

Local institutions and human capital formation in pre-industrial economies: Evidence from the former Kingdom of Valencia

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Abstract

This article analyses the relationship between institutions and human capital formation in the former Kingdom of Valencia. In the absence of a strong State, the supply or provision of education were a local affair and the existence of sizable disparities in educational outcomes therefore reflects heterogeneous endowments or institutions. It empirically assesses whether some institutional frameworks were less conducive to human capital formation. In the Old Regime, the territory of the Kingdom of Valencia was under rather distinct jurisdictions: royal domains, secular lordships, ecclesiastical lordships or military orders. Besides, after the expulsion of the Moriscos in 1609, several Morisco-lordships were resettled with Christians, but the historical evidence has recurrently suggested that the living conditions in these territories were particularly harsh. Our findings show that male literacy rates were consistently lower in lordships. Moreover, Morisco-lordships exhibited an even lower literacy level.

Keywords: Local Institutions, Human Capital, Spain, Lordships, Moorish

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1. Introduction

This article investigates whether local institutions had an impact on human capital formation. Before the development of State-infrastructure, formal education was neither hierarchical nor uniform. The building and funding of elementary schools was a local affair and thereby largely depended upon the initiative of local agents (council, Church or benefactors...) and the institutional framework that shaped exchanges and interactions within the community. During the Old Regime, the capacity of the State was limited, and the Crown delegated the authority to private agents which were responsible for the local government, essentially administration and justice. Differences in the institutional framework might therefore have relevant socioeconomic implications.

This line of research is at the core of the debate on human capital and economic development. On the one hand, institutions shape social and economic exchanges and consequently economic development (Acemoglu et al., 2001; Engerman and Sokoloff, 2000; Ogilvie and Carus, 2014). In some cases, a particular institutional framework could have long-lasting effects (Nunn, 2008; Dell, 2010; Michalopoulos and Papaianou, 2016), a feature that would be of particular relevance for education, as the stock of human capital has proved central for economic development (Gennaioli et al., 2013; Waldinger, 2017; Valencia Caicedo, 2019). Understanding how institutions affect human capital formation thus remains paramount. Although skills and knowledge are learned through different means, formal schooling has often been at the core of this process in Europe, especially after the Protestant reformation and the ensuing Counter-Reformation. Therefore, in the absence of a leveller, or a strong State, the existence of sizable differences in educational outcomes has put local institutions in the spotlight.

In this study, we exploit the institutional heterogeneity existing in the former Kingdom of Valencia at the dawn of the contemporary period to empirically assess its effect on human capital formation. At that time, the involvement of the central Spanish administration, or the recently-created Liberal State, was negligible. School funding and budget allocations for teachers were the responsibility of local councils, religious foundations and the pupils' families.² The literacy levels recorded by mid-19th century would then be explained by differences in local institutions

² It was only in 1857 when the Public Instruction Act (or Moyano Act) established a uniform and hierarchical education system. Elementary schooling under the new law remained nonetheless a local affair since it still relied on funding from the local councils.

and/or endowments (Beltrán Tapia et al., 2019). In terms of the existing institutional diversity, the population could live under different jurisdictions: Crown (*realengos* or royal domains) or Lords (*señoríos* or lordships). The extent to which royal domains and lordships, given their intrinsic nature, were more or less conducive to extraction or rent-seeking should have an impact on educational attainments either through the supply or the demand for education. For example, it may well be that lords were not particularly fond of elementary schooling, being more interested in maintaining the status to protect their own economic and social position. Besides, lower incomes arising from hardship conditions and greater socioeconomic inequality would discourage many families to invest in education.

The joint study of both effects is undoubtedly complex and the existing literature has tended to reach its conclusions by establishing hypotheses as to the causal mechanisms prevailing in each of the cases analysed. Studying the former Kingdom of Valencia nonetheless provides a more refined identification because its historical experience allows identifying territories that were particularly extractive. In 1609, it was decreed the expulsion of the Moriscos (Moslem converts to Christianity or New Christians) which, in the Kingdom of Valencia, accounted for approximately a third of the population.³ The Moriscos were mainly settled in lordships and their living conditions have often been described as acutely harsh. In fact, their situation has been even compared to that of the “black slaves” in the United States.⁴ After their expulsion these territories were repopulated with Old Christians from other regions. Still, the living conditions of the new settlers were also rather harsh (Reglà, 1964; Torres Morera, 1969; Ardit, 2009; Chaney and Hornbeck, 2016).

In order to empirically assess the relationship between institutions and human capital formation, we constructed a novel data set with information at the municipal-level on literacy rates from the 1860 Population Census. While the institutional characteristics of each municipality at the end of the Old Regime, determined by the type of jurisdiction (royal domain or lordship, either controlled by nobility or clergy), are obtained from the Census of Population of 1787, the locations inhabited by Moriscos before their expulsion comes from Lapeyre (1959, 1986). In addition, the collected data provide information on other idiosyncratic elements that may be

³ Lapeyre (1959, 1986) notes that 216 of the 524 Valencian municipalities can be considered exclusively Morisco at the start of the seventeenth century.

⁴ Reglà (1964, p.141) remarks that Earl Hamilton “...has compared the situation of the lords’ Morisco vassals with that of black slaves in the South of the United States, slaves protected by big landowners”.

affecting human capital formation such as population size, the settlement pattern, the economic structure, income level and language (Catalan or Spanish) spoken. Finally, first- and second-nature geographical dimensions have also been included in the analysis to better identify the distinct link between institutions and education.

Considering this information, we analyse whether there is any significant effect associated with the institutional framework on the spread of literacy. The basis of the local institutional setting arose during the Medieval period: as the Reconquista advanced from north to south, the different Iberian Crowns had to decide how the repopulation and distribution of land from the territories conquered was carried out. In some instances, land remained under royal jurisdiction while in other cases it was granted to the nobility or an ecclesiastical order. Likewise, we also explore whether there were any significant differences in literacy between those places inhabited by Old Christians and those repopulated after the expulsion of the Moriscos in 1609. In the latter, the hard working and living conditions imposed before and after the expulsion, and the resulting economic inequality that prevailed, might have hindered the social demand for education. Finally, once we isolate and establish the mechanisms, we assess the marginal effect deriving from the local conditions. In order to do this, we distinguish between distinct institutional frameworks and then quantify the cost in educational terms of being located in each one of them. The results show that those municipalities that were under lordship jurisdiction and had been inhabited by Moriscos until 1609 exhibited the lowest education levels in mid-19th century. In other words, and according to the existing qualitative historical accounts, we confirm the existence of a negative, sizable and statistically significant effect in more extractive institutional frameworks.

Studying the determinants of literacy levels in the Kingdom of Valencia contributes to wider debates. An early approach pointed that the consolidation of institutional frameworks that led to a more uneven distribution of income or resources, thus concentrating economic and political power in the hands of elites, could have had a negative effect on the rise of public schooling (Galor et al., 2009; Chaudhary, 2009; Go and Lindert, 2010; Vollrath, 2013). Another possible reason for the existence of a relationship between institutions and education could be linked to the conditions affecting the demand for it. It has been argued that extractive institutions could be related to poverty and inequality which might limit the number of families that can take on the direct economic cost of learning, thus decreasing the social demand for it. The economic

basis for this has been well established by Galor and Zeira (1993), who pointed out that, in the presence of capital market imperfections, economic inequality generates long-term effects on human capital investment. Several investigations have empirically confirmed that this relationship exists (Cinnirella and Hornung, 2016).

Within this strand of the literature, Beltrán Tapia and Martínez-Galarraga (2018) have analyzed the case of Spain in mid-19th century. These authors find a negative relationship between land access inequality and male literacy rates at the district level in 1860. Further, they argue that the disparities in the local institutions and in the distribution of land was the outcome of the different historical phases of the Reconquista.⁵ In a similar vein, other works have examined the long-term effects of the Reconquista. Oto-Peralías and Romero-Ávila (2016) argue that this lengthy historical process had a persistent negative effect on regional economic development by favouring the existence of differences in the concentration of economic and political power across Spain and this political inequality translated into regional income differences that can be still seen today. Analysing the frontier of the Nasrid Kingdom of Granada, these authors illustrate these forces at a more local level (Oto-Peralías and Romero-Ávila, 2017). However, a recent paper by Cinnirella et al. (2020) focuses on the role of Islam on human capital formation in Spain. They argue that the origins of the spatial differences in literacy in contemporary Spain are to be found not in the arrangements made by Christians after the Reconquista, but in the pre-existing Muslim institutions. The length of Muslim rule would be responsible for the low literacy levels by creating institutions that discouraged trade and therefore the rise of a merchant class which, in turn, did not favor local forms of self-government.

By analysing the relationship between institutions and human capital in a context in which the involvement of the State was still limited, our paper also contributes to the literature on state capacity (Acemoglu et al., 2015b; Dell et al., 2017). A strand of this literature has explored whether the existence of local powers erode the ability of central rulers to implement policies across the territory thereby limiting the provision of infrastructures and public goods in an institutional framework characterised by fragmented jurisdictions (Epstein, 2000; Grafe, 2012; Dincecco and Katz, 2014; Acemoglu et al., 2015a). In the case of Spain, Oto-Peralías (2019) has shown that the delegation of governmental authority to lordships during the Old Regime had a

⁵ They do not find however a negative effect in the case of female literacy levels -which at that time were very low in Spain, around 10%-. In addition, the effect of the Reconquista on land distribution only appeared in the former territories of the Crown of Castile, but not for the Crown of Aragon where the Kingdom of Valencia was located.

negative effect that is still visible in today's economic outcomes. Our paper sheds further light on this issue by showing that, while lordships consistently hindered human capital formation, there is significant variation within lordships as those in former Moriscos lands suffered a larger negative effect.

In addition, the Muslim ascendant of the Moriscos links this study to those looking at the relation between religion, human capital and economic progress (Barro and McCleary, 2008; Glaeser and Sacerdote, 2008; Becker et al., 2020), a topic which has extensively been discussed within economics and economic history (Botticini and Eckstein, 2007; Becker and Woessmann, 2009; Abramitzky, 2011; Cantoni, 2015; Squicciarini, 2020). The hard conditions that this religious minority suffered throughout history until their expulsion also relates our study with the literature that has analysed the relationship between religious persecution, human capital formation and economic development (Voigtländer and Voth, 2012; Johnson and Koyama, 2019). Yet, in this paper we consider that there is an unexplored mechanism that links the persistence of communities of Muslim ascendant with lower literacy levels and economic development which is related not only with religious and cultural matters but also with a situation characterized by a differential economic oppression.

Finally, this article relates to the more general literature that focuses on the effect that different political institutions may have on economic development, particularly within countries (Dell, 2010; Michalopoulos and Papaioannou, 2013; Maloney and Valencia Caicedo, 2019; Angelucci et al., 2020). On the one hand, this is related with the negative economic impact of lordships. If lordships brought about more unequal societies, this may have a detrimental effect on economic growth (Deininger and Squire, 1998; Barro, 2000, 2008; Galor et al., 2009). The higher inequality would be linked to the extractive nature of lordships as local political and economic institutions in which monopolistic rights and exactions could be imposed by the lord to the vassals. On the other hand, our study follows in the footsteps of previous studies that have shown a negative and persistent effect of the institutional framework introduced in the territories previously inhabited by the Moriscos on economic development (Chaney and Hornbeck, 2016). Moreover, our results permit to better understand the roots of differences in human capital formation, an issue that is particularly relevant given its long-lasting effect. As the case of the Valencia region shows, the sizable differences observed in literacy in the beginning of the contemporary period also seem to be relevant for understanding the current differentials, not only in average education

levels but also in per capita income across Valencian municipalities (see Figure B1 in Appendix B). Likewise, this study also stresses the importance of historical processes to better understand the fate of a society over time, especially given the relevance of intergenerational transmission of human capital (Valencia Caicedo, 2019).⁶

The reminder of the paper is organized as follows. Section 2 provides historical background on the education outcomes and regulatory framework, the distribution of lordships across space, and the presence of Moriscos in the region of Valencia. Section 3 introduces the data used and the sources, and then presents a first descriptive analysis. While Section 4 contains the main results and robustness checks, Section 5 closes the article with some concluding remarks.

2. Historical background

The Valencia region (or *Comunitat Valenciana*) is located on the eastern side of the Iberian Peninsula, on the Mediterranean Sea. It covers an area of 23,255 km² and is geographically longer than it is wide, with approximately 435 km of coastline. Today, it has around 5 million inhabitants and its capital, Valencia, is Spain's third largest city after Madrid and Barcelona. The population thus represents 10.6% of the country's total while its economy accounts for 9.2% of GDP. Back in 1860, the Valencia region had 1.3 million inhabitants, around 8.1% of the population, and it has been estimated that the economy accounted for 8.6% of GDP (Rosés *et al.*, 2010; Prados de la Escosura, 2017), being a markedly agrarian society since almost two thirds of the labour force was in agriculture.⁷

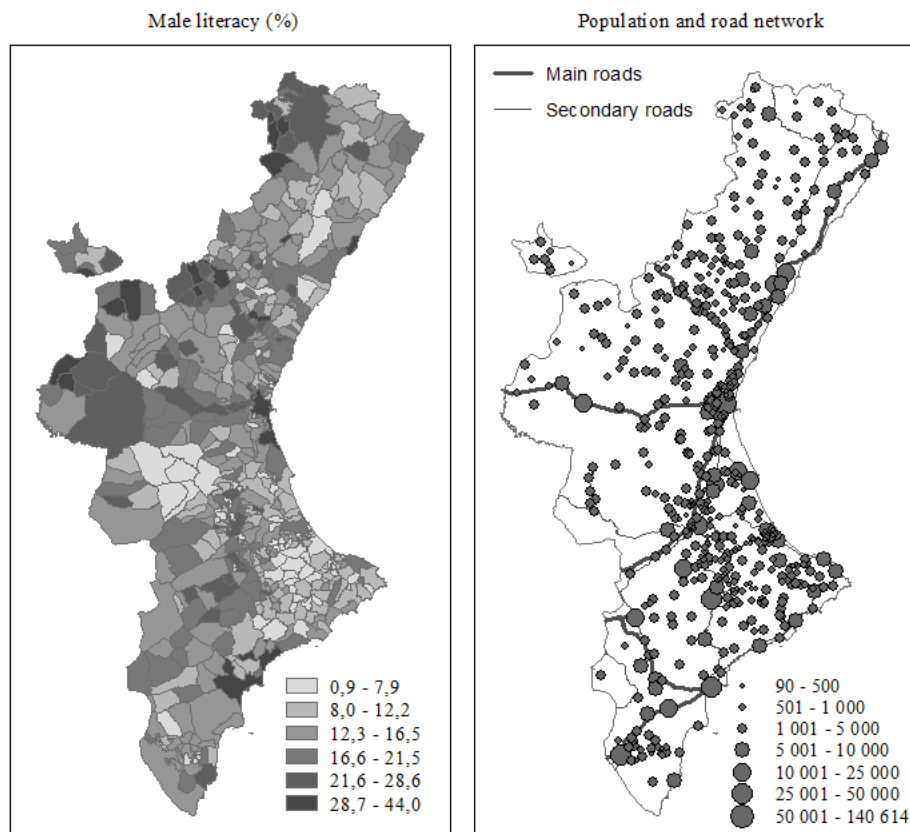
Given the economic and social context in the Valencia region (Furió, 1995), education levels had always been somewhat modest. In 1860, the male literacy rate was 18%, 16 points below the country's average. Indeed, a striking characteristic of mid-19th century Spain was the sizable territorial disparities in educational attainments. This is true not only when comparing Spain's regions (Núñez, 1992), but also within a region or province (Beltrán Tapia *et al.*, 2019). A good illustration of this is the region of Valencia, where municipal male literacy ranged between 1% and 44% in 1860 (Figure 1). In the absence of a uniform and hierarchical education system, the

⁶ Recent reviews including the potential issues which might be present in persistence studies can be found in Kelly (2019) and Voth (2020).

⁷ In 1860 the city of Valencia had 107,703 inhabitants, with other important population centres being Alicante (31,162), Orihuela (25,208), Alcoy (25,196), Castellón (20,123) and Elche (18,734).

building, running and funding of elementary schools was a local affair.⁸ The local council and pupils' parents covered the expenses, essentially the teacher's salary and materials (Viñao, 1990). Therefore, these marked differences might reflect existing heterogeneities before 1860, thereby pointing to the Old Regime and the early years of the liberal period.

Figure 1. Male literacy in 1860 by municipality (%)



Source: own elaboration based on the 1860 Census of Population.

⁸ Although elementary education was essentially a local affair, the Spanish Crown did intervene in a relevant aspect, the language of instruction. From the mid-18th century, it has been established that Spanish should be the language of instruction (González-Portilla and Urrutikoetxea, 2016).

2.1. *Elementary education in Spain: from the Old Regime to the liberal State*

The regulatory framework for elementary (or primary) education in Spain in 1860, the first year for which countrywide information on literacy exists, was the result of a long gestation process that culminated in 1857 with the passing of the Public Instruction Act (PIA), also known as the Moyano Act. The enlightened reformers of the late 18th century had already identified education as a driving force for socioeconomic development. Jovellanos, for example, noted in his 1802 ‘Memorandum on Public Education’ that “the origins of social prosperity are many; but all spring from the same source, and this source is public instruction”. These words indicate that the intellectuals or knowledge-elites were fully aware of the importance of education. However, the reality was that Spain was lagging behind other countries at the time. School funding and budget allocations for teachers in the Old Regime were the responsibility of local councils, Church and parents.⁹ Given these circumstances, education in Spain presented a bleak picture.¹⁰

It was in this historical context that Article 366 of the Constitution of 1812 (Item IX. On public education) set out that “all the towns in the Kingdom shall establish elementary schools in which children will be taught reading, writing and counting, and the catechism of the Catholic religion, which will also include a brief outline of civil obligations”. It also aimed to create a uniform education system (Art. 368) and a Ministerial Education Board in charge of inspections (Art. 369). These ideas were given shape in the Quintana Report of 1814 (Report and Draft Decree on the Regulation of Public Education). Following this report, the General Regulations for Public Instruction were established in 1821, but the plans to implement them were halted due to political and social instability and not pursued further. This was also the case with the Duque de Rivas Plan of 1836. During the first half of the 19th century, therefore, primary schools followed no specific education plan and were left to their own devices as far as funding was concerned. In other words, primary education was a municipal responsibility like in the old days.

It was not until 1857, a time marked by great socioeconomic change in which various countries were taking their first steps towards mass schooling, that the Moyano Act was passed. This regulated education from 1857 to 1970, when it was replaced by the General Education Act

⁹ Student fees were paid in cash or kind. Besides, the contribution of local councils to teachers’ wages was usually in cash but could sometimes be in kind, usually board and keep. For instance, in the village of Càrcer, according to Madoz (1845), “the master has no funding other than the monthly payments made by his pupils”, while in Carpesa, a village of similar size, a sum of 1,000 *reales* had been allocated.

¹⁰ Viñao (1990) estimates that only about 23.3% of the population between ages 6 and 13 were being schooled in 1797.

(GEA).¹¹ Indeed, the Moyano Act was one of the great reforms introduced during the 19th century. Education was split into primary, secondary and higher education (Art. 1), with a curriculum being established for each education level. At the same time, primary education would become “compulsory for all Spaniards” (Art. 7) between the ages of 6 and 9, but was free only in cases where the “parents, guardians or providers are unable to pay for it” (Art. 9).¹² The Moyano Act also laid down a minimum threshold requirement for schools for each town according to its size.¹³ Nevertheless, public schools, i.e., those that were “fully or partly maintained by public funds or by religious or other similar foundations” (Art. 97), continued to be the responsibility of local forces.¹⁴ From the point of view of building, running and funding elementary schools the Moyano Act did thus not change much the situation and elementary education remained as a local affair. Moreover, passed in 1857, the Moyano Act hardly affected average literacy levels in 1860.

All things considered, the existing educational attainments could have been directly linked to two idiosyncratic elements involving local affairs during the Old Regime. The first is the capacity and willingness of the local administration to pay for the service. It should be noted that schools were either publicly-funded by the local council or privately-funded by the Church (dioceses, parishes, institutes) or wealthy individuals, namely benefactors. Although public schooling was generally paid with “common funds”, pecuniary and non-pecuniary contributions from pupils’ parents were frequent. Yet, even if “common funds” permitted the funding of a school, local forces might not support the initiative, thus creating a problem of agency or conflict of interests. Secondly, poverty and socioeconomic inequality could in turn affect the social demand for education. That is, even if a school existed the direct and/or opportunity costs may have limited attendance.

¹¹ Although the Moyano Act continued until 1970, successive changes were introduced during the 113 years that it remained in force. Compulsory education, for example, initially from ages 6 to 9, was extended to age 12 in 1909 and age 14 in 1964.

¹² The compulsory nature of education was not absolute, since pupils could ask to be excused when they were “sufficiently provided with this type of education in their homes or in a private establishment” (Art. 7). And to obtain free primary education, a “certificate issued by the relevant parish priest and endorsed by the town mayor” had to be provided (Art. 9).

¹³ Communities of over “500 souls”, for example, should have at least one public primary school for boys and another for girls (Art. 100). Communities of at least “2,000 souls” should have two complete schools each for boys and girls, while those with “4,000 souls” should have three, and so on (Art. 101). It was also recommended that communities of fewer than “500 souls” should form districts so that they could have a complete primary school (Art. 102).

¹⁴ Art. 97 stipulated that every year there would be an allocation of “one million *reales*, at least, to help those towns and villages that are unable by themselves to cover the cost of primary education”.

2.2. Lordships, royal domains and the legacy of the Old Regime

Taking into account all of the above, our initial hypothesis is that local conditions, including the institutional framework, shaped the supply and demand in the Valencia region in the Old Regime. In order to address this, we rely on the information contained in the census of 1787, known as the Census of Floridablanca.¹⁵ This census, “the most perfect product of the rulers of the Old Regime in Europe” (Livi Bacci, 1987, p.147), provides information, at the population entity-level (or *pueblo*), of the existing jurisdictional regimes during the late years of the Old Regime, classifying them as royal domains, ecclesiastical lordships, secular lordships and territories belonging to military orders.

In this respect, a lordship involved the delegation of power by the Crown (Dewald, 1996). Historiographers of medieval and modern Spain distinguish between ecclesiastical lordships or abbasies (*señoríos eclesiásticos* or *abadengos*) and secular or noble lordships (*señoríos laicos* or *nobiliarios*). The first group covers two basic categories: monastic lordships and those granted to bishops (bishoprics or *mitras*) and chapters (*cabildos*). Falling somewhere between secular and ecclesiastical lordships were those awarded to the military orders (of Calatrava, of the Temple...). Another relevant point is the length of time for which powers were delegated by the Crown since this could affect incentives. In this regard, it is worth noting that most *lordships* were hereditary, although some, such as those involving the military orders (*órdenes militares*), were for a lifetime.¹⁶

The territories occupied by lordships initially took shape during the 9th and 10th centuries and spread over the course of the Middle Ages, generally because it was a way in which the King would reward nobles who took part in the Reconquest. The second stage of this process took place during the modern era, in particular during the period of the House of Habsburg and was driven by financial needs. However, from the point of view of how a municipality’s institutional framework could possibly have an impact on the local elites, we need to consider the powers involved when a lordship was granted to its holder, be it a noble or an ecclesiastical one. In this regard at least two basic types of power should be considered: the jurisdictional lordship (*señorío jurisdiccional*) and the territorial lordship (*señorío solariego*), which also includes so-called vassalage.

¹⁵ The information in the Census of Floridablanca has recently been used in other studies (Oto-Peralías, 2019; Figueroa, 2020; Cinnirella et al., 2020).

¹⁶ See Torres Morera (1969). Much of this property was in turn sold and converted into lordships during the 16th and 17th centuries.

In a jurisdictional lordship, the Crown delegated a royal power such as justice to the holder of the title. The extent of the delegated jurisdiction changed during the medieval and modern periods. The earliest lordships, basically those granted up to the end of the 14th century, did not usually include jurisdiction. However, the granting of jurisdictional rights was more common during the final stages of the Reconquista and in lordships established in the modern era. At its peak, full jurisdictional lordship meant delegating the administration of justice, along with the capacity to appoint judges and officials and to at least approve if not appoint council members. This was a clear delegation of royal power to the local elites.¹⁷

The second way in which the Crown could delegate power was through a territorial lordship, which involved a set of rights in connection with legal ownership of the land. To gain an idea of its importance, suffice it to say that the abolition of this power was a priority of the liberal reformists in Spain in 1811. Being given territorial control involved the delegation of rights over the lordship estates, regardless of whether they were worked directly by the lord or by tenant farmers or settlers. The deeds of cession also usually included the right to collect the rents paid by those who had the right to use the land subject to charges (*censo*), i.e. those with emphyteutic contracts. They also included the income deriving from local land tax (*pecho*)¹⁸.

In addition, another right that could form part of the territorial lordship was the income from vassalage. This income included taxes that came from neither the jurisdictional services nor the working of the land, but from the servitude that a territory's inhabitants owed to their lord. It would have included tolls, road use charges (*portazgo*s), personal taxes on Moors and Jews, monopolies on ovens, mills and presses, sales taxes if the local lord charged them (*alcabalas*), and even military service under the lord's orders. The literature has pointed out that this vassalage was important in two areas: the economic area, since the income obtained from these rights was much greater than that obtained through jurisdictional and territorial rights; and the coercive

¹⁷ For example, in many 16th-century deeds (*escrituras de donación*) involving lordships and bishopric towns and monasteries that reverted to the Crown when the holder of the title died (*amortización de encomiendas*), the Habsburgs – whose intention it was now to sell the properties to secular lords – would include in the formula of bestowal the phrase: “civil and criminal jurisdiction, high and low justice, simple and mixed rule”. In the original Spanish: “*la jurisdicción civil y criminal, alta y baja, y mero y mixto imperio*” (Moxó, 1965). It was this formula that granted the right to appoint the mayor (*alcalde mayor*) and other figures of authority, the clerks of the court and council (*escribanías del juzgado y concejo*), and to pass sentences (*penas de cámara, fiscales y arbitrarias*). It therefore involved a complete transfer of administrative, civil, fiscal and penal jurisdiction, along with the right to collect the taxes and charges that would fund it.

¹⁸ This type of tax has different names and forms across the length and breadth of Spain (*martinegas, tercios del pan, de la fruta...*).

area, because the fact that the Crown had delegated powers gave the lord the capacity of coercion over the people who lived in his territory.

All in all, distinguishing between territories under royal domains and lordships may shed some light on two basic aspects. The first of these is decision making. In a large number of lordships, the mayor, the council and all the posts associated with municipal government were appointed by the lord. Besides, the lordship also often involved the delegation of territorial rights, i.e., rights over the actual land (*derechos solariegos*). Given such a situation, the incentives of the local elites as far as the provision of education was concerned would relate to its impact on unskilled workers, a factor used intensively in the activity from which they extracted a large part of their income, i.e., agriculture. If the accumulation of human capital at a local level meant that unskilled labour became more expensive, then the local elites would have an incentive to block the provision of education.¹⁹

The second aspect is related to the social demand for literacy. If lordships subject their vassals to greater fiscal pressure, then the opportunity cost of elementary schooling could be affected. In addition, in cases where a territorial lordship included beneficial ownership of the land, this land would be concentrated in the hands of the local lord, thereby worsening economic inequality. Poverty and inequality would act to minimize the social demand for education and thereby affect literacy levels. Finally, the coercion that a lord might use on its vassals could have been an element that hindered investment in education.²⁰

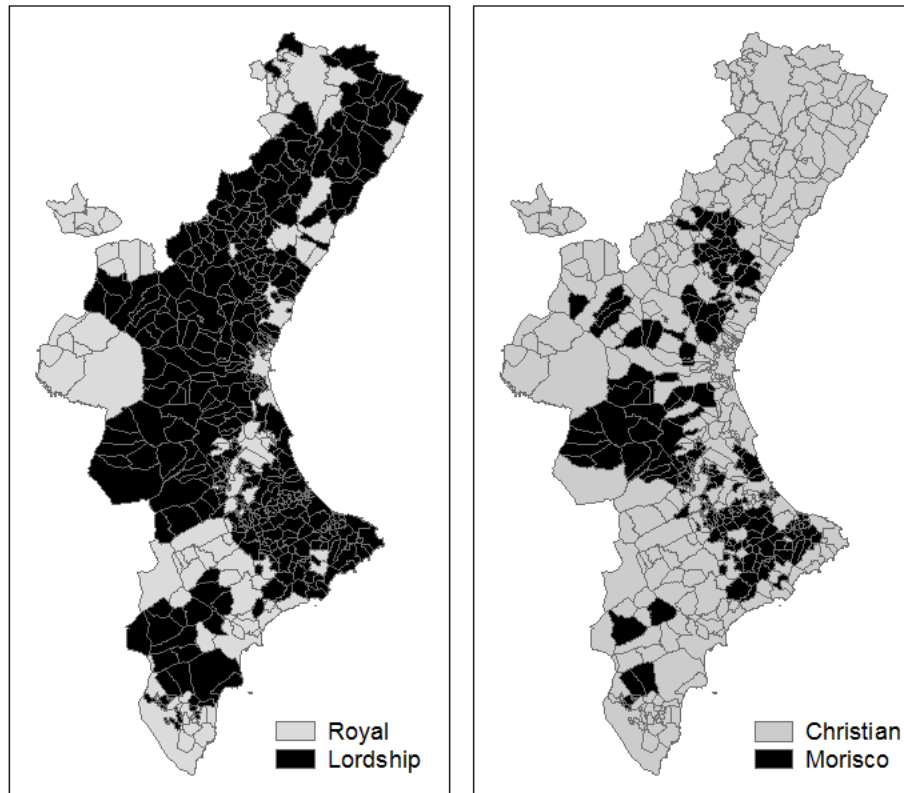
Lastly, it should be pointed out that there is a key aspect when it comes to tackling the empirical side of this investigation. The spatial distribution of jurisdictional regimes was influenced by the characteristics of the territories (type of pre-existing production activities, soil qualities and potential agricultural uses of the land, etc.), which would have had a direct effect on the expected returns to literacy, thus hindering the possibility of clearly identifying the relationship between institutional frameworks and literacy levels. Nevertheless, as can be seen in Figure 2, the way that the Reconquest proceeded in the Kingdom of Valencia meant that the allocation of territories to the Crown or granted to the Church, military orders or the nobility following the lordship formula was done more or less randomly. As Oto-Peralías (2019) shows in the case of

¹⁹ Galor et al. (2009) argue that, given the scant complementarity between agriculture and human capital, the large landowners would have had the incentive to keep investment in education to a minimum. A similar argument can be found in Galor (2011) and Cinnirella and Hornung (2016).

²⁰ As argued by Cinnirella and Hornung (2016).

lordships established towards the end of the conquest of the kingdom of Granada, the Crown reserved for itself the jurisdiction of cities and neighbouring territories, but the rest of the land was portioned out apparently at random as a reward for contributing to the process of conquest.

Figure 2. Valencian municipalities by jurisdiction and population type



Source: see text.

2.3. Lordships in Valencia after the expulsion of the Moriscos in 1609

In addition to the arguments set out above, some authors have pointed out that, although the lordship regime always involved the delegation of power from the Crown to private agents, its negative impact on living conditions and socioeconomic inequality is unclear. In fact, in the context of lordships established after the conquest of the Nasrid Kingdom of Granada, Oto-Peralías (2019) presents evidence in favour of the opposite hypothesis, i.e., that living conditions were better in lordships than in royal domains. This evidence casts doubt on whether distinguishing between lordships and royal domains will enable us to accurately identify the

impact of Old Regime institutional frameworks on human capital accumulation at a local level. This is because the effect generated by this institutional framework on the demand for education could act in any direction. Therefore, despite the fact that our analysis may enable us to confirm the presence of a negative relationship between municipalities under a lordship regime and the accumulation of human capital, it does not appear that we can simply isolate the mechanism whereby this relationship is established.

Given these circumstances, analysing what happened in the region of Valencia provides us with an opportunity for a more precise identification. We need to bear in mind that, as far as Valencia is concerned, the Reconquista did not bring with it the need to repopulate the entire territory. Large areas were already populated by Moslems who continued to inhabit them after the Christian occupation. Gradually, the once Moslem population, forcibly converted to Christianity in 1525 (then Moriscos), became concentrated in rural areas in the interior, settling in villages and hamlets mainly under lordship jurisdiction.²¹ Under the umbrella of an apparently similar lordship regime, however, historians have recorded that the living conditions of the Moriscos were particularly burdensome compared to those in lordships populated by Old Christians (Reglà, 1964; Torres Morera, 1969; Ardit, 1987). The Moriscos were often obliged to provide labour services to the lords and present them with a high percentage of their harvests (Ciscar, 1977, pp. 228-235, estimates this to be 40%), a relationship was much less onerous or extractive than in neighbouring lordships inhabited by Old Christians (Ciscar, 1993, p.200; Chaney, 2009, p.182).

Regardless of its origins, the lordship regime experienced a shock when Philip III ordered the immediate expulsion of the New Christians or Moriscos in 1609. This historic event opened up a new gap between the conditions existing in lordships granted during the time of the Reconquista and in those that underwent renewal and enabled the lordship regime to continue in territories previously populated by Moriscos. With the expulsion of the Moriscos, the lords lost the income they used to receive from them, which had gone towards paying off debts

²¹ Of the 205 municipalities populated by New Christians, 201 had lordship jurisdiction. Unlike the general distribution of royal districts and lordships over the territory, the geographical distribution of the Morisco population over the Valencia region may have followed a pattern that connected the territorial distribution of the lordships established in areas inhabited by Moriscos with certain first-nature geographical characteristics such as altitude, temperature and the ruggedness of the terrain, which may have had an effect on product specialization and labour productivity. This is certainly an element that should be taken into account in the analysis. Figure 2 shows the location of Valencian municipalities inhabited exclusively by Moriscos before 1609.

secured using the lands and dwellings they had occupied as collateral. The nobility argued that the expulsion would make it impossible to pay the taxes on their properties and strongly urged the Crown to mitigate the impact that it would have on their rents. Political dealing finally resulted in the Crown devising a formula that, without renouncing to the expulsion of the Moriscos, would make it possible to attend the claims of the lords without causing lasting harm to the commercial and financial bourgeoisie to whom money (*censos*) was owed. As well as pressing for the creditors (*censalistas*) to allow remission of the lords' debts, the Crown hoped to drive repopulation of the lands left empty by the expelled population and, importantly, compensated the lords of these areas by reviewing the deeds of bestowal (*escrituras de otorgamiento*) under which their lordship rights had been granted (Reglà, 1964). In the new town charters (*cartas pueblas*) applying to territories affected by the expulsion, the territorial powers of the lords were extended and they were granted ownership of the farms (*haciendas*) and real estate (*bienes raíces*) that used to belong to the Moriscos until 1609. In addition, with the granting of beneficial ownership came the introduction of extremely pernicious conditions for the new settlers insofar as they not only had to pay taxes and levies but also took on obligations in connection with vassalage, including limitations to their freedom of movement (Reglà, 1964). Then, and following this strand of the literature, we empirically investigate whether the Morisco lordships, by being harsher, were also less conducive to human capital formation.

3. Sources, data description and descriptive analysis

The data set used to perform the empirical analysis was created by collecting and homogenizing information from different sources.²² The dependent variable is the share of males who could read and write, which come from the Spanish population census of 1860. We focus on male literacy rates due to the existence at that time of a large gender gap in literacy, paired with low levels for female literacy and substantial differences in attitudes, infrastructure, and investment in girls' education. There are nonetheless two issues regarding these data. First, Spanish population censuses, under data for municipalities, provide information on the number of inhabitants who could read and write, distinguishing between men and women but not by age group. Given this situation, throughout the text when we talk about literacy rates, we are

²² A detailed description of the sources and methods used to construct the data set can be found in the Appendix A.

referring to people who could read and write as a percentage of total population. Second, gathering and processing this information is not straightforward given that the number of municipalities has changed over the course of modern Spanish history. Therefore, following Beltrán Tapia et al. (2019), male literacy has been computed using 524 entities that correspond to the current municipalities in the region of Valencia.²³ Table 1 shows some descriptive statistics.

Table 1. Main descriptive statistics for male literacy (%) in 1860^a

	Municipalities	N	Mean^b	sd	Min	p25	p50	p75	Max
-	All	524	14.3	6.5	0.9	10.1	13.5	17.7	44.0
1	Lordship	431	13.5	6.0	0.9	9.5	13.1	16.6	44.0
	Royal	93	17.8	7.8	5.1	12.0	17.2	21.5	39.7
2	Morisco	216	11.9	5.4	0.9	7.8	11.6	15.2	32.0
	Non-Morisco	308	16.0	6.7	3.4	11.4	14.6	19.9	44.0
3	Lordship, Morisco	212	11.8	5.5	0.9	7.7	11.6	15.1	32.0
	Lordship, non-Morisco	219	15.2	6.0	3.4	11.3	14.2	18.1	44.0
4	Royal, Morisco	4	15.4	4.2	9.7	12.4	16.6	18.5	18.8
	Royal, non-Morisco	89	18.0	8.0	5.1	12.0	17.2	22.1	39.7

Notes: ^a Male literacy is computed as the percentage of men who could read and write in a given municipality. ^b A two-sample t-test (with equal variance) for each group was performed to compare average values. The results indicate that the averages are statistically different with a p-value equal to 0.0000.

Sources: Own elaboration based on the 1787 Census of Population; the 1860 Census of Population; and Lapeyre (1959, 1986).

The information relating to the institutional characteristics during the Old Regime was obtained from the census of 1787, i.e., the Census of Floridablanca. This source provides information on the size, structure and occupation of the population by settlement, and these settlements are classified by category (city, town, village, hamlet...),²⁴ and jurisdiction. As stated earlier, the census classifies the type of jurisdiction of local entities as royal, ecclesiastical lordship, secular lordship and military orders. Using this information, we have been able to identify the

²³ In fact, there are 542 municipalities in the *Comunitat Valenciana* today. However, as there have been various changes in the borders involving different municipalities since 1860, we have made some adjustments in order to have consistent municipalities over time. Specifically, we have merged a number of them, thereby converting 35 municipalities into 17 new artificial supraentities or pseudo-municipalities (see Table A1 in the Appendix A). Hence, the whole of the territory of the Valencia region is covered in our data set.

²⁴ In the original Spanish these entities were known as *villas*, *lugares*, *aldeas*, *arrabales*, *caseríos*, etc.

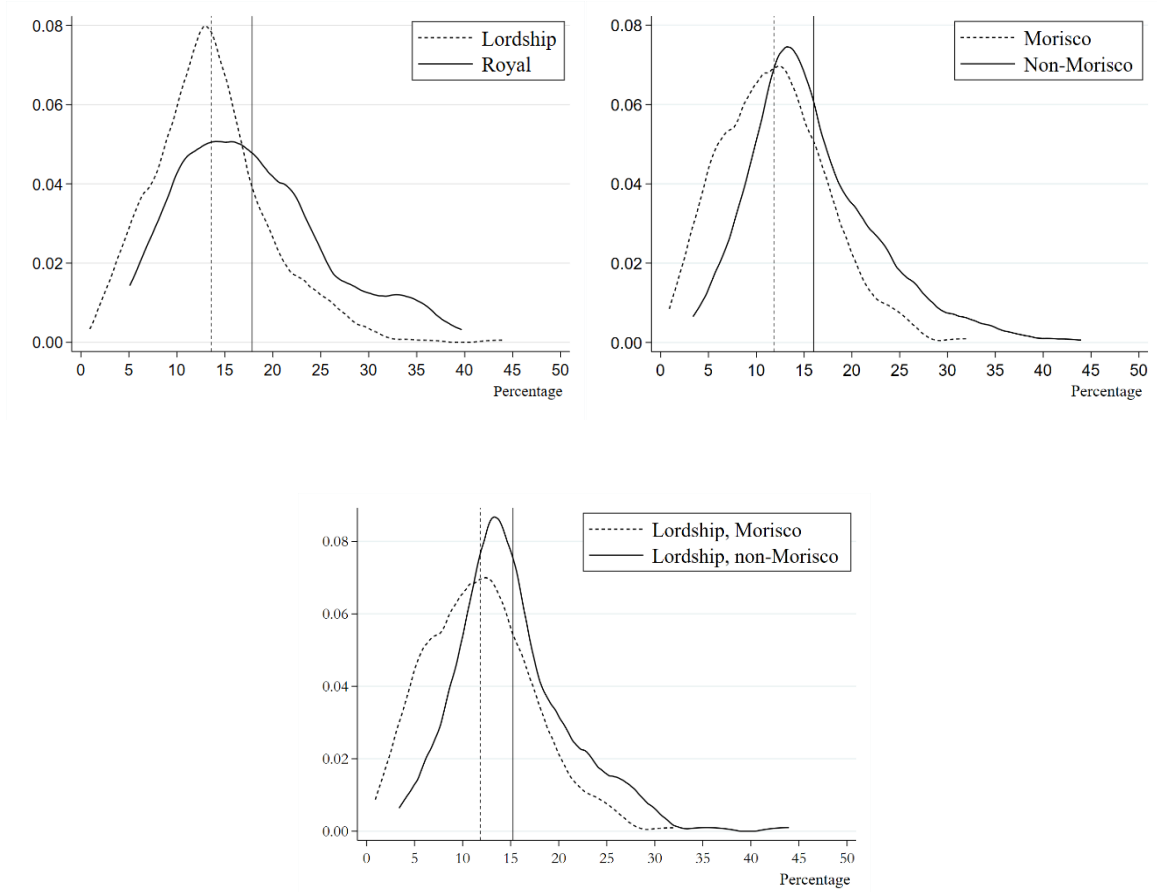
jurisdictional regime of the 524 municipalities. While the royal domains had less relative importance than the lordships (accounting for 18% and 82% respectively), most lordships were secular.²⁵

Information on which municipalities were *Morisco*, i.e., inhabited by New Christians before their expulsion in 1609, was obtained from Lapeyre (1959, 1986). This meticulous research provides the Morisco and non-Morisco (or Old Christian) population entities (town, village, hamlet). As well as clearly distinguishing between Morisco and non-Morisco municipalities, there were also mixed cases in which both coexisted. Still, since in most of these the Morisco population was residual, municipalities classified as mixed, according to Lapeyre (1959, 1986), are considered to be non-Morisco in our sample. Out of the 524 municipalities, therefore, 216 are classified as Morisco and 308 as non-Morisco.

Figure 3 shows the kernel densities for male literacy percentages under the different categories that we just defined. The distribution of lordship municipalities (left panel), which is located to the left of the non-lordship distribution, indicates that the former has lower male literacy levels. Further, when we look at male literacy distinguishing between Morisco and non-Morisco municipalities (right panel), the distribution of the formers is located to the left of the non-Morisco, indicating that male literacy was lower in the Morisco areas. Although interesting, these results could to some extent be due to the fact that some of the categories were determined simultaneously (e.g., the percentage of municipalities classified as lordships being higher among Morisco municipalities than in the sample as a whole). To solve this, we combine different categories in order to establish the existence of effects between pairs that share one characteristic but differ in other. Focusing only on the 431 lordship municipalities, the kernel densities in Figure 3 (bottom panel) illustrate that there was a consistently lower level of male literacy in Morisco than in non-Morisco lordships, thus suggesting that that these territories endured harsher conditions.

²⁵ Out of the 431 lordship municipalities, 363 are secular lordships, 30 ecclesiastical lordships, and 38 military orders.

Figure 3. Kernel distribution for male literacy (%)



Notes: Left panel – *lordship* vs. *royal domains*; Right panel – *Moriscos* vs. *Non-Moriscos domains*; Bottom panel – *lordship, Morisco* vs. *lordship, non-Morisco domains*. Sources: Own elaboration based on the 1787 Census of Population; the 1860 Census of Population; and Lapeyre (1959, 1986).

4. Empirical analysis

Since the descriptive analysis is broadly in line with the hypothesis discussed above, we delve further using an econometric strategy that allows us to control for additional factors according to the following baseline equation:

$$male_literacy_i = \alpha_0 + \alpha_1 lordship_i + \alpha_2 morisco_i + \delta Z_i + \lambda_j + u_i \quad (1)$$

where the endogenous or explanatory variable is the percentage of male literacy in 1860, the subscript $i = 1, \dots, 524$ refers to the municipality, and the subscript $j = 1, \dots, 17$ refers to the district. The dummy variable *lordship* is equal to one if the municipality is classified as a lordship and zero if it is classified as royal. The dummy variable *morisco* is equal to one if the municipality was inhabited by Moriscos before their expulsion in 1609 and zero otherwise. Thus, we can compare lordships versus royal domains, and Morisco versus non-Morisco. Apart from the error term (u_i) and district fixed-effects (λ_j), this specification also includes a vector of control variables (Z_i) described below that capture municipal intrinsic features that may affect education (see also Table 2 for the main descriptive statistics).

Firstly, we take into account the size or total population of each municipality in 1860 as well as the dispersion of population within a municipality. In the case of Spain, it has been argued that the average size of municipalities in each region historically conditioned the provision of schools (Pérez Moreda, 1997, p. 249).²⁶ Likewise, there exists municipalities that include various population entities within their borders, a situation that predominates, albeit not exclusively, in the north of Spain, and is particularly acute in the north-west (Reher 1990; Oto-Peralías, 2017). It has been claimed that a more dispersed population, together with deficient communications, negatively affected the extensive provision of schools and schooling attendance (Viñao, 1990; Borrás, 2002). In order to consider this factor, we compute the percentage of population that lived in the main settlement in contrast to those who resided scattered across minor entities (hamlets, homesteads, mills, rural dwellings and isolated buildings; this information comes from the *Nomenclator* of Spain for 1887).

Other important element to consider is the economic structure since it can generate differences in the demand for skilled labour across municipalities. Land and human capital are less complementary than physical and human capital, so literacy might be of more relevance for non-agricultural activities. A greater share of manufacture and artisan activity may therefore imply a higher demand for skilled workers and thereby greater potential benefits of education (Galor et al., 2009; Franck and Galor, 2017; Diebolt et al., 2017; Montalbo, 2020). In order to control for this, we have collected information on the percentage of manufacturers and artisans over the

²⁶ As regards the number and size of municipalities, there exists a territorial structure characterized by large differences between the south (a lower number of municipalities with larger population size) and the north of Spain (large number of municipalities with lower population size) (Beltrán Tapia et al., 2019, p. 48).

active population. This information, extracted from the Census of Floridablanca, is available for 474 municipalities.

Likewise, literacy in Valencian municipalities could also be related to the existence of a distance, a mismatch, between the compulsory language of schooling (Spanish) and the mother tongue (either Spanish or Catalan, depending on the municipality). From an education supply perspective, the presence of a language mismatch would affect in cases where funding was a municipal-level responsibility and the local elites could believe that the use of a language of schooling that was not their own posed a threat to their position of privilege (Cinnirella and Schueler, 2016; Cvrcek and Zajicek, 2013). Moreover, it has also been pointed out that the existence of a language mismatch can reduce the demand for education (Jain, 2017; Bleakley and Chin, 2004; Bruthiaux, 2002; Angrist and Lavy, 1997). In order to consider this potential effect, we have classified the 524 municipalities into Catalan or Spanish language areas as defined by the *Ley de uso y enseñanza del valenciano* passed by the *Generalitat Valenciana* regional government in 1983, considering that the prevalence of one language or the other dates back to medieval and early modern times, so the situation today is more or less the same as that found at the end of the Old Regime or the mid-nineteenth century (381 municipalities, 73%, are assigned to the Catalan language area and 143 to the Spanish).

Finally, since geographical characteristics could also affect literacy levels, the analysis includes controls for both first-nature (temperature and rainfall) and second-nature geography (distance to main road, distance to the capital city of each province, and distance to the coast). Geographical and climatological conditions may have an influence on agrarian specialization and productivity and, indirectly on human capital investment, both from the supply and the demand side. Likewise, access to markets or second-nature geography is also relevant. On the one hand, proximity to the transport network, such as to main roads or to the capital and administrative city of the district may open up economic opportunities -and the transmission of information- that influence how families approach to education, given that remoteness may disincentive human capital investment. On the other, a coastal region engaged in a traditionally open and export-oriented economy since Medieval times, Valencia enjoyed trade opportunities in the Mediterranean Sea during the Modern Period when commerce thrived (Braudel 1996). Indeed, the port of Valencia, together with Barcelona were key in the Western Mediterranean area. While the climate information refers to the average temperature and average rainfall during the period

1950–2000 (Hijmans et al. 2005)²⁷, access to markets is computed as the distance between each municipality and the capital city, the transportation network and the coast.²⁸ Finally, the effect of unobserved locations-specific characteristics is captured using the latitude/longitude of the municipalities.

Table 2. Main descriptive statistics of the control variables

Variable	N	Mean	Sd	Min	p25	p50	p75	Max
Population 1860	524	2,434	6,795	90	709	1,229	2,386	140,614
% population in the core entity	524	86.0	18.1	4.6	80.7	94.2	98.2	100.0
% manufacturers and artisans	474	8.5	9.4	0	2.5	6.4	10.5	66.3
Catalan speaking	524	0.7	0.5	0	0	1	1	1
Temperature (degrees)	524	15.7	2.0	9.7	14.2	16.2	17.3	18.3
Rainfall (mm)	524	470.2	62.9	281.0	439.9	464.4	507.7	627.3
Distance to main road (km)	524	17.8	15.8	0.1	4.5	13.6	27.7	69.1
Distance to the capital city (km)	524	41.7	18.4	1.5	28.5	42.1	56.6	85.5
Distance to the coast (km)	524	25.4	20.4	0.9	8.9	21.4	34.4	108.3

Sources: Censo de Floridablanca 1787, Census of population 1860, *Nomenclator de España*, 1887, GIS.

4.1. Baseline results

Table 3 presents the results of estimating equation (1) using ordinary least square with standard errors corrected for spatial dependence.²⁹ While column (1) reports the baseline model, column (2) incorporates an additional control variable: the economic structure. As this information is not available for all the municipalities the number of observations decreases from 524 to 474. Columns (3)-(6) add geographical control variables and district fixed effects. The estimated coefficients of the dummy variables *lordship* and *morisco* have the expected negative sign, which means that male literacy in 1860 was lower in lordships than in royal domains and in Morisco

²⁷ Concerning first-nature geographical variables there is information also about the altitude mean of the municipality (meters above sea level), but due to the high correlation between this variable and temperature (-0.968), we decided to exclude it from the econometric specification.

²⁸ We thank Pau de Soto for sharing his work digitalizing the Spanish road network in in the middle of the 19th century (Mercator-e Project): <http://fabricadesites.fcsh.unl.pt/mercator-e/results-2/xixth-century-roads/>

²⁹ The standard errors are computed using the Conley method considering a cutoff of 42.7 kilometers, namely considering the ten nearest spatial units. Adopting a smaller cutoff (22.2 kilometers), which includes the five nearest municipalities, hardly alters the results reported here and the coefficients are still statistically significant different from zero (see Table B1 in the Appendix B).

than in non-Morisco municipalities. More specifically, and depending on the model, the percentages of male literacy in lordships range between 1.7 and 2.9 percentage points lower than in royal domains and in Morisco municipalities between 1.0 and 3.5 percentage points lower than in non-Morisco ones.

Table 3. Estimation results (individual effect)

Dependent variable: percentage of male literacy in 1860						
Econometric model: ordinary least squares (standard errors corrected for spatial dependence)						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables of interest						
Lordship	-2.5123** (1.1768)	-2.8824*** (1.0664)	-1.9725** (0.9781)	-1.7184* (0.8857)	-1.6844* (0.8824)	-1.7773** (0.8719)
Morisco	-3.4740*** (0.7503)	-2.7078*** (0.7139)	-2.1036*** (0.6303)	-1.2831** (0.6045)	-1.2668** (0.6027)	-1.0296** (0.5179)
Control variables						
ln(Population 1860)	1.1411*** (0.4331)	0.7237 (0.4576)	1.1289*** (0.3557)	1.2058*** (0.4101)	1.2299*** (0.4130)	1.2103*** (0.4172)
Settlement pattern (1887)	0.0747*** (0.0160)	0.0649*** (0.0171)	0.0823*** (0.0189)	0.0700*** (0.0217)	0.0671*** (0.0226)	0.0605*** (0.0225)
Catalan	-3.2733*** (0.9689)	-3.1477*** (0.9550)	0.2996 (0.9133)	-0.2808 (0.8914)	-0.2574 (0.0295)	-0.1424 (0.9048)
% manuf. and artisans (1787)		0.1422*** (0.0432)	0.0881*** (0.0325)	0.1126*** (0.0312)	0.1098*** (0.0295)	0.1191*** (0.0303)
Constant	5.5558 (3.9596)	8.1066** (4.0187)	34.3543*** (5.9309)	25.8850*** (9.2083)	-44.0165 (64.3457)	-23.8644 (77.2749)
First-nature geography	No	No	Yes	Yes	Yes	Yes
District fixed effects	No	No	No	Yes	Yes	Yes
Latitude and longitude	No	No	No	No	Yes	Yes
Second-nature geography	No	No	No	No	No	Yes
Observations	524	474	474	474	474	474
R-square	0.2173	0.2535	0.3120	0.3615	0.3638	0.3747

Notes: First-nature geography includes temperature and rainfall. Second-nature geography includes distance to main road, distance to the capital city, distance to coast (in natural logarithms). Conley standard errors (Conley, 1999) are in parentheses. Cutoff: 42.7 km (ten nearest neighbors). Coefficients are statistically significant at * $p < 0.1$, ** $p < 0.05$, *** and $p < 0.01$.

As regards the control variables, both population size and concentration have a positive effect in all the regressions. According to model (6), if the population of the municipality increases by 1%, the percentage of male literacy increases by an average of 0.01 percentage points, whereas if the population concentrated in the core entity increases by one percentage point, it increases by an average of 0.06 percentage points. The economic structure also has a positive impact on the male literacy, a 1% increase in the share of manufacturers and artisans increases male literacy by 0.12 percentage points. The Catalan-speaking municipalities have lower male literacy than

Spanish-speaking municipalities, confirming the existence of an effect caused by the distance (or mismatch) between the language of instruction and the mother tongue. Nevertheless, this negative effect is only significant in models (1) and (2)—when the geographical variables are not included—due to the existing correlation between the language and some geographical variables.

4.2. *The combined effect of lordships and former Morisco presence*

Although interesting, the previous results show the independent effect of two specific characteristics, being a lordship municipality and a Morisco municipality. One way of tackling this issue is to perform comparisons between literacy rates in municipalities with the same type of jurisdiction (either lordship or royal), comparing on the one hand those classified as Morisco, and, on the other, those classified as non-Morisco. Taking into account the type of jurisdiction (lordship or royal) and whether or not there was a Morisco population, municipalities can thus be classified as follows: (1) lordship, Morisco municipalities (n=212); (2) lordship, non-Morisco municipalities (n=219); (3) royal, Morisco municipalities (n=4); and (4) royal, non-Morisco municipalities (n=89). According to this classification four dummy variables are created, three of which are included in the econometric specification (*royal_nomor*, *lordship_mor*, and *royal_mor*), and the other (*lordship_nomor*) is used as a control group. The resulting equation for this second specification is as follows:

$$male_literacy_i = \beta_0 + \beta_1 royal_nomor_i + \beta_2 lordship_mor_i + \beta_3 royal_mor_i + \delta Z_i + \lambda_j + u_i \quad (2)$$

The coefficient of the variable *royal_nomor* (β_1) allows us to analyze whether there are differences between royal or lordship municipalities (considering fixed the fact of being non-Morisco municipalities), while the coefficient of the variable *lordship_mor* (β_2) allows us to analyze the difference between Morisco and non-Morisco municipalities (considering fixed the fact of being lordship municipalities). Given that the number of royal, Morisco municipalities (*royal_mor*) is very low (n=4), the analysis is developed without reporting the results of this specific category.

The model is estimated with ordinary least squares with standard errors corrected for spatial dependence using Conley's method, considering the ten nearest spatial units (42.7 kilometers).³⁰

Table 4. Estimation results (combined effect)

Dependent variable: percentage of male literacy in 1860						
Econometric model: ordinary least squares (standard errors corrected for spatial dependence)						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables of interest						
Royal, non-Morisco	2.4804** (1.2527)	2.8284** (1.1483)	1.9158* (1.0568)	1.6044** (9.3424)	1.5480 (0.9564)	1.6352* (0.9432)
Lordship, Morisco	-3.4906*** (0.7432)	-2.7305*** (0.7130)	-2.1268*** (1.3539)	-1.3285** (0.6202)	-1.3179** (0.6187)	-1.0796** (0.5269)
Control variables						
ln(Population 1860)	1.1415*** (0.4333)	0.7242* (0.4579)	1.1289*** (0.6331)	1.2009*** (0.4114)	1.2259*** (0.4136)	1.2064*** (0.4174)
Settlement pattern (1887)	0.0746*** (0.0160)	0.0647*** (0.0171)	0.0821*** (0.0189)	0.0696*** (0.0216)	0.0666*** (0.0225)	0.0599*** (0.0225)
Catalan	-3.2745*** (0.9677)	-3.1496*** (0.9532)	0.3004 (0.9149)	-0.2827 (0.8957)	-0.2716 (0.8556)	-0.1533 (0.9050)
% manuf. and artisans (1787)		0.1428*** (0.0430)	0.0887*** (0.0323)	0.1147*** (0.0305)	0.1121*** (0.0290)	0.1215*** (0.0300)
Constant	3.0603 (3.2825)	5.2455 (3.4815)	32.4347*** (5.9685)	24.1613** (9.3424)	-49.4508 (64.5111)	-29.2245 (76.7456)
First-nature geography	No	No	Yes	Yes	Yes	Yes
Districts fixed effects	No	No	No	Yes	Yes	Yes
Latitude and longitude	No	No	No	No	Yes	Yes
Second-nature geography	No	No	No	No	No	Yes
Observations	524	474	474	474	474	474
R-square	0.2173	0.2536	0.3121	0.3618	0.3642	0.3751

Notes: The reference or control group in the variables of interest is lordship, non-Morisco municipalities. Due to the low number of observations (n=4), the estimated coefficient of royal, Morisco (royal_mor) municipalities is not reported. First-nature geography includes temperature and rainfall. Second-nature geography includes distance to main road, distance to the capital city, distance to coast (in natural logarithms). Conley standard errors (Conley, 1999) are in parentheses. Cutoff: 42.7 km (ten nearest neighbors). Coefficients are statistically significant at * p<0.1, ** p<0.05, *** and p<0.01.

The results are presented in Table 4. Firstly, we look at the pair of dummies used to compare non-Morisco municipalities (coefficient β_1). The royal, non-Morisco municipalities have higher male literacy rates than the lordship, non-Morisco municipalities (the control group). Specifically, male literacy was, depending on the model, between 1.5 and 2.8 percentage points higher in the

³⁰ As previously, the standard errors have been computed using Conley standard errors with a smaller cutoff (22.2 kilometers), which includes the five nearest municipalities (see Table B2 in the Appendix B). Additionally, we estimate the equation with robust standard errors (see Table B3 in the Appendix B), and robust standard errors clustered by district (see Table B4 in the Appendix B). The significance of the variable of interest is consistent to the changes.

royal than in the lordship domains. These results confirm that these different institutional frameworks have a consistent and statistically significant effect on literacy levels. Moreover, the results also confirm that the negative effect on male literacy is greater in Morisco lordships. Specifically, the percentage of male literacy was between 1.1 and 3.5 percentage points lower. These findings thus reinforce the hypothesis that more extractive local institutions have a negative effect on literacy levels, and hence in human capital formation. Bearing in mind that the median literacy was 13.5%, these effects are indeed quantitatively relevant.

The previous results show how institutional heterogeneity shaped literacy rates within the Valencia region in 1860. Yet, what was the quantitative significance of these findings? To answer this question, we compute predictive margins—namely average values of male literacy—from the results obtained through specification 2. Column (1) in Table 5 shows the average values of the percentage of male literacy according to the type of municipality.³¹ On average, the highest percentage of male literacy is to be found in royal, non-Morisco (16%), followed by lordship, non-Morisco (14.4%), and lordship, Morisco (13.3%); and these differences are statistically significant.³²

Table 5. Predictive margins

Type of municipality	(1) Margin	(2) Delta SE	(3) Sign.	(4)
Royal, non-Morisco	16.0072	0.8324	***	100
Lordship, non-Morisco	14.3721	0.6845	***	89.84
Lordship, Morisco	13.2925	0.6699	***	83.14

Notes: First step: OLS regression with robust standard errors. The specification includes control and geographical variables: $\ln(\text{population } 1860)$, settlement pattern (1887), Catalan, % manuf. and artisans (1787), temperature, rainfall, district fixed effects, latitude and longitude, $\ln(\text{distance to main road})$, $\ln(\text{distance to capital city})$, and $\ln(\text{distance to coast})$. See Table B3 (column (6)) in Appendix B. Second step: Computation of the predictive margins using the Stata command “margin” and the option “asbalanced”.

³¹ Margins are statistics calculated from prediction of a previously fit model in which some of the covariates can be fixed at values different from what they really are. Then, the margin obtained for Royal, non-Morisco is obtained considering the actual values of all the control variables, but as if all the municipalities were Royal, non-Morisco. The same procedure is done for the other types of municipalities. Thus, margins are adjusted predictions that allow us to quantify the institutional impact on male literacy level. For more detailed description, see StataCorp (2019, 2021) and Williams (2012).

³² The difference between royal, non-Morisco and lordship, non-Morisco (16 versus 14.37) is statistically significant at 10 percent; the difference between royal, non-Morisco and lordship, Morisco (16 versus 13.29) is statistically significant at 5 percent; and the difference between lordship, non-Morisco and lordship, Morisco (14.37 versus 13.29) is statistically significant at 10 percent.

4.3. Robustness checks

Our findings are consistent with several robustness checks confirming the strength of the main result, namely the negative effect of Morisco municipalities on male literacy rates (the whole set of results can be found in Appendix B). The negative effect of lordships is also visible in these specifications but its coefficient is less precisely estimated. In addition to the exercises related to the computation of spatial standard errors previously described (tables B1-B4), we conduct four robustness tests. First, we include a new control variable to account for the level of wealth of the municipalities based on the information available in mid-19th century (INE, 2002). In this regard, we consider the logarithm of the taxable payment per capita for each municipality. This information is however only available in 491 out of 524 municipalities, thus reducing our sample. Further, after combining this information with the one related to professions obtained from the Census of 1787, the number of observations decreases from 474 to 466 (Table B5). The new control is statistically significant in regressions (3) – (6), when the geographical controls and district fixed effects are considered. The estimated coefficient of the variable *lordship, Morisco* remains statistically significant in all the specifications.

Then, we restrict the size of the sample through different ways. On the one hand, we use a more homogeneous sample of municipalities and exclude the nine municipalities that were not part of the Kingdom of Valencia during the Old Regime and that joined the Valencia region in the mid-19th century (Table B6).³³ Considering equation (2) (and thus the variables included in Table 4), the estimated coefficient of the variable *lordship, Morisco* remains statistically significant in all the specifications. On the other hand, we provide two additional exercises that reduce the sample to lordship domains in order to minimize the jurisdictional differences among municipalities. To isolate the fact of having different jurisdictions (either lordship or royal) and capture more accurately the Morisco effect on literacy levels, we consider only the subsample of lordship municipalities.

The dummy variable *morisco* allows us to analyse the effect of being a Morisco municipality, considering fixed the fact of being a lordship domain. The sign of the estimated coefficient is negative and statistically significant in all the specifications (Table B7). Moreover, if we compare the coefficient of the column (6) with the one obtained in the same column of the Table 3, the

³³ These nine municipalities are Camporrobles, Caudete de las Fuentes, Fuenterrobles, Requena, Sax, Utiel, Venta del Moro, Villargordo del Cabriel, and Villena.

effect is slightly higher — and statistically significant — in the lordships subsample than in the whole sample (-1.2 versus 1). This result reinforces the hypothesis that the lordship, Morisco municipalities were characterized by having local extractive institutions.

Finally, in order to further isolate the jurisdictional effect, we discriminate by different types of lordships. In particular, we distinguish between secular lordships (*secular*) and lordships controlled by the Church and the military orders (*nosecular*). Thus, municipalities can be classified as follows: (1) secular lordship, Morisco municipalities (n=202); (2) secular lordship, non-Morisco municipalities (n=161); (3) ecclesiastical lordship, Morisco municipalities (n=10); and (4) ecclesiastical lordship, non-Morisco municipalities (n=58). Four dummy variables are created, three of which are included in the econometric specification (*secular_mor*, *nosecular_mor*, and *nosecular_nomor*), and the other (*secular_nomor*) is used as a control group.

$$male_literacy_i = \gamma_0 + \gamma_1 secular_mor_i + \gamma_2 nosecular_mor_i + \gamma_3 nosecular_nomor_i + \delta Z_i + \lambda_j + u_i \quad (4)$$

Results are presented in Table B8. For simplicity, only the estimated coefficient γ_1 is reported. This coefficient shows the effect of Morisco in a very specific jurisdiction, secular lordships, homogenising, in this way, the jurisdictional characteristics of the municipalities that are compared. For consistency, in this exercise we use the same restricted sample as in the previous robustness test in which only the lordships are considered (n=431, n=396). The results confirm that the negative effect on male literacy is greater in Morisco domains. Specifically, the percentage of male literacy was between 1.4 and 3.4 percentage points lower. If we further restrict the sample and only consider secular lordships (n=363, n=338), our main results are not significantly altered (Table B9).

5. Final discussion

Prior to the development of modern States in the 19th century the provision of formal education was a local affair. In this article, we exploit the spatial variation in local institutions at the end of the Old Regime, or at the onset of the Liberal State, to empirically assess its impact on human capital formation. Using the case of the former Kingdom of Valencia we have shown that places where political power was delegated to private agents (nobility and Church), as opposed to royal domains, exhibited lower literacy rates. This evidence goes in line with Oto-Peralías (2019) who

finds that lordships had a negative and long-lasting effect on economic development both for Spain and in the case of the former Nasrid Kingdom of Granada. Our case, however, also shows that not all lordships were alike.

It appears that the expulsion of the Moriscos in 1609 was not a break with the past as new settlers also faced rather harsh living conditions. Indeed, the historiography provides abundant evidence in this regard (Reglà, 1964; Torres Morera, 1969; Ardit, 2009). Torres Morera (1969) noted that, regardless of the soil quality or type of agriculture, the Royal charters issued after the expulsion not only stipulated the rents or rights for the new settlers but these rules of the game were rather coercive as vassals were obliged to reside on a permanent basis and for a number of years under the threat of losing all granted rights (Torres Morera, 1969).³⁴ In short, the institutional arrangements established after the expulsion virtually transformed new settlers into serfs.

As contemporaries and recent studies have shown, these arrangements persisted until the end of the Old Regime, or early 19th century. In 1811, when the abolition of lordships was under discussion, a Valencian delegate declared that “all the evils that Valencia suffers today began with the expulsion of the Moriscos”, adding in 1813 that those who repopulated former Morisco territories “substituted the expelled in their slavery” (Moxó, 1965, pp. 206-207). More recently, it has been argued that these coercive arrangements stemmed from the co-ordinated efforts of the Crown and the political elites (Chaney and Hornbeck, 2016). In fact, the involvement of peasants from former *Morisco* territories in the revolts (*Segundas Germanías*) of 1693 (García Martínez, 1991) and the way these took a stance in favour of Archduke Charles in the Spanish War of Succession (1700-1714) has also been used as qualitative evidence.

We indeed show that not only lordships were less conducive to human capital formation, but even within them more coercive ones performed worse. In this regard, the length of Muslim rule has been recently proposed as a potential mechanism of the spread of literacy within Spain at the turn of the 20th century (Cinnirella et al., 2020). The former Kingdom of Valencia replaced Muslim rule by the 13th and 14th centuries and the Moslems that stayed were then forced to

³⁴ Torres Morera (1969) argued that Royal charters somehow followed a template that specified the payments that had to be made by the settlers: a sixth, eighth or ninth part of the proceeds (*sexta, octava o novena parte de los frutos*), tithes (*diezmos*), third tithe (*tercio diezmo*), first fruits (*primicia*) and feudal dues (*percepción feudal*). Besides, it was also established that lords could grant beneficial ownership to new settlers in exchange for payments in cash and kind. These new charters were used with the approval of the Crown to compensate the Valencian lords for losses arising from the expulsion of the Moriscos.

convert, hence Moriscos, in 1525. Whether the spirit of Islamic law influenced the subsequent institutional arrangements remains to be seen yet, since as Torres Morera (1969) pointed, the Royal charters somehow followed a template.

Likewise, the Moriscos were a clear example of religious persecution, or “*explotació i neteja ètnica*” (Chaney, 2009). Drelichman et al. (2021) have recently found a consistent and persistent negative effect of the Inquisition on economic performance and educational attainment within Spain. Still, it does not seem that new Christian vassals enjoyed better living conditions after the expulsion of the Moriscos in 1609. This suggests that, although ethnic or religious differences mattered, the underlying driving factor was the institutions that shaped interactions within a particular community. In this regard, it would be interesting to delve deeper into the matter and find out more on who exactly were the lords for each territory and what set of institutional arrangements were established.

Finally, our study also contributes to the literature on economic development. In Spain, although the Moyano Act introduced an education system in 1857, the building, funding and running of elementary schools remained a local affair until 1901. In fact, sizable disparities in literacy within the Valencia region prevailed until the 20th century. If equality of opportunity and territorial cohesion are a priority in the political agenda, local specificities should not then be underestimated. As our study shows that, in the absence of a leveller (central or regional government) local institutions clearly affect human capital formation and hence economic development and human progress.

References

- Abramitzky, R. 2011. 'Lessons from the kibbutz on the equality-incentives trade-off', *Journal of Economic Perspectives*, 25(1), 185-208.
- Acemoglu, D., Johnson, S., Robinson, J.A. 2001. 'The colonial origins of comparative development: an empirical investigation', *American Economic Review*, 91(5), 1369-1401.
- Acemoglu, D., Garcia-Jimeno, C., Robinson, J.A. 2015. 'State capacity and economic development: a network approach', *American Economic Review*, 105(8), 2364-2409.
- Acemoglu, D., Naidu, S., Restrepo, P., Robinson, J.A. 2015. 'Democracy, redistribution and inequality', in A. Atkinson and F. Bourguignon (eds.), *Handbook of income distribution*, 2B (Oxford and Amsterdam: Elsevier), 1885-1996.
- Angelucci, C., Meraglia, S., Voigtländer, N. 2020. 'How merchant towns shaped parliaments: from the Norman conquest of England to the Great Reform Act', *NBER Working Paper*, 23606.
- Angrist, J.D., Lavy, V. 1997. 'The effect of a change in language of instruction and the returns to schooling in Morocco', *Journal of Labor Economics*, 15(1), 48-76.
- Ardit, M. 1968. *Els valencians de les Corts de Cadis* (Barcelona: Rafael Dalmau).
- Ardit, M. 1987. 'Expulsió dels moriscos i creixement agrari al País Valencià', *Afers*, 5/6, 273-316.
- Ardit, M. 1996. 'Agricultura e industria rural en el siglo XVIII', in J. Azagra, E. Mateu and J. Vidal (eds.), *De la sociedad tradicional a la economía moderna* (Alicante: Instituto de Cultura Juan Gil-Albert), 62-76.
- Ardit, M. 2009. 'Una reflexió sobre la expulsión de los moriscos valencianos y la repoblación', *Revista de Historia Moderna*, 27, 295-316.
- Ardit, M. 2010. 'Els moriscos valencians: una panoràmica historiogràfica', *Manuscripts*, 28, 71-86.
- Barro, R.J. 2000. 'Inequality and growth in a panel of countries', *Journal of Economic Growth*, 5(1), 5-32.
- Barro, R.J. 2008. 'Inequality and growth revisited', *Working Paper Series on Regional Economic Integration, Asian Development Bank*, 11.
- Barro, R.J., McCleary, R.M. 2003. 'Religion and economic growth across countries', *American Sociological Review*, 68, 760-781.
- Becker, S.O., Rubin, J., Woessmann, L. 2020. 'Religion in economic history: a survey', *IZA Working Papers*, DP No. 13371.

- Becker, S.O., Woessmann, L. 2009. 'Was Weber wrong? A human capital theory of Protestant economic history', *The Quarterly Journal of Economics*, 124(2), 531-596.
- Beltrán Tapia, F.J., Díez-Minguela, A., Martínez-Galarraga, J., Tirado-Fabregat, D.A. 2019. *Capital humano y desigualdad territorial. El proceso de alfabetización en los municipios españoles desde la Ley Moyano hasta la Guerra Civil* (Banco de España: Estudios de Historia Económica, volumen 74).
- Beltrán Tapia, F.J., Martínez-Galarraga, J. 2018. 'Inequality and education in pre-industrial economies: evidence from Spain', *Explorations in Economic History*, 69(3), 81-101.
- Bleakley, H., Chin, A. 2004. 'Language skills and earnings: evidence from childhood emigrants', *Review of Economics and Statistics*, 86(2), 267-298.
- Borrás, J.M. 2002. 'El trabajo infantil en el mundo rural español, 1849–1936', in J.M. Martínez-Carrión (ed.), *El nivel de vida en la España rural, siglos XVIII–XX* (Alicante: Publicaciones de la Universidad de Alicante), 497-548.
- Botticini, M., Eckstein, Z. 2007. 'From farmers to merchants, conversions and Diaspora: human capital and Jewish history', *Journal of the European Economic Association*, 5(5), 885-926.
- Braudel, F. 1996. *The Mediterranean and the Mediterranean World in the age of Philip II* (Berkeley: University of California Press).
- Bruthiaux, P. 2002. 'Hold your courses: language education, language choice and economic development', *TESOL Quarterly*, 36(3), 275-296.
- Cantoni, D. 2015. 'The economic effects of the Protestant Reformation: testing the Weber hypothesis in the German lands', *Journal of the European Economic Association*, 13(4), 561-598.
- Chaney, E. 2009. 'Els efectes a llarg termini de l'exploració i la neteja ètnica. El testimoniatge de l'expulsió dels moriscs', *Afers*, 62/63, 173-199.
- Chaney, E., Hornbeck, R. 2016. 'Economic dynamics in the Malthusian era: evidence from the 1609 Spanish expulsion of the Moriscos', *Economic Journal*, 126, 1404-1440.
- Chaudhary, L. 2009. 'Determinants of primary schooling in British India'. *Journal of Economic History*, 69, 269-302.
- Cinnirella, F., Hornung, E. 2016. 'Landownership concentration and the expansion of education', *Journal of Development Economics*, 121, 135-152.
- Cinnirella, F., Naghavi, A., Prarolo, G. 2020. 'Islam and human capital in historical Spain', *CEPR Discussion Paper*, DP14561.

- Cinnirella, F., Schueler, R.M. 2016. 'The cost of decentralization: linguistic polarization and the provision of education', *CESifo Working Paper*, 5894.
- Ciscar Pallarés, E. 1977. *Tierra y señorío en el País Valenciano (1570-1620)* (Valencia: Del Cenia al Segura).
- Ciscar Pallarés, E. 1993. *Moriscos, nobles y repobladores* (Valencia: Ediciones Alfonso el Magnánimo).
- Conley, T.G. 1999. 'GMM estimation with cross sectional dependence', *Journal of Econometrics*, 92, 1-45.
- Cvrcek, T., Zajicek, M. 2013. 'School, what is it good for? Useful human capital and the history of public education in Central Europe', *NBER Working Paper*, 19690.
- Deininger, K., Squire, L. 1998. 'New ways of looking at old issues: inequality and growth', *Journal of Development Economics*, 57(2), 259-87.
- Dell, M. 2010. 'The persistent effects of Peru's mining mita', *Econometrica*, 78(6), 1863-1903.
- Dell, M., Lane, N., Querubin, P. 2017. 'The historical state, local collective action, and economic development in Vietnam', *Econometrica* (forthcoming).
- Dewald, J. 1996. *The European nobility, 1400-1800* (New York: Cambridge University Press).
- Diebolt, C., Le Chapelain, C., Menard, A.R. 2017. 'Industrialization as a deskilling process? Steam engines and human capital in XIXth century France', *Working Papers of BETA*, 17.
- Dincecco, M., Katz, G. 2014. 'State capacity and long-run economic performance', *Economic Journal*, 126, 189-218.
- Engerman, S.L., Sokoloff, K.L. 2000. 'History lessons: institutions, factor endowments, and paths of development in the New World', *Journal of Economic Perspectives*, 14(3), 217-232.
- Epstein, L. 2000. *Freedom and growth: the rise of states and markets in Europe, 1300-1750* (London: Routledge).
- Figueroa, V. 2020. 'The consolidation of royal control: evidence from northern Castile, 1352-1787', *European Review of Economic History* (forthcoming).
- Franck, R., Galor, O. 2017. 'Technology-skill complementarity in the early phase of industrialization', *NBER Working Paper*, 23197.
- Furió, A. 1995. *Història del País Valencià* (València: Alfons el Magnànim).
- Galor, O. 2011. 'Inequality, human capital formation and the process of development', in E.A. Hanushek, S. Machin and L. Woessmann (eds.), *Handbook of the economics of education, vol. 4* (Amsterdam: Elsevier), 441-493.
- Galor, O., Moav, O., Vollrath, D. 2009. 'Inequality in landownership, the emergence of human-

- capital promoting institutions, and the Great Divergence', *Review of Economic Studies*, 76(1), 143-179.
- Galor, O., Zeira, J. 1993. 'Income distribution and macroeconomics', *Review of Economic Studies*, 60(1), 35-52.
- Garcia Martinez, S. 1991. *Valencia bajo Carlos II* (Valencia: Ayuntamiento de Valencia).
- Gennaioli, N., La Porta, R., Lopez-de-Silanes, F., Shleifer, A. 2013. 'Human capital and regional development', *The Quarterly Journal of Economics*, 128(1), 105-164.
- Glaeser, E.L., Sacerdote, B.I. 2008. 'Education and religion', *Journal of Human Capital*, 2(2), 188-215.
- Go, S., Lindert, P.H. 2010. 'The uneven rise of American Public Schools to 1850', *The Journal of Economic History*, 70, 1-26.
- Gonzalez-Portilla, M., Urrutikoetxea, J. 2016. 'El capital humano en la primera industrialización vasca (1876-1930). Viejas herencias e innovaciones recientes', *Revista de Demografía Histórica*, 34(2), 53-83.
- Grafe, R. 2012. *Distant tyranny: markets, power, and backwardness in Spain, 1650-1800* (Princeton: Princeton University Press).
- Hijmans, R.J., Cameron, S.E., Parra, J.L., Jones, P.G., Jarvis, A., 2005. 'Very high resolution interpolated climate surfaces for global land areas', *International Journal of Climatology*, 25(15), 1965-1978.
- Instituto Nacional de Estadística. 1991. *Censo de 1787 "Floridablanca", Tomo VI* (Madrid: Instituto Nacional de Estadística).
- Instituto Nacional de Estadística. 2002. *Poblaciones imputadas en la primera mitad del siglo XIX* (Madrid: Instituto Nacional de Estadística).
- Jain, T. 2017. 'Common tongue: the impact of language on educational outcomes', *Journal of Economic History*, 77, 473-509.
- Johnson, N.D., Koyama, M. 2019. *Persecution and toleration: the long road to religious freedom* (Cambridge: Cambridge University Press).
- Kelly, M. 2019. 'The standard error of persistence', *UCD Working Papers*, WP19/13.
- Lapeyre, H. 1959. *Géographie de l'Espagne morisque* (París: SEVPEN).
- Lapeyre, H. 1986. *Geografía de la España morisca* (Valencia: Ediciones Alfonso el Magnánimo).
- Livi Bacci, M. 1987. 'Il Censimento di Floridablanca nel contesto dei censimenti europei', *Genus*, 43, 137-151.

- Madoz, P. 1845. *Diccionario Geográfico-Estadístico-Histórico de España y sus posesiones de ultramar por Pascual Madoz* (Madrid: Establecimiento tipográfico de P. Madoz y L. Sagasti).
- Maloney, W.F., Valencia Caicedo, F. 2019. ‘The persistence of (subnational) fortune: geography, agglomeration, and institutions in the New World’, *World Bank Policy Research Working Paper*, No 6187.
- Michalopoulos, S., Papaioannou, E. 2013. ‘Pre-colonial ethnic institutions and contemporary African Development’, *Econometrica*, 81(1), 113-152.
- Michalopoulos, S., Papaioannou, E. 2016. ‘The long-run effects of the scramble for Africa’, *American Economic Review*, 106(7), 1802-1848.
- Montalbo, A. 2020. ‘Industrial activities and primary schooling in early nineteenth-century France’, *Cliometrica*, 14(3), 325-365.
- Moxó, S. 1965. *La disolución del régimen señorial en España* (Madrid: CSIC).
- Nunn, N. 2008. ‘The long-term effects of Africa’s slave trades’, *The Quarterly Journal of Economics*, 123(1), 139-176.
- Núñez, C.E. 1992. *La fuente de la riqueza. Educación y desarrollo económico en la España contemporánea* (Madrid: Alianza).
- Ogilvie, S., Carus, A.W. 2014. ‘Institutions and economic growth in historical perspective’, in S. Durlauf and P. Aghion (eds.), *Handbook of Economic Growth, Volume 2A* (North-Holland: Elsevier), 403-513.
- Oto-Peralías, D. 2017. ‘Settlement patterns in Europe and the Spanish anomaly: the Medieval frontier origins of a country’s economic geography’, University of St. Andrews (*mimeo*).
- Oto-Peralías, D. 2019. ‘Delegation of government authority in historical perspective: lordships, state capacity and development’, Universidad Pablo de Olavide (*mimeo*).
- Oto-Peralías, D., Romero-Ávila, D. 2016. ‘The economic consequences of Spanish Reconquest: the long-term effects of Medieval conquest and colonization’, *Journal of Economic Growth*, 21(4), 409-464.
- Oto-Peralías, D., Romero-Ávila, D. 2017. ‘Historical frontiers and the rise of inequality. The case of the frontier of Granada’, *Journal of the European Economic Association*, 15(1), 54-98.
- Prados de la Escosura, L. 2017. *Spanish economic growth, 1850-2015* (Cham: Palgrave Macmillan).
- Reglà, J. 1964. *Estudios sobre los moriscos* (Valencia: Universidad de Valencia).
- Reher, D.S. 1990. *Town and country in pre-industrial Spain* (Cambridge: Cambridge University Press).

- Rosés, J.R., Martínez-Galarraga, J., Tirado-Fabregat, D.A. 2010. ‘The upswing of regional income inequality in Spain (1860-1930)’, *Explorations in Economic History*, 47(2), 244-257.
- Squicciarini, M.P. 2020. ‘Devotion and development: religiosity, education, and economic progress in 19th-century France’, *American Economic Review* (forthcoming).
- StataCorp. 2019. Stata Statistical Software: Release 16. College Station, TX: StataCorp LLC.
- StataCorp. 2021. Stata: Release 17. Statistical Software. College Station, TX: StataCorp LLC.
- Torres Morera, J. 1969. *Repoblación del Reino de Valencia, después de la expulsión de los moriscos* (Valencia: Ayuntamiento de Valencia).
- Valencia Caicedo, F. 2019. ‘The Mission: economic persistence, human capital transmission and culture in South America’, *The Quarterly Journal of Economics*, 134(1), 507-556.
- Viñao, A. 1990. ‘The history of literacy in Spain: evolution, traits, and questions’, *History of Education Quarterly*, 30(4), 573-599.
- Voigtländer, N., Voth, H.J. 2012. ‘Persecution perpetuated: the Medieval origins of anti-semitic violence in Nazi Germany’, *The Quarterly Journal of Economics*, 127(3), 1339-1392.
- Vollrath, D. 2013. ‘School funding and inequality in the United States, 1890’, *Explorations in Economic History*, 50(2), 267-284.
- Voth, H.J. 2020. ‘Persistence – myth and mystery’, *CEPR Working papers*, DP15147.
- Waldinger, M. 2017. ‘The long-run effects of missionary orders in Mexico’, *Journal of Development Economics*, 127, 355-378.
- Williams, R. 2012. ‘Using the margins command to estimate and interpret predictions and marginal effects’, *The Stata Journal*, 12(2), 308-331.

Appendix A: the sample

Our sample is based on the number of municipalities located in the Valencia region today. According to the latest count, there were a total of 542 in the Comunitat Valenciana. However, there have been various changes and alterations, so we have had to make some adjustments in order to have consistent municipalities over time.

Endogenous variable: literacy (Population Census of 1860)

The Population Census of 1860 included a total of 570 municipalities in the Valencia region.³⁵ This means that we have to convert this historical figure into the current 542 municipalities.³⁶ To homogenize the data we assigned a current INE code to all the municipalities that appear in the census. First of all, following Goerlich et al. (2006: *Apéndice 2. Alteraciones de los municipios entre los censos de 1900 y 2001*) and using information from the document entitled “*Variaciones de los municipios de España desde 1842*” (Ministerio de Administraciones Públicas, 2008), the 570 municipalities of 1860 were converted into today’s 542. These sources enabled us to assign a current INE code to the vast majority of the historical municipalities in the population census, following their historical pathways. However, in some cases complications arose. Most changes in municipalities between these dates are the result of mergers or separations, although the causes vary: towns absorbing neighbouring towns, towns that were merged together, towns that split from each other, etc.³⁷ In 1860, for example, today’s municipality of l’Eliana was part of La Pobla de Vallbona. Hence no information on literacy rates for l’Eliana is available for 1860 (in fact the municipality of l’Eliana separated from la Pobla de Vallbona in 1955). To address this problem we created a «pseudo-municipality» known as Pobla de Vallbona - l’Eliana. Thus the municipalities included within a pseudo-municipality form a new single entity and have the same literacy rate, or to be more precise, a joint literacy rate. We worked in a similar way with the other cases. Overall, due to border changes, there is no information on literacy in the population census of 1860 for 18 out of the 542 municipalities. To solve this problem, 17 artificial pseudo-municipalities (covering 35 municipalities) were created (see Table A1). If the current total

³⁵ These 570 municipalities were distributed among the three provinces that make up the region as follows: 142 (Alicante), 144 (Castellón) and 284 (Valencia). They were further divided into 46 *partidos judiciales* or judicial districts: 14 (Alicante), 10 (Castellón) and 22 (Valencia). Since there were 4 districts in the city of Valencia, 43 cities and towns were district capitals.

³⁶ Benicull de Xúquer became the 542nd municipality in the early 2000s, when it split from Polinyà de Xúquer.

³⁷ There were also numerous changes in the names of the municipalities, with many of them applying to express the name of the municipality in the language of the region.

number of municipalities in the region of Valencia is 542, once the pseudo-municipalities were created this figure was reduced by 18. Thus our sample consists of 524 municipalities, 17 of which are our artificial pseudo-municipalities.

Table A1. Pseudo-municipalities

INE code	Municipality	Province
3005	Albatera	Alicante
3904	San Isidro	Alicante
3014	Alacant/Alicante	Alicante
3050	Campello, El	Alicante
3015	Almoradí	Alicante
3903	Montesinos, Los	Alicante
3077	Fondó de las Neus, El	Alicante
3078	Hondón de los Frailes	Alicante
3093	Novelda	Alicante
3114	Romana, La	Alicante
3099	Orihuela	Alicante
3902	Pilar de la Horadada	Alicante
3013	Algueña	Alicante
3105	Pinós, El/Pinoso	Alicante
12101	San Rafael del Río	Castellón
12121	Traiguera	Castellón
12124	Vall d'Alba	Castellón
12128	Vilafamés	Castellón
12902	Sant Joan de Moró	Castellón
12135	Villareal	Castellón
12901	Alquerías del Niño Perdido	Castellón
12068	Herbés	Castellón
12080	Morella	Castellón
46116	Eliana, l'	Valencia
46202	Pobla de Vallbona, la	Valencia
46124	Fontanars dels Alforins	Valencia
46184	Ontinyent	Valencia
46190	Paterna	Valencia
46903	San Antonio de Benagéber	Valencia
46058	Benifairó de les Valls	Valencia
46122	Faura	Valencia
46007	Albal	Valencia
46065	Beniparrell	Valencia
46197	Polinyà de Xúquer	Valencia
46904	Benicull de Xúquer	Valencia

Note: The municipalities in bold are those that existed in 1860.

Census of Floridablanca (Census of 1787)

The Census of Floridablanca contains information on the ancien regime. Referring to the year 1787, it includes a huge amount of information covering the total population by town (or population entity) and by gender, its structure by age groups and its distribution by professions. It also includes information on the administrative characteristics of the population entities, such as category (*ciudad, villa, lugar, aldea,...*), person in authority (*alcalde mayor, alcalde ordinario, gobernador, ...*) and jurisdiction (royal or lordship).³⁸ On the former kingdom of Valencia, it provides information on a total of 550 population entities.³⁹ These include 9 that today belong to the Comunitat Valenciana but were then part of other administrations.⁴⁰

As regards one of our main explanatory variables – jurisdiction – the census carried no information of any kind for 43 of today’s municipalities. These mainly involve two types of cases: a) 15 of them are included in our pseudo-municipalities (see above), so we assume the same jurisdiction as their pseudo-municipality partner/s (see Table A2), and b) for the remaining 28 municipalities the strategy is twofold: in some cases we can identify the municipality they belonged to before becoming independent and then apply the same jurisdiction, otherwise we search for historical information from different sources to discover the type of jurisdiction in the past, assuming they existed in 1787 (see Table A3).⁴¹ Once this is done, and taking into account the 17 artificial pseudo-municipalities, we have information on type of jurisdiction for all 524 municipalities in the sample.

³⁸ *Realengo, señorío secular, señorío religioso* and *órdenes militares* are the main types of jurisdiction.

³⁹ There were 129 in the today’s province of Alicante, 141 in Castellón and 280 in Valencia. These towns or entities were in turn grouped into larger administrative entities called *partidos* or districts (13) and *intendencias* or regions (the kingdom of Valencia was an *intendencia*). Moreover, some entities were «free» or exempted.

⁴⁰ Sax and Villena (Murcia); Camporrobles, Caudete de las Fuentes, Fuenterrobles, Requena, Utiel, Venta del Moro and Villargordo de Cabriel (Cuenca) joined Valencia in the mid-nineteenth century.

⁴¹ Torrevieja, which was created from lands belonging to Orihuela, Guardamar, Rojals and Almoradí (all of them *realengos*), is considered to be royal jurisdiction, although before the nineteenth century there was no population, just surveillance towers (and salt mines). In the cases of Geldo and Serra d’En Galceran, for some reason the census does not supply any information about jurisdiction. Based on information obtained from alternative sources we assign to these two towns a lordship jurisdiction.

Table A2. Municipalities without jurisdiction in the Census of Population of 1787 which belong to a pseudo-municipality

INE code	Municipality	Same jurisdiction as pseudo-municipality partner
3013	Algueña	3105 Pinós, El/Pinoso (3089 Monòver)
3050	el Campello	3014 Alicante/Alacant
3078	Hondón de los Frailes	3077 Fondó de les Neus (3019 Asp)
3114	la Romana	3093 Novelda
3902	Pilar de la Horadada	3099 Orihuela
3903	Los Montesinos	3015 Almoradí
3904	San Isidro	3005 Albaterra
12101	San Rafael del Río	12121 Traiguera
12124	Vall d'Alba	12128 Vilafamés
12901	Alquerías del Niño Perdido	12135 Vila-Real
12902	Sant Joan de Moró	12128 Vilafamés
46116	l'Elia	46202 la Pobla de Vallbona
46124	Fontanars dels Alforins	46184 Ontinyent
46903	San Antonio de Benagéber	46190 Paterna
46904	Benicull de Xúquer	46197 Polinyà de Xúquer

Table A3. Municipalities without jurisdiction in the Census of Population of 1787 which do not belong to a pseudo-municipality

INE code	Municipality	INE code	Municipality
3004	Aigües	12049	Costur
3011	Alfàs del Pi	12069	Higuera
3012	Algorfa	12102	Santa Magdalena de Pulpis
3016	Almudaina	12114	Torás
3051	Campo de Mirra/Camp de Mirra, El	46046	Barx
3052	Cañada	46048	Bellreguard
3062	Daya Vieja	46082	Canet d'En Berenguer
3077	Fondó de las Neus, El/Hondón de las Nieves	46087	Casas Altas
3105	Pinós, El/Pinoso	46088	Casas Bajas
3120	San Miguel de Salinas	46089	Casinos
3121	Santa Pola	46108	Chera
3122	San Vicente del Raspeig/Sant Vicent del Raspeig	46141	Higuera
3133	Torre Vieja	46149	Losa del Obispo
3138	Verger, El	46224	Segart

Note: Both El Pinós and El Fondó de les Neus are the main population entities in their respective pseudo-municipalities. However, these two municipalities did not exist back in 1787, since they were created by breaking away from Monòver (1826) and Asp (1839) respectively.

As for the other variables included in our analysis apart from the administrative ones (i.e. total population, population by gender, population by age group and by profession), there are two different situations to be considered. On the one hand, we have the same problem as before given that the census has no information of any kind for the 28 municipalities shown in Table A3. Although we have been able to compile past administrative information for these places, we cannot do this for the demographic variables. In addition, there are 21 municipalities with administrative information (category, authority, jurisdiction, district, regional authority), but no information on population and its structure and professions (see Table A4). This means that with some econometric specifications we are left with a minimum sample of $(524-28-21) = 475$ municipalities.

Table A4. Municipalities in the Census of 1787 with incomplete information

INE code	Municipality	INE code	Municipality
3064	Dolores	46054	Benetússer
3118	San Fulgencio	46078	Burjassot
12028	Benicasim/Benicàssim	46098	Corbera
12060	Figueroles	46125	Fortaleny
12097	Sacañet	46152	Llocnou de la Corona
12110	Teresa	46186	Paiporta
46002	Ador	46196	Pinet
46013	Alboraia	46197	Polinyà de Xúquer
46014	Albuixech	46223	Sedaví
46022	Alfatar	46237	Tavernes Blanques
46032	Almàspera		

Census of 1887

The census of 1887 contains information not only about the population of the municipalities but also its distribution between the core entity (city, town) and the minor entities (village, hamlet, homestead, mills and isolated buildings). In this case there is information on all 524 municipalities in our sample. Using data from the *Nomenclator* of Spain for 1887, we created a variable that measures the percentage of population living in the core entity. In the computation of this variable it is important to bear two things in mind.

(i) Pseudo-municipalities. In order to compute this dispersion measure, only the core entity of the main municipality is taken into account (see Table A1).

(ii) Municipalities that were independent in 1887 but today belong to other municipalities (see Table A5). In order to compute the dispersion measure, the core entities of both municipalities in 1887 are taken into account.

Table A5. Completing the information on jurisdiction

Independent municipalities in 1887	INE code	Current municipality
Adsubia Forna	3001	Adsubia
Daya Nueva o Vieja Puebla de Rocamora	3061	Daya Nueva
Sela y Mirarrosa Miraflor	3901	Poblets, Els
Alcudia de Veo Veo	12006	Alcudia de Veo
Montanejos Campos de Arenoso	12079	Montanejos
Pobla de Benifassà, La Ballestar Bojar Corachar Fredes	12093	Pobla de Benifassà, La
Rosell Bel	12096	Rosell
Albaida Aljorj	46006	Albaida
Albuixech Mahuella	46014	Albuixech
Gandia Beniopa Benipeixcar	46131	Gandia
Valencia Benifaraig Borbotó Campanar Masarrochos Villanueva del Grau	46250	Valencia

Other relevant information

As well as the information on literacy levels, type of jurisdiction, whether or not the municipality was Morisco and the official language, our data set also includes information on other demographic and geographical variables for the 524 municipalities of Valencia, taken mainly from the population censuses. Table A6 summarizes the sample of the data set.

Table A6. Summary

	Number of municipalities
Dependent variables	
Literacy (1860)	524
Variables of interest	
Jurisdiction	524
Morisco or non-Morisco	524
Control variables	
Population (1860)	524
Settlement patterns (1887)	524
Official language	524
Geographical information	524

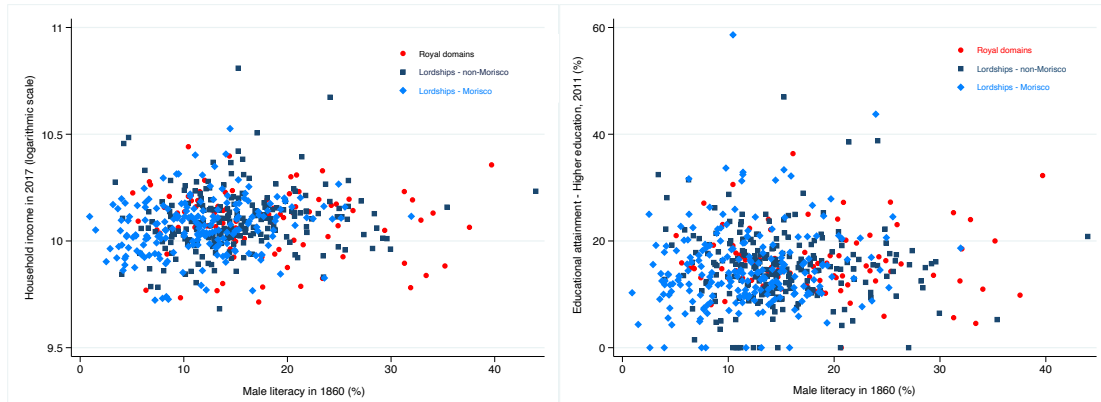
Table A7. Municipalities without information about the taxable payment (1850)

INE code	Municipality	INE code	Municipality
3004	Aigües	12102	Santa Magdalena de Pulpis
3011	Alfàs del Pi	12110	Teresa
3016	Almudaina	12114	Torás
3051	Campo de Mirra/Camp de Mirra, El	12121	Traiguera
3052	Cañada	46002	Ador
3062	Daya Vieja	46079	Calles
3077	Fondó de las Neus, El	46087	Casas Altas
3105	Pinós, El/Pinoso	46088	Casas Bajas
3107	Polop	46089	Casinos
3113	Rojales	46117	Emperador
3120	San Miguel de Salinas	46137	Granja de la Costera, la
3121	Santa Pola	46151	Llocnou d'En Fenollet
3122	San Vicente del Raspeig/Sant Vicent del Raspeig	46153	Llocnou de Sant Jeroni
12028	Benicasim/Benicàssim	46182	Olocáu

INE code	Municipality	INE code	Municipality
12049	Costur	46196	Pinet
12060	Figueroles	46224	Segart
12097	Sacañet		

Appendix B

Figure B1. Male literacy in 1860 vs. income-2017 and human capital-2011 in the Valencian region



Source: Own elaboration based on the 1860 Census of Population and INE.

Table B1. Alternative standard errors: Conley method (5 municipalities)

Dependent variable: percentage of male literacy in 1860						
Econometric model: ordinary least squares (standard errors corrected for spatial dependence)						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables of interest						
Lordship	-2.5123** (1.0855)	-2.8824*** (1.0378)	-1.9725** (0.9371)	-1.7184* (0.9361)	-1.6844* (0.9423)	-1.7773* (0.9328)
Morisco	-3.4740*** (0.7582)	-2.7078*** (0.7411)	-2.1036*** (0.6668)	-1.2831** (0.6493)	-1.2668* (0.6452)	-1.0296* (0.5828)
Control variables						
ln(Population 1860)	1.1411*** (0.3876)	0.7237* (0.4228)	1.1289*** (0.3543)	1.2058*** (0.3716)	1.2299*** (0.3708)	1.2103*** (0.3714)
Settlement pattern (1887)	0.0747*** (0.0159)	0.0649*** (0.0171)	0.0823*** (0.0185)	0.0700*** (0.0202)	0.0671*** (0.0213)	0.0605*** (0.0208)
Catalan	-3.2733*** (0.8625)	-3.1477*** (0.8628)	0.2996 (0.8984)	-0.2808 (0.9013)	-0.2574 (0.8978)	-0.1424 (0.9527)
% manuf. and artisans (1787)		0.1422*** (0.0383)	0.0881*** (0.0322)	0.1126*** (0.0318)	0.1098*** (0.0304)	0.1191*** (0.0308)
Constant	5.5558 (3.4614)	8.1066** (3.6686)	34.3543*** (6.1307)	25.8850*** (9.8606)	-44.0165 (71.5741)	-23.8644 (81.8277)
First-nature geography	No	No	Yes	Yes	Yes	Yes
Districts fixed effects	No	No	No	Yes	Yes	Yes
Latitude and longitude	No	No	No	No	Yes	Yes
Second-nature geography	No	No	No	No	No	Yes
Observations	524	474	474	474	474	474
R-square	0.2173	0.2535	0.3120	0.3615	0.3638	0.3747

Notes: First-nature geography includes temperature and rainfall. Second-nature geography includes distance to main road, distance to the capital city, distance to coast (in natural logarithms). Conley standard errors (Conley, 1999) are in parentheses. Cutoff: 22.2 km (five nearest neighbors). Coefficients are statistically significant at * $p < 0.1$, ** $p < 0.05$, *** and $p < 0.01$.

Table B2. Alternative standard errors: Robust standard errors

Dependent variable: percentage of male literacy in 1860						
Econometric model: ordinary least squares (standard errors corrected for spatial dependence)						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables of interest						
Royal, non-Morisco	2.4804*** (0.8677)	2.8284*** (0.9368)	1.9158** (0.8619)	1.6044* (0.9445)	1.5480 (0.9557)	1.6352* (0.9733)
Lordship, Morisco	-3.4906*** (0.6132)	-2.7305*** (0.6333)	-2.1268*** (0.5944)	-1.3285** (0.6342)	-1.3179** (0.6292)	-1.0796* (0.6227)
Control variables						
ln(Population 1860)	1.1415*** (0.3369)	0.7242* (0.3690)	1.1289*** (0.3581)	1.2009*** (0.3672)	1.2259*** (0.3650)	1.2064*** (0.3638)
Settlement pattern (1887)	0.0746*** (0.0149)	0.0647*** (0.0163)	0.0821*** (0.0170)	0.0696*** (0.0193)	0.0666*** (0.0198)	0.0599*** (0.0197)
Catalan	-3.2745*** (0.6128)	-3.1496*** (0.6467)	0.3004 (0.8023)	-0.2827 (0.9043)	-0.2716 (0.9381)	-0.1533 (0.9966)
% manuf. and artisans (1787)		0.1428*** (0.0368)	0.0887** (0.0344)	0.1147*** (0.0357)	0.1121*** (0.0351)	0.1215*** (0.0358)
Constant	3.0603 (2.8600)	5.2455* (3.1612)	32.4347*** (5.8298)	24.1613** (9.8932)	-49.4508 (77.1653)	-29.2245 (85.7574)
First-nature geography	No	No	Yes	Yes	Yes	Yes
Districts fixed effects	No	No	No	Yes	Yes	Yes
Latitude and longitude	No	No	No	No	Yes	Yes
Second-nature geography	No	No	No	No	No	Yes
Observations	524	474	474	474	474	474
R-square	0.2173	0.2536	0.3121	0.3618	0.3642	0.3751

Notes: The reference or control group in the variables of interest is lordship, non-Morisco municipalities. Due to the low number of observations (n=4), the estimated coefficient of royal, Morisco (*royal_mor*) municipalities is not reported. First-nature geography includes temperature and rainfall. Second-nature geography includes distance to main road, distance to the capital city, distance to coast (in natural logarithms). Robust standard errors are in parentheses. Coefficients are statistically significant at * p<0.1, ** p<0.05, *** and p<0.01.

Table B3. Alternative standard errors: Standard errors clustered by districts

Dependent variable: percentage of male literacy in 1860						
Econometric model: ordinary least squares (standard errors corrected for spatial dependence)						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables of interest						
Royal, non-Morisco	2.4804* (1.2863)	2.8284** (1.2222)	1.9158 (1.1183)	1.6044 (1.0594)	1.5480 (1.0414)	1.6352 (1.0781)
Lordship, Morisco	-3.4906*** (0.8234)	-2.7305*** (0.6487)	-2.1268*** (0.5855)	-1.3285*** (0.4092)	-1.3179*** (0.3997)	-1.0796*** (0.3116)
Control variables						
ln(Population 1860)	1.1415*** (0.3893)	0.7242* (0.3735)	1.1289*** (0.2566)	1.2009*** (0.3144)	1.2259*** (0.3266)	1.2064*** (0.3190)
Settlement pattern (1887)	0.0746*** (0.0093)	0.0647*** (0.0138)	0.0821*** (0.0216)	0.0696** (0.0290)	0.0666** (0.0280)	0.0599* (0.0292)
Catalan	-3.2745*** (0.9837)	-3.1496*** (0.9412)	0.3004 (0.7996)	-0.2827 (0.7932)	-0.2716 (0.9054)	-0.1533 (1.1745)
% manuf. and artisans (1787)		0.1428*** (0.0391)	0.0887*** (0.0295)	0.1147*** (0.0309)	0.1121*** (0.0278)	0.1215*** (0.0294)
Constant	3.0603 (3.0154)	5.2455** (2.2357)	32.4347*** (3.9009)	24.1613** (10.0112)	-49.4508 (56.2545)	-29.2245 (81.9427)
First-nature geography	No	No	Yes	Yes	Yes	Yes
Districts fixed effects	No	No	No	Yes	Yes	Yes
Latitude and longitude	No	No	No	No	Yes	Yes
Second-nature geography	No	No	No	No	No	Yes
Observations	524	474	474	474	474	474
R-square	0.2173	0.2536	0.3121	0.3618	0.3642	0.3751

Notes: The reference or control group in the variables of interest is lordship, non-Morisco municipalities. Due to the low number of observations ($n=4$), the estimated coefficient of royal, Morisco (*royal_mor*) municipalities is not reported. First-nature geography includes temperature and rainfall. Second-nature geography includes distance to main road, distance to the capital city, distance to coast (in natural logarithms). Robust standard errors clustered by districts are in parentheses. Coefficients are statistically significant at * $p < 0.1$, ** $p < 0.05$, *** and $p < 0.01$.

Table B4. Alternative standard errors: Conley method (5 municipalities)

Dependent variable: percentage of male literacy in 1860						
Econometric model: ordinary least squares (standard errors corrected for spatial dependence)						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables of interest						
Royal, non-Morisco	2.4804** (1.1527)	2.8284** (1.1123)	1.9158* (1.0098)	1.6044 (1.0149)	1.5480 (1.0270)	1.6352 (1.0199)
Lordship, Morisco	-3.4906*** (0.7604)	-2.7305*** (0.7459)	-2.1268*** (0.6757)	-1.3285** (0.6654)	-1.3179** (0.6613)	-1.0796* (0.5965)
Control variables						
ln(Population 1860)	1.1415*** (0.3879)	0.7242* (0.4231)	1.1289*** (0.3545)	1.2009*** (0.3726)	1.2259*** (0.3716)	1.2064*** (0.3720)
Settlement pattern (1887)	0.0746*** (0.0159)	0.0647*** (0.0172)	0.0821*** (0.0189)	0.0696*** (0.0202)	0.0666*** (0.0213)	0.0599*** (0.0208)
Catalan	-3.2745*** (0.8620)	-3.1496*** (0.8616)	0.3004 (0.9004)	-0.2827 (0.9037)	-0.2716 (0.9017)	-0.1533 (0.9554)
% manuf. and artisans (1787)		0.1428*** (0.0383)	0.0887*** (0.0321)	0.1147*** (0.0315)	0.1121*** (0.0301)	0.1215*** (0.0305)
Constant	3.0603 (3.1379)	5.2455 (3.4038)	32.4347*** (6.1424)	24.1613** (9.9380)	-49.4508 (72.3561)	-29.2245 (82.4396)
First-nature geography	No	No	Yes	Yes	Yes	Yes
Districts fixed effects	No	No	No	Yes	Yes	Yes
Latitude and longitude	No	No	No	No	Yes	Yes
Second-nature geography	No	No	No	No	No	Yes
Observations	524	474	474	474	474	474
R-square	0.2173	0.2536	0.3121	0.3618	0.3642	0.3751

Notes: The reference or control group in the variables of interest is lordship, non-Morisco municipalities. Due to the low number of observations (n=4), the estimated coefficient of royal, Morisco (royal_mor) municipalities is not reported. First-nature geography includes temperature and rainfall. Second-nature geography includes distance to main road, distance to the capital city, distance to coast (in natural logarithms). The variables related to distance are expressed in natural logarithms. Conley standard errors (Conley, 1999) are in parentheses. Cutoff: 22.2 km (five nearest neighbors). Coefficients are statistically significant at * p<0.1, ** p<0.05, *** and p<0.01.

Table B5. Additional control variable: ln(Taxable income/Population)

Dependent variable: percentage of male literacy in 1860						
Econometric model: ordinary least squares (standard errors corrected for spatial dependence)						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables of interest						
Royal, non-Morisco	2.4804** (1.2597)	2.6714** (1.1360)	1.6456* (1.0007)	1.4170 (0.9622)	1.3381 (0.9567)	1.4127 (0.9412)
Lordship, Morisco	-3.4906*** (0.7432)	-2.8975*** (0.6894)	-2.2006*** (0.5879)	-1.3368** (0.6005)	-1.3070** (0.6009)	-1.0890** (0.5432)
Control variables						
ln(Population 1860)	1.1415*** (0.4333)	0.6214 (0.4628)	1.0796*** (0.3619)	1.1532*** (0.4204)	1.1885*** (0.4228)	1.1758*** (0.4246)
Settlement pattern (1887)	0.0746*** (0.0160)	0.0657*** (0.0168)	0.0845*** (0.0192)	0.0714*** (0.0219)	0.0679*** (0.0227)	0.0620*** (0.0230)
Catalan	-3.2745*** (0.9677)	-3.1657*** (0.9868)	0.2846 (0.8921)	-0.2401 (0.8515)	-0.2175 (0.8134)	-0.0753 (0.8917)
% manuf. and artisans (1787)		0.1455*** (0.0426)	0.0879*** (0.0331)	0.1134 (0.0304)	0.1097*** (0.0285)	0.1185*** (0.0291)
ln(Taxable income/pop1860)		0.5341 (0.5074)	0.9652* (0.4874)	1.0221** (0.4428)	1.0993** (0.4445)	0.9959** (0.4220)
Constant	3.0603 (3.1379)	3.8164 (3.8509)	29.2614*** (6.0415)	20.8599** (8.9568)	-67.6903 (63.0189)	-45.7238 (76.6059)
First-nature geography	No	No	Yes	Yes	Yes	Yes
Districts fixed effects	No	No	No	Yes	Yes	Yes
Latitude and longitude	No	No	No	No	Yes	Yes
Second-nature geography	No	No	No	No	No	Yes
Observations	524	699	699	699	699	699
R-square	0.2173	0.2548	0.3168	0.3694	0.3728	0.3813

Notes: The reference or control group in the variables of interest is lordship, non-Morisco municipalities. Due to the low number of observations (n=4), the estimated coefficient of royal, Morisco (*royal_mor*) municipalities is not reported. First-nature geography includes temperature and rainfall. Second-nature geography includes distance to main road, distance to the capital city, distance to coast (in natural logarithms). Conley standard errors (Conley, 1999) are in parentheses. Cutoff: 42.7 km (ten nearest neighbors). Coefficients are statistically significant at * p<0.1, ** p<0.05, *** and p<0.01.

Table B6. More homogeneous sample: the former Kingdom of Valencia

Dependent variable: percentage of male literacy in 1860						
Econometric model: ordinary least squares (standard errors corrected for spatial dependence)						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables of interest						
Royal, non-Morisco	2.0488* (1.2863)	2.1651** (1.0882)	1.3471 (1.0129)	1.5319 (0.9668)	1.4819 (0.9646)	1.6046* (0.9602)
Lordship, Morisco	-3.4245*** (0.7413)	-2.5730*** (0.6984)	-2.0184*** (0.6255)	-1.2430** (0.6223)	-1.2369** (0.6207)	-1.0075* (0.5241)
Control variables						
ln(Population 1860)	1.1934*** (0.4388)	0.8157* (0.4554)	1.1749*** (0.3589)	1.2198*** (0.4127)	1.2427*** (0.4147)	1.2194*** (0.4201)
Settlement pattern (1887)	0.0710*** (0.0157)	0.0590*** (0.0172)	0.0762*** (0.0191)	0.0621*** (0.0217)	0.0590*** (0.0225)	0.0519** (0.0223)
Catalan	-3.0373*** (0.9904)	-2.8397*** (0.9884)	0.4728 (0.9547)	-0.3375 (0.9022)	-0.3023 (0.8625)	-0.1681 (0.9047)
% manuf. and artisans (1787)		0.1532*** (0.0446)	0.1009*** (0.0335)	0.1220*** (0.0325)	0.1189*** (0.0309)	0.1282*** (0.0315)
Constant	2.8056 (3.3445)	4.7105 (3.5733)	31.2646*** (5.9988)	24.4188*** (9.3524)	-47.8552 (64.1686)	-25.6921 (76.5611)
First-nature geography	No	No	Yes	Yes	Yes	Yes
Districts fixed effects	No	No	No	Yes	Yes	Yes
Latitude and longitude	No	No	No	No	Yes	Yes
Second-nature geography	No	No	No	No	No	Yes
Observations	515	465	465	465	465	465
R-square	0.1961	0.2344	0.2908	0.3335	0.3362	0.3494

Notes: The reference or control group in the variables of interest is lordship, non-Morisco municipalities. Due to the low number of observations ($n=4$), the estimated coefficient of royal, Morisco (*royal_mor*) municipalities is not reported. First-nature geography includes temperature and rainfall. Second-nature geography includes distance to main road, distance to the capital city, distance to coast (in natural logarithms). Conley standard errors (Conley, 1999) are in parentheses. Cutoff: 42.7 km (ten nearest neighbors). Coefficients are statistically significant at * $p < 0.1$, ** $p < 0.05$, *** and $p < 0.01$.

Table B7. Subsample lordship municipalities

Dependent variable: percentage of male literacy in 1860						
Econometric model: ordinary least squares (standard errors corrected for spatial dependence)						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables of interest						
Morisco	-3.4100*** (0.7669)	-2.6080*** (0.7517)	-2.1534*** (0.7228)	-1.4707** (0.6876)	-1.4655** (0.6852)	-1.2142** (0.5404)
Control variables						
ln(Population 1860)	1.2387*** (0.4449)	1.0599*** (0.4055)	1.2213*** (0.3835)	1.2770*** (0.4265)	1.2758*** (0.4320)	1.2688*** (0.4326)
Settlement pattern (1887)	0.0721*** (0.159)	0.0700*** (0.0152)	0.0842*** (0.0177)	0.0623*** (0.0207)	0.0585*** (0.0219)	0.0514** (0.0212)
Catalan	-2.7872*** (0.9979)	-2.7127*** (0.9902)	0.2426 (1.0248)	0.8519 (0.9255)	-0.7956 (0.8456)	-1.2103 (0.9364)
% manuf. and artisans (1787)		0.1327*** (0.0497)	0.1026** (0.0428)	0.1279*** (0.0425)	0.1243*** (0.0413)	0.1356*** (0.0400)
Constant	2.2002 (3.4447)	2.0901 (3.2764)	27.1096*** (5.9591)	24.7774** (10.4220)	-61.4730 (71.4728)	-83.1148 (78.7556)
First-nature geography	No	No	Yes	Yes	Yes	Yes
Districts fixed effects	No	No	No	Yes	Yes	Yes
Latitude and longitude	No	No	No	No	Yes	Yes
Second-nature geography	No	No	No	No	No	Yes
Observations	431	396	396	396	396	396
R-square	0.1812	0.2075	0.2578	0.3162	0.3201	0.3485

Notes: First-nature geography includes temperature and rainfall. Second-nature geography includes distance to main road, distance to the capital city, distance to coast (in natural logarithms). Conley standard errors (Conley, 1999) are in parentheses. Cutoff: 42.7 km (ten nearest neighbors). Coefficients are statistically significant at * $p < 0.1$, ** $p < 0.05$, *** and $p < 0.01$.

Table B8. Distinguishing by lordship type (Secular lordship)

Dependent variable: percentage of male literacy in 1860						
Econometric model: ordinary least squares (standard errors corrected for spatial dependence)						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables of interest						
Secular lordship, Morisco	-3.4463*** (0.7978)	-2.7365*** (0.7723)	-2.3804*** (0.7430)	-1.6357** (0.7006)	-1.6433** (0.7108)	-1.4263** (0.5550)
Control variables						
ln(Population 1860)	1.2331*** (0.4412)	1.0621*** (0.3996)	1.2395*** (0.3771)	1.2989*** (0.4233)	1.3026*** (0.4303)	1.3002*** (0.4300)
Settlement pattern (1887)	0.0716*** (0.0159)	0.0696*** (0.0151)	0.0846*** (0.0181)	0.0626*** (0.0210)	0.0588*** (0.0223)	0.0516** (0.0216)
Catalan	-2.8398*** (0.9967)	-2.7475*** (1.0055)	0.2732 (1.0463)	-0.7930 (0.9554)	-0.7418 (0.8627)	-1.1627 (0.9322)
% manuf. and artisans (1787)		0.1336*** (0.0502)	0.1040** (0.0433)	0.1264*** (0.0426)	0.1225*** (0.0415)	0.1334*** (0.0401)
Constant	2.2870 (3.4384)	2.1888 (3.2694)	27.4986*** (5.9126)	24.1300** (10.0939)	-69.2926 (73.5058)	-92.4942 (77.9318)
First-nature geography	No	No	Yes	Yes	Yes	Yes
Districts fixed effects	No	No	No	Yes	Yes	Yes
Latitude and longitude	No	No	No	No	Yes	Yes
Second-nature geography	No	No	No	No	No	Yes
Observations	431	396	396	396	396	396
R-square	0.1827	0.2092	0.2608	0.3184	0.3226	0.3513

Notes: The reference or control group in the variables of interest is secular lordship, non-Morisco municipalities. For simplicity, only the estimated coefficient of secular, lordship, Morisco (*lord_sec_mor*) municipalities is reported. First-nature geography includes temperature and rainfall. Second-nature geography includes distance to main road, distance to the capital city, distance to coast (in natural logarithms). Conley standard errors (Conley, 1999) are in parentheses. Cutoff: 42.7 km (ten nearest neighbors). Coefficients are statistically significant at * $p < 0.1$, ** $p < 0.05$, *** and $p < 0.01$.

Table B9. Secular lordship subsample

Dependent variable: percentage of male literacy in 1860						
Econometric model: ordinary least squares (standard errors corrected for spatial dependence)						
	(1)	(2)	(3)	(4)	(5)	(6)
Variables of interest						
Morisco	-3.3937*** (0.7902)	-2.6300*** (0.7578)	-2.2535*** (0.7046)	-1.6085** (0.6748)	-1.5110** (0.6466)	-1.2638** (0.5402)
Control variables						
ln(Population 1860)	1.3319*** (0.4409)	1.1106*** (0.4133)	1.2614*** (0.3782)	1.3751*** (0.4380)	1.4596*** (0.4264)	1.4897*** (0.4214)
Settlement pattern (1887)	0.0712*** (0.0163)	0.0668*** (0.0157)	0.0776*** (0.0169)	0.0543*** (0.0187)	0.0524** (0.0212)	0.0466** (0.0214)
Catalan	-2.5975** (1.0280)	-2.4263** (1.0073)	0.7208 (1.0772)	-0.6641 (1.0400)	-1.0618 (0.9691)	-1.4591 (1.0167)
% manuf. and artisans (1787)		0.1491** (0.0612)	0.1142** (0.0516)	0.1420*** (0.0537)	0.1369*** (0.0499)	0.1441*** (0.0494)
Constant	1.4186 (3.6698)	1.6978 (3.5372)	28.7136*** (5.8734)	24.3144** (11.6148)	-168.7244* (93.5675)	-191.6473** (95.7102)
First-nature geography	No	No	Yes	Yes	Yes	Yes
Districts fixed effects	No	No	No	Yes	Yes	Yes
Latitude and longitude	No	No	No	No	Yes	Yes
Second-nature geography	No	No	No	No	No	Yes
Observations	363	338	338	338	338	338
R-square	0.1738	0.2019	0.2617	0.3193	0.3289	0.3544

Notes: First-nature geography includes temperature and rainfall. Second-nature geography includes distance to main road, distance to the capital city, distance to coast (in natural logarithms). Conley standard errors (Conley, 1999) are in parentheses. Cutoff: 42.7 km (ten nearest neighbors). Coefficients are statistically significant at * $p < 0.1$, ** $p < 0.05$, *** and $p < 0.01$.