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Muslim conquest and institutional formation

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ABSTRACT

Recent studies suggest that Muslim military conquest (632–1100 CE) generated an institutional equilibrium with deleterious long-run political economy effects. This equilibrium was predicated on *mamluk* institutions: the use of elite slave soldiers (*mamluks*) and non-hereditary property rights over agricultural lands to compensate them (*iqta*). This paper evaluates this historical narrative by exploring the accuracy of its initial step. Using a difference-in-differences strategy, I show that conquest changed institutions in conquered territories. I then provide suggestive evidence that the presence and efficacy of *mamluk* institutions affected this institutional configuration and that leaders survived longer in power during the conquest period.

1. Introduction

An emerging body of research argues institutional arrangements from the early Medieval period may have set many Muslim-majority (hereon, Muslim) societies on a trajectory towards economic underperformance in the modern era (e.g., Kuran, 2011; Chaney, 2012; Blaydes and Chaney, 2016; Rubin, 2017; Kuran 2018). These arguments draw on two central insights in political economy and development. First, the quality of a society's underlying political institutions comprise fundamental drivers of its long-run economic development (e.g., Besley and Persson, 2011; Acemoglu and Robinson, 2012). Second, the quality of these institutions frequently have “deep” historical roots that may be traced back to “critical junctures” in history (e.g., Nunn, 2009; Dincecco, 2017). Motivated by these insights, this paper presents evidence that Muslim military conquest (632–1100 CE) fostered institutional change – primarily through the strengthening of political (state) centralization – in conquered territories. The evidence largely corroborates the *initial* step in a historical narrative in which the period of Muslim conquest after the death of Prophet Muhammad served as a critical juncture in the subsequent political and economic development of many contemporary Muslim countries (Chaney, 2012; Blaydes and Chaney 2016; Blaydes, 2017).

After the death of Prophet Muhammad in 632 CE, Muslim armies helped spread the religion through military conquest. Starting from the Arabian Peninsula, by 900 CE Muslim armies had conquered territory in the Iberian Peninsula, large swathes of land in North and West Africa, up into the Caucasus and Central Asia, and eastward to the Bay of Bengal (Kennedy, 2007). By 1100 CE, the

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Caliphate – under various Islamic empires (e.g., Abbasids, Umayyads, Ghaznavids, Karakhanids) – had expanded the religion's reach in territories corresponding to borders of 45 contemporary states (Lapidus, 2002). Honing on the governing institutions employed in these conquered territories, Lisa Blaydes and Eric Chaney (separately and together) argue that Muslim conquest introduced *mamluks* (elite slave soldiers) and associated governing institutions (e.g., *iqta*) that served as the backbone of political authority in conquered territories with persistent pernicious long-run political economy effects (Chaney, 2012; Blaydes and Chaney, 2013, 2016; Blaydes, 2017).¹ In support of this conjecture, Chaney (2012) presents robust cross-sectional evidence that countries whose modern day territory experienced greater “exposure” to military conquest by Muslim armies (between 632 and 1100) are *less* democratic today. He attributes this to the emergence and persistence of a classical Islamic equilibrium (CIE).

Despite suggestive evidence of the long-run effects of these military campaigns, whether the initial conquest fostered institutional change (in conquered territories) remains underexplored. In this paper, I provide evidence that starts to address this gap. This is important because it connects Blaydes and Chaney's insights to broader scholarship in political economy and economic history, such as the military dimensions of state formation (e.g., Strayer, 1970; Tilly, 1992), the historical determinants of contemporary economic and political development (e.g., Nunn, 2009; Acemoglu and Robinson, 2012), and the intersection between religion and economics (e.g., Barro and McCleary, 2019).

This paper studies the initial step in the conjectured link from Muslim conquest to contemporary political and economic outcomes. Leveraging a difference-in-differences (DD) empirical strategy and panel data (from the year 0 CE onwards), I show how Muslim conquest changed institutions in conquered territories.² Relative to non-conquered territories, the modal conquered society transitioned from a level of “no governance” to one with a more centralized political authority that governed (“controlled”) a significantly larger percentage of territory. In an extension to this main finding, I show Muslim conquest had politically salubrious effects: political leaders in Muslim societies enjoyed longer tenures in power during the conquest period (about 25% longer for the modal Muslim ruler). I then explore the underlying channels. Here I provide evidence suggesting the presence of elite slave soldiers (*mamluks*) and the economic efficacy of *iqta* (the system to compensate *mamluks*) affected institutional change in conquered territories.³

In exploring how Muslim conquest affected political institutions, the analysis faces two empirical challenges. The first deals with gathering objective information on institutions in pre-modern societies (and particularly, across territories that do not necessarily correspond to contemporary state boundaries). The second challenge arises from endogeneity, such as the possibility of reversal causality (e.g., the types of pre-conquest political structures may have been or more less attractive for conquest) and omitted variables.

To tackle the first challenge, I associate Mann's (1984) conception of state centralization to governing institutions in the pre-modern period. For Mann, state centralization varies on two key dimensions: the centrality of the government's rule (i.e., over more localized political units, such as villages or tribes) and the extent of its territorial control. With these criteria in mind, I accordingly employ Putterman's (2007) index of state centralization which quantifies the prevailing government's centrality and territorial control. Starting from the year 0 through to the present (at 50-year intervals), this index covers both conquered and non-conquered countries (Section 3 describes the index in greater detail). Crucially, as I show in Section 3.1, the measure of state centralization does not “mechanically” code Muslim conquest to increase state centralization and likely understates the effect by construction.

To grapple with the second empirical challenge, I use a difference-in-differences (DD) identification strategy to estimate causal effects. This empirical strategy is advantageous as it helps mitigate concerns with endogeneity and unobserved spatial and temporal heterogeneity (e.g., with region and country fixed effects and time-trends). Moreover, this identification strategy permits me to evaluate (and discount) competing historical narratives, including those associated with agriculture (Haber and Menaldo, 2011), access to trade routes (Michapoulous et al., 2018) and pre-conquest levels of state centralization/weakness (Stasavage, 2020). Of course, the validity of the DD approach hinges on whether the parallel trends assumptions holds; which I show is unlikely to be violated (see Section 3.3).

In documenting how Muslim conquest changed institutions in conquered territories, the paper establishes a crucial *precondition* for other facets of medieval Muslim societies that *subsequently* helped shape the trajectory of long-run economic and political development in Muslim societies (Kuran, 2011; Rubin, 2017; Platteau, 2017). For example, this includes the importance of Islamic law (*sharia*) in influencing various economic institutions, such as the *wafq* (charitable trust) and inheritance laws (Kuran, 2011). Relatedly, the prominence of *sharia* helped elevate the position of clerics (*ulema*) in regulating economic and political activity through the interpretation of the law (Rubin, 2017).⁴ Thus, by focusing on how the conquest equilibrium came about, the paper's analysis documents a crucial precondition for the role other “Islamic institutions” that emerged thereafter.

The paper's findings do, however, contrast with related historical arguments. Hariri (2015), for example, attributes the lack of democracy in many contemporary Muslim societies, particularly in the Middle East and North Africa (MENA) region, to their earlier transition to settled agriculture. Cognizant of this competing explanation (and others), I show the results are robust to potential the differential impact of agricultural and climatic conditions, access to trade routes, and the level of state centralization *prior* to Muslim conquest on political centralization during Muslim conquest.

¹ This argument draws on the accounts of Islamic historians, including Crone (1980), Tsugitaka (1996), Lapidus (2002) and Kennedy (2007).

² Section 4 presents the estimated effects. The most conservative estimate suggests that relative to non-conquered territories, the modal conquered territory experienced a 5 index point increase (on a 50-point scale) in state centralization per half-century.

³ The former is based on showing that territories where Islam spread by 1100 but did not feature *mamluks* (i.e., sub-Saharan Africa) did not experience a robust increase in political centralization.

⁴ One such application was the *ulema*'s monopoly on the written production of the Qu'ran, which effectively limited the spread of the printing press in the Middle East and the subsequent spread of ideas/innovation.

2. Historical background

2.1. Institutional change through military conquest

In a series of papers, Eric Chaney and Lisa Blaydes (Chaney 2012; Blaydes and Chaney, 2013, 2016; Blaydes 2017) advance a positive political economy account describing why many contemporary Muslim societies are prone to low levels of economic development, insufficient investments in human capital, and dictatorship.⁵ Synthesizing the insights of Islamic historians (e.g. Hodgson 1974; Crone, 1980; Tsugitaka, 1996; Lapidus, 2002; Kennedy, 2007), Blaydes and Chaney describe the process of state formation during the period of Muslim military conquest as a critical juncture in the subsequent trajectory of economic and political development in conquered territories. They argue that by 1100, the Caliphate utilized two key institutions in consolidating and maintaining political authority (dictatorship) in conquered territories.⁶ The first is the widespread use of slave soldiers (*mamluks*) as the core of the military elite that comprised the Caliph's repressive capacity and also helped govern conquered territories. Relatedly, a second institution – *iqta* – extended state control over agricultural land as means of payment for slave soldiers.

While not unique in pre-modern times,⁷ the institution of slave soldiers as the backbone of the military elite (*mamluks*) emerged during the Abbasid period in the 9th century and spread across the conquered territories.⁸ *Mamluks* reinforced the Caliphate's rule across conquered territories in the Muslim heartland of Egypt, Turkey, and the Middle East (Finer, 1997, 730–731, Barkey, 1994; Blaydes, 2017) and reached from modern day Spain (Glick, 1979) on the west to India (Jackson, 1999) on the east. Critically, particularities of *mamlukism* strengthened the loyalty of these elite soldiers to the sovereign. Because *mamluks* were recruited from abroad, links between local elites and military power structure were weak, thus reducing the likelihood that the military might join with the local population to overthrow an oppressive sovereign.

Closely tied to the use of *mamluks* was the system of non-hereditary grants to tax agricultural land (*iqta*) that served to pay the elite military slaves.⁹ Though well compensated, *mamluks* were unable to transform themselves into a hereditary landed baronage because they were not permitted to transmit their status directly to their offspring (Finer 1997, 676). Crucially, upon the death of an *iqta* holder, ownership of the land returned to the state/Caliph.¹⁰ This concentration of land holdings in the Caliphate, in which government service remained disassociated with land ownership, was unique among pre-modern societies (Crone 1980, 87). Even in sultanates led by *mamluks* (e.g., Egypt 1250–1517), upon the death of a *mamluk* caliph, a new cadre of soldiers rotated in with a re-parceling of *iqta* holdings (Finer 1997, 731–732). Moreover, because the land could not be inherited or sold, the income generated from the tax rights gave soldiers a vested interest in the incumbent regime's longevity.¹¹ Thus, *iqta* reinforced the loyalty of the elite military forces to a powerful monarch. And in combination with the repressive capacity of *mamluks*, *iqta* helped consolidate political authority in the Caliphate which formed the basis of a conquest equilibrium (or “classical Islamic equilibrium” according to Chaney (2012)). (Appendix A1 distills the equilibrium's analytical features.)

2.2. Institutional persistence

Propagating agents. The conquest equilibrium proved remarkably enduring and was supported by an important additional propagating agent: the *ulema* (clerics).¹² Clerics helped “legitimize” the Caliph's rule to the general population and in return Islamic law (Rubin 2017, 11,12) gained prominence in Muslim territories, with adverse economic effects in the long-run (Kuran, 2011).¹³ Politically, as Chaney (2012, 383) summarizes, in tandem “both the military and religious elites worked to resist the emergence of rival centers of power, such as merchant guilds, that could have facilitated institutional change.”

The ability of religious and military elites in Muslim societies to thwart challenges from competing groups differed sharply from the institutional trajectory in medieval Europe. The absence of *mamlukism* and *iqta* proved critical. In Europe, a series of fiscal shocks in the 8th century compelled monarchs to conscript local forces from landholders rather than collect taxes. Due to their lack of funds, sovereigns often compensated the service of elite troops (i.e., mounted warriors or knights) through permanent land grants (North et al., 2012, 79). While this method of military recruitment became the “basis for state-building” (Strayer, 1970, 15), it also facilitated the rise of a landed aristocracy, which served as a check on the monarch's political authority and subsequent emergence of parliamentary institutions (Downing, 1992, 3).¹⁴ The resulting configuration of propagating agents contrasted with those in Muslim soci-

⁵ Since this paper evaluates the veracity of this existing historical narrative, the description of these “conquest institutions” in this section is quite brief. For a more detailed exposition and its political economy implications, see Blaydes and Chaney (2016) and Blaydes (2017).

⁶ According to Lapidus (2002, 31–56), by 1100, the Islamic empire had consolidated its authority in the territory of 45 modern-day states. Throughout this section, I refer to the various Islamic Empires (e.g., Abbasids, Umayyads, Fatimids, etc.) in the singular with terms like, “the Islamic Empire”, “Caliph” or “Caliphate.”

⁷ For example, the Byzantine and Chinese empires employed ‘slave mercenary’ forces (Finer 1997, 704).

⁸ The Abbasids first “imported” slave soldiers in large part to quell internecine fighting (Blaydes, 2017, 494).

⁹ *Iqta* became prominent in mid-10th century Iraq and eventually spread across the Islamic Empire, including Iran, Afghanistan, Syria, and Egypt (Tsugitaka, 1996).

¹⁰ This reduced the incentive of *iqta* holders to supply local public goods. Instead, an alternate but inefficient institution – the *waqf* – emerged (Kuran, 2011).

¹¹ Despite various attempts by *iqta* holders to make land as signments hereditary, Islamic states resisted, mainly by redistributing the *iqta* frequently and maintaining the bureaucratic assessment of the taxes with the state (Tsugitaka, 1996).

¹² Auriol and Platteau (2017) develop a model showing how/why an autocrat may co-opt clerics to maintain political power.

¹³ In this regard, Islamic law and associated institutions, such as the *waqf*, are after effects of Muslim conquest and are thus “post-treatment.”

¹⁴ Strayer (1970) and Blaydes and Chaney (2013) discuss Europe's divergent institutional trajectory further.

eties: “In medieval Europe, the Church, economic elite, and military propagated kings. In the Middle East, religious authorities and the military were the primary propagating agents” (Rubin, 2017, 36).

Continuity. Despite a series of foreign invasions (primarily from the Mongols and Turks in central Asia), Ottoman rule, European colonialism, and some periods of institutional reforms (e.g., the *Tanzimat* era in the 19th century Ottoman empire), the division of political power among a small group of individuals – the Sultan, his *mamluks*, and religious elites – in conquest territories proved remarkably enduring (Chaney, 2012; Blaydes, 2017).¹⁵ The presence of relatively centralized autocratic structures proved influential in the governing strategies of European colonialists in the 19th and 20th centuries.

Much like their predecessor – the Ottomans – the British and French generally governed through existing institutional structures in a system of indirect rule (Fieldhouse, 2006, 346).¹⁶ According to Gerring et al. (2011), indirect rule was relatively efficient as the existence of stable authority structures provided the British and French with sufficient institutional infrastructure which to control the territories. Rather than rebuilding or importing their own institutions, it was less costly to govern through existing structures. In doing so, indirect rule helped to “perpetuate the dominance of indigenous elites [leading to] a period of virtual social standstill in the territories” (Fieldhouse, 2006, 346 and 348). Critically, indirect rule limited the diffusion of democratic *norms* and *institutions* from European colonialism and settlement (Hariri, 2015).

Some scholars go further, noting that “modernization in the nineteenth century, and still more in the twentieth, far from reducing this [historical] autocracy, substantially increased it” (Lewis, 1993, 96). Indeed, upon gaining independence after World War II, the new states inherited and largely maintained their autocratic institutions and governing coalitions (e.g., religious legitimization of a militaristic form of dictatorship). In these Muslim societies, the military was omnipresent in public affairs, where about 1 in 5 governments in the 1960s had active military involvement.¹⁷ Moreover, some contemporary observers in Muslim societies note similarities to the past and have called “their [Muslim] rulers Mamelukes, alluding to the slave-soldiers who exercised unrestrained and arbitrary power in those countries” (Kedourie, 1994, 92). For example, the emergence of a distinct military class in Egypt has been described as “neo-Mamluks” (Bulliet, 2011). Thus, in many contemporary Muslim societies that experienced Muslim military conquest after the death of Prophet Muhammad, the concentration of political power and prevailing institutions bear a striking resemblance to their past.

This historical narrative traces how Muslim conquest generated an institutional trajectory that may explain the prevalence of pernicious political economy in many contemporary Muslim societies. Chaney (2012) provides compelling evidence of the negative long-run effect of Muslim conquest on democracy today. This finding, of course, hinges on verification of the initial step: whether Muslim conquest actually changed institutions in conquered territories. Yet, to the best of my knowledge, no other studies have yet to probe this. The rest of the paper seeks to do that.

3. Empirical strategy

3.1. Measurement

Muslim conquest. While the start date of Muslim conquest can be pinned down to the first few years after the death of Prophet Muhammad (circa 632 CE), the end date is less clear. For instance, the *reconquista* effectively ended Muslim rule in Spain in 1492, yet in other parts of the Islamic empire the historical record is less accurate as to the effective termination (if at all) of Muslim rule.¹⁸ As I described in the previous section, subsequent rulers (empires) built on existing institutions and maintained the prevailing ruling coalitions (e.g., the prominence of clerics and military elite) to govern Muslim territories. For my purposes, I use the year 1100 to bound (end) the duration of the Muslim rule. By 1100, *mamluk* institutions – the use of *mamluks* and *iqta* – had been implemented across conquered territories. Moreover, after 1100 many territories experienced reconquest (e.g., by Christians in Spain and during the Crusades) and foreign invasions (e.g., Mongol/Turkic incursions from Central Asia). Thus, to avoid introducing the influence of other empires/rulers, I cleanly bound the period of Muslim conquest from 632 to 1100.

By demarking 1100 as a clear endpoint, I am in a stronger position to accurately measure the geographic expansion of Muslim military conquest. To do so, I follow Chaney (2012) and measure a country's geographic exposure to Muslim conquest (C_i) with the percentage of land conquered by Muslim armies in the period after the death of Prophet Muhammad (in 632 CE) through to the end of the initial military expansion (in 1100) that correspond to contemporary national boundaries (based on digitizing maps from Kennedy (2002)). Thus, C_i ranges from 0 (no conquered territory) to 1 (entire territory conquered).

By 1100, Muslim armies controlled territory in 45 contemporary states (see Table B1), ranging from a trivial share in China (0.06%) and Kazakhstan (3%) to significant shares in Azerbaijan (88%), Pakistan (85%), Spain (37%), Turkey (70%), and all of the Arabian peninsula, Mesopotamia (e.g., Iraq, Iran), and North Africa. Within conquered countries, Muslim armies controlled around 66% of their territory, on average.

¹⁵ The discussion here is quite brief. Appendix A2 describes how the Mongols, Turks, and Ottomans employed *mamluks* and *iqta* to sustain autocratic rule.

¹⁶ Examples of indirect colonial rule in Muslim-majority states include the British mandates (including modern day Pakistan and Bangladesh), French governance in Syria, and European rule in Morocco, Tunisia, Algeria, and the emirates along the edges of the Arabian peninsula.

¹⁷ Author's calculation using data from Svolik (2012).

¹⁸ For example, some Middle Eastern monarchies today (e.g., Jordan, Saudi Arabia) assert a hereditary connection to Prophet Muhammad and a continuation of the Caliphate.

Pre-modern institutions. To the best of my knowledge, there are no direct measures of institutions in the pre-modern era (i.e., before 1500) for a large set of territories; and moreover, that corresponds to modern-day boundaries. Instead, I draw on existing measures of state centralization as a proxy for political structures in the pre-modern period. While conceptually quite broad, state centralization – often synonymous with state capacity – refers to the “government’s ability to accomplish its intended policy goals” (Dincecco, 2017, 3). Thus, a necessary condition for any semblance of state capacity is some degree of authority/control by a dominant actor(s) within its territory to carry out its activities (Mann, 1984, 187–189).

To capture these features of political authority/control, I leverage the State Antiquity Index (Putterman, 2007). The index has been widely utilized, for example, to study the long-run effects of state centralization on economic and political development (e.g., Bockstette et al., 2002; Hariri 2015). For my purposes, the index is attractive on three key dimensions. First, it is panel data from year 0 CE onwards. Second, it uses countries with their contemporary national boundaries as the unit of analysis. Third, the index has an objective and transparent coding criteria. The index is based on three questions (components, z_1 z_2 z_3) that ascertain the *level* of a *political unit’s* organization, its primary *location* (foreign or locally based) and extent of *geographic* control. Using information from the historical accounts of each country in the *Encyclopedia Britannica*, for each period of fifty years, the coders asked three questions:

- 1 Is there a government above the tribal level? (z_1 receives 1 point if yes, 0.75 point if the government can be best described as a paramount chiefdom and 0 points if no government is present);
- 2 Is this government foreign or locally based? (z_2 is 1 if the rule is locally based, 0.5 if externally based (e.g., the country is a colony), and 0.75 for local government with substantial foreign oversight);
- 3 How much of the territory of the modern country was ruled by this government? (z_3 is based on the proportion of territory under some rule: 1 (50%), 0.75 (25–50%), and 0.3 (under 10%)

The scores on these three indices are multiplied by one another and then by 50. Thus the composite index ranges from 0 to 50, where a *higher value* corresponds to greater centralization of political authority. In particular, increases in the first (z_1) and third (z_3) components (e.g., movement from tribal to national government, greater territorial control) increase the overall centralization index, while greater control by a foreign power (z_2) decreases the index. The latter implies that by construction, the aggregate index does not mechanically code Muslim conquest (i.e., the imposition of greater foreign rule) to necessarily increase the index. This is visible in the raw data.

Fig. 1 plots the change in state centralization from 600 to 1150 for countries that were fully or partially conquered by Muslim armies. While, on average, the typical conquered country became more centralized during this period (as suggested by the fitted line’s positive slope), there were some territories that experienced a decline, such as modern day Armenia, Iran, and Turkey. For example, after 15 years of fighting, Muslim armies finally defeated the Sassanid Empire in 651 bringing much of modern Iran and Iraq under Caliph Umar’s rule (at the time, based in Medina).¹⁹ Since this represented a shift from indigenous rule to a mixture of foreign and local based rule, the second component of the index shifts from a value of 1 to 0.75; which also decreases the aggregate index.²⁰ Thus, the aggregate index does not seem to automatically upward bias the effect of Muslim conquest. Nevertheless, I present results in Section 4.3 where I strive to partial out the “foreign vs. local rule” component (z_2) from the aggregate index. Finally, as a potential correlate of institutional change (associated with political centralization), I also examine data on political survival (in Section 4.4). This analysis compiles information on the duration of political tenure at the level of individual dynasties/leaders from Bosworth (1996) and Morby (1989) and at the polity level from Nüssli (2011).

3.2. Identification strategy

Specification. I trace the trajectory of state centralization associated with Muslim conquest using a difference-in-differences (DD) regression with exogenous (pre-treatment) covariates:

$$SC_{it} = \alpha + \theta (C_i \times M_t) + X_{it}\delta + F_i + Y_t + \varepsilon_{it} \quad (1)$$

where SC_{it} is an increasing measure of state centralization for country i at half-century time periods, t . C_i measures the percentage of a country’s territory conquered by Muslim armies and M_t is a dummy variable equal to 1 during the period of Muslim conquest and zero otherwise.²¹ X_{it} is a vector of controls (e.g., pre-conquest state centralization, year trends, etc.), which will be described as the analysis proceeds, F_i and Y_t are country and period fixed effects respectively, and ε_{it} is the error term. Given the panel structure of the data (i.e., country by time period), I conservatively cluster the standard errors at the country level to account for potential serial correlation.²² Table B2 reports summary statistics for the data.

In Eq. (1), the variable of interest is the interaction of Muslim conquest (C_i) and the period of conquest (M_t). In the analysis to follow, I will refer to this interaction term ($C_i \times M_t$) as “Muslim expansion”; where a positive and statistically significant coefficient esti-

¹⁹ For a detailed account of the Muslim conquests, see Kennedy (2007).

²⁰ As both Crone (1980) and Kennedy (2007) describe in detail, in the first few centuries of the conquest Muslim armies resided in garrison towns outside conquered cities and co-governed with the locals.

²¹ C_i varies across countries and is time-invariant. M_t varies across time but not across countries.

²² To account for potential geographic clustering associated the progression of Muslim conquest from Islam’s heartland (Mecca), Table D3 replicates the paper’s main results that weight the observations based on their distance to Mecca and with robust standard errors, clustered by distance to Mecca.

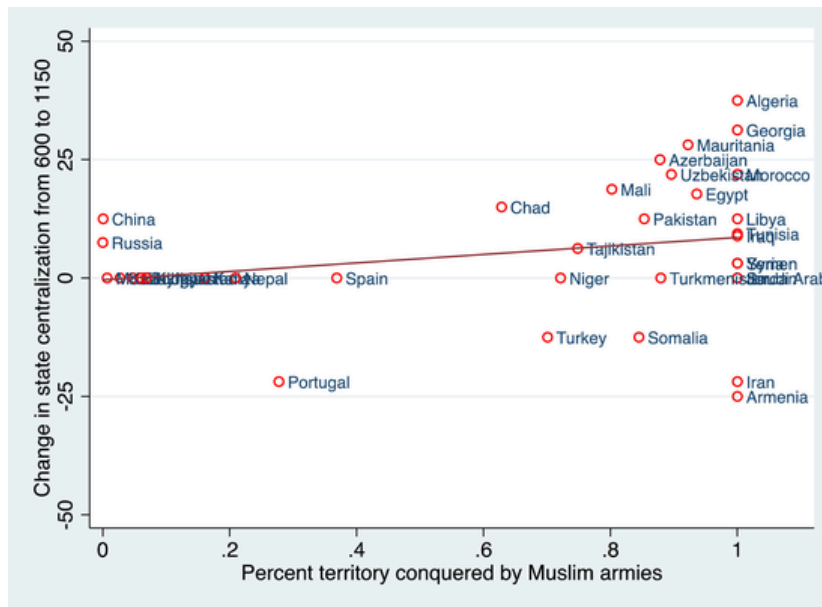


Fig. 1. Change in state centralization during Muslim conquest. Notes: The x-axis measures the percentage of a country's modern day territory conquered by Muslim armies by 1100 CE on a [0,1] scale. A value of 1 implies 100% of a country's territory was conquered by Muslim armies. The sample of territories is limited to those that experienced any conquest (i.e., $C_i > 0$). The y-axis measures each territory's change (difference) in its level of state centralization prior to the onset of Muslim conquest (600 CE) to its conclusion (by 1150 CE).

mate (θ) implies Muslim conquest increased state centralization during the conquest period relative to countries that were not conquered by Muslim armies.

An attractive feature of using panel data is the ability to control for unobserved unit-level and temporal heterogeneity with country (F_i) and half-century (Y_t) fixed effects, respectively. The inclusion of country fixed effects is noteworthy in two regards. First, they capture all time-invariant country characteristics (e.g., geography), especially those that pre-date Muslim conquest and that might affect state centralization, such as a country's "timing" from its transition to settled agriculture and pre-conquest level of state centralization. Second, the coefficient estimates in (1) will capture the *within* country variation explained by the independent variables. Thus, the effect of Muslim conquest can be traced within the same country over time.

A potential concern with estimation of Eq. (1) with two-way fixed effects (i.e., by country and period) is the possibility of heterogeneous treatment effects, which may violate the common trends assumption underlying the DD identification strategy. Chaisemartin and D'Haultfoeille (2020) provide a series of tests to probe the presence (and relevance) of heterogeneous treatment effects in research designs with either a common or staggered intervention (treatment). Reassuringly, conducting their main test reveals this paper's empirical strategy is unlikely to exhibit heterogeneous treatment effects that could violate the common trends assumption.²³

Sample. An important consideration is the appropriate counter-factual sample of territories. In the DD setup, treated units are those that experienced different "intensities" of Muslim conquest (as measured by the percentage of their modern-day territory conquered by Muslim armies). The counterfactual or control group of countries are those that did not experience any Muslim conquest ($C_i = 0$). I consider three sets of counterfactual countries. First, I begin my analysis with a global sample of countries. I then use history as a guide: Muslim conquest entailed land-based military expansion (starting from the Arabian peninsula), although these forces were able to traverse short distances by sea, such as the invasion of the Iberian peninsula from Morocco (Kennedy, 2007). Thus, the second sample of counterfactual countries span Eurasia and Africa. Finally, I consider a narrower set of "matched" counterfactuals comprised of those countries that (1) had similar levels of pre-conquest state centralization (as conquered territories) and (2) could have been conquered by Muslim armies but there were not. This includes territories that were on the periphery on the Islamic empire that Muslim armies could have feasibly invaded and possibly conquered, but did not (e.g., Cyprus, Greece, Italy, Serbia).

²³ In applied work, Chaisemartin and D'Haultfoeille (2020, 2966) recommend researchers "compute the weights attached to their regression and the ratio of $|\theta_e|$ divided by the standard deviation of the weights... If many weights are negative, and if the ratio is not very large, we recommend that they compute our new estimator." Accordingly, I employ their preferred *twowayfweights* Stata package to discern the percent of negative weights, which is not large based on additional derivations described in the accompanying "help file."

3.3. Parallel trends

The causal interpretation of Eq. (1) is bolstered if the parallel trends assumption is not violated: in the absence of the treatment (Muslim military conquest), the difference in state centralization between the treatment (conquered Muslim territories) and control (non-conquered territories) is constant over time. While there are no formal tests per se for this assumption, one strategy is to plot the underlying trends in the dependent variable (state centralization) across the treatment and control groups. I do so by plotting the average within-country level of state centralization in countries completely or partially conquered by Muslim armies (“Conquest”) and those not conquered at all (“Non-conquest”).²⁴

Fig. 2 reveals three important patterns that support the use of DD. First, the average levels of state centralization are near identical between conquest and non-conquest countries *prior* to the start of Muslim expansion (circa 632 CE). Second, the *trends* in state centralization between conquest and non-conquest countries are parallel *prior* to the start of expansion. This interpretation is supported with more formal statistical analysis which controls for pre- and post-treatment trends (Autor, 2003) and country-specific time trends (Earle and Gehlbach, 2015). This analysis – reported in Appendix C – reveals that the pre- and post-treatment terms are not statistically significant, while the treatment effect ($C_i \times M_i$) is. The statistical insignificance of the pre-treatment term suggests that the underlying trends between conquered and non-conquered societies did not statistically differ prior to the onset of Muslim conquest. Moreover, the treatment effect remains robust in specifications that plausibly account for counterfactual country-period trends (Earle and Gehlbach, 2015). Together, these findings suggest the parallel trends assumption is unlikely to be violated. Third, starting around 650, the average level of state centralization in conquest countries starts to increase at a faster rate than in non-conquest countries. This growing divergence – particularly between 650 and 1100 – is consistent with a positive interaction term (θ) in (1).

4. Muslim conquest and institutional change

4.1. Main results

Table 1 presents corroborating statistical evidence for the divergence in state centralization during Muslim conquest (corresponding to θ in Eq. (1)).²⁵ Looking at the “within conquest” sample only (i.e., the sample that corresponds to the “Conquest” trajectory in Fig. 2), column 1 shows that Muslim expansion increased political centralization during the conquest period. The coefficient is positive (= 8.07) and precisely estimated. Of course, the strength of the DD research design depends on the relevant comparison group. Accordingly, I gauge the effect of Muslim expansion on state centralization in relation to several samples of counterfactual (non-conquest) countries.

I start with the broadest possible sample of counterfactual territories. In column 2, the counterfactual is a global sample of countries that did not experience any Muslim conquest. For example, this includes countries in the Americas (e.g., Canada, Peru) and East Asia (e.g., Japan) where Muslim armies did not reach. In column 3, the counterfactual sample is trimmed to countries in Eurasia that were (plausibly) within the geographic reach of Muslim armies but were not invaded (e.g., Germany, Burma). Across these specifications, the estimated effect of Muslim expansion is similar in magnitude to the coefficient estimate in column 1 and remains precisely estimated. The estimated effects in column 2 and 3 suggest that relative to non-conquest countries, the modal conquered territory (with $C_i = 0.68$) experienced around a 5 index point increase in state centralization per 50-year interval. These estimated effects imply Muslim expansion helped transition the modal conquered society from a condition of “no governance” to one with a more centralized political entity that governed a larger area of territory.²⁶ In some conquered societies, this entailed direct rule by the Caliphate (e.g., Abbassids in the modern day Iraq), while in others this was indirect rule over local tribes (e.g., in parts of Central Asia).

The political change associated with Muslim expansion was likely towards authoritarian governance. As several scholars note, without a democratic alternative in the pre-modern period (Anderson, 1974; Mann 1984), territories that experienced greater centralization of political authority tended to develop more authoritarian power structures (North et al., 2012; Ober, 2015). For example, Mann (1984) argues that in the premodern period, greater state centralization corresponded to the exercise of greater “despotic power” by the ruler. Similarly, Josiah Ober characterizes the “premodern normal” as a condition of political domination by an autocrat, who often claimed divine authorization for his rule. As a consequence, these rulers were not subject to constraints imposed by ‘mortals.’ And in their sweeping account of political order from the earliest recorded human civilizations, North et al. (2012) describe the “natural state” as autocratic, nepotistic, and prone to generating violence. The positive coefficients on Muslim expansion in Table 1, therefore, suggest conquered territories developed more authoritarian political institutions.

Robustness. The estimated effect of Muslim expansion on state centralization is robust. The findings are not driven by countries from particular regions that may unduly bias the estimated effects. For instance, skeptics may worry that the inclusion of European countries – and their differential political trajectory towards more representative institutions in the early Medieval period

²⁴ The within-country level of state centralization purges the contribution of time-invariant country characteristics (e.g., geography, climate), especially those that pre-date 0 CE (e.g., role of Roman civilization, transition to the Neolithic Revolution) and corresponds to the preferred fixed effects DD specification.

²⁵ The results in Table 1 are robust without fixed effects. See Table D1.

²⁶ Table 3 shows this more directly. The estimated effects imply that Muslim conquest increased a conquered society’s “political organization” (panel A) and “geographic control” (panel B).

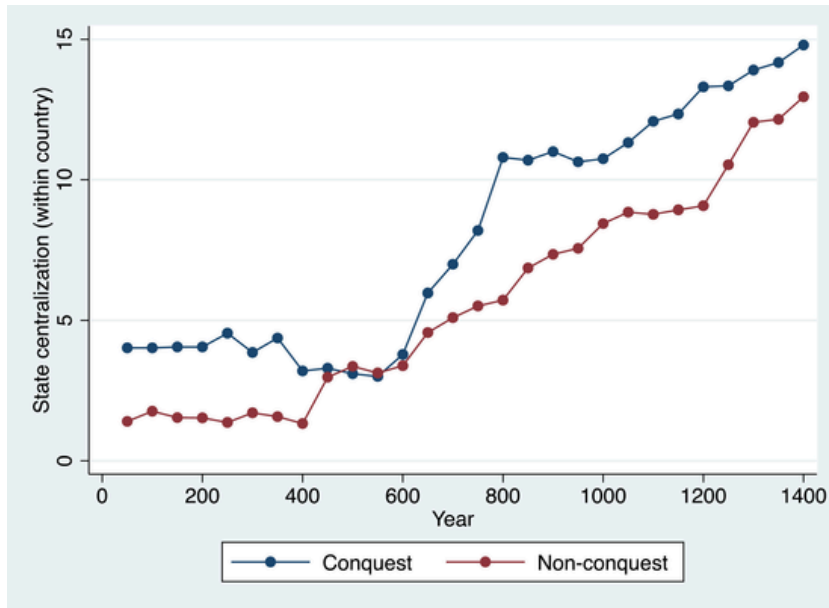


Fig. 2. State centralization in the pre-modern period. Notes: This figure reports the within country variation in state centralization across conquest and non-conquest territories. “Conquest” countries were fully or partially conquered by Muslim armies by 1100 ($C_i > 0$), while “Non-conquest” countries did not experience any conquest ($C_i = 0$). Each point in the figure is the average residual (for the conquest and non-conquest samples) from the regression of state centralization on country fixed effects and a constant.

Table 1
State centralization during Muslim expansion.

| Dependent variable: | State centralization index | | | | | | | |
|-------------------------|----------------------------|------------|------------|--------------|------------|------------|------------|-----------|
| Sample: | Conquest | Global | Eurasian | Excl. Europe | Excl. MENA | Global | Global | Global |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Muslim expansion | 8.073 | 7.241 | 7.380 | 8.244 | 10.433 | 7.241 | 6.712 | 5.535 |
| ($C_i \times M_i$) | (3.850)** | (2.186)*** | (3.312)** | (2.222)*** | (3.506)** | (2.159)*** | (2.162)*** | (2.269)** |
| Conquest (C_i) | | | | | | 10.192 | 10.328 | |
| | | | | | | (3.114)*** | (3.086)*** | |
| Time trend | | | | | | | 0.388 | 0.346 |
| | | | | | | | (0.157)** | (0.792) |
| Constant | 31.334 | 34.946 | 36.207 | 32.996 | 35.177 | 21.714 | 1.301 | 7.913 |
| | (1.993)*** | (1.335)*** | (1.572)*** | (1.696)*** | (1.371)*** | (3.258)*** | (1.291) | (30.424) |
| Country fixed effects | Yes | Yes | Yes | Yes | Yes | | | Yes |
| Period fixed effects | Yes | Yes | Yes | Yes | Yes | | | Yes |
| Continent fixed effects | | | | | | Yes | Yes | |
| Cont. FE x Trend | | | | | | | Yes | |
| Country FE x Trend | | | | | | | | Yes |
| No. observations | 1443 | 5421 | 2613 | 4095 | 4953 | 5421 | 5421 | 5421 |
| R-squared | 0.61 | 0.66 | 0.66 | 0.69 | 0.66 | 0.38 | 0.38 | 0.75 |

Notes: Estimation via OLS. Robust standard errors, clustered by country reported in parentheses. *, **, *** = significant at 10, 5, and 1%, respectively. The global sample includes 139 countries. In column 1, the sample includes countries that experienced any Muslim conquest (i.e., $C_i > 0$). Columns 4 and 5 exclude observations from Europe and the MENA region, respectively. Columns 6 and 7 account for continent fixed effects and accordingly do not include country fixed effects (but does include C_i from the interaction term measuring Muslim expansion).

(e.g., [Blaydes and Chaney 2013](#); [Stasavage 2016, 2020](#)) – in the analysis biases the effect associated with Muslim conquest. To address this worry, column 4 explicitly drops observations from Europe. In this specification, therefore, the control group no longer contains any European territories that were not invaded by Muslim armies (e.g., Italy, Germany).²⁷ On the flip side, the inclusion of countries in the Middle East and North Africa (MENA) region could also bias (upwards) the findings. Column 5 – which drops observations from the MENA region – shows this is not the case. This result is noteworthy as it implies that Muslim expansion fostered institutional change in countries *outside* of the MENA region (e.g., modern day Pakistan, Senegal, etc.) and suggests the centralizing effect associated with Muslim conquest is *not* an artifact of arguments related to Middle Eastern exceptionalism

²⁷ The results are also robust to excluding countries from the Americas and Africa (see Table D2).

nor to the higher level of bureaucratic capacity (e.g., tax collection) in some pre-conquest territories, such as societies geographically closer to the Roman Empire or within Mesopotamian empires from antiquity (e.g., Stasavage, 2020, Chapter 7).

More stringently, the results remain robust in specifications that control for additional spatial and temporal heterogeneity with continent fixed effects, continent \times period time trends, and country-specific time trends (columns 6–8).²⁸ For example, the inclusion of continent fixed effects in column 8 accounts for potential geographic conditions (e.g., North–South or East–West orientation) that might affect economic and political development.²⁹ In contrast, interactions with a time trend account for different trajectories of state centralization that may vary across regions (column 7) and countries (column 9), such as those between the Middle Eastern and European states. The inclusion of interactions of a time trend with each continent fixed effect in column 7, for example, purges the possible effect of regional characteristics (e.g., arid versus temperate climates) that affected patterns of state development across countries in their respective continents. The specification is column 9 is particularly conservative as it explicitly controls for the differential trajectories associated with each country's unique time-invariant characteristics, such as its climate, agriculture, geographic location, and characteristics prior to the start of the sample period (e.g., a country's transition to settled agriculture prior to the year 0).³⁰

4.2. Threats to validity

4.2.1. Matched counterfactuals

Skeptics may argue the findings in Table 1 are spurious and potentially driven by observable and unobservable characteristics that made subsequently conquered territories more predisposed to be centralized. Controlling for region and particularly country-specific time trends is one strategy to address this worry with unobservables (see Table 1, columns 7 and 8). Another is to “construct” a more plausible group of counterfactual (non-conquest) territories as the reference group. I consider two approaches.

Table 2 reports the impact of Muslim expansion on state centralization in a sample with a “matched” counterfactual (non-conquest) group of countries. In these regressions, the sample of counterfactual countries are limited to those that fall within a 5 point band of the median “conquered country” on its level of state centralization directly *prior* to the onset of Muslim conquest. Many of these counterfactual territories were on the immediate periphery of the Islamic empire and were feasible targets of Muslim armies but were not actually conquered (e.g., Albania, Cyprus, Greece, Italy, and Serbia).³¹ In this matched sample, columns 1 and 2 show Muslim expansion remains a positive and statistically significant determinant of state centralization. The estimated effect ($= 7.46$) is similar in magnitude to the main results in Table 1. An alternative matching approach is to construct a synthetic control (Abadie and Hainmueller, 2015). Fig. 3 contrasts the trajectory of the typical (average) conquered country (i.e., the “treated unit”) against a synthetic control compiled from a global sample of non-conquest territories.³² Given the 50-year interval structure of the data, the treatment period begins in 650 CE (even though conquest commenced on the Arabian peninsula a couple of years after 632 CE, thus accounting for the slight uptick in centralization prior to 650). The figure suggests that during the treatment (conquest) period, the typical conquered territory became more politically centralized, while the synthetic control did not. Reassuringly, each counterfactual exercise helps answer the question what would have been the level of state centralization in countries “similar” to conquered territories had conquest not occurred. The results suggest state centralization would not have increased.

4.2.2. Competing historical explanations

Agriculture. It is plausible that Muslim expansion might be capturing the effects of other historical factors that made conquered territories more prone to institutional change. One such competing explanation emphasizes the role of rain-fed agriculture.³³ Haber and Menaldo (2011) posit that certain types of rain-fed agriculture affected their societies' historical paths of institutional development; some that proved favorable to stable democracy. They argue that in zones of moderate rainfall, unlike arid and tropical zones, it was possible to grow crops that were highly storable and that exhibited modest scale economies in production, which created broad-based incentives to trade, protect property rights, and make inter-generational investments in human capital. This led to the emergence of stable democracies in these “moderate” zones. Haber and Menaldo's conjecture suggests the results in Table 1 reflect the fact that many territories conquered by Muslim armies were *not* suitable for the development of rain-fed agriculture and thus more likely to follow nondemocratic trajectories. To evaluate whether rain-fed agriculture differentially affected the trajectory of state centralization, I interact a country's average rainfall and cereal production

²⁸ Since the estimated effect on Muslim expansion is most conservative in column 2, I use the same set of counterfactual countries for the specifications in columns 6–8. That is, the counterfactual sample are all countries in the world that did not experience any Muslim conquest.

²⁹ As both region and country effects are country specific but time-invariant, this specification excludes country effects to address concerns with multicollinearity. The specification does control for the main effect of conquest, C_i .

³⁰ For Earle and Gehlbach (2015), the inclusion of country-specific period trends accounts for the counterfactual trajectory of state centralization (i.e., in the absence of Muslim conquest). The robustness of Muslim expansion in the presence of these trends suggests the parallel trends is unlikely to be violated. See Appendix C for further discussion.

³¹ Thus, the sample includes all countries that experienced Muslim conquest plus those that were not conquered but had a “similar” level of state centralization (SC) in the year 600. The median (subsequently) conquered country had SC = 25 in the year 600.

³² The synthetic control is “predicted” from values of state centralization in the pre-conquest period. The treated unit is comprised of the average value (per period) across all conquered territories.

³³ A related explanation stems from a country's transition to settled agriculture (associated with the Neolithic Revolution). The main results remain robust when controlling for a country's timing since the Neolithic Revolution (from Hariri, 2015) interacted with conquest period. These results are available upon request.

Table 2
Analysis with matched counterfactuals and competing explanations.

| Dependent variable: | State centralization index | | | | | | |
|---------------------------------------|----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Muslim expansion ($C_i \times M_t$) | 7.464 (2.886)** | 7.464 (2.956)** | 13.06 (4.769)*** | 8.331 (4.018)** | 6.754 (3.058)** | 7.38 (2.778)** | 10.866 (5.273)** |
| Conquest (C_i) | 0.595 (3.416) | | | | | | |
| Conquest period (M_t) | -4.736 (1.946)** | | | | | | |
| Log rain $\times M_t$ | | | 3.49 (2.010)* | | | | 2.834 (2.082) |
| Cereal production $\times M_t$ | | | | 4.478 (13.927) | | | -3.968 (12.023) |
| Trade route $\times M_t$ | | | | | -5.932 (3.162)* | | -3.179 (3.797) |
| SC in 600 $\times M_t$ | | | | | | 7.843 (5.108) | 4.505 (6.316) |
| Constant | 28.031 (2.678)*** | 22.054 (1.869)*** | 22.054 (1.861)*** | 21.982 (1.919)*** | 31.911 (1.688)*** | 32.342 (1.679)*** | 32.084 (1.690)*** |
| Country fixed effects | | Yes | Yes | Yes | Yes | Yes | Yes |
| Period fixed effects | | Yes | Yes | Yes | Yes | Yes | Yes |
| No. observations | 1638 | 1638 | 1638 | 1599 | 1599 | 1638 | 1560 |
| R-squared | 0.01 | 0.56 | 0.56 | 0.56 | 0.57 | 0.56 | 0.58 |

Notes: Estimation via OLS. Robust standard errors, clustered by country reported in parentheses. *, **, *** = statistically significant at 10, 5, and 1%, respectively. Across all specifications, the sample is restricted to conquest territories plus “counterfactual” territories within a 5 point band of the median subsequently conquered country’s level of state centralization in 600 (median = 25). In columns 3–7, log rain, cereal production, trade route, and level of state centralization in 600 are country-specific and time-invariant; and are thus subsumed with country fixed effects.

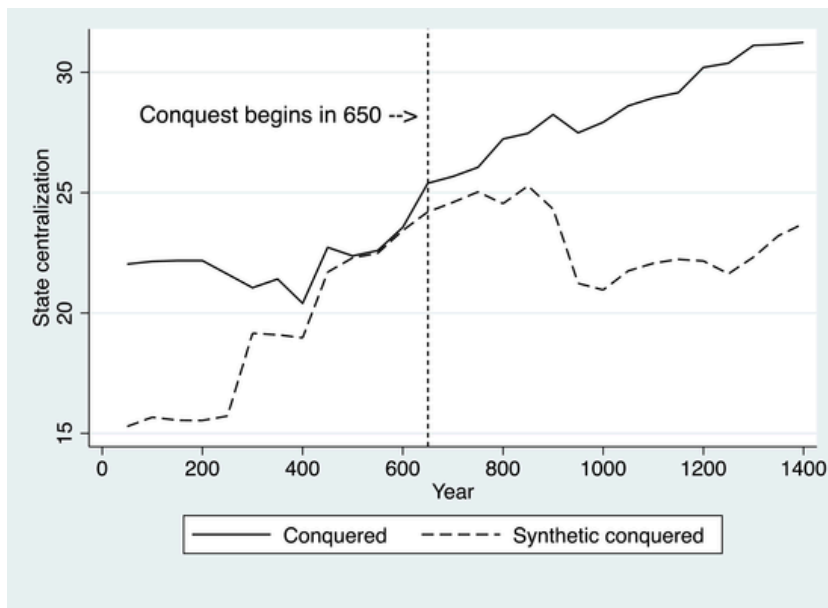


Fig. 3. State centralization, with a “typical” (treated) and synthetic conquered territory. Notes: This figure follows the procedure described in Abadie and Hainmueller (2015). It plots the level of state centralization for the average (“typical”) level of state centralization in conquered territories (the treated unit) and a synthetic control comprised by a weighted sum of non-conquered territories. The synthetic control is based on values of state centralization prior to 600 (i.e., before the onset of the treatment period in 650).

(which is an alternate measure for a country’s capacity for settled agriculture that is not related to rainfall) with the conquest period (M_t) and include it as an additional covariate in the baseline DD specification.³⁴ Columns 3 and 4 shows that conditional on these additional interaction terms, Muslim expansion remains a robust determinant of state centralization. While territories with greater rainfall and cereal production experienced modest increases in state centralization from 650–1100, the effects are not particularly robust.

Trade. Another plausible historical explanation is the role of pre-existing trade routes in facilitating the spread of Islam through both Muslim conquest and the potential gains from trade (Michalopoulos et al., 2018). In particular, these scholars provide robust statistical evidence that Islam spread to regions closer to pre-existing trade routes in 600 CE. Their argument centers on the potential economic gains that individuals experienced by converting to Islam, such as access to trade networks. As such, the trade explanation does not directly explain why new converts to Islam would adopt particular governance practices (e.g., *mamluks*, *iqta*) except through outright conquest which directly transplanted these institutions. Nevertheless, failure to account for pre-existing trade routes may comprise omitted variable bias. The specification in column 5 address this concern by controlling for the interaction of M_t with a country's minimal distance to trade routes in 600 CE (from Michalopoulos et al., 2018). This specification shows that societies farther from existing trade routes (e.g., those in sub-Saharan Africa) experienced less centralization during the conquest period. While this interactive effect is marginally significant, Muslim expansion remains a robust determinant of state centralization.

Pre-conquest state centralization. More generally, I evaluate the argument that more centralized territories prior to the onset of Muslim conquest were more likely to continue centralizing irrespective of the institutions introduced via Muslim conquest (Stasavage, 2020). The panel structure of the data allows me to directly account for each society's level of pre-conquest state centralization. In particular, I include a country's level of state centralization in 600 (SC_{600}) interacted with M_t as an additional covariate (column 6). In this specification, Muslim expansion remains positive and statistically, while $SC_{600} \times M_t$ is not a robust determinant.

Finally, column 7 reports a specification that pits all the competing explanations against each other. In this specification, Muslim expansion exhibits a positive and (only) statistically significant effect on state centralization. Substantively, the results in columns 2–7 demonstrate that Muslim conquest was an important determinant of state centralization from 650 to 1100 while conditioning on a country's climate, agricultural production, distance to trade routes, and pre-conquest state centralization.

4.3. Indigenous state centralization

Even though Fig. 1 shows the coding procedure does not automatically link Muslim conquest to increase the composite measure of state centralization, skeptics may still worry the DD estimates are upward biased. To allay this concern, I evaluate the effect of Muslim expansion on the indigenous sources of political centralization. Specifically, I focus on the first and third components of the state centralization index (described in Section 3.1). The first component ($z1$) measures the level of political organization (i.e., above a tribal level), while the third component ($z3$) measures the percentage of territory under the control of the government. Higher values of each component correspond to greater political authority/control. While $z1$, $z2$, and $z3$ are positively correlated, focusing on $z1$ and $z3$ provides an objective way to minimize the effect of foreign imposed rule (that follows from conquest) that might bias the aggregate index.

Table 3 presents DD estimates from this exercise. Panels A and B report the effect of Muslim expansion on each separate component ($z1$ and $z3$, respectively), while panel C examines a combined measure (by multiplying the components). Across all nine specifications, Muslim expansion exhibits a robust, positive effect on a territory's level of political organization and geographic control by the government. The estimated effects are informative. First, the estimated effects tend to be larger in magnitude relative to those reported in Table 1. This suggests the baseline estimates are unlikely to be biased upward. Second, the estimated effects tend to be larger in countries outside the Middle East and North Africa (see column 2). This suggests the estimated effects are not necessarily driven by pre-conquest conditions in the MENA region that may have predisposed these territories to greater centralization during the conquest period (e.g., lingering bureaucratic structures from previous empires, access to pre-existing trade routes to Europe and Asia, etc.). Third, this is further confirmed in column 3 which controls for a host of competing historical explanations (discussed in Section 4.2). On balance, the DD estimates in Table 3 suggest the baseline results in Tables 1 and 2 are unlikely to be upward biased due to the construction of the aggregate index (by Putterman and colleagues).

4.4. Political survival

The results thus far have focused on the expansion and consolidation of political authority. Did Muslim conquest affect other areas of politics? While data on other dimensions of politics is scant in the premodern period, presumably the process of political centralization in conquered territories is likely to have been beneficial to the political survival of leaders (Svolik, 2012). To explore this conjecture, I gather information on the duration of political dynasties across both Muslim and non-Muslim societies in the premodern period collected by Bosworth (1996) and Morby (1989).³⁵ To evaluate whether leaders in Muslim societies enjoyed longer tenures in power during the period of Muslim conquest, I estimate variants of the following specification:

$$DURATION_{ipt} = \alpha + \varphi Z_i + \kappa M_t + \lambda (Z_i \times M_t) + \phi_p + v_{ipt} \quad (2)$$

where $DURATION_{ipt}$ is number of years leader i ruled in year t in century p . Z_i indicates whether the ruler is the head of an Islamic polity (as identified by Bosworth and/ or Morby), M_t is an indicator variable equal to 1 during the period of Muslim conquest, and

³⁴ The former – rainfall – is Haber and Menaldo's preferred measure. Both rainfall and cereal production are conditions prior to the onset of conquest and are thus "pre-treatment."

³⁵ Unfortunately, data on Muslim leader spells is unavailable prior to 600 since Muslim kingdoms did not exist.

Table 3
Examining the components of state centralization.

| Dependent variable: | Components of state centralization | | |
|--|--|----------------------|------------------------|
| Sample/Controls | Global | Exclude MENA | Competing explanations |
| | Panel A: Political organization | | |
| | (1a) | (2a) | (3a) |
| Muslim expansion ($C_i \times M_i$) | 9.558 (1.717)*** | 11.826 (3.104)*** | 9.860 (3.654)*** |
| | Panel B: Geographic control | | |
| | (1b) | (2b) | (3b) |
| Muslim expansion ($C_i \times M_i$) | 7.264 (1.851)*** | 8.724 (3.042)*** | 6.920 (3.326)** |
| | Panel C: Political organization and geographic control | | |
| | (1c) | (2c) | (3c) |
| Muslim expansion ($C_i \times M_i$) | 7.718 (1.911)*** | 9.433 (3.178)*** | 7.410 (3.298)** |
| Observations | 5421 | 4953 | 4173 |
| Country fixed effects | Yes | Yes | Yes |
| Period fixed effects | Yes | Yes | Yes |
| Full controls | No | No | Yes |

Notes: Estimation via OLS. Robust standard errors, clustered by country reported in parentheses. *, **, *** = statistically significant at 10, 5, and 1%, respectively. Across all specifications, the R-squared ranges from 0.68 to 0.70. In panel A, the dependent variable is the “Z1” component of the state centralization index, which measures the level of political authority (i.e., above tribal level, etc.). In panel B, the dependent variable is the “Z3” component of the state centralization index, which measures the share of territory controlled by the government. In panel C, the dependent variable is the product of Z1 and Z3 (and then multiplied by 50). Across all 3 panels, the dependent variable ranges from 0 to 50, where a higher value corresponds to greater political centralization. In columns 2a, b, and c, the sample excludes territories from the Middle East and North Africa. In columns 3a, b, and c, the specification controls for the interaction of conquest period (M_i) and each of the following: log rain, cereal production, trade route, and level of state centralization in 600 are country-specific and time-invariant.

zero otherwise, and ϕ_p is a vector of century fixed effects.³⁶ The coefficient of interest is λ : if state centralization associated with Muslim expansion benefited the duration of political rule, then λ should be positive and statistically significant.

Table 4 reports the estimated effect of Muslim conquest on leader duration. I begin by examining the effect among leaders in Muslim societies only.³⁷ Column 1 shows that during the period of Muslim conquest, leaders in Muslim societies enjoyed 2.5 years more in power; which for the modal leader represents a 25% extension in their political tenure. This effect is precisely estimated and suggests the strengthening of political authority during the conquest period was also politically salubrious for Muslim sovereigns, on average.³⁸ This inference, however, may be at odds with recent scholarship.

In a comparative analysis of political survival during the medieval period, Blaydes and Chaney (2013) show that European monarchs survived in power longer relative to their counterparts in the Islamic world. They attribute this divergence to differences in the institutional arrangements underlying absolutist rule. In Western Europe, greater bargaining with feudal lords compelled the monarch to grant political concessions. While this placed greater constraints on monarchical authority, it lowered the incentive of local elites to overthrow the leader. In contrast, Muslim monarchs faced fewer constraints on their authority but an elevated risk of deposition. This suggests that the period of Muslim conquest – which helped expand and consolidate sovereign authority – may have been highly politically unstable for Muslim rulers. To evaluate this hypothesis, I expand the sample to also include non-Muslim (Christian) leaders from Western Europe.

Column 2 in Table 4 suggests nuanced effects of Muslim conquest on political survival in a pooled sample of Muslim and non-Muslim sovereigns. While Muslim leaders survive for shorter durations on average (e.g., column 2, coefficient = -7.2) relative to European rulers (consistent with Blaydes and Chaney’s “divergence”), Christian monarchs did *not* experience a significant boon during the period of Islamic conquest as indicated by the statistically insignificant effect on conquest (e.g., column 2, coefficient = -1.581). However, the period of Muslim conquest did benefit Muslim rulers: they survived about 4 to 5.5 years longer in power. The specification in column 3, which adds century fixed effects, suggests similar estimated effects.³⁹

³⁶ Eq. (2) augments the main specification from Blaydes and Chaney (2013) to account for the (potential) differential effect of Muslim conquest on leader duration.

³⁷ Since this regression is limited to a Muslim-only sample, it therefore does not control for Z_i and its interaction with M_i .

³⁸ This finding is broadly consistent with recent evidence in Allen et al. (2020). Examining the specific case of Iraq, they find leader duration fell significantly (to around 2 years) after the Muslim conquest. In a related paper, Allen and Haldreing (2021) find a decline in state capacity in Iraq (stemming from changes in irrigation) affected local development in the late 9th century. Their findings connecting state capacity to development (in their particular context, 9th and 10th century Iraq) suggests Muslim conquest may also explain patterns of economic development. This is potentially a fruitful area of future investigation.

³⁹ The estimates in Table 4 suggest two important inferences about political survival during the early Medieval era. The period of Muslim conquest was not politically detrimental to the survival of Muslim rulers. However, the average effect of being a Muslim ruler is negative over the entire sample period (600–1400 CE), which is consistent with Blaydes and Chaney’s (2013) narrative that a divergence in the political survival between Muslim and European monarchs emerged in the medieval period due to differences in their institutional configuration (i.e., feudalism in Europe and non-feudal in Muslim societies).

Table 4
Political survival during Muslim expansion.

| Dependent variable: | Leader duration (years) | | | | | | |
|---------------------------|-------------------------|------------|------------|------------|------------|------------|------------|
| | Bosworth/Morby | | | Nüssli | | | |
| Data set: | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Muslim expansion | | 4.100 | 5.491 | | 6.231 | 6.447 | 6.091 |
| ($Z_i \times M_i$) | | (1.406)*** | (1.250)*** | | (0.818)*** | (2.046)*** | (1.946)*** |
| Islam (Z_i) | | -7.21 | -9.624 | | -7.185 | -7.246 | -5.533 |
| | | (1.065)*** | (0.896)*** | | (1.226)*** | (1.793)*** | (1.814)*** |
| Conquest period (M_i) | 2.519 | -1.581 | -1.7 | 3.658 | -2.576 | -1.921 | -3.651 |
| | (0.840)*** | (1.127) | (1.381) | (1.814)* | (0.975)*** | (1.793) | (1.527)** |
| Constant | 11.066 | 18.277 | 12.75 | 9.046 | 16.231 | 15.983 | 11.636 |
| | (0.622)*** | (0.864)*** | (0.931)*** | (0.926)*** | (0.818)*** | (1.349)*** | (3.965) |
| Century fixed effects | | | Yes | | | Yes | Yes |
| Polity controls | | | | | | | Yes |
| Sample | Islam | IS-WE | IS-WE | Islam | IS-WE | IS-WE | IS-WE |
| No. observations | 1797 | 3316 | 3316 | 513 | 2820 | 2820 | 2879 |

Notes: Estimation via OLS. Robust standard errors, clustered by dynasty (columns 1–3) and polity (columns 4–7). *, **, *** = significant at 10, 5, and 1%, respectively. In columns 1 and 4, the sample is restricted to dynasties/polities with a Muslim ruler. Columns 2, 3, 5–7 pools data from Islamic and Western European dynasties (IS-WE). In column 7, polity controls include: a polity's average agricultural suitability, latitude at the polity's centroid, the polity's area at the start of century, and proportion of polity's territory that was part of the Roman Empire in year 100 CE.

The inferences from columns 1–3 also hold in specifications with data at the “polity” level from Nüssli (2011). In columns 4–6, I replicate the analysis in columns 1–3 with this alternate data source. An advantage to using polity-level data is the possibility to control for various polity-level covariates that could affect leader tenure. The specification in column 7 does that by controlling a polity's average agricultural suitability, latitude (at its centroid), area, and proportion of territory that was part of the Roman Empire in year 100 CE. The coefficient estimates in columns 4–7 corroborate those with data from Bosworth/Morby: the period of Muslim conquest extended the political tenure of leaders in Muslim societies.

5. Evaluating channels

5.1. The presence of Mamluk institutions

Whereas military conquest played a critical role in the spread of Islam in the Middle East, North Africa, Spain, Anatolia, Central and South Asia, elsewhere it played a marginal role. In many societies where Islam became prevalent by 1100, particularly in sub-Saharan Africa (SSA), the religion spread primarily through trade (see Appendix E for further details). In these territories, conversion to Islam gained adherents access to lucrative trade networks (e.g., Lapidus, 2002; Kennedy, 2007; Michapoulos et al., 2018).⁴⁰ Crucially, based on my reading of the literature, the expansion of Islam in these territories had a very light institutional footprint and did not introduce *mamluk* institutions.

In sub-Saharan Africa these newly converted Muslim rulers continued to govern based on clan and kinship alliances (Levtzion, 1973). Consider, for example, the Mali Kingdom which from the early 13th to the end of the 16th centuries was the dominant regime in West Africa and main center of Islam. The kingdom was a “typical West African Islamic regime” (Lapidus, 2002, 402) in which politics was organized around the family and village units, with the head of the family serving as both the priest and chieftain. Groups of villages (called *kafs*) would align and coalesce primarily along shared kinship and would “choose” a ruler (and associated royal clan). This political organization would aggregate further through a consortium of related clans. Functionally, revenues were directly extracted from taxes and tributes from dependent communities. Administratively, there was a central territory (i.e., a capital with surrounding village networks), directly controlled by governors, and tribute-paying territories on the periphery ruled by vassal chieftains.

The notable absence of *mamluk* institutions in sub-Saharan Africa allows me to evaluate whether the presence of these institutions were important determinants of state centralization. Across a global sample of countries, columns 1–5 in Table 5 present evidence that “splits” the measure of conquered territory (C_i) to identify areas where *mamluk* institutions were present and those where they not.⁴¹ The latter – “conquest without *mamluks*” – includes all territories exposed to Islam by 1100 in sub-Saharan Africa (e.g., modern day Mali, Nigeria, Sudan). Columns 1 and 2 examine the separate effects, showing a robust increase in centralization during the conquest period in territories where *mamluk* institutions were present (e.g., Middle East, Central Asia) but no effect in conquered territories in sub-Saharan Africa. Columns 3 and 4 pool the effects, showing that conquest with *mamluk* institutions increased state centralization when controlling for competing historical explanations (e.g., log rain x conquest period) and with the indigenous determi-

⁴⁰ Access to trade networks also played a role in the expansion of Islam to Southeast Asia (e.g., Indonesia, Malaysia). Islam reached these regions after 1100 and thus are not considered part of the first wave of Muslim conquest. See Appendix E for further details.

⁴¹ With this analysis, the causal inferences should be interpreted cautiously, as the parallel trends assumption may be violated in across these sub-samples of conquered territories.

Table 5
The importance of mamluk institutions.

| Dependent variable: | State centralization | | | | | | | |
|---|----------------------|----------------------|----------------------|----------------------|----------------------|--|----------------------|----------------------|
| | Global | | | | | Land inequality in conquered territories ($C_i > 0$) | | |
| Sample: | | | | | | | | |
| | | | | | | z1 and z3 | | |
| | (1) | (2) | (3) | (4) | (5) | More | Less | (8) |
| Conquest with <i>mamluks</i> x x Conquest period (M_t) | 8.749 (2.351)*** | | 8.702 (2.362)*** | 10.286 (3.938)*** | 8.076 (1.981)*** | | | 12.033 (6.570)* |
| Conquest without <i>mamluks</i> x M_t | | -2.875 (3.553) | -1.183 (3.483) | 6.825 (5.193) | 5.66 (4.959) | | | -18.966 (58.929) |
| Conquest (C_i) x M_t | | | | | | 4.634 (5.306) | 13.514 (5.771)** | |
| Constant | 34.946 (1.333)*** | 34.946 (1.362)*** | 34.946 (1.335)*** | 32.568 (1.172)*** | 49.041 (1.383)*** | 28.98 (3.230)*** | 33.819 (2.339)*** | 33.819 (2.325)*** |
| Competing explanations | | | | Yes | | | | |
| Country FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Period FE | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| No. observations | 5421 | 5421 | 5421 | 4173 | 5421 | 741 | 702 | 702 |
| R-squared | 0.67 | 0.66 | 0.67 | 0.67 | 0.7 | 0.61 | 0.65 | 0.65 |
| Countries | 139 | 139 | 139 | 107 | 139 | 19 | 18 | 18 |

Notes: Robust standard errors, clustered in countries in parentheses. *** = significant at 1%. All specifications include country and year fixed effects. These coefficients and a constant are not reported. Column 4 controls for competing historical explanations: log rain x conquest period, cereal x conquest period, minimum distance to trade route x conquest period, land inequality x conquest period, and state centralization in 600 x conquest period. In column 5, the dependent variable is product of 50, z1 and z3 components of the state centralization index.

nants of centralization as the dependent variable (column 5). Together, the estimates in Table 5 suggest that the presence of *mamluk* institutions played an influential role in centralizing political authority in conquered territories.

5.2. The efficacy of mamluk institutions

The efficacy of *mamluk* institutions relied on both the repressive capacity of the elite soldiers (*mamluks*) and sufficient funds to compensate them. The latter was achieved through *iqta*, a system of non-hereditary grants that permitted *mamluks* to tax agricultural lands. Moreover, because these lands could not be inherited or sold, the income generate from this tax scheme gave *mamluks* a vested interest in the ruler's political ambitions, including the expansion and consolidation of political authority in conquered territories. This suggests that more agriculturally productive territories would raise the efficacy of *mamluk* institutions and concomitantly foster state centralization.

To explore this conjecture, I draw on findings from Michalopoulos et al. (2018) and employ the distribution of land quality to measure a society's agricultural productive capabilities during the conquest period.⁴² In particular, Michalopoulos et al. analysis reveals that within countries, more unequally endowed regions display a larger land allocation towards animal husbandry compared to farming. To the extent that farming was more conducive (lucrative) for taxation, this suggests the efficacy of *iqta* may have been influenced by the distribution of land quality: more equal distributions would likely generate higher agricultural production, and thus greater tax revenues for *mamluks*. This in turn may have aided the state centralization process.

I test this 'layered' hypothesis by re-estimating Eq. (1) across two samples of conquered territories ($C_i > 0$): one above the median level of land inequality in conquered territories in the year 600 ("More unequal") and one below this group median ("Less unequal").⁴³ These results are reported in columns 5–7 in Table 5. Column 5 shows that Muslim expansion did not have a robust effect on state centralization in territories with a more unequal distribution of land quality. In contrast, column 6 shows that Muslim expansion did have a statistically effect in centralizing political authority in societies with a more equal distribution of land quality. Furthermore, this finding holds in a specification that hones in on territories that where *mamluk* institutions were known to be present (column 7). Together, the estimated effects in columns 5–7 suggest that Muslim expansion strengthened political centralization in territories that were potentially more agriculturally productive and plausibly, a more lucrative source of revenue to compensate *mamluks*.

6. Conclusion

Increasingly economists recognize that "critical junctures" in history can shape the long-run trajectory of institutions, with profound effects on contemporary political economy outcomes (e.g., per capita income, democracy, political violence). This paper eval-

⁴² Unfortunately, direct measures of agricultural productivity during the conquest period are unavailable. Rather, Michalopoulos et al. (2018) use contemporary disaggregated data on the suitability of land for agriculture to proxy for regional productive endowments.

⁴³ The median level of land inequality in conquered territories is 0.56.

uates whether the expansion of Islam via military conquest (and its associated implementation of *mamluk* institutions) affected the long-run institutional trajectory in conquered territories. The paper does so by exploring the initial step in this narrative. Using a difference-in-differences research design, the results suggest conquered territories experienced institutional change, primarily through the centralization of political authority during the conquest period. The presence and efficacy of *mamluk* institutions may have assisted the process of political centralization, with politically salubrious effects: Muslim rulers enjoyed longer tenures in power during the conquest period.

By demonstrating how institutions developed during Muslim conquest, this paper offers two contributions to economic history and political economy. First, from a macro-historical perspective, in identifying the causal role of conquest on political centralization, this paper contributes to scholarship on the military dimensions of state formation. One strand of this literature argues that “war makes the state” by compelling sovereigns to make political concessions to local elites to finance war (Tilly, 1992). These accounts, typically for the experiences in Europe, imply that conscripting a domestic military can decentralize power and spur greater democracy. In contrast, state-building in conquered Muslim societies utilized foreign slave soldiers that removed the incentive for the sovereign to recruit local forces and thus grant political concessions to local elites. Moreover, the state's control of land allowed it to finance such a strategy of military recruitment. Together, this contributed to an alternate equilibrium configuration: a consolidation of power in a small governing elite.

Second, this paper supports the claim that Muslim conquest influenced the long-run institutional trajectory in conquered territories towards autocracy in the modern era. Indeed, the resilience of autocratic structures in many fully or partially conquered Muslim societies today may explain why they often revert to back to dictatorship after brief experiences with democracy, such as the rotation of civilian and military-led governments in Pakistan since the 1970s and most recently, the resumption of military dictatorship in Egypt after a short stint with democracy after the Arab Spring. Of course, in Muslim majority countries where Islam did *not* spread through military conquest (e.g., via trade in Indonesia and Malaysia) the institutional legacy of Muslim conquest is absent; providing greater scope for democratic governance and higher levels of economic development in the contemporary period.

Uncited references

, Hodgson (1974), Kuran (2018)

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.eeh.2021.101400](https://doi.org/10.1016/j.eeh.2021.101400).

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