Darker regions (i.e., the higher range of entries—the index is split into four quartiles) signify countries with longer statehood experience. The data is taken from Putterman (2004).

### 3.2. Independent variable—length of state history

To measure our core independent variable, we use data taken from Putterman (2004), who exploited information from *Encyclopaedia Britannica* to compile the index of state antiquity for 151 countries that span 39 half centuries from 1 to 1950 AD. This index of state history assigns to a contemporary country a positive score from 0 to 50 for each half-century to reflect: (1) whether there existed a government at the macro level (i.e., above the tribal level)—this characteristic separates state polities from tribal-based ruling systems; (2) whether the identified government was foreign or home-based—this feature separates self-governing territories from those that were under colonial hegemony or those experiencing a ruling arrangement that is a hybrid of both; and (3) whether a greater proportion of the present-day territory was covered by that government—this aspect determines the extent to which state apparatuses can bring

its territory under a unified ruling configuration. The above three sub-indexes are computed, respectively, as follows: (1) a value of 1 is given if a territory was judged to have supra-tribal level polity, and 0 otherwise; (2) a value of 1, 0.5, and 0.75 are specified, respectively, for a state's polity that is home-based, foreign-based (relating to countries under colonial rule), and home-foreign amalgam; and (3) a value of 1 is recorded if more than half of the present-day territory is covered by the type of government existing in the relevant half-century, 0.75 if between one-fourth and one-half, 0.5 if between one-tenth and one-fourth, and 0.3 if less than one-tenth.

Further, the scores awarded for each of the three sub-indexes were multiplied by one another and by 50, so that for a given half-century period, a country has a maximum score of 50 if it was an autonomous society, 0 if it lacks supra-tribal level of governance, 25 if the whole territory had a ruling system imposed by a foreign country, etc.; see, e.g., Putterman (2008), Putterman and Weil (2010), and Ang (2013). The version of the index that we use applies a 5% decay rate to every previous half-century. As a robustness test, we have also considered versions of the index with alternative decay rates. Lastly, the scores obtained for composite state history index, which lies on a 0-50 scale, is then transformed to lie on a 0-1 scale. Higher values capture the presence of a longer history of statehood. In Figure 1b, we map the distribution of state history across the 151 countries reported in the State Antiquity Index Dataset of Putterman (2004). It is clear that state history exhibits broad cross-national differences. In particular, each of Asia, Europe, North Africa, the Middle East and South America have clusters of countries with longer experiences of statehood.

### *3.3. Controls in the benchmark analysis*

Consistent with the existing literature on the effects of state history on current socio-economic and institutional development, we now introduce other variables used in the benchmark model. For instance, it is possible that other historical variables (e.g., legal origin or colonial heritage), rather than state history, are the drivers of current global profiles of persistence in religious states.<sup>15</sup> Hence, we add the legal origin of company law or the commercial code for each country that are coded as either British, French, German, Scandinavian, or Socialist. To do this, we follow the classification of legal origins of countries expounded by La Porta et al. (2008). We also include binary variables for colonial heritage of either Britain, France, Portugal, Spain, or other European countries (Netherlands, Belgium, and Italy), which we take from Nunn and Puga (2012).

It has also been shown that geography shaped history, institutions, and culture (e.g., Acemoglu et al. 2001; Alesina et al. 2013; Diamond 1997; Easterly and Levine 2003; Engerman and Sokoloff 1997), such

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<sup>15</sup> See, for example, La Porta et al. (1999) on cross-country determinants of the quality of government. For considerations of historical legacies in light of religion market, see, for example, Barro and McCleary (2005), Coşgel et al. (2018), and Buckley and Mantilla (2013).

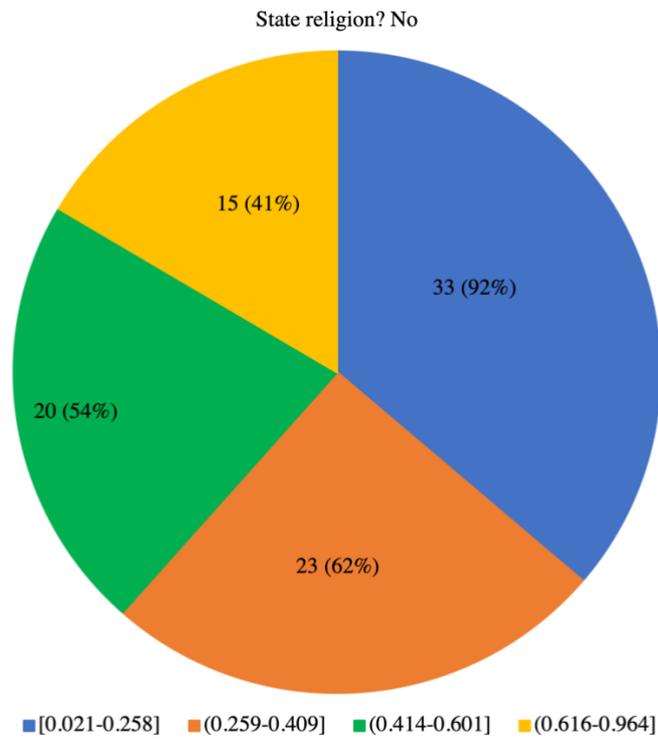
that one can expect a potential role for the former in our research. The geographic factors controlled for in the core regressions are area (the natural log of land area of a country from Nunn and Puga (2012)), latitude (the absolute value of the distance of the country from the equator, normalised to lie between zero and one from CIA World Factbook), landlocked (a dummy variable that equals 1 if a country is wholly encircled by land and 0 otherwise from CIA World Factbook), island (a dummy variable that equals 1 if a country is an island and 0 otherwise from CIA World Factbook), and ruggedness (an index that computes for each country small-scale terrain irregularities, taken from the Terrain Ruggedness Index of Nunn and Puga (2012)). Lastly, we include continent fixed effects (a binary variable indicating a country's continental association based on United Nations classifications— Africa, the Americas, Asia, Europe, or Oceania); these are added to capture continent-specific unobserved heterogeneities.

### *3.4. A first look at the data*

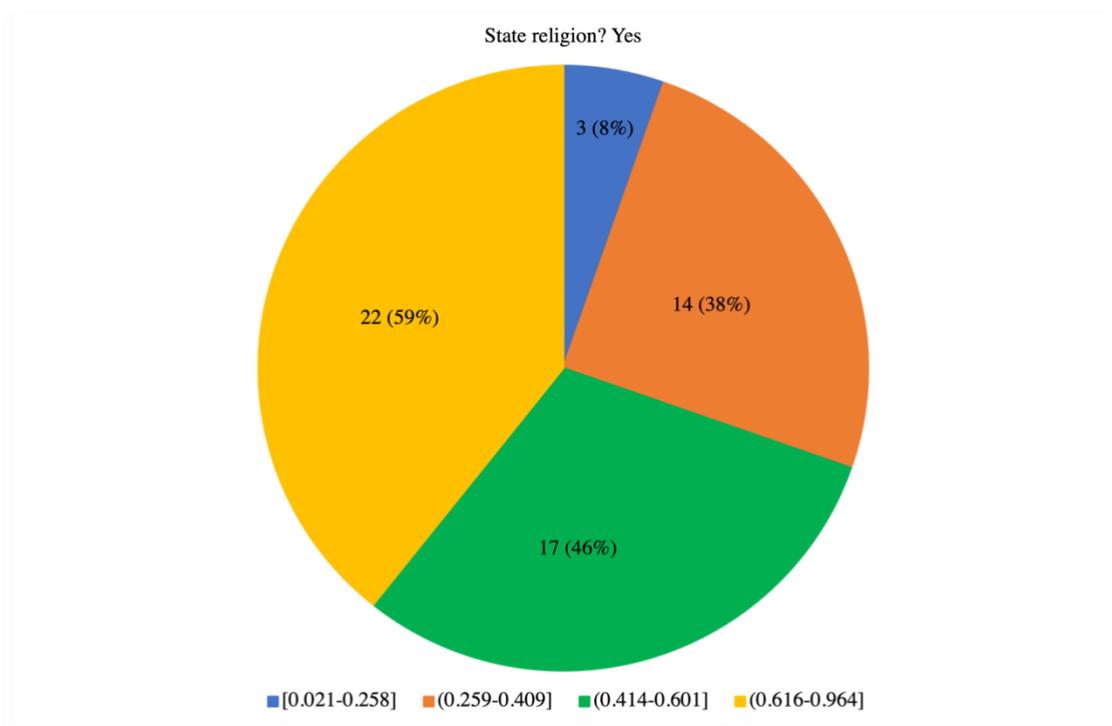
While we have 188 observations for whether a country has a state religion or not, data availability on other cross-national variables means that we are left with 147 observations for use in our core regression specifications in Section 4. Roughly 62% of these countries (91) have no state religion in 2000, with the remaining 56 countries having one (see Figure 2). Of the 56 countries with state religion in the year 2000, 20 had Muslim categorisation, 17 Catholic, 8 Orthodox, 6 Protestant, 3 Buddhist, 1 Hindu, and 1 Jewish. For our purpose, we note that the form of state religion is immaterial. Nevertheless, we see a more germane and striking picture when we look within each type of state religion (No and Yes in panels (a) and (b), respectively) and between quartiles of state history. In line with our expectation, these diagrams provide preliminary evidence that state history directly leads the persistence of religious states. This can be seen on the pie-charts in Figures 2a and 2b, which show that there are 36 countries in quartile 1 of state history with values below 0.259, while 37 countries are grouped into each of quartiles 2, 3, and 4 of state history.

More specifically, we observe in Figure 2 that: At low levels of state history, more countries have no state religion, 33 of 36 countries (92%), but there is greater prevalence of state religion as the accumulated stock of state history of countries rose. To be more precise, the fraction of countries with state religion increased from 8% (3 of 36 countries) in quartile 1 to 59% (22 of 37 countries) in quartile 4. Based on Figures 1 and 2, younger states (with length of state history  $< 0.259$ ) that do not have state religion include Australia, Canada, Kenya, Philippines, and the United States (the three countries with state religion in this quartile of state history are Argentina, Liberia, and Panama), while older states (with length of state history  $> 0.601$ ) with state religion comprise Afghanistan, Cambodia, Korea, Peru, and the United Kingdom. We present the summary statistics for all variables used in the regression analyses in Table A1.

(a)



(b)



**Figure 2: Persistence of religious states by length of state history across countries**

*Note:* The figure plots the distribution of state religion across quartiles of state history for 147 countries used in the baseline regressions. In panel (a), we show the shares of countries in each quartile with state religion = 0; the equivalent shares for state religion = 1 are shown in panel (b). Constructed based on the data for: (i) state religion, which is taken from Barro and McCleary (2005) and is based on Barrett 1982 and Barrett et al. (2001); and (ii) state history, which is measured over 1-1950 AD based on State Antiquity Index from Putterman (2004).

## 4. Regression analysis

### 4.1. Core results

The following regression model is estimated to methodically investigate the influence of state history on the persistence of religious states:

$$\text{religious states}_i = \alpha + \beta \text{state history}_i + x_i' \gamma + \varepsilon_i \quad (1)$$

where religious states is a (0,1) binary indicator of the presence of state religion in country  $i$  in 2000, state history is an index of the length of statehood experience accumulated by a country from 1 to 1950 AD—the main index used in most of the regression specifications are computed based on a 5% decay rate per period,  $x$  is a vector of baseline controls that are reflecting differences in country characteristics, and  $\varepsilon$  is a disturbance term.  $\alpha$ ,  $\beta$ , and  $\gamma$  are parameters to be estimated. Here,  $\beta$  is the parameter of prime interest and our hypothesis is that  $\beta > 0$ , as motivated by the discussions in Section 2 and the preliminary evidence presented in Section 3.

As a benchmark, we estimate Equation (1) using linear probability models (LPM). Following Barro and McCleary (2005), we choose a linear functional form due to its interpretive simplicity. We are aware of the shortcoming of not employing non-linear model specifications, given that our dependent variable is binomial. Therefore, we have also performed alternative estimations of our regression models by applying probit and logit methods below. It is well-known that when probit and logit estimates attain statistical significance at standard confidence boundaries, the size of the estimated marginal effects of the explanatory variables are close to those from the LPM results, which is what we found.

Our core results are presented in Table 1, where different combinations of control variables are added to the length of state history in order to evaluate the consistency of the reported results.<sup>16</sup> In column 1, we exclude all other covariates, considering only the influence of state history for perpetuating religious states. We find that state history has a positive coefficient, 0.614 (*s.e.* = 0.155), that is statistically significant at the 1% confidence level. This estimate implies that an increase of one standard deviation in accumulated state history will raise the probability of state religion persisting by 15% (0.614\*0.243). This finding provides strong supports for our argument that having a deep-rooted state capacity is a predisposition towards enhancing the persistence of religious states. Our reasoning for this is the existence of stronger coalitions between the ruling elites and religious establishments, which will generally be reinforcing of their respective interests.

In columns 2-5, we investigate the influences of state history on the persistence of religious states conditional on legal origins, colonial heritage, geographic factors and continent fixed effects, respectively.

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<sup>16</sup> We have omitted the full set of coefficients in the majority of the tables reporting the results, choosing to present mainly the estimated coefficients for the effect of state history to conserve on space. Nevertheless, we sometimes reference and discuss unreported estimates, which are all available upon request.

In every case, we find that the estimated coefficients of state history remain positive and retain their high statistical significance, which in most cases (3 of the 4 models) is at the 1% confidence level. In column 6, we estimate a regression model with all controls from columns 2-5 included synchronously. The estimated impact of state history, 0.537 (*s.e.* = 0.230), is again positive and statistically significant at the 5% confidence level.

Table 1: Religious states and state history—core results

	(1)	(2)	(3)	(4)	(5)	(6)
	<i>Dependent variable = Religious states</i>					
State history	0.614***	0.696***	0.589***	0.497***	0.572**	0.537**
	(0.155)	(0.159)	(0.197)	(0.185)	(0.222)	(0.230)
Legal origins?	No	Yes	No	No	No	Yes
Colonial heritage?	No	No	Yes	No	No	Yes
Geographic controls?	No	No	No	Yes	No	Yes
Continent dummy?	No	No	No	No	Yes	Yes
N	147	147	147	147	147	147
R <sup>2</sup>	0.094	0.184	0.173	0.120	0.147	0.306

*Note:* \*\*\* Significant at 1%; \*\* Significant at 5%; \* Significant at 10%. Robust standard errors in parentheses. Regressions are estimated using LPM method. All regressions are based on cross-sectional data with one observation per country. Constant terms are included but not reported. The dependent variable, religious states, equals 1 for countries with state religion in 2000 and takes on a value of 0 otherwise (Barro and McCleary 2005). The key explanatory variable, state history, is an index measured on a 0-1 scale capturing: (i) the presence of a government at supra-tribal level; (ii) whether this government is foreign or locally based; and (iii) how much of the current territory of the country was covered by this government (Putterman 2004). Legal origins are from La Porta et al. (2008), who code (0,1) binary indicators identifying the legal endowment of each country as either British, French, German, Scandinavian, or Socialist based on company law or commercial law. Colonial heritage indicators assign a value of 1 if a country was colonised by either Britain, France, Portugal, Spain, or other European countries (Netherlands, Belgium, and Italy), and 0 otherwise. The data for colonial heritage are taken from Nunn and Puga (2012) and is based on Teorell and Hadenius (2007). The geographic controls used in the regression models are: (i) Area: is the log of land area of a country, taken from Nunn and Puga (2012) and is based on the Food and Agriculture Organisation data measured in thousands of hectares; (ii) Latitude: absolute value of the distance of the country from the equator, normalised to lie between zero and one from CIA World Factbook; (iii) Landlocked: a dummy variable that equals 1 if a country is wholly encircled by land and 0 otherwise taken from CIA World Factbook; (iv) Island: a dummy variable that equals 1 if a country is an island and 0 otherwise taken from CIA World Factbook; and (v) Ruggedness: an index that computes small-scale terrain irregularities for each country, which is taken from the Terrain Ruggedness Index of Nunn and Puga (2012). Continent dummy variables for Africa, America, Asia, Europe and Oceania are based on the United Nations (UN) classifications.

Of the baseline controls added to column 6, only four are statistically significant: German legal origin ( $-0.705$ , *s.e.* = 0.247), Socialist legal origin ( $-0.819$ , *s.e.* = 0.283), Portuguese colonial heritage ( $-0.377$ , *s.e.* = 0.213), and the dummy indicator for being an Island ( $-0.227$ , *s.e.* = 0.128). All their point estimates show a negative association with state religion, indicating that, for a given value of state history, a country with any of these specific features has a lower probability of adopting a monopoly religion market under state control.

In the remainder of this section, we report a battery of tests to validate the robustness of our core findings. In particular, we confront the prognostications of state history for the persistence of religious states by: (i) utilising other estimation strategies; (ii) employing alternative definitions of core variables; (iii) running a model with lagged dependent variable; (iv) using different sample compositions and classification; and (v) finally, conditioning on additional control variables.

## 4.2. Checking the results

### 4.2.1. Probit, logit and 2SLS estimates

To alleviate possible concerns about our benchmark methodology, which used the LPM approach and check the consistency of the results in Table 1 to this estimation strategy, we begin the robustness tests of our core findings by reporting results from using alternative estimation methods. In the first instance, we consider a regression model in which the probability  $p$  that a country, in the year 2000, was a religious state is a non-linear function of the form:

$$p(\text{religious states}_i = 1) = g(\alpha + \beta \text{state history}_i + x_i' \gamma) + \varepsilon_i \quad (2)$$

where the function  $g$  is assumed to be a normal c.d.f. (Papaioannou and Siourounis 2008). All variables and parameters are as described in relation to Equation (1). We provide probit estimates of the relationship in Equation (2) in panel (a) of Table 2. In addition, we report the results from logit regressions in panel (b). Throughout Table 2, the regression model specifications resemble those in Table 1, with the bottom panel of Table 2 clarifying the baseline controls included in each column of both panels (a) and (b). As previously mentioned, probit and logit estimates of probability models are not easy to interpret. Because of this, we have also displayed the implied marginal effects of our main explanatory variable (state history) on the probability of countries having persistent religious states.

Comparing the results from the probit models in panel (a) of Table 2 to those of the LPM estimates in Table 1, we notice that the coefficients on state history in all six columns in both tables are statistically significant at least at the 5% confidence level. More specifically, 4 (out of 6) of the results in Table 1 achieve statistical significance at the 1% level; the equivalent number in Table 2 is 5 (out of 6). With regards to the logit regression models reported in panel (b), parallel statistical significance is attained between the estimates in both Tables 1 and 2. Turning to the marginal effects, measured at the sample average of state history, for both probit and logit models in panels (a) and (b) of Table 2, we observe that these values are markedly of similar sign, size, and significance to the analogous estimates from the LPM estimates in Table 1. Consequently, this finding bolsters our confidence in the coefficients obtained from running the linear probability models and continues to lend support to our hypothesis that historic state capacities are instrumental for engendering persistent religious states.

With regards to the baseline controls (and focussing again on the full model in column 6), the German legal origin and Island dummy indicator continue to be statistically significant with negative estimated coefficients, as before. In contrast to the LPM estimates, all continent fixed effects in both probit and logit models are now statistically significant, having positive associations with religious states. This result is in line with the evidence from Figure 1b that each continental bloc has clusters of countries with lengthy

state history. It is also consistent with the literature promoting geographic and historical roots of modern-day social and economic experiences (e.g., Spolaore and Wacziarg 2013).

Table 2: Religious states and state history—probit and logit results

	(1)	(2)	(3)	(4)	(5)	(6)
<i>(a) Probit estimates</i>						
	<i>Dependent variable = Religious states</i>					
State history	1.707*** (0.457)	2.062*** (0.512)	1.773*** (0.567)	1.401*** (0.522)	1.695*** (0.630)	1.723** (0.692)
N	147	145	142	147	147	140
Pseudo R <sup>2</sup>	0.073	0.144	0.127	0.099	0.128	0.238
<i>Marginal effect:</i>	0.644*** (0.174)	0.776*** (0.194)	0.670*** (0.216)	0.525*** (0.197)	0.606*** (0.227)	0.623** (0.254)
<i>(b) Logit estimates</i>						
	<i>Dependent variable = Religious states</i>					
State history	2.751*** (0.767)	3.424*** (0.877)	2.894*** (0.996)	2.263*** (0.875)	2.789** (1.095)	2.909** (1.270)
N	147	145	142	147	147	140
Pseudo R <sup>2</sup>	0.072	0.144	0.124	0.097	0.126	0.238
<i>Marginal effect:</i>	0.641*** (0.182)	0.793*** (0.204)	0.677*** (0.235)	0.522*** (0.204)	0.563** (0.225)	0.582** (0.265)
Legal origins?	No	Yes	No	No	No	Yes
Colonial heritage?	No	No	Yes	No	No	Yes
Geographic controls?	No	No	No	Yes	No	Yes
Continent dummy?	No	No	No	No	Yes	Yes

*Note:* \*\*\* Significant at 1%; \*\* Significant at 5%; \* Significant at 10%. Robust standard errors in parentheses. Regressions in panel (a) are estimated using probit models. Regressions in panel (b) are estimated using logit models. All regressions are based on cross-sectional data with one observation per country. Constant terms are included but not reported. The table also reports the marginal effects that are expressed in  $dY/dX$  form evaluated at sample averages and the McFadden's pseudo R<sup>2</sup> from the probit and logit estimates. The dependent variable, religious states, equals 1 for countries with state religion in 2000 and takes on a value of 0 otherwise (Barro and McCleary 2005). The key explanatory variable, state history, is an index measured on a 0-1 scale capturing: (i) the presence of a government at supra-tribal level; (ii) whether this government is foreign or locally based; and (iii) how much of the current territory of the country was covered by this government (Putterman 2004). Legal origins are from La Porta et al. (2008), who code (0,1) binary indicators identifying the legal endowment of each country as either British, French, German, Scandinavian, or Socialist based on company law or commercial law. Colonial heritage indicators assign a value of 1 if a country was colonised by either Britain, France, Portugal, Spain, or other European countries (Netherlands, Belgium, and Italy), and 0 otherwise. The data for colonial heritage are taken from Nunn and Puga (2012) and is based on Teorell and Hadenius (2007). The geographic controls used in the regression models are: (i) Area: is the log of land area of a country, taken from Nunn and Puga (2012) and is based on the Food and Agriculture Organisation data measured in thousands of hectares; (ii) Latitude: absolute value of the distance of the country from the equator, normalised to lie between zero and one from CIA World Factbook; (iii) Landlocked: a dummy variable that equals 1 if a country is wholly encircled by land and 0 otherwise taken from CIA World Factbook; (iv) Island: a dummy variable that equals 1 if a country is an island and 0 otherwise taken from CIA World Factbook; and (v) Ruggedness: an index that computes small-scale terrain irregularities for each country, which is taken from the Terrain Ruggedness Index of Nunn and Puga (2012). Continent dummy variables for Africa, America, Asia, Europe and Oceania are based on the United Nations (UN) classifications.

So far, our empirical approach has worked on the premise that state history is exogenous to religious states. Three concerns arise from such treatment. First, there is a possibility of omitted variable bias affecting our LPM estimates if some unobserved country-specific characteristics have affected both state history and religious states. Second, the evidence in the literature that we considered in Section 2 suggests path-dependence in state-religion relationship, which dates a lot farther back than the documented 1900 in Barret et al. (2001) dataset (Barro and McCleary 2005; Coşgel et al. 2018; Gill 2008; Vaubel 2017). For example, Stark (2007) shows that state and religion have developed in tandem over the great majority

of civilisation. Hence, the issue of reverse causality is also worth a revisit. Third, the LPM estimates will be most affected when there is measurement error in state history.

To assuage these concerns, we follow Ertan et al. (2016) in utilising biogeography, an index of the prehistoric access to storable plants and domesticable animals, assembled by Hibbs and Olsson (2004) as an instrumental variable for state history. In this case, the exogenous variation in state history that is due to the diversity of storable plants and domesticable animals will be isolated by biogeography from the endogenous variation in state history that is coming from the disturbance term. Table 3 reports the results from 2SLS estimates of Equation (1), where we treat state history as endogenous and model it as:

$$state\ history_i = \varphi + \theta biogeography_i + x_i' \delta + \epsilon_i \quad (3)$$

The exclusion restriction is that biogeography does not enter into Equation 1. Under this assumption, motivated by the work of Diamond (1997), biogeography is assumed to affect the persistence of religious states solely through its effects on the length of state history, conditional on the controls included in the regressions. However, in line with the insights of Ertan et al. (2016), we do not claim that the instrument is perfect or that the exclusion restriction is strictly satisfied. Rather, our main objective in carrying out the 2SLS estimates is to provide useful further evidence to either confirm or confound our core results.

Panel (a) of Table 3 reports the estimates from running reduced-form regressions. The specifications are similar to the baseline regressions employed in Table 1, and as before, the bottom panel details the baseline controls included in each specification. As documented, there exists a strong positive relationship between religious states and biogeography, with estimated coefficients having statistical significance at the 1% confidence level. Thus, in line with our identification strategy, countries with higher index of biogeography have longer experience of statehood, which makes it more probable to institutionalise or monopolise religion, as we have hypothesised. Panel (b) demonstrates that the first stage estimates have the expected signs, with biogeography displaying strong positive effects on state history that are statistically significant at the 1% confidence level. Also, the first stage F-statistics of the excluded instrument, which tests the null hypothesis that biogeography does not explain the variations in the length of state history across countries, gives additional support that biogeography is not a weak instrument, except on one occasion in column 5, where the reported F-statistic (= 7.52) is lower than the usually adopted rule-of-thumb magnitude of 10.

Panel (c) reports the second stage estimates of the effects of the instrumented state history on religious states. In column 1, which controls for only state history, the estimated 2SLS coefficient on the persistence of religious states is 1.582 (*s.e.* = 0.329). This effect is statistically significant at the 1% confidence level

and is also larger than the LPM estimate reported in panel (d) (0.681, *s.e.* = 0.190).<sup>17</sup> The implication of this finding is that our instrumentation approach has corrected for measurement error, which appears to put the negative attenuation bias ahead of positive biases plausibly from reverse causality and/or omitted variables in our empirical work. The estimate implies that a one standard deviation increase in state history will raise the probability of persisting with religious states by 38% ( $1.582 \times 0.243$ ), a much stronger impact than the one (15%) from the baseline LPM estimate.

As in the core results shown in Table 1, we sequentially add legal origins, colonial heritage, geographic factors, and continent fixed effects in columns 2 to 5. In all these specifications, including the baseline controls does not alter our baseline finding that longer state history increases the probability of religious states persisting, which in all four columns are statistically significant at the 1% confidence level. In column 6, we simultaneously add legal origins, colonial heritage, geographic factors, and continent fixed effects. As reported, the 2SLS point estimate for state history is positive (3.875, *s.e.* = 1.116) and is highly statistically significant (at the 1% confidence level).

Panel (c) also lists supplementary test statistics (*p*-values of the Anderson-Rubin Wald test and Kleibergen-Paap LM test), with both rejecting the null hypothesis of weak identification at high significance bounds in nearly all models. Moreover, we perform the Hausman-Wu test for endogeneity of state history in the regression models. The reported *p*-values, which reject the null hypothesis that state history is exogenous at high confidence levels, are supportive of the use of 2SLS approach as a means of validating the core results discussed in the previous section.

Overall, the results from the alternative estimation strategies (probit, logit, reduced form and 2SLS) are all consistent with our benchmark results in Table 1 that it is more likely that we will witness the persistence of religious states in countries with greater accrued level of statehood experience. Given this, the results discussed in the rest of the paper are based on the linear probability models.

#### 4.2.2. *Alternative definitions of core measures and model specification*

Next, we provide a robustness test of our core results to the employed measures of religious states and state history, as well as consider a slight modification to the baseline regression model. Columns 1-6 of Table 4 show results parallel to columns 1-6 of Table 1 but use the (0,1) binary indicator for religious states recorded for 1970 as the dependent variable (instead of the benchmark measure taken to be for the year 2000). In both tables, the signs of the estimated coefficients are congruent. On size, the estimated effects of state history on religious states are higher in 5 (out of 6) regression models when the latter is represented by its 1970 value rather than the 2000 counterpart. This trend is likewise seen with the reported

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<sup>17</sup> Just as can be seen that the 2SLS point estimates for state history are larger across columns 1-6 in panel (c) of Table 3 compared to the equivalent (i.e., using same observations) LPM estimates in panel (d), we confirm that the 2SLS estimates are likewise larger than the reported baseline LPM estimates in Table 1, which used the larger number (147) of observations.

R<sup>2</sup> in the two tables. Doing this is vital in giving credence to our results given the critique of Barro and McCleary (2005) on the classification of state religion for three European countries—Italy, Portugal and Spain—by Barrett et al. (2001). We return to this issue again in the next section.

Table 3: Religious states and state history—2SLS results

	(1)	(2)	(3)	(4)	(5)	(6)
<i>(a) Reduced form estimates</i>						
	<i>Dependent variable = Religious states</i>					
Biogeography	0.007*** (0.001)	0.007*** (0.001)	0.009*** (0.001)	0.007*** (0.001)	0.010*** (0.001)	0.012*** (0.002)
R <sup>2</sup>	0.226	0.280	0.398	0.272	0.371	0.506
<i>(b) First stage results</i>						
	<i>Dependent variable = State history</i>					
Biogeography	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.005*** (0.001)	0.002*** (0.001)	0.003*** (0.001)
F-statistic of excluded instrument	59.08	47.25	23.67	69.13	7.52	10.07
R <sup>2</sup>	0.342	0.389	0.376	0.436	0.431	0.545
<i>(c) Second stage results</i>						
	<i>Dependent variable = Religious states</i>					
State history	1.582*** (0.329)	1.787*** (0.383)	2.301*** (0.603)	1.488*** (0.316)	4.074*** (1.469)	3.875*** (1.116)
Anderson-Rubin Wald test ( <i>p</i> -value)	0.000	0.000	0.000	0.000	0.000	0.000
Kleibergen-Paap LM test ( <i>p</i> -value)	0.000	0.000	0.000	0.000	0.062	0.018
Endogeneity test ( <i>p</i> -value)	0.003	0.003	0.001	0.004	0.000	0.000
<i>(d) Equivalent linear probability models</i>						
	<i>Dependent variable = Religious states</i>					
State history	0.681*** (0.190)	0.788*** (0.188)	0.642*** (0.222)	0.611*** (0.206)	0.630** (0.254)	0.688*** (0.253)
R <sup>2</sup>	0.122	0.194	0.241	0.199	0.206	0.400
Legal origins?	No	Yes	No	No	No	Yes
Colonial heritage?	No	No	Yes	No	No	Yes
Geographic controls?	No	No	No	Yes	No	Yes
Continent dummy?	No	No	No	No	Yes	Yes
N	104	104	104	104	104	104

Note: \*\*\* Significant at 1%; \*\* Significant at 5%; \* Significant at 10%. Robust standard errors in parentheses. Regressions in panels (a), (b) and (d) are estimated using LPM method. Regressions in panel (c) are estimated using 2SLS method. All regressions are based on cross-sectional data with one observation per country. Constant terms are included but not reported. The table also reports the F-statistic of excluded instrument (in panel (b)), *p*-values corresponding with weak instrument tests of Anderson-Rubin and Kleibergen-Paap (in panel (c)), and *p*-value of Hausman-Wu test for endogeneity of state history (in panel (c)). The dependent variable in panels (a), (c) and (d), religious states, equals 1 for countries with state religion in 2000 and takes on a value of 0 otherwise (Barro and McCleary 2005). The key explanatory variable in panels (c) and (d), state history, is an index measured on a 0-1 scale capturing: (i) the presence of a government at supra-tribal level; (ii) whether this government is foreign or locally based; and (iii) how much of the current territory of the country was covered by this government (Putterman 2004) and is also the dependent variable in panel (b). The instrumental variable, biogeography—an index of the prehistoric access to storable plants and domesticable animals (Hibbs and Olsson 2004)—is the independent variable in panels (a) and (b). Legal origins are from La Porta et al. (2008), who code (0,1) binary indicators identifying the legal endowment of each country as either British, French, German, Scandinavian, or Socialist based on company law or commercial law. Colonial heritage indicators assign a value of 1 if a country was colonised by either Britain, France, Portugal, Spain, or other European countries (Netherlands, Belgium, and Italy), and 0 otherwise. The data for colonial heritage are taken from Nunn and Puga (2012) and is based on Teorell and Hadenius (2007). The geographic controls used in the regression models are: (i) Area: is the log of land area of a country, taken from Nunn and Puga (2012) and is based on the Food and Agriculture Organisation data measured in thousands of hectares; (ii) Latitude: absolute value of the distance of the country from the equator, normalised to lie between zero and one from CIA World Factbook; (iii) Landlocked: a dummy variable that equals 1 if a country is wholly encircled by land and 0 otherwise taken from CIA World Factbook; (iv) Island: a dummy variable that equals 1 if a country is an island and 0 otherwise taken from CIA World Factbook; and (v) Ruggedness: an index that computes small-scale terrain irregularities for each country, which is taken from the Terrain Ruggedness Index of Nunn and Puga (2012). Continent dummy variables for Africa, America, Asia, Europe and Oceania are based on the United Nations (UN) classifications.

Moreover, our discussion of the state religion data shows that there exists a high degree of persistence in religious states over the three dates (1900, 1970 and 2000) for which data was collected. This evidence is line with the literature on cultural persistence (e.g., Nunn 2012). Hence, column 7 of Table 4 controls for the presence of state religion in a country in 1900. The evidence again signals that the central finding—that state history has a statistically significant, positive impact on the persistence of religious states—holds, even after conditioning on lagged state religion.

Further, columns 8-12 examine different decay rates for state history in a model that is a replica of the full regression specification in column 6 of Table 1. The rates of depreciation that we studied are 0% (column 8), 0.1% (column 9), 1% (column 10), 10% (column 11), and 50% (column 12)—the core measure used in the baseline analysis is based on a 5% decay rate. The results displayed in columns 8-10 are positive and statistically significant, reminiscent of our core findings in column 6 of Table 1. Interestingly, the results from using lower decay rates, which stresses the importance of long-established states, not only reinforces our main results but improves on them both in size and significance.

By contrast, the estimated coefficients are reversed when we use higher decay rates, which places more weight on contemporary periods. In particular, we obtain a positive (but insignificant) point estimate (0.376, *s.e.* = 0.237, *p*-value = 0.115) for the connection between state history and religious states when we use 10% decay rate in column 11. Likewise, column 12 shows that the higher decay rate of 50% on the length of statehood experience yields a negative, albeit insignificant ( $-0.094$ , *s.e.* = 0.242, *p*-value = 0.698), association between state history and religious states.

We argue that both results in columns 11 and 12 are equally supportive of our hypothesis in that higher depreciation rate corresponds to lower levels of the stock of state history, and vice versa. Hence, we would expect the size of the estimated coefficients for state history to decrease, effects becoming less meaningful, as we increase the decay rates. Taken together, the results in Table 4 reaffirm our baseline finding that having a longer statehood experience contributes positively to the persistence of religious states.

#### 4.2.3. *Employing alternative sample compositions and classification*

Another possible source of concern regarding our core estimates in Table 1 is that they may be driven by the inclusion of some particularly influential observations and plausibly the designation of Italy, Portugal, and Spain as having state religion in the year 2000. In terms of removing the influences of atypical observations, we adopt six strategies to verify whether our benchmark results will hold up in the absence of these country-observations. With regards to the assignment of state religion for Italy, Portugal, and Spain, we follow the style of Barro and McCleary (2005), who, as a robustness check, re-coded these three countries in two ways, which we describe below. Table 5 presents the results from these tests, using the full benchmark model specification in column 6 of Table 1.

Table 4: Religious states and state history—alternative definitions of core measures and model specification

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	<i>Dependent variable = Religious states 1970 [columns (1)-(6)]</i>						<i>Dependent variable = Religious states 2000 [columns (7)-(12)]</i>					
Decay rates for state history:	5% [columns (1)-(7)]						0%	0.1%	1%	10%	50%	
State history	0.554*** (0.154)	0.723*** (0.147)	0.895*** (0.185)	0.648*** (0.165)	0.884*** (0.172)	0.988*** (0.173)	0.427** (0.194)	0.624*** (0.214)	0.623*** (0.214)	0.615*** (0.218)	0.376 (0.237)	-0.094 (0.242)
Religious state 1900?	No	No	No	No	No	No	Yes	No	No	No	No	No
Legal origins?	No	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Colonial heritage?	No	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic controls?	No	No	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Continent dummy?	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	147	147	147	147	147	147	147	147	147	147	147	147
R <sup>2</sup>	0.078	0.276	0.237	0.158	0.162	0.444	0.463	0.328	0.328	0.324	0.286	0.271

*Note:* \*\*\* Significant at 1%; \*\* Significant at 5%; \* Significant at 10%. Robust standard errors in parentheses. Regressions are estimated using LPM method. All regressions are based on cross-sectional data with one observation per country. Constant terms are included but not reported. The dependent variable in columns 1-6, religious states, equals 1 for countries with state religion in 1970 and takes on a value of 0 otherwise (Barro and McCleary 2005). The counterpart measure for the year 2000 (our benchmark outcome variable for religion) is the dependent variable in columns 7-12. The key explanatory variable in columns 1-7, state history, is an index measured on a 0-1 scale capturing: (i) the presence of a government at supra-tribal level; (ii) whether this government is foreign or locally based; and (iii) how much of the current territory of the country was covered by this government (Putterman 2004). 5% decay rate is applied to this index of state history and represents our benchmark main control variable. State religion coded for 1900 is used as an additional conditioning variable in the regression model in column 7. In columns 8-12, we consider state history with the attached decay rates as alternative main control variables. Legal origins are from La Porta et al. (2008), who code (0,1) binary indicators identifying the legal endowment of each country as either British, French, German, Scandinavian, or Socialist based on company law or commercial law. Colonial heritage indicators assign a value of 1 if a country was colonised by either Britain, France, Portugal, Spain, or other European countries (Netherlands, Belgium, and Italy), and 0 otherwise. The data for colonial heritage are taken from Nunn and Puga (2012) and is based on Teorell and Hadenius (2007). The geographic controls used in the regression models are: (i) Area: is the log of land area of a country, taken from Nunn and Puga (2012) and is based on the Food and Agriculture Organisation data measured in thousands of hectares; (ii) Latitude: absolute value of the distance of the country from the equator, normalised to lie between zero and one from CIA World Factbook; (iii) Landlocked: a dummy variable that equals 1 if a country is wholly encircled by land and 0 otherwise taken from CIA World Factbook; (iv) Island: a dummy variable that equals 1 if a country is an island and 0 otherwise taken from CIA World Factbook; and (v) Ruggedness: an index that computes small-scale terrain irregularities for each country, which is taken from the Terrain Ruggedness Index of Nunn and Puga (2012). Continent dummy variables for Africa, America, Asia, Europe and Oceania are based on the United Nations (UN) classifications.

Table 5: Religious states and state history—alternative samples and classification

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Drop 10 smallest state history	Drop 10 largest state history	Drop if $ er  > 1.96$	Drop if $cd > 4/N$	Drop if $lev > 2(df + 2)/N$	Drop if $ dfbeta  > 2/\sqrt{N}$	Recode religious states for Italy, Portugal, and Spain 1 → 0	Recode religious states for only Italy 1 → 0
<i>Dependent variable = Religious states</i>								
State history	0.590** (0.247)	0.931*** (0.219)	0.617*** (0.231)	0.582** (0.228)	0.483** (0.238)	0.699*** (0.241)	0.461** (0.224)	0.530** (0.228)
Legal origins?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Colonial heritage?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Continent dummy?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	137	137	143	139	140	130	147	147
R <sup>2</sup>	0.288	0.394	0.401	0.423	0.293	0.432	0.285	0.297

Note: \*\*\* Significant at 1%; \*\* Significant at 5%; \* Significant at 10%. Robust standard errors in parentheses. Regressions are estimated using LPM method. All regressions are based on cross-sectional data with one observation per country. Constant terms are included but not reported. The procedures for discarding influential observations include dropping observations with absolute standardized residuals greater than 1.96 in column 3, dropping observations with a Cook's distance greater than 4 divided by the number of observations in column 4, dropping observations with leverage greater than  $2(df + 2)/N$  in column 5, and dropping observations with absolute  $dfbeta$  greater than  $2/\sqrt{N}$  in column 6. The dependent variable in columns 1-6, religious states, equals 1 for countries with state religion in 2000 and takes on a value of 0 otherwise (Barro and McCleary 2005). In column 7, we recode religious states, such that Italy, Portugal and Spain no longer are classified as having state religion, while in column 8, the recoding of religious states is done for only Italy to not having state religion, with Portugal and Spain continuing to be designated as having state religion. The key explanatory variable, state history, is an index measured on a 0-1 scale capturing: (i) the presence of a government at supra-tribal level; (ii) whether this government is foreign or locally based; and (iii) how much of the current territory of the country was covered by this government (Putterman 2004). Legal origins are from La Porta et al. (2008), who code (0,1) binary indicators identifying the legal endowment of each country as either British, French, German, Scandinavian, or Socialist based on company law or commercial law. Colonial heritage indicators assign a value of 1 if a country was colonised by either Britain, France, Portugal, Spain, or other European countries (Netherlands, Belgium, and Italy), and 0 otherwise. The data for colonial heritage are taken from Nunn and Puga (2012) and is based on Teorell and Hadenius (2007). The geographic controls used in the regression models are: (i) Area: is the log of land area of a country, taken from Nunn and Puga (2012) and is based on the Food and Agriculture Organisation data measured in thousands of hectares; (ii) Latitude: absolute value of the distance of the country from the equator, normalised to lie between zero and one from CIA World Factbook; (iii) Landlocked: a dummy variable that equals 1 if a country is wholly encircled by land and 0 otherwise taken from CIA World Factbook; (iv) Island: a dummy variable that equals 1 if a country is an island and 0 otherwise taken from CIA World Factbook; and (v) Ruggedness: an index that computes small-scale terrain irregularities for each country, which is taken from the Terrain Ruggedness Index of Nunn and Puga (2012). Continent dummy variables for Africa, America, Asia, Europe and Oceania are based on the United Nations (UN) classifications.

In Table 5, column 1 reports the results when we drop countries with the ten smallest values for state history (i.e., countries with the least statehood experience). The opposite check, with countries having the ten largest values of state history, is carried out in column 2. In column 3, we drop observations with absolute standardized residuals higher than 1.96. Column 4 shows the effect of state history on religious states when we drop observations with a Cook's distance greater than the rule-of-thumb sill of 4 divided by the number of observations. In column 5, we drop high-leverage observations (i.e., those with leverage greater than  $2(df + 2)/N$ ), while we drop those with absolute  $df\beta$  greater than  $2/\sqrt{N}$  in column 6. As shown, the hypothesised sign and significance of the coefficients of state history are retained in these six columns of Table 5. Also, the size of the effects is, on average, comparable to the baseline finding.

Similar to Barro and McCleary (2005), columns 7 and 8 contain the results of our attempts to check whether our core results are sensitive to re-coding state religion for Italy, Portugal, and Spain. In column 7, all three countries are allocated to the group not having state religion in 2000. Then, based on Fox and Sandler (2004) data, column 8 uses a third version of state religion in which both Portugal and Spain had state religion in the year 2000, but not Italy. Looking at the two sets of estimates—reported in columns 7 and 8 of Table 5—we can confirm that the results remain strongly consistent that lengthier statehood experience increases the probability of persistent religious states across countries.

#### *4.2.4. Including additional control variables*

There is also good reason to think that our results may be sensitive to the inclusion of other historical factors or current determinants of state regulation of religion. With regards to the former, we consider three of the most regularly utilised measures of pre-modern development (see, for example, Ang 2013; Ertan et al. 2016): agricultural transition in 1500 AD (the number of centuries elapsed in 1500 AD since the Neolithic transition took place, assembled by Putterman and Trainor (2006)); technology adoption in 1500 AD (a composite index of technologies, relating to agriculture, transportation, communications, industry and military, in use by the 1500 AD population of countries, constructed by Comin et al. (2010)); and population density in 1500 AD (historical population estimates divided by land area based on data from McEvedy and Jones (1978) and land data from World Bank World Development Indicators).

The results in columns 1-3 of Table 6 reveal that the influence of state history in leading religious states is robust to the inclusion of these other early-development indicators. Although state history is now only statistically significant at 10% confidence level in columns 1 and 2, we observe that the additional controls—agricultural transition (0.005, *s.e.* = 0.003, *p*-value = 0.154) and technology adoption (0.324, *s.e.* = 0.412, *p*-value = 0.434) in columns 1 and 2, respectively—are themselves insignificant. Whereas higher population density in 1500 AD is negatively ( $-0.091$ , *s.e.* = 0.044) and statistically significantly (*p*-value = 0.041) interconnected to the persistence of religious states.

Table 6: Religious states and state history—including additional control variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Additional control =	Agricultural transition in 1500 AD	Technology adoption in 1500 AD	Population density in 1500 AD	Current income	Years of schooling	Urbanisation rate	Internet usage	Population & Population squared
<i>Dependent variable = Religious states</i>								
State history	0.450*	0.623*	0.764***	0.540**	0.673***	0.533**	0.601***	0.693***
	(0.230)	(0.334)	(0.268)	(0.236)	(0.232)	(0.238)	(0.220)	(0.227)
N	147	105	144	142	128	146	144	146
R <sup>2</sup>	0.318	0.376	0.322	0.323	0.334	0.303	0.332	0.355
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Additional control =	Main religion adherence squared	Second religion adherence squared	Main religion is monotheistic	Main religion is Muslim	Religion adherence shares	Democracy	Political rights	Communist ideology
<i>Dependent variable = Religious states</i>								
State history	0.378*	0.456**	0.544**	0.459**	0.586**	0.529**	0.528**	0.548**
	(0.221)	(0.223)	(0.237)	(0.216)	(0.267)	(0.218)	(0.216)	(0.230)
N	147	147	147	147	147	140	147	147
R <sup>2</sup>	0.371	0.334	0.312	0.341	0.386	0.344	0.345	0.325
Legal origins?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Colonial heritage?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Continent dummy?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Note:* \*\*\* Significant at 1%; \*\* Significant at 5%; \* Significant at 10%. Robust standard errors in parentheses. Regressions are estimated using LPM method. All regressions are based on cross-sectional data with one observation per country. Constant terms are included but not reported. The dependent variable, religious states, equals 1 for countries with state religion in 2000 and takes on a value of 0 otherwise (Barro and McCleary 2005). The key explanatory variable, state history, is an index measured on a 0-1 scale capturing: (i) the presence of a government at supra-tribal level; (ii) whether this government is foreign or locally based; and (iii) how much of the current territory of the country was covered by this government (Putterman 2004). Agricultural transition in 1500 AD refers to the number of centuries that elapsed in 1500 AD since the Neolithic transition (a shift to reliance on agriculture) is estimated to have taken place, assembled by Putterman and Trainor (2006). Technology adoption in 1500 AD is a composite index of technologies (describing innovations in agriculture, transportation, communications, industry and military) that are in use by the 1500 AD population around the world, constructed by Comin et al. (2010). Population density in 1500 AD is calculated as population divided by land area based on data for historical population estimates from McEvedy and Jones (1978) and land data from World Bank World Development Indicators (WDI). Current income is log of GDP per capita (PPP, constant 2010 US \$) from WDI. Years of schooling is the average total years of schooling in the population age 25 and over (Barro and Lee 2013). Urbanisation rate is the percentage of a country's population living in urban areas from WDI. Internet usage is the percentage of the population with access to the Internet from the International Telecommunications Union. Population is the log of total population in thousands from WDI. Main religion adherence squared is the square of the proportion of a country's population following the most popular religion, taken from Barro and McCleary (2005).

A similar definition is used to obtain the second religion adherence squared given the data on the fraction of a country's population adhering to the second most popular religion. Main religion is monotheistic is a binary indicator for whether the most dominant religion in a country is Christian, Jewish, or Muslim (Barro and McCleary 2005). Main religion is Muslim is a binary indicator for whether the most popular religion is Muslim (Barro and McCleary 2005). Religion adherence shares is a dummy variable that equals 1 if the most popular religion in a country is Buddhist, Catholic, Hindu, Jewish, Protestant, Muslim, Orthodox, Other Christian, or Others (other Eastern religions, other religions and nonreligions), and 0 otherwise from Barro and McCleary (2005). Democracy is constructed as the difference between Polity IV's democracy and autocracy indices (Marshall et al. 2018). Political rights refer to a measure of democracy from Freedom House (2018). Communist ideology is a dummy variable that equals 1 for whether the regime in a country in 2000 is Communist, and 0 otherwise (Barro and McCleary 2005). All time-varying controls refer to their 2000 values. Legal origins are from La Porta et al. (2008), who code (0,1) binary indicators identifying the legal endowment of each country as either British, French, German, Scandinavian, or Socialist based on company law or commercial law. Colonial heritage indicators assign a value of 1 if a country was colonised by either Britain, France, Portugal, Spain, or other European countries (Netherlands, Belgium, and Italy), and 0 otherwise. The data for colonial heritage are taken from Nunn and Puga (2012) and is based on Teorell and Hadenius (2007). The geographic controls used in the regression models are: (i) Area: is the log of land area of a country, taken from Nunn and Puga (2012) and is based on the Food and Agriculture Organisation data measured in thousands of hectares; (ii) Latitude: absolute value of the distance of the country from the equator, normalised to lie between zero and one from CIA World Factbook; (iii) Landlocked: a dummy variable that equals 1 if a country is wholly encircled by land and 0 otherwise taken from CIA World Factbook; (iv) Island: a dummy variable that equals 1 if a country is an island and 0 otherwise taken from CIA World Factbook; and (v) Ruggedness: an index that computes small-scale terrain irregularities for each country, which is taken from the Terrain Ruggedness Index of Nunn and Puga (2012). Continent dummy variables for Africa, America, Asia, Europe and Oceania are based on the United Nations (UN) classifications.

In terms of the contemporary factors that may impact on the stability of our core results (columns 4-16), we draw on the existing literature and employ several of the variables that scholars typically appeal to in providing both theoretical and empirical explanations for the degree of state involvement in religion (see, e.g., Barro and McCleary 2005; Bruce 2003; Casanova 1994; Chaves 1994; Driessen 2010; Finke and Stark 2005; Fox 2007; Fox and Sandler 2003; Gill 2008; Iannaccone 1991; Norris and Inglehart 2004; Stark and Iannaccone 1994). More specifically, we proxy for aggregate economic development using (log) of current income per capita (column 4) and condition on some recognised dimensions of economic development—years of schooling (column 5), urbanisation rate (column 6), and Internet usage (column 7).<sup>18</sup> The principal finding is that the estimated coefficients on state history in all four regression models remain positive and highly statistically significant, which continues to uphold our hypothesis of the relevance of longer statehood experience for explaining the persistence of religious states. We also find that the coefficients on GDP per capita and Internet usage correlate negatively and significantly with religious states. However, the dimensions of development covered by education (years of schooling) and contemporary urbanisation rate are insignificant predictors of the persistence of religious states.

Next, we consider the implications for our baseline results of the emphasis on the size of the religion market and the dispersion of religious adherence across countries. To this end, we use the log of population and its squared term to gauge the size of the religion market in column 8. In line with the standard view of a curvilinear association between population size and the degree of state involvement in the religion market, we obtain a positive and significant point estimate (0.328, *s.e.* = 0.135, *p*-value = 0.016) for log population and a negative and significant point estimate (−0.023, *s.e.* = 0.007, *p*-value = 0.001) for log population squared. In columns 9 and 10, we condition on adherences to the main and second religion from Barro and McCleary (2005), respectively. These variables are used to capture the probability that two randomly selected individuals belong to a country's most popular and second most popular religions. We find that the two measures of religion adherence are strongly statistically significant (at the 1% confidence level), with the main religion adherence squared having a positive coefficient (0.566, *s.e.* = 0.148), while that of the second religion adherence squared is negative (−1.971, *s.e.* = 0.649). These estimates are consistent with the predictions of the Hotelling model presented in Barro and McCleary (2005) and the results of Coşgel and Miceli (2009), who used Herfindahl index of concentration as one of their three main variables (the other two are indicators of loyalty and democracy) for explaining state control of religion. Importantly, we see that state history continues to play positive and significant role on which countries have persisting religious states in columns 8-10.

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<sup>18</sup> In unreported regression model for a sample of 146 countries, we have also considered life expectancy but find it to produce negative and insignificant estimated coefficient (−0.406, *s.e.* = 0.317, *p*-value = 0.202). Again, the point estimate for state history is positive and significant (0.415, *s.e.* = 0.249, *p*-value = 0.098).

It has also been established that differences relating to predominant religion between countries impact on the extent of religion market regulations across countries in practice. This concept is easily captured by the degree of religious (in)tolerance in a country, which has been identified to be most formidable or infamous in the three major monotheistic faiths (Christian, Jewish and Muslim); see, e.g., Stark (2003). Thus, we insert a dummy indicator for if a country has any of these ‘pathways’ to God as their main religion in column 11, while column 12 conditions on a dummy indicator for Muslim monotheism in particular. As shown, the point estimates for the effects of state history for the persistence of religious states are still positive and significant in both columns. The results, however, suggest that monotheistic faiths in general do not exert a significant effect on which nation persists with religious states in column 11. In contrast, Muslim monotheism matters for the persistence of religious states, with a positive and significant coefficient (0.272, *s.e.* = 0.112, *p*-value = 0.016) in column 12, which is consistent with Fish (2002) and Lakoff (2004). In column 13, we additionally account for the potential influence of religious pluralism for the continuous choice of state religion by using religion adherence shares (a dummy variable that equals 1 if the most popular religion in a country is Buddhist, Catholic, Hindu, Jewish, Protestant, Muslim, Orthodox, Other Christian, or Others,<sup>19</sup> and 0 otherwise). This has negligible impact on our results, with the estimated coefficient of state history positive (0.586, *s.e.* = 0.267) and significant at the 5% confidence level.

Finally, we include measures of democracy and political ideology in the last three columns (14-16) of Table 6 to permit the possibility that they may be driving our core results. In particular, we use Polity IV’s (Marshall et al. 2018) polity index to capture democracy in column 14. Column 15 augments the benchmark model with the Freedom House Political Rights Index instead. Lastly, communist ideology is known to represent a different aspect of political structure that acts to impose nonreligion, rather than competitive religion market that may be obtainable under democracy. As expected, therefore, all three political variables are negative and highly statistically significant; these findings are in line with Barro and McCleary (2005) and Coşgel et al. (2018). The key implication of more democratic outcomes in column 14 or increased political rights for a society in column 15 is higher religious liberties (i.e., a reduction in the persistence of religious states). Hence, the negative point estimates in both columns. Although the same negative estimated coefficient is obtained for the communist ideology, the mechanism is different: in this case, it is because the imposition of state religion or the freedom to select amongst the various religions on offer has been replaced with a religion-void society (Stark 2007). Looking at the estimates for state history in columns 14-16, we see, again, that conditioning on political factors do not alter our baseline finding that higher stock of state history increases the probability of a country remaining a religious state.

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<sup>19</sup> Others consist of other Eastern religions, other religions and nonreligions.

#### 4.2.5. *Is it historical state capacity or state capacity today?*

We draw this section to a close by checking the robustness of our results to the theory of Buckley and Mantilla (2013) on the relevance of state capacity for governmental approach to regulating the market for God. Their variant of the secularization theory is that economic development enhances the ability of countries to formulate and implement effective policies that make it easier to regulate religion. Apart from focussing on modern-day state capacity while we inspect the power of pre-modern state capacity, our outcome variable (religion monopoly) also differs from theirs (religion regulation). Nonetheless, it is beneficial to contemplate whether state history is proxying for indicators of current state capacity. If this was the case, then the results presented in this paper of the long-term consequences of state history on the persistence of religious states would be misleading. Hence, we investigate the potency of the autonomous effect of state history on the persistence of religious states by controlling for various measures of present-day state capacity in Table 7.

Our general finding is that the positive association between state history and persistence of religious states holds, even when conditioning on an aggregate index of contemporary state capacity (the quality of governance) in column 1 of Table 7, or when controlling for its individual components separately in column 2 (control of corruption), column 3 (government effectiveness), column 4 (political stability), column 5 (rule of law), column 6 (regulatory quality), and column 7 (voice and accountability). In all the regression specifications in Table 7, the point estimates for state history are larger in size ( $> 0.537$ ) and statistically stronger ( $> 5\%$  confidence level) than the results in the benchmark regression model in Table 1, column 6. These results reveal that historical state capacity matters for the persistence of religious states not because of, but in spite of, state capacity today.

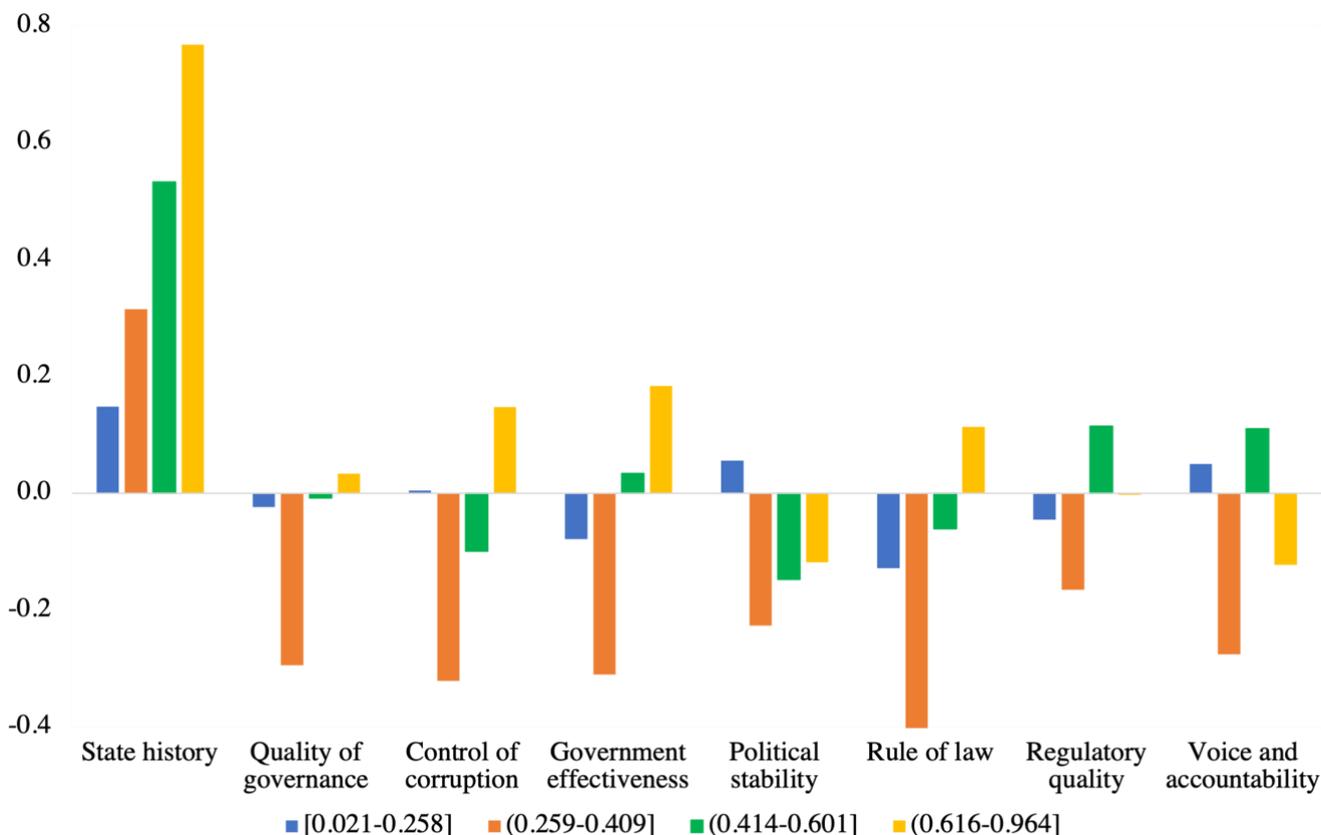
Meanwhile, we see that measures of current state capacity—whether aggregate or individual facets—are also statistically significant at the 1% confidence level, with all displaying negative point estimates, which contradicts the results of Buckley and Mantilla (2013). Figure 3 demonstrates why state history does not work through state capacity in predicting which countries will have persistent religious states. Surveying the bar charts below, one can see that there is no obvious correlation between the quartiles of historical state capacity and the quartiles of state capacity today. This is because, in many instances, there appears to have been a reversal of capacity; in which, countries with high (strong) historical states now have low (weak) state capacities.

In summary, it goes without saying that the preponderance of religious states in countries with deep-rooted unions between the institutions of both state and religion can be closely traced to the drudgeries associated with emerging from such long state-religion collusive roots, thereby acting as stumbling blocks to building new, religiously liberal state apparatuses.

Table 7: Religious states and state history—historical state capacity vs state capacity today

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
State capacity =	Quality of governance	Control of corruption	Government effectiveness	Political stability	Rule of law	Regulatory quality	Voice and accountability
<i>Dependent variable = Religious states</i>							
State history	0.701*** (0.206)	0.733*** (0.205)	0.723*** (0.209)	0.598*** (0.222)	0.747*** (0.209)	0.635*** (0.212)	0.607*** (0.206)
State capacity	-0.229*** (0.060)	-0.197*** (0.055)	-0.193*** (0.057)	-0.134*** (0.050)	-0.205*** (0.055)	-0.190*** (0.051)	-0.213*** (0.059)
Legal origins?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Colonial heritage?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geographic controls?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Continent dummy?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	147	147	147	147	147	147	147
R <sup>2</sup>	0.385	0.376	0.373	0.342	0.387	0.376	0.377

*Note:* \*\*\* Significant at 1%; \*\* Significant at 5%; \* Significant at 10%. Robust standard errors in parentheses. Regressions are estimated using LPM method. All regressions are based on cross-sectional data with one observation per country. Constant terms are included but not reported. The dependent variable, religious states, equals 1 for countries with state religion in 2000 and takes on a value of 0 otherwise (Barro and McCleary 2005). The key explanatory variable, state history, is an index measured on a 0-1 scale capturing: (i) the presence of a government at supra-tribal level; (ii) whether this government is foreign or locally based; and (iii) how much of the current territory of the country was covered by this government (Putterman 2004). Quality of governance is the average score of control for corruption, government effectiveness, political stability, rule of law, regulatory quality, and voice and accountability from Kaufman et al. (2010). The individual components are: (i) control of corruption—an index capturing perceptions of the degree to which state power is exercised to obtain private gains; (ii) government effectiveness—an index capturing perceptions of the quality of the provided public services, policy formulation, and implementation; (iii) political stability—an index capturing perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism, that may destabilise or topple a government; (iv) rule of law—an index capturing perceptions of the extent to which agents have confidence in and abide by the rules of a state; (v) regulatory quality—an index capturing perceptions of the incidence of unfriendly market policies; and (vi) voice and accountability—an index capturing the degree to which citizens of a country are able to participate in the selection of their government. Legal origins are from La Porta et al. (2008), who code (0,1) binary indicators identifying the legal endowment of each country as either British, French, German, Scandinavian, or Socialist based on company law or commercial law. Colonial heritage indicators assign a value of 1 if a country was colonised by either Britain, France, Portugal, Spain, or other European countries (Netherlands, Belgium, and Italy), and 0 otherwise. The data for colonial heritage are taken from Nunn and Puga (2012) and is based on Teorell and Hadenius (2007). The geographic controls used in the regression models are: (i) Area: is the log of land area of a country, taken from Nunn and Puga (2012) and is based on the Food and Agriculture Organisation data measured in thousands of hectares; (ii) Latitude: absolute value of the distance of the country from the equator, normalised to lie between zero and one from CIA World Factbook; (iii) Landlocked: a dummy variable that equals 1 if a country is wholly encircled by land and 0 otherwise taken from CIA World Factbook; (iv) Island: a dummy variable that equals 1 if a country is an island and 0 otherwise taken from CIA World Factbook; and (v) Ruggedness: an index that computes small-scale terrain irregularities for each country, which is taken from the Terrain Ruggedness Index of Nunn and Puga (2012). Continent dummy variables for Africa, America, Asia, Europe and Oceania are based on the United Nations (UN) classifications.



**Figure 3: Historical state capacity and state capacity today**

*Note:* The figure plots the distribution of state history and various measures/dimensions of state capacity today across their quartiles. State history is an index measured on a 0-1 scale capturing: (i) the presence of a government at supra-tribal level; (ii) whether this government is foreign or locally based; and (iii) how much of the current territory of the country was covered by this government (Putterman 2004). Quality of governance is the average score of control for corruption, government effectiveness, political stability, rule of law, regulatory quality, and voice and accountability from Kaufman et al. (2010) and refer to their 2000 values. The individual components are: (i) control of corruption—an index capturing perceptions of the degree to which state power is exercised to obtain private gains; (ii) government effectiveness—an index capturing perceptions of the quality of the provided public services, policy formulation, and implementation; (iii) political stability—an index capturing perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism, that may destabilise or topple a government; (iv) rule of law—an index capturing perceptions of the extent to which agents have confidence in and abide by the rules of a state; (v) regulatory quality—an index capturing perceptions of the incidence of unfriendly market policies; and (vi) voice and accountability—an index capturing the degree to which citizens of a country are able to participate in the selection of their government.

## 5. Concluding thoughts

States and religion have gone hand in hand since the beginning of civilisation. As this historic marriage of institutions is replete with many unholy affairs, not to mention holy wars, it is no wonder that many *new* nations have been founded on the principles of the separation of religion and politics, while some *older* ones have sought a divorce between the two. Evidence at the start of the 21<sup>st</sup> century points towards a greater delineation of the duties of both state and religion within present-day societies. Does it mean that modernity will eventuate a world consisting of just secular states? Our answer: No.

Looking at state capacity, not as a contemporary phenomenon but as an ancient one, we have outlined in this paper an institutional theory of the persistence of religious states, arguing that, in equilibrium, the number of religious states cannot be zero. Our rationale for this proposition is that state antiquity, reflecting

a nation's historical state capacity, creates differences in how each state and society intermingle today in the religion market, generating disparities in the symbiotic demands and functions of governments and citizens across the globe. In particular, we argue that, due to the expectations of some societies, states act both as an institutional carrier of the history of religious states and as an institutional barrier to the rise of secular states. It is our suggestion that the state's function as an institutional carrier represents a necessary condition, whereas its position as an institutional barrier represents a sufficient condition. Therefore, when there is an appetite within a polity on the parts of both its state and society for tradition to prevail, we offer that the combination and operationalisation of both functions of a state will yield a reinforcement bias, as a result of which religious states persist to the present day.

Using measures of state history and state religion to confront our hypothesis, we find that the lengthier the statehood experience of a nation, the stronger the persistence of the religious state, even after taking into account several other relevant factors, including legal origins, colonial heritage, geographic controls, and continent dummies. Although our core results are based on linear probability models, we confirm them using probit, logit, and two-stage least squares regressions, using, for the latter, biogeography, as an instrument for state history. Besides, the results are upheld when we employ alternative definitions of main variables and model specification, such as using the 1970 instead of the 2000 coding of religious states, and varying the decay rates for state history from the 5% used for the baseline analysis, when we utilise different sample compositions and classification, such as excluding outliers, and when we include supplementary factors, such as other historical and contemporary variables that may affect religion.

In closing, we observe that the knowledge advanced in this paper is derived from a cross-sectional investigation premised on historical state capacity. As a result, there are limitations in terms of attempting to generalise the results. For instance, our discussion in Section 2 includes the case of Turkey, which is officially a secular state, and yet behaves like a religious state. Meanwhile, France is a secular state both in law and practice. By contrast, one can consider the United Kingdom; officially a religious state, but one which allows multitudes of religious sects to co-exist. One thing these countries have in common is that they all fall in the top quartile of state history. Thus, state history and the persistence of religious states are not necessarily perfectly correlated. The extent to which state history may not be prerequisite to the existence/persistence of state religion, as we have outlined, requires additional autopsies. Hence, future work may shed light on our contribution by examining cross-regional and within-country micro-level research, as well as tracing deeper historical trajectories of religious states vis-à-vis secular ones in a comparative assessment, a research agenda that is already under way.

## Appendix

Table A1: Summary statistics on variables used in the paper

	N	Mean	SD	Min	Max
<b>(a) Religion outcomes</b>					
Religious states 1970	147	0.361	0.482	0	1
Religious states 2000	147	0.381	0.487	0	1
<b>(b) Main controls</b>					
State history 1-1950, 0%	147	0.365	0.262	0.010	0.981
State history 1-1950, 0.1%	147	0.367	0.262	0.010	0.980
State history 1-1950, 1%	147	0.381	0.258	0.012	0.978
State history 1-1950, 5%	147	0.443	0.243	0.021	0.964
State history 1-1950, 10%	147	0.504	0.226	0.035	0.955
State history 1-1950, 50%	147	0.640	0.195	0.125	1.000
<b>(c) Baseline controls</b>					
Legal origin: British	147	0.265	0.443	0	1
Legal origin: French	147	0.551	0.499	0	1
Legal origin: German	147	0.136	0.344	0	1
Legal origin: Scandinavian	147	0.034	0.182	0	1
Legal origin: Socialist	147	0.014	0.116	0	1
Colonial heritage: British	147	0.265	0.443	0	1
Colonial heritage: French	147	0.156	0.365	0	1
Colonial heritage: Portuguese	147	0.034	0.182	0	1
Colonial heritage: Spanish	147	0.129	0.337	0	1
Colonial heritage: Other European	147	0.041	0.199	0	1
Land area	147	9.812	1.989	3.526	14.31
Latitude	147	0.300	0.199	0.005	0.722
Landlocked	147	0.245	0.431	0	1
Island	147	0.143	0.351	0	1
Ruggedness	147	1.348	1.192	0.016	6.202
Continent dummy: African	147	0.313	0.465	0	1
Continent dummy: American	147	0.184	0.389	0	1
Continent dummy: Asian	147	0.238	0.427	0	1
Continent dummy: European	147	0.238	0.427	0	1
Continent dummy: Oceania	147	0.0272	0.163	0	1
<b>(d) Instrumental variable</b>					
Biogeography	104	34.82	33.72	6.471	100
<b>(e) Additional controls</b>					
State religion 1900	147	0.599	0.492	0	1
Neolithic transition 1500	147	40.44	24.01	0	100
Technology adoption 1500	105	0.487	0.317	0	1
Population density 1500	144	0.923	1.480	-3.817	3.842
Current income	142	8.146	1.531	5.285	11.31
Years of schooling	128	7.032	3.152	0.908	12.93
Urbanisation rate	146	0.523	0.219	0.083	1
Internet usage	144	8.284	13.67	0.010	52
Population	146	9.220	1.608	4.396	14.05
Population squared	146	87.58	29.75	19.33	197.4
Main religion adherence share squared	147	0.646	0.265	0.097	0.982
Second religion adherence share squared	147	0.032	0.047	2.50e-05	0.230
Main religion is monotheistic	147	0.878	0.329	0	1

Main religion is Muslim	147	0.231	0.423	0	1
Religion: Buddhist majority	147	0.075	0.264	0	1
Religion: Catholic majority	147	0.333	0.473	0	1
Religion: Hindu majority	147	0.027	0.163	0	1
Religion: Jewish majority	147	0.007	0.083	0	1
Religion: Muslim majority	147	0.252	0.435	0	1
Religion: Orthodox majority	147	0.095	0.295	0	1
Religion: Other Christian majority	147	0.082	0.275	0	1
Religion: Other religions majority	147	0.034	0.182	0	1
Religion: Protestant majority	147	0.095	0.295	0	1
Democracy	140	0.700	0.305	0.050	1
Political rights	147	0.598	0.360	0	1
Communist ideology	147	0.027	0.163	0	1
Quality of governance	147	-0.074	0.957	-2.025	1.952
Control of corruption	147	-0.068	1.045	-1.569	2.443
Government effectiveness	147	-0.043	1.011	-2.232	2.199
Political stability	147	-0.110	1.015	-2.477	1.760
Rule of law	147	-0.136	1.034	-2.275	1.985
Regulatory quality	147	-0.025	0.999	-2.446	2.142
Voice and accountability	147	-0.060	0.987	-2.040	1.679

*Note:* The table provides the summary statistics for all variables used for analysis. Panel (a) contains the religious outcomes that are used as dependent variables in the regression models. State religion is a (0,1) binary indicator of the presence of a state religion in a country circa 1970 and 2000, with the indicator for the latter year used as the primary dependent variable. The data for state religion is taken from Barro and McCleary (2005) and is based on Barrett 1982 and Barrett et al. (2001). Panel (b) outlines state history variables used as the main explanatory variables in the regression models. State history is an index covering the period from 1 AD to 1950 AD, scaled to take values between 0 and 1, that captures: (i) the presence of a government at supra-tribal level; (ii) whether this government is foreign or locally based; and (iii) how much of the current territory of the country was covered by this government. The primary index that we used is the state history index for which 5% decay rate is assumed. The data for state history is taken from Putterman (2004). Panel (c) details the baseline controls included in presenting the core results in Section 4. Legal origins are from La Porta et al. (2008), who code (0,1) binary indicators identifying the legal endowment of each country as either British, French, German, Scandinavian, or Socialist based on company law or commercial law. Colonial heritage indicators assign a value of 1 if a country was colonised by either Britain, France, Portugal, Spain, or other European countries (Netherlands, Belgium, and Italy), and 0 otherwise. The data for colonial heritage are taken from Nunn and Puga (2012) and is based on Teorell and Hadenius (2007). The geographic controls used in the regression models are: (i) Area: is the log of land area of a country, taken from Nunn and Puga (2012) and is based on the Food and Agriculture Organisation data measured in thousands of hectares; (ii) Latitude: absolute value of the distance of the country from the equator, normalised to lie between zero and one from CIA World Factbook; (iii) Landlocked: a dummy variable that equals 1 if a country is wholly encircled by land and 0 otherwise taken from CIA World Factbook; (iv) Island: a dummy variable that equals 1 if a country is an island and 0 otherwise taken from CIA World Factbook; and (v) Ruggedness: an index that computes small-scale terrain irregularities for each country, which is taken from the Terrain Ruggedness Index of Nunn and Puga (2012). Continent dummy variables for Africa, America, Asia, Europe and Oceania are based on the United Nations (UN) classifications. Biogeography is an index of the prehistoric access to storable plants and domesticable animals (Hibbs and Olsson 2004). Agricultural transition in 1500 AD refers to the number of centuries that elapsed in 1500 AD since the Neolithic transition (a shift to reliance on agriculture) is estimated to have taken place, assembled by Putterman and Trainor (2006). Technology adoption in 1500 AD is a composite index of technologies (describing innovations in agriculture, transportation, communications, industry and military) that are in use by the 1500 AD population around the world, constructed by Comin et al. (2010). Population density in 1500 AD is calculated as population divided by land area based on data for historical population estimates from McEvedy and Jones (1978) and land data from World Bank World Development Indicators (WDI). Current income is log of GDP per capita (PPP, constant 2010 US \$) from WDI. Years of schooling is the average total years of schooling in the population age 25 and over (Barro and Lee 2013). Urbanisation rate is the percentage of a country's population living in urban areas from WDI. Internet usage is the percentage of the population with access to the Internet from the International Telecommunications Union. Population is the log of total population in thousands from WDI. Main religion adherence squared is the square of the proportion of a country's population following the most popular religion, taken from Barro and McCleary (2005). A similar definition is used to obtain the second religion adherence squared given the data on the fraction of a country's population adhering to the second most popular religion. Main religion is monotheistic is a binary indicator for whether the most dominant religion in a country is Christian, Jewish, or Muslim (Barro and McCleary 2005). Main religion is Muslim is a binary indicator for whether the most popular religion is Muslim (Barro and McCleary 2005). Religion adherence shares is a dummy variable that equals 1 if the most popular religion in a country is Buddhist, Catholic, Hindu, Jewish, Protestant, Muslim, Orthodox, Other Christian, or Others (other Eastern religions, other religions and nonreligions), and 0 otherwise from Barro and McCleary (2005). Democracy is constructed as the difference between Polity IV's democracy and autocracy indices (Marshall et al. 2018). Political rights refer to a measure of democracy from Freedom House (2018). Communist ideology is a dummy variable that equals 1 for whether the regime in a country in 2000 is Communist, and 0 otherwise (Barro and McCleary 2005). Quality of governance is the average score of control for corruption, government effectiveness, political stability, rule of law, regulatory quality, and voice and accountability from Kaufman et al. (2010). The individual components are: (i) control of corruption—an index capturing perceptions of the degree to which state power is exercised to obtain private gains; (ii) government effectiveness—an index capturing perceptions of the quality of the provided public services, policy formulation, and implementation; (iii) political stability—an index capturing perceptions of the likelihood of political instability and/or politically motivated violence, including terrorism, that may destabilise or topple a government; (iv) rule of law—an index capturing perceptions of the extent to which agents have confidence in and abide by the rules of a state; (v) regulatory quality—an index capturing perceptions of the incidence of unfriendly market policies; and (vi) voice and accountability—an index capturing the degree to which citizens of a country are able to participate in the selection of their government. All time-varying controls refer to their 2000 values.

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