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ORIGINAL PAPER

Commons and the standard of living debate in Spain, 1860–1930

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Abstract Biological living standards stagnated or even declined during the transition to modern economic growth. Although income per capita was increasing, other indicators, such as mortality rates or heights, portrayed a completely different image. This paper adds to the standard of living debate by analysing the potential effect of the privatisation of common lands. Although highly controversial regarding its impact on the modernisation process itself, its contribution to human welfare has somewhat received much less attention. Focusing on the Spanish experience, this paper exploits geographical variation over time by collecting a panel data set at the provincial level on three different periods: 1860, 1900 and 1930. The empirical analysis shows that the persistence of these collective resources is related with higher life expectancy and heights, particularly during the second half of the nineteenth century. Biological human welfare also seems to have been negatively influenced by the progressively decreasing role that local communities played on the management of these resources. The survival of common lands in some regions provided peasants with mechanisms different from the market, thus making the transition to a market economy more socially sustainable.

Keywords Common lands · Privatisation · Biological living standards · Spain

JEL Classification I15 · I30 · N34 · N44 · N54 · Q15

1 Introduction

The standard of living debate has revealed the deterioration in welfare suffered by many people in the transition from traditional to modern economies (Floud and

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Steckel 1997; Komlos 1998; Easterlin 1999). Although income per capita was increasing, other indicators, such as mortality rates, life expectancy or heights, puzzlingly portrayed an image of stagnating or deteriorating well-being in the early phases of modern economic growth, especially among the lower classes of the population. The development process, reflected in rapid industrialisation and urbanisation, generated negative externalities, which, in an era where government intervention was practically nonexistent, were overcome only slowly due to an increasing awareness on the role of the public sector in improving the health environment. Apart from assessing the direct impact of economic modernisation on human well-being, the literature has also stressed that health also influences economic development (Fogel 2004; Arora 2001).

This paper adds to the standard of living debate by analysing the potential effect of the privatisation of common lands. Although highly controversial regarding its impact on the modernisation process itself, its contribution to human welfare has received much less attention. Traditional historiography has positively regarded privatisation as a prerequisite to foster agricultural growth (North and Thomas 1977). However, the negative view surrounding the communal regime, whose paradigmatic example is the 'tragedy of the commons' (Hardin 1968), has been challenged 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 (Ostrom 1990; Allen 1992; de Moor et al. 2002).[1] Regarding the British case, although privatisation has often been considered one of the main drivers of the agricultural revolution (Chambers and Mingay 1966; Overton 1996), Allen (1992) shows that enclosures did not increase efficiency, but caused a massive redistribution of income from peasants to large landowners. Likewise, other authors emphasise that the enclosure movement prevented poor households from keeping livestock and other animals on the commons, thus eliminating an important source of complementary income and accelerating the proletarisation of the agricultural labour (Humphries 1990; Neeson 1993).[2]

Drawing on the Spanish case as field laboratory, this article aims to shed some light into this long-standing debate. The evolution of human well-being in Spain closely follows the wider international experience given that the development process carried out throughout the nineteenth century had ambiguous effects in the standard of living of its population. As shown in Fig. 1, in a context of steady economic growth, biological living standards stagnated or even declined between 1850 and 1880 (Reher et al. 1997; Martínez-Carrión and Pérez-Castejón 2000). Worsening living conditions and increasing spread of diseases, in a context of insufficient diets due to low agricultural productivity, are seen as the main causes behind this process. These indicators reversed this negative trend from the late nineteenth century onwards, and particularly so during the first decades of the twentieth century, in response to

[1] Contrary to Hardin's (1968) belief, historical commons across Europe were not open access resources doomed to overexploitation, but were subject to clear regulations, thus preserving their social and ecological sustainability (De Moor 2009, pp. 4–10).

[2] This view, nonetheless, has been contested by Clark and Clark (2001).

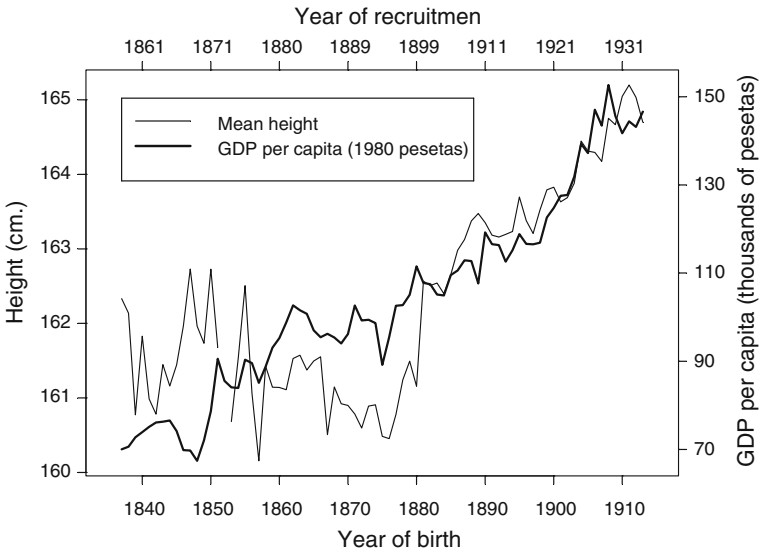

Fig. 1 Heights and income per capita in Spain, 1860–1930. *Source*: Martínez-Carrión and Pérez-Castejón (2000)

improvements in diets and general living conditions, thus strengthening the connection between incomes and biological living standards.

Common lands were a key component in the organic-based Spanish preindustrial economy (Iriarte 2002). Around one-fourth of the total land was managed by local communities in 1860, a figure that was much higher in some regions. Apart from providing pasture to support livestock, which in turn supplied agriculture with fertiliser and workforce, commons constituted a source of complementary income by providing animal proteins, wood and fuel, among other products, including the possibility of temporary cropping. Likewise, common lands 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 and establishing the level of local taxes. 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 nineteenth and early twentieth centuries. The degree of common land persistence was nonetheless fairly uneven depending on the region being analysed (GEHR[3] 1994; Beltrán Tapia 2014), thus turning the Spanish experience into an ideal case study on which to base this research.

In order to test the distinctive impact of common lands on biological standards of living, this paper exploits geographical variation over time by collecting a panel data set at the provincial level on three different periods: 1860, 1900 and 1930. The empirical analysis shows not only that, relative to private lands, the commons were not detrimental to biological living standards before 1860, but also that the persistence of these collective resources was related to higher life expectancy at

[3] Grupo de Estudios de Historia Rural.

birth and heights, particularly during the second half of the nineteenth century. Biological human welfare also seems to have been negatively influenced by the progressively decreasing role that local communities played on the management of these resources, thus supporting the claims defended by Ostrom (1990). The rest of the paper is organised as follows. The next section discusses the historical evidence regarding biological standards of living and the potential role that common lands played in this context. Section 3 describes the methodology employed to test the hypothesis outlined here, whereas Sect. 4 reports the results of the empirical analysis. Finally, the last section presents the conclusions.

2 Standards of living and common lands

Spanish biological standards of living were among the worst in the European continent throughout the nineteenth century. Mortality rates, for instance, especially infant and childhood mortality, were dramatically high (Pérez-Moreda 1999, p. 10). In a context of low agricultural productivity and inadequate transportation, these negative outcomes were the result of subsistence crises, chronic malnutrition and the effect of diseases and epidemics (Tortella 2000, p. 33). Moreover, although income per capita was growing steadily, at least from the middle of the nineteenth century, biological living standards, measured by mortality rates or heights, stagnated or, in some cases, declined between 1850 and 1880 (Reher et al. 1997; Martínez-Carrión 2002).[4] Recent research shows that the evolution of height and levels of economic development in Spain was not correlated during the initial stages of modern economic growth but became closely linked during the period between 1900 and 1920 (María-Dolores and Martínez-Carrión 2011, p. 34). The decline in biological living standards during the middle decades of the nineteenth century in Spain, and its subsequent rapid improvement from the late nineteenth century, has been related to economic factors that affected real incomes and the effects of increasing market integration (Martínez-Carrión and Pérez-Castejón 1998; Martínez-Carrión 2002; Moreno-Lázaro 2006). In the absence of adequate public sanitation, urbanisation and industrialisation processes also negatively affected living standards, although it seems that the low dynamism of Spanish cities cushioned their potentially negative impact on health (Pérez-Moreda 1999, p. 18; Martínez-Carrión and Moreno-Lázaro 2007).

The pattern of biological welfare indicators was also geographically different, especially between Northern and Southern Spain. Quiroga (1998, p. 378) analysed differences in heights between Spanish provinces in 1920 and concluded that variation reflected population pressure, income levels and economic structure.[5] However, income differences do not fully explain the regional differences in mortality rates during the second half of the nineteenth century. Climatic conditions were also an important factor (Cusso and Nicolau 2000, p. 529). Humid regions seem to have enjoyed an ecological

[4] Regional and local studies in diverse areas of the Iberian Peninsula confirm these trends (Colomé et al. 2002; Moreno-Lázaro 2006; Cámara 2009; Ramón-Muñoz 2009; García-Montero 2009; Hernández-García and Moreno-Lázaro 2009; Martínez-Carrión and Puche-Gil 2009).

[5] Inequality in income distribution between professional groups showed the expected sign but was not significant, perhaps due to multicollinearity problems (Quiroga 1998, p. 378).

advantage regarding the impact of digestive infectious diseases, which is one of the main factors behind the extremely high childhood mortality rates. Coastal provinces are also seen as favouring heights (Gómez-Mendoza and Pérez-Moreda 1995, p. 85). Likewise, social and institutional factors also mattered. Regions where land ownership was more evenly distributed have also been linked to better biological living standards (Martínez-Carrión 2002). Apart from its impact on productivity and income levels, education also influenced heights by facilitating improvements in hygiene and nutritional habits (Quiroga 2003, pp. 615–617). Lastly, a more dispersed population may have also reduced the diffusion of infectious diseases (Cusso and Nicolau 2000, p. 246).

However, the potential effect of the privatisation of common lands on biological standards of living has hardly been stressed, either in the longitudinal studies or in the cross-sectional analyses. Although abundant evidence connecting this process to the deterioration of living standards has been found in regional studies, this issue is rarely mentioned when making wider generalisations at the national level.[6] This fact is surprising given that the disentailment process has been considered one of the most important events in the Spanish economic history (Simón Segura 1973, p. 293). Fuelled by ideological and fiscal pressures, a massive privatisation of collective lands was carried out during the nineteenth century and the early twentieth century (Balboa 1999; Jiménez Blanco 2002; Iriarte 2002).[7] In total, more than 10 million hectares, around 20 % of the total national area, ended up in private hands (Rueda 1997). This process, analysed elsewhere (Beltrán Tapia 2014), involved not only a redefinition of land property rights, but also the way in which these resources had been traditionally used. Up to the mid-nineteenth century, local councils not only controlled who enjoyed user-rights over the commons, but also who benefited from the occasional sales and distributions. However, the *General Disentailment Act* (1855) and the *Uplands Act* (1863) forced municipalities to sell their common lands through public auctions as well as auctioning the user-rights of those lands which survived the sales. According to Tortella (2000, p. 51), the dismantling of common lands was a measure that 'touched almost every aspect of social and economic life', from the distribution of wealth and income, or the impact on production and productivity, to the repercussions for the Treasury, both at the local and at the national levels. However, and most importantly for the purpose of this paper, neither the pressures created by the market nor those generated by the state were completely successful, and thus, the outcome of the process, in terms of common land persistence, was quite different depending on the geographical area

[6] See Martínez-Carrión (2002), Escudero and Simón (2003, p. 550) and Gallego (2007) for exceptions. For regional analyses, which explicitly link the liberal land reforms with declining biological living standards see Cámara (2009) and Ramón-Muñoz (2009). Likewise, recent research on the commons, mostly at the regional or local level, has strongly pointed out the negative economic and social consequences that the privatisation of common lands involved (Iriarte 1998; Moreno 1998; Linares 2001; Ortega-Santos 2002; Serrano 2005; Lana 2008). However, their conclusions have not yet found their way into the wider literature.

[7] According to Rueda (1997, p. 61), around 6.7 million hectares became private between 1855 and 1924. Although less known, the end of the eighteenth and the first half of the nineteenth century also witnessed an important privatisation process, the 'silent disentailment', which may have affected around 5.3 million hectares.

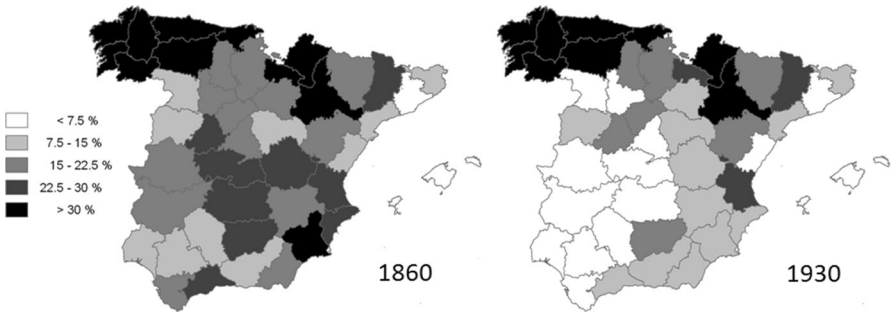

Fig. 2 Common land persistence in Spain (percentage of total area). *Source*: Artiaga and Balboa (1992), GEHR (1994) and Gallego (2007). No data for the Basque Country are available

we analyse. As illustrated in Fig. 2, privatisation was especially intense in some areas of Central and Southern Spain.[8]

By promoting individual property rights and land markets, the liberal reforms were expected to provide better incentives for investing in land, as well as allocating land to those farmers who will make a better use of these resources.[9] However, although the disentailment brought into cultivation idle or underutilised land, thus increasing agricultural production, productivity remained low (Simpson 1995; Clar and Pinilla 2009). The loss of common lands may have negatively affected agricultural productivity because it meant a reduction in pastures and, subsequently, in livestock density, hence reducing the availability of manure and workforce (Del Moral Ruiz 1979, p. 14).[10] In the context of a traditional agriculture, these inputs were crucial and there is evidence that livestock density indeed declined throughout the nineteenth century (Simpson 1989).

The privatisation process itself could have also negatively affected standards of living, especially for the poorer households, through different ways. On the one hand, collective lands constituted a fundamental source of complementary income by providing pasture, wood, fertiliser and fuel, together with the possibility of temporary cropping (Iriarte 2002). This mechanism was extremely important since commons contributed to achieving a minimum level of caloric intake and a higher level of animal protein consumption (Jiménez Blanco 2002, p. 146). Meat, milk and egg consumption is positively related to health and stature (Cusso and Nicolau 2000, p. 245; Martínez-Carrión and Puche Martínez-Carrión and Puche-Gil 2009, p. 177). The combined effect of the loss of common rights and the decline in livestock production are likely to have

[8] The explanation for this regional diversity on the persistence of common lands has been attributed to the social and environmental context, together with the level of market penetration that characterised the different rural societies. See GEHR (1994), Iriarte (2002) and Beltrán Tapia (2014).

[9] The possibility of using land as collateral in the credit market would reinforce these advantages (Deininger and Feder 2001, p. 299).

[10] The testimonies of the contemporaries on this issue are plentiful. An official report about the province of Teruel in mid-nineteenth century is highly eloquent: 'every first-quality land is already under cultivation; […] and even some plots which should only be employed as pasture or waste land have unfortunately been ploughed and now they are useless for either of them' (quoted in Del Moral Ruiz del Moral Ruiz 1979, 35). See also Sánchez Salazar (1995) and Gómez-Urdañez (2002).

reduced the consumption of animal proteins per capita (Martínez-Carrión 2002, p. 37; Cámara 2009, pp. 59–60). The widespread conflict and resistance that privatisation generated, especially among the least favoured groups, 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). This behaviour was also reflected on the *Guardia Civil*'s reports of illegal uses on the remaining commons, especially wood and firewood theft and unauthorised pasturing, which were geographically concentrated in those regions where the dismantling of the communal regime had been more intense (GEHR 1999, pp. 150–152).

On the other hand, the role that commons played in the finances of local institutions should also be stressed. The monetary income derived from the cession of use rights on the commons constituted a fundamental component of the municipal budget (Bernal 1978; Del Moral Ruiz 1986; García and Comín 1995; Iriarte 2003). In 1858, common lands covered 32.4 % of the ordinary municipal budget (García and Comín 1995, p. 95).[11] These figures, nonetheless, reflect the national average and hide the importance of the commons in those municipalities that had preserved them, especially in the rural areas.[12] The privatisation of these collective resources meant that municipalities lost a crucial source of income.[13] The provision of public goods and services, including schooling, medical care and poor relief, was thus clearly affected (Bernal 1978; Iriarte 2003; Beltrán Tapia 2013). Likewise, in order to manage the loss of revenue from common lands along with increasing expenditures on these new public services, municipalities raised local taxes, especially affecting poorer households due to the regressive nature of a fiscal system mostly built around taxing consumption goods (Del Moral Ruiz 1984, p. 150; García and Comín 1995, p. 91; Linares 2006).[14] Iriarte (2003, p. 250) 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.

[11] Furthermore, the income arising from the renting of common lands did frequently not appear in the municipal budgets, so these figures would be a minimum approximation (Del Moral 1986, p. 746). In addition, commons were not only a source of revenues to municipalities but could be used as a guarantee when applying for credit (Bernal 1978, p. 307; Iriarte 2003, p. 245).

[12] 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, p. 307). In the four municipalities studied by Iriarte (2003, p. 243) in Navarra, the importance of the commons in the local budget ranged from 20 to 59 % in the period 1926/35.

[13] According to the legal text, 20 % of the sale value would directly go to the state, while the remaining 80 % would belong to the municipalities now transformed in perpetual and inalienable public debt yielding a 3 % annual return. 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 (García Sanz 1985, p. 28).

[14] 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. This outcome was by no means unexpected for contemporaries. The parliamentary debates carried out between 1835 and 1855 about the convenience of privatising common lands reflect the concern that depriving local communities from these resources would necessarily force municipalities to increase local taxes, negatively affecting the lower classes (Gómez-Urdañez 2002, p. 144).

Apart from the direct impact on human welfare that the possibility of resorting to the commons provided, other indirect mechanisms may have played a role as well. 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, although this outcome may have depended on the previous structure of land ownership (Rueda 1997). A more equal redistribution of land would have promoted a farmers' middle class with a higher consumption capacity (Nadal 1987, p. 63). Likewise, land purchases may have diverted capital that would have otherwise been invested in modernising farms or in the industrial sector (Simón Segura 1973, p. 300). Lastly, the communal management of these resources enhanced social cohesion and local cooperation (Iriarte 1998; Gallego 2007). In this sense, the social networks built around common lands facilitated the diffusion of information and the building of mutual knowledge and trust, hence promoting social capital (Beltrán Tapia 2012).

To sum up, the dismantling of communal resources triggered off a chain of negative outcomes, likely having affected human welfare in rural areas. In this sense, privatisation processes often eliminate the institutions that support a market economy, especially in developing regions where market failures are widespread and the state is absent (Timmer 2002, p. 1490).

3 Methodology and data

A panel data set at the provincial level has been collected at three different time periods (1860, 1900 and 1930) in order to analyse the impact of the privatisation of common lands on biological standards of living during the transition to modern economic growth in Spain. The use of life expectancy at birth and heights as indicators of human welfare has a well-established tradition within the literature (Floud and Steckel 1997; Easterlin 1999; Arora 2001; Fogel 2004). These indicators are especially useful when studying developing countries where statistics about income or other economic indicators are often unreliable and/or large informal sectors are present. These biological measures capture net nutritional levels and health better than income measures since they account not only for the effect of diets, but also for the impact of the disease and working environment, including the effect of public sanitation and health systems. Period life expectancy at birth provides a measure of long-term population health by adding up the extent of disease-generated deaths. Adult heights, apart from genetic factors, reflect the cumulative net nutritional status from conception to maturity.

Data for these variables, originally generated from vital statistics and conscripts records, have been collected from different published sources (Dopico 1987; Dopico and Reher 1998; Gómez-Mendoza and Pérez-Moreda 1985; Quiroga 2002).[15] A summary of that information is presented in Table 3. While life expectancy is derived from vital statistics based on parish registers, stature information comes

[15] I would like to thank the authors for kindly sharing their data.

from military conscripts and refers to the year of measurement. It should be noted that the data on heights are not perfectly comparable between the three periods. Firstly, while data on 1860 come from the summary statistics provided by the Army, information on 1900 and 1930 comes from sampling individual recruitment files. In order to improve the accuracy of the stature estimates for the latter dates, the average of the periods 1896–1904 and 1926–1934 is employed for 1900 and 1930, respectively. Secondly, data in 1860 may be downwards biased because redemption via payment in cash was allowed. Another concern is that conscripts were measured at different ages: the age of recruitment was 20 years old between 1859 and 1906, except for the period 1885–1899 during which conscripts were measured at age 19, and then increased to 21 years old in 1907 onwards. However, these modifications in the recruitment age hardly changed the trend in heights (Martínez-Carrión and Moreno-Lázaro 2007, p. 151). Lastly, there is missing information on heights for some of the provinces, so the sample size is slightly smaller than for life expectancy. However, the potential bias in the sample of heights would only affect the empirical results if that bias was systematically related to the existing stock of common lands.

It is important to note that migration may have biased these indicators. Cusso and Nicolau (2000, p. 544) argue that emigrating abroad implied a considerable investment and, therefore, healthier migrants, who have more opportunities abroad, will not appear in the statistics, thus downward biasing average height estimates in sending regions. Conscript records in a high-migration area such as Castile-Leon show that 21 % of rural conscripts emigrated to America at the end of the nineteenth century and their average height was 1.9 cm higher than those who remained behind (Martínez-Carrión and Moreno-Lázaro 2007, p. 156).[16] Internal migration may have also generated a selection bias (Hernández-García and Moreno-Lázaro 2009, p. 159). In order to account for this bias, internal and international migration rates will be included in the analysis using data from Mikelarena (1993).[17]

Common lands are measured as the proportion of common lands over the total provincial area (GEHR 1994; Artiaga and Balboa 1992).[18] As shown in Fig. 2, the stock of common lands already presented a wide regional variation in 1860. The privatisation that took place from that date onwards under the *General Disentailment Law* (1855) accentuated these differences, especially from 1860 to 1900. Sales were much less important during the first decades of the twentieth century. However, the welfare of the rural communities was influenced not only by the availability of common lands, but also by the way these resources were managed (Jiménez Blanco 2002, p. 146). The communal regime in Spain involved two main

[16] Low heights in Galicia could also be the result of extremely high desertion rates since around one-third on the conscripts deserted (Cusso and Nicolau 2000, 544).

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

[18] Given the hybrid nature that characterised the concept of the 'commons' in nineteenth-century Spain, this article identifies common lands as those lands that were collectively managed at the local level in spite of being legally owned by the state, the municipalities or the village neighbours themselves (Iriarte 2002). Also in Gómez-Urdañez (2002), Serrano (2005) and Gallego (2007). See Beltrán Tapia (2014) for a more detailed explanation of this issue. Unfortunately, data are not available for the Basque Country.

types of access to the land: a direct but regulated access for all members of the community (*comunales*) or a temporary cession of user-rights to particular individuals in exchange for a monetary income (*propios*). The privatisation process affected both their property rights and the way these resources were used. The proportion of private user-rights over the remaining commons grew over time (GEHR 1999, p. 136). To account for this distinction, common lands are also split up into two variables by taking into account the fraction of total user-rights, which was being enjoyed privately or collectively (GEHR 1991).[19]

The panel data collected allow carrying out an econometric analysis to assess the distinctive impact of common lands on the standards of living according to the following specification:

$$Y_{it} = \beta_0 + \beta_1 X_{it} + \sum \gamma_k Z_{k_{it}} + \delta_i + \alpha_t + u_{it}$$

where Y_{it} refers to either to life expectancy at birth or heights and X_{it} to the fraction of common lands over the total provincial area. A fixed-effects model controls for time-invariant province-specific factors (δ_i), partly solving the omitted variable problem, which is so pervasive in cross-sectional analyses. This model also allows for the inclusion of time fixed effects (α_t) to account for both the process of economic development itself, together with the technological and institutional advances in relation to biological well-being, which were implemented from the late nineteenth century onwards. These would include improved nutrition, better public and personal sanitation, decontamination of food and water, improved housing or advances in medical technology, among others. In this regard, interacting the variable of interest with time-period dummies also permits to assess whether the effect of common lands varied over time as the Spanish economy developed.

The main potential concern here is the omitted variable bias arising from variation both across provinces and over time. Both common land privatisation and changing biological well-being could also be the result of another time-variant unobserved factor, thus affecting our estimates. Other processes were unfolding during this period, which may be correlated with privatisation and human welfare. In order to overcome this problem, a host of controls that takes into account other potential determinants of life expectancy and heights is included in the analysis (Z_{kit}). The potential effect of income per capita on biological living standards is considered using recent estimates of gross domestic product at the provincial level

[19] In order to avoid unexplained short-run variations in the data, the average proportion of collective practices over the periods 1861–1870, 1903–1913 and 1920–1932 is used to account for the years 1860, 1900 and 1930, respectively. These data should be nonetheless taken with caution. On the one hand, in contrast to 1860, the data for the period 1900–1930 only apply to a restricted set of common lands, the so-called montes de utilidad pública (GEHR 2002). On the other hand, the Disentailment Law itself introduced incentives for villages to misclassify those resources depending on their interests regarding privatisation. The law forced municipalities to sell their commons with the exception of those, which had been enjoyed collectively in the past. Villages could thus apply to except "comunales" from the sales. However, regardless of the actual use of the commons, municipalities cheated both ways depending on their interests either by pretending that commons had been used collectively in order to prevent sales or by pretending that they had been individualised in order to put them on the market.

taken from Rosés et al. (2010).[20] Demographic pressures are proxied by population density (Nicolau 2005; INE 2001). Urbanisation and industrialisation are measured as the proportion of population living in cities larger than 5,000 inhabitants and the per capita gross value added by nonagricultural activities per capita (Tafunell 2005; Rosés et al. 2010). Structural change is measured by the proportion of the male active population working on agriculture (Erdozáin and Mikelarena 1999).[21] The effect of changes in landownership, as a proxy of inequality, is assessed through the fraction of landowners over the agricultural active population (Dirección General del Instituto Geográfico y Estadístico 1863, 1922).[22] Finally, literacy rates are also employed in order to account for the potential effect of education (Núñez 1992).

4 Results

Table 1 reports the results of fixed-effect regressions estimating the impact of the stock of common lands on either life expectancy at birth or heights. All regressions also include time dummies. Columns (1) and (5) present the baseline specification. Columns (2) and (6) 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 developed. In addition, internal and international migration rates are included in columns (3) and (7) to account for their potential bias on the dependent variables. The remaining columns further test the robustness of the results by including the series of controls explained above, which take into account other potential determinants of human well-being.[23]

The results evidence that there was no influence, neither positive nor negative, of common lands on biological living standards before 1860. Relative to private lands, common lands were not detrimental to life expectancy at birth and heights before that date, thus supporting the revisionist literature on this issue (Allen 1992, 2003; De Moor 2009). Interestingly, the estimated impact of common lands on biological living standards is shown to be positive and statistically significant after that date. The explanation behind this change can be related to the tighter control that local

[20] I am grateful to Julio Martínez-Galarraga for kindly sharing the data. Population figures are taken from Nicolau (2005).

[21] 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 (Erdozáin and Mikelarena 1999; Nicolau 2005; Pérez-Moreda 1999; 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 Erdozáin and Mikelarena (1999, pp. 107–108) on this issue.

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

[23] The coefficients of the migration variable are significant and have the expected negative sign: higher migration rates are related to lower life expectancy and heights, suggesting that migration is positively selected. Regarding the other control variables, the share of agricultural population and literacy rates have the expected positive sign, while the remaining controls turn out to be statistically insignificant.

Table 1 Commons and biological living standards

	Dependent variable							
	Life expectancy at birth				Heights			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Common lands	0.13* (0.08)	0.12* (0.07)	0.13* (0.07)	0.05 (0.05)	0.00 (0.05)	0.00 (0.04)	0.00 (0.04)	0.02 (0.05)
CL*d_1900		0.05* (0.03)	0.05* (0.03)	0.06** (0.03)		0.06*** (0.02)	0.06*** (0.02)	0.06*** (0.02)
CL*d_1930		−0.01 (0.03)	−0.01 (0.03)	−0.02 (0.04)		0.05*** (0.01)	0.05*** (0.01)	0.05* (0.02)
d_1900	6.29*** (0.80)	5.29*** (1.00)	5.05*** (1.09)	−0.23 (1.38)	0.72 (0.48)	−0.37 (0.66)	−0.36 (0.66)	−0.52 (1.13)
d_1930	21.56*** (0.81)	21.54*** (1.04)	21.29*** (1.16)	11.29*** (2.76)	2.95*** (0.49)	2.04*** (0.47)	2.04*** (0.50)	1.85 (2.18)
Migration	No	No	Yes	Yes	No	No	Yes	Yes
Controls	No	No	No	Yes	No	No	No	Yes
Observations	137	137	137	137	124	124	124	124
R^2	0.96	0.96	0.96	0.97	0.56	0.62	0.62	0.66

Robust standard errors between brackets; *, ** or *** denote significance at 10, 5 or 1 % level. 'CL*d_1900' and 'CL*d_1930' stand for the interaction of the variable of interest, common lands, with a time dummy for 1900 and 1930, respectively. All regressions include provincial fixed effects. For simplicity, the intercept is not reported. Migration refers to both internal and international migration rates. Controls include income per capita, population density, agricultural population, urbanisation, industrialisation, land ownership and literacy

communities exerted over the sale of these resources before the *General Disentailment Act* in 1855. The role played by the central government during the first half of the nineteenth century limited itself to establish the legal framework that allowed municipalities to freely dispose of their patrimony (Jiménez Blanco 2002; Gómez-Urdañez 2002). It has been argued that sales and distribution of common lands carried out during this period also often ended up benefiting small- and middle-sized local farmers (Jiménez Blanco 2002, pp. 149–150)[24]. It was not until the *General Disentailment Act*, when privatisation was already quite advanced in certain areas, when the liberal state became actively involved in the process by forcing municipalities to sell their commons. Most land was then publicly auctioned to the highest bidder, thus benefiting the well-off that could bid on them (Tortella 1987, p. 45).[25] As a result, local communities lost control over who gained from these land transfers, which allowed wealthy individuals, often coming from outside the community, to appropriate resources that were being more fairly distributed before.

To illustrate the impact of the privatisation on biological living standards, it should be noted that common lands went from representing around 25.6 % of the total Spanish area in 1860 to 17 % in 1900. The estimates obtained here imply that, on average, the privatisation process is associated with a reduction in life expectancy by around 0.5 years and stature by around 0.5 cm during that period. Although these may seem low values, it should be stressed that life expectancy at birth was only 29.8 years in 1860, increasing to 35 years in 1900, while heights only increased by 1.1 cm during this period. In Toledo, for example, where privatisation was more intense (21 % of the land became private between 1860 and 1900), the effect was much more dramatic. Life expectancy there would be reduced by around 1.3 years, and heights stunted by 1.3 cm. These estimates, reflecting only the population average, should be also taken as a lower bound, especially in areas where access to resources was highly unequal, since the bottom-half of the distribution relied comparatively more on the commons to obtain a crucial complement for their incomes.

In relative terms, the impact of common lands on human well-being is much greater in the case of heights than in life expectancy. A one standard deviation decrease in the stock of common lands reduced stature by 0.3 standard deviations, while life expectancy decreased by 0.1 standard deviations. Likewise, while the effect on life expectancy had already disappeared in 1930, the positive influence of the commons on heights was still visible in the period prior to the civil war. This situation is due to the different ways in which both common lands themselves and

[24] It is worth mentioning that, in the highly unstable first half of the nineteenth century, the liberal movement was well aware of the advantages of the civil disentailment to increase the number of land owners and thus widen the social support to the revolution against absolutism (Gómez-Urdañez 2002, pp. 139–140).

[25] Moreover, plots were not parcelled up and payments were required in cash, thus preventing small farmers from participating in the bids (García Sanz 1985, p. 28; Jiménez Blanco 2002, p. 150). Likewise, the use of public auctions also facilitated that foreigners could participate in the sales. Sales were carried out through simultaneous public auctions both in Madrid and in the village where the plot was located (Linares 2001, p. 26).

the evolution of the Spanish economy affected life expectancy and heights. It is likely that the nutritional complement that commons supplied, particularly in terms of animal proteins, had a larger and more persistent impact on heights than on life expectancy, whose determinants were more strongly influenced by the improvements in the disease environment.[26] In this regard, advances in medical technologies, together with the increasing importance of the state in providing a healthier environment, made the contribution of the commons to life expectancy less and less necessary over time.

The coefficients of the time dummies illustrate that as the country developed, biological standards of living greatly improved, especially during the first decades of the twentieth century. In this sense, it is especially interesting to discuss the relative impact of the modernisation process and the increasing role of the state by comparing the coefficients of the time-period fixed effects before and after including the host of controls in the model. In columns (3) and (7), the time dummies capture the combined impact of both processes.[27] The results show that even though life expectancy at birth increased throughout the whole period, the improvements were much larger during the first decades of the twentieth century.[28] Increases in heights, on the other hand, are only visible between 1900 and 1930. Columns (4) and (8) add the set of controls reflecting the ongoing modernisation process reflected in growing incomes and higher urbanisation or industrialisation levels, together with increasing literacy rates and other factors affecting living standards. Interestingly, the effect of the time dummy for 1900 on life expectancy is no longer significant, which means that the weak advances prior to that date were not due to increasing public intervention but to better economic conditions. However, the coefficient in 1930 is not only highly statistically significant, but also remains historically important after including controls, thus implying that the role of the state on augmenting life expectancy was crucial during the first decades of the twentieth century.[29] This finding, consistent with other research (Floud and Steckel 1997; Dopico and Reher 1998; Komlos 1998; Arora 2013), supports the idea that the first stages of economic modernisation were not so beneficial for human welfare, being only the active intervention of the state the key factor able to overcome the negative externalities arising from demographic pressures, urbanisation or industrialisation. Mostly available only from the beginning of the twentieth century onwards, the new technologies of disease control, including efforts to educate the public on this matter, were not implemented by the market but by government action (Easterlin 1999; Arora 2005). On the other hand, given that the effect on heights of the time

[26] Although life expectancy and heights are related because both are influenced by the nutritional status and the disease environment, the relative impact of each of these elements on these different measures of health is likely to be different. See Arora (2001, pp. 703–705) for a discussion on these two indicators.

[27] Holding the influence of the commons fixed.

[28] While life expectancy increased by an average of around 5 years between 1860 and 1900, it grew by around 16.2 years between 1900 and 1930.

[29] According to these estimates, the role of the state accounts for around 11.3 of the 21.3 years by which life expectancy increased between 1860 and 1930 (column 4). Given that the control variables account for all the 5.05 years of increase between 1860 and 1900 (column 3), it can be concluded that increasing government intervention accounts for more than two-thirds of the improvements between 1900 and 1930.

dummy in 1930 disappears when controls are included, increasing statures, only visible after 1900, were not related to state intervention, but to improved economic conditions. These diverse patterns point again to the different relative importance that the disease environment and diets had in influencing mortality rates and heights mentioned above. In this sense, significant improvements in Spanish diets, especially regarding the consumption of meat, milk and eggs, were only achieved during the first decades of the twentieth century (Simpson 1995, pp. 180–181).

Lastly, it is important to note that the welfare of these communities was influenced not only by the availability of common lands, but also by the way these collective resources were managed. As explained above, the communal regime in Spain involved two main types of user-rights: a direct but regulated access for all members of the community or a temporary cession of use rights to particular individuals in exchange for a monetary income. Table 2 reports the estimates when common lands are split up into two types depending on whether they were being exploited collectively or privately. While columns (1) and (4) report the baseline specification, columns (2) and (5) introduce the variables of interest interacted with time-period dummies to allow the effect of common lands to vary over time and the remaining columns add the set of controls which account for other potential determinants of human well-being.

These estimates confirm the previous findings and clarify the picture portrayed above regarding the redefinition of property rights. On average, it was those user-rights enjoyed collectively, not the user-rights rented out to individuals, the ones which positively affected life expectancy at birth and heights, thus stressing the importance of common rights in complementing households' incomes. Again, while no relationship is found between the different types of user-rights and living standards before 1860, the persistence of collective practices over the remaining common lands after that date is shown to be positively related with life expectancy and heights. Interestingly, prior to that date, local communities independently managed these resources, thus benefiting their own neighbours when deciding both the forms of use and who enjoyed access to them. However, from the *Ley de Montes* (*Uplands Act*) of 1863 onwards, both the central government and the market began to actively influence the administration of these resources (Jiménez Blanco 2002, p. 155; Balboa 1999, p. 119, 124; Iriarte 2002, p. 25). Private user-rights over the remaining commons not only progressively grew in importance, but also were increasingly subject to external regulations designed by forestry engineers and granted through public auctions. As a result, local communities partly lost control over the management of the commons and the progressive dismantling of collective use rights increasingly involved the presence of powerful individuals or private firms that monopolised access to these resources.[30] In this context, the commons whose user-rights remained collective became crucial to sustain biological living standards, especially for the lower rural classes.

[30] Iriarte (1998, p. 133) stresses that this process undermined the social consensus over the management of the remaining common lands and increased both social conflict and the illegal use of these resources.

Table 2 Types of commons and biological living standards

	Dependent variable					
	Life expectancy at birth			Heights		
	(1)	(2)	(3)	(4)	(5)	(6)
Collectively used common lands	0.01 (0.04)	0.01 (0.04)	−0.05 (0.04)	−0.02 (0.03)	0.01 (0.02)	0.00 (0.02)
Coll. CL *d_1900		0.09*** (0.03)	0.07** (0.03)		0.07*** (0.02)	0.08*** (0.02)
Coll. CL *d_1930		−0.01 (0.04)	−0.04 (0.05)		0.08*** (0.02)	0.09** (0.04)
Privately used common lands	0.10* (0.06)	0.18** (0.08)	0.10 (0.07)	−0.03 (0.05)	0.04 (0.05)	0.06 (0.05)
Priv. CL *d_1900		−0.12 (0.10)	−0.11 (0.09)		−0.05 (0.08)	−0.05 (0.08)
Priv. CL *d_1930		0.01 (0.10)	−0.00 (0.09)		−0.02 (0.05)	−0.01 (0.06)
d_1900	5.18*** (0.72)	5.09*** (1.14)	−0.15 (1.37)	0.60 (0.41)	0.26 (0.68)	−0.27 (1.13)
d_1930	20.17*** (0.75)	20.21*** (1.11)	8.94*** (2.44)	2.82*** (0.37)	2.38*** (0.46)	1.73 (2.22)
Migration	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	No	Yes	No	No	Yes
Observations	137	137	137	124	124	124
R^2	0.96	0.96	0.97	0.56	0.64	0.68

Robust standard errors between brackets; *, ** or *** denote significance at 10, 5 or 1 % level. 'Coll. CL' and 'Priv. CL' refer to the variables of interest, the fraction of collectively or privately used common lands, when interacted with time dummies for 1900 and 1930. All regressions include provincial fixed effects. For simplicity, the intercept is not reported. Migration refers to both internal and international migration rates. Controls include income per capita, population density, agricultural population, urbanisation, industrialisation, access to land and literacy

5 Conclusion

Common lands played a crucial role in the functioning of rural communities in Spain. They constituted a source, among other different goods and services, of pasture, wood, fertiliser and fuel, together with the possibility of temporary cropping. The commons were indeed a crucial element of a system in which agricultural activity was completely integrated with cattle breeding and forestry. They also represented a critical asset for the local municipalities given that they were an important source of revenue. Although privatisation per se may have not been negative for economic growth, the way the liberal land reform was carried out in Spain, regarding both its distributional impact and its timing, had negative consequences for the standard of living of a large part of the population.

On the one hand, both the redefinition of property and user-rights carried out between 1860 and 1900 mostly benefited a small elite, thus preventing an important part of the population from enjoying the benefits that commons used to provide. In this sense, undermined by the penetration of market incentives and the increasing intervention of the central government, local communities lost control over both the sales themselves and the management of the remaining commons. This process had a negative influence over how these resources were exploited and who enjoyed access to them, thus supporting Ostrom's (1990) thesis about the efficiency of the local management of collective resources. It is regrettable that the political heirs of the liberal Constitution of 1812 did not observe its preamble, which stressed the risks of privatising communal lands and advocated for the respect of local autonomy when managing those resources: 'the very neighbours of the villages are the only people who know best how to promote their own interests and there is nobody better than them to adopt the appropriate measures'.[31]

On the other hand, the timing of the process is also of considerable importance for two main reasons. First of all, the potential benefits of the privatisation may not be fully achieved unless society has reached a determined level of development. A modernising agriculture requires not only financial resources, but also enough economic incentives to carry out those investments. Secondly, the negative effects of the dismantling of the communal regime can only be limited if either a wide array of market opportunities exists or, alternatively, a new set of institutions is built to substitute the functions that the commons fulfilled for the local community. Unlike the Poor Laws in Britain, no compensation measures for landless peasants were deployed despite the privatisation of common lands. On the contrary, while state intervention in public health only slowly began to influence living standards during the first decades of the twentieth century, privatisation imposed a terrible shock on local institutions, which became both incapable of providing basic public services and were forced to increase the tax burden.

In conclusion, standards of living depended on the whole array of possibilities that peasant families could rely on. The persistence of collective resources in some provinces provided peasants with mechanisms different from the market and made the transition to a market economy more socially sustainable, an outcome

[31] My translation. Quoted in Gómez-Urdañez (2002, p. 139).

completely different from what happened in some areas of Central and Southern Spain where the dismantling of the communal regime was more intense. This view is not only compatible with the idea that the privatisation of common property was not a vital component of the agricultural revolution, but also points to the negative consequences of this process for the standards of living of the rural populations. Therefore, the choice followed by liberal governments of speeding up the transition to capitalism by urging the privatisation of common lands may prove to have been mistaken.

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Appendix

See Table 3.

Table 3 Biological living standards in Spain, 1860–1930

	Life expectancy at birth			Heights				
	1863–1870	1900	1930	1858	*N* 1896–1904	Mean	*N* 1926–1934	Mean
Álava	32.0	37.3	53.7		320	162.17	90	166.06
Albacete	30.0	32.1	47.3	161.24			23	164.89
Alicante	32.8	38.6	50.8	164.12			91	166.42
Almería	31.1	28.4	50.0	162.38	34	160.20	90	163.74
Ávila	24.9	30.4	45.6	162.74	320	160.39	96	161.49
Badajoz	28.8	31.3	47.9	162.22			233	164.57
Baleares	41.7	45.2	57.6	162.82	238	165.90	270	165.82
Barcelona	28.4	36.4	53.3	163.67	120	164.54	90	168.12
Burgos	30.6	33.0	46.9	158.52	320	158.91	141	163.08
Cáceres	25.7	30.7	44.3	161.23	320	159.32	180	161.82
Cádiz	29.9	32.9	44.7	163.33			90	163.72
Canarias		43.1	52.9		641	164.87	360	167.40
Castellón	29.3	36.6	51.5	161.88	318	162.68	92	164.37
Ciudad Real	29.6	34.8	46.9	162.38			80	164.05
Córdoba	30.4	29.5	48.5	161.31	207	160.13	90	164.42
Coruña, La	35.3	41.3	51.6	158.81	280	161.70	90	163.90
Cuenca	28.8	34.8	47.1	161.15	142	160.13	95	163.19
Gerona	31.4	35.0	55.8	163.76			86	167.28
Granada	29.1	30.8	50.4	161.44	234	160.48	90	164.11
Guadalajara	27.4	33.8	49.4	161.33	320	160.59	93	163.56

Table 3 continued

	Life expectancy at birth			Heights				
	1863–1870	1900	1930	1858	*N* 1896–1904	Mean	*N* 1926–1934	Mean
Guipúzcoa	34.4	41.1	54.6		120	165.96	80	168.86
Huelva	29.4	36.7	50.6	161.82	321	164.03	90	166.14
Huesca	25.4	36.2	53.0	160.57			90	164.20
Jaén	29.0	27.9	47.2	160.96	321	161.15	90	163.31
León	25.4	37.6	49.2	161.39			103	162.78
Lérida	27.3	37.2	56.3	162.14	320	163.11	91	166.02
Logroño	27.0	33.6	49.7	161.66	349	161.38	278	162.58
Lugo	35.5	41.5	53.2	158.50	320	161.01	90	162.66
Madrid	23.5	29.7	47.7	161.87	400	161.80	270	166.08
Málaga	33.4	33.4	50.5	162.07			90	163.98
Murcia	32.4	32.8	49.7	160.44			214	164.12
Navarra	29.6	37.2	52.9	161.77	320	162.12	270	165.83
Orense	30.0	36.6	52.3	157.29	160	162.06	90	162.57
Oviedo	37.2	39.7	53.2	159.12			168	165.29
Palencia	22.1	30.8	44.9	158.82			90	162.95
Pontevedra	37.1	45.1	52.8	155.89	280	161.26	90	162.95
Salamanca	28.6	36.1	48.9	161.57	160	158.32	118	162.10
Santander	36.1	39.6	51.8	161.00	275	160.78	99	167.13
Segovia	25.0	33.0	49.0	160.30	280	160.08	113	162.32
Sevilla	31.8	31.0	47.0	163.71	323	164.09	90	165.65
Soria	28.9	33.1	49.6	161.45	317	159.82	93	162.24
Tarragona	32.7	40.1	57.3	164.07	320	162.88	92	166.90
Teruel	29.0	33.2	49.6	161.85	313	159.70	90	163.70
Toledo	28.6	33.8	49.8	160.40			116	163.23
Valencia	26.9	35.6	50.0	161.52	322	164.45	129	164.31
Valladolid	23.1	29.8	45.6	161.18	73	167.57	98	162.43
Vizcaya	34.3	34.7	52.6		120	164.55	96	166.62
Zamora	23.8	34.6	47.8	158.41	320	159.80	90	162.59
Zaragoza	23.7	30.7	49.0	161.80	252	168.07	90	164.43
Spain	29.8	35.0	49.9	160.93	9,800	162.02	5,978	164.54

Source: Dopico (1987) and Dopico and Reher (1998) for life expectancy and Gómez-Mendoza and Pérez-Moreda (1985) and Quiroga (2002) for heights

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