Trade, Geography, and Religion: Evidence from South Asia

Jared Rubin* Avner Seror† Rohit Ticku‡

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Abstract

There are several complementary explanations for the spread of religion. Intrinsic differences in the institutional structures promoted by different religions can explain their spread. Alternatively, there might be geography-specific factors, such as the ability to promote trade, that might determine the spread of religions. In this paper we propose a model to distinguish the different factors that can explain the spread of religion. We test the model predictions through new data on the historical evolution of Hinduism, Buddhism, Jainism and Islam in South Asia over a period of two millenia.

*Institute for Study of Religion, Economics and Society, Chapman University.
†Aix-Marseille School of Economics.
‡Robert Schuman Center for Advanced Studies, European University Institute.

1 Introduction

There exist several complementary explanations for the spread of religion. First, *religious institutions-specific* explanations emphasize the intrinsic differences in the institutional structures promoted by different religions. In explaining the spread of Islam for instance, Michalopoulos, Naghavi, and Prarolo (2016) suggest that the redistributive economic principles of Islam were a unifying force aimed at reining in the underlying inequality in exchange for security for the trading caravans. Islam may also have appealed to merchants because it legitimized their economic base more than other systems of belief. Rubin (2017) stresses the role of the political power conceded to Muslim religious authorities due to their power to legitimate rule. Politically strong religious authorities contributed to the spread of the Islamic faith.[1] Generally, religion might also spread through state expansion since religions can legitimize state authority, some religions might be more conducive for state building and therefore expand through the rise of more powerful states.

Second, the *Geography-specific* explanations emphasize that differences in land endowments give rise to location-specific human capital, leading to the formation of localized ethnicities and religions (Michalopoulos (2012)). Indeed, besides being particularly able to promote trade, Islam may have flourished in the regions were inequalities on the quality of lands were larger. This, in turn, may have shaped a structure of comparative advantage in trade and the spread of Islam (Michalopoulos, Naghavi, and Prarolo (2018) and Michalopoulos, Naghavi, and Prarolo (2016)). Third, a complementary piece of explanation emphasizes the role of diffusion forces. According to a *Diffusion-specific* explanation, for example, migration of Muslims and their inter-marriages - along the trade routes for instance - contributed to the spread of Islam in South Asia.

What role did religious institutions played relative to geographic or diffusion forces? Can we disentangle the relative strength of the preceding explanations? Is there something specific about Islamic institutions

[1] A large body of work has highlighted the link between religion and state maintenance. For instance, see Bisin et al. (2018), Kuran (2011), Chaney (2013), Chaney (2013), Platteau (2017).

that led to the spread of Islam in South Asia? How did political, religious, and economic institutions contributed to the spread of Islam, Buddhism and Hinduism? Why did Islam and Buddhism spread along the trade routes? In this paper, we disentangle the preceding explanations and assess the relative strength of Islamic versus Buddhist or Hindu institutions in explaining the spread of the three main religions of South Asia. For this purpose, we first set a theory, that we then estimate with a novel dataset on religion in South Asia. Our empirical analysis leverages the historical evolution of important world religions: Hinduism, Buddhism, Jainism and Islam in South Asia over a period of two millennia, to identify the mechanisms for religious expansion in South Asia.

The rest of the paper proceeds as follows: we summarize the literature in Section 2. We introduce the theory in Section 3. We summarize the data and present the empirical findings in Section 4.

2 Related Literature

Michalopoulos, Naghavi, and Prarolo (2016, 2018) study the case of Islam and propose two plausible explanations for why Islam spread in proximity to ancient trade routes. The link between ancient trade routes and Islam can be attributed to: Islam specific institutions — Redistributive principles of Islam (zakaat, waqf etc.) made Islam attractive in areas with high initial inequality since it minimized the conditions for conflict between pastoral and agrarian societies (Michalopoulos, Naghavi, and Prarolo, 2016). Benefit of Common religion — Trade is facilitated when parties involved in exchange follow a common code of exchange/or religion (Michalopoulos, Naghavi, and Prarolo, 2018). Michalopoulos, Naghavi, and Prarolo (2018) study the effect of proximity to pre-6th century trade routes on the distribution of the Muslim population in the 20th century. They conduct the empirical analysis across countries (i) and across ethnic groups (i,c). They find a robust positive association between proximity to ancient trade routes and share of Muslims in the 20th century. The effect is magnified in locations with high land inequality (measured by the Gini coefficient of land inequality). To analyze whether the association is Islam-specific; they also look at the effect of proximity to ancient trading routes and the share of other

world religions (Christianity, Hinduism and Buddhism) in the 20th century. Authors find no association between proximity to trade routes and the population shares of other world religions. The authors conclude that specific features of Islam made it attractive for adoption in areas with high land inequality along the ancient trade routes.

Michalopoulos, Naghavi, and Prarolo (2018) use 20th-century population shares to assess the contemporaneous impact of trade and inequality on religion. The empirical design does not account for the historical evolution of religion(s). The lack of association between proximity to trade networks and the contemporary distribution of non-Islamic religions could be due to religions having competed against and superseded other religions over history. For instance, in South Asia Islam spread in areas where Buddhism was the predominant religion. We can address these issues empirically by studying the link between ancient trade routes, historical land inequalities, and the evolution of *different* religions in the pre-modern period in South Asia. Further, we can contrast the contemporaneous evolution of different religions in South Asia to evaluate whether the growth of religion along the trade routes is specific to Islam or otherwise.

3 Theoretical framework

3.1 Trade model:

The following theory builds on Eaton and Kortum (2002). We assume that different cities trade, and have differential access to land and technology, so that efficiency varies across commodities and cities. We denote city i's efficiency in producing good $j \in [0, 1]$ as $z_i(j)$.

We introduce geographic barriers, by assuming that delivering a unit from city i to city n requires producing d_{ni} units in i, with $d_{ii} = 1$ for any city i. Positive geographic barriers mean $d_{ni} > 1$ for $n \neq i$. We assume that there exists a finite set of cities, $i \in N = \{1, \ldots, N\}$ with a slight abuse of notations. Moreover, a city

has a religious denomination, $r \in R = \{M, B, H\}$, where M stands for Muslim, B for Buddhist and H for Hindu. We denote r the subset of cities in N with a religious denomination r. We assume that the cost from delivering a unit from city i to city n depends on whether i and n share the same religious denomination, and we denote $1/\epsilon_{ni}$ the cost for i from delivering one unit to a city n, given that they possibly have different religious denominations.

Taking the geographic barriers and the religious denominations into account, delivering a unit of good j produced in city i to city n costs

$$p_{ni}(j) = \frac{d_{ni}}{z_i(j)\epsilon_{ni}}, \tag{1}$$

the unit production cost multiplied by the geographic barrier and the religious iceberg cost. We finally assume perfect competition, so $p_{ni}(j)$ would be the price paid when n buys good j from i.

Following Eaton and Kortum (2002), we assume that technologies are probabilistic. More specifically, country i's efficiency at producing good j is the realization of a random variable Z_i drawn from a distribution $F_i(z)$. By the law of large numbers, $F_i(z)$ is also the fraction of goods for which city i has an efficiency that is below z. We assume that $F_i(.)$ is a Fréchet distribution,

$$F_i(z) = e^{-T_i z^{-\theta}}, \tag{2}$$

with $T_i > 0$ and $\theta > 1$. The parameter θ is linked to the variability of the distribution. A higher value of θ means less variability. Therefore, a higher value of θ underlies that trade patterns are close to deterministic, and therefore highly dependent on the structure of comparative advantage (i.e. on geography and religion). The parameter T_i relates to the location of the distribution. A lower value of the parameter indicates that on average, city i has a higher efficiency at producing any good. City i could for instance benefit from a higher land quality than the other cities, hence a higher agricultural productivity.

The price for which city i can buy good j from city n follows a distribution $G_{ni}(.)$, with:

$$G_{ni}(p) = \Pr(p_{ni}(j) \leq p) = \Pr(\frac{d_{ni}}{z_i(j)\epsilon_{ni}} \leq p) = 1 - F_i(\frac{d_{ni}}{p\epsilon_{ni}}). \tag{3}$$

We are then able to deduce that the probability π_{ni} that city i provides the lowest price to n:

$$\pi_{ni} = \Pr(p_{ni}(j) < \min_{l \neq j}\{p_{nl}(j)\}) = \int_{p=0}^{\infty} \prod_{l \neq i} \Pr(p < p_{nl}(j)) dG(p). \tag{4}$$

After a few computations, we find that:

$$\pi_{ni} = \frac{T_i(d_{ni}/\epsilon_{ni})^{-\theta}}{\sum_{l \in N} T_l(d_{nl}/\epsilon_{nl})^{-\theta}}. \tag{5}$$

Using the law of large numbers, π_{ni} is also the fraction of goods that n buys from i.

If the distance between n and i decreases, then the size of i's exports to n increases. The coefficient θ provides the elasticity of i's export to n relative to the distance between the two cities. Observe as well as the size of i's exports to n depends on whether the two cities share the same religious values. If the two cities have a common religion, then the coefficient ϵ_{ni} is expected to the large, which increase the exchanges from i to n - and from n to i as well. Now that we have described how trade patterns are affected by the religious values and the distances, we can discuss how cities change their institutions - i.e choose a religion denomination.

3.2 Institutional change:

The adoption of a religion is thought as an institutional change. Literature on institutional change and religion. North (1991), Michalopoulos, Naghavi, and Prarolo (2016, 2018), Bisin and Verdier (2017), Rubin (2017), Bisin et al. (2018), Rubin (2011)).

In order to model institutional change simply, we posit that institutions change in a given city, and in a

given period, so as to maximize the welfare of the agents living in that city.

A simple measure of social welfare is the price index merchants and consumers face in a given city. Denoting $Q(j)_t$ the amount of good j bought by any city n in period t, and assuming that consumers - and merchants - purchase individual goods to maximize a CES objective of the form:

$$U_{n,t} = [\int_0^1 Q(j)_t^{(\sigma-1)/\sigma}]^{(\sigma-1)/\sigma}, \tag{6}$$

the exact price index, assuming $\sigma < 1 + \theta$, takes the form:

$$p_{n,t}(R) = \gamma \Phi_{n,t}(R)^{-1/\theta} \tag{7}$$

in city n, which adopts religion R in time t, where

$$\Phi_{n,t}(R) = \sum_{i \in R(t)} T_i (d_{ni}/\epsilon_{ni})^{-\theta} \tag{8}$$

and

$$\gamma = [\Gamma(\frac{\theta + 1 - \sigma}{\theta}]^{1/(1-\sigma)}.^{2} \tag{9}$$

The price index depends on geographic distances, as well as on the distribution of religious denominations. This generates different price indices for different cities. The set $R(t)$ is the ensemble of cities that have a religious denomination $R \in \{M, B, H\}$ at time t. Given that each period, the cities face the choice to change their religious denomination, $R(t)$ changes over time.

We posit that $\epsilon_{ni} \equiv \epsilon_{nR}$ for any city i in R. In words, city n pays the same iceberg cost when trading with any city with the religious denomination R. In order to simplify, we will make this additional assumption: if n does not belong to religion R, then setting a commercial relation with a city that does belong to R implies a prohibitively high cost and $\epsilon_{ni} = 0$. This assumption means that trading relations are impossible

[2] See Eaton and Kortum (2002).

to establish across religious lines. [**This assumption is strong. We follow this simple path temporarily in order to show the full model.**] By contrast, when n belongs to R and establishes a trade relation with a city that belongs to R as well, city n faces some uncertainty over the iceberg cost it faces. We assume that in that case $\epsilon(nR)$ is drawn from a distribution $H_R(.)$, with:

$$H_R(\epsilon) = 1 - e^{-\eta_R \epsilon^K}, \tag{10}$$

with $\eta_R > 0$ and $K > 1$. The parameter η_R is high when the average value of the iceberg cost for religion R is low. We can therefore interpret η_R as the benefits - in trade - from holding religion R. As for θ, the parameter K is related to the variability of the distribution. When K is higher, then the degree of complementarity in trade implied by any religion becomes more deterministic.

Using the preceding assumption, we can compute the price index that city n faces, from adopting religion R:

$$p_{n,t}(R) = \gamma \epsilon_{nR} [\sum_{i \in R(t)} T_i (d_{ni})^{-\theta}]^{-1/\theta} \tag{11}$$

Institutions are chosen in period $t+1$ so as to maximize the social welfare, as evaluated in period t (Bisin and Verdier (2017)). Given the distribution of religious denominations in t then, city n adopts religion $R \in \{M, B, H\}$ in period $t+1$ when:

$$p_{n,t}(R) < p_{n,t}(Y), \text{ for any religion } Y \neq R. \tag{12}$$

Denoting $Z(R)_t = [\sum_{i \in R(t)} T_i (d_{ni})^{-\theta}]^{-1/\theta}$, we deduce from (10) and (11) that the probability that n adopts religion R in period $t+1$ takes the form:

$$\pi_{n,t+1}(R) = \int_0^\infty \prod_{K \in R} [1 - H_R(\epsilon Z(R)_t / Z(K)_t)] dH_R(\epsilon). \tag{13}$$

After a few computations, we find that

$$\pi_{n,t+1}(R) = \frac{\eta_R Z(R)_t^{-K}}{\sum_{K\in R}\eta_K Z(K)_t^{-K}}. \tag{14}$$

Or equivalently,

$$\pi_{n,t+1}(R) = \frac{\eta_R[\sum_{i\in R_t} T_i(d_{ni})^{-\theta}]^{-K/\theta}}{\sum_{K\in R}\eta_K[\sum_{i\in K_t} T_i(d_{ni})^{-\theta}]^{-K/\theta}}. \tag{15}$$

We deduce the following multivariate (latent) model:

$$\begin{cases} \pi_{n,t+1}(M) = \frac{\eta_M[\sum_{i\in M_t} T_i(d_{ni})^{-\theta}]^{-K/\theta}}{\sum_{K\in R}\eta_K[\sum_{i\in K_t} T_i(d_{ni})^{-\theta}]^{-K/\theta}} \\ \pi_{n,t+1}(B) = \frac{\eta_B[\sum_{i\in B_t} T_i(d_{ni})^{-\theta}]^{-K/\theta}}{\sum_{K\in R}\eta_K[\sum_{i\in K_t} T_i(d_{ni})^{-\theta}]^{-K/\theta}} \\ \pi_{n,t+1}(H) = \frac{\eta_H[\sum_{i\in H_t} T_i(d_{ni})^{-\theta}]^{-K/\theta}}{\sum_{K\in R}\eta_K[\sum_{i\in K_t} T_i(d_{ni})^{-\theta}]^{-K/\theta}}. \end{cases} \tag{16}$$

We then have a multivariate model, which should lead to the estimation of following key parameters: θ, $\{\eta_M, \eta_B, \eta_H\}$ and K.

3.3 From the model to the data:

In order to estimate (16), we will use the following data:

- T_i as the inverse of the soil quality in city i. We can compute a variable $T_i \equiv 1 - S_i$, where S_i is the data on soil quality at the city level.
- We can readily compute the distance d_{ni} between two cities, given our data on the trade routes.
- We also have a variable $X_{n,t}(R) = \{M, B, H\} \equiv \{1, 2, 3\}$, which is our dependent variable. $X_{n,t}$ equals 1 if city n adopts Islam in period t, 2 if it adopts Budhism and 3 if it adopts Hinduism. $\pi_{n,t} = \{\pi_{n,t}(M), \pi_{n,t}(B), \pi_{n,t}(H)\}$ in (16) is the latent variable associated to $X_{n,t}$.

Next, we explain further how to interpret the parameters θ, $\{\eta_M, \eta_B, \eta_H\}$ that we estimate in (16).

- **Interpretation of θ:** When θ is high, there is a low variability in the distribution of the technologies of the various cities. It means that everything that contributes to a given city's comparative advantage, i.e. geography or religion is critical in explaining trade flows.

- **Interpretation of K:** When K is high, there is a low variability in the distribution of the religious-specific iceberg cost. This implies that religious changes reflect the structure of comparative advantage - from trade - relatively well. The evolution of religious institutions is highly sensitive to trade patterns.

- **Interpretation of η_R, $R \in \{M, B, H\}$:** If η_M is high, from (16), conversions to Islam (resp. Buddhism and Hinduism) are more (resp. less) likely.

We can draw the following interpretations, which link our estimated parameters to different historical narratives for explaining trade flow and the spread of religions in South Asia.

In an environment where θ is high, while K is low, then the patterns of trade are largely explained by the comparative advantage structure. However, religious changes are scarce. This means that trade patterns are explained foremost by geography, i.e. by the distribution of land quality.

In an environment where both θ and K are high, then the patters of trade are explained by the comparative advantage structure, i.e. distances and religion. Religious change is, in turn, explained by these trade patterns. It is then an environment where trade is a key determinant for the evolution of religion in South Asia. Furthermore, trade can be explained by two things, depending on the strength of our last set of parameters $\{\eta_M, \eta_B, \eta_H\}$. If we find that η_M is high relative to η_B and η_H for instance, then Muslim institutions, in combination with geography (since θ is large) explain conversion patterns. This would be consistent with the Michalopoulos, Naghavi, and Prarolo (2016)'s story. If we find that η_B and η_H are also large relative to η_M, then we would have demonstrated that Islam is not intrinsically better at promoting trade relative to Buddhism and Hinduism.

Finally, in an environment where θ is low, it means that trade is not a preponderant factor in explaining

the spread of religion in South Asia. Then depending on our estimates of K and $\{\eta_M, \eta_B, \eta_H\}$, we can establish different results. For instance, if we find that η_M is large relative to η_B and η_H, it means that there is a diffusion of Islam for reasons that are unrelated to trade. This would be that Islamic institutions are more efficient than others, i.e. promote or that Islam spreads by means that are unrelated to trade, i.e. wars. We summarize the various possible interpretations of the results of the estimation in the following table.

Table 1: Description of Changes to the Foreign Assistance Act

Estimated variables	Description
θ high, K high:	*Religious institutions promoting trade:* • η_M high relative to η_B and η_H: The spread of religion is explained by the combination of geography and the efficiency of Muslim institutions at promoting trade. Michalopoulos, Naghavi, and Prarolo (2016). • η_M and η_B have the same magnitude: Muslim institutions are not more efficient at promoting trade than Buddhist institutions.
θ high, K low:	*Geography:* • The spread of religion is explained by geography, not the efficiency of religious institutions - or there exist important frictions in institutional change.
θ low, K high:	*Religious institutions unrelated to trade:* • η_M high relative to η_B and η_H: The spread of religion is not explained by trade, but rather by intrinsic characteristics of Islamic institutions unrelated to trade, e.g. religious legitimacy, military expansions. • η_M and η_B have the same magnitude: Muslim institutions unrelated to trade are not more efficient at spreading Islam than Buddhist (resp. Hindu) institutions at spreading Buddhism (resp. Hinduism).
θ low, K low:	• The model does not explain much.

4 Empirical Analysis

4.1 Data

We create a balanced panel of 2356 0.5 degree × 0.5 degree grid cells that cover the entirety of modern-day South Asia, for three periods for which maps of historical religious sites in South Asia are available. The main variables and their sources are discussed below:

Religion. Georeferenced data on four prominent religions of South Asia: Hinduism, Buddhism, Jainism and Islam; for three time periods (200 BC to 300 CE, 700 CE to 1200 CE, and 1200 CE to 1525 CE). The data is obtained from Schwartzberg (1978) Atlas. Note that the data on Hinduism, Buddhism and Jainism is available for period 1 and period 2. For Islam the data is available for period 2 and period 3 (since Islam came to existence in period 2). For period 3 we can identify non-Islamic religious sites, but we can not identify which of the three non-Islamic religious the religious site is associated with.

We use the religion data to construct two key variables for our analysis. For the dependent variable we measure whether a site of a religion r (both at the extensive and intensive margins) was located in a cell (i) in a given period (t). We also use the religion data to construct the religious potential for each cell (i); it is defined as the sum over all the partner cells (j≠i) the presence of religion site r inverse weighted by the square of the distance to cell i (Figure 2-Figure 7 for Period 1). We also create an alternative religious potential measure where we normalize the variables to ascertain the relative strength of each religion per cell.

Trade routes. Michalopoulos, Naghavi, and Prarolo (2018) (pre-6th century trade routes and 18th century trade routes); Neelis (2010). We augment this database of trade locations with data on pre-6th century port locations. The data is sourced from de Graauw, Brendan, and McCormick (2021).

We use the trade data to define the trade potential of a cell. This is done in two parts. First, we mark cells that either had an inland trade or port location, or were adjacent to such cells as a trading city (Figure 8). Then we construct trade potential for each cell which is the sum over all the partner trading cells inverse weighted by the square of the distance to cell i (Figure 9).

Historical land use and demography. This data is sourced from Hyde 2.1 database. Data is available at the grid level for each century (available from 5000 BC onwards). We match the land use and demography maps for the first century of each time period of the religious sites maps.

Dynasty religion. The data on dynasties is sourced from World History Maps.[3] We geo-reference fifteen maps that showcase the political boundaries in South Asia at the turn of each century. We further collect data on dynasties from various sources. We then codify the extent to which a religion's polities ruled over a grid cell in a given time period. For instance, we have six maps for period 1 (200 BC, 100 BC, 1 AD, 100 AD, 200 AD and 300 AD). We create a numeric indicator that takes a value between 0-6 and tells us the number of times we observe a given religion's polity ruling over cell i across the reference maps for period 1.

[3] See https://www.worldhistorymaps.info/.

4.2 Descriptives: Period 1 and 2

Figure 1: Religious Potential: Buddhism in Period 1

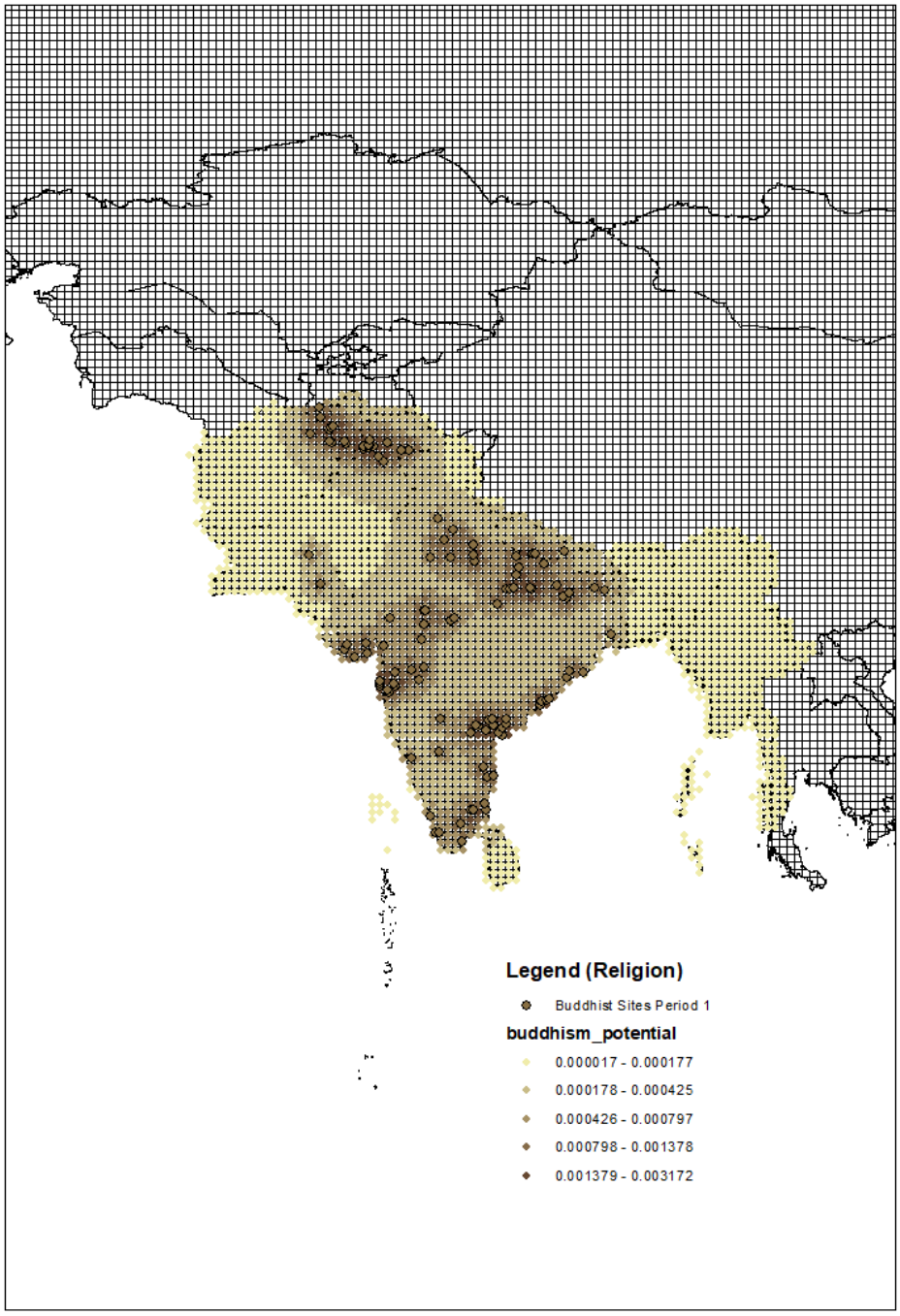


Figure 2: Religious Potential: Buddhism in Period 2

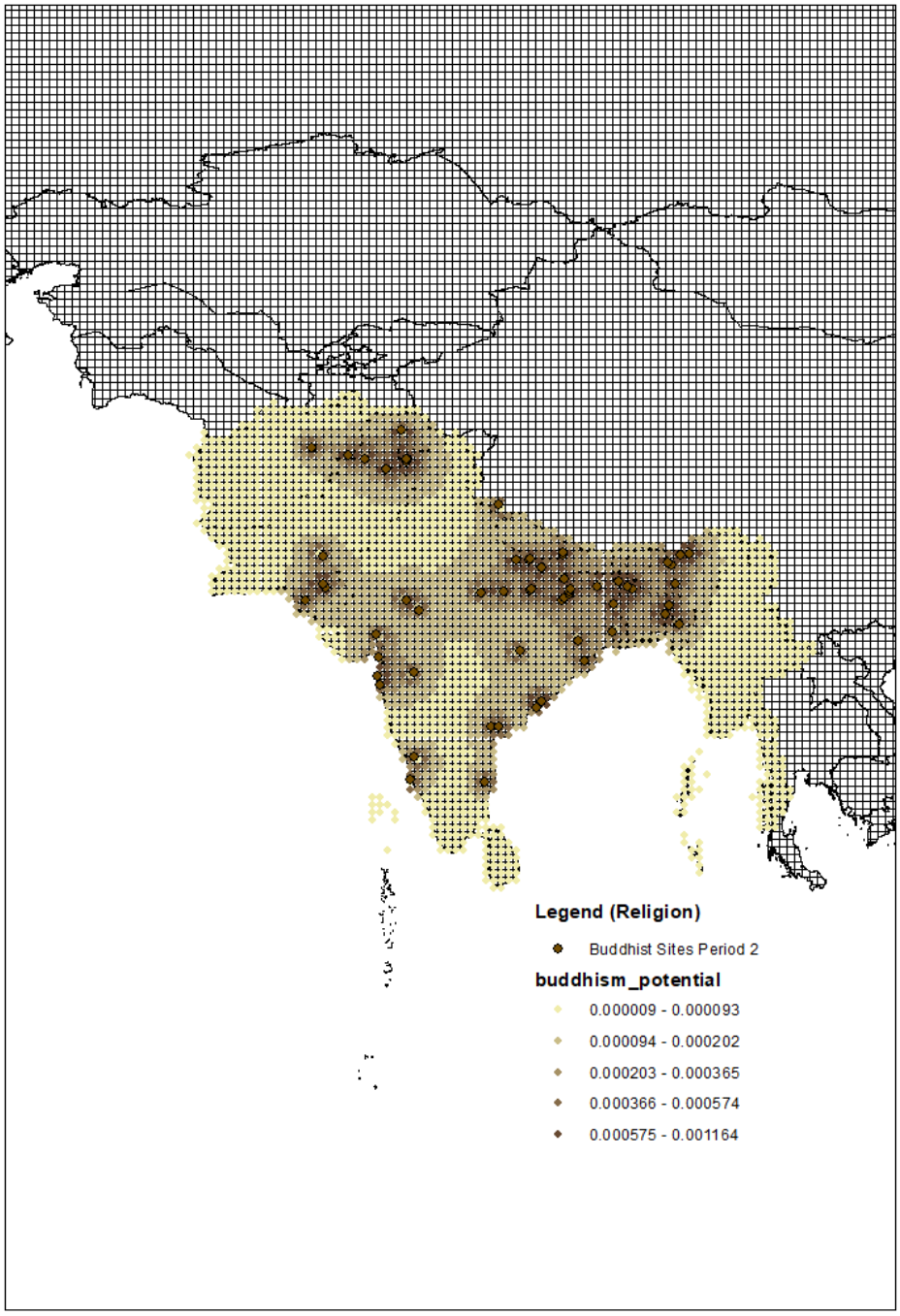


Figure 3: Religious Potential: Hinduism in Period 1

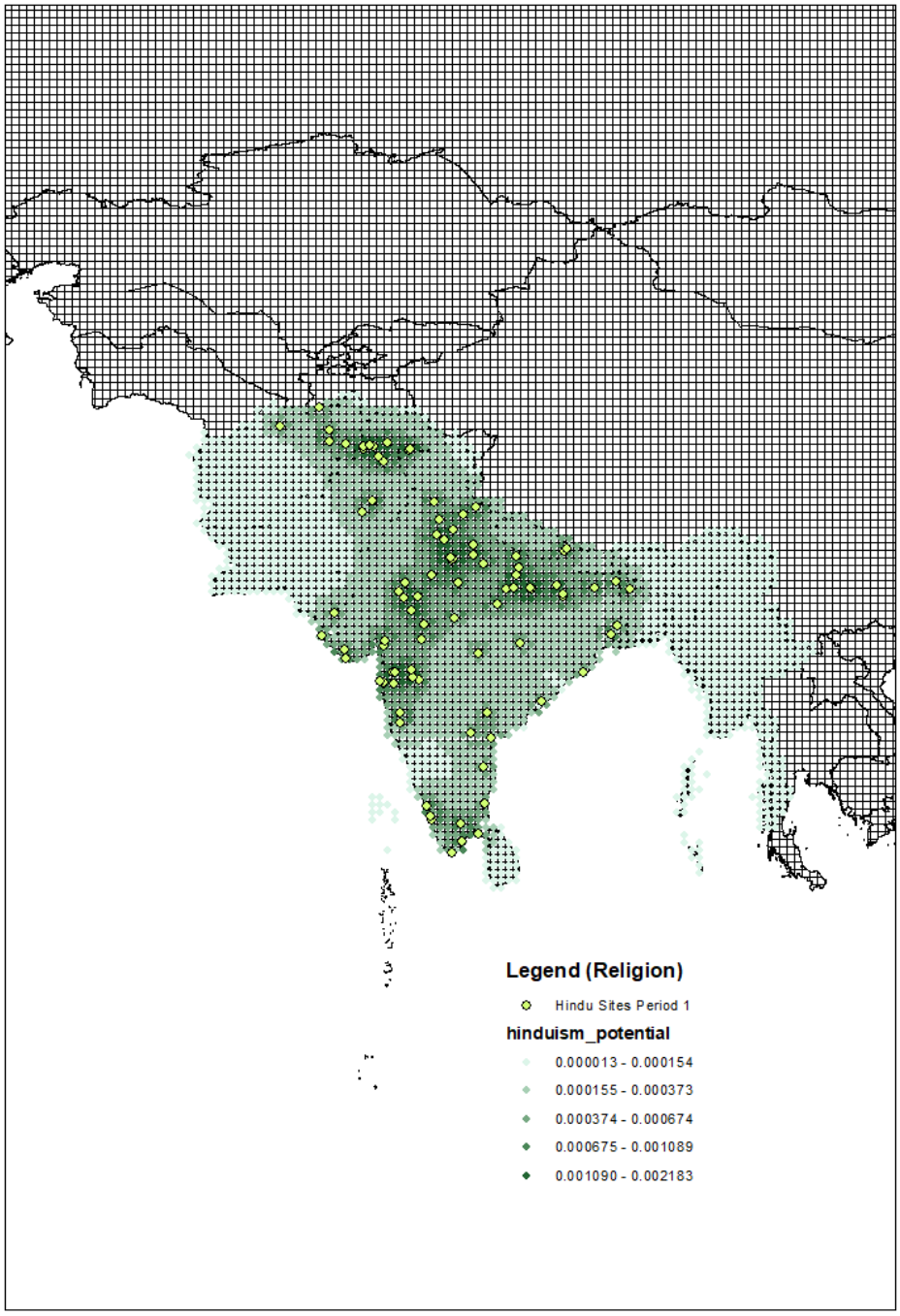


Figure 4: Religious Potential: Hinduism in Period 2

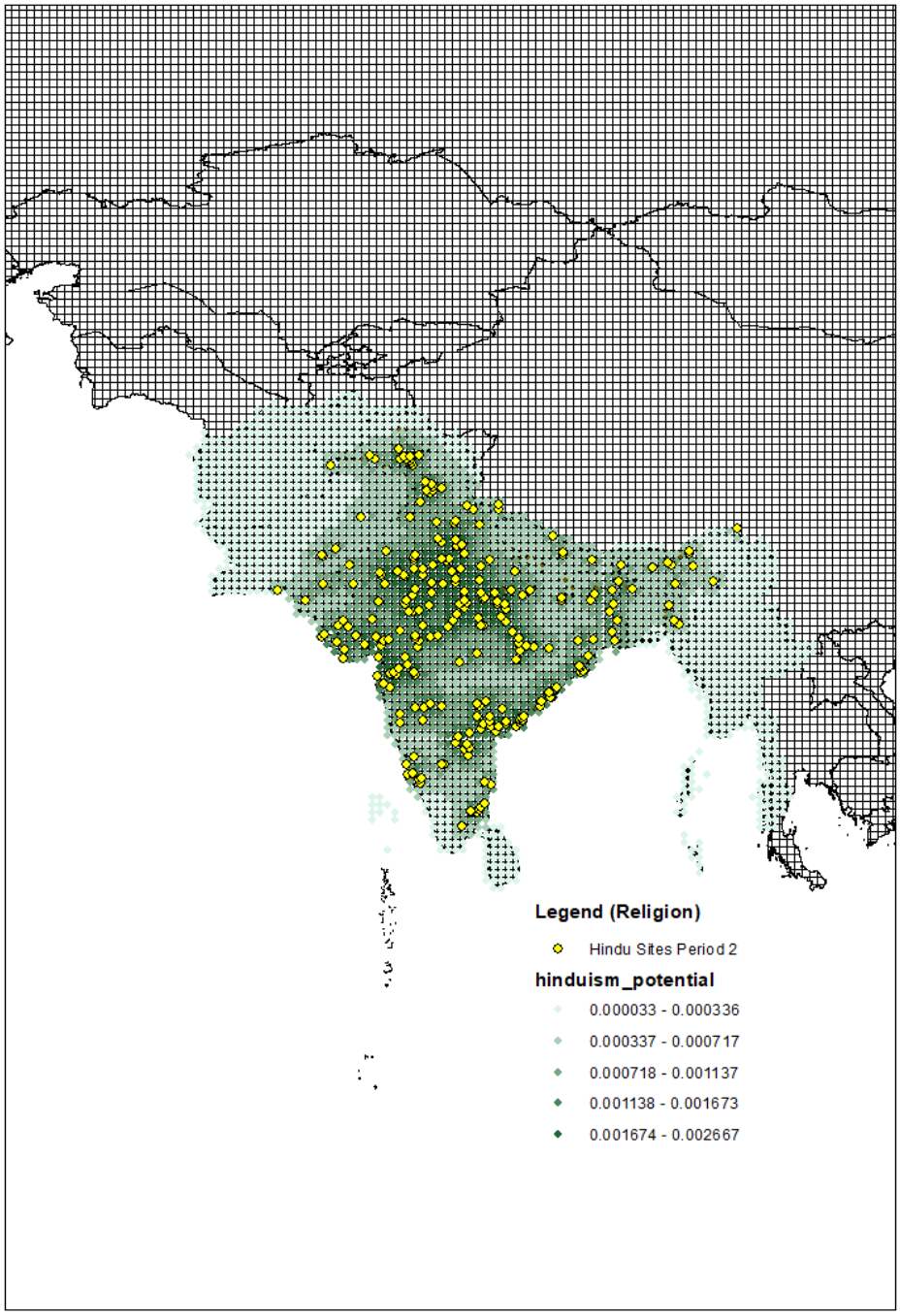


Figure 5: Religious Potential: Jainism in Period 1

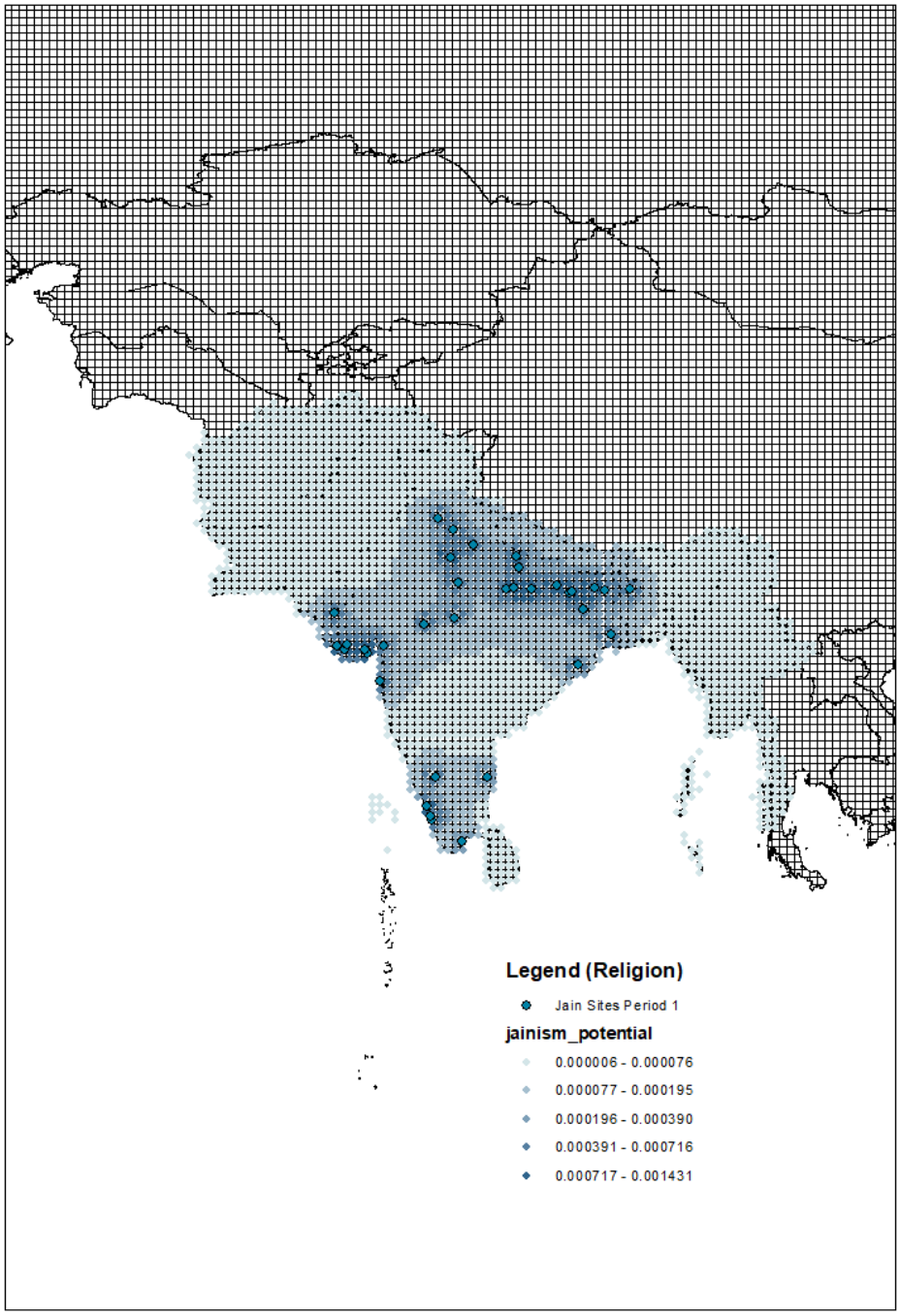


Figure 6: Religious Potential: Jainism in Period 2

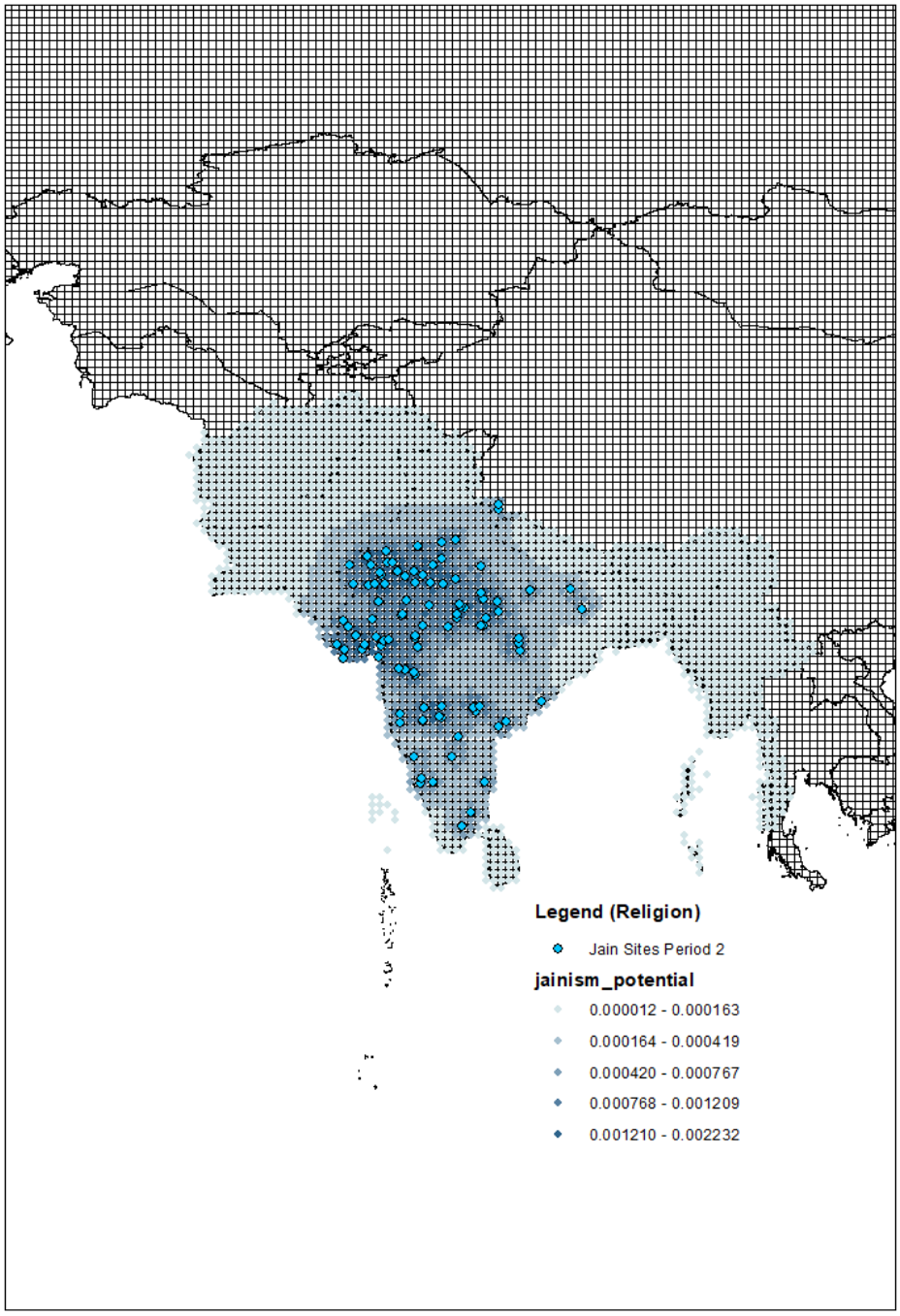


Figure 7: Religious Potential: Islam in Period 2

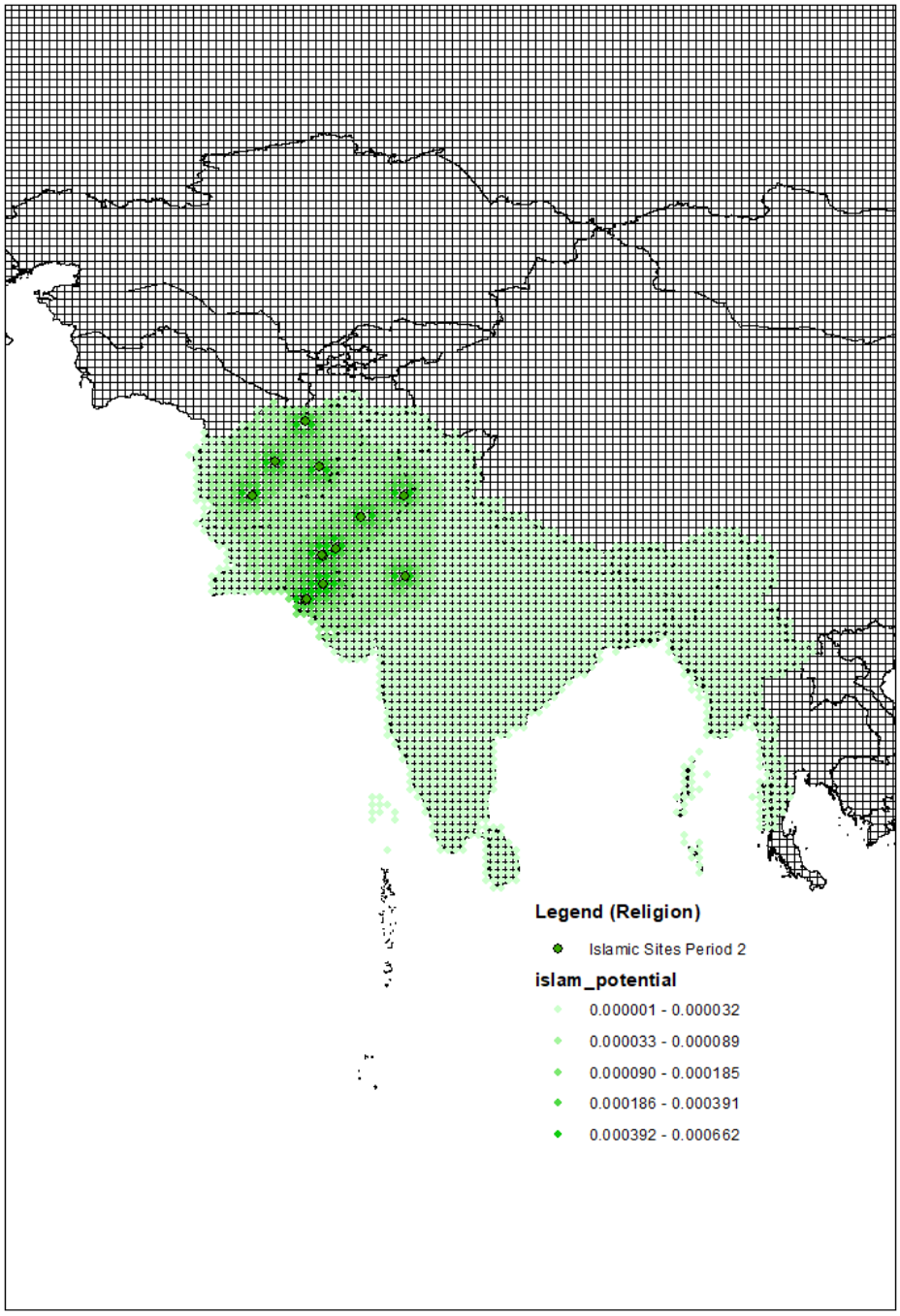


Figure 8: Trading Cities

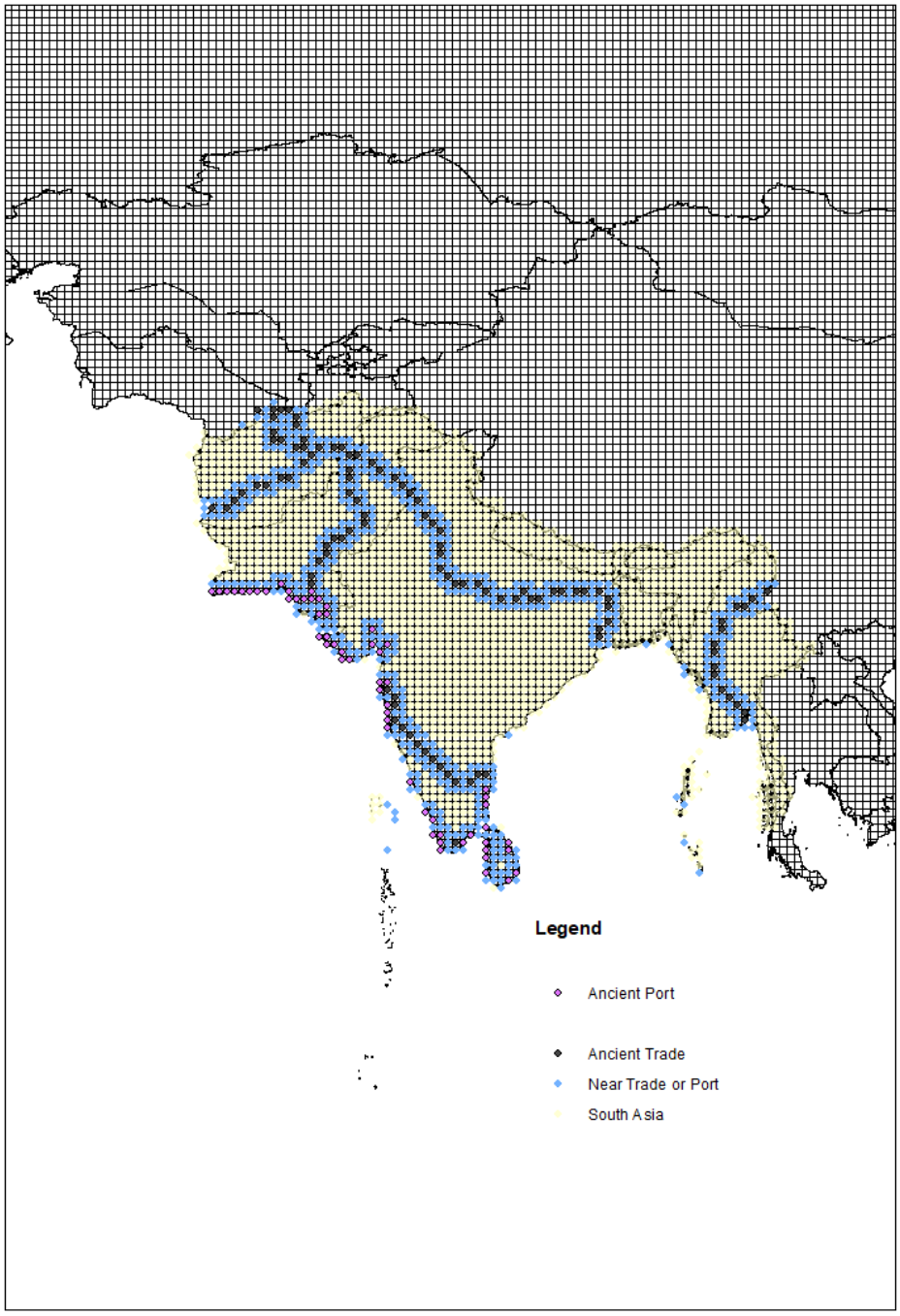
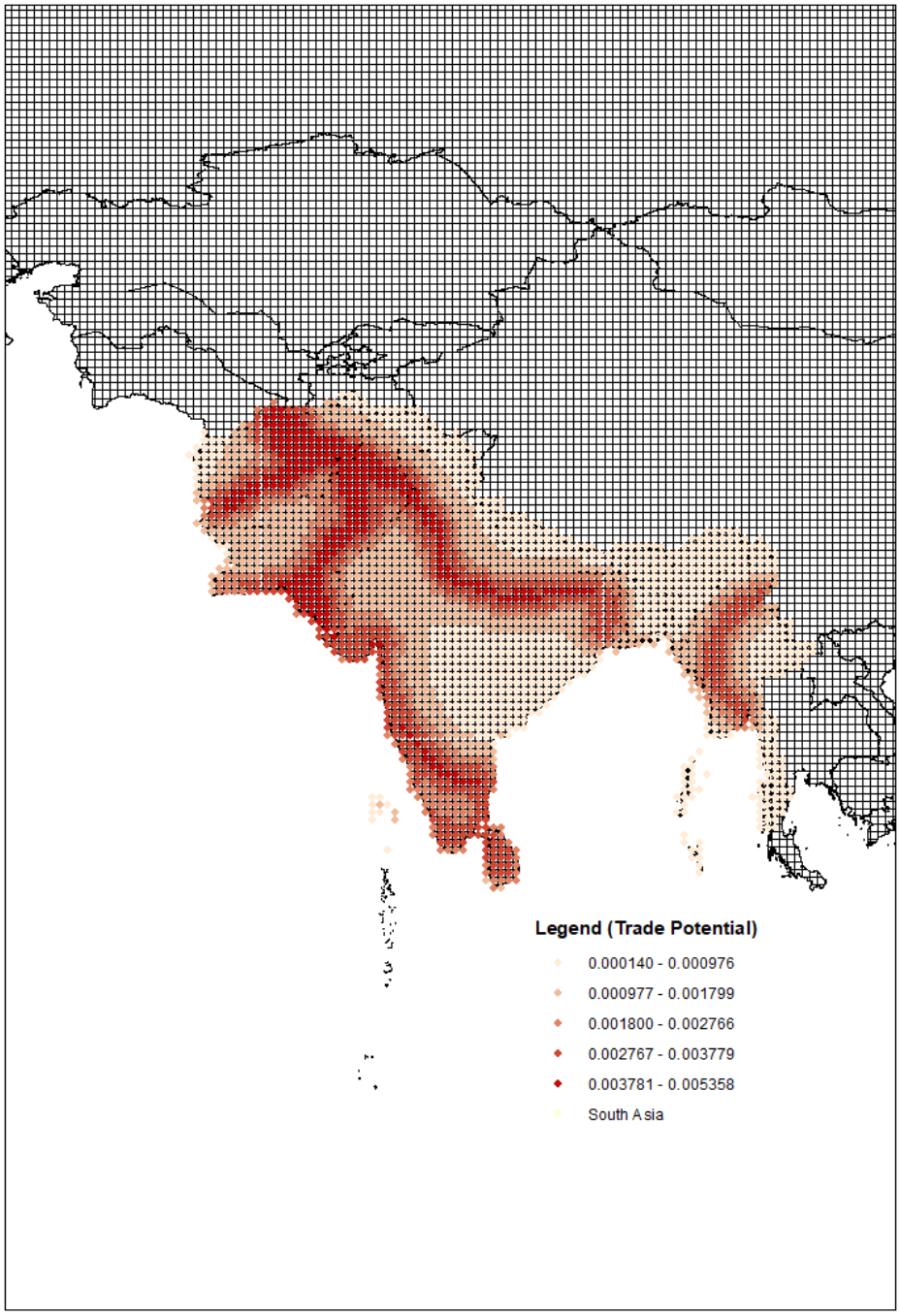


Figure 9: Trade Potential



5 Empirical Analysis

We focus on religious potential and trade potential, as well as their interaction as the main drivers of the presence of a religious site in a given cell in time period i. Religious potential captures the proximity to the sites of own religion in South Asia. Trading potential captures the proximity to trading centers in South Asia. We also control for state legitimacy of religion through a categorical variable that measures the extent to which a given religion's polity ruled over a given cell in period i. Additional controls include prospects for agriculture (cropland), demographic characteristics (population and urbanization), distance to the birthplace of each religion, and finally distance to prominent trading cities in West Asia (Hormuz) and in East Asia (Xian).[4] We assess the relationship separately for Period 1 (200 BC to 300 CE), Period 2 (700 CE to 1200 CE), and Period 3 (1200 CE to 1525 CE).

5.1 Period 1: 200 BC to 300 CE

Three religions are consequential in South Asia in Period 1- Buddhism, Hinduism, and Jainism. Tables 2, 3, and 4 show whether proximity to own religious sites, proximity to trading centers, or an interaction of the two determines the presence of a religious site related to Buddhism, Hinduism and Jainism respectively in Period 1. Results suggest that proximity to other Buddhist sites is an important determinant of Buddhism (row 1 of Table 2) while proximity to other Jain sites is only consequential in locations that are also proximate to the trading centers (row 3 and row 5 of Table 4). Further, competition from Hinduism is weakened by the proximity to trading centers for both Buddhism and Jainism in Period 1. On the other hand, competition from Buddhism is strengthened in proximity to trading centers in case of Jainism. Overall, proximity to trading centers appear to be relatively important for the spatial presence of Buddhism and Jainism. Demographic characteristics like population and urbanization appear to be more relevant for Hinduism, while state legitimacy is only relevant for Jainism (row 10 of Table 4).

[4]Note: I chose one trading center each for West and East based on the silk road map of the period 300 BC to 100 AD. We can try alternative locations as well.

One concern is that religious centers might concentrate in proximity to the trading centers because it is easier to appropriate surplus through donations along the trading routes. Therefore, the effect of the interaction between religious potential and trading centers is not due to the trading enhancing effect of religious potential but it is due to the possibility of extracting surplus along the trading routes. To address this alternative explanation we control for the interaction between religious centers and cropland. This is based on the intuition that land grants were an important source of donations for religious institutions. Therefore, if surplus extraction is the channel through which the interaction between trading centers and religious potential determines the presence of a religious site, then we should expect a similar correlation with the interaction between religious potential and cropland. Results presented in Table 5 show that the interaction between religious potential and cropland does not have a statistically significant effect on the presence of the religious site of any religion. Therefore, we rule out that the mediating effect of trading centers in Period 1 is due to the possibility of extracting religious donations.

Table 2: Determinants of **Buddhism** in Period 1

	(1)	(2)	(3)	(4)	(5)	(6)
Budh pot.	197.3***	198.6***	263.0***	264.4***	201.1***	281.6***
	(32.99)	(58.22)	(61.72)	(61.96)	(33.04)	(62.91)
Hindu pot.	-7.394	-7.262	-110.8*	-107.1*	-0.295	-96.06*
	(28.48)	(26.95)	(60.78)	(58.05)	(27.34)	(55.30)
Jain pot.	-87.69**	-87.42**	-116.7	-92.79	-110.3***	-154.4
	(34.66)	(36.40)	(108.8)	(124.5)	(42.02)	(136.3)
Trade potential	3.351	3.526	-0.516	-0.995	5.109	-0.0128
	(3.263)	(4.744)	(3.253)	(3.630)	(3.489)	(3.843)
Budh pot.×Trade potential		-596.4	-31946.4	-33119.7		-39691.3
		(14165.6)	(24010.5)	(24057.0)		(25232.4)
Hindu pot.×Trade potential			48572.5*	48178.5*		48885.3*
			(27099.6)	(26795.7)		(25623.6)
Jain pot.×Trade potential			8153.0	5194.5		16862.4
			(31769.2)	(33223.9)		(35833.2)
Time Buddhist rule					-0.00622**	-0.00776**
					(0.00299)	(0.00327)
Time Hindu rule					-0.00212	-0.00361
					(0.00219)	(0.00239)
Time Jain rule					0.00740	0.0147
					(0.0128)	(0.0128)
Cropland	-0.0000280	-0.0000285	-0.0000820	-0.000187	0.0000320	-0.000190
	(0.000343)	(0.000337)	(0.000333)	(0.000317)	(0.000333)	(0.000309)
Log population	0.00321	0.00318	0.00413	0.00667*	0.00433	0.00998**
	(0.00309)	(0.00355)	(0.00366)	(0.00367)	(0.00333)	(0.00426)
Urban area	0.0206	0.0206	0.0200	0.0201	0.0175	0.0167
	(0.0136)	(0.0136)	(0.0133)	(0.0132)	(0.0138)	(0.0133)
Log Dist Vaishali	0.0344	0.0344	0.0282	0.0328**	0.0450**	0.0460***
	(0.0209)	(0.0210)	(0.0196)	(0.0147)	(0.0218)	(0.0142)
Log Dist Banaras	0.0128	0.0129	0.0137	0.0194	0.00454	0.0227
	(0.0172)	(0.0185)	(0.0174)	(0.0220)	(0.0175)	(0.0204)
Log Dist Gaya	-0.0520*	-0.0521*	-0.0462*	-0.0449	-0.0538*	-0.0586**
	(0.0270)	(0.0270)	(0.0260)	(0.0281)	(0.0301)	(0.0283)
Log Dist Hormuz				-0.00289		-0.0120***
				(0.00500)		(0.00441)
Log Dist Xian				-0.00949		-0.00353
				(0.0116)		(0.00983)
Observations	2291	2291	2291	2291	2280	2280

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 1 covers 200 BC to 300 CE.

Table 3: Determinants of **Hinduism** in Period 1

	(1)	(2)	(3)	(4)	(5)	(6)
Budh pot.	55.79**	54.17**	24.89	25.85	57.89**	30.39
	(26.36)	(26.30)	(38.48)	(38.08)	(26.30)	(38.72)
Hindu pot.	48.75	-11.01	45.56	47.93	54.13	53.68
	(52.17)	(70.77)	(91.33)	(90.90)	(53.12)	(92.87)
Jain pot.	-10.67	-20.73	-147.6	-138.0	-26.29	-175.6
	(46.47)	(48.44)	(123.8)	(128.9)	(45.87)	(133.1)
Trade potential	5.376*	-1.379	-2.514	-2.424	7.064*	-1.582
	(2.954)	(2.767)	(2.245)	(2.455)	(3.678)	(2.919)
Hindu pot.×Trade potential		26103.7**	1780.2	1220.1		1614.1
		(13041.9)	(31224.8)	(31471.2)		(31228.4)
Budh pot.×Trade potential			13835.5	13302.0		11092.6
			(16052.2)	(16267.1)		(17174.7)
Jain pot.×Trade potential			42927.5	41791.8		48672.2
			(34213.4)	(35358.7)		(36734.2)
Time Buddhist rule					-0.00485	-0.00435
					(0.00324)	(0.00401)
Time Hindu rule					-0.000759	-0.000394
					(0.00227)	(0.00221)
Time Jain rule					0.00586	0.0160
					(0.00943)	(0.00990)
Cropland	0.000257	0.000243	0.000241	0.000203	0.000305	0.000225
	(0.000298)	(0.000298)	(0.000298)	(0.000328)	(0.000291)	(0.000314)
Log population	0.00412	0.00554**	0.00644**	0.00737**	0.00455*	0.00833**
	(0.00261)	(0.00268)	(0.00306)	(0.00340)	(0.00262)	(0.00347)
Urban area	0.0384**	0.0381**	0.0381**	0.0381**	0.0360**	0.0359**
	(0.0153)	(0.0154)	(0.0156)	(0.0157)	(0.0145)	(0.0148)
Log Dist Vaishali	0.0121	0.00935	0.00615	0.00859	0.0180	0.0154
	(0.0178)	(0.0169)	(0.0162)	(0.0151)	(0.0171)	(0.0152)
Log Dist Banaras	-0.0188	-0.0218	-0.0222	-0.0209	-0.0252*	-0.0176
	(0.0155)	(0.0147)	(0.0151)	(0.0184)	(0.0136)	(0.0167)
Log Dist Gaya	0.00182	0.00837	0.0117	0.0129	0.00277	0.00547
	(0.0223)	(0.0226)	(0.0222)	(0.0233)	(0.0219)	(0.0219)
Log Dist Hormuz				-0.000223		-0.00526
				(0.00382)		(0.00601)
Log Dist Xian				-0.00495		-0.00236
				(0.00754)		(0.00767)
Observations	2291	2291	2291	2291	2280	2280

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 1 covers 200 BC to 300 CE.

Table 4: Determinants of **Jainism** in Period 1

	(1)	(2)	(3)	(4)	(5)	(6)
Budh pot.	-6.005	-7.637	28.61	26.89	-5.831	29.60
	(12.99)	(14.66)	(26.23)	(25.62)	(14.51)	(26.00)
Hindu pot.	14.59	21.24	-33.24	-37.51	17.26	-33.62
	(19.24)	(20.36)	(23.58)	(22.93)	(20.56)	(23.21)
Jain pot.	40.04	-179.0***	-151.0**	-172.8**	18.72	-227.8***
	(38.74)	(61.61)	(66.14)	(75.44)	(46.74)	(78.18)
Trade potential	6.310*	0.612	-0.00649	0.132	7.901**	0.159
	(3.749)	(2.537)	(1.993)	(2.089)	(3.726)	(1.817)
Jain pot.×Trade potential		72304.7***	62478.6***	65120.2***		76336.3***
		(11945.5)	(16242.8)	(16872.3)		(17069.5)
Budh pot.×Trade potential			-17437.2*	-16302.4		-18094.1*
			(10566.4)	(10451.4)		(10220.7)
Hindu pot.×Trade potential			25093.2**	25875.0*		26450.6*
			(12751.2)	(13213.3)		(13600.3)
Time Buddhist rule					-0.00257	-0.00245
					(0.00241)	(0.00280)
Time Hindu rule					0.0000492	-0.000407
					(0.00245)	(0.00262)
Time Jain rule					0.0209*	0.0281***
					(0.0123)	(0.00965)
Cropland	-0.000178	-0.000221	-0.000241	-0.000151	-0.0000913	-0.000110
	(0.000190)	(0.000183)	(0.000181)	(0.000248)	(0.000200)	(0.000254)
Log population	0.00392**	0.00622***	0.00619***	0.00396*	0.00326	0.00488*
	(0.00188)	(0.00234)	(0.00233)	(0.00228)	(0.00210)	(0.00252)
Urban area	0.0314***	0.0310***	0.0308***	0.0308***	0.0296***	0.0292***
	(0.0115)	(0.0116)	(0.0113)	(0.0114)	(0.0114)	(0.0112)
Log Dist Vaishali	-0.00118	-0.0109	-0.0122	-0.0170	0.00828	-0.00504
	(0.0128)	(0.0108)	(0.0104)	(0.0143)	(0.0125)	(0.0130)
Log Dist Banaras	-0.000403	-0.000944	-0.000164	-0.00424	-0.00000355	0.00400
	(0.0157)	(0.0160)	(0.0162)	(0.0160)	(0.0164)	(0.0151)
Log Dist Gaya	-0.00293	0.00738	0.00812	0.00617	-0.0120	-0.00920
	(0.0172)	(0.0178)	(0.0173)	(0.0185)	(0.0179)	(0.0173)
Log Dist Hormuz				0.00165		-0.00274
				(0.00360)		(0.00368)
Log Dist Xian				0.00984		0.00969
				(0.00705)		(0.00610)
Observations	2291	2291	2291	2291	2280	2280

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 1 covers 200 BC to 300 CE.

Table 5: Alternative channel: **Surplus extraction**

	(1) Budh	(2) Hind	(3) Jain
Budh pot.	249.9***	32.32	31.49
	(40.21)	(56.38)	(25.96)
Hindu pot.	-71.43	76.76	-50.86*
	(58.61)	(107.9)	(26.74)
Jain pot.	-116.7	-204.0	-216.4**
	(149.2)	(145.6)	(95.32)
Trade potential	-0.393	-1.400	0.110
	(3.569)	(2.941)	(1.823)
Budh pot.×Trade potential	-37067.3*	9900.9	-17602.9*
	(21470.3)	(18147.6)	(9919.5)
Hindu pot.×Trade potential	48156.0*	779.9	27017.0**
	(25296.2)	(32801.6)	(13207.2)
Jain pot.×Trade potential	15889.5	51366.8	74440.3***
	(38770.1)	(35728.5)	(17250.7)
Budh pot.×Cropland	1.861	-0.193	-0.0430
	(2.410)	(1.521)	(0.496)
Hindu pot.×Cropland	-1.420	-1.732	1.248
	(1.644)	(2.405)	(0.908)
Jain pot.×Cropland	-3.025	2.066	-0.708
	(3.109)	(3.525)	(2.442)
Time Buddhist rule	-0.00727**	-0.00455	-0.00241
	(0.00305)	(0.00380)	(0.00273)
Time Hindu rule	-0.00352	-0.000611	-0.000282
	(0.00234)	(0.00224)	(0.00267)
Time Jain rule	0.0142	0.0160	0.0281***
	(0.0130)	(0.00995)	(0.00958)
Cropland	-0.000116	0.000689	-0.000450
	(0.000560)	(0.000477)	(0.000281)
Log population	0.00942**	0.00774**	0.00539**
	(0.00414)	(0.00341)	(0.00259)
Urban area	0.0203	0.0365**	0.0280**
	(0.0150)	(0.0162)	(0.0122)
Log Dist Vaishali	0.0446***	0.0179	-0.00628
	(0.0142)	(0.0155)	(0.0131)
Log Dist Banaras	0.0253	-0.0184	0.00400
	(0.0209)	(0.0178)	(0.0161)
Log Dist Gaya	-0.0599**	0.00458	-0.00849
	(0.0279)	(0.0220)	(0.0173)
Log Dist Hormuz	-0.0117***	-0.00513	-0.00291
	(0.00428)	(0.00592)	(0.00344)
Log Dist Xian	-0.00362	-0.00310	0.0102
	(0.00934)	(0.00796)	(0.00633)
Observations	2280	2280	2280

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 1 covers 200 BC to 300 CE. Each column is comparable to Column 6 of Table related to the given religion in that period.

5.2 Period 2: 700 CE to 1200 CE

We consider the determinants of four religions: Buddhism, Hinduism, Jainism and Islam in this period. First note that for Islam, trade potential and state legitimacy variables are the primary determinant of the presence of an Islamic site (Table 9). This suggests that Islam is most conducive to facilitating trade and therefore spreads in the proximity to trading routes. Further Islamic rule is also conducive to the spread of Islam. The effect of trading potential as the determinant of an Islamic site is also magnified in the South Asian locations that are relatively more proximate to Mecca (column 4 of Table A-2). On the other hand, Table 6-8 suggest that religious potential alone determines the presence of a religious site for the non-Islamic religions, while proximity to trading routes play no mediating role (or even have a weakening effect in the case of Buddhism). This might suggest that as Islam, with more conducive institutions for trans-regional trade, takes hold in South Asia, proximity to trading routes has either no effect or even a weakening effect on the presence of non-Islamic religions in South Asia. Final, Tables 7-8 suggest that competition from Islam also directly impedes the presence of both Hindu and Jain religious sites.

Table 10 shows that potential rent extraction from land facilitates the presence of a Hindu site (while competition from other religions around cropland impedes the presence of a Hindu religious site).

Table 6: Determinants of **Buddhism** in Period 2

	(1)	(2)	(3)	(4)	(5)	(6)
Budh pot.	58.55	104.4**	124.7**	122.6**	53.40	121.1**
	(46.99)	(52.20)	(56.85)	(56.60)	(50.12)	(60.28)
Hindu pot.	32.38**	31.02**	8.085	4.127	31.67**	3.577
	(15.15)	(14.73)	(21.20)	(22.92)	(15.03)	(24.26)
Jain pot.	-43.66***	-41.79**	-14.41	-12.83	-45.54**	-15.02
	(16.93)	(16.38)	(30.73)	(30.86)	(17.93)	(31.56)
Islam pot.	-0.130	3.198	26.26	-11.44	-5.683	4.390
	(46.94)	(53.44)	(90.33)	(80.55)	(41.45)	(82.79)
Trade potential	4.059*	7.771**	5.986	4.722	4.204*	4.846
	(2.458)	(3.574)	(3.654)	(3.578)	(2.352)	(3.610)
Budh pot.×Trade potential		-21190.5**	-29471.4*	-30099.2*		-30009.0*
		(10369.7)	(15446.0)	(15700.5)		(15456.6)
Hindu pot.×Trade potential			11009.8	12670.4		12991.0
			(10947.6)	(11137.6)		(11144.1)
Jain pot.×Trade potential			-13952.0	-15179.2		-15207.0
			(18816.3)	(19073.8)		(19299.2)
Islam pot.×Trade potential			-6896.4	2301.1		-1206.9
			(18883.7)	(18427.2)		(18309.9)
Time Buddhist rule					-0.0000882	0.000151
					(0.00171)	(0.00177)
Time Hindu rule					0.00171	0.000799
					(0.00222)	(0.00217)
Time Jain rule					0.000571	0.00133
					(0.00314)	(0.00324)
Time Islam rule					0.00182	0.000717
					(0.00211)	(0.00287)
Cropland	0.000471	0.000415	0.000416	0.000437	0.000470	0.000435
	(0.000380)	(0.000377)	(0.000376)	(0.000384)	(0.000381)	(0.000390)
Log population	-0.000587	-0.000762	-0.000329	-0.00125	-0.00170	-0.00166
	(0.00261)	(0.00256)	(0.00273)	(0.00330)	(0.00300)	(0.00364)
Urban area	0.00380	0.00495	0.00396	0.00359	0.00349	0.00341
	(0.00912)	(0.00918)	(0.00946)	(0.00950)	(0.00908)	(0.00950)
Log Dist Vaishali	-0.0167	-0.0128	-0.00960	-0.0145	-0.0195	-0.0152
	(0.0156)	(0.0161)	(0.0157)	(0.0158)	(0.0158)	(0.0159)
Log Dist Banaras	0.0153	0.0141	0.0148	0.0184	0.0166	0.0183
	(0.0184)	(0.0180)	(0.0174)	(0.0172)	(0.0188)	(0.0178)
Log Dist Gaya	-0.00516	-0.00838	-0.0117	-0.0155	-0.00554	-0.0145
	(0.0173)	(0.0173)	(0.0168)	(0.0175)	(0.0188)	(0.0187)
Log Dist Mecca	0.00512	0.00480	0.00446	-0.00470	0.00670	0.000232
	(0.00951)	(0.0101)	(0.0102)	(0.0269)	(0.0105)	(0.0341)
Log Dist Hormuz				0.00322		0.000878
				(0.0194)		(0.0298)
Log Dist Xian				0.0121		0.00883
				(0.0131)		(0.0117)
Observations	2291	2291	2291	2291	2280	2280

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 2 covers 700 to 1200 CE.

Table 7: Determinants of **Hinduism** in Period 2

	(1)	(2)	(3)	(4)	(5)	(6)
Budh pot.	53.08	52.78	4.407	9.208	56.92	-8.505
	(57.06)	(57.20)	(84.47)	(90.68)	(58.92)	(92.63)
Hindu pot.	165.6***	169.9***	195.8***	205.5***	156.2***	197.9**
	(42.04)	(61.13)	(74.80)	(77.34)	(48.66)	(81.53)
Jain pot.	-21.67	-21.75	-61.64	-65.38	-17.54	-52.43
	(43.44)	(43.36)	(76.29)	(77.52)	(43.79)	(76.02)
Islam pot.	-201.1***	-203.7***	-301.8**	-213.5*	-184.3***	-271.8
	(54.06)	(54.17)	(119.0)	(126.5)	(57.82)	(174.1)
Trade potential	2.853	4.144	2.173	5.241	5.545	8.077
	(4.394)	(5.643)	(6.416)	(7.560)	(6.178)	(7.099)
Hindu pot.×Trade potential		-1954.2	-14574.3	-18679.0		-19862.3
		(10592.5)	(21169.0)	(22416.7)		(22229.5)
Budh pot.×Trade potential			21061.7	22597.3		29266.7
			(20608.9)	(22463.5)		(25432.3)
Jain pot.×Trade potential			21054.4	24107.6		20439.8
			(27327.6)	(28442.3)		(29332.2)
Islam pot.×Trade potential			29019.2	7284.5		20115.0
			(32803.3)	(32682.5)		(40207.6)
Time Buddhist rule					-0.00530	-0.00606
					(0.00511)	(0.00465)
Time Hindu rule					-0.00139	-0.0000606
					(0.00304)	(0.00315)
Time Jain rule					-0.00696	-0.00757
					(0.00572)	(0.00650)
Time Islam rule					-0.00761	-0.00528
					(0.00499)	(0.00911)
Cropland	0.00122**	0.00122**	0.00124**	0.00119**	0.00133**	0.00130**
	(0.000612)	(0.000607)	(0.000603)	(0.000586)	(0.000603)	(0.000590)
Log population	0.0000820	-0.000142	-0.000302	0.00208	0.000571	0.00198
	(0.00506)	(0.00562)	(0.00558)	(0.00540)	(0.00491)	(0.00550)
Urban area	0.00920	0.00946	0.0101	0.0110	0.00917	0.0105
	(0.0173)	(0.0176)	(0.0176)	(0.0180)	(0.0166)	(0.0175)
Log Dist Vaishali	0.0473**	0.0464**	0.0415*	0.0538**	0.0549**	0.0570**
	(0.0207)	(0.0216)	(0.0220)	(0.0269)	(0.0248)	(0.0286)
Log Dist Banaras	0.00926	0.00920	0.00865	-0.000113	0.00685	0.00109
	(0.0260)	(0.0259)	(0.0255)	(0.0242)	(0.0271)	(0.0256)
Log Dist Gaya	-0.0344*	-0.0338*	-0.0280	-0.0190	-0.0335	-0.0210
	(0.0203)	(0.0195)	(0.0198)	(0.0183)	(0.0207)	(0.0204)
Log Dist Mecca	-0.0222**	-0.0221**	-0.0218**	0.00391	-0.0251*	0.0127
	(0.0110)	(0.0107)	(0.0103)	(0.0335)	(0.0128)	(0.0601)
Log Dist Hormuz				-0.0106		-0.0189
				(0.0243)		(0.0561)
Log Dist Xian				-0.0306		-0.0315*
				(0.0213)		(0.0175)
Observations	2291	2291	2291	2291	2280	2280

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 2 covers 700 to 1200 CE.

Table 8: Determinants of **Jainism** in Period 2

	(1)	(2)	(3)	(4)	(5)	(6)
Budh pot.	-36.62**	-36.40**	-37.25	-35.37	-38.61**	-53.49
	(18.54)	(18.09)	(33.02)	(33.40)	(17.74)	(43.60)
Hindu pot.	25.55	26.05	21.47	20.16	20.18	15.52
	(16.38)	(16.72)	(31.66)	(33.51)	(18.92)	(34.96)
Jain pot.	120.2***	127.9***	132.6**	131.9**	113.2***	121.0*
	(22.29)	(28.93)	(60.35)	(60.65)	(22.15)	(62.03)
Islam pot.	-83.77***	-88.87***	-40.37	-14.23	-46.41*	1.058
	(29.27)	(25.91)	(83.99)	(80.51)	(26.26)	(104.9)
Trade potential	2.734	3.840	3.394	3.232	4.696	5.503
	(3.223)	(4.479)	(4.854)	(4.920)	(3.606)	(4.658)
Jain pot.×Trade potential		-4016.4	-7180.4	-8044.7		-8545.0
		(13020.7)	(30911.5)	(31746.5)		(30895.3)
Budh pot.×Trade potential			581.8	394.8		5242.3
			(17813.3)	(17819.3)		(20399.0)
Hindu pot.×Trade potential			2423.5	3336.1		1709.5
			(14351.9)	(15226.3)		(15992.6)
Islam pot.×Trade potential			-13659.2	-18335.3		-10904.4
			(24095.3)	(23019.5)		(23806.3)
Time Buddhist rule					-0.000522	0.0000740
					(0.00176)	(0.00132)
Time Hindu rule					0.00306	0.00185
					(0.00219)	(0.00201)
Time Jain rule					-0.00219	-0.00220
					(0.00501)	(0.00546)
Time Islam rule					-0.00410	-0.0111
					(0.00294)	(0.00772)
Cropland	0.000341*	0.000342*	0.000350*	0.000376*	0.000452**	0.000575**
	(0.000197)	(0.000198)	(0.000198)	(0.000210)	(0.000214)	(0.000262)
Log population	-0.00187	-0.00209	-0.00195	-0.00353	-0.00445	-0.00454
	(0.00293)	(0.00327)	(0.00319)	(0.00385)	(0.00287)	(0.00389)
Urban area	0.00331	0.00333	0.00289	0.00270	0.00333	0.00270
	(0.00776)	(0.00781)	(0.00832)	(0.00834)	(0.00710)	(0.00797)
Log Dist Vaishali	0.00728	0.00640	0.00677	0.00255	0.00778	0.00230
	(0.0142)	(0.0146)	(0.0137)	(0.0110)	(0.0135)	(0.0121)
Log Dist Banaras	-0.00107	-0.000843	-0.000478	-0.0000241	-0.00642	-0.00204
	(0.0123)	(0.0123)	(0.0120)	(0.0117)	(0.0152)	(0.0139)
Log Dist Gaya	-0.00181	-0.00137	-0.00220	0.000161	0.00904	0.00441
	(0.0128)	(0.0127)	(0.0131)	(0.0140)	(0.0143)	(0.0159)
Log Dist Mecca	-0.00357	-0.00347	-0.00339	-0.0386	-0.00725	0.0324
	(0.00583)	(0.00609)	(0.00573)	(0.0252)	(0.00753)	(0.0542)
Log Dist Hormuz				0.0273		-0.0465
				(0.0199)		(0.0541)
Log Dist Xian				0.0128		0.0104
				(0.0149)		(0.0149)
Observations	2291	2291	2291	2291	2280	2280

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 2 covers 700 to 1200 CE.

Table 9: Determinants of **Islam** in Period 2

	(1)	(2)	(3)	(4)	(5)	(6)
Budh pot.	5.283	5.418	9.478	7.776	4.142	12.18
	(7.870)	(7.813)	(8.677)	(8.544)	(9.537)	(9.788)
Hindu pot.	-4.178	-4.507	2.576	3.656	-3.714	3.986
	(3.717)	(3.869)	(3.904)	(5.400)	(3.820)	(5.632)
Jain pot.	0.544	1.928	6.372	6.985	5.892	16.98*
	(4.332)	(5.099)	(9.852)	(10.32)	(5.471)	(9.806)
Islam pot.	32.69	-13.61	-29.11	-52.98	5.907	-78.76
	(52.34)	(39.11)	(46.21)	(55.02)	(54.72)	(58.08)
Trade potential	4.522**	4.160*	7.135**	7.252**	3.944*	6.872**
	(2.052)	(2.185)	(3.124)	(3.143)	(2.080)	(3.020)
Islam pot.×Trade potential		12801.4	15257.0	19577.8		18973.0
		(14929.3)	(16852.8)	(15830.1)		(14369.6)
Budh pot.×Trade potential			-2033.7	-1881.7		-2510.4
			(6681.0)	(6968.1)		(6397.9)
Hindu pot.×Trade potential			-3174.5	-3945.5		-3390.3
			(2616.4)	(3311.0)		(3319.2)
Jain pot.×Trade potential			-2148.3	-1410.8		-2234.8
			(4291.6)	(4634.6)		(4546.9)
Time Buddhist rule					-0.00117	-0.00189
					(0.000975)	(0.00126)
Time Hindu rule					-0.00129	-0.000870
					(0.00149)	(0.00115)
Time Jain rule					-0.000639	-0.000988
					(0.000617)	(0.000682)
Time Islam rule					0.00199	0.00495***
					(0.00138)	(0.00184)
Cropland	0.0000921	0.0000901	0.0000799	0.0000578	0.0000445	-0.0000241
	(0.000134)	(0.000135)	(0.000126)	(0.000126)	(0.000138)	(0.000133)
Log population	0.000615	0.000590	0.0000855	0.00146	0.00190	0.00195
	(0.00124)	(0.00121)	(0.00116)	(0.00153)	(0.00210)	(0.00206)
Urban area	-0.00506*	-0.00495	-0.00439	-0.00423	-0.00527*	-0.00444*
	(0.00305)	(0.00305)	(0.00271)	(0.00260)	(0.00311)	(0.00253)
Log Dist Vaishali	-0.00185	-0.00200	-0.00344	0.000184	-0.00137	0.00121
	(0.00322)	(0.00318)	(0.00323)	(0.00284)	(0.00337)	(0.00319)
Log Dist Banaras	-0.00310	-0.00318	-0.00328	-0.00361	0.000525	-0.00218
	(0.00350)	(0.00355)	(0.00318)	(0.00392)	(0.00311)	(0.00369)
Log Dist Gaya	0.00661	0.00711	0.00809	0.00593	-0.000996	0.00322
	(0.00478)	(0.00485)	(0.00496)	(0.00412)	(0.00471)	(0.00332)
Log Dist Mecca	-0.00231	-0.00243	-0.00225	0.0286*	0.000258	-0.00862
	(0.00182)	(0.00186)	(0.00177)	(0.0155)	(0.00220)	(0.0150)
Log Dist Hormuz				-0.0240*		0.0154
				(0.0125)		(0.0136)
Log Dist Xian				-0.0110		-0.0107
				(0.00690)		(0.00706)
Observations	2291	2291	2291	2291	2280	2280

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 2 covers 700 to 1200 CE.

Table 10: Alternative channel: **Surplus extraction**

	(1) Budh	(2) Hind	(3) Jain	(4) Islam
Budh pot.	155.8***	94.99	-26.07	20.82
	(56.96)	(83.16)	(39.35)	(13.17)
Hindu pot.	-19.58	109.0*	0.711	6.456
	(33.50)	(58.66)	(31.35)	(6.124)
Jain pot.	14.53	33.96	143.7***	18.26*
	(36.66)	(67.52)	(53.69)	(9.502)
Islam pot.	20.66	-261.6	-9.950	-55.54
	(82.35)	(182.7)	(111.5)	(65.60)
Trade potential	5.492	9.335	5.641	7.184**
	(3.616)	(7.301)	(4.630)	(3.169)
Budh pot.×Trade potential	-29438.8*	34990.0	6333.5	-4043.1
	(15431.0)	(27086.7)	(21893.6)	(6344.8)
Hindu pot.×Trade potential	9108.2	-32146.2*	-1487.1	-3246.5
	(11168.3)	(19356.2)	(17284.2)	(3426.0)
Jain pot.×Trade potential	-8567.9	40711.0	-2443.2	-2620.9
	(19362.7)	(26949.0)	(32969.1)	(4459.3)
Islam pot.×Trade potential	3369.9	22451.8	-6217.7	20426.8
	(16814.0)	(41841.0)	(25119.3)	(14714.4)
Budh pot.×Cropland	-2.661	-7.646*	-2.095	-0.653
	(3.337)	(3.918)	(1.748)	(0.540)
Hindu pot.×Cropland	2.085	7.456***	1.535	-0.205
	(1.804)	(2.311)	(1.666)	(0.170)
Jain pot.×Cropland	-3.311	-9.500***	-2.769	-0.0565
	(2.353)	(2.766)	(2.506)	(0.134)
Islam pot.×Cropland	-4.658	-1.839	-1.203	-4.265**
	(3.015)	(3.338)	(1.992)	(1.692)
Time Buddhist rule	-0.0000296	-0.00718*	0.000204	-0.00172
	(0.00178)	(0.00429)	(0.00142)	(0.00122)
Time Hindu rule	0.0000931	-0.00121	0.00138	-0.00114
	(0.00206)	(0.00330)	(0.00180)	(0.00123)
Time Jain rule	0.00243	-0.00401	-0.00125	-0.00108
	(0.00342)	(0.00683)	(0.00512)	(0.000694)
Time Islam rule	-0.000319	-0.00602	-0.0118	0.00428**
	(0.00298)	(0.00925)	(0.00810)	(0.00187)
Cropland	0.000629	0.000238	0.000718*	0.000485
	(0.000553)	(0.000743)	(0.000430)	(0.000334)
Log population	-0.000969	0.00606	-0.00419	0.00157
	(0.00356)	(0.00509)	(0.00434)	(0.00209)
Urban area	0.000926	-0.000408	0.00211	-0.00407*
	(0.00894)	(0.0151)	(0.00747)	(0.00226)
Log Dist Vaishali	-0.0177	0.0517*	0.000865	0.000372
	(0.0160)	(0.0294)	(0.0117)	(0.00287)
Log Dist Banaras	0.0162	-0.00472	-0.00290	-0.00216
	(0.0176)	(0.0255)	(0.0146)	(0.00354)
Log Dist Gaya	-0.0105	-0.0137	0.00671	0.00428
	(0.0187)	(0.0182)	(0.0162)	(0.00329)
Log Dist Mecca	0.00962	0.0216	0.0402	-0.00242
	(0.0369)	(0.0660)	(0.0581)	(0.0166)
Log Dist Hormuz	-0.00674	-0.0245	-0.0533	0.0100
	(0.0313)	(0.0623)	(0.0577)	(0.0141)
Log Dist Xian	0.00682	-0.0333*	0.00874	-0.0122
	(0.0119)	(0.0176)	(0.0151)	(0.00813)
Observations	2280	2280	2280	2280

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 2 covers 700 CE to 1200 CE. Each column is comparable to Column 6 of Table related to the given religion in that period.

5.3 Period 3: 1200 CE to 1525

We consider the determinants of Islam in this period, since we can't identify the non-Islamic sites as either Hindu, Jain or Buddhist. Columns 1 and 5 of Table 11 suggests that religious potential measures matter for the presence of an Islamic site in period 3 (the effect is however not robust to controlling for the alternative ways in religion and trade might interact). Proximity to trading routes is no more a key determinant of an Islamic site in this period. On the other hand, non-Islamic state presence is the only variable that somewhat restricts the presence of an Islamic site in Period 3 (the effect is almost significant at the 10% level, pvalue of 0.103 in column 6). Similar result is obtained when we account for the surplus extraction channel in Table 12.

Table 11: Determinants of **Islam** in Period 3

	(1)	(2)	(3)	(4)	(5)	(6)
Islam pot.	104.8*	38.03	36.37	34.00	97.99*	21.15
	(55.05)	(58.48)	(58.04)	(57.57)	(54.24)	(59.67)
Non Islam pot.	-7.924*	-6.238	-2.317	-4.932	-6.357	0.739
	(4.435)	(6.001)	(7.527)	(7.671)	(3.864)	(8.092)
Trade potential	0.761	-1.861	-1.432	-1.533	0.885	-1.400
	(1.199)	(4.525)	(4.683)	(4.628)	(1.495)	(4.651)
Islam pot.×Trade potential		28212.7	28562.9	29115.9		30551.8
		(45538.3)	(45564.7)	(45354.6)		(45191.4)
Non Islam pot.×Trade potential			-1549.7	-1239.7		-2937.7
			(2669.4)	(2654.2)		(3051.2)
Time Islamic rule					-0.00520	-0.00367
					(0.00383)	(0.00357)
Time Non Islamic rule					-0.00864*	-0.00830
					(0.00511)	(0.00509)
Cropland	0.000218	0.000178	0.000178	0.000188	0.000209	0.000180
	(0.000185)	(0.000218)	(0.000218)	(0.000216)	(0.000196)	(0.000222)
Log population	0.00205	0.00267*	0.00260*	0.00207	0.00184	0.00128
	(0.00141)	(0.00155)	(0.00154)	(0.00131)	(0.00141)	(0.00111)
Urban area	0.00158	0.00187	0.00202	0.00207	0.00192	0.00264
	(0.00514)	(0.00527)	(0.00537)	(0.00541)	(0.00530)	(0.00563)
Log Dist Vaishali	-0.00108	0.00127	0.00119	-0.00155	-0.00203	-0.00217
	(0.00345)	(0.00572)	(0.00576)	(0.00520)	(0.00386)	(0.00457)
Log Dist Banaras	-0.00229	-0.00362	-0.00346	-0.00243	-0.000896	0.000110
	(0.00626)	(0.00467)	(0.00464)	(0.00469)	(0.00581)	(0.00522)
Log Dist Gaya	0.00645	0.00633	0.00625	0.00685	0.00753	0.00685
	(0.00635)	(0.00635)	(0.00638)	(0.00619)	(0.00487)	(0.00592)
Log Dist Mecca	-0.00425	-0.00494*	-0.00502*	-0.0193	-0.00273	-0.0305
	(0.00271)	(0.00295)	(0.00296)	(0.0134)	(0.00255)	(0.0187)
Log Dist Hormuz				0.0104		0.0211
				(0.00884)		(0.0136)
Log Dist Xian				0.00636		0.00901
				(0.00470)		(0.00600)
Observations	2291	2291	2291	2291	2276	2276

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 3 covers 1200 CE to 1525 CE.

Table 12: Alternative channel: **Surplus extraction**

	(1) Islam
Non Islam pot.	5.477 (8.947)
Islam pot.	23.47 (60.82)
Trade potential	-1.430 (4.682)
Non Islam pot.×Trade potential	-2660.2 (3090.7)
Islam pot.×Trade potential	30672.7 (46151.2)
Non Islam pot.×Cropland	-0.307 (0.411)
Islam pot.×Cropland	-0.151 (1.020)
Time Islamic rule	-0.00383 (0.00365)
Time Non Islamic rule	-0.00845* (0.00509)
Cropland	0.000302 (0.000364)
Log population	0.000962 (0.00133)
Urban area	0.00370 (0.00594)
Log Dist Vaishali	-0.00177 (0.00431)
Log Dist Banaras	0.000416 (0.00512)
Log Dist Gaya	0.00644 (0.00561)
Log Dist Mecca	-0.0276 (0.0201)
Log Dist Hormuz	0.0191 (0.0146)
Log Dist Xian	0.00789 (0.00652)
Observations	2276

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 2 covers 1200 CE to 1525 CE. Each column is comparable to Column 6 of Table related to the given religion in that period.

5.4 Robustness Checks

In this section we add additional interactions to column (4) of each table, that may also proxy the interaction between trade and religion. Specifically we interact the distance to the religious center for each religion with trade potential, and the religious potential with distance to thwe trading cities in the West (Hormuz) and that in the East (Xian).

Table A-1: Determinants of religion in Period 1

	(1) Budh	(2) Hind	(3) Jain
Budh pot.	-2399.4**	23.82	22.40
	(1180.7)	(38.64)	(23.84)
Hindu pot.	-114.5*	-2178.2*	-44.80*
	(64.25)	(1223.4)	(24.99)
Jain pot.	71.06	-3.159	-4800.3***
	(141.7)	(127.3)	(1600.2)
Trade potential	172.7**	125.0***	153.2***
	(69.39)	(42.65)	(47.87)
Budh pot.×Trade potential	-29680.1	15155.2	-12907.2
	(25325.0)	(16216.5)	(9251.8)
Hindu pot.×Trade potential	48620.1*	-8208.7	25197.3**
	(29201.6)	(28628.1)	(12183.1)
Jain pot.×Trade potential	-61041.5	-2926.3	7942.3
	(48348.4)	(39795.3)	(21437.5)
Log Dist Gaya×Trade potential	-23.72**		
	(9.561)		
Budh pot.×Log Dist Hormuz	64.98		
	(58.92)		
Budh pot.×Log Dist Xian	265.7*		
	(145.9)		
Log Dist Banaras×Trade potential		-17.38***	
		(5.765)	
Hindu pot.×Log Dist Hormuz		-74.77	
		(88.52)	
Hindu pot.×Log Dist Xian		345.4***	
		(102.6)	
Log Dist Vaishali×Trade potential			-20.81***
			(6.476)
Jain pot.×Log Dist Hormuz			69.24
			(103.2)
Jain pot.×Log Dist Xian			523.1***
			(126.6)
Cropland	-0.0000807	0.000257	0.0000595
	(0.000339)	(0.000316)	(0.000213)
Log population	0.00606*	0.00625*	0.00283
	(0.00363)	(0.00320)	(0.00191)
Urban area	0.0131	0.0404***	0.0288**
	(0.0144)	(0.0155)	(0.0113)
Log Dist Vaishali	0.000104	-0.0353	-0.0142
	(0.0202)	(0.0218)	(0.0188)
Log Dist Banaras	0.0131	0.0222	0.00560
	(0.0200)	(0.0244)	(0.0189)
Log Dist Gaya	0.0256	0.0200	0.0147
	(0.0304)	(0.0250)	(0.0205)
Log Dist Hormuz	-0.0132**	0.00000880	-0.00535*
	(0.00521)	(0.00545)	(0.00321)
Log Dist Xian	-0.0276***	-0.0103	-0.00192
	(0.0100)	(0.00686)	(0.00818)
Observations	2291	2291	2291

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 1 covers 200 BC to 300 CE. Each column is comparable to Column 4 of Table related to the given religion in that period.

Table A-2: Determinants of religion in Period 2

	(1) Budh	(2) Hind	(3) Jain	(4) Islam
Budh pot.	4066.8	90.09	-32.64	4.648
	(3308.5)	(62.71)	(44.23)	(9.590)
Hindu pot.	6.613	-3165.8***	44.47	-2.255
	(23.62)	(946.4)	(31.51)	(5.619)
Jain pot.	-24.01	-93.59	-284.3	12.50
	(37.24)	(86.04)	(1916.4)	(10.38)
Islam pot.	-145.5	-156.6	-208.3	-27012.2**
	(121.5)	(119.7)	(140.2)	(11550.7)
Trade potential	105.2	151.5**	98.27**	177.5***
	(86.20)	(70.97)	(43.83)	(43.61)
Budh pot.×Trade potential	-85885.1**	-11724.9	-8166.5	-5605.6
	(34651.1)	(15326.2)	(24539.1)	(6711.6)
Hindu pot.×Trade potential	8246.9	-22549.9	-1803.0	108.9
	(11869.9)	(24946.5)	(14752.6)	(3201.8)
Jain pot.×Trade potential	-10469.5	20415.2	-12069.1	-8212.6**
	(18835.8)	(26218.7)	(29621.6)	(4020.7)
Islam pot.×Trade potential	22951.1	2785.8	30846.6	-9338.6
	(28890.0)	(31882.3)	(35837.0)	(21602.7)
Log Dist Gaya×Trade potential	-13.17			
	(11.42)			
Budh pot.×Log Dist Hormuz	-399.1*			
	(218.5)			
Budh pot.×Log Dist Xian	-91.71			
	(230.2)			
Log Dist Banaras×Trade potential		-19.53**		
		(9.035)		
Hindu pot.×Log Dist Hormuz		89.37		
		(78.56)		
Hindu pot.×Log Dist Xian		334.6***		
		(96.15)		
Log Dist Vaishali×Trade potential			-12.85**	
			(5.476)	
Jain pot.×Log Dist Hormuz			-137.9	
			(93.91)	
Jain pot.×Log Dist Xian			176.8	
			(174.8)	
Log Dist Mecca×Trade potential				-20.50***
				(5.060)
Islam pot.×Log Dist Hormuz				885.3**
				(407.3)
Islam pot.×Log Dist Xian				2508.9**
				(1051.8)
Cropland	0.000606	0.00119**	0.000463**	0.0000259
	(0.000470)	(0.000529)	(0.000228)	(0.000128)
Log population	-0.000332	0.00259	-0.00498	0.00197
	(0.00337)	(0.00531)	(0.00443)	(0.00185)
Urban area	0.00404	0.00516	0.000103	-0.00338
	(0.0104)	(0.0171)	(0.0103)	(0.00221)
Log Dist Vaishali	-0.0209	0.0148	0.0244**	-0.000405
	(0.0193)	(0.0226)	(0.0101)	(0.00214)
Log Dist Banaras	0.0327*	0.0417	-0.0160	-0.00454
	(0.0190)	(0.0344)	(0.0130)	(0.00456)
Log Dist Gaya	-0.00778	-0.00517	0.00525	0.00357
	(0.0376)	(0.0242)	(0.0153)	(0.00385)
Log Dist Mecca	-0.0329	0.131*	-0.0788*	0.0358*
	(0.0401)	(0.0668)	(0.0446)	(0.0188)
Log Dist Hormuz	0.0238	-0.101**	0.0570*	-0.0180
	(0.0286)	(0.0420)	(0.0307)	(0.0128)
Log Dist Xian	0.00613	-0.0922***	0.0172	-0.0212**
	(0.0176)	(0.0241)	(0.0180)	(0.00928)
Observations	2291	2291	2291	2291

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 2 covers 700 CE to 1200 CE. Each column is comparable to Column 4 of Table related to the given religion in that period.

Table A-3: Determinants of Islam in Period 3

	(1)
Islam pot.	-10412.0***
	(3212.6)
Non Islam pot.	-3.384
	(9.920)
Trade potential	-8.066
	(67.43)
Non Islam pot.×Trade potential	-1185.5
	(2955.5)
Islam pot.×Trade potential	48117.5
	(38362.3)
Log Dist Mecca×Trade potential	0.804
	(7.736)
Islam pot.×Log Dist Hormuz	349.0**
	(145.2)
Islam pot.×Log Dist Xian	948.5***
	(279.8)
Cropland	0.000233
	(0.000220)
Log population	0.00210
	(0.00163)
Urban area	0.00256
	(0.00555)
Log Dist Vaishali	-0.0126*
	(0.00725)
Log Dist Banaras	-0.00728
	(0.00653)
Log Dist Gaya	0.0172**
	(0.00752)
Log Dist Mecca	0.0299
	(0.0207)
Log Dist Hormuz	-0.0255
	(0.0168)
Log Dist Xian	-0.00500
	(0.00636)
Observations	2291

Notes: *** p<0.01, ** p<0.05, * p<0.1. Robust standard errors in parentheses are adjusted for spatial auto-correlation that decays upto 1000 kms. Period 3 covers 1200 CE to 1525 CE. Each column is comparable to Column 4 of Table related to the given religion in that period.

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