

## **Quantitative Agricultural History: institutions, markets and natural resources**

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### **Measuring wealth inequality in the late preindustrial era. A case study for north-eastern Spain (1795)**

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The aim of this paper is to show a study on wealth inequality based on a list of the 43,000 families from the Girona region (north-eastern Spain) in 1795, which indicates for each of them the amount paid for the 'Catastro Ganancial', a tax proportional to their immovable assets (house and land). The source also includes those exempted from paying the 'Catastro', i.e., the landless, something that differentiates it from many sources related to direct taxation, allowing for more accurate inequality coefficients to be provided.

Also, this geographical frame enables the comparison, albeit on a small scale, of the differences between the wine-growing coastline, the pre-coastal cereal plains and the forestry areas of the pre-Pyrenean mountainous sector. Indeed, the obtained results suggest that the coastline had a greater presence of small landholders, and the hilly areas are where landless labourers were more frequently registered. Then, the pre-coastal depression would be a transitional sector between these two realities, being also where most tenant farmers were found.

Finally, this study might have implications regarding the threefold process of expansion, intensification and specialisation that characterised the agricultural transformations in the late preindustrial era, as well as in the further consolidation of agrarian capitalism.

Wealth inequality; Land property; Landless; Catastro

### **New Estimates for the of the Rural Economy Contribution to GDP (1650-1850)**

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Agriculture plays a major role in the Little Divergence debate and, specifically, in the Portuguese and Spanish cases. These two historiographies have lately made great strides regarding the reconstruction of the national accounts for the pre-statistical age. Alvarez-Nogal & Prados Escosura (2013) presented the first estimate for Spain regarding the period 1270-1850 whilst Palma & Reis (2019) carried out the same exercise for Portugal in the period 1527-1850. In contrast with the well-scrutinized reconstructions for England (Broadberry et al., 2015), these approaches followed the indirect method (Allen, 2000) in estimating Gross Agricultural Output (GAO). In both cases, the results point to a decline in the pc GAO in the Modern Era. In Spain, the indirect methodology has also been challenged by alternative proposals (Llopis Agelán et al.,

2018). Based on the methodology employed by Palma & Reis (2019), I provide new sectorial estimates of income distribution, which provide a new perspective on the relevance of the rural economy (agricultural and non-agricultural) to the rise and decline of Portugal's GDP between 1650 and 1850. I also explore the implications on consumption and on the overall performance of the agricultural sector of the indirect GAO estimates.

Little Divergence; Gross Agricultural Product; Rural Economy

### **The location of livestock in Spain since mid-nineteenth century: the case of pig-husbandry**

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Livestock is a fundamental sector in modern Spanish agriculture, as evidenced by historical analyses. This study focuses on one of the main branches of livestock production, specifically pig husbandry, and investigates its evolution in Spain from 1865 to 1973. Pig farming has emerged as the most significant livestock activity in Spain since 1960, while other sectors have declined. This case is intriguing, as pigs have a distinct role in the livestock industry due to their monogastric digestive system. This means that pigs can be produced through different feeding regimens and husbandry practices. Notably, this latter factor may have contributed to explaining the uneven evolution of regional and provincial pig farming over time. Our study explores whether and to what extent geographic disparities in feeding regimes resulted in differing pig spatial locations over time. To accomplish this goal, we created a provincial index of pig farming practices for the late nineteenth century, which allows for the classification of provinces based on whether they practiced extensive, semi-extensive, or pure stabled pig farming. Subsequently, a panel-data econometric model is used to test the potential impact of farming practices, including specific feeding regimes, on the changes in pig husbandry location over time.

livestock; Pig-husbandry; Agricultural-History; Location; Economic-Geography

### **La evolución de la PPN en los agroecosistemas mediterráneos. Una primera aproximación a los impactos ambientales (1880-2020)**

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Este estudio muestra la evolución de la agricultura mediterránea desde finales del siglo XIX hasta la actualidad. Para ello se ha calculado la productividad primaria neta (PPN) y las distintas categorías que la componen, entre ellas la Extracción Doméstica, así como los cambios en los usos del suelo para los años 1880, 1930, 1970, 2000 y 2020 a escala regional en Portugal, España, Francia e Italia. Los resultados muestran la especialización territorial y el aumento considerable de la PPN de ciertos cultivos en detrimento de la biomasa reciclada, clave para la reproducción y mantenimiento de los agroecosistemas. Hemos calculado también la evolución de la oferta alimentaria a partir de los usos del suelo y de los rendimientos por unidad de superficie y la hemos confrontado con la demanda que genera la dieta mediterránea estándar, predominante en la zona de estudio. Los resultados muestran un progresivo distanciamiento entre la producción y la mencionada dieta, creciendo la incapacidad de la mayoría de las regiones mediterráneas para satisfacer los requerimientos alimentarios que la práctica de esa dieta comporta. Ello pone en

evidencia el creciente desacoplamiento de la alimentación respecto al territorio y la creciente dependencia de las importaciones alimentarias.

Usos del suelo; Productividad Primaria Neta; Metabolismo Agrario; Dieta mediterránea; Regiones

### **Retaining population with water? Irrigation policies and depopulation in rural Spain, 1900-2011**

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Rural depopulation in Spain, both historically and presently intense, has become a major concern. Spain also being a country characterized by severe environmental constraints on agricultural growth, it has been claimed that irrigation projects contribute to resettling populations and reducing migration to the cities and abroad, by increasing agricultural output and productivity. However, no evaluation of the causal effect of irrigation policies on population has been conducted to date. This research project aims to elucidate on this relationship.

The database consists of information at the twelve census dates between 1900 and 2011—that is to say, 1900, 1910, 1920, 1930, 1940, 1950, 1960, 1970, 1981, 1991, 2001 and 2011. The data are disaggregated at a high spatial level: the 8,115 Spanish municipalities. In short, the focus on the effect of irrigation on population at such a degree of spatial disaggregation—the municipality—permits a better isolating of a specific policy measure.

The outcome of most interest is total population and, alternatively, population density, for levels and growth rates. We can estimate irrigation throughout history at such a degree of spatial disaggregation thanks to the methodology set out by the HID database; completed for the more recent dates with the methodology set out by the HYDE database.

Demographic change; Irrigated land; Historical analysis; Econometric analysis; Spanish municipalities

### **The long run effects of land distribution on human capital in Italy**

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This paper aims at studying the mechanisms by which an unequal distribution of land might affect human capital accumulation in rural towns, as well as the long-term economic effects of land concentration. It looks at municipal-level data on land inequality and literacy rates in Italy during the 1930s. By doing so, this paper contributes to the literature on the causes of the Italian North-South divide, and the fact that the Italian South has remained much poorer. Data on land distribution have been collected from the Catasto Agrario of 1929. Municipal-level data shows significant differences in land tenure not only across regions, but also within Northern and Southern states. It also shows that latifundia was not confined to the South.

Firstly, this paper looks at the correlation between land inequality and literacy across Italian rural municipalities in the 1930s. Secondly, it considers the demand factors that might explain the

adverse effect of Italian latifundia on education. Only demand factors are considered given that the Italian central government had centralized educational policies and spending. The paper also studies other institutional and socioeconomic factors affecting education. Finally, it examines the long-term effect of land inequality on rural development by using 2011 municipal-level survey data.

Land distribution; human capital; Italy; latifundia