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Enclosing literacy? Common lands and human capital in Spain, 1860–1930

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Abstract. The slow growth of the stock of human capital in Spain has been related to weak levels of economic development and a low commitment of Spanish institutions to primary education. This paper adds to these explanations by showing that common lands positively contributed to achieving significantly higher levels of both schooling expenditure and literacy rates. By supporting both municipal and households' incomes, these collective resources sustained not only the local supply of education, but also the demand for it, although their influence decreased over time. Likewise, either low levels of economic development prevented human capital from growing endogenously or demand factors were not as important as previously argued. Lastly, even though the active intervention of the central government was crucial to promote education, its effort was not enough and human capital in Spain lagged behind other European countries in the early stages of economic development.

1. Introduction

The transition from restricted to universal literacy in Europe took place during the 19th century, thus coinciding with fundamental economic and political transformations. Together with other backward economies, Spain experienced a delayed and geographically uneven spread of literacy, resulting in very poor average levels of human capital (Núñez, 1992). While literacy was almost universal in Britain and France, at least one-third of the Spanish population was still illiterate in 1930 (Tortella, 1994).[1] Likewise, internal regional differences on literacy rates, already high in 1860, also widened during the second half of the 19th century and the first decades of the 20th century.

Given that human capital has been extensively associated with different factors affecting long-term economic development,[2] unveiling the causes behind the

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1 Although growing, Spanish educational attainments, measured by average years of schooling, were hardly 60% of the British levels for the cohorts born between 1886 and 1936 (Núñez, 2003b: 624). Spanish public expenditure and enrolment rates in primary schooling were also significantly lower than in other European countries (Núñez, 2010).

2 Higher educational levels positively affect workers' productivity and wages and facilitate the adoption of technological and organisational innovations (Easterlin, 1981; Schultz, 1963). Primary schooling has also shown to be positively related with geographical and occupational mobility, thus

dissimilar trajectories on the transition from restricted to universal literacy becomes crucial. Studying the historical experience of European countries from the middle of the 19th century onwards, Sandberg (1982) argues that a relatively high level of human capital was a pre-condition for modern economic growth.[3] Deficient levels of schooling actually seem to have prevented Spain from achieving higher economic growth rates before the Civil War (O'Rourke and Williamson, 1997; Tortella, 1994).[4] It is therefore important to understand why Spain was a laggard in terms of educational attainments.

Broadly speaking, the slow growth of the stock of human capital during the early stages of economic modernisation in Spain has been associated with weak levels of economic development, together with a low commitment of Spanish institutions to primary education (Núñez, 2003b). This paper adds to these explanations by analysing the links between the existence of common lands and the provision of education in the early stages of economic development in Spain. Some authors have actually pointed out the role of the commons in contributing to financing the local supply of primary schooling (García and Comín, 1995; Iriarte, 2003; Linares, 2006; Núñez, 1991). Given the different regional paths, the privatisation of these collective resources throughout the 19th and early 20th centuries provides an excellent case study to test these arguments. In order to assess the distinctive impact of common lands on human capital, this paper exploits geographical variation over time by collecting a panel dataset at the provincial level on three different periods: 1860, 1900 and 1930. Three main conclusions emerge from the empirical analysis. First, common lands positively contributed to achieving significantly higher levels of both schooling expenditure and literacy rates. By supporting both municipal and households' incomes, these collective resources sustained not only the local supply of education but also the demand for it, although their influence decreased over time. Second, either low levels of economic development during this period prevented human capital from growing endogenously or demand factors were not as important as previously argued. Lastly, although the active intervention of the central government was crucial to promote education, its effort was not enough and human capital in Spain lagged behind most European countries. The rest of the paper is organised

promoting the reallocation of labour (Nicholas and Shergold, 1987; Sánchez Alonso, 2000). In addition, increased human capital influences household fertility behaviour, facilitating the demographic transition (Becker *et al.*, 1990). In general, education improves the ability of individuals to acquire information and to adapt to, and benefit from, the new opportunities arising from an increasingly fast-changing environment, typical of the modernisation process (Bowman, 1980; Núñez, 2003a).

3 Lindert (2003) also shares this view and links high schooling rates with democratic institutions. Recent empirical analysis, focusing on cross-country comparisons during the second half of the 20th century, also shows that the impact of human capital, particularly primary schooling, is relevant for economic growth (Sala-i-Martin *et al.*, 2004).

4 See Núñez (1992, 2003b) for an extensive analysis of the contribution of education to economic development in Spain.

as follows. Section 2 reviews the elements behind the historical transition from restricted to universal literacy. Section 3 discusses the potential role that common lands played in this context. While Section 4 describes the methodology employed to test the hypothesis outlined here, Section 5 reports the results of the empirical analysis. Finally, the last section presents the conclusions.

2. The literacy transition: a supply- or demand-driven process?

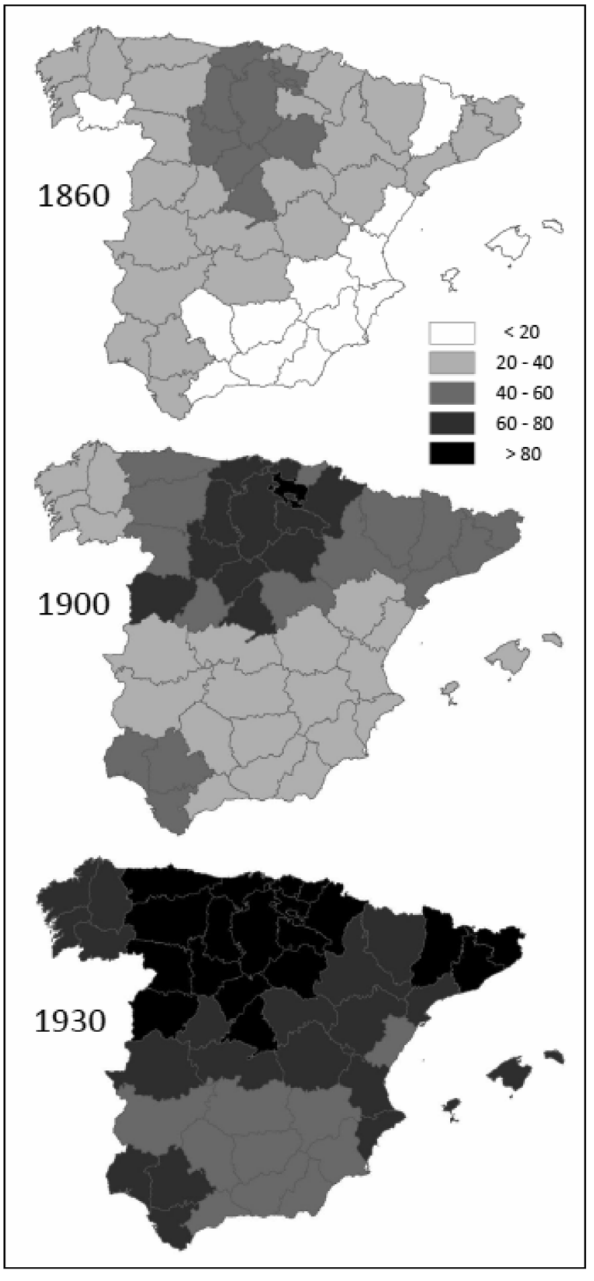
Leaving aside North America, the transition from restricted to universal literacy first took place in Northwestern Europe, hand-in-hand with the establishment of a system of formal schooling and growing economic development (Easterlin, 1981; Núñez, 2003a; Sandberg, 1982). Spain, however, experienced a delayed and geographically uneven spread of literacy (Núñez, 1992, 2003b). Although growing, Spanish educational attainments diverged from the levels achieved by the most developed nations during the second half of the 19th century and only began to converge during the first decades of the 20th century. These improvements were also subject to frequent interruptions and setbacks, especially between 1870 and 1910 (Núñez, 2010: 253). Likewise, regional differences on literacy rates, already high in 1860, widened during the second half of the 19th century and the first decades of the 20th century (see Figure 1). Even though educational attainments were improving everywhere, the early stages of economic modernisation resulted in a huge educational gap between Northern and Southern Spain.[5]

The demand for education has been considered as a crucial element in the rise of human capital during this period. Only when the returns to education were large enough were investments made to acquire it (Galor and Weil, 1999; Núñez, 2003a; Reis, 2005). The rate of return to education, and thus the incentives to invest in it, depends on its potential benefits and actual costs. In this sense, apart from the direct costs of schooling, the opportunity cost of forgoing work is crucial in household behaviour. Literacy and primary schooling had a higher economic value for the average individual in more market-oriented economies and in the growing non-agricultural sector (Lucas, 2002; Sandberg, 1982). More developed societies also had more resources to invest in education. The relationship between industrialisation and literacy, however, is not so clear. Although some scholars argue that literacy was related to the British industrial revolution, other researchers have pointed out to stagnating, or even falling, literacy rates during that period, especially in industrial areas (Mitch, 1992; Schofield, 1973).[6] According to Galor (2011), the acceleration of technological

5 The geography of the transition to universal literacy in Spain was obviously more complex. The Galician provinces in the North, for instance, did perform badly, while the Mediterranean coast was not as backward as the South. See Núñez (1992) for a more detailed geographical picture.

6 Not only was literacy perhaps not required for factory workers, but also industrialisation, by providing a wider array of working opportunities, may have increased the opportunity costs of investing in

Figure 1. The literacy transition in Spain (percentage of population literate). Source: Núñez (1992).



progress during the second phase of industrialisation gradually increased the relative importance of human capital. Likewise, an unequal access to land may have also influenced the demand for education. The existence of credit market imperfections disproportionately affects the lower classes' capacity to invest in human capital (Galor and Zeira, 1993). Moreover, while small and middle size farmers positively valued education, landless labourers, due to scanty economic prospects, did not see any economic advantage from investing on it (Núñez, 2005: 132).[7] Since the decision to invest in education is generally taken by the parents, their educational levels, particularly those of the mothers, significantly influenced the demand for education for the next generation (Pérez Moreda, 1997). Lastly, life expectancy, by determining the time horizon of the investment, also affects the potential benefits that can be reaped off from investing in education (Galor, 2011: 52; Núñez, 2005: 131).

Although demand factors are crucial, the supply side, by affecting the costs of education, plays an important role in determining the levels of human capital (Lindert, 2003; Núñez, 2003a; Reis, 2005). The public provision of free and compulsory primary schooling significantly reduced the direct cost of education, while at the same time it tried to prevent child labour. The first serious attempt to promote primary schooling in Spain was the Moyano Act in 1857 (Núñez, 1992: 216–226).[8] However, although it theoretically established compulsory education (and free for those who could not afford it), its enactment was not fully effective until the early 20th century. Recent research has shown that an unequal distribution of land property rights negatively influences human capital formation (Deininger and Squire, 1998; Engerman and Sokoloff, 2000; Galor *et al.*, 2009). Landholding elites are likely to block the implementation of educational reforms in order to both preserve the power relations *status quo* and reduce the mobility of the rural labour force. Although the backwardness of the economy obviously limited the spending capacity during this period, the low levels of public expenditure on schooling evidenced the lack of commitment of the Spanish government and local elites to primary education, partly explaining the deficient primary educational system (Comín, 1988; Núñez, 1991, 2005). The finance of schooling was actually left to municipal councils and, therefore, their capacity to fund primary education became crucial. Núñez (1991) has shown

education (Núñez, 2003a: 547–548). In this regard, by promoting child labour, employment opportunities generated by industrialisation or growing cities may have affected human capital formation (Pérez Moreda, 1997: 248). See Núñez (2003a) for a more extended survey on the relationship between literacy and industrialisation or economic development in general.

7 Likewise, there is also evidence that child labour was widespread in the agricultural sector, what is likely to have also affected opportunity costs, preventing higher educational attainments in rural areas (Borras, 2002; Sarasúa, 2002).

8 There were some short-lived and hardly effective precedents, such as the *Rivas* and *Pidal Plans* of 1836 and 1845, respectively (Núñez, 1992: 208–229).

that schooling expenditures per capita were already geographically uneven in 1860 and these regional differences had increased in 1930. A related problem was the low quality of school teaching. The ratio students per teacher worsened throughout the 19th century, probably up to around 1910 (Núñez, 1992: 237). The material conditions of the schools were deficient and teachers' low salaries and social status prevented attracting qualified and motivated professionals (Núñez, 2005: 130). Although it soon became obvious that municipalities could not afford supporting a well-functioning primary education system, the central government was too slow to intervene: it was only in 1902 when, together with the creation of the Ministry of Public Instruction and Arts, it took care of the salaries of school teachers (Núñez, 1991). However, given that the central state limited itself to cover schooling expenditures, without readjusting the pre-existing disequilibria, the problems regarding the uneven regional distribution of schooling expenditures persisted well into the first decades of the 20th century. Furthermore, the problem with primary education was not only of lack of resources but also of allocation between educational levels. Those regions where elites were powerful enough gave priority to secondary and university level expenditures, thus negatively affecting primary schooling (Núñez, 1991).[9]

However, apart from government intervention, other elements should also be taken into account when explaining the supply of education. Although demographic growth in Spain was relatively slow, the proportion of schooling-age population was significantly larger than in other countries (Núñez, 2005: 131). This trend put an extra pressure on the Spanish educational system, making it more difficult to increase schooling expenditures per capita.[10] It may be the case, nonetheless, that the supply of education enjoyed increasing returns to scale, so the extra demographic burden may have been offset by the increasing productivity arising from size (Pérez Moreda, 1997: 249). Likewise, although distance to the school is likely to have played a negative influence in areas with dispersed settlements, especially in the context of a steep orography, the one-teacher per village policy, related also to the role that the local parish had on imparting education, may have benefited small villages (Pérez Moreda, 1997: 249; Sarasúa, 2002: 569–570). Lastly, inherited historical factors, such as somewhat different legal systems or cultural values, may have also played a role in the different regional paths followed by educational attainments in Spain during this period (Pérez Moreda, 1997; Reher, 1997).

9 A similar pattern can be found in Latin America and colonial India (Chaudhary, 2009; Mariscal and Sokoloff, 2000).

10 It should be noted that, given that households' resources were limited, demographic pressures also affected the demand for education by limiting the possibility that every child enjoyed schooling (Pérez Moreda, 1997: 246).

3. Commons and human capital

Commons have been traditionally regarded as inefficient and privatisation has been usually regarded as a precondition to foster economic growth (North and Thomas, 1977). The negative view surrounding the communal regime has nonetheless been subjected to revision by a new wave of empirical research that considers common property regimes to be efficient and sustainable, thus revaluating the role that common resources had for the local communities that managed them (Allen, 1992; De Moor, 2009; De Moor *et al.*, 2002; Ostrom, 1990). The reassessment of the commons has focused on their impact on agricultural productivity and inequality (Allen, 1992, 2003; Humphries, 1990; Neeson, 1993), but their potential contribution to human capital has hardly been explored.

Common lands were a key component in the organic-based Spanish preindustrial economy (Balboa, 1999; Iriarte, 2002; Jiménez Blanco, 2002). The communal regime in Spain involved two main types of access to the land: a direct but regulated access for all members of the community (*bienes comunales*) or a temporary cession of user rights to particular individuals in exchange for a monetary income (*bienes de propios*). Apart from providing pasture to support livestock, which in turn supplied agriculture with fertiliser and workforce, these *comunales* constituted a source of complementary income by providing animal proteins, wood, and fuel, among other products, including the possibility of temporary cropping. The *bienes de propios*, on the other hand, played a fundamental role in the finances of local institutions, which was particularly important given that municipalities were responsible for the provision of basic public services. However, the transformations caused by the transition to capitalism, and the emergence of a new liberal state, triggered the gradual dismantling of the communal regime throughout the 19th and early 20th centuries (Iriarte, 2002). The degree of common land persistence was nonetheless fairly different depending on the region being analysed (GEHR,[11] 1994). As shown in Figure 2, the dismantling of the communal regime was particularly intense in the half south of the country, while common land persistence was especially high in North-western Spain.[12]

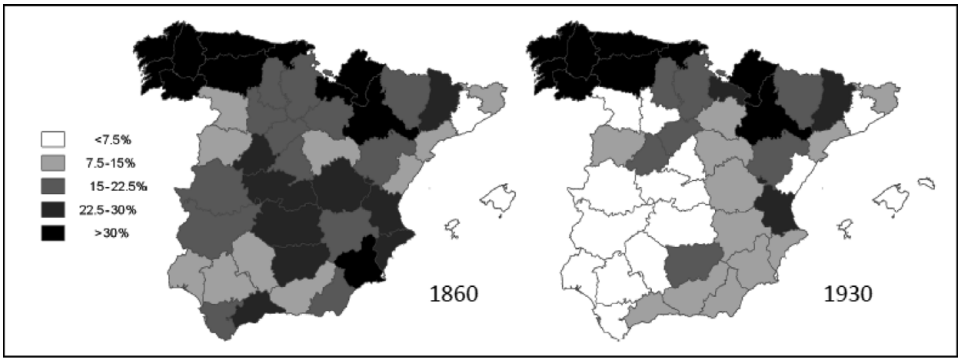
During the 19th century, municipalities were indeed responsible for the provision of elementary education and their financial capacity was crucial when it came to funding schooling expenditures.[13] It has been argued that both the backwardness of Spanish literacy and its uneven regional spread are partly explained by the fiscal problems of these local institutions (García and Comín, 1995; Núñez, 1991). The monetary income derived from the cession of user rights

11 Grupo de Estudios de Historia Rural.

12 See GEHR (1994) for a detailed analysis of the factors behind this diverse regional outcome.

13 Between 1858 and 1863, for instance, primary education absorbed around 15%–20% of the municipal expenditures (García and Comín, 1995: 93).

Figure 2. Common land persistence in Spain (percentage of total area). Source: Artiaga and Balboa (1992), GEHR (1994) and Gallego (2007). No data for the Basque Country are available.



on the commons actually constituted a fundamental component of the municipal budget (Bernal, 1978; García and Comín, 1995; Iriarte, 2003; Linares, 2006).[14] In 1858, revenues obtained from the commons met 32.4% of the municipal budget (García and Comín, 1995: 95).[15] It should be noted that these figures reflect the national average and therefore hide the importance of the commons in those municipalities that had preserved them, especially in the rural areas. In the province of Seville, for instance, despite being one of the areas that most suffered privatisation prior to the Disentailment Act of 1855, the income generated by the commons still provided the 100% of the ordinary revenue in 66% of the municipalities in 1849 (Bernal, 1978: 307).[16]

The financial difficulties of municipalities during the 19th century are well known by the historiography (García and Comín, 1995; Moral Ruíz, 1986). The privatisation of common lands meant a loss of assets that negatively influenced their economic viability and the possibility to meet the increase in expenditures required by the functions on education, among other basic public services, which they were suppose to carry out (Iriarte, 2003; Jiménez Blanco, 2002: 169; Linares, 2006).[17] In Seville, for instance, the revenues generated by common lands were reduced by 70% between 1821 and 1849, a situation that

14 Commons were not only a source of revenues to municipalities but could be used as a guarantee when applying for credit to finance the provision of public goods (Bernal, 1978; Iriarte, 2003). Common lands were indeed the source of the economic and political independence of municipalities against an increasingly active central government (García and Comín, 1995; Jiménez Blanco, 2002).

15 Furthermore, the income coming from the renting of common lands did frequently not appear in the municipal budgets, so these figures would be a minimum approximation (Moral Ruiz, 1986: 746).

16 In the four municipalities studied by Iriarte (2003: 243) in Navarre, the importance of the commons in the local budget still ranged from 20% to 59% in the period 1926–1935.

17 The income generated by the commons and the funds obtained with their guarantee financed the creation and maintenance of local public goods, especially schooling (Iriarte, 2003).

aggravated later as a result of the General Disentailment Act of 1855 (Bernal, 1978: 302).[18] The financial problems of municipalities negatively influenced the provision of local public goods, especially of education (García and Comín, 1995). Most of the municipal budget on education was devoted to the payment of local teachers, which did not prevent their wages from being extremely low. In addition, the delays in paying the wages of the local teachers were widespread. A high proportion of these teachers had no official certificates and a great deal of villages did not have an adequate building devoted to the school.

Although literacy improved in the whole country during the period analysed here, the gap between Northern and Southern Spain increased (Núñez, 1992). The provision of schooling, measured by the number of schools and teacher per population, and the public expenditures in education per capita, were indeed higher in the northern half of the Peninsula, which also coincided with the geography of common land persistence. The diverse survival of the commons may therefore partly contribute to explaining the dissimilar funding capacity of municipalities that led to a considerable regional variation in the provision of schooling (Collantes, 2004; Núñez, 1992; Sarasúa, 2002). In the province of Cádiz, for instance, most of the teachers' salaries came from revenues generated by the commons in 1840 (Bernal, 1978: 303). Furthermore, municipalities frequently financed schooling directly through the commons by allocating a plot of land to the maintenance of the teacher or by providing the building where lessons were given (Sarasúa, 2002: 580–581).[19]

However, apart from contributing to the supply of education by financing public services, the income generated by the commons allowed the reduction of the fiscal burden supported by the community (García and Comín, 1995; Iriarte, 2003; Linares, 2006). The privatisation of these collective resources coincided with the increasing expenditures that municipalities had to face to provide new public services. These two combined factors not only influenced the provision of education and other public goods, such as medical care and poor relief, but also forced local institutions to increase taxes. Poorer households were especially affected by this process due to the regressive nature of a fiscal system built mostly around taxing consumption goods.[20] This consequence was by no

18 According to the legal text, 20% of the sales value would directly go to the state while the remaining 80% would belong to the municipalities but transformed in perpetual and inalienable public debt yielding a 3% annual return (García Sanz, 1985: 28). Although these rents were intended to compensate municipalities for the loss of these resources, the debt quickly depreciated and the payments were not often honoured.

19 In a comparative study of two European regions, Maynes (1979) shows that the absence of common lands made the expansion of schooling difficult in Vaucluse (France) because it had to be funded with regressive local taxes, while in Baden (Germany), the persistence of traditional ways of financing local schools based on payments in kind (housing, arable land…) allowed for a higher diffusion of elementary schools.

20 The Treasury set the state's fiscal needs, which were then apportioned between regions and municipalities. If the municipal budget did not meet these requirements, local taxes had to be increased.

means unexpected for the contemporaries. The parliamentary debates about the convenience of privatising common lands carried out between 1835 and 1855 reflect the concern that depriving local communities from these resources would necessarily force municipalities to increase local taxes (Gómez Urdañez, 2002: 144). Municipal budgetary problems also meant that local public goods, especially schooling, were sometimes funded through neighbours' extraordinary contributions (Sarasúa, 2002: 581).[21]

Likewise, the dismantling of common lands not only influenced the municipal financial capacity and the level of local taxes, but it also directly affected households' incomes. As explained above, common lands provided pasture, fertiliser, wood, fuel, among other products, including the possibility of temporary cropping. The loss of these sources of complementary incomes, by reducing disposable income, increased the relative cost of education, thus reducing the demand for education, particularly for the less favoured groups. The widespread conflict and resistance that privatisation generated strongly points to the crucial role that commons played on securing the subsistence of rural households and the negative impact that privatisation had on their living standards (Cobo *et al.*, 1992; De la Torre and Lana, 2000).

Lastly, the privatisation of common lands could also have indirectly influenced human capital through its effect on inequality. The way through which privatisation was implemented is likely to have increased, or at least consolidated, the concentration of landholding by an elite, thus contributing to social polarisation and the proletarisation of agricultural labour (Linares, 2001; Moral Ruíz, 1979). According to the arguments outlined in Section 3, an unequal distribution of land property rights negatively affected human capital formation through both the supply and the demand for education. Not only did landless labourers not see any economic advantage from investing on it, but also landholding elites blocked the implementation of educational policies.

4. Methodology and data

In order to test the hypothesis outlined above regarding the distinctive impact of common lands on human capital in Spain, this paper exploits geographical variation over time by collecting a panel dataset at the provincial level on three different periods: 1860, 1900 and 1930. Literacy rates and schooling expenditures have been widely employed as indicators of educational

The tax on consumption goods became the most important source of municipal revenue and was particularly hated and contested by the lower classes (García and Comín, 1995: 100; Linares, 2006: 83). See Comín and Yun-Casalilla (2012: 258–259) for a detailed summary of the functioning of the liberal fiscal system during this period.

21 In a study of four municipalities in Navarre, Iriarte (2003) shows that higher levels of income coming from the commons were related to both a lower municipal fiscal burden on the neighbours and higher levels of social spending.

attainments, especially in developing countries (Núñez, 2003a). These indicators are particularly suitable for studying the evolution of education in the early stages of economic modernisation because most of the human capital embodied in the Spanish population during this period was due to elementary schooling (Núñez, 2005: 130). Data for these variables are taken from Núñez (1991, 1992).[22] Although highly correlated, analysing both indicators is especially meaningful because the ability to read and write evaluates an educational output, while schooling expenditures measure an input.[23] In this sense, while literacy is the result of demand and supply factors, schooling expenditures mostly reflect supply considerations, which partly allow distinguishing the role that common lands played on these two different dimensions.[24]

It is important to note that migration processes may have biased these indicators. The importance of internal migratory patterns increased from mid-19th century onwards and accelerated in the first decades of the 20th century (Silvestre, 2005). Although relatively low in international terms, emigration abroad followed a delayed but similar trend (Sánchez Alonso, 2000). Regional differences in migratory behaviour were large throughout this period. In this regard, higher literacy rates not only allow acquiring the necessary information about potential destinations but also increase the potential returns of migrating (Gould, 1980). Regions with superior educational attainments actually enjoyed higher rates of both internal and international migration before the Civil War (Collantes, 2004; Núñez, 2003b; Sánchez Alonso, 2000).[25] Drawing on military records, Quiroga (2003: 600) finds that average literacy rates for internal emigrants between 1893 and 1899 were at least 25% higher than for those who stayed in their province of origin. Therefore, the actual literacy rates would have been higher if migration had not taken place. The role of outmigration in schooling expenditures is, on the other hand, less clear. Although it reduces pressure on local resources, it also diminishes the potential to generate income given that the most skilled were those who often made the move. Similar arguments can be made about the receiving areas. However, the capacity of the existing urban educational system to meet a growing stock of potential students due to a high inflow of migrants could have been compromised (Núñez,

22 I would like to thank the author for kindly sharing her data. Literacy refers to the fraction of population above 10 years old that was able to read and write while schooling expenditure refers to expenses in staff and material per capita.

23 In addition, while literacy is a stock variable, schooling expenditure is a flow variable. See Núñez (2003a) for a detailed discussion of the nature, advantages and shortcomings of historical human capital indicators.

24 It should also be noted that literacy levels only reflect a component of education, the skills of reading and writing, while schooling expenditure serves as an indicator of the quality of schooling that goes beyond those particular skills.

25 However, Silvestre (2005), using cross-section analysis at the provincial level, does not find that changes in literacy rates between 1900 and 1920 significantly affected internal migration in the 1920s.

2003a: 547–548). In order to account for this potential bias, both internal and international migration rates will be included in the analysis (Mikelarena, 1993).[26]

The stock of common lands was already geographically diverse in 1860. The privatisation that took place from that date onwards under the General Disentailment Act accentuated these differences, especially from 1860 to 1900 when sales were widespread. Common lands are measured as the proportion of common lands over the total provincial area (GEHR, 1994). The Galician case is nonetheless problematic. Given their particular legal characteristics, a large part of the commons in this region did not belong to the municipalities but to the neighbours themselves (Artiaga and Balboa, 1992; Balboa, 1999).[27] This means that these collective resources did not contribute to funding municipalities.[28] In order to minimise this problem, only those Galician commons belonging to the municipalities will be considered in the analysis. Furthermore, in order to further test the robustness of the general results, the Galician provinces will also be excluded from the empirical analysis.

The panel data collected allow carrying out an econometric analysis in order to assess the distinctive impact of common lands on education. A fixed-effects model accounts for unobserved time-invariant provincial heterogeneity, thus partly addressing the potential omitted variable problem. This specification also permits including time dummies to account for the evolution of the Spanish economy and the establishment of a mass public schooling system, which was mostly implemented from the early 20th century onwards.[29] Also, interacting the variable of interest with time-period dummies allows assessing whether the effect of the existence of common lands on human capital varied over time as the Spanish economy evolved.

The main potential concern here is the possibility that both the privatisation of common lands and the changing educational attainments were the result of another time-variant unobserved factor, thus affecting our estimates. Other processes were taking place around the same time, which may be correlated with common land persistence and human capital indicators. As explained above, the actual educational levels are the result of a complex web of supply and demand factors. In order to overcome the omitted variable problem, a host of

26 Migration rates are measured as net migration flows. The available data do not perfectly fit the time periods employed here. The flows between 1878–1887, 1888–1920 (average of three different sub-periods) and 1921–1930 are employed to account for 1860, 1900 and 1930, respectively.

27 In these areas, the body of neighbours formed a legal entity different from the municipality. Despite the central government's efforts to municipalise these resources, their management was in practice left in the hands of the neighbours.

28 According to Balboa (2002: 464), the Galician municipalities did respect neighbours' autonomy and did not intervene in the management of the commons at all.

29 As explained in Section 2, some advances were nonetheless carried out from the middle of the 19th century.

controls that take into account other potential determinants of human capital are included in the investigation. On the one hand, the demand for education is considered by employing different proxies of economic development. Income per capita is calculated from recent estimates of gross domestic product at the provincial level and population figures (Nicolau, 2005; Rosés *et al.*, 2010). Urbanisation and industrialisation are measured as the proportion of population living in cities bigger than 5,000 inhabitants and the gross value added by non-agricultural activities per capita respectively (Rosés *et al.*, 2010; Tafunell, 2005). The importance of the agricultural sector is proxied by the proportion of the male active population working on agriculture (Erdozáin and Mikalerena, 1999).[30] Inequality in access to the land is measured through the fraction of landowners over active agricultural population (Dirección General del Instituto Geográfico y Estadístico, 1863, 1922).[31] The importance of the parents, especially of the mothers, is taking into account by interacting the actual literacy rates with the inverse of the gender educational gap (Núñez, 1992). In addition, given that the returns on education also depend on the time horizon of the investment, life expectancy is also included in the model (Dopico, 1987; Dopico and Reher, 1998). On the other hand, supply factors are also considered. In this regard, the impact of demographic pressures is proxied by population density (INE, 2001; Nicolau, 2005). The potential influence of the population settlement pattern is already accounted for by including provincial fixed effects. Similarly, regional-specific factors arising from somewhat different legal systems or cultural values are also taken into account by this specification. Summary statistics of the dependent and independent variables are reported in the Appendix.

5. Results

Table 1 reports the results of the empirical analysis. All regressions include province fixed effects and time dummies. Columns (1) and (5) present the baseline specification assessing the relationship between the persistence of common lands and human capital indicators. The remaining columns introduce the variable of interest interacted with time-period dummies to allow the effect of common lands to vary over time as the Spanish economy evolved. In addition, columns (3) and (7) introduce the controls explained above, thus taking into account other

30 The lack of consistency between censuses regarding female working population advices to rely only on male workers when accounting for the importance of agriculture, a usual procedure in Spanish historical literature (Erdozain and Mikalerena, 1999; Nicolau, 2005; Prados de la Escosura, 2008). Consistency between censuses also recommends using data of 1877 instead of 1860. It seems nonetheless that the population distribution did not change much between 1860 and 1877, while there was enough variation between 1877 and 1900. Likewise, the strange figures found in some provinces in 1930 also recommend to employ an average between 1920, 1930 and 1940 to account for that date. See also the comments of Erdozain and Mikalerena (1999: 107) on this issue.

31 Data on land ownership are only available for 1860 and 1920. Therefore, linear interpolation is employed to estimate that figure for 1900 and, for 1930, the data on 1920 are used.

Table 1. Commons and human capital

	Dependent variable							
	Literacy				Schooling expenditure			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Common lands	0.35**	0.33***	0.16**	0.19***	0.05***	0.04***	0.03***	0.03***
	(0.14)	(0.12)	(0.07)	(0.06)	(0.01)	(0.01)	(0.01)	(0.01)
CL*d_1900		0.24***	0.15**	0.16**		0.00	−0.01**	−0.01**
		(0.07)	(0.07)	(0.07)		(0.01)	(0.01)	(0.01)
CL*d_1930		0.25***	0.05	0.03		0.04***	0.01	0.00
		(0.08)	(0.07)	(0.07)		(0.01)	(0.02)	(0.02)
d_1900	20.81***	17.22***	13.41***	14.08***	0.82***	0.78***	1.16***	1.27***
	(1.40)	(1.71)	(1.53)	(1.55)	(0.11)	(0.12)	(0.19)	(0.24)
d_1930	48.76***	45.08***	32.94***	31.04***	2.22***	1.61***	2.34***	2.30***
	(1.33)	(1.84)	(3.24)	(3.22)	(0.21)	(0.24)	(0.52)	(0.68)
Controls	No	No	Yes	Yes	No	No	Yes	Yes
Observations	138	138	137	125	137	137	137	125
R^2	0.97	0.97	0.98	0.98	0.75	0.80	0.87	0.87

Note. Robust standard errors are given in parentheses; ** or *** denotes significance at 5% or 1% level. All regressions include provincial fixed effects. For simplicity, the intercept is not reported. Controls include income per capita, population density, agricultural population, urbanisation, industrialisation, access to land, parents' literacy and life expectancy.

potential determinants of human capital. Lastly, given the conceptual ambiguity of the Galician commons, columns (4) and (8) further test the robustness of the results by excluding the Galician provinces from the empirical analysis. Since migration rates turned out to be statistically insignificant in all specifications and did not affect the outcome of the analysis, they have been removed from the reported results.

The presence of common lands is shown to be positive and significantly related to both literacy rates and schooling expenditures per capita. These estimates are robust even when adding the series of controls explained above and the Galician provinces are excluded.[32] The impact of the persistence of common lands on human capital is relatively important in economic terms, although it decreases over time (see Table 2). According to the estimates in columns (4) and (8), a one standard deviation in the stock of common lands in 1860 meant literacy and schooling expenditure to be an average of 2.5 percentage points and 0.39 pesetas per capita higher, respectively. Given that the average level of literacy and schooling expenditure in 1860 were 27.7 percentage points and 1.14 pesetas per capita, these figures represent 9% and 34.2% of those levels in that order.

32 The special characteristics of the Galician commons can be extended to other north-western provinces (Jiménez Blanco, 2002: 151). The empirical results nonetheless remain unchanged if, together with Galicia, the other north-western provinces (Asturias, Cantabria and León) are excluded from the analysis.

Table 2. Evolution of the estimated influence of common lands

	Literacy		Schooling expenditure	
	Absolute	Relative	Absolute	Relative
1860	2.5 pp.	9.0%	0.39 ptas.	34.2%
1900	3.9 pp.	8.3%	0.22 ptas.	13.7%
1930	2.1 pp.	2.9%	0.34 ptas.	11.4%

Note. Literacy is measured in percentage points (pp.) and schooling expenditure per capita in pesetas (ptas.). The effect is computed using one standard deviation in the stock of common lands. These estimates only reflect the national average and therefore underestimate the influence of the commons in those areas that had preserved them.

This result points to the important role these collective resources played in the funding of education at the municipal level in the period prior to 1860. As expected, the lower influence of the commons on literacy reflects the fact that, while schooling expenditure mostly reflects supply side considerations, literacy is the outcome of a wider set of supply and demand factors, thus leaving less room to the contribution of the commons.

The impact of the commons on these variables changed between 1860 and 1900, coinciding with the further privatisation of these resources under the General Disentailment Act, which took place from 1855 onwards. In this sense, while the relationship between common lands and literacy levels grew even stronger, their effect on schooling expenditure was somewhat diminished.[33] Two factors explain the fact that despite the estimated impact of the commons on the supply of schooling was significantly reduced, their effect on literacy levels actually increased. On the one hand, the privatisation process that took place during this period mostly affected those commons which were being rented privately – the so-called *bienes de propios* – which especially contributed to the municipal budget (Linares, 2001; Sanz Fernández, 1985).[34] Therefore, given the limitations on schooling expenditure, the privatisation process further constrained the transition to universal literacy by creating a bottleneck in the supply of schooling.[35] On the other hand, the literature has stressed that the second half of the 19th century was a difficult period for the bottom half of the population (Martínez Carrión, 2002; Pérez Moreda, 1999). The privatisation of common lands certainly made things worse. These collective

33 One standard deviation in the stock of common lands now increased literacy and schooling expenditures by 3.9 percentage points and 0.22 pesetas per capita respectively. Taking into account that both indicators were growing between 1860 and 1900, the relative effect of the commons was now 8.3% and 13.7%, respectively.

34 Although the Uplands Act of 1863 promoted the privatisation of user rights over the remaining commons, which would have increased municipal revenues, its actual application was fairly limited before 1900 (GEHR, 2002: 518).

35 There is evidence that the quality of education decreased during the second half of the 19th century as the number of teachers per pupil decreased (Núñez, 1992: 237).

resources became a crucial source of complementary incomes in those areas that were more successful in resisting privatisation pressures (Iriarte, 2002; Jiménez Blanco, 2002). Therefore, by complementing households' incomes, commons distinctively contributed to sustaining the demand for education.

The influence of the commons on educational human capital continued evolving during the first decades of the 20th century. On the one hand, their absolute contribution to fund schooling expenditure recovered the levels of 1860. Together with a larger effort by municipal authorities to provide education during the 1920s, this is likely due to the greater importance that monetary revenues obtained from the commons gained during the first decades of the 20th century (GEHR, 2002; Iriarte, 2003; Núñez, 1992: 307).[36] On the other hand, their effect on literacy rates decreased from the previous period, reflecting the fact that the role of the commons in complementing households' incomes declined as the economy modernised. However, although still noticeable in absolute terms, given that the levels of both variables had increased over time, the relative effect of these collective resources on both literacy rates and schooling expenditure did not recover the levels achieved in previous periods.[37] A more intensive process of economic development provided alternative, and more important, sources of income to both municipalities and households, which, together with the increasing intervention of the state in the supply of education, meant that common lands became relatively less and less important over time.[38]

6. The literacy transition: economic modernisation or state intervention?

Interestingly, the results reported in Table 1 also allow assessing the relative importance of these two processes, economic modernisation and state intervention, in the transition to universal literacy in Spain. The coefficients of the time-period fixed effects illustrate that as the country developed, both indicators of human capital greatly improved, especially during the first decades of the 20th century. If we compare the coefficients of the time dummies before and after including the host of controls, the distinctive impact of the modernisation process and the increasing role of the state can be distinguished. In columns (2) and (6), the time dummies capture the combined impact of both processes. Literacy rates increased throughout the whole period, although the increase is

36 Not only did private user rights over the commons allocated through public auctions grow in importance but also the value of the production estimated by forest engineers in the plans came closer to the outcome that actually took place, which means that municipalities gradually learnt to manage the commons in more 'efficient' ways (GEHR, 2002; Iriarte, 2003; Linares, 2001).

37 While one standard deviation in the stock of common lands was now related to higher levels of literacy and schooling expenditures by 2.15 percentage points and 0.34 pesetas per capita, respectively, their relative effect on the actual levels of these variables was 2.9% and 11.4%, respectively.

38 Iriarte (2003: 243) shows that although the revenues coming from the commons increased during the first decades of the 20th century, their relative importance in relation to total revenues gradually decreased. See also García and Comín (1995: 94–95) and Linares (2006: 95).

almost two times larger between 1900 and 1930 than during the previous period. Schooling expenditures grew evenly during the whole period. Columns (3) and (7) add the set of controls reflecting the ongoing modernisation process visible in growing incomes, urbanisation and industrialisation levels, together with other demographic and economic factors. The coefficient on the dummy variable now reflects the rise in literacy and schooling expenditure that is not explained by the model and can therefore be attributed to the efforts of the state to improve the provision of education. The comparison between these pairs of columns unveils interesting conclusions.

On the one hand, regarding literacy rates, the effect of the dummy for 1900 hardly changes when controls are included, which means that economic modernisation barely had any effect on human capital and that most of those 17 percentage points increase on literacy rates between 1860 and 1900 were due to state intervention. This situation changed during the first decades of the 20th century. Although the state was still responsible for a larger share of the now higher increases in literacy rates, economic modernisation began to play a significant role in pushing human capital forward.[39] On the other hand, although schooling expenditures per capita grew evenly during both periods, the results evidence that the process of structural change triggered off by economic modernisation had negative consequences on the supply of primary education. The coefficient of the time dummies increases significantly after including the set of controls, implying that the financial effort of municipalities and the state was partly offset by other negative processes at play. In this sense, accelerating population and urbanisation growth is likely to have put more pressure on the scarce resources available (Lindert, 2003: 343; Núñez, 2010: 256).

These results therefore strongly confirm the crucial role of public institutions in providing education, especially in the first stages of economic development. It is worth noting that the contribution of the public sector to literacy rates and schooling expenditure remained roughly unchanged both between 1860 and 1900 and between 1900 and 1930.[40] This points to the robustness of these results since the role of the state in providing education, at the local or national level, is reflected first on schooling expenditures, which is then translated into literacy rates, a measure that reflects the interaction of supply and demand factors. Although there is evidence of some improvements,

39 According to these estimates and holding the influence of the commons fixed, literacy rates increased by around 45.1 percentage points between 1860 and 1930. Given that a 17.2-point increase did happen between 1860 and 1900, the actual increase between 1900 and 1930 was 27.9 percentage points. Applying the same logic to the coefficient on the time dummy after including controls means that the state is responsible for 19.5 percentage points of that increase (or 69.9%), while the remaining 8.4 percentage points (or 30.1%) are attributable to economic modernisation.

40 In absolute terms, while public institutions accounted for 13.4 and 19.5 percentage points of the rise in literacy rates during the periods 1860–1900 and 1900—1930, respectively, they contributed to the increase in schooling expenditures by 1.2 and 1.1 pesetas per capita during those periods.

the modernisation of the Spanish economy was not enough to foster an endogenous increase in human capital indicators. Economic development only translated into a noticeable increase in literacy rates from 1900 onwards and, even then, its contribution was significantly lower than that of the public sector. Therefore, either demand forces were too weak or their role in promoting educational human capital was not as important as it has been suggested.

However, given the low levels of human capital in Spain relative to neighbouring countries, it can be argued that the public effort was not enough either. Likewise, given that the contribution of the public sector to both literacy levels and school expenditure is similar throughout the whole period, it seems that the Law of 1902, by which the central government took care of teachers' salaries, thus releasing municipalities from that responsibility, did not significantly succeed in promoting human capital indicators. In this sense, Núñez (1991: 145) argues that the centralisation of schooling expenditure was not able to alter previous trends because it limited itself to meeting the pre-existing budget without either improving it or adjusting its uneven regional distribution.[41] According to this author, an oversized secondary and tertiary educational sector, mostly benefiting the sons of the elites, prevented more public resources to be devoted to schooling. In this sense, while there was a wide gap between Spain and other European countries in terms of investment on primary schooling, the difference is hardly significant in secondary education and even positive at the university level (Núñez, 2010: 247–252). The distribution of public expenditures among the different educational levels was thus not only unequal but also inefficient given the importance of primary schooling for economic growth in developing countries (261–264).

Several authors have pointed to the lack of interest of the elites to educate the masses, reflecting the high degree of inequality in the Spanish economic and political arena (Núñez, 1992; Pérez Moreda, 1997; Reher, 1997). In this regard, Easterlin (1981: 14) claims that a decisive commitment to mass education only happens when 'a major shift in political power and associated ideology in a direction conducive to greater upward mobility for a wider segment of population' has taken place. Similarly, Acemoglu and Robinson (2000) link the extension of voting rights to the spread of educational policies. Despite the establishment of universal male suffrage in 1890, that shift does not seem to have occurred in Spain or was only slowly coming about due to the unequal distribution of wealth and the shortcomings of the political regime. Political and economic elites firmly controlled the Spanish political system by widespread vote buying, coercion and mass fraud, together with promises of individual or collective favours, although these practices weakened over time, especially after the turn of the century (Curto-Grau *et al.*, 2012; Moreno-Luzón, 2007). Lindert's

41 Schooling expenditures did actually stagnate between 1902 and 1915 (Núñez, 1992: 303).

arguments (1994, 1996) regarding the importance of the degree of political participation in determining the patterns of the provision of public goods are especially relevant here. Powerful elites indeed tend to block the implementation of institutions promoting human capital (Easterly, 2007; Lindert, 2003; Mariscal and Sokoloff, 2000). Although it is true that relevant steps were taken, the Spanish political system, kidnapped by oligarchic interests and restricted political representation, somewhat precluded higher levels of human capital formation. As shown here, the privatisation of common lands from 1860 onwards, which principally benefited the well-off, and their negative effects on the supply and demand for education highlight only another way through which an unbalanced political system hindered economic development.

7. Conclusion

Common lands played a crucial role in the functioning of the rural communities in pre-industrial Spain. They complemented households' incomes by providing pasture, fertiliser, wood, and fuel, among other different goods and services, as well as offering the possibility of temporary cropping. The commons were also a critical asset for the local municipal councils, given that they constituted an important source of revenue. Although less important over time, these functions contributed to sustaining both the demand and the supply of education during the early stages of economic development when neither the slow rates of structural change were able to maintain an endogenous increase of human capital, nor the intervention of the state was decisive enough to bring Spanish educational attainments in line with other European countries.

The historical experience of the developed countries should serve to prevent the repetition of the same mistakes in the developing world today. As mentioned above, the historical revision of the modernisation process in Europe has shown that the privatisation of common lands was not, as long-term believed, a pre-condition for promoting economic growth. Enclosures in Britain did not increase agricultural productivity but redistributed income from peasants to large landlords, thus contributing to the pauperisation of an important part of the population. A well-functioning primary education system is essential for sustained economic growth but the diffusion of higher levels of human capital in many parts of the world is still a formidable endeavour (Colclough and Lewin, 1993; Easterlin, 1981). Given the crucial role of local institutions in providing schooling during the 19th century and the, although threatened, still large stock of common and public resources managed at the local level in developing countries (Lindert, 2003: 333; Ostrom, 2010), exploring the links and potentialities between them and the supply and demand for education at the local level may prove a beneficial agenda for the years to come.

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Appendix

	Summary statistics				
	Observations	Mean	Std. Dev.	Min	Max
Literacy	138	48.4	23.3	14	97
Schooling expenditure	137	1.9	1.11	0.18	5.97
Commons	138	17.0	12.3	0.7	60.9
Urbanisation	138	24.3	18.9	2	74.2
Real per capita GDP	138	487.6	204.2	80	1498
Industrialisation	138	17.5	7.9	5.6	55.2
Population density	138	43.6	31.5	12.5	233
Agricultural population	138	71.3	13.3	15	93.3
Access to land	138	31.5	13.4	3	61
Life expectancy	137	38.2	9.5	22.1	57.6
Gender literacy gap	138	24.7	12.6	6	64

Sources: See the text. Literacy: fraction of population above 10 years old that was able to read and write; schooling expenditure: expenses in staff and material per capita; commons: percentage over total provincial area; urbanisation: proportion of population living in cities bigger than 5,000 inhabitants; industrialisation: percentage of the gross value added by non-agricultural activities per capita; population density: total population divided by total area; agricultural population: proportion of the male active population working on agriculture; access to land: fraction of landowners over the agricultural population; life expectancy at birth (in years); gender literacy gap: percentage point difference between male and female literacy levels.