The Economic Consequences of the Spanish Reconquest: The Long-term Effects of Medieval Conquest and Colonization

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Abstract

This paper shows that a historical process that ended more than five centuries ago, the Reconquest, is very important to explain Spanish regional economic development down to the present day. An indicator measuring the rate of Reconquest reveals a heavily negative effect on current income differences across the Spanish provinces. A main intervening factor in the impact the Reconquest has had is the concentration of economic and political power in a few hands, excluding large segments of the population from access to economic opportunities when Spain entered the industrialization phase. The timing of the effect is consistent with this argument. A general implication of our analysis is that large frontier expansions may favor a political equilibrium among the colonizing agents that is biased toward the elite, creating the conditions for an inegalitarian society, with negative consequences for long-term economic development.

Keywords: Economic Development, Political Power, Economic inequality, Spanish Reconquest, History

JEL Classification: C21, N2, O1

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"*The history of no other European people has been so decisively modified by a frontier as Castile, for century after century*"

–Claudio Sánchez-Albornoz, in Burns (1989, p. 325).

I. Introduction

This paper shows that the legacy of history is particularly pervasive in Spain. We provide evidence to show that a historical process that ended more than five centuries ago, the Reconquest, is very important to explain Spanish regional economic development. The so-called Reconquista is a milestone in Spanish history. For a period of almost eight hundred years that started in 711 with the invasion of the Iberian Peninsula by the Muslims, what is now mainland Spain experienced a process fairly akin to colonialism. Throughout this long period, and after an initial phase of mere resistance, the Christians located in the north gradually reconquered the Muslim lands and implemented measures to colonize the reclaimed territory. We argue that the rate or speed of the Reconquest, that is, whether the Christian frontier advanced rapidly or not, was a crucial factor affecting the type of colonization conducted in each territory and its corresponding initial political equilibrium. A fast rate of Reconquest is associated with imperfect colonization, characterized by an oligarchic political equilibrium, thus creating the conditions for an inegalitarian society with negative consequences for long-term economic development.

This paper is framed within a new stream of literature dealing with the long-term effects of frontier expansions. In a recent contribution, García-Jimeno and Robinson (2011) have proposed the "conditional frontier hypothesis" to explain the starkly contrasting outcomes derived from the frontier experiences in North America (Turner, 1920) and Latin America (Hennessy, 1978). According to this hypothesis, the consequences of the frontier depend on the initial political equilibrium existing in society at the time of the territorial expansion. In North America, where the prevailing social climate was relatively democratic and egalitarian, the frontier brought about individualism, self-government and aversion to social stratification, whereas in the more oligarchic societies of South America, the presence of a

frontier reinforced economic and political inequality.[1] Focusing on the historical border between Castile and the Nasrid Kingdom of Granada in southern Spain, Oto-Peralías and Romero-Ávila (2015) have suggested that military insecurity is a factor that favors a political equilibrium biased toward the military elite in frontier regions, generating persistent differences in inequality.

This article argues that the political equilibrium among the colonizing agents may be endogenous to the scale of frontier expansion. This is because large territorial expansion allows the elite to play a dominant role in the process of colonizing the conquered lands. Applied to our case study, this became evident after the collapse of the Almohad Caliphate in 1212 following the Battle of Las Navas de Tolosa, which enabled the Christian armies to conquer vast swathes of territory in a short period of time. The outcome involved large frontier regions dominated by military orders and the nobility, with negative consequences for long-term development. In contrast, a slow frontier expansion was associated with a more balanced occupation of the territory and a more egalitarian social structure. This was so because smaller frontier regions favored the participation of individual settlers and the Crown in the repopulation, which would lead to better political institutions and a more equitable distribution of the land – as happened in the colonization of the Duero Valley, where settlers occupied land and obtained its ownership. As argued below, these initial differences in the patterns of distribution of economic and political power persisted over time, and led to divergent development paths across what are now the Spanish provinces.

This paper also contributes in several ways to a growing body of research that considers economic development as a long-term process with deep historical roots (Spolaore and Wacziarg 2013; Nunn 2014).[2] First, our case study is appealing in the sense that the

[1] Their analysis of the frontiers on the American continent provides evidence of both higher long-term economic growth and levels of democracy, the greater the constraints on the executive in 1850 and the larger the frontier.

[2] Examples of this vibrant literature are Engerman and Sokoloff (1997), Acemoglu et al. (2001, 2008), Bockstette, Chanda, and Putterman (2002), Banerjee and Iyer (2005), Angeles (2007), Gennaioli and Rainer (2007), Baten and van Zanden (2008), Feyrer and Sacerdote (2009), Angeles and Neanidis (2009), Iyer (2010), Dell (2010), Gallego (2010), Naritomi et al. (2012), Bruhn and Gallego (2012), Easterly and Levine (2003, 2014), Ashraf and Galor (2013), Alsan (2014), Cook (2014), and Fenske (2013, 2014).

historical process studied in this article is very remote in time. The Reconquest ended in 1492 with the fall of Granada yet, significantly, its effects remain visible today. Explaining the reasons for the effect of the Reconquest being so persistent, along with the channels through which it took place, are questions of general interest. Second, our work is also interesting because unlike most previous studies focusing on former colonies, it analyzes the experience of a developed economy that became a leading colonial power in the Mercantilist era of colonialism.[3]

Third, a particularity of the Spanish case is that over a long period of time its territory experienced a process very similar to colonialism. Thus, an analysis of the Spanish Reconquest is useful because it gives clues about the subsequent colonization of the New World. When Spain colonized Central and South America in the sixteenth century, it had all the experience gained in the Reconquest and through the policies implemented in the occupation of Muslim lands. Therefore, while the recent literature has emphasized that Spanish colonial policies were significantly influenced by the preexisting indigenous organization in conquered areas (Engerman and Sokoloff 2002; Frankema 2010), it should not be ignored that the granting of large tracts of land to the nobility, for example, had a clear precedent in the homeland.[4] Interestingly, the Spanish Reconquest constitutes a historical process that resembles the long-term outcomes of the colonization of North and South America. As with the contrast between northern and southern Spain, in North America (the US and Canada) a type of colony based on smallholder farmers of European descent flourished, whereas in Central and South America landowners with large estates predominated, along with other institutions such as the *encomienda* that perpetuated a highly unequal society (Engerman and Sokoloff 1997, 2000).

[3] See Acemoglu et al. (2011a, 2011b) for other studies on historical events taking place in non-colonies.

[4] In the territories of the southern plateau and Andalusia, the Crown granted large estates (or *encomiendas*) to the military orders and the nobility (Brenan 1943). "An *encomienda* was an estate given by the King in *señorío*, or with full manorial rights, for one lifetime or for some determinate period only. The *Comendador* was the title of the temporary possessor, who enjoyed all or most of the rights of the King. After the twelfth century *encomiendas* died out except in the military orders, in which they were the recognized form of land tenure" (Brenan 1943, p. 113).

In the empirical part of the paper, we create an indicator measuring the "rate of Reconquest", which captures whether the Christian military conquests progressed rapidly or slowly when each province was reclaimed. We show that there is a robustly negative relationship between the rate of Reconquest and current per capita income across today's Spanish provinces. This relationship does not simply reflect the fact that regions in the South are poorer, since the results survive the inclusion of latitude. The effect remains statistically significant when the regression analysis is extended to the level of municipality, even after controlling for province fixed effects. The results are not driven by a selection problem informed by the possibility that –for instance– the Christian kingdoms chose to conquer faster economically less attractive territories. A number of falsification tests show that there is no link between the rate of Reconquest and several indicators of pre-Reconquest economic development.

We also analyze the channels through which the rate of Reconquest has affected current income. The results suggest that the concentrations of economic and political power played central roles as intervening variables. This is consistent with the hypothesis formulated by Engerman and Sokoloff (1997, 2000) and Acemoglu, Johnson, and Robinson (2002) whereby a high concentration of economic and political power in a few hands has impaired modern economic growth because it precludes large segments of the population from participating in economic activity when the opportunity to industrialize arrived. The timing of the effect of the Reconquest is consistent with this hypothesis, since its negative effect became apparent during the industrialization period (but not before). This interpretation is also congruent with the fact that although in 1860 (the onset of industrialization in Spain) the negative impact of the rate of Reconquest on per capita income was still absent, the effect was already present in some of the foundations of modern economic growth, such as human capital. A general conclusion of our analysis is that accelerated (and imperfect) colonization may create the conditions for an inegalitarian society, with negative consequences for long-term economic development.

The remainder of the paper is organized as follows. Section 2 provides a brief historical overview of the Spanish Reconquest. Section 3 describes the indicator for the rate of Reconquest and the other variables used in the paper. Section 4 presents the analysis of the effect the Reconquest has had on current economic development, while Section 5 provides several sensitivity analyses. Section 6 analyzes the timing of the effect of the Reconquest, and Section 7 investigates the possible channels through which this effect occurs. Finally, Section 8 puts forward some implications, and concludes.

II. Historical Background[5]

An interesting feature of Spanish history is that for a period of almost eight hundred years the Iberian Peninsula experienced a process somewhat akin to colonialism. In 711, what is now the Spanish mainland was invaded by the Muslims, who in a very short period of time occupied almost the whole of the Iberian Peninsula and created a Muslim domain that was known as *al-Andalus*. This western European Muslim territory achieved great economic and cultural development, and for most of the period under Moorish rule it was the most advanced country on the continent (Chejne 1999). With the passage of time, the Christian outposts located in northern Spain gradually conquered the Muslim territory in a process that lasted until 1492, with the fall of the Nasrid Kingdom of Granada. This long period of Christian conquest is known as the *Reconquista*. Military campaigns were followed by a process of colonization or repopulation of the new lands. The way in which the colonization was conducted had fundamental consequences for each region's ensuing development.[6]

The crucial outcomes of the repopulation process were how land was distributed and who held political power. Other potential aspects of relevance were the resulting level of population density, the degree of integration of the Muslim population, and the extent to

[5] This historical overview draws on Sánchez Albornoz (1932), Brenan (1943), Dominguez-Ortiz (1955), Herr (1958), Vicens Vives (1969), Malefakis (1970), Sobrequés (1972), Carrión (1975), Ruiz-Maya (1979), Glick (1979), Mestre-Campi and Sabaté (1998), Guichard (2002) and García-Ormaechea (2002).

[6] Spanish historiography labels repopulation as the process of colonization of the reconquered lands by the Christian kingdoms. In this paper, we use the terms colonization and repopulation indistinctly to refer to this process.

which preexisting technologies were preserved. An important factor that decisively affected the outcome of the repopulation was the speed of the Christian conquests; that is, whether the Christian frontier advanced rapidly or slowly (Sobrequés 1972; Malefakis 1970). We call this factor "rate of Reconquest". A slow process in this case is generally associated with a more complete and balanced repopulation. This is because a smaller area to be colonized favored the participation of individual settlers and the Crown in the repopulation, which led to better political institutions and a more egalitarian distribution of land. By contrast, a rapid process is associated with imperfect colonization (González Jiménez, 2006). In this case, a larger area to be repopulated implied fewer resources were available relative to the magnitude of the task; that is, an insufficient number of settlers, as well as administrative and military difficulties to govern and defend the territory. This favored the participation of the nobility and military orders in the organization and defense of the new lands.

Figure 1 shows how the rate of Reconquest differs markedly across the different stages of this historical process. During the first three and half centuries of the Reconquest (from 711 to 1062) the Christian kingdoms conquered about 155,000 km^2, while over the next two centuries (until 1266) the reconquered area almost doubled (about 287,000 km^2). Thus, the rate of Reconquest (i.e., the area reconquered divided by the duration in years of that period) was much slower in the first period (approx. 441 km^2/year) than in the second period (approx. 1407 km^2/year). These differences had profound consequences for the type of colonization conducted in each case.

[Insert Figure 1 about here]

A slow rate of Reconquest implied that individual settlers with few economic resources could colonize the territory by themselves. This was the case of the repopulation of the Duero Valley, where the distinctive feature of this process was the predominance of private initiative; that is, a type of repopulation conducted by individuals who occupied land and acquired its property through the institution of *presura* or *aprisio* (i.e., apprehension of land). In general, this repopulation implied a more balanced occupation of the land, as

reflected in the presence of a large number of small settlements that appear evenly distributed across the repopulated territory. It also led to the creation of a society with a democratic structure of free peasants with access to land (Vicens Vives 1969).[7] The Crown also found it easier to organize the repopulation when the area to be occupied was not large. Thus, in the lands comprised between the rivers Duero and Tagus the repopulation was to a large extent officially organized and conducted by the King through the creation of municipalities or councils (*repoblación concejil*), which delimited and distributed smallholdings among settlers (Ruiz-Maya 1979). When the repopulation was conducted by the Crown, the result was still beneficial to the peasantry, since land was relatively well distributed and cities remained under royal jurisdiction.[8]

In addition, a smaller area to be repopulated (consequence of a slow rate of Reconquest) favored the preservation of Muslim agricultural technologies and the integration of the Muslim population. Indeed, the repopulation in Aragon was different than in Castile, largely due to the smaller area this kingdom reconquered. In this case, the King was able to carefully organize the colonization, and the nobility played a smaller role (Sobrequés 1972). In contrast to Castile, the repopulation of Aragon had such particularities as a higher concern for maintaining irrigation structures, greater respect for the Muslim population, and less reward for the aristocracy for their participation in the conquest and defense of new territories (Casado-Alonso 2002; Vicens Vives 1969).

The above contrasts with the situation in the stages of the Reconquest comprised between 1062 and 1266, particularly in Castile, where the Christian conquests progressed much more rapidly. The larger areas to be repopulated rendered it unfeasible to colonize through individual settlers. Likewise, it was also difficult for the King to be able to organize the repopulation on such a large scale. The intervention of the nobility and military orders was

[7] The northern and mountainous territories that did not fall under Muslim control were characterized by the existence of few large estates, as well as by a social structure composed of a majority of free men and little class differentiation (Glick 1979).

[8] Under royal jurisdiction, the peasantry faced a smaller tax burden than under noble jurisdiction, where seigneurial duties were added to state taxes (García-Ormaechea 2002).

therefore required in order to conduct an effective occupation and defense of the new lands.[9] This situation was intensified after the Muslim defeat at the Battle of Las Navas de Tolosa in 1212. In a short period of time (between 1225 and 1250), most of the southern third of the peninsula suddenly fell into Christian hands (Malefakis 1970). By the mid-thirteenth century, the Reconquest was almost complete, with the exception being the Nasrid Kingdom of Granada. This gives an indication of the huge demographic effort that Castile would need to make in the thirteenth century in order to simultaneously repopulate Andalusia, La Mancha, Murcia and the majority of Extremadura (González Jiménez, 2006). The magnitude of the frontier expansion profoundly affected the subsequent social reorganization (Sobrequés 1972; Malefakis 1970). "[G]iven the weak resources of the period, the Castilians had to deploy enormous effort in order to cater for the administration, defense, and economic development of these southern lands [...] Inevitably, the disparity between the magnitude of the task and the precarious resources available produced problems. One of these was the birth of the great landed estates" (Cabrera Muñoz, 1989, p. 465); another was the concentration of political power in the hands of the nobility.

In a context in which the rapid advance of the Christian frontier created clear problems of manpower and resources, the Crown found in the military orders and the nobility the most "effective means of defense in the border region" (Forey 1984, p. 214). The warrior-monks and warlords were clearly the best alternative for holding and defending extensive areas in the frontier regions. Since the Castilian kings by themselves were unable to administer and organize such a huge territory, they granted large estates and jurisdictional rights to the nobility and military orders. As a result, the concentration of landownership and the proportion of territory under the jurisdiction of nobles or military orders were the highest in

[9] Following the example of the Holy Land crusaders, the Castilians created three great military orders that served as armies for the kingdom to conquer Muslim lands and defend the Christian frontier. The order of Calatrava was founded in 1158, the order of Santiago in 1170, and the order of Alcántara in 1176, all during the second half of the twelfth century, a period from which military orders grew in importance due to their key role in the defense of the frontier (González Jiménez 1989).

the regions of Castile-La Mancha, Extremadura and Andalusia.[10] In addition, a rapid rate of Reconquest made it difficult to govern the Muslim population and preserve their agricultural technologies. Thus, the previously intensive agriculture of the Guadalquivir Valley dramatically changed after the expulsion of the Moors from Andalusia following the 1264 revolt, being replaced by an extensive agrarian sector dominated by olive groves and sheep (Vicens Vives 1969; Malefakis 1970).

The existence of a link between the rate of Reconquest and the type of colonization is clearly reflected in the pattern of settlements in Spain. A rapid rate of Reconquest means a scarcity of settlers and economic resources, which gives rise to an unbalanced occupation of the territory consisting of an urban structure of few settlements involving large jurisdictional areas. In this sense, López-González et al. (1989) have argued that the size of municipal areas tends to increase as the Reconquest progressed, with the largest being on the Castilian side of Andalusia. Intuitively, when large territories have to be colonized with limited human and material resources, a disperse distribution of large settlements across the territory is more likely. In fact, there is a very positive relationship between the rate of Reconquest and municipal surface area (measured both in 1787 and 2011). Remarkably, the rate of Reconquest alone explains 61% of the variation in municipal area in 1787.[11] This provides additional support for the fact that the scale of the frontier expansion affected the pattern of colonization of the conquered lands in a manner that is consistent with our line of argumentation.

To sum up, the rate of Reconquest conditioned the type of colonization conducted in each region. A rapid rate favored a political equilibrium biased toward the nobility, creating societies with high levels of economic and political inequality –with other potential

[10] Regarding the possibility that the concentration of land in Andalusia after the Reconquest merely reflected the situation under Muslim domination, Malefakis (1970) states that it is indisputable that land concentration in Moorish times was lower than under Castilian domination.

[11] The positive effect of rate of Reconquest on municipality size is robust to controlling for geographic variables such as soil quality, altitude and distance to the coast. As a falsification test, we also show that rate of Reconquest is not significantly related to average size of ancient (pre-medieval) settlements. Due to space considerations, detailed results are available in an unpublished appendix to this paper.

consequences being a low integration of the Muslim population and scant preservation of their technologies. In contrast, a slow rate of Reconquest led to a more balanced occupation of the territory and a more egalitarian social structure. We argue that initial differences in the type of repopulation created different development paths across today's Spanish provinces, with implications for their current level of prosperity. Thus, we expect a negative relationship between the rate of Reconquest and current per capita income. After presenting the data used in the paper, the following sections test this prediction and provide evidence on the mechanisms at work.

III. Rate of Reconquest and Other Data

We construct a database for the 50 Spanish provinces that contains variables concerning the rate of Reconquest, current economic development, and many historical and geographic controls. Our main indicator for measuring the conditions and pace at which the Reconquest was made is labeled "rate of Reconquest". It measures the total area of the stage of the Reconquest in which the province was conquered by Christians, divided by the duration in years of that stage of the Reconquest. Therefore, the rate of Reconquest is a ratio of the amount of reconquered area divided by an interval of years. Intuitively, it reflects the speed at which the Christian frontier advanced and, consequently, the level of colonization effort required for the effective occupation of the province.

We construct this variable as follows. First, using geospatial software we calculate the surface area of each stage of the Reconquest from detailed maps provided by Mestre-Campi and Sabaté (1998). In this first step, we differentiate between the areas conquered by the Kingdom of Castile and the Crown of Aragon. Regarding the initial area of resistance in northern Spain, since it was not effectively conquered by the Muslims and, therefore, not reconquered, we assume the reconquered area to be zero.[12] Second, we calculate the duration in years of each stage of the Reconquest as the difference between the dates associated with each one of the subsequent frontier lines depicted in the map of the

[12] As shown in Section *IV.B*, the effect of the rate of Reconquest is robust to the exclusion of the provinces corresponding to the initial area of resistance.

Reconquest in Figure 1. Third, we divide the surface area of each stage of the Reconquest by its duration in years. This provides a measure of the rate of Reconquest expressed in km^2/year.[13] A high value of this indicator implies that the Reconquest progressed quickly in that stage. Finally, we impute the estimated value of the rate of Reconquest to the provinces located in the respective stages. Since the area of a province can partially cover more than one stage of the Reconquest, we calculate the proportion of the provincial area within each one of the respective stages. We then compute the weighted average of the rate of Reconquest for each province, where the weights are given by the percentage of the provincial area conquered in each stage.

The variable used to measure economic development is the figure for GDP per capita in 2005 provided by the Spanish National Statistics Institute. This study also employs a number of variables that may act as potential channels for explaining the effect of the Reconquest, as well as measures of pre-Reconquest economic development and a wide array of climatic, geographic, topographic and historical controls. We present all these variables in the sections in which they are used. To save space, their definitions and sources are provided in the unpublished appendix (Table A1), while the descriptive statistics are reported in Table A2.

IV. The Effect of the Reconquest on Current Development

A. Initial Results

Table 1 contains the results concerning the effect of the Reconquest on current levels of GDP per capita. The following equation is estimated with ordinary least squares (OLS) and heteroskedasticity-consistent standard errors:

$$Y_i = \alpha + \beta_1 \cdot Reconquest_i + \beta_2 \cdot X_i + \omega_i \quad (1)$$

where Y_i is log per capita GDP in 2005 in province i, α is a constant term, $Reconquest_i$ stands for our measure of the rate of Reconquest, X_i is a vector of control variables, and ω_i

[13] More specifically, and in order to make the numbers manageable, this indicator is expressed in 100 km^2/year.

is the error term. Column 1 in Table 1 reports a highly significant, negative bivariate relationship between current GDP levels and the rate of Reconquest. Our measure of the Reconquest alone explains 30% of the variation in current GDP per capita. This result indicates that the Reconquest is an important determinant of the current distribution of provincial output. We may compare two provinces with high and low rates of Reconquest to gain a sense of the size of the effect the Reconquest has had on current GDP per capita. For instance, Barcelona has a level of GDP per capita that is 48% higher than Seville (24,782 vs. 16,782). The latter has a rate of Reconquest of 21.94, while for the former it is 1.58. The estimate in column 1, –0.018, indicates that Barcelona should be 44% richer than Seville ($e^{0.366} - 1 \approx 0.44$), which is very close to the real differences in income per capita. This result cannot be taken as conclusive, since the presence of unobserved province-level heterogeneity, if correlated with both the Reconquest and current economic development, would introduce an omitted variable bias in the relevant coefficient. Therefore, in the rest of this section we seek to exhaustively control for possible factors that may affect both the rate of Reconquest and current GDP per capita levels.

A first set of controls is related to the biogeographic conditions 10,000 years ago, and the transition to early agriculture within the Neolithic Revolution. Accordingly, column 2 introduces the percentage of provincial area covered by wooded steppe versus dry steppe. These were the types of Neolithic vegetation (as indicators of soil quality and agricultural suitability) that prevailed on the Iberian Peninsula in prehistory.[14] Column 3 incorporates the predicted date of adoption of early agriculture using the information provided by Pinhasi, Fort, and Ammerman (2005) regarding the exact location of thirteen calibrated C-14 dates from Neolithic sites on the Iberian Peninsula.[15] Statistically, none of the Neolithic controls enters significantly for the Spanish provinces, whereas the effect of the Reconquest remains highly significant and largely unchanged in size.

[14] The omitted category in the regression is dry steppe. Wooded steppe entailed a closed forest, including mixed conifer-broadleaf forest; and dry steppe implied sparse vegetation with open wooded vegetation types and a more temperate climate. See Olsson and Paik (2013) for more details.

[15] Olsson and Paik (2013) use this data source to analyze the effect of the early transition to agriculture on current development in the western agricultural core.

A second set of controls accounts for historical conditions that may be relevant factors omitted from our analysis. Column 4 introduces a variable measuring the road density level in Roman times, which could affect the progress of the Christian conquests, and may also be related to local development potential. This variable enters insignificantly in the regression, without altering the effect of the Reconquest. Column 5 controls for an indicator of pre-Reconquest economic development, namely, urban population density in 800.[16] This is an important control variable, since the Christian frontier could arguably advance more slowly in more developed regions, because –for example– they offered stauncher resistance. The coefficient on urban population density in 800 is negative and statistically significant, while the effect of the Reconquest remains negative and statistically highly significant. Following a similar reasoning, the next column controls for an indicator of the level of economic development (urban population density) just before the Christians conquered and colonized the territory. In addition, column 7 includes a variable measuring the average urban population density in the Christian kingdoms at the time of the conquest. This variable sets out to reflect the general level of economic development of Castile or Aragon (depending on the case) immediately before the province was repopulated, since the type of colonization conducted could be affected by the conqueror's level of prosperity at that time. These two last controls are insignificant in the regression, without affecting the coefficient on rate of Reconquest.

Column 8 introduces an indicator measuring the number of centuries that the province was under Muslim domination. This may be a confounding variable since a longer Muslim domination could affect factors such as cultural values or the Spanish-Christian identity of the population. Interestingly, the coefficient on rate of Reconquest remains highly robust, while the new variable appears statistically insignificant.[17] Column 9 introduces a dummy

[16] In this regard, we follow Bairoch (1988), de Vries (1976), and more recently, Acemoglu, Johnson, and Robinson (2002), who argue that urbanization is a good proxy for economic development, since urban societies require an advanced agriculture and a developed transport infrastructure.

[17] A possible way to analyze the Muslim cultural legacy is by looking at the Moorish ancestry in the current population of each province. The correlation between Moorish ancestry and the number of centuries under Muslim domination is below 5%. In Section *VII* we discuss this question in more detail.

variable capturing whether the province once belonged to the Crown of Aragon. Certain institutional characteristics of this former kingdom may have had an impact on economic development. The dynastic union between the Crown of Aragon and Castile was forged in 1469 with the marriage of the Catholic Monarchs, but Aragon preserved its legal system and institutions until the War of Spanish Succession at the beginning of the eighteenth century. Arguably, these particularities during this early period could have influenced subsequent economic activity. Even though this historical control appears highly significant and positively related to current development levels, its inclusion does not affect our baseline results. Column 10 introduces a dummy variable for Madrid, the Spanish capital, in order to control for the fact that its good economic performance may have been driven by its special administrative character.[18] As expected, the coefficient on Madrid is positive and highly significant.

We next control for various climatic, geographic and topographic factors that may be omitted from the baseline specification. Many scholars consider geography to be an important determinant of economic development (Gallup et al. 1999; Sachs 2003). Following Acemoglu, Johnson, and Robinson (2002), we may differentiate between simple and sophisticated geographic explanations. The first type considers factors such as climate (with effects on work effort), soil fertility, and diseases. It predicts persistence in economic outcomes because geographic factors are time-invariant. Sophisticated geographic hypotheses are more appealing because they allow for the possibility that some geographic factors have a changing economic role over time. Applied to the Spanish case, access to the Mediterranean Sea may have been more decisive during the Middle Ages, with subsequent access to the Atlantic through trade with the Americas, and more recently during the industrialization period to the Bay of Biscay. In addition, coal reserves played an important role during the industrialization period, but not all the provinces had their own reserves. Transportation costs –measured, for instance, through access to the sea or distance from

[18] In addition to being the seat of government bureaucracy, which represents a flow of rents to its inhabitants, Madrid is the hub of Spain's radial communication network, reflecting traditional government centralism (Herr 1958). This provides the capital of Spain with a privileged position as a business location.

major trading partners and industrial centers in Europe– could also have been more important during the nineteenth century, when commercial relations across regions and countries intensified. In order to dispel doubts, we next control for variables that may be associated with both sets of geographic hypotheses. We begin with factors exhibiting geographic variation along a North-South gradient that mimics the direction of the Reconquest. The incorporation of latitude into column 11 (which enters insignificantly) does not affect the statistical significance or size of the coefficient on rate of Reconquest. Therefore, our results do not simply capture the fact that southern Spanish regions are poorer.

Columns 12-14 control for such variables as temperature, rainfall and humidity, which may also affect soil quality and its suitability for crops that require large estates (and in turn induce the concentration of economic power in the hands of the landed elite). Higher aridity and less rainfall may also require a higher concentration of land on the grounds of economic efficiency and profitability (Brenan 1943). Hence, they may be factors that confuse the long-term effect of the Reconquest on development. It is worth stressing that none of these factors enters significantly or reduces the statistical significance of the effect of the Reconquest.[19] The baseline result remains unaltered when column 15 introduces a direct measure of soil quality constructed on the basis of several dimensions (nutrient availability and retention capacity, rooting conditions, oxygen availability to roots, excess salts, toxicity and workability) from FAO/IIASA (2010) data, which enters with a highly significant and positive coefficient. Columns 16-18 exploit provincial variation in the suitability of land for such cash crops as sugar, cotton and tobacco in order to capture the possibility of a contrast in the suitability of land for large plantations in the South of Spain as opposed to the North (as in the US). It is worth noting that none of these three controls appears statistically significant or affects the main findings. The introduction in columns 19 and 20 of average altitude and terrain ruggedness does not alter the baseline results either. Only the former is marginally significant and with a negative coefficient.

[19] Only humidity slightly reduces the size of the relevant coefficient from –0.018 to –0.015.

[Insert Table 1 about here]

Columns 1-11 in Table 2 control for geographic attributes related to transportation costs that include access to the Mediterranean Sea, the Atlantic Ocean, and the Cantabrian Sea, a dummy indicator for being an island, a coast dummy, coast length over surface area, distance to the coast, border with Portugal, and distance from Madrid, London, and Paris. Of all these controls, only distance to the coast and border with Portugal are statistically significant and negatively associated with current development. Most importantly, the effect of the Reconquest remains fairly robust to these additions. Columns 12-16 control for indicators accounting for natural resource endowments that include the percentage of agricultural land in 1900, the percentage of arable land in 1962, log mining output in 1860, a coal dummy in 1860, and log coal output in 1860. Only provincial mining output is statistically significant and with a positive coefficient, whereas the baseline results remain unaltered.

[Insert Table 2 about here]

B. Baseline Specification and Robustness Checks

Column 1 in Table 3 includes in the same specification all the controls that are individually significant. This is our paper's baseline specification. Even in this case, the coefficient on the Reconquest measure is significant at the 1% level, and its size is not reduced. Besides, the dummies Crown of Aragon and Madrid, soil quality, and log mining output in 1860 continue to be statistically significant and positively associated with current development, while the coefficient on urban population density in 800 is negative and marginally significant. The strength of the effect of the rate of Reconquest on current development is illustrated in Figure 2 by a scatter plot of the two variables, after conditioning on the set of controls included in column 1. The partial *R*-square of the rate of Reconquest is 36% in this baseline specification. It is remarkable that an indicator measuring a historical event that occurred many centuries ago has such a large explanatory power on current income.

A typical concern of empirical analyses with a limited number of observations is the possibility that a few extreme cases drive the results. Columns 2-6 in Table 3 show that our findings are robust to removing outliers detected by the following procedures: leverage, standardized residuals, studentized residuals, Cook's distance, DFITS, Welsch distance, and DF-Beta. Likewise, the effect of the Reconquest remains unchanged when the northern provinces forming the core of initial Christian outposts, for which the reconquered area was assumed to be zero, are excluded from the analysis (column 7). Another potential concern is the presence of spatial correlation, which may reduce the true precision of the effect. We have checked that the statistical significance of the coefficient on the rate of Reconquest is not reduced when using standard errors corrected for spatial dependence (i.e., Conley (1999) standard errors). Finally, the inclusion of the geographic coordinates (latitude and longitude) in the baseline specification does not eliminate the effect of the Reconquest. Notably, the effect remains statistically highly significant even when including a higher-order (cubic) latitude/longitude polynomial.[20]

[Insert Table 3 and Figure 2 about here]

V. Sensitivity analysis

A. Municipality-level Analysis

Although the relationship between the rate of Reconquest and current GDP appears robust to the inclusion of many geographic and historical controls, as well as to the removal of outliers, a possible objection is that some unobservable province-level characteristics are driving this result. One way to address this concern is to conduct the analysis at a finer level, namely, using municipality data, and test whether the results hold even when conditional upon province-specific fixed effects. This test is quite strong, and allows us to exploit within-province variation in the conditions surrounding the Reconquest. The inclusion of such powerful fixed effects enables us to account for any systematic and structural particularities related to the history of each province, which cannot be controlled

[20] These unreported results are available in the unpublished appendix.

explicitly in a province-level analysis. For this exercise, we create a dataset of more than 8,000 municipalities in Spain. We impute to each municipality the rate of Reconquest corresponding to the Reconquest phase to which the municipality belongs. As proxies for income at local level, we use current data for average socioeconomic conditions, average number of vehicles per household, and labor force activity rate, which appear clearly linked to economic development. This is corroborated by the existence of a high correlation with GDP per capita at provincial level (the correlation is 0.81 with average socioeconomic condition, 0.54 with average number of vehicles per household, and 0.73 with labor force activity rate).

Table 4 presents the results with standard errors clustered at provincial level in order to consider spatial correlation, which can be substantial in this municipality-level analysis. All regressions include province dummies. Columns 1, 3 and 5 show that the rate of Reconquest appears negatively associated with the three proxies for local economic development, at least at the 5% significance level after incorporating the municipalities' total population to control for differences in municipal size, latitude, and geographic factors related to transportation costs, such as distance to Madrid, distance to the coast, and distance to the nearest provincial capital (in linear and square form), together with a provincial capital dummy. In columns 2, 4 and 6, we extend the control set to incorporate additional variables for the municipalities' climate, geography and topography. These include altitude, annual average temperature, annual rainfall, and seven dimensions measuring soil quality (nutrient availability and retention capacity, rooting capacity, oxygen availability to roots, excess salts, toxicity, and workability).[21] It is worth noting that the baseline effect of the Reconquest remains statistically significant in all cases. This alleviates our concern that unobserved heterogeneity at provincial level might be the driving force behind the significant effect the Reconquest has had on current development in the province-level analysis.

[21] The inclusion of all these controls together, along with the province-level fixed effects, is particularly important here. This is because with only 50 observations in the province-level analysis, we could not control for all the individual regressors together, since the degrees of freedom would dramatically fall. Instead, we opted for including in the same specification only those regressors that were found individually significant.

[Insert Table 4 about here]

B. Alternative Indicators of the Reconquest

Thus far, we have reported the existence of a strong and robust negative effect of the Reconquest on current income. However, a further concern about our previous results is that they hinge on a particular indicator of the Reconquest. To address this concern, in the first place, we check that our results are robust to the use of an alternative indicator of the rate of Reconquest, which divides this historical process in stages of the same duration. More specifically, provinces are classified according to the century in which they were reconquered. As in the construction of the baseline Reconquest indicator, the territory that was not occupied by the Muslims is assigned a reconquered area equal to zero. For each century, we compute the total land area reconquered in that period, differentiating between the areas conquered by Castile and Aragon. Then, the rate of Reconquest in a given province is estimated as the total land area that was reconquered in the century in which that province was reconquered. The results shown in Tables 1, 2 and 3 are highly robust to the use of this alternative indicator (the detailed results are provided in Tables A9-A11 of the unpublished appendices).

In the second place, with the same underlying argument used in the calculation of the rate of Reconquest, we create an indicator consisting of a dummy variable indicating whether the province was reconquered after the collapse of the Almohad Caliphate in 1212 following the Battle of Las Navas de Tolosa. This military victory by the Christian armies enabled them to conquer a vast territory in a short period of time. The rapid advance of the Christian frontier made the task of repopulation difficult and demanding, giving rise to a type of colonization in which the nobility and military orders played a predominant role in the occupation and defense of the new territories, with negative consequences for long-term economic development.

Table 5 replicates regressions in Table 3 using this alternative indicator of the Reconquest called *post-1212 conquest*. The coefficient on *post-1212 conquest* is negative and statistically highly significant in all the columns. The magnitude of the effect is also

economically important in this case. Column 1 indicates that, conditional upon the controls included in the regression, the provinces conquered after 1212 are 24% poorer ($e^{-0.274} - 1 \approx -0.24$). Thus, according to this result, the large frontier expansion recorded after 1212 led to negative long-term outcomes across today's Spanish provinces.[22]

[Insert Table 5 about here]

C. Falsification Test

This section conducts a falsification exercise to show that the rate of Reconquest is not negatively related to the level of economic development in the pre-Reconquest era. A main threat to the validity of our analysis is the possibility that areas conquered faster were initially poorer, which could have facilitated a rapid conquest. If those areas conquered faster were worse off even before the Reconquest, then the observed relationship between the rate of Reconquest and current income may be driven by the territories' intrinsic characteristics, rather than by the type of colonization conducted by Christians. However, it is very unlikely that the rate of Reconquest hinged on the territories' economic development, since the pace of the advance of the Christian frontier was arguably caused mainly by the relative military weakness of the Muslim territory in each period. Therefore, the rate of Reconquest was the consequence of an exogenous factor with respect to the territories' economic potential.

Our aim is to verify that our indicator of the Reconquest does not have a statistically significant negative association with economic development and other outcome variables before the Reconquest. We measure pre-Reconquest development primarily through city population and urban population density in 800, which is the earliest year for which urban population data are available. Given that the Reconquest had hardly begun at that time, it serves our purpose. We also consider additional outcome indicators related to pre-Reconquest development. These include years since the transition to agriculture, ancient

[22] We also replicated all the regressions in Tables 1 and 2, finding that the coefficient on *post-1212 conquest* was always negative and statistically significant. These unreported results are available in Tables A7-A8 of the unpublished appendix.

(pre-medieval) settlements over surface area, Roman road density (total roads and main roads), the ratio of the number of locations where imperial coinage was found to surface area, Roman villas over surface area, and density of bishoprics circa 600.

To assess whether these variables can be used as plausible measures of early development, we look at their correlation with an indicator of land suitability for agriculture –the percentage of agricultural area in 1900–, since pre-industrial prosperity is commonly considered to be related to soil fertility and, more specifically, to agricultural land potential. Remarkably, all the indicators –except for years since the transition to agriculture– are positively correlated with the percentage of agricultural area. In the case of city population and the density of urban population in 800, Roman road density –total and main roads–, presence of imperial Roman coinage, and Roman villas, correlations are statistically significant.[23] Very similar correlations follow when we employ the variable percentage of arable land in 1962 as a measure of land suitability for agriculture. These results indicate that most indicators of pre-Reconquest development reveal expected relationships with agricultural land potential, which makes us more confident about their reliability.

Table 6 provides the results on the relationship between the rate of Reconquest and early development. It is worth noting that the rate of Reconquest is not negatively associated with any of the measures of early economic development.[24] The above findings suggest that the effect of the Reconquest does not merely represent the perpetuation of differences in economic development that already existed before the Reconquest, or mean that provinces conquered more rapidly started off at a disadvantage or were intrinsically poorer.

[Insert Table 6 about here]

[23] For total Roman road density, the coefficient of correlation is significant at the 10.7% level. Detailed results are provided in the unpublished appendix.

[24] This analysis omits those control variables that are meaningless when the dependent variable is a measure of pre-Reconquest development, namely, Crown of Aragon, Madrid, and border with Portugal. Nevertheless, we have confirmed that the findings are the same when they are included. For obvious reasons, urban population density in 800 was also excluded from the set of controls. We also confirmed that the indicator of *post-1212 conquest* is not related to pre-Reconquest economic development either. These unreported results are available in Tables A14-A15 of the unpublished appendix.

VI. The Timing of the Effect of the Reconquest

The above results confirm the strong and robust negative effect that the Reconquest has had on current per capita income. A question that requires further study is when this effect actually took place. This is a key issue because it provides clues about the nature and causes of the effect. On the one hand, if our findings were due to –for example– some geographic confounding factor, the effect of the Reconquest would probably be visible at all times.[25] On the other hand, the analysis of the timing of the effect is useful for considering the mechanisms at work. For example, if the main implications of the rapid advance of the Christian frontier were related to the destruction of Muslim technologies or to a lack of agglomeration economies due to low population density, the negative effect should have become apparent soon after the Reconquest.

Table 7 presents estimates of the effect of the Reconquest at different moments in time: 1860, 1930, 1971 and 2005. We select 1860 as our first point in time because there are no data on GDP for Spain's provinces before that date.[26] The regression results shown in Panel A are appealing because they do not reveal a simple direct effect of the Reconquest on economic development. As shown in column 1, the coefficient on rate of Reconquest is insignificant in 1860, around the time when Spain entered the industrialization phase (Pascual and Sudriá 2002; Rosés 2006).[27] This contrasts with the negative and highly significant coefficient found since then (columns 2-4). We find similar results when log GDP per capita is replaced by log industrial production per capita, which may be more closely related to industrialization (columns 5-8). Panel B provides the standardized effect of rate of Reconquest (i.e., the coefficient multiplied by the standard deviation of rate of

[25] In this regard, the evidence presented so far dismisses such a possibility, since the effect is quite robust to many geographic controls, and the rate of Reconquest is not related to indicators of early development.

[26] There is also the possibility of using urbanization rate as a proxy for economic development for previous periods. However, we prefer not to use this variable since it does not accurately measure the level of economic development at the subnational level for the case of Spain. This is because there are many densely populated *agro-towns* distributed across the southern part of Spain that accumulate a large number of landless peasants, but have very few features consistent with high levels of economic development (Reher 1990).

[27] The fact that Spain began its industrialization around 1860 is well reflected in the evolution of the railway network, which grew from less than 400 kilometers in 1855 to 5,076 kilometers in 1866 (Pascual and Sudriá 2002).

Reconquest and divided by the standard deviation of the dependent variable). Focusing on GDP per capita, we observe that the negative effect of the Reconquest does not diminish over time, which reflects a high degree of persistence.[28]

[Insert Table 7 about here]

Table 7 shows the effect of the Reconquest is clearly linked to industrialization. We pursue this question further by taking into account that the exact timing of industrialization in Spain may be endogenous. Thus, we complement the previous analysis with some panel regressions that use industrialization in the UK and the US (Mitchell 2007a, b) as a measure of the opportunity to industrialize, following the insights from Acemoglu, Johnson, and Robinson (2002, pp. 1274-1275). The panel data specification is as follows:

$$y_{it} = \alpha_i + \theta_t + \delta \cdot Reconquest_i \times Industrialization_t + v_{it} \quad (2)$$

where y_{it} is either provincial GDP per capita or industrial output per capita expressed in relative terms with respect to the national average at date t (1860, 1930, 1971, and 2005). α_i is a set of province-level dummies and θ_t stands for a set of time dummies. $Reconquest_i$ represents the rate of Reconquest in province i and $Industrialization_t$ denotes either UK industrial output or US industrial output at date t. The coefficient of interest is δ on the interaction between rate of Reconquest and industrialization, which should be negative and statistically significant. Table 8 presents the panel regressions for the cases in which the dependent variable is relative GDP per capita and relative industrial output per capita. It is worth stressing that the interaction term δ appears negative and statistically significant at the 1% level in all cases, which is consistent with the results reported in Table 7. The magnitude of the coefficient of interest is found to be substantially larger (in absolute terms) in the specifications that use industrial output per capita as the dependent variable. This can be explained to the extent that industrial output is more closely related to industrialization than GDP. In sum, these results indicate that the effect of the Reconquest

[28] Table A16 of the unpublished appendix shows a very similar pattern in the timing of the effect when *post-1212 conquest* is used as an alternative indicator of the Reconquest.

on income occurred during industrialization, and has persisted since then. The remainder of the paper sets out to explain these findings.

[Insert Table 8 about here]

VII. Mechanisms at work

In Section 2, we argued that the rate of Reconquest was a crucial factor affecting the outcome of the repopulation process. A rapid rate is generally associated with imperfect colonization, with negative consequences for each region's subsequent development. The rapid advance of the Christian frontier made the task of repopulation more difficult and demanding, which originated several problems, such as scarcity of settlers and resources, defense requirements for vast territories, and the governance of a large conquered Muslim population. What follows describes the potential channels that may help explain the effect of the Reconquest on current development, as well as the way they can be measured. We also discuss the consistency of each alternative explanation with the observed timing of the effect.

A. Economic and Political Power Concentration

Spanish historiography suggests that two key outcomes of the repopulation process were how land was distributed and who held political power. This constitutes our main hypothesis, and the argument deserves to be further developed. The rate of Reconquest affected the possibility that either individual settlers or the nobility and military orders gained control over the newly conquered territories. As historically documented, a greater area to be repopulated increased the likelihood that nobles and military orders were called upon to participate in the repopulation and defense of such vast territories. Consequently, a rapid frontier expansion favored an initial political equilibrium biased toward the nobility, which led to the concentration of political power –in the form of jurisdictional rights– and economic power –in the form of land– in the hands of this social group.

The consequences of a high concentration of power by the nobility were pervasive. Jurisdictional rights provided the landowning nobility with the legal and political apparatus

that afforded them *de jure* political power over the broad mass of the population. This meant the landless peasantry became attached to the nobles' lands, and the judiciary and local council were controlled by the nobility. They used their economic and political power to run *de facto* extractive institutions and control local government to exploit the peasantry through such mechanisms as severe restrictions on land and grain transactions, labor contracts with caps on agricultural wages, land tenure systems implying short-term leases whose conditions were reviewed annually, and the obligation to use the nobles' mill to grind the grain.[29] In this context, it is evident that the political equilibrium clearly favored the landed nobility at the expense of the agricultural proletariat on large estates, who were the majority of the population in the regions of southern Spain (Brenan 1943; Dominguez-Ortiz 1955). This created a society characterized by a high level of social and political inequality.

The picture of the concentration of economic and political power arising from the Reconquest persisted over time, and even became accentuated, in a clear process of path dependence. Several factors explain this process of extraordinary persistence. First, the decline in population after the Christian conquest due to migrations, the expulsion of the Muslim population, and other circumstances, such as epidemics, favored the establishment and consolidation of a type of extensive agriculture based on large estates (Malefakis 1970). Second, the landed nobility used their political power to illegally usurp lands and monopolize unappropriated or common lands (Vicens Vives 1969; Cabrera Muñoz 1989). Third, the balance of political power in favor of power groups gave rise to such inefficient institutions as the creation of entailed estates protected by law (*mayorazgos*) and other regulations by which land became non-conveyable. Fourth, jurisdictional rights were hereditary, thereby guaranteeing the persistence in the concentration of *de jure* political power in the hands of the nobility. The liberal reforms of the nineteenth century derogated

[29] Nobles also exploited monopoly rights over other manufacturing activities, such as public ovens, butcheries, forges, and wineries, or services such as shops, taverns and potteries (Cabrera Muñoz 2006). In many instances, nobles also had the right of taxation at local level and adjudicated over property disputes, punishing minor crimes and even imposing death sentences for capital crimes (Dominguez-Ortiz 1955; Herr 1958; Dewald 2004).

the legal apparatus of the Old Regime, but in contrast to what happened in other European countries like France, they failed to derogate nobles' landownership and hence change the balance of power in society (García-Ormaechea 2002). Finally, the process of disentailment of communal and ecclesiastical landownership known as *desamortización* aggravated the pattern of land concentration in a few hands because land was bought up by the rich, the bourgeoisie, and nobles (Brenan 1943; Carrión 1975; Malefakis 1970).

The role of economic and political power concentration as mechanisms for explaining the effect of the Reconquest on income appears fairly consistent with the fact that this effect became apparent during industrialization. In line with Acemoglu, Johnson, and Robinson (2002), we argue that pervasive forms of concentrating economic and political power act as severe impediments to the requirements for modern economic growth by excluding broad segments of the population from participating in economic activity. Nevertheless, from the point of view of the generation of wealth regardless of its distribution, when the main sector of activity is agriculture, economic and political inequality may not impair aggregate production. In pre-industrial times, other factors such as soil fertility or environmental suitability may have been more important for production. In this sense, some of the provinces with higher concentrations of economic and political power are among the most fertile lands in Spain, and until the onset of industrialization were also among the wealthiest.[30] However, when the opportunity to industrialize arrives, the participation of broad segments of the population in economic activity is a fundamental factor for industrialization to succeed. Acemoglu, Johnson, and Robinson (2002) and Engerman and Sokoloff (2002) emphasize the importance of the population's broad-based participation in economic activity, paying particular attention to the role played by new entrepreneurs, innovators, and middle-class citizens. Economic growth is viewed as the "cumulative impact of incremental advances made by individuals throughout the economy" (Engerman

[30] For example, still in 1860, at the beginning of the industrialization period, Andalusia was the second wealthiest region, ahead of Catalonia and the Basque Country, with a level of GDP per capita about 36 percentage points above the Spanish average. Yet just seventy years later, in 1930, Andalusia was among the poorest regions, with a level of GDP per capita of only 77% of the Spanish average (data from Rosés et al. 2010).

and Sokoloff 2002, p. 84; Sokoloff and Khan 1990). In this regard, the adverse effect of the concentration of political power through the creation of extractive institutions appeared hand-in-hand with industrialization, since they "may become much more *inappropriate* with the arrival of new technologies" (Acemoglu, Johnson, and Robinson 2002, p. 1273). Galor, Moav, and Vollrath (2009) also provide an interesting link by which economic power concentration –in particular, land inequality– may induce the landed elite to block education reforms, and thus, the transition from an agricultural to an industrial society. This argument is particularly applicable to the Spanish case, given the large differences in land inequality across provinces.

We measure political and economic power concentration with two indicators from the 1797 population census: on the one hand, the percentage of villages and cities under seigneurial jurisdiction that includes both nobles and military orders, which aims to capture the *de jure* political power of the nobility;[31] on the other, the percentage of landless workers over the agricultural active population, which is a proxy for the concentration of land in the hands of the nobles. The class of landless laborers, which can be traced back to the fifteenth century, was a by-product of the concentration of land in the hands of the nobility (Cabrera Muñoz 1989).[32,33]

B. Other Potential Intervening Factors

The rate of Reconquest could also affect other factors of relevance to economic development. A first candidate is population density. The rapid advance of the Christian frontier gave rise to sparsely populated territories due to a lack of manpower and settlers,

[31] We proceed in this way because military orders were mostly composed of members of the nobility, with masters (*maestres*) and commanders usually forming part of the higher nobility (Vicens Vives 1969; Mestre-Campi and Sabaté 1998; Alvarez-Palenzuela 2002).

[32] According to Cabrera Muñoz (1989) "From the 1460s onwards the existence of a large rural proletariat [in the Guadalquivir Valley] can be clearly documented. Indeed, use of the notarial records alone would suggest that those who actually worked the land were never, or hardly ever, the owners of it, the owners in effect being rentiers" (p. 480).

[33] No data on proxies for land concentration at provincial level are available before the end of the eighteenth century. From that moment on, the empirical evidence clearly indicates a high degree of persistence in land inequality, as reflected in the high correlation (0.81) existing between the percentage of landless workers in 1797 and 1956.

which was aggravated by the eventual expulsion of the conquered population. Low population density affects economic development not only by facilitating the concentration of power in the hands of the nobility, but also through other channels, such as, for instance, technological progress à la Boserup or agglomeration economies.[34] We control for this mechanism by using an indicator of past population density measured in 1594.

A second important factor is the extent to which the preexisting Muslim population was respected and integrated into the Christian kingdoms. A rapid frontier expansion made it difficult to govern and integrate this population, as became apparent with the great *mudejar* revolt of 1264, which led to the expulsion of the Muslim population from the Guadalquivir Valley. In addition to creating problems of labor scarcity, the fate of the Muslim population had important implications due to their higher human capital, particularly concerning the level of agricultural technology.[35] Moreover, the degree of assimilation of the Muslim population could also have cultural implications. To measure this factor, the best we can do is use an indicator of the proportion of Moorish ancestry in the current population of each province. Using an admixture approach based on binary and Y-STR haplotypes, Adams et al. (2008) were able to identify the genetic differentiation of the population of the Iberian Peninsula and the Balearic Islands, finding a relatively high mean proportion of ancestry from North Africa (10.6%). As opposed to the common expectation that a South-North gradient of North-African ancestry is followed, it is worth noting that the highest proportions of Moorish ancestry (greater than 20%) are found in Galicia and Northwest Castile, which contrast with the much lower proportions in Andalusia.[36]

[34] By examining the interaction between plague, war and urbanization, Voigtländer and Voth (2013) show that high death rates lead to low population growth, high land-to-labor ratios, higher wages, and higher GDP per capita.

[35] *al-Andalus*, the unique Muslim domain in Western Europe, achieved by far the highest level of prosperity on the continent (Chejne 1999). Its economy was based on a developed and partially irrigated agriculture, a significant arts and crafts industry and flourishing trade. Furthermore, a monetary system was in place, contrasting with the primitive economy of the northern Christian kingdoms (Vicens Vives 1969, Glick 1979).

[36] It is also worth mentioning the marked differences between the western part of Spain, with a relatively high proportion, and the eastern part with a relatively low proportion. Adams et al. (2008) seek to explain these differences in the history of enforced relocation and expulsion of the Moorish population.

Another possible mechanism that may affect current levels of development is the degree of market fragmentation. Grafe (2012) points to the exceptionally high degree of market fragmentation observed in Spain over the seventeenth and eighteenth centuries as the main obstacle to economic development. In addition, market fragmentation could be the consequence –at least in part– of accelerated colonization by, for instance, making it more difficult to maintain the pre-existing infrastructure network. We measure differences in the degree of market fragmentation across provinces by constructing an indicator of road density in 1760 at provincial level, with higher road density implying less fragmented markets. This indicator can also be used to test for possible differences in government investment in infrastructure across provinces.

One might also assume that the Reconquest generated historical differences both in the political power of the Church and in religiosity across provinces, which might have had some effect on current development. To control for this factor, we employ two indicators measured in 1797: the percentage of villages and cities under Church jurisdiction, and the percentage of population that was a member of the clergy (both secular and regular). A related factor is the role played by the Inquisition, which was charged with preserving Catholic orthodoxy. Vidal-Robert (2014) shows that inquisitorial activity is negatively associated both with urbanization rates at regional level and population growth at municipal level. However, a lack of consistent data for constructing an indicator for the majority of the Spanish provinces has prevented us from empirically assessing the role of the Inquisition in mediating the effect of the Reconquest.

A final mechanism that remains uncontrolled involves interregional migration, which is historically hard to measure. However, there may be reasons explaining why people do not move between regions to arbitrate the existing differences in economic development. One simple explanation may be found in Gennaioli et al. (2013), who develop a model in which there are frictions related to the limited supply of land and housing that prevent people from completely arbitrating away the differences in income. Besides, migration in our case would act against our identification strategy, since if income differences were swept away

because of interregional migration, we would no longer find an effect on current income differences, which would have vanished over time.

The consistency between these alternative potential mechanisms and the observed timing of the effect of the Reconquest is theoretically less compelling than the case of the channel involving the concentration of economic and political power. Indeed, if the lack of agglomeration economies due to low population density, human capital depreciation derived from the expulsion of the Muslims, market fragmentation, and differences in religiosity were relevant factors explaining the effect of the Reconquest, the timing of the effect should have been much earlier, instead of much later during industrialization.

C. Empirical Analysis

Although the timing of the effect of the Reconquest provides some clues about the empirical validity of the proposed channels, Table 9 analyzes this question more systematically. Following Bruhn and Gallego (2012), we regress each one of the channels considered on the rate of Reconquest and the basic set of controls. As a benchmark, columns 1 and 2 reproduce the results from our baseline specification (using *per capita* income as the dependent variable). Panel A reports the estimated coefficients on all the explanatory variables, while Panel B displays the standardized coefficient on rate of Reconquest. Three criteria are considered to evaluate each potential mechanism: a) the statistical significance of the coefficient on rate of Reconquest; b) whether the sign is consistent with the theoretical prediction; and c) the magnitude of the effect.

It is worth noting that the results using the proxies for economic and political power concentration (i.e., the percentage of landless workers and the percentage of villages under seigniorial jurisdiction) are fully consistent with the correlation between rate of Reconquest and current income. The coefficient on rate of Reconquest is always statistically significant, with its negative sign being consistent with theoretical predictions, and the magnitude of the effect is large (columns 3–6). Panel B shows that the standardized effect on landless workers is greater than that in the baseline specification, while that on seigniorial

jurisdiction is somewhat lower. According to these results, both factors seem to be relevant mechanisms explaining the long-term consequences of the Reconquest.

Regarding population density, the coefficient on rate of Reconquest is insignificant in the regression without controls, while it becomes statistically highly significant when control variables are included. The coefficient has an expected negative sign, and the effect is economically important (columns 7–8). Population density can thus be considered a potential channel for the effect of the Reconquest. However, an empirical problem here is that we cannot distinguish which part of the effect of population density works through economic and political power concentration, or through other mechanisms such as agglomeration economies. This evidence does not therefore allow us to know whether population density affects economic development beyond its effect on economic and political inequality.

Columns 9–12 show that the coefficient on rate of Reconquest is statistically insignificant when the dependent variable is either Moorish ancestry or road density. With the evidence at hand, this suggests that the degree of integration of the Muslim population and market fragmentation are not relevant mechanisms explaining the long-term economic consequences of the Reconquest. As regards the two indicators related to the role of the Church and religion (columns 13-16), the coefficient on rate of Reconquest is only statistically significant in the case of villages under Church jurisdiction. However, when the set of control variables is included the statistical significance is greatly reduced, and most importantly, the sign is contrary to predictions. This is because a rapid rate of Reconquest is expected to lead to more Church jurisdictions, which would bring about lower GDP per capita (implying a *positive* coefficient on rate of Reconquest).

[Insert Table 9 about here]

D. Outcome Indicators at the Onset of Industrialization

The evidence presented in this section largely supports the view that the concentration of economic and political power plays a central role in explaining the Reconquest's effect and

why it became apparent during the era of industrialization. Table 10 provides additional evidence consistent with this hypothesis by focusing on the decisive moment in which Spain began industrializing. It shows that although the Reconquest's impact on income was not yet apparent in 1860, some of the fundamentals of modern economic growth were already undermined at the onset of the industrialization period. Our dependent variables are a number of factors that are relevant for economic growth, all measured in the 1860s. They are two indicators related to education (literacy rate and school enrollment), two related to health (infant mortality and life expectancy), two associated with political participation (percentage of electors and voters), and two indicators related to social conflict (criminality and convicts). According to our view, we expect the rate of Reconquest –working through economic and political inequality– to lead to lower human capital (negatively affecting education and health), lower political participation, and higher social conflict.[37] This is precisely what we observe in columns 1–8 in Table 10.

[Insert Table 10 about here]

The last two columns perform a falsification test by analyzing the relationship between, on the one hand, the rate of Reconquest and, on the other, agricultural productivity and agriculture's share of GDP (both measured in 1860). If the coefficient on rate of Reconquest is negative and statistically significant, particularly in the case of agricultural productivity, it may suggest that provinces corresponding to areas that were conquered faster have poorer land or a less favorable climate, which would cast doubts on our conclusions. By contrast, if the coefficient is positive and significant in both cases, it will imply that those same provinces have a competitive advantage in agriculture and are specialized in this sector, which would also add confusion to our hypothesis about economic and political inequality as one of the main channels explaining the effect of the Reconquest. The results shown in columns 9 and 10 are again consistent with a genuine effect of the Reconquest, as well as with the empirical validity of the power concentration

[37] Regarding political participation, it is important to note that at that time a limited suffrage system based on capacity and fiscal criteria was in place.

hypothesis. All in all, the evidence provided in Table 10 indicates that although in 1860 there was not yet a statistically significant relationship between rate of Reconquest and income, the conditions were already created for the subsequent failure to industrialize.

VIII. Conclusions

The legacy of history appears particularly pervasive in the case of Spain. This paper shows the Reconquest in the Middle Ages to have been a major historical process shaping the distribution of regional income. The rate of Reconquest, which captures the magnitude of the colonization effort required in the period when each one of what are now today's provinces was conquered by the Christians, has a robust and strong negative effect on current income. Our results are robust to controlling for historical controls and a wide array of climatic, geographic and natural resource endowments that account for simple and sophisticated versions of the geography hypothesis. Of particular interest is the lack of a significant effect due to differences in land suitability for plantation crops featuring economies of scale in production. Moreover, the effect of the rate of Reconquest survive the inclusion of latitude, indicating that we are not simply capturing the fact that regions in the South are poorer. The results also remain unaltered when employing an alternative indicator of the Reconquest, measuring whether the province was conquered after 1212. A municipality-level analysis that includes province-level fixed effects also provides evidence supporting the existence of a negative effect of the rate of Reconquest on economic development. In addition, a number of falsification tests indicate that the rate of Reconquest is not associated with indicators of pre-Reconquest economic development.

We argue that a rapid rate of Reconquest led to imperfect colonization, mainly characterized by a high concentration of power in a few hands. The evidence supports the view that a fast frontier expansion favored a political equilibrium biased toward the military elite (i.e., the nobility), which generated a high concentration of economic and political power, thus creating the conditions that led to the exclusion of large segments of the population from participating in the economic opportunities that opened up with the arrival of industrialization. The result was that provinces featuring an unequal distribution of

economic and political power fell behind during the industrialization period. Thus, the Reconquest set in motion processes that generated persistent inequality, constituting a severe impediment to the requirements for modern economic growth, which is based on entrepreneurship, innovation, and the participation in economic activity of broad segments of the population.

Our results contribute to the novel literature on the political-economic effects of frontier expansions in that the existence of a large frontier that needs to be occupied and defended from the enemy may lead to a shift in the balance of power toward dominant groups, which may create the conditions for an inegalitarian society, with negative consequences for long-term development. This study of the Spanish Reconquest is also appealing from the point of view of the literature on colonialism, because it gives clues about the colonization of the New World. When Spain colonized Central and South America in the sixteenth century, it had the long experience gained in the Reconquest. The policy of distributing economic power in the form of large estates, as well as of political power in the form of feudal rights, as applied in Spain since the mid-eleventh century (becoming widespread as of the thirteenth century) is a foretaste of what would later be implemented in the New World.

Finally, a question that deserves further research is why the effect of the Reconquest resulting from the pattern of colonization of the conquered lands is so persistent, even though today some sources of this problem are no longer present. The early obstruction of industrialization may have long-lasting consequences. Historical, economic, and political inequality may have affected the initial paths of industrialization and development and, once launched, different economic forces (e.g., increasing returns) reproduce the initial divergence. In addition, many social and cultural patterns developed in the past due to a high concentration of economic and political power may still persist today.

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TABLE 1 - THE EFFECT OF THE RECONQUEST ON CURRENT DEVELOPMENT (I)

Dependent variable is log GDP per capita in 2005

		Neolithic controls		*Historical controls*						
	Basic relation-ship	Wooded steppe (% area)	Years since transition to agriculture	Roman roads density	Urban population density in 800	Urban population density at conquest	Av. urban pop.dens. at conquest in the Christian kingdom	Centuries under Muslim domination	Crown of Aragon	Madrid
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rate of Reconquest	-0.018***	-0.019***	-0.018***	-0.019***	-0.017***	-0.017***	-0.019***	-0.016***	-0.016***	-0.018***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Additional control		-0.046	0.0001	0.0004	-0.015**	-0.007	0.014	-0.010	0.139***	0.356***
		(0.055)	(0.001)	(0.002)	(0.007)	(0.015)	(0.053)	(0.011)	(0.044)	(0.023)
R^2	0.30	0.31	0.30	0.3	0.31	0.30	0.30	0.31	0.38	0.36
Number of observations	50	50	50	50	50	50	50	50	50	50

Climatic, geographic and topographic factors

	Latitude	Tempera-ture	Rainfall	Humidity	Soil quality	Land suitability for sugar	Land suitability for cotton	Land suitability for tobacco	Average altitude	Ruggedness
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Rate of Reconquest	-0.017***	-0.02***	-0.019***	-0.015***	-0.023***	-0.019***	-0.02***	-0.018***	-0.019***	-0.019***
	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.006)	(0.004)	(0.004)	(0.003)
Additional control	0.006	0.005	0.0000	0.006	0.369***	0.001	0.000	0.000	-0.0001*	0.097
	(0.006)	(0.007)	(0.00008)	(0.007)	(0.076)	(0.002)	(0.000)	(0.000)	(0.000)	(0.062)
R^2	0.31	0.30	0.30	0.32	0.46	0.30	0.30	0.30	0.33	0.33
Number of observations	50	50	50	50	50	50	50	50	50	50

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE 2 - THE EFFECT OF THE RECONQUEST ON CURRENT DEVELOPMENT (II)

Dependent variable is log GDP per capita in 2005

	Geographic controls related to transportation costs							
	Medite-rranean Sea	Atlantic Ocean	Cantabrian Sea	Island	Coast Dummy	Coast length/ surface area	Distance to the coast	Border with Portugal
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rate of Reconquest	-0.019***	-0.018***	-0.019***	-0.019***	-0.018***	-0.018***	-0.018***	-0.016***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
Additional control	0.079	-0.026	-0.020	0.08	0.038	0.329	-0.047*	-0.164***
	(0.055)	(0.059)	(0.087)	(0.066)	(0.048)	(0.307)	(0.028)	(0.054)
R^2	0.33	0.30	0.30	0.31	0.31	0.31	0.35	0.38
Number of observations	50	50	50	50	50	50	50	50

	Geographic controls related to transportation costs (continued)			*Natural resources endowments*				
	Distance from Madrid	Distance from London	Distance from Paris	Agric. land 1900 (%)	Arable land 1962 (%)	Mining output in 1860	Coal dummy in 1860	Coal output in 1860
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Rate of Reconquest	-0.018***	-0.016***	-0.015***	-0.02***	-0.018***	-0.019***	-0.018***	-0.018***
	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)	(0.003)	(0.004)	(0.004)
Additional control	0.002	-0.007	-0.010	0.156	-0.069	0.007**	0.061	0.003
	(0.004)	(0.005)	(0.007)	(0.193)	(0.147)	(0.003)	(0.053)	(0.005)
R^2	0.30	0.32	0.33	0.31	0.30	0.35	0.31	0.3
Number of observations	50	50	50	48	50	50	50	50

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE 3 - THE EFFECT OF THE RECONQUEST ON CURRENT DEVELOPMENT: ROBUSTNESS CHECKS

Dependent variable is log GDP per capita in 2005

	Baseline specification	Leverage	Standard. residuals/ Student. residuals	Cook's distance/ Dfits	Welsch distance	DF-Beta	Initial resistance provinces removed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rate of Reconquest	-0.019***	-0.017***	-0.016***	-0.019***	-0.017***	-0.020***	-0.015***
	(0.004)	(0.004)	(0.003)	(0.004)	(0.004)	(0.003)	(0.004)
Urban population density in 800	-0.016*	-0.047	-0.015***	0.006	-0.047	-0.061*	-0.017**
	(0.008)	(0.039)	(0.004)	(0.032)	(0.039)	(0.031)	(0.008)
Crown of Aragon	0.093**	0.094**	0.12***	0.087**	0.094**	0.105**	0.127**
	(0.041)	(0.041)	(0.033)	(0.042)	(0.042)	(0.04)	(0.047)
Madrid	0.412***	n.a.	0.409***	0.435***	0.397***	0.389***	0.417***
	(0.061)	n.a.	(0.052)	(0.063)	(0.065)	(0.053)	(0.058)
Distance to the coast	-0.027	-0.022	-0.04	-0.051*	-0.022	-0.012	-0.023
	(0.032)	(0.03)	(0.027)	(0.03)	(0.03)	(0.025)	(0.028)
Border with Portugal	-0.034	-0.043	-0.041	-0.019	-0.043	-0.062	-0.052
	(0.046)	(0.046)	(0.037)	(0.048)	(0.047)	(0.043)	(0.045)
Altitude (average)	-0.0001	-0.0001	0.0000	0.0000	-0.0001	-0.0001	0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Soil quality	0.319***	0.32***	0.307***	0.32***	0.32***	0.29***	0.223**
	(0.083)	(0.084)	(0.075)	(0.084)	(0.085)	(0.077)	(0.085)
Mining output in 1860	0.006*	0.005*	0.006**	0.006**	0.005*	0.004	0.004
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)
R^2	0.68	0.65	0.8	0.68	0.67	0.75	0.67
Number of observations	50	48	46	48	49	44	45

Notes : Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively. Outliers are the following: Column 2, Madrid and Córdoba; Column 3, Alicante, Granada, Jaén and Álava; Column 4, Granada and Córdoba. Column 5, Córdoba. Column 6, Córdoba, Huelva, Jaén, Murcia, Sevilla and Álava. Initial resistance provinces in column 7 are Asturias, Cantabria, Guipúzcoa, Vizcaya and Álava.

TABLE 4 - MUNICIPALITY-LEVEL ANALYSIS: PROVINCE FIXED-EFFECTS REGRESSIONS

	Dependent variable is:					
	Average socioeconomic condition		*Average number of vehicles per household*		*Labor force activity rate*	
	(1)	(2)	(3)	(4)	(5)	(6)
Rate of Reconquest	-0.149**	-0.14**	-0.005**	-0.004*	-0.131***	-0.127***
	(0.068)	(0.069)	(0.002)	(0.002)	(0.042)	(0.038)
Population (log)	-0.112	0.387*	0.006	0.004	-0.377***	-0.213**
	(0.222)	(0.206)	(0.011)	(0.01)	(0.107)	(0.103)
Latitude	4.641***	2.929***	0.046	0.058**	0.943	0.525
	(1.155)	(0.946)	(0.03)	(0.028)	(0.591)	(0.576)
Distance to Madrid	0.021	0.008	0.000	0.000	0.007	0.007
	(0.02)	(0.019)	(0.001)	(0.001)	(0.009)	(0.009)
Distance to Madrid squared	0.000	0.000	0.000	0.000	0.000	-0.00001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Distance to the coast	0.008	-0.047*	0.000	0.000	0.012	-0.01
	(0.03)	(0.025)	(0.001)	(0.001)	(0.015)	(0.015)
Distance to the coast squared	0.000	0.0002***	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Distance to the nearest capital	-0.184***	-0.219***	-0.007***	-0.006***	-0.049***	-0.056***
	(0.037)	(0.033)	(0.001)	(0.001)	(0.013)	(0.012)
Distance to the nearest capital squared	0.001***	0.001***	0.00004***	0.00003***	0.0003***	0.0003***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Provincial capital dummy	1.704	-0.209	-0.246***	-0.227***	1.47**	0.947
	(1.187)	(1.212)	(0.05)	(0.049)	(0.598)	(0.582)
Altitude		0.007***		0.0001**		0.003***
		(0.001)		(0.000)		(0.001)
Nutrient availability		-0.91		0.011		0.05
		(0.616)		(0.017)		(0.424)
Nutrient retention capacity		1.145		0.026		0.243
		(0.811)		(0.02)		(0.39)
Rooting conditions		-0.422		0.027**		-0.008
		(0.424)		(0.01)		(0.196)
Oxygen availability to roots		0.564		0.007		-0.885*
		(0.814)		(0.022)		(0.521)
Excess salts		0.702		0.006		0.824*
		(0.657)		(0.013)		(0.465)
Toxicity		0.864		-0.013		0.233
		(0.639)		(0.026)		(0.257)
Workability		0.464		-0.005		0.57**
		(0.462)		(0.014)		(0.226)
Annual average temperature		-0.043		0.002***		-0.021
		(0.027)		(0.001)		(0.017)
Annual rainfall		0.005		0.000		0.001
		(0.004)		(0.000)		(0.002)
Province dummies	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.58	0.60	0.52	0.53	0.23	0.24
Number of observations	8098	8041	8098	8041	8098	8041

Notes : Variables descriptions are provided in Table A1. The estimations include a constant term and province dummies, which are omitted for space considerations. Robust standard errors clustered at the provincial level are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE 5 - AN ALTERNATIVE INDICATOR OF THE RECONQUEST: POST-1212 CONQUEST

Dependent variable is log GDP per capita in 2005

	Baseline specification	Leverage	Standard. residuals/ Student. residuals	Cook's distance	Dfits	Welsch distance	DF-Beta	Initial resistance provinces removed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post-1212 conquest	-0.274***	-0.262***	-0.291***	-0.296***	-0.296***	-0.291***	-0.313***	-0.230***
	(0.049)	(0.049)	(0.046)	(0.05)	(0.051)	(0.05)	(0.036)	(0.055)
Urban population density in 800	-0.017**	-0.055***	-0.016**	-0.052**	-0.052**	-0.042*	-0.032*	-0.017**
	(0.007)	(0.02)	(0.007)	(0.019)	(0.019)	(0.022)	(0.018)	(0.007)
Crown of Aragon	0.12***	0.118***	0.122***	0.11***	0.11***	0.117***	0.087**	0.147***
	(0.037)	(0.036)	(0.038)	(0.038)	(0.038)	(0.038)	(0.032)	(0.04)
Madrid	0.433***	n.a.	0.423***	n.a.	0.4***	0.445***	0.434***	0.438***
	(0.058)	n.a.	(0.053)	n.a.	(0.052)	(0.06)	(0.058)	(0.053)
Distance to the coast	-0.076**	-0.068**	-0.076**	-0.072**	-0.072**	-0.092***	-0.081**	-0.066**
	(0.032)	(0.031)	(0.029)	(0.028)	(0.028)	(0.032)	(0.03)	(0.027)
Border with Portugal	-0.047	-0.054	-0.07**	-0.073**	-0.073**	-0.062*	-0.057*	-0.053
	(0.037)	(0.036)	(0.032)	(0.031)	(0.032)	(0.035)	(0.032)	(0.037)
Altitude (average)	-0.0001	-0.0001	-0.0001	-0.0001	-0.0001	0.0000	-0.0001	0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Soil quality	0.387***	0.393***	0.413***	0.452***	0.452***	0.421***	0.433***	0.308***
	(0.08)	(0.079)	(0.067)	(0.072)	(0.073)	(0.079)	(0.066)	(0.085)
Mining output in 1860	0.002	0.002	0.003	0.003	0.003	0.003	0.002	0.002
	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)
R^2	0.77	0.75	0.81	0.79	0.81	0.78	0.83	0.76
Number of observations	50	48	47	46	47	48	43	45

Notes : Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively. Outliers are the following: Column 2, Madrid and Córdoba; Column 3, Ciudad Real, Cáceres and Álava; Column 4, Ciudad Real, Cáceres, Córdoba and Madrid. Column 5, Ciudad Real, Cáceres and Córdoba. Column 6, Cáceres and Córdoba. Column 7, Almería, Balearic Islands, Castellón, Cáceres, Córdoba, Jaén and Álava. Initial resistance provinces in column 8 are Asturias, Cantabria, Guipúzcoa, Vizcaya and Álava.

TABLE 6 - FALSIFICATION TEST: THE EFFECT OF THE RECONQUEST ON PRE-RECONQUEST DEVELOPMENT

Dependent variable:	City population in 800	Density of urban population in 800	Years since transition to agriculture	Ancient settlements over surface area	Roman roads density	Roman roads density: Main roads	Coinage of imperial Roman coins over surface area	Roman villas over surface area	Number of bishoprics circa 600 over surface area
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rate of Reconquest	1.411	0.104	-1.348	0.03	0.483	0.141	0.002	0.007	0.001
	(0.925)	(0.067)	(1.197)	(0.031)	(0.318)	(0.198)	(0.002)	(0.011)	(0.003)
Distance to the coast	4.871	0.281	-13.78**	-0.266	0.644	2.516**	-0.012	0.011	-0.016
	(3.553)	(0.256)	(5.887)	(0.166)	(2.124)	(0.984)	(0.013)	(0.043)	(0.018)
Altitude (average)	-0.013	-0.001	0.054***	0.000	0.001	-0.01**	0.000	0.000	0.000
	(0.01)	(0.001)	(0.019)	(0.001)	(0.008)	(0.004)	(0.000)	(0.000)	(0.000)
Soil quality	2.585	0.176	-4.669	0.768	-4.147	7.445*	0.088*	0.072	-0.012
	(3.378)	(0.237)	(16.322)	(0.744)	(12.417)	(3.971)	(0.05)	(0.14)	(0.075)
Mining output in 1860	0.335	0.02	0.196	0.03	0.271	0.15	0.000	0.000	0.001
	(0.359)	(0.025)	(0.722)	(0.029)	(0.358)	(0.123)	(0.002)	(0.007)	(0.002)
R^2	0.18	0.17	0.21	0.19	0.06	0.19	0.10	0.06	0.03
Number of observations	50	50	50	50	50	50	50	50	50

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE 7 - THE TIMING OF THE EFFECT OF THE RECONQUEST

Dependent variable:	*Log GDP per capita in:*				*Log industrial output per capita in:*			
	1860	*1930*	*1971*	*2005*	*1860*	*1930*	*1970*	*2005*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Regression Results								
Rate of Reconquest	0.010	-0.015*	-0.023***	-0.019***	0.034***	-0.041***	-0.056***	-0.040***
	(0.006)	(0.008)	(0.005)	(0.004)	(0.01)	(0.014)	(0.013)	(0.014)
Urban population density in 800	0.001	-0.007	-0.007	-0.016*	0.005	0.012	-0.009	-0.028
	(0.021)	(0.011)	(0.009)	(0.008)	(0.017)	(0.024)	(0.022)	(0.027)
Crown of Aragon	0.142	0.184*	0.131**	0.093**	0.248	0.2	0.196	0.201
	(0.099)	(0.098)	(0.053)	(0.041)	(0.201)	(0.169)	(0.145)	(0.198)
Madrid	0.595***	0.909***	0.638***	0.412***	0.711***	0.978***	0.432**	-0.136
	(0.12)	(0.139)	(0.082)	(0.061)	(0.171)	(0.281)	(0.181)	(0.176)
Distance to the coast	0.032	0.001	-0.016	-0.027	0.086	-0.033	0.066	0.1
	(0.066)	(0.068)	(0.038)	(0.032)	(0.084)	(0.155)	(0.1)	(0.117)
Border with Portugal	-0.15	-0.118	-0.046	-0.034	-0.334*	-0.238	-0.007	-0.181
	(0.149)	(0.098)	(0.071)	(0.046)	(0.187)	(0.219)	(0.2)	(0.224)
Altitude (average)	0.000	-0.001***	-0.0004***	-0.0001	-0.0005**	-0.001***	-0.001***	-0.0003
	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0004)	(0.0003)	(0.0004)
Soil quality	0.781**	0.369**	0.426***	0.319***	0.554	0.962**	0.693*	0.177
	(0.34)	(0.171)	(0.119)	(0.083)	(0.411)	(0.422)	(0.348)	(0.346)
Mining output in 1860	0.003	0.009	0.004	0.006*	0.021	0.016	0.029**	0.03**
	(0.008)	(0.006)	(0.003)	(0.003)	(0.013)	(0.011)	(0.011)	(0.012)
R^2	0.48	0.63	0.71	0.68	0.46	0.60	0.56	0.33
Number of observations	50	50	50	50	50	50	50	50
Panel B: Standardized Effects								
Rate of Reconquest	0.171	-0.278	-0.512	-0.554	0.363	-0.354	-0.564	-0.411

Notes : Variables descriptions are provided in Table A1. GDP and industrial output variables are all expressed in pesetas. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE 8 - THE TIMING OF THE EFFECT OF THE RECONQUEST: PANEL RESULTS

	Dependent variable is relative GDP per capita (average=100)		*Dependent variable is relative industrial output per capita (average=100)*	
	Reduced-form results		Reduced-form results	
	(1)	(2)	(3)	(4)
Rate of Reconquest * UK industrial output	-0.011***		-0.026***	
	(0.003)		(0.005)	
Rate of Reconquest * US industrial output		-0.002***		-0.004***
		(0.000)		(0.001)
Time dummies	Yes	Yes	Yes	Yes
Province dummies	Yes	Yes	Yes	Yes
R^2	0.65	0.63	0.66	0.63
Number of observations	200	200	200	200

Notes : Variables descriptions are provided in Table A1. The dependent variables GDP and industrial output *per capita* are expressed in relative terms with respect to the national average in each period. The panel consists of four data points: 1860, 1930, 1971 and 2005. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE 9 - MECHANISMS AT WORK

Dependent variable:	*Log GPD per capita 2005*		*Percentage of landless workers 1797*		*Percentage of villages and cities under seigneurial jurisdiction in 1797*		*Population density in 1594*		*Moorish ancestry*		*Market fragmentation (Road density in 1760)*		*Percentage of villages and cities under Church jurisdiction in 1797*		*Religiosity (Clerical population in 1797)*	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Panel A: Regression Results																
Rate of Reconquest	-0.018***	-0.019***	2.484***	2.374***	0.013***	0.014***	-0.233	-0.528***	0.173	0.304	-0.0003	-0.0005	-0.008***	-0.004*	0.0001	-0.0001
	(0.004)	(0.004)	(0.375)	(0.452)	(0.004)	(0.005)	(0.139)	(0.186)	(0.182)	(0.203)	(0.0003)	(0.0004)	(0.002)	(0.002)	(0.0001)	(0.0001)
Urban population density in 800		-0.016*		0.723		0.001		0.289		-0.429		-0.001		0.001		0.001***
		(0.008)		(0.642)		(0.005)		(0.275)		(0.275)		(0.001)		(0.003)		(0.000)
Crown of Aragon		0.093**		9.995*		0.058		-8.842***		-0.587		0.000		0.104***		0.002*
		(0.041)		(5.374)		(0.065)		(2.78)		(2.04)		(0.006)		(0.037)		(0.001)
Madrid		0.412***		13.938**		0.173***		12.891***		-4.156		0.012**		-0.002		0.006***
		(0.061)		(5.56)		(0.046)		(2.877)		(2.856)		(0.006)		(0.038)		(0.002)
Distance to the coast		-0.027		1.11		0.071**		-0.092		-0.594		0.005*		-0.009		0.001
		(0.032)		(3.013)		(0.027)		(1.446)		(1.385)		(0.003)		(0.02)		(0.001)
Border with Portugal		-0.034		-6.043		-0.014		3.532		7.787**		-0.007		0.05		0.003*
		(0.046)		(5.642)		(0.057)		(2.141)		(3.152)		(0.005)		(0.044)		(0.002)
Altitude (average)		-0.0001		0.003		0.0002		-0.006		0.001		0.000		0.0000		0.0000
		(0.0001)		(0.01)		(0.0001)		(0.004)		(0.004)		(0.000)		(0.0001)		(0.000)
Soil quality		0.319***		27.025***		0.109		3.147		-15.099**		0.023*		-0.297***		0.008***
		(0.083)		(8.587)		(0.124)		(4.978)		(5.757)		(0.012)		(0.095)		(0.002)
Mining output in 1860		0.006*		-0.211		-0.006**		-0.132		-0.352*		0.000		-0.002		0.000
		(0.003)		(0.291)		(0.003)		(0.134)		(0.192)		(0.000)		(0.002)		(0.000)
R^2	0.3	0.68	0.48	0.66	0.15	0.53	0.05	0.42	0.02	0.55	0.01	0.29	0.15	0.57	0.03	0.48
Number of observations	50	50	50	50	50	50	47	47	48	48	50	50	50	50	50	50
Panel B: Standardized Effects																
Rate of Reconquest	-0.548	-0.554	0.693	0.662	0.389	0.407	-0.208	-0.470	0.128	0.225	-0.120	-0.201	-0.393	-0.192	0.134	-0.134

Notes : Variables descriptions are provided in Table A1. GDP and industrial output variables are all expressed in pesetas. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE 10 - OUTCOMES INDICATORS IN THE 1860s

Dependent variable:	*Literacy rate*	*School enrollment*	*Infant mortality*	*Life expectancy*	*Percentage of electors*	*Percentage of voters*	*Crimes*	*Convicts*	*Agricultural productivity*	*Agriculture's share*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rate of Reconquest	-0.827***	-0.006***	4.764***	-0.367***	-0.002**	-0.002**	0.065***	0.048***	3.864	0.031
	(0.249)	(0.002)	(1.122)	(0.093)	(0.001)	(0.001)	(0.02)	(0.012)	(5.518)	(0.268)
Urban population density in 800	-0.224	0.000	-3.768**	0.109	-0.001	0.001*	-0.014	-0.041*	12.294	0.681
	(0.364)	(0.002)	(1.634)	(0.135)	(0.001)	(0.001)	(0.031)	(0.021)	(26.358)	(0.498)
Crown of Aragon	-9.23***	-0.028	10.927	-1.096	0.01	-0.023**	0.566**	0.348	63.47	6.159
	(2.981)	(0.024)	(14.295)	(1.368)	(0.01)	(0.009)	(0.263)	(0.238)	(74.535)	(4.494)
Madrid	15.818***	-0.085***	61.499***	-4.525***	-0.002	-0.029***	2.154***	1.163***	-259.729***	-36.457***
	(4.251)	(0.03)	(12.568)	(1.463)	(0.01)	(0.008)	(0.286)	(0.221)	(85.2)	(4.25)
Distance to the coast	1.939	0.022	16.951**	-1.917**	0.009	-0.002	0.378**	0.256**	-59.492	-1.188
	(2.295)	(0.015)	(7.295)	(0.794)	(0.006)	(0.004)	(0.154)	(0.118)	(69.618)	(2.31)
Border with Portugal	0.485	0.044*	-29.764*	3.486**	-0.003	0.009	-0.144	-0.186	-19.138	9.444*
	(3.188)	(0.024)	(17.64)	(1.465)	(0.009)	(0.009)	(0.23)	(0.158)	(96.896)	(4.886)
Altitude (average)	0.003	0.0001*	0.027	-0.006**	0.000	0.000	0.001	0.001**	0.35	0.026***
	(0.007)	(0.0000)	(0.022)	(0.002)	(0.000)	(0.000)	(0.000)	(0.000)	(0.236)	(0.007)
Soil quality	4.599	0.055	56.551**	-3.882	0.047**	0.032*	0.629	0.399	309.43*	-12.351*
	(6.752)	(0.062)	(23.139)	(2.595)	(0.023)	(0.016)	(0.431)	(0.373)	(178.396)	(6.464)
Mining output in 1860	0.228	0.002	-1.595**	-0.012	0.001	0.001	-0.007	0.007	-2.342	-0.144
	(0.247)	(0.002)	(0.734)	(0.09)	(0.001)	(0.000)	(0.016)	(0.013)	(6.13)	(0.235)
R^2	0.44	0.45	0.62	0.64	0.45	0.43	0.65	0.59	0.23	0.50
Number of observations	50	50	50	50	50	50	50	50	50	50

Notes : Variables descriptions are provided in Table A1. GDP and industrial output variables are all expressed in pesetas. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

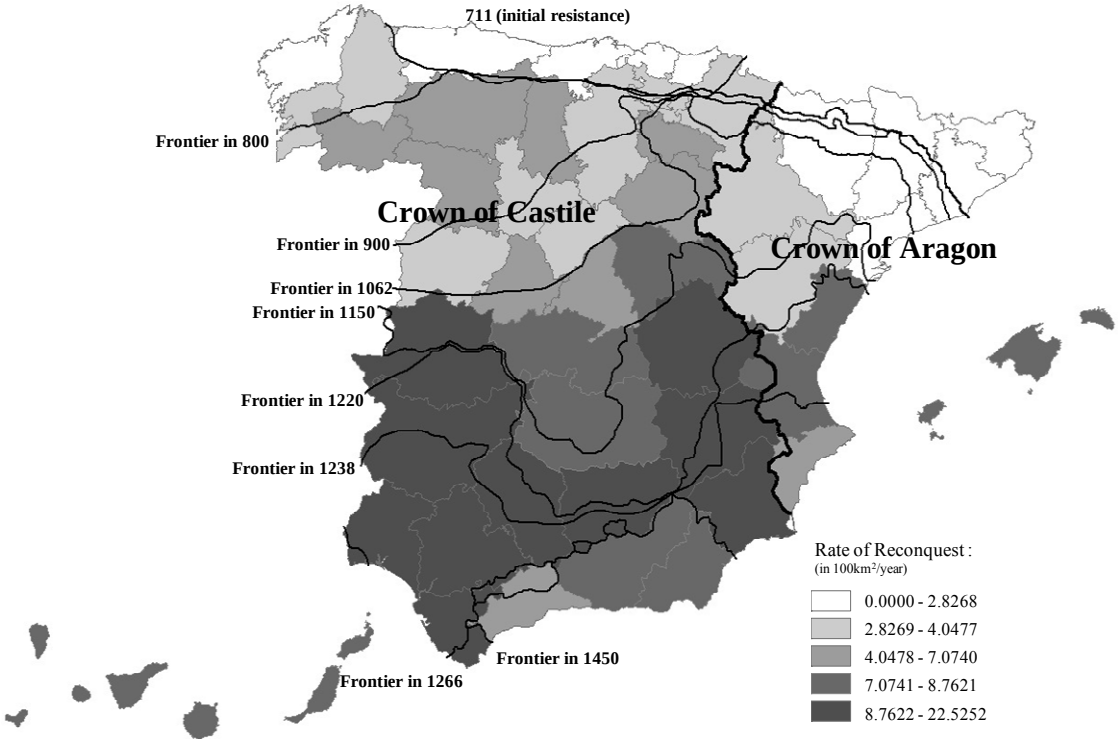

Figure 1. The Spanish Reconquest (711-1492)

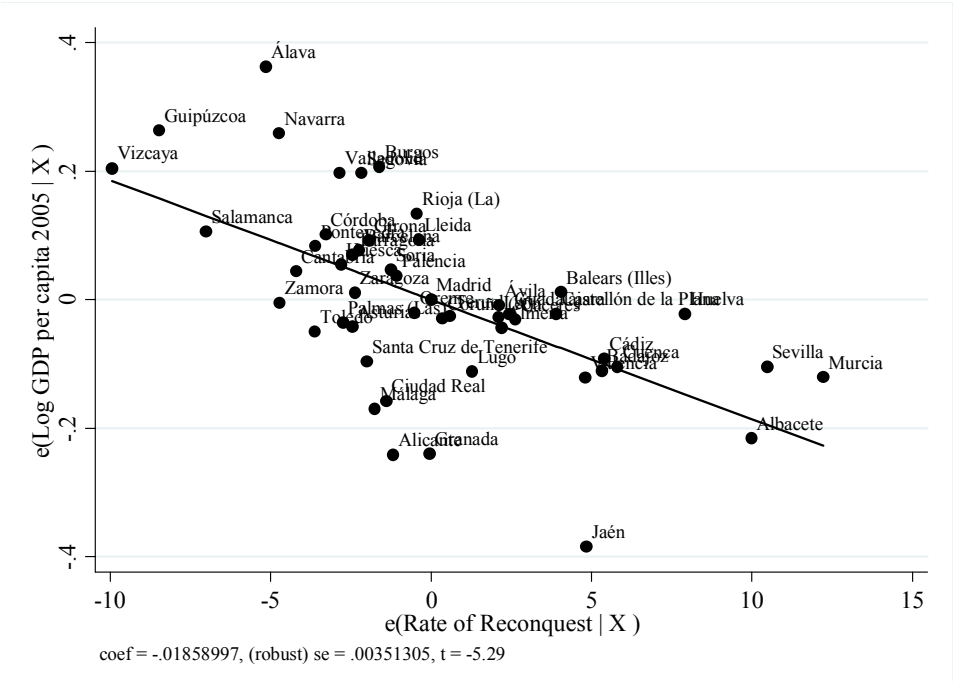

Figure 2. Conditional relationship between current GDP per capita and rate of Reconquest

(NOT FOR PUBLICATION)

Unpublished appendix

to

"The Economic Consequences of the Spanish Reconquest: The Long-term Effects of Medieval Conquest and Colonization"

Daniel Oto-Peralías and Diego Romero-Ávila

December 2014

This appendix includes:

Table A1. Description of variables.

Table A2. Descriptive statistics.

Table A3. Replication of Table 1 using Conley standard errors.

Table A4. Replication of Table 2 using Conley standard errors.

Table A5. Replication of Table 3 using Conley standard errors.

Table A6. Including geographic coordinates and a cubic polynomial in longitude and latitude.

Table A7. Replication of Table 1 using the Post-1212 conquest indicator.

Table A8. Replication of Table 2 using the Post-1212 conquest indicator.

Table A9. Replication of Table 1 using an alternative indicator of rate of Reconquest.

Table A10. Replication of Table 2 using an alternative indicator of rate of Reconquest.

Table A11. Replication of Table 3 using an alternative indicator of rate of Reconquest.

Table A12. Replication of Table 6 using the complete set of controls.

Table A13. Correlations between indicators of pre-Reconquest development and suitability for agriculture.

Table A14. Replication of Table 6 using the Post-1212 conquest indicator.

Table A15. Replication of Table 6 using the Post-1212 conquest indicator and the complete set of controls.

Table A16. Replication of Table 7 using the Post-1212 conquest indicator.

Table A17. The effect of rate of Reconquest on the average size of municipalities.

Figure A1. Current income distribution in the Spanish provinces.

TABLE A1 - DESCRIPTION OF VARIABLES

Variable	Description	Source
Main dependent variables		
Log GDP *per capita*	Lof of GDP *per capita* in 1860, 1930, 1971 and 2005.	Rosés et al (2010) for 1860 and 1930; Carreras et al. (2005) for 1971; Spanish Regional Accounts. Base 2000 (INE) for 2005.
Log industrial output *per capita*	Log of industrial output *per capita* in 1860, 1930, 1970 and 2005.	Rosés et al. (2010) for 1860; Carreras (2005) for 1930 and 1970; Spanish Regional Accounts. Base 2000 (INE) for 2005.
Reconquest indicators		
Rate of Reconquest	This variable is created (using ArcGIS) as follows. We overlap the Reconquest map from Mestre-Campi and Sabaté (1998) with a geo-referenced map of the Spanish provinces. We also overlap a map of the initial resistance area (http://explorethemed.com/Reconquista.asp) with the map of Spanish provinces. We then draw the lines of each stage of the Reconquest as well as a line separating Castile and Aragon. We calculate the surface area corresponding to each stage of the Reconquest for Castile and Aragon. Next, we divide the reconquered area in each stage by the duration in years that each stage lasted for, thus obtaining a measure of the rate of Reconquest. Since the area of a province can partially cover more than one stage of the Reconquest, we calculate its area within each of the respective stages. We then compute the weighted average of the rate of Reconquest of each province, where the weights are given by the percentage of the province area conquered in each stage. The variable is expressed in 100 km^2/year.	Authors' elaboration using information from Mestre-Campi and Sabaté (1998).
Post-1212 conquest	Dummy variable indicating whether the province was reconquered after the collapse of the Almohad Empire in 1212 in the battle of Las Navas de Tolosa.	Authors' elaboration using information from Mestre-Campi and Sabaté (1998) and Guichard (2002), among others.
Rate of Reconquest (alternative)	This indicator is calculated as follows: (i) Provinces are classified according to the century in which they were reconquered. In this way, the Reconquest is divided in stages of the same duration. The five Cantabrian provinces not occupied by the Muslim are considered separately, with a value equal to 0. (ii) For each century, we compute the total land area reconquered in that period, differentiating between the areas conquered by Castile and Aragon. (iii) Then, the rate of Reconquest in a given province is the total land area that was reconquered in the century in which that province was reconquered, expressed in 100 km^2/year.	Authors' elaboration using information from Mestre-Campi and Sabaté (1998).
Controls		
Agricultural land in 1900 (%)	Percentage of agricultural area over provincial surface area in 1900.	Barciela et al. (2005).
Arable land in 1962 (%)	Percentage of arable land over total surface area.	1962 agricultural census (INE) (www.ine.es).
Average altitude	Average altitude of the province (simple average of the municipalities of the province)	Geographic Nomenclature of Municipalities and Local Population (Instituto Geográfico Nacional -IGN- 2012).
Average urban population density at conquest in the Christian kingdom	Average density of urban population (inhabitants in cities greater than or equal to 5000 inhabitants over provincial surface area in km^2) in Castile or Aragon just before the conquest of the province.	Authors' elaboration using information from Bairoch (1988).
Border with Portugal	Dummy variable indicating whether the province is in the border with Portugal.	Authors' elaboration.
Centuries under Muslim domination	Number of centuries that the province was under Muslim domination. It is calculated as the closest integer to the difference between the year of the Reconquest of the capital city of the province and the date of the Muslim invasion (711).	Authors' elaboration using information from Mestre-Campi and Sabaté (1998) and Guichard (2002), among others.
Coal dummy in 1860	Dummy variable indicating whether the province had some coal mine in 1860.	1860-1861 Statistical Yearbook of Spain (Junta General de Estadística -JGE- 1863).
Coal output in 1860	Logarithm of the value created by coal mining in 1860.	1860-1861 Statistical Yearbook of Spain (JGE 1863a).

TABLE A1 - DESCRIPTION OF VARIABLES (*Continued*)

Variable	Description	Source
Controls (*continued*)		
Coast dummy	Dummy variable indicating whether the province has coast.	Authors' elaboration.
Coast length/ surface area	Length of coast over surface area.	Physical variables. Territory (INE) (www.ine.es).
Crown of Aragon	Dummy variable capturing whether the province belonged to the Crown of Aragon.	Authors' elaboration.
Distance from London and from Paris	Linear distance between the centroid of the province and London or Paris (in 100 km), using ArcGIS.	Authors' elaboration.
Distance from Madrid	Linear distance between the centroid of the province and Madrid (in 100 km), using ArcGIS.	Authors' elaboration.
Distance to the coast	Linear distance between the centroid of the province and the nearest point of the coast (in 100 km), using ArcGIS. For the three provinces that are islands, this variable takes the value of 0.	Authors' elaboration.
Humidity, Temperature and Rainfall	Annual average temperature, rainfall and relative humidity.	Standard Climate Values (Agencia Estatal de Meteorología 2012).
Island	Dummy variable indicating whether the province is an island.	Authors' elaboration.
Latitude	Latitude of the centroid of the province, using ArcGIS.	Authors' elaboration.
Land suitability for cotton	Provincial average of the crop suitability index for low input level rain-fed cotton.	Authors' elaboration using data from FAO/IIASA (2010).
Land suitability for sugar	Provincial average of the crop suitability index for low input level rain-fed sugarcane.	Authors' elaboration using data from FAO/IIASA (2010).
Land suitability for tobacco	Provincial average of the crop suitability index for low input level rain-fed tobacco.	Authors' elaboration using data from FAO/IIASA (2010).
Madrid	Dummy variable indicating the capital city of Spain.	Authors' elaboration.
Mediterranean Sea, Atlantic Ocean, Cantabrian Sea	Dummy variables indicating whether the province has access to the Mediterranean Sea, the Atlantic Ocean or the Cantabrian Sea.	Authors' elaboration.
Mining output in 1860	Logarithm of the value created by the mining industry in 1860.	1860-1861 Statistical Yearbook of Spain (JGE 1863a).
Roman roads density	Length of Roman roads (in meters) over provincial surface area (in km^2).	Authors' elaboration using ArcGIS and data from García de Cortázar (2007).
Ruggedness	Coefficient of variation of the altitude of the municipalities of the province.	Geographic Nomenclature of Municipalities and Local Population (Instituto Geográfico Nacional -IGN- 2012).
Soil quality	Average of seven key soil dimensions important for crop production: nutrient availability, nutrient retention capacity, rooting conditions, oxygen availability to roots, excess salts, toxicities, and workability. For each component, we calculate the provincial average value.	Authors' elaboration using data from Fischer et al. (2008).
Urban population density in 800	Density of urban population (inhabitants in cities greater than or equal to 5000 inhabitants over provincial surface area in km^2) in 800.	Bairoch (1988).
Urban population density at conquest	Density of urban population (inhabitants in cities greater than or equal to 5000 inhabitants over provincial surface area in km^2) in the latest available date previous to the conquest of the province by the Christians.	Authors' elaboration using information from Bairoch (1988).
Wooded steppe (% area)	Percentage of province area that was subject to wooded steppe 10,000 years ago.	Authors' elaboration using ArcGIS and information from Olsson and Paik (2013).
Years since transition to agriculture	This variable is constructed for each province using the following equation: $Y(S_0)=\Sigma\ \lambda_i\ Y(S_i)$, where $Y(S_0)$ is the predicted date of adoption of agriculture for the centroid of each respective province (denoted by S_0). Σ means a sum from site 1 to N, where N is the number of measured sample points surrounding S_0. We restrict the measured sample points to those located in the Iberian Peninsula that make a total of 13 Neolithic sites. $Y(S_i)$ is the observed value of the predicted date of early adoption of agriculture in Neolithic site S_i. λ_i are weights calculated as $\lambda_i= (D/d_i)/\Sigma(D/d_i)$, where $\Sigma\ \lambda_i = 1$ and d_i is the distance between S_0 and each Neolithic site S_i. $D = \Sigma d_i$ is the total sum of the 13 d_i for the centroid of each respective province (S_0). Note that (D/d_i) implies that we assign greater weights to those sites located closer to the centroid of each province.	Authors' elaboration using ArcGIS and data from Pinhasi, Fort and Ammerman (2005).

TABLE A1 - DESCRIPTION OF VARIABLES (*Continued*)

Variable	Description	Source
Variables of pre-Reconquest development		
Ancient settlements over surface area	Number of ancient (pre-medieval) settlements over provincial surface area (in 1,000 km^2).	Authors' elaboration using ArcGIS and data from Pleiades (2014).
City population in 800	Inhabitants (in thousands) in cities greater than or equal to 5000 inhabitants in 800.	Bairoch (1988).
Coinage of imperial Roman coins over surface area	Number of points of coinage of imperial Roman coins over provincial surface area (in 1,000 km^2).	Authors' elaboration using data from García de Cortázar (2007).
Number of bishoprics circa 600 over surface area	Number of bishoprics circa 600 over provincial surface area (in 1,000 km^2).	Authors' elaboration using data from Digital Atlas of Roman and Medieval Civilizations.
Roman roads density: Main roads	Length of the main Roman roads (in meters) over provincial surface area (in km^2).	Authors' elaboration using ArcGIS and data from García de Cortázar (2007).
Roman villas over surface area	Number of Roman villas over provincial surface area (in 1,000 km^2).	Authors' elaboration using ArcGIS and data from Pleiades (2014).
UK and US industrial output		
Total UK industrial output	Total industrial output of the United Kingdom in 1860, 1930, 1971 and 2005. Base year is 1913.	Mitchell (2007a) and IMF (2013).
Total US industrial output	Total industrial output of the United States in 1860, 1930, 1971 and 2005. Base year is 1899.	Mitchell (2007b) and IMF (2013).
Variables used as mechanisms		
Religiosity (Clerical population in 1797)	Percentage of population that is member of the clergy (both secular and regular) in 1797. We impute data from historical regions to current provinces by estimating (with ArcGIS) the percentage of area in each province that corresponds to each historical region.	Authors' elaboration using data from Morales (1998) and 1797 population census (INE, 1992).
Moorish ancestry	Proportion of Moorish ancestry in the current population of each province.	Adams et al. (2008).
Percentage of landless workers in 1797	Percentage of landless workers over the agricultural active population in 1797. We impute data from historical regions to current provinces by estimating (with ArcGIS) the percentage of area in each province that corresponds to each historical region.	Authors' elaboration using data from Morales (1998) and 1797 population census (INE, 1992).
Percentage of villages and cities under Church jurisdiction in 1797	Variable measuring the percentage of villages and cities ("villas" and "ciudades") under ecclesiastical jurisdiction in 1797. We impute data from historical regions to current provinces by estimating (with ArcGIS) the percentage of area in each province that corresponds to each historical region.	Authors' elaboration using data from Morales (1998) and 1797 population census (INE, 1992).
Percentage of villages and cities under seigneurial jurisdiction in 1797	Variable measuring the percentage of villages and cities ("villas" and "ciudades") under either noble or military order jurisdiction in 1797. We impute data from historical regions to current provinces by estimating (with ArcGIS) the percentage of area in each province that corresponds to each historical region.	Authors' elaboration using data from Morales (1998) and 1797 population census (INE, 1992).
Population density in 1594	Number of inhabitants per square kilometer in 1594. We impute data from historical regions to current provinces by estimating (with ArcGIS) the percentage of area in each province that corresponds to each historical region.	Authors' elaboration using data from 1858 Statistical Yearbook of Spain (JGE 1860) and INE (1982).
Market fragmentation (Road density in 1760)	Kilometers of roads in 1760 ("caminos de ruedas") over provincial surface area (in km^2).	Authors' elaboration using ArcGIS and data from IGN (2008).

TABLE A1 - DESCRIPTION OF VARIABLES (*Continued*)

Variable	Description	Source
Outcomes variables in the 1860s		
Agricultural productivity	Agricultural output in 1860 divided by the number of male agricultural workers.	Authors' elaboration from Rosés et al. (2010), Erdozáin and Mikelarena (1999), and the 1860 population census (JGE 1863b).
Agriculture's share	Agricultural output in 1860 divided by total provincial output.	Rosés et al. (2010).
Convicts and Crimes	Total crimes committed over total population in 1860 (in thousands). Total convicts over total population in 1860 (in thousands).	1860-1861 Statistical Yearbook of Spain (JGE 1863a); 1860 population census (JGE 1863b).
Infant mortality	Infant mortality rates. Probability of dying (per thousand) of individuals under one year in 1860.	Regional and provincial mortality tables. Spain 1860 (Proyecto-Nisal, 2014).
Life expectancy	Life expectancy at birth in 1860.	Regional and provincial mortality tables. Spain 1860 (Proyecto-Nisal, 2014).
Literacy rate	Total literacy rates for the adult population in 1860.	Núñez (1992).
Percentage of electors and voters	Electors (or voters) in the parliamentary election of 1865 as a percentage of the male population aged 25 or older.	Authors' elaboration from the 1862-1865 Statistical Yearbook of Spain (JGE 1865) and the 1860 population census (JGE 1863b).
School enrollment	Total children enrolled over the population under 15 years.	Authors' elaboration from the 1860 population census (JGE 1863b).
Variables at the municipal level		
Altitude	Altitude corresponding to the municipality centroid.	Geographic Nomenclature of Municipalities and Local Population (IGN 2012).
Annual average temperature	Annual average temperature corresponding to the municipality centroid (in centigrade degrees multiplied by 10).	Authors' elaboration using ArcGIS and data from WorldClim (Hijmans et al., 2005).
Annual rainfall	Annual precipitation corresponding to the municipality centroid (in millimeters).	Authors' elaboration using ArcGIS and data from WorldClim (Hijmans et al., 2005).
Average number of vehicles per household	Number of vehicles (cars and vans) for personal transport owned by households, divided by the number of households. The year of measurement is 2001.	INE. Censos de Población y Viviendas 2001 (www.ine.es).
Average socioeconomic condition	Average of class marks of socioeconomic conditions of individuals (multiplied by 100). Socioeconomic condition is obtained by combining information from the variables occupation, activity and professional situation. To illustrate the construction of this variable, a (maximum) class mark equal to 3 is given to non-agricultural entrepreneurs with employees, and a (minimun) class mark of 0 to those unemployed who have not worked previously. The year of measurement is 2001.	INE. Censos de Población y Viviendas 2001 (www.ine.es).
Distance to Madrid	Linear distance between the centroid of the municipality and Madrid (in km), using ArcGIS.	Authors' elaboration.
Distance to the coast	Linear distance between the centroid of the municipality and the nearest point of the coast (in km), using ArcGIS.	Authors' elaboration.
Distance to the nearest capital	Linear distance between the centroid of the municipality and the nearest provincial capital (in km), using ArcGIS.	Authors' elaboration.
Excess salts	This variable assesses the following soil characteristics: "*Soil salinity, soil sodicity and soil phases influencing salt conditions*". We calculate the average value of the municipality.	Authors' elaboration using ArcGIS and data from Fischer et al. (2008).
Labor force activity rate	Labor force activity rate of the population between 20 and 59 years old. The year of measurement is 2001.	INE. Censos de Población y Viviendas 2001 (www.ine.es).

TABLE A1 - DESCRIPTION OF VARIABLES (*Continued*)

Variable	Description	Source
Variables at the municipal level (*continued*)		
Latitude	Latitude of the municipality centroid.	Geographic Nomenclature of Municipalities and Local Population (IGN 2012).
Nutrient availability	This variable assesses the following soil characteristics: "*Soil texture, soil organic carbon, soil pH, total exchangeable bases*". We calculate the average value of the municipality.	Authors' elaboration using ArcGIS and data from Fischer et al. (2008).
Nutrient retention capacity	This variable assesses the following soil characteristics: "*Soil organic carbon, soil texture, base saturation, cation exchange capacity of soil and of clay fraction*". We calculate the average value of the municipality.	Authors' elaboration using ArcGIS and data from Fischer et al. (2008).
Oxygen availability to roots	This variable assesses the following soil characteristics: "*Soil drainage and soil phases affecting soil drainage*". We calculate the average value of the municipality.	Authors' elaboration using ArcGIS and data from Fischer et al. (2008).
Population	Log of total population in 2001.	INE. Censos de Población y Viviendas 2001 (www.ine.es).
Provincial capital dummy	Dummy variable indicating whether the municipality is a provincial capital city.	Authors' elaboration.
Reconquered area	This variable is created in a similar way to the provincial level variable. In this case, we assign to each municipality the reconquered area corresponding to the stage of the Reconquest to which the municipality centroid belongs.	Authors' elaboration using ArcGIS and information from Mestre-Campi and Sabaté (1998).
Rooting conditions	This variable assesses the following soil characteristics: "*Soil textures, bulk density, coarse fragments, vertic soil properties and soil phases affecting root penetration and soil depth and soil volume*". We calculate the average value of the municipality.	Authors' elaboration using ArcGIS and data from Fischer et al. (2008).
Toxicity	This variable assesses the following soil characteristics: "*Calcium carbonate and gypsum*". We calculate the average value of the municipality.	Authors' elaboration using ArcGIS and data from Fischer et al. (2008).
Workability	This variable assesses the following soil characteristics: "*Soil texture, effective soil depth/volume, and soil phases constraining soil management (soil depth, rock outcrop, stoniness, gravel/concretions and hardpans)*". We calculate the average value of the municipality.	Authors' elaboration using ArcGIS and data from Fischer et al. (2008).

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TABLE A1 - DESCRIPTION OF VARIABLES (*Continued*)

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The other variables referred to the Spanish National Statistics Institute (INE) are available at http://www.ine.es/

TABLE A2 - DESCRIPTIVE STATISTICS

Variable	Obs	Mean	Std. Dev.	Min	Max
Main dependent variables					
Log GDP per capita 1860 (ptas)	50	5.82	0.36	4.38	6.53
Log GDP per capita 1930 (ptas)	50	7.09	0.33	6.54	7.99
Log GDP per capita 1971 (ptas)	50	13.21	0.27	12.75	13.70
Log GDP per capita 2005 (€)	50	9.87	0.20	9.51	10.28
Log industrial output per capita 1860 (ptas)	50	4.06	0.55	2.73	5.44
Log industrial output per capita 1930 (ptas)	50	5.45	0.70	4.26	7.01
Log industrial output per capita 1970 (ptas)	50	9.77	0.59	8.67	11.07
Log industrial output per capita 2005 (€)	50	7.96	0.58	6.68	9.16
Reconquest indicators					
Rate of Reconquest	50	7.08	5.94	0.00	22.53
Post-1212 conquest	50	0.36	0.48	0.00	1.00
Rate of Reconquest (Alternative)	50	5.73	4.86	0.00	14.66
Controls					
Agricultural land in 1900 (%)	48	0.33	0.15	0.06	0.71
Arable land in 1962 (%)	50	0.40	0.17	0.04	0.80
Average altitude	50	534.90	276.04	111.01	1044.14
Average urban population density at conquest in the Christian kingdom	50	0.54	0.53	0.00	1.76
Border with Portugal	50	0.14	0.35	0.00	1.00
Centuries under Muslim domination	50	3.64	2.38	0.00	8.00
Coal dummy in 1860	50	0.18	0.39	0.00	1.00
Coal output in 1860	50	1.90	4.18	0.00	14.84
Coast dummy	50	0.44	0.50	0.00	1.00
Coast length/ surface area	50	0.03	0.06	0.00	0.29
Crown of Aragon	50	0.22	0.42	0.00	1.00
Distance from London	50	13.20	3.90	9.41	29.57
Distance from Madrid	50	3.57	3.15	0.00	18.34
Distance from Paris	50	11.13	4.04	7.26	28.37
Distance to the coast	50	1.10	0.94	0.00	3.30
Humidity	50	66.84	5.29	57.00	78.00
Temperature	50	14.64	2.82	10.10	21.20
Rainfall	50	575.28	320.77	134.00	1691.00
Island	50	0.06	0.24	0.00	1.00
Latitude	50	40.12	3.17	27.95	43.29
Land suitability for cotton	50	668.20	761.35	0.00	2379.11
Land suitability for sugar	50	2.24	7.46	0.00	34.53
Land suitability for tobacco	50	1327.79	528.66	171.52	2681.86
Madrid	50	0.02	0.14	0.00	1.00
Atlantic Ocean	50	0.12	0.33	0.00	1.00
Cantabrian Sea	50	0.10	0.30	0.00	1.00
Mediterranean Sea	50	0.22	0.42	0.00	1.00

TABLE A2 - DESCRIPTIVE STATISTICS (*Continued*)

Variable	Obs	Mean	Std. Dev.	Min	Max
Controls *(Continued)*					
Mining output in 1860	50	10.32	6.04	0.00	17.90
Roman roads density	50	27.04	14.06	0.00	56.45
Roughness	50	0.52	0.34	0.06	1.36
Soil quality	50	-1.54	0.22	-2.13	-1.04
Urban population density in 800	50	0.47	1.72	0.00	11.62
Urban population density at conquest	50	0.86	1.90	0.00	7.91
Wooded steppe (% area)	50	0.38	0.46	0.00	1.00
Years since transition to agriculture	50	7445	34	7339	7530
Variables of pre-Reconquest development (not described yet)					
Ancient settlements over surface area	50	1.25	1.14	0.00	5.93
City population in 800	50	6.50	23.84	0.00	160.00
Coinage of imperial Roman coins over surface area	50	0.06	0.09	0.00	0.40
Number of bishoprics circa 600 over surface area	50	0.11	0.11	0.00	0.39
Roman roads density: Main roads	50	6.28	7.04	0.00	30.22
Roman villas over surface area	50	0.26	0.29	0.00	1.57
Variables used as mechanisms					
Religiosity (Clerical population in 1797)	50	0.02	0.00	0.01	0.03
Moorish ancestry	48	8.76	8.01	0.00	21.70
Percentage of landless workers in 1797	50	48.12	21.87	3.10	86.01
Percentage of villages and cities under Church jurisdiction in 1797	50	0.10	0.13	0.00	0.43
Percentage of villages and cities under seigneurial jurisdiction in 1797	50	53.56	20.30	0.00	84.88
Population density in 1594	47	17.98	6.67	7.34	36.24
Market fragmentation (Road density in 1760)	50	0.02	0.01	0.00	0.06
Outcomes variables in the 1860s					
Agricultural productivity	50	653.31	252.33	122.50	1582.16
Agriculture's share	50	42.81	12.90	8.16	72.28
Crimes	50	2.28	0.95	0.63	5.20
Convicts	50	1.50	0.70	0.43	3.35
Infant mortality	50	249.41	52.47	131.58	344.72
Life expectancy	50	29.82	5.09	19.68	45.88
Literacy rate	50	27.40	10.71	14.00	53.00
Percentage of electors	50	0.11	0.03	0.06	0.21
Percentage of voters	50	0.06	0.02	0.02	0.13
School enrollment	50	0.23	0.08	0.08	0.42

TABLE A2 - DESCRIPTIVE STATISTICS (*Continued*)

Variable	Obs	Mean	Std. Dev.	Min	Max
Variables at the municipal level					
Altitude	8117	613.46	344.00	0.00	1695.00
Annual average temperature	8197	127.51	24.80	24.00	196.00
Annual rainfall	8197	604.79	225.89	113.00	1522.00
Average number of vehicles per household	8108	0.96	0.28	0.00	2.51
Average socioeconomic condition	8108	95.12	14.99	31.00	186.00
Distance to Madrid	8195	290.99	202.62	0.00	1950.28
Distance to the coast	8195	131.93	98.90	0.03	370.87
Distance to the nearest capital	8195	44.14	24.42	0.00	230.53
Excess salts	8137	-1.13	0.41	-5.95	-1.00
Labor force activity rate	8108	74.37	7.10	27.27	100.00
Latitude	8117	40.73	2.12	27.70	43.74
Nutrient availability	8137	-1.26	0.44	-6.14	-1.00
Nutrient retention capacity	8137	-1.17	0.36	-6.08	-1.00
Oxygen availability to roots	8137	-1.03	0.19	-5.95	-1.00
Population	8108	6.55	1.75	1.95	14.89
Provincial capital dummy	8195	0.01	0.08	0.00	1.00
Reconquered area	8191	5.90	5.32	0.00	22.66
Rooting conditions	8137	-2.48	1.01	-6.26	-1.00
Toxicity	8137	-1.12	0.30	-5.95	-1.00
Workability	8137	-2.40	0.77	-6.24	-1.00

TABLE A3. REPLICATION OF TABLE 1 USING CONLEY STANDARD ERRORS

Dependent variable is log GDP per capita in 2005

		Neolithic controls		*Historical controls*						
	Basic relation-ship	Wooded steppe (% area)	Years since transition to agriculture	Roman roads density	Urban population density in 800	Urban population density at conquest	Av. urban pop.dens. at conquest in the Christian kingdom	Centuries under Muslim domination	Crown of Aragon	Madrid
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rate of Reconquest	-0.018***	-0.019***	-0.018***	-0.019***	-0.017***	-0.017***	-0.019***	-0.016***	-0.016***	-0.018***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Additional control		-0.046	0.0001	0.0004	-0.015**	-0.007	0.014	-0.010	0.139***	0.356***
		(0.058)	(0.001)	(0.002)	(0.007)	(0.014)	(0.055)	(0.012)	(0.048)	(0.026)
R^2	0.30	0.31	0.30	0.30	0.31	0.30	0.3	0.31	0.38	0.36
Number of observations	50	50	50	50	50	50	50	50	50	50

	Climatic, geographic and topographic factors									
	Latitude	Tempera-ture	Rainfall	Humidity	Soil quality	Land suitability for sugar	Land suitability for cotton	Land suitability for tobacco	Average altitude	Ruggedness
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Rate of Reconquest	-0.017***	-0.02***	-0.019***	-0.015***	-0.023***	-0.019***	-0.02***	-0.018***	-0.019***	-0.019***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.006)	(0.005)	(0.004)	(0.004)
Additional control	0.006	0.005	0.0000	0.006	0.369***	0.001	0.000	0.000	-0.0001*	0.097
	(0.006)	(0.007)	(0.000)	(0.007)	(0.078)	(0.002)	(0.000)	(0.000)	(0.000)	(0.062)
R^2	0.31	0.30	0.30	0.32	0.46	0.30	0.30	0.30	0.33	0.33
Number of observations	50	50	50	50	50	50	50	50	50	50

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Conley standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE A4. REPLICATION OF TABLE 2 USING CONLEY STANDARD ERRORS

Dependent variable is log GDP per capita in 2005

	Geographic controls related to transportation costs							
	Medite-rranean Sea	Atlantic Ocean	Cantabrian Sea	Island	Coast Dummy	Coast length/ surface area	Distance to the coast	Border with Portugal
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rate of Reconquest	-0.019***	-0.018***	-0.019***	-0.019***	-0.018***	-0.018***	-0.018***	-0.016***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
Additional control	0.079	-0.026	-0.02	0.08	0.038	0.329	-0.047*	-0.164***
	(0.054)	(0.061)	(0.082)	(0.065)	(0.045)	(0.303)	(0.028)	(0.053)
R^2	0.33	0.30	0.30	0.31	0.31	0.31	0.35	0.38
Number of observations	50	50	50	50	50	50	50	50

	Geographic controls related to transportation costs (continued)			*Natural resources endowments*				
	Distance from Madrid	Distance from London	Distance from Paris	Agric. land 1900 (%)	Arable land 1962 (%)	Mining output in 1860	Coal dummy in 1860	Coal output in 1860
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Rate of Reconquest	-0.018***	-0.016***	-0.015***	-0.02***	-0.018***	-0.019***	-0.018***	-0.018***
	(0.004)	(0.004)	(0.004)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Additional control	0.002	-0.007	-0.01	0.156	-0.069	0.007**	0.061	0.003
	(0.004)	(0.005)	(0.007)	(0.187)	(0.152)	(0.003)	(0.054)	(0.005)
R^2	0.30	0.32	0.33	0.31	0.30	0.35	0.31	0.3
Number of observations	50	50	50	48	50	50	50	50

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Conley standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE A5. REPLICATION OF TABLE 3 USING CONLEY STANDARD ERRORS

Dependent variable is log GDP per capita in 2005

	Baseline specification	Leverage	Standard. residuals/ Student. residuals	Cook's distance/ Dfits	Welsch distance	DF-Beta	Initial resistance provinces removed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rate of Reconquest	-0.019***	-0.017***	-0.016***	-0.019***	-0.017***	-0.02***	-0.015***
	(0.003)	(0.004)	(0.002)	(0.004)	(0.004)	(0.003)	(0.004)
Urban population density in 800	-0.016**	-0.047	-0.015***	0.006	-0.047	-0.061**	-0.017**
	(0.007)	(0.032)	(0.003)	(0.028)	(0.032)	(0.027)	(0.006)
Crown of Aragon	0.093**	0.094**	0.12***	0.087**	0.094**	0.105***	0.127***
	(0.04)	(0.04)	(0.03)	(0.04)	(0.04)	(0.036)	(0.043)
Madrid	0.412***	n.a.	0.409***	0.435***	0.397***	0.389***	0.417***
	(0.056)	n.a.	(0.048)	(0.058)	(0.057)	(0.047)	(0.052)
Distance to the coast	-0.027	-0.022	-0.04	-0.051*	-0.022	-0.012	-0.023
	(0.029)	(0.027)	(0.025)	(0.027)	(0.027)	(0.023)	(0.025)
Border with Portugal	-0.034	-0.043	-0.041	-0.019	-0.043	-0.062	-0.052
	(0.041)	(0.041)	(0.033)	(0.043)	(0.041)	(0.038)	(0.039)
Altitude (average)	-0.0001	-0.0001	0.0000	0.0000	-0.0001	-0.0001	0.0000
	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)	(0.0001)
Soil quality	0.319***	0.32***	0.307***	0.32***	0.32***	0.29***	0.223***
	(0.079)	(0.08)	(0.069)	(0.08)	(0.08)	(0.07)	(0.076)
Mining output in 1860	0.006**	0.005**	0.006***	0.006**	0.005**	0.004*	0.004
	(0.003)	(0.003)	(0.002)	(0.003)	(0.003)	(0.002)	(0.003)
R^2	0.68	0.65	0.8	0.68	0.67	0.75	0.67
Number of observations	50	48	46	48	49	44	45

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Conley standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively. Outliers are the following: Column 2, Madrid and Córdoba; Column 3, Alicante, Granada, Jaén and Álava; Column 4, Granada and Córdoba. Column 5, Córdoba. Column 6, Córdoba, Huelva, Jaén, Murcia, Sevilla and Álava. Initial resistance provinces in column 7 are Asturias, Cantabria, Guipúzcoa, Vizcaya and Álava.

TABLE A6. INCLUDING GEOGRAPHIC COORDINATES AND A CUBIC POLYNOMIAL IN LONGITUDE AND LATITUDE

Dependent variable is log GDP per capita in 2005

	Including geographic coordinates (latitude & longitude)	Including a cubic polynomial in longitude and latitude
	(1)	(2)
Rate of Reconquest	-0.01***	-0.01**
	(0.003)	(0.003)
Urban population density in 800	-0.02**	-0.01***
	(0.007)	(0.005)
Crown of Aragon	0.06	-0.036
	(0.053)	(0.051)
Madrid	0.52***	0.45***
	(0.048)	(0.028)
Distance to the coast	-0.08***	-0.09***
	(0.022)	(0.025)
Border with Portugal	-0.04	-0.29***
	(0.041)	(0.056)
Altitude (average)	0.00	0.00
	(0.000)	(0.000)
Soil quality	0.60***	0.29**
	(0.092)	(0.114)
Mining output in 1860	0.00	0.00
	(0.003)	(0.002)
R^2	0.81	0.93
Number of observations	50	50

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE A7. REPLICATION OF TABLE 1 USING THE POST-1212 CONQUEST INDICATOR

Dependent variable is log GDP per capita in 2005

		Neolithic controls		*Historical controls*						
	Basic relation-ship	Wooded steppe (% area)	Years since transition to agriculture	Roman roads density	Urban population density in 800	Urban population density at conquest	Av. urban pop.dens. at conquest in the Christian kingdom	Centuries under Muslim domination	Crown of Aragon	Madrid
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Post-1212 conquest	-0.182***	-0.196***	-0.173***	-0.181***	-0.156***	-0.167***	-0.273***	-0.139*	-0.182***	-0.172***
	(0.051)	(0.056)	(0.053)	(0.051)	(0.051)	(0.057)	(0.064)	(0.079)	(0.043)	(0.051)
Additional control		-0.047	0.001	-0.001	-0.026***	-0.007	0.126*	-0.012	0.195***	0.293***
		(0.064)	(0.001)	(0.002)	(0.008)	(0.014)	(0.067)	(0.016)	(0.04)	(0.034)
R^2	0.20	0.21	0.20	0.2	0.24	0.2	0.23	0.20	0.36	0.24
Number of observations	50	50	50	50	50	50	50	50	50	50

	Climatic, geographic and topographic factors									
	Latitude	Tempera-ture	Rainfall	Humidity	Soil quality	Land suitability for sugar	Land suitability for cotton	Land suitability for tobacco	Average altitude	Ruggedness
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Post-1212 conquest	-0.161*	-0.271***	-0.182***	-0.137**	-0.254***	-0.189***	-0.142**	-0.158***	-0.221***	-0.213***
	(0.081)	(0.086)	(0.055)	(0.056)	(0.058)	(0.059)	(0.064)	(0.051)	(0.053)	(0.05)
Additional control	0.004	0.02	0.000	0.011	0.405***	0.001	0.000	0.000	-0.0002**	0.166**
	(0.011)	(0.013)	(0.000)	(0.007)	(0.089)	(0.002)	(0.000)	(0.000)	(0.000)	(0.069)
R^2	0.20	0.22	0.20	0.27	0.37	0.20	0.21	0.23	0.27	0.27
Number of observations	50	50	50	50	50	50	50	50	50	50

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE A8. REPLICATION OF TABLE 2 USING THE POST-1212 CONQUEST INDICATOR

Dependent variable is log GDP per capita in 2005

	Geographic controls related to transportation costs							
	Medite-rranean Sea	Atlantic Ocean	Cantabrian Sea	Island	Coast Dummy	Coast length/ surface area	Distance to the coast	Border with Portugal
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post-1212 conquest	-0.247***	-0.177***	-0.175***	-0.215***	-0.226***	-0.214***	-0.232***	-0.173***
	(0.043)	(0.054)	(0.053)	(0.051)	(0.048)	(0.05)	(0.045)	(0.047)
Additional control	0.185***	-0.028	0.04	0.202***	0.125**	0.931***	-0.089***	-0.214***
	(0.044)	(0.059)	(0.093)	(0.072)	(0.051)	(0.321)	(0.029)	(0.045)
R^2	0.32	0.20	0.20	0.25	0.28	0.27	0.36	0.34
Number of observations	50	50	50	50	50	50	50	50

	Geographic controls related to transportation costs (continued)			*Natural resources endowments*				
	Distance from Madrid	Distance from London	Distance from Paris	Agric. land 1900 (%)	Arable land 1962 (%)	Mining output in 1860	Coal dummy in 1860	Coal output in 1860
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Post-1212 conquest	-0.21***	-0.146*	-0.126*	-0.2***	-0.164***	-0.178***	-0.178***	-0.181***
	(0.054)	(0.074)	(0.071)	(0.056)	(0.049)	(0.052)	(0.053)	(0.053)
Additional control	0.012**	-0.007	-0.011	0.054	-0.207	0.005	0.03	0.001
	(0.006)	(0.01)	(0.011)	(0.163)	(0.15)	(0.004)	(0.057)	(0.005)
R^2	0.23	0.20	0.23	0.21	0.22	0.22	0.20	0.2
Number of observations	50	50	50	48	50	50	50	50

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE A9. REPLICATION OF TABLE 1 USING AN ALTERNATIVE INDICATOR OF RATE OF RECONQUEST

Dependent variable is log GDP per capita in 2005

		Neolithic controls		*Historical controls*						
	Basic relation-ship	Wooded steppe (% area)	Years since transition to agriculture	Roman roads density	Urban population density in 800	Urban population density at conquest	Av. urban pop.dens. at conquest in the Christian kingdom	Centuries under Muslim domination	Crown of Aragon	Madrid
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Rate of Reconquest (alternative)	-0.025***	-0.025***	-0.024***	-0.026***	-0.023***	-0.023***	-0.024***	-0.022***	-0.022***	-0.025***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Additional control		-0.035	0.0000	0.001	-0.015*	-0.017	-0.029	-0.014	0.122**	0.352***
		(0.051)	(0.001)	(0.002)	(0.008)	(0.013)	(0.052)	(0.01)	(0.049)	(0.022)
R^2	0.36	0.37	0.36	0.37	0.38	0.39	0.37	0.39	0.42	0.43
Number of observations	50	50	50	50	50	50	50	50	50	50

	Climatic, geographic and topographic factors									
	Latitude	Tempera-ture	Rainfall	Humidity	Soil quality	Land suitability for sugar	Land suitability for cotton	Land suitability for tobacco	Average altitude	Ruggedness
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Rate of Reconquest (alternative)	-0.022***	-0.024***	-0.025***	-0.022***	-0.027***	-0.025***	-0.028***	-0.026***	-0.025***	-0.024***
	(0.004)	(0.004)	(0.004)	(0.005)	(0.003)	(0.004)	(0.006)	(0.005)	(0.004)	(0.004)
Additional control	0.011*	-0.003	0.000	0.004	0.292***	-0.001	0.000	0.000	0.000	0.041
	(0.005)	(0.006)	(0.000)	(0.007)	(0.08)	(0.002)	(0.000)	(0.000)	(0.000)	(0.059)
R^2	0.39	0.37	0.36	0.37	0.47	0.36	0.37	0.36	0.37	0.37
Number of observations	50	50	50	50	50	50	50	50	50	50

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE A10. REPLICATION OF TABLE 2 USING AN ALTERNATIVE INDICATOR OF RATE OF RECONQUEST

Dependent variable is log GDP per capita in 2005

	Geographic controls related to transportation costs							
	Medite-rranean Sea	Atlantic Ocean	Cantabrian Sea	Island	Coast Dummy	Coast length/ surface area	Distance to the coast	Border with Portugal
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Rate of Reconquest (alternative)	-0.025***	-0.024***	-0.026***	-0.025***	-0.025***	-0.025***	-0.024***	-0.022***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Additional control	0.013	-0.039	-0.037	-0.007	-0.021	-0.031	-0.021	-0.141***
	(0.06)	(0.047)	(0.086)	(0.063)	(0.05)	(0.313)	(0.027)	(0.045)
R^2	0.36	0.37	0.37	0.36	0.37	0.36	0.37	0.42
Number of observations	50	50	50	50	50	50	50	50

	Geographic controls related to transportation costs (continued)			*Natural resources endowments*				
	Distance from Madrid	Distance from London	Distance from Paris	Agric. land 1900 (%)	Arable land 1962 (%)	Mining output in 1860	Coal dummy in 1860	Coal output in 1860
	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Rate of Reconquest (alternative)	-0.025***	-0.022***	-0.022***	-0.027***	-0.025***	-0.025***	-0.025***	-0.025***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Additional control	-0.004	-0.011**	-0.013**	0.185	-0.007	0.007**	0.069	0.004
	(0.004)	(0.005)	(0.006)	(0.165)	(0.145)	(0.003)	(0.05)	(0.005)
R^2	0.37	0.40	0.42	0.38	0.36	0.4	0.38	0.37
Number of observations	50	50	50	48	50	50	50	50

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE A11. REPLICATION OF TABLE 3 USING AN ALTERNATIVE INDICATOR OF RATE OF RECONQUEST

Dependent variable is log GDP per capita in 2005

	Baseline specification	Leverage	Standard. residuals/ Student. residuals	Cook's distance/ Dfits	Welsch distance	DF-Beta	Initial resistance provinces removed
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Rate of Reconquest (alternative)	-0.02***	-0.019***	-0.02***	-0.023***	-0.021***	-0.017***	-0.015**
	(0.005)	(0.005)	(0.004)	(0.005)	(0.005)	(0.004)	(0.006)
Urban population density in 800	-0.021**	-0.074**	-0.015***	-0.008	-0.063	-0.026***	-0.021**
	(0.011)	(0.036)	(0.005)	(0.027)	(0.038)	(0.009)	(0.01)
Crown of Aragon	0.103**	0.101**	0.13***	0.09*	0.097**	0.112**	0.145***
	(0.045)	(0.046)	(0.039)	(0.045)	(0.045)	(0.043)	(0.048)
Madrid	0.35***	n.a.	0.379***	0.307***	0.285***	0.281***	0.376***
	(0.063)	n.a.	(0.054)	(0.059)	(0.061)	(0.06)	(0.056)
Distance to the coast	-0.001	0.006	-0.023	0.008	0.03	0.033	-0.007
	(0.037)	(0.028)	(0.028)	(0.029)	(0.031)	(0.035)	(0.03)
Border with Portugal	-0.055	-0.064	-0.042	-0.052	-0.073	-0.095**	-0.069
	(0.045)	(0.044)	(0.041)	(0.051)	(0.049)	(0.046)	(0.043)
Altitude (average)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Soil quality	0.242***	0.259***	0.242***	0.268***	0.272***	0.223***	0.15*
	(0.081)	(0.082)	(0.077)	(0.082)	(0.082)	(0.075)	(0.074)
Mining output in 1860	0.006*	0.006*	0.006*	0.007**	0.007*	0.007**	0.004
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
R^2	0.65	0.64	0.73	0.68	0.67	0.68	0.65
Number of observations	50	48	47	47	48	47	45

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively. Outliers are the following: Column 2, Madrid and Córdoba; Column 3, Alicante, Granada, and Álava; Column 4, Toledo, Granada, and Córdoba. Column 5, Toledo and Córdoba. Column 6, Toledo, Jaén, and Álava. Initial resistance provinces in column 7 are Asturias, Cantabria, Guipúzcoa, Vizcaya and Álava.

TABLE A12. REPLICATION OF TABLE 6 USING THE COMPLETE SET OF CONTROLS

Dependent variable:	City population in 800	Density of urban population in 800	Years since transition to agriculture	Ancient settlements over surface area	Roman roads density	Roman roads density: Main roads	Coinage of imperial Roman coins over surface area	Roman villas over surface area	Number of bishoprics circa 600 over surface area
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Rate of Reconquest	1.661	0.123	-0.607	0.026	0.48	0.356*	0.004	0.009	0.003
	(1.071)	(0.078)	(1.18)	(0.041)	(0.376)	(0.176)	(0.002)	(0.014)	(0.003)
Urban population density in 800	-	-	-0.252	0.087**	-0.171	-0.189	(0.000)	0.022	0.005
	-	-	(2.142)	(0.042)	(0.47)	(0.345)	(0.004)	(0.017)	(0.007)
Crown of Aragon	0.423	-0.045	5.721	0.247	8.076	9.929***	0.031	0.068	0.086
	(3.575)	(0.242)	(13.284)	(0.431)	(7.052)	(2.793)	(0.037)	(0.1)	(0.054)
Madrid	-21.26*	-1.42	5.191	-0.398	5.434	-0.699	-0.046	-0.143	0.041
	(12.077)	(0.872)	(11.566)	(0.423)	(6.391)	(1.615)	(0.038)	(0.135)	(0.035)
Distance to the coast	7.89	0.504	-10.381*	-0.247	-0.333	3.134***	-0.003	0.034	-0.01
	(4.992)	(0.361)	(6.071)	(0.215)	(3.061)	(1.095)	(0.016)	(0.062)	(0.023)
Border with Portugal	-14.944	-1.238	-31.413*	-0.013	11.059*	0.971	-0.037	-0.145	-0.041
	(12.649)	(0.916)	(17.121)	(0.374)	(5.825)	(3.025)	(0.025)	(0.152)	(0.04)
Altitude (average)	-0.019	-0.001	0.047**	0.0000	0.006	-0.007	0.0000	0.0000	0.0000
	(0.014)	(0.001)	(0.018)	(0.001)	(0.01)	(0.004)	(0.000)	(0.000)	(0.000)
Soil quality	-6.535	-0.558	-26.485	0.663	-0.177	4.543	0.055	-0.044	-0.07
	(8.966)	(0.657)	(19.622)	(0.935)	(11.745)	(3.054)	(0.051)	(0.179)	(0.066)
Mining output in 1860	0.295	0.014	-0.067	0.032	0.424	0.252**	0.0000	0.0000	0.001
	(0.324)	(0.023)	(0.736)	(0.033)	(0.362)	(0.092)	(0.002)	(0.007)	(0.002)
R^2	0.22	0.22	0.29	0.21	0.15	0.48	0.14	0.12	0.15
Number of observations	50	50	50	50	50	50	50	50	50

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE A13. CORRELATIONS BETWEEN INDICATORS OF PRE-RECONQUEST DEVELOPMENT AND SUITABILITY FOR AGRICULTURE

	Agricultural land 1900 (%)	Arable land 1962 (%)
City population in 800	0.2642* 0.0696	0.2749* 0.0533
Density of urban population in 800	0.2817* 0.0524	0.2707* 0.0573
Years since transition to agriculture	-0.0129 0.9308	-0.1147 0.4275
Ancient settlements over surface area	0.1488 0.3127	0.0628 0.6646
Roman roads density: Main roads	0.2941** 0.0425	0.3915*** 0.0049
Roman roads density	0.2356^{+} 0.107	0.3676*** 0.0086
Coinage of imperial Roman coins over surface area	0.2478* 0.0895	0.2091 0.145
Roman villas over surface area	0.3869*** 0.0066	0.3010** 0.0337
Number of bishoprics circa 600 over surface area	0.1589 0.2808	0.1763 0.2206

Notes: Variables descriptions are provided in Table A1. For each entry we provide the correlation coefficient (above) and the p-value (below). $^{+}$, *, ** and *** denote significance at the 11, 10, 5 and 1% level, respectively.

TABLE A14. REPLICATION OF TABLE 6 USING THE POST-1212 CONQUEST INDICATOR

Dependent variable:	City population in 800	Density of urban population in 800	Years since transition to agriculture	Ancient settlements over surface area	Roman roads density	Roman roads density: Main roads	Coinage of imperial Roman coins over surface area	Roman villas over surface area	Number of bishoprics circa 600 over surface area
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post-1212 conquest	15.285	1.122	-13.792	0.249	1.403	2.279	-0.01	0.024	0.007
	(10.937)	(0.796)	(12.693)	(0.407)	(5.052)	(2.867)	(0.033)	(0.102)	(0.043)
Distance to the coast	8.638	0.558	-17.337**	-0.19	1.738	2.931***	-0.007	0.028	-0.014
	(5.432)	(0.392)	(6.473)	(0.189)	(2.151)	(0.989)	(0.014)	(0.058)	(0.018)
Altitude (average)	-0.017	-0.001	0.058***	-0.001	-0.003	-0.01**	0.000	0.000	0.000
	(0.012)	(0.001)	(0.02)	(0.001)	(0.008)	(0.004)	(0.000)	(0.000)	(0.000)
Soil quality	1.334	0.084	-4.165	0.804	-1.306	6.675	0.116*	0.113	-0.012
	(6.348)	(0.45)	(17.112)	(0.834)	(13.047)	(4.523)	(0.06)	(0.148)	(0.078)
Mining output in 1860	0.552	0.036	-0.005	0.034	0.318	0.177	0.000	0.001	0.001
	(0.487)	(0.035)	(0.803)	(0.028)	(0.364)	(0.123)	(0.002)	(0.008)	(0.002)
R^2	0.15	0.14	0.19	0.18	0.02	0.20	0.09	0.04	0.03
Number of observations	50	50	50	50	50	50	50	50	50

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE A15. REPLICATION OF TABLE 6 USING THE POST-1212 CONQUEST INDICATOR AND THE COMPLETE SET OF CONTROLS

Dependent variable:	City population in 800	Density of urban population in 800	Years since transition to agriculture	Ancient settlements over surface area	Roman roads density	Roman roads density: Main roads	Coinage of imperial Roman coins over surface area	Roman villas over surface area	Number of bishoprics circa 600 over surface area
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post-1212 conquest	16.632	1.234	-6.524	0.141	-0.357	3.408	-0.011	0.011	0.016
	(12.1)	(0.879)	(12.138)	(0.482)	(5.792)	(2.593)	(0.036)	(0.112)	(0.047)
Urban population density in 800	-	-	-0.462	0.106**	0.398	-0.036	0.005	0.032*	0.007
	-	-	(1.897)	(0.044)	(0.611)	(0.345)	(0.005)	(0.017)	(0.007)
Crown of Aragon	-2.99	-0.298	6.82	0.188	6.713	9.247***	0.02	0.044	0.079
	(4.993)	(0.356)	(13.68)	(0.421)	(6.789)	(2.764)	(0.038)	(0.103)	(0.053)
Madrid	-23.219*	-1.565	5.586	-0.398	5.803	-0.879	-0.042	-0.138	0.041
	(13.724)	(0.994)	(11.787)	(0.439)	(6.284)	(1.85)	(0.04)	(0.141)	(0.036)
Distance to the coast	11.529	0.774	-11.623*	-0.215	-0.189	3.798***	-0.003	0.039	-0.007
	(7.237)	(0.522)	(6.526)	(0.256)	(3.21)	(1.155)	(0.018)	(0.076)	(0.023)
Border with Portugal	-11.631	-0.993	-32.639*	0.082	13.807**	1.824	-0.014	-0.1	-0.03
	(10.756)	(0.769)	(17.313)	(0.295)	(5.919)	(2.968)	(0.024)	(0.117)	(0.04)
Altitude (average)	-0.023	-0.002	0.048**	0.0000	0.004	-0.008*	0.0000	0.0000	0.0000
	(0.015)	(0.001)	(0.019)	(0.001)	(0.01)	(0.004)	(0.000)	(0.000)	(0.000)
Soil quality	-4.668	-0.421	-26.549	0.793	5.087	4.973	0.101	0.037	-0.056
	(9.788)	(0.712)	(20.321)	(0.983)	(12.399)	(4.154)	(0.063)	(0.161)	(0.073)
Mining output in 1860	0.54	0.033	-0.154	0.035	0.448	0.299***	0.0000	0.001	0.001
	(0.45)	(0.033)	(0.795)	(0.032)	(0.375)	(0.1)	(0.002)	(0.008)	(0.002)
R^2	0.18	0.18	0.29	0.21	0.12	0.46	0.11	0.10	0.14
Number of observations	50	50	50	50	50	50	50	50	50

Notes: Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE A16. REPLICATION OF TABLE 7 USING THE POST-1212 CONQUEST INDICATOR

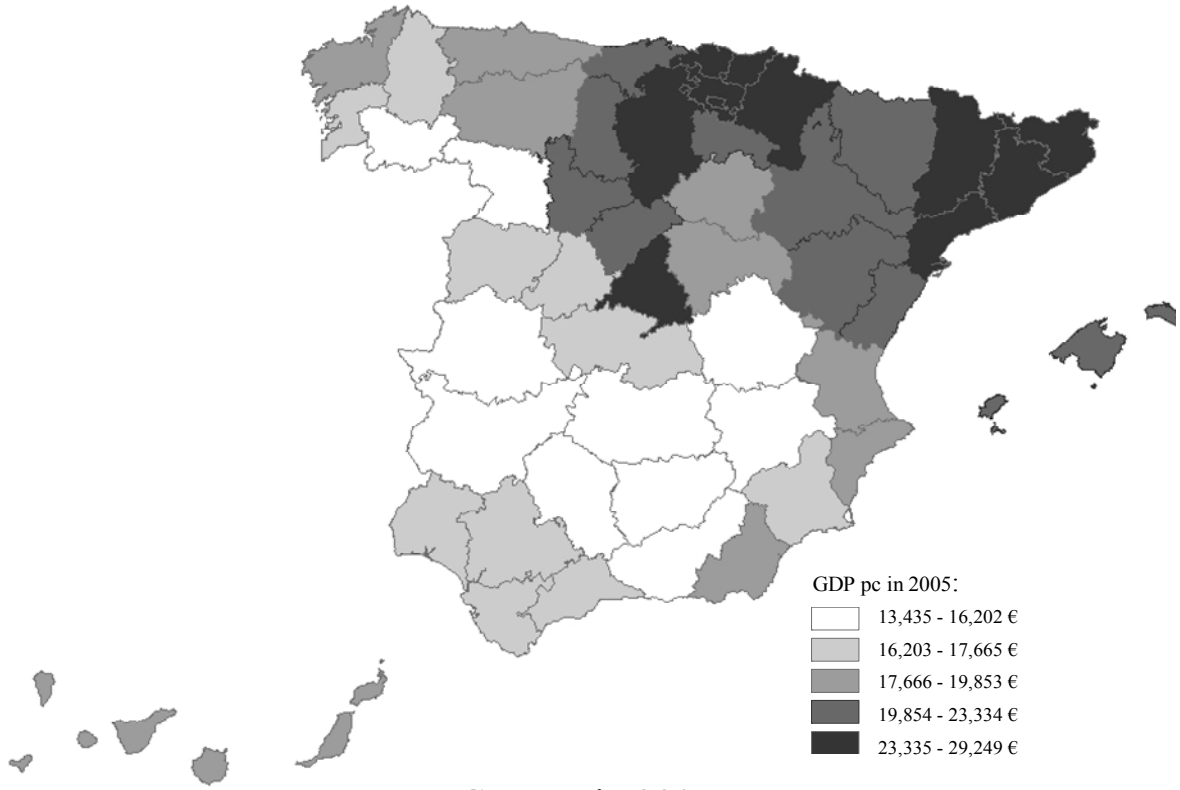
Dependent variable:	*Log GDP per capita in:*				*Log industrial output per capita in:*			
	1860	*1930*	*1971*	*2005*	*1860*	*1930*	*1970*	*2005*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Regression Results								
Post-1212 conquest	0.16**	-0.17*	-0.327***	-0.274***	0.39***	-0.69***	-0.909***	-0.893***
	(0.077)	(0.101)	(0.056)	(0.049)	(0.134)	(0.151)	(0.138)	(0.182)
Urban population density in 800	0.001	-0.012	-0.009	-0.017**	0.014	0.016	-0.006	-0.007
	(0.02)	(0.011)	(0.008)	(0.007)	(0.016)	(0.019)	(0.015)	(0.019)
Crown of Aragon	0.128	0.211**	0.166***	0.12***	0.189	0.253	0.27*	0.231
	(0.102)	(0.098)	(0.057)	(0.037)	(0.206)	(0.161)	(0.134)	(0.178)
Madrid	0.582***	0.919***	0.662***	0.433***	0.685***	1.036***	0.506***	-0.053
	(0.122)	(0.135)	(0.076)	(0.058)	(0.181)	(0.271)	(0.158)	(0.149)
Distance to the coast	0.061	-0.031	-0.075**	-0.076**	0.159*	-0.155	-0.096	-0.052
	(0.062)	(0.066)	(0.036)	(0.032)	(0.087)	(0.139)	(0.081)	(0.091)
Border with Portugal	-0.145	-0.148	-0.069	-0.047	-0.273	-0.243	-0.021	-0.112
	(0.137)	(0.1)	(0.069)	(0.037)	(0.178)	(0.218)	(0.173)	(0.188)
Altitude (average)	0	-0.001**	0***	0	-0.001**	-0.001***	-0.001***	0
	(0)	(0)	(0)	(0)	(0)	(0)	(0)	(0)
Soil quality	0.737**	0.371**	0.495***	0.387***	0.533	1.19***	0.977***	0.611**
	(0.335)	(0.171)	(0.127)	(0.08)	(0.422)	(0.428)	(0.328)	(0.288)
Mining output in 1860	0.005	0.007	0	0.002	0.026*	0.009	0.019*	0.02*
	(0.008)	(0.006)	(0.003)	(0.003)	(0.014)	(0.01)	(0.009)	(0.011)
R^2	0.49	0.62	0.76	0.77	0.46	0.66	0.71	0.58
Number of observations	50	50	50	50	50	50	50	50
Panel B: Standardized Effects								
Post-1212 conquest	0.215	-0.250	-0.585	-0.667	0.341	-0.482	-0.747	-0.752

Notes: Variables descriptions are provided in Table A1. GDP and industrial output variables are all expressed in pesetas. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.

TABLE A17. THE EFFECT OF RATE OF RECONQUEST ON THE AVERAGE SIZE OF MUNICIPALITIES

	Average size (in surface area) of "singular population entities" in 1787		Average size (in surface area) of municipalities in 2011		*Falsification test:* Average size of ancient (pre-medieval) settlements	
	(1)	(2)	(3)	(4)	(5)	(6)
Rate of Reconquest	5.06***	4.867***	6.164***	6.485***	0.04	0.026
	(0.939)	(1.322)	(1.117)	(1.293)	(0.028)	(0.041)
Urban population density in 800		1.278		1.937		0.087**
		(1.903)		(2.117)		(0.042)
Crown of Aragon		-3.884		-21.268*		0.247
		(9.741)		(11.929)		(0.431)
Madrid		-11.667		-43.211*		-0.398
		(14)		(23.726)		(0.423)
Distance to the coast		3.522		3.406		-0.247
		(5.758)		(10.394)		(0.215)
Border with Portugal		-9.446		-40.233**		-0.013
		(16.31)		(16.055)		(0.374)
Altitude (average)		-0.017		-0.034		0.0000
		(0.021)		(0.028)		(0.001)
Soil quality		-2.951		-55.399*		0.663
		(26.418)		(30.88)		(0.935)
Mining output in 1860		-0.48		0.256		0.032
		(0.968)		(0.865)		(0.033)
R^2	0.61	0.63	0.49	0.62	0.04	0.21
Number of observations	46	46	50	50	50	50

Notes: The dependent variables are measured as the ratio of provincial surface area (in km^2) to the number of population entities, municipalities or ancient settlements, respectively. Variables descriptions are provided in Table A1. The estimations include a constant term, which is omitted for space considerations. Robust standard errors are in parentheses. *, ** and *** denote significance at the 10, 5 and 1% level, respectively.



GDP pc in 2005

Figure A1. Current income distribution in the Spanish provinces