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By *Daniel Oto-Peralías and Diego Romero-Ávila*

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Keywords: Historical Frontiers, Political Power, Political and Economic Inequality, Spanish Reconquest, Frontier of Granada, Spatial Regression Discontinuity Analysis.

JEL Classification: C14, N2, N9, O1

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1. Introduction

Frontiers have largely shaped the economic geography of many regions and countries throughout the world.[1] Despite the importance of frontiers in history, few studies have dealt empirically with this issue. This paper aims to explore the political-economic effects that can lead frontier regions to be unequal. We argue that frontiers can adversely affect the path of development of societies by leading to an excessive concentration of power in the hands of the elites. Our hypothesis is that, in the presence of a military threat, frontiers must be defended and this fact biases the political equilibrium in favor of the military elite, which ends up accumulating an enormous amount of economic and political power. We empirically test this hypothesis by exploiting the existence of a stable frontier between Castile and the Nasrid Kingdom of Granada in the late Middle Ages in the southern Spanish region of Andalusia. Our results indicate that the frontier of Granada had very persistent effects on political and economic inequality, which decisively affected subsequent development.

Historically, with the possible exception of the U.S. frontier, which involved individualism, self-governing forms of political democracy, and aversion to social stratification (Turner, 1920), frontiers have been associated with political and economic inequality. For instance, Hennessy (1978, p. 26) asserts that "far from stimulating democratic values and creating a democratic myth, the frontier in Latin America has bred a spirit of lawless anarchy and perpetuated outworn forms of social and economic organization [...]. It could be argued that it is these frontier regions which have bred *caudillismo* or strong man rule; that power and prestige derive from ownership of land and domination over a serf-like rural following". Other frontiers, such as those of the Boers in South Africa, the Russians on the European side and in Siberia, or the German expansion into the region East of the Elbe, did not introduce significant political institutions providing serious fundaments for a modern state.

Until now, the only empirical study that deals explicitly with the political economy that leads frontiers to be unequal is García-Jimeno and Robinson (2011). According to their conditional frontier hypothesis, the contrasting outcomes obtained from the different frontier experiences on the

[1] There are frontiers not only in the colonization of the New World (e.g., North and South America) –Turner (1920) and Gerhard (1959)– but also in the Old World. Examples of the latter are Hadrian's Wall, which delimited the northern limits of the Roman Britain, the Great Wall separating the settled Han Chinese from the nomadic tribes of the North for over two millennia, the Arab-Byzantine frontier in the Middle Ages, the frontier that separated Western Europe from al-Andalus during the Christian re-occupation of the Iberian Peninsula, the so-called *Reconquista*, the border between the Habsburg and Ottoman Empires in Eastern Europe, Russian expansion in Central Asia, and Germany's expansion eastward, to name just a few. See (supplementary) Appendix A for a more detailed account of frontiers of settlement and defense throughout history.

American continent must be sought in the initial political equilibrium existing in society at the time of the frontier's expansion. When the political equilibrium was biased toward the oligarchies with political power, as occurred in most of Latin America, frontier land was allocated on an inegalitarian basis favoring members of the political elite to ensure they remained in power. Closely related is the existing literature that links the emergence of institutions to frontier experiences. This includes the prevalence of extractive institutions that took the form of serfdom in the region East of the Elbe due to a certain configuration of social institutions biased towards the landowning elite at the expense of the peasant class, as postulated by Brenner (1976).[2] More generally, Acemoglu and Robinson (2012) and Chaney and Hornbeck (2015) hold the view that in pre-industrial times large adverse shocks leading to persistent labor scarcity created a critical juncture in history that, depending on the initial balance of power in society, pushed institutions in the direction of either strengthening pre-existing extractive institutional arrangements (as in Eastern Europe) or of weakening them (as in much of Western Europe), with feudalism eventually disappearing.[3]

This article opens a new research avenue on the political-economic effects associated with historical frontiers. We establish the hypothesis that militarily insecure frontier regions, because of their defense needs, favor a political equilibrium biased toward the elite groups, which generates political and economic inequality, thus undermining subsequent economic development. The frontier of Granada, which was for two and a half centuries the frontier in Europe between Christianity and Islam, constitutes an excellent opportunity to test this hypothesis. It allows us to compare municipalities that were conquered and resettled under the influence of an insecure frontier, on the Castilian side, with municipalities that were organized and repopulated after the dismantlement of the frontier, on the Granada side.[4] On the one hand, the Castilian part was organized and resettled under the premises of being an insecure frontier region facing the Muslim adversary, which decisively affected the way the resettlement was done. As illustrated in Figure 1, this created the conditions for a specific configuration of *de facto* and *de jure* political power distribution in favor of the powerful groups (particularly the nobility, the Church, and military orders), which generated

[2] In a similar spirit, Gerhard (1959, p. 223) argues that medieval frontiers such as that of the Eastern colonization were associated with the migration of the medieval feudal organization in full. Due to space considerations, other arguments and references on the Brenner debate are provided in Appendix B.

[3] With a focus on African societies, Fenske's (2012, 2013) land abundance view of African history links the existence of open frontiers in Africa, characterized by large tracts of unoccupied land and low population density (and in turn labor scarcity), to a lack of price and rights over the land, as well as to the prevalence of slavery and other forms of coerced labor across the African continent.

[4] The Castilian side of the frontier approximately encompasses the modern provinces of Cadiz, Cordoba, Huelva, Jaen, and Seville, while the Granada side the provinces of Malaga, Granada and Almeria.

extractive institutions to exploit the landless peasantry, with negative consequences that persisted over time right through to the twentieth century.[5] More specifically, the need to defend against the enemy led the nobility and military orders to play a central role in the occupation and protection of the new territory. This political equilibrium biased towards the privileged orders brought about a high concentration of *de facto* political power in the form of great land allocations and *de jure* political power through jurisdictional rights along the frontier. Other factors such as the insecurity of a border area constantly under threat promoted a type of extensive land exploitation based on pasture and livestock, and the low population density –a consequence of this insecurity– was also conducive to the accumulation of land in a few hands. On the other hand, the former Nasrid Kingdom of Granada evolved differently, largely because once it had been conquered, the phenomenon of the frontier ceased to exist, and the Muslim opponent was no longer a threat. The territory could be repopulated and organized according to different premises and objectives, and the distribution of land ended up being relatively more egalitarian.

[Insert Figure 1 about here]

The empirical strategy is operationalized by exploiting municipality-level data to study the effect of the frontier of Granada on the concentration of economic and political power on the Castilian side. We compile historical data for the 771 municipalities making up modern-day Andalusia. Our dataset covers the percentage of landless workers over the total agrarian active population in 1787 –which is closely related to the extent of land concentration in the hands of the privileged orders– and the amount of income earned by the wealthiest individual in each city or village in the 1750s, as measures of *de facto* political power. As a measure of *de jure* political power, we employ the jurisdictional category of each municipality under the Ancien Regime, i.e. those cities and villages over which nobles, military orders and the Church had jurisdictional rights in 1787. We also collect data on current land inequality and development outcomes, and many geographic and historical controls. We then compare observations on both sides of the frontier using a border specification and a semiparametric spatial regression discontinuity design (RDD). The evidence shows that the municipalities on the Castilian side have a significantly higher percentage of landless workers, a higher level of accumulated wealth, and more jurisdictional rights in the hands of the privileged orders, whereas there are no significant discontinuous shifts across the frontier in a wide array of

[5] According to Acemoglu and Robinson (2010, p. 8), "*de jure* political power refers to power that originates from the *political institutions* in society [… and] *de facto* political power originates from the ability of the group in question to solve its collective action problem and from the economic resources available to the group (which determines their capacity to use force [and influence] against other groups)".

climatic and geographic factors, or in pre-existing conditions. In addition, using current indicators of land inequality measured in the 1980s, we show that the effect of the frontier of Granada persists today, five centuries after it disappeared. These results are robust to controlling for a wide array of observable characteristics and employing alternative specifications in the RDD, using microdata for a sample of almost 129,000 holdings, as well as to a series of falsification tests consisting in either drawing 1,000 random placebo borders or moving the true frontier northwestward and northward. Using several outcomes linked to contemporary development, we corroborate Acemoglu and Robinson's (2006, 2010) view that historical structural inequality is harmful to economic development.

Our findings on the negative consequences that the frontier of Granada had for the border region of Andalusia are consistent with the "conditional frontier thesis" proposed by García-Jimeno and Robinson (2011).[6] For the case of the Castilian expansion into southern Spain in the thirteenth century, the dynamics of a frontier region with a threatening enemy favored the control of land and political power by the nobility. Thus, the frontier of Granada is an instance of a more general phenomenon: a frontier that leads to pernicious effects due to a political equilibrium defined by a high concentration of power in the hands of a military elite, which is reinforced by the fact of being an insecure border region. Our results may be applicable to other insecure frontier regions.[7]

Our study differs in several respects from others analyzing historical borders since it focuses on the political economy that leads frontiers to be unequal. As such, it primarily centers on the immediate effects of being a frontier on inequality, and secondarily, it documents the long-term persistence of the effects. Also, the case of the frontier of Granada is more extreme: the frontier ceased to exist at the end of the fifteenth century, but its effects are still felt five centuries later.[8] Finally, this article

[6] Their analysis of the frontiers on the American continent points to the existence of higher long-run economic growth and current democracy levels, the greater the constraints on the executive in 1850 and the longer the frontier.

[7] While García-Jimeno and Robinson (2011) paint a story in which the central oligarchy wants its affiliates to control frontier regions –which is a resource that is used to ensure the oligarchic elites cement themselves in power–, Hennessy (1978) emphasizes the fact that the center finds it hard to control frontier land and this empowers local strongmen to amass huge power. In either case, the existence of a frontier favors the perpetuation in power of the nondemocratic oligarchy, rather than create a viable rural middle class comparable with that in North America. In principle, both mechanisms would be compatible with our findings. However, our historical account seems to favor the former hypothesis, though placing more emphasis on the center's final objective of strengthening frontier positions and preventing foreign conquest.

[8] The extant literature has mainly focused on historical borders (see, among others, Dell, 2010; Grosjean, 2011a, b; Becker et al., 2015). Borders can be conceptualized as a geographical delimitation (a line) separating two political or administrative units. Historical and modern borders may be very useful to exploit discontinuities (for example in institutions). By contrast, frontiers are a different phenomenon. They represent large geographic areas delimiting major cultural and political blocks, under military insecurity and instability, and with a potential for further territorial

also contributes to the literature on the long-term persistence of historical events by shedding light on the causes of the long-standing inequality that Andalusia has suffered throughout its modern history.[9] This issue has been emphasized, among others, by Vicens Vives (1969) who pointed out that along the frontier of Granada the large landholdings of the military orders and the greatest noble families were consolidated to such an extent that all the nobles that have played an important role in Spanish history since the fifteenth century have based their power on this *latifundia* system. This initial concentration of economic and political power persisted over time, stamping on Andalusia its hallmark of "the classic land of the *latifundia* or slave-worked estates" (Brenan, 1950, p. 114) and *caciquismo* (Ortega López 1986; Tusell 1976).

The remainder of the paper is organized as follows: Section 2 provides a historical overview. Section 3 describes the data, and Section 4 provides preliminary statistical evidence on the effect of the frontier of Granada. Section 5 develops the empirical strategy and presents the empirical evidence from the estimation of a border specification and a spatial RDD, and also conducts several robustness checks. Section 6 presents an RDD applied to microdata of agricultural holdings. Section 7 investigates the effect of the Granada frontier on several contemporary development outcomes. Section 8 puts forward some implications and concludes.

2. Historical Background

2.1. The Frontier of Granada and the Origins of Economic and Political Power Concentration in Andalusia

The *Reconquista* is modern Spain's historical constitutive process. Over a protracted period of almost eight hundred years (from approximately 722 to 1492), the Christians located in the north gradually conquered the Muslim territory to the south and implemented measures to colonize these new lands. These measures, aimed at organizing and resettling the conquered territory, were fundamental to the subsequent development of each region (Oto-Peralías and Romero-Ávila, 2014b). After the battle of *Las Navas de Tolosa* in 1212, most of the southern third of the peninsula

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expansion. Frontiers develop specific and differentiated cultural, political and economic patterns, giving rise to "frontier societies". In this sense, our paper is original because it focuses on the dynamics of a frontier society.

[9] This line of research pioneered by the seminal papers by Engerman and Sokoloff (1997) and Acemoglu, Johnson, and Robinson (2001) focusing on European colonialism has been followed by a number of different studies investigating historical events such as overseas colonialism, revolutions, or religious reformations. They include, among others, Banerjee and Iyer (2005), Gennaioli and Rainer (2007), Acemoglu et al. (2008), Becker and Woessmann (2009), Gallego (2010), Iyer (2010), Bai and Kung (2011), Bruhn and Gallego (2012), Chaney (2013), Fenske (2014), Oto-Peralías and Romero-Ávila (2014a), Bai and Kung (2015), Cantoni (2015), and Chaney and Hornbeck (2015).

suddenly fell into Christian hands. The rapid advance of the Christian frontier made it difficult for the Crown to officially organize the repopulation on such a large scale and altered the balance of power toward the nobility and military orders, who were required for conducting an effective occupation and defense of the new lands. Within this context, the fact that the *Reconquista* was not fully completed, due to the resistance of the Nasrid Kingdom of Granada, was a factor that decisively influenced the repopulation of Andalusia, which was a frontier region for two and a half centuries. The insecurity derived from the existence of the frontier determined the organization of the new lands by further strengthening the power position of the privileged groups.

In the first place, the continuous warfare between Castile and the Kingdom of Granada forced the former to make new and important military efforts and reinforce the frontier of Granada, particularly after the uprising of the *mudéjares* in 1264 and over the decade following the first incursion of the Marinids in 1275. To this end, Alfonso X called on the military orders to do their duty of defending the frontier. However, by the end of the thirteenth century the military orders had lost interest in frontier warfare and were concentrating on administrating their enormous wealth.[10] As a result, from this point onwards the task of defending and protecting the frontier territories was entrusted to the great noble families of the region. The frontier was able to fulfill the needs of both the Crown and the nobles. The former secured frontier positions that were difficult to defend and were at constant risk, while the latter found in the frontier a means of social, economic, and political empowerment (Cabrera Muñoz 2006).

Secondly, the low population density that is characteristic of these insecure border regions, the demographic decline brought about by epidemics,[11] and the expulsion of the Muslim population after the 1264 revolt, all favored the establishment of an extensive agricultural system based on large estates, which were concentrated in the hands of the nobility.[12] Thus, the intensive agriculture

[10] Following the example of the Holy Land crusaders, the Castilians created three great military orders that served as armies for the country to conquer Muslim lands and defend the Christian frontier. The order of Calatrava was founded in 1158, the order of Santiago in 1170, and the order of Alcántara in 1175, during the second half of the twelfth century, a period from which military orders grew in importance due to their key role in the defense of the frontier (Forey, 1984; González Jiménez 1989), with the creation about a century later of the order of Santa María de España (1272). Besides their military activity, these orders played an active role in the resettlement of the conquered lands.

[11] Due to lack of data, we are unable to control for the number of casualties that the Black Death caused on each side of the frontier. However, we can conjecture that the Black Death is likely not to be the explanation for the frontier effect found below given that the pest equally acted on both sides of the frontier, as the disease could easily spread across borders.

[12] Cabrera Muñoz (2006) argues that adverse population shocks like the failure of the initial *repartimientos*, the expulsion of the Muslim population and epidemics contributed to the expansion of lordships which served as a way to compensate the nobility for the losses incurred and as a means to occupy and repopulate large tracts of depopulated territories. This has some similarities to the strengthening of feudal links through serfdom in Eastern Europe coinciding

that had previously prevailed in the Guadalquivir Valley since Roman times was replaced by an extensive agrarian sector dominated by olive groves and sheep (Vicens Vives 1969; Malefakis 1970). Thirdly, key to the expansion of the seigneurial system and the consolidation of the high nobility in Andalusia after the defeat of Peter I was the founding of the Trastamaran dynasty (1369-1504) in favor of Henry II. The new dynasty again converted the nobility into the main player in the defense of the frontier and, accordingly, handed out extensive lordships and land allocations. Fourthly, the relative weakness of the Crown vis-à-vis the high nobility, who controlled town council positions, facilitated the increase of nobles' lands through usurpations (Cabrera Muñoz 1989).

In short, all the above factors biased the political equilibrium toward the nobility at the expense of the peasantry. The former enjoyed enormous political power in the form of jurisdictional rights, which provided the legal and political apparatus that afforded them *de jure* political power over the broad mass of the population. This implied the attachment of the landless peasantry to the land of landowners –who had to provide the latter with labor services– and the control of the judiciary and the local council by the nobility. This *de jure* political power in combination with *de facto* political power afforded by the high concentration of land allowed the landed elite to set economic institutions to their own benefit. Examples are the existence of severe restrictions on land and grain transactions, labor contracts with caps on agricultural wages, land tenure systems implying short-term leases, and the obligation to use the nobles' mill to grind grain and press olives. Nobles also exploited monopoly rights over public ovens, butcheries, forges, wineries, taverns, and potteries (Cabrera Muñoz 2006). They were often granted the right of taxation at local level, and they adjudicated over disputes about property, punishing minor crimes and even imposing death sentences for capital crimes (Dewald 2004). They could also use their power to buy and control state offices (Truxillo 2001).

2.2 Was Economic and Political Power Concentration Second-best?

An interesting question is whether the resulting strategy of colonizing border regions through large lordships controlled by the privileged orders could potentially be second-best, and whether there

with the demographic crisis of the late fourteenth century (Brenner, 1976). In the context of the expulsion of 120,000 *Moriscos* from the Kingdom of Valencia in 1609, Chaney and Hornbeck (2015) argue that the relative land abundance and labor scarcity in former *Morisco* districts brought an institutional response that, instead of empowering peasants by improving their outside options –as would be expected by the neo-Malthusian view of feudal decline by Postan (1973) and Le Roy Ladurie (1977)–, led to coordinated efforts by the powerful elites to coerce the peasantry –in a similar spirit to Brenner's account of the second serfdom. These facts can be reconciled under the theoretical framework of Acemoglu and Wolitzky (2011).

was an alternative way to settle these territories that had less nefarious consequences. The answer is that there probably was. Indeed, according to González Jiménez (1981a) and Cabrera Muñoz (2006), after Ferdinand III's conquest of the lands of Cordoba (1236), Jaen (1246), and Seville (1248), the Crown initially tried to implement a system of military occupation in Andalusia that allowed the Muslim population to stay in the conquered territory, since it constituted an abundant labor force and a stable source of fiscal revenues. A similar "colonial" system had been established in Valencia and Murcia (Burns, 1976). In addition, the Crown was initially reluctant to employ the nobility and military orders as the main guarantor of the occupation and defense of the conquered areas, given the excessive concentration of power they accumulated in central Spain (Extremadura and La Mancha). Ferdinand III and Alfonso X therefore conducted a repopulation process that sought to attract the maximum number of settlers who, by obtaining property rights over the lands and dwellings obtained in the *repartimientos*, would occupy and defend the territory from the enemy. This is the reason initially large estates and lordships had limited importance (Cabrera Muñoz, 1989).

However, the repopulation process based on small and medium-size holdings of free peasants came to a halt due to the *mudéjar* crisis in 1264 that brought about extreme rural depopulation, the incursion of the Marinids over the 1275-1285 period, and the continuous frontier wars that would last until 1350, which forced Christian settlers to concentrate in urban centers that afforded military protection. Despite the fiscal exemptions offered to attract settlers to the frontier, a lack of manpower was still evident in the fourteenth century (González Jiménez, 1981b). In this context of frontier insecurity, Castilian monarchs had no choice but to delegate military and governmental powers to the nobility and their lordships. As will be shown in the empirical analysis, these inevitable patterns of conditional settlement would bring about negative long-term consequences in the distribution of economic and political power, which are still visible even today.

The former Nasrid Kingdom of Granada evolved differently, largely because once reconquered the phenomenon of the frontier ceased to exist, and Castile's enemy was no longer a threat. The repopulation and organization of the territory could be made under different premises and objectives. Accordingly, although nobles also received generous land allocations, its distribution ended up being relatively more egalitarian, and the nobility received fewer jurisdictional rights. By the late fifteenth century, the Catholic Monarchs had accumulated enough power to control the nobles' pre-eminence (Vicens Vives 1969). This was aimed at preserving the existing balance of power among the main noble lineages, and between these lineages and the Crown. Hence, once the

frontier ceased to exist, the position of the Crown was strengthened.[13] In sum, we can exploit the discontinuity produced by the frontier; on the Castilian side, the resettlement was conducted under the circumstances of an insecure frontier region, while on the Granada side, the organization of the new land was carried out in relative safety.

2.3. The Persistent Concentration of Economic and Political Power and its Implications

Once the point of departure had been established, several mechanisms of persistence perpetuated and even aggravated the initial level of inequality. One key factor was the proliferation of entailed estates protected by law (*mayorazgos*) and other regulations by which land became non-conveyable such as the communal lands of municipalities and ecclesiastical land in mortmain. In addition, jurisdictional rights were hereditary, which guaranteed the persistence in the concentration of disproportionate shares of *de jure* political power in the hands of the nobility. The nineteenth century witnessed two major developments that failed to shift the balance of power in favor of the landless working class. First, several liberal reforms dismantled the legal apparatus of the Old Regime, but many jurisdictional domains became the property of the nobles in charge of the jurisdiction (Ruiz-Maya 1979). Second, in the process involving the disentailment of communal and ecclesiastical landownership, known as *desamortización,* the financial needs of the state prevailed, and land was bought up by the rich, the bourgeoisie and the aristocracy (Carrión, 1975). This ensured the continuation of the previous economic institutions, since the oligarchic structure of the Ancien Regime remained fairly unaltered. Far from disappearing, the unfavorable situation for the landless peasantry endured until well into the twentieth century, thereby contributing to the outbreak of the Civil War in 1936-1939 (Brenan 1950). The situation did not improve during the early years of General Franco's regime (1939-1952), in which the strict control of prices and supply in the markets for goods and factors led to limited factor mobility.[14]

Regarding the implications for economic development, high land concentration had negative consequences for agricultural productivity, as highlighted by the enlightened thinkers of the eighteenth century (Olavide 1768; Jovellanos 1795). It is also argued that the agricultural

[13] It is well known in Spanish historiography that nobles and military orders were a competing power against the Crown, rather than a simple intermediary between the Crown and the populace. Indeed, before the conquest of Granada, due to the Crown's dependence on the nobility to protect the frontier, the latter used their power to transform royal jurisdictions into noble jurisdictions (Rodríguez Molina 2000).

[14] No major agrarian reform was conducted over the postwar period, with the "agrarian question" being partly resolved thanks to the rural exodus, either to the cities or to the industrialized regions of Spain or Europe (Caro Baroja, 1966). Despite Spain's integration into the European Union and the associated redistributive policies, a fall in regional disparities has not been observed since the eighties.

population's low standard of living and lack of purchasing power has been a major factor responsible for the failure to industrialize in Andalusia (Nadal 1975; Nadal, Carreras and Sudriá 1987).[15] Oto-Peralías and Romero-Ávila (2014b) hold the view that under such conditions, broad segments of the population were excluded from participating in economic activity when the opportunity to industrialize arrived. As a result, regions with large estates fell behind during the industrialization period.

3. Data Description

We have compiled a dataset for the 771 municipalities there are in Andalusia. It contains one indicator measuring whether the town or village belonged to the Castilian part of Andalusia, three variables related to historical measures of land concentration, wealth accumulation, and jurisdictional rights, two variables related to current measures of land inequality, several outcomes linked to contemporary economic development, and a wide array of variables associated with climatic and geographic factors. To begin with, the frontier of Granada is defined as it was at the beginning of the War of Granada (1481-1492), which coincides with the subsequent boundaries of the historical province of Granada. Since the end of the great conquests of Ferdinand III and Alfonso X in the mid-thirteenth century, the borders of the Kingdom of Granada were quite stable, and only some territories were lost near the Strait of Gibraltar and around the area of the town of Antequera (Mestre Campi and Sabaté 1998).[16] Since this paper's hypothesis is that the existence of a frontier with an enemy was an important factor in the organization and repopulation of the territory, we prefer to use the 1481 frontier, i.e., the last line that could affect the repopulation of the Christian territories. Arguably, once the War of Granada began, the new lands conquered during the war could be organized and resettled according to different purposes. In statistical terms, our treatment group will include those municipalities that have been exposed to frontier at some point in time; that is, those municipalities that have at some stage been part of the Castilian side of the frontier. Otherwise, an earlier definition of the frontier would make some treated municipalities appear in the

[15] This would agree with Brenner's (1976, 1982) view that East of the Elbe it was easier for the landlord to squeeze the peasantry rather than invest in agricultural development, as in England. This in turn prevented the emergence of a domestic market for manufactured goods and an industrial labor force.

[16] Over the fourteenth century and most of the fifteenth century, the Castilians annexed only a few locations along the frontier, i.e., Teba, Pruna, and Olvera (1327-1330), Alcalá la Real (1341), Antequera (1410), Castellar and Jimena (1431-1434), Huelma and Bélmez (1438-1448) and Archidona (1462), in addition to Algeciras (1344) and Gibraltar (1462) on the Atlantic coast, which also served as a natural frontier with North Africa (see Mestre-Campi and Sabaté 1998, for more details). These conquests were therefore local in nature and constituted relatively small adjustments of the frontier established in the thirteenth century (González Jiménez 2006).

control group. Thus, we take the border in its maximum extension, although for robustness purposes we also look at various expansion stages below.

Regarding the historical measure of land concentration, we use the percentage of landless workers over the total active agricultural population in 1787, as recorded by the Floridablanca census. The total agricultural population is composed of farmers and landless day laborers. The percentage of landless workers can be considered as a proxy for historical structural inequality. This is referred to as a type of inequality that is *historical* in the sense that it has strongly persisted over centuries, and *structural* in the sense that it is a class-based inequality. Figure 2 shows the percentage of landless workers for each municipality. Although the values are very high almost across the board, the Castilian part of Andalusia has a higher percentage of landless workers (87%), versus 72% in the former Kingdom of Granada.

Concerning the historical measure of wealth accumulation, we use the total amount of income earned by the individual earning the most in each municipality. This variable is provided by the *Catastro de Ensenada* compiled between 1750 and 1753, and more precisely, by a series of books known as *El Mayor Hacendado*. Given the economic structure of that period, with a clear predominance of agriculture, in the vast majority of cases the *mayor hacendado* (i.e., the individual with the highest income) is a landowner, and the bulk of the income comes from land (Artola, Bernal, and Contreras, 1978). Since this indicator of wealth accumulation can vary depending on the municipality's extension, we express it relative to the size of the municipality. Figure 3 shows remarkable differences between the Castilian part of Andalusia and Granada. The average value for the former is about 1,550 *reales/km*^{2}, while for the latter it is about 674 *reales/km*^{2}.[17] The former two variables can be thought of as measures of *de facto* political power.

Our third historical variable refers to jurisdictional rights in the Ancien Regime. We use data from the 1787 Floridablanca census, which identifies each municipality's jurisdictional category. There are four types of jurisdictions: municipalities owned directly by the Crown (*realengo* or royal jurisdiction), ecclesiastical lordships, noble lordships, and military order lordships.[18] Since we are interested in a measure of the (*de jure*) political power of the privileged orders, we use a single

[17] In the empirical analysis, we control for other factors that can also be related to income, such as land quality.

[18] By far the most important categories are *realengos*, accounting for 45% of the municipalities, and noble lordships, representing 49%. However, in terms of population, to the extent that the main towns were under royal jurisdiction, municipalities depending on the Crown represented 59% of the total population, while 37% were under noble jurisdiction. In terms of surface area, royal jurisdiction accounted for 49% of the total land area, with the figure for noble jurisdictions being 45%.

group to consider those jurisdictions depending on the nobility, military orders, and the Church – while keeping in mind that municipalities belonging to the latter two groups were residual in Andalusia (only 28 and 12, respectively). Figure 4 depicts the distribution of jurisdictions in Andalusia. There is a noteworthy presence of jurisdictions belonging to the privileged orders along the frontier of Granada, particularly in the southwestern and central parts.

[Insert Figures 2-4 about here]

In sum, these three historical variables can be interpreted as measures of the concentration of political power in the hands of the privileged orders versus the peasantry. In addition, we also calculate two indicators of current land inequality using the agricultural census of 1982 in order to analyze whether the effect of the frontier of Granada on inequality has persisted over time, and if there is still an effect in the second half of the twentieth century. These variables are the percentage of utilized agricultural area (UAA) in holdings with 200 hectares or more of UAA, and the Gini coefficient of UAA. We consider private agricultural holdings (owned by private persons or legal entities).[19] To save space, the definitions and sources of the remaining variables are presented in Table A1, while the descriptive statistics are reported in Appendix D.

4. Preliminary Evidence

On the basis of the historical account presented in Section 2, our hypothesis is that the frontier of Granada was a factor that significantly increased political and economic inequality on the Castilian side of Andalusia, but not in the territory of the Kingdom of Granada. We test our hypothesis by comparing municipalities on both sides of the frontier. As a first approximation, Table 1 (Panel A) presents tests of mean differences for our three historical indicators related to economic and political power concentration. Conley (1999) standard errors robust to spatial correlation of unknown form are used.[20] The first three columns show the results for the whole sample. The average value of the percentage of landless workers in 1787 is higher in the Castilian part of Andalusia than in Granada, with the difference being highly significant. The accumulation of income as given by the variable *Mayor Hacendado*'s income over land area is also significantly higher in the former territory of Castile. As regards the jurisdiction of privileged orders (measured with a dummy variable), its average represents the percentage of cities and villages governed in this way. Again, this percentage is significantly higher (by almost 23 points) on the Castilian side of Andalusia. In columns 4–6 in

[19] See Figures A1 and A2 in Appendix C for maps showing the distribution of these two variables.
[20] We employ cutoffs of 1 decimal degree, beyond which the spatial correlation is assumed to be zero.

Table 1, we compare municipalities whose centroids are within 50 kilometers of the frontier (i.e., we set a bandwidth of 100 km), and columns 7–9 restrict the sample to municipalities within 25 kilometers of the frontier. Although this now involves comparing municipalities that are closer to the frontier and hence more alike in geography and climate, the mean differences in each one of the three relevant variables between both sides of the frontier remain fairly unaltered and statistically significant.[21]

Panel B in Table 1 investigates whether the effect of the frontier of Granada on inequality still remains today, five centuries after it disappeared. Towards that end, we use the two indicators of land inequality calculated with the 1982 agricultural census, namely, the percentage of UAA in holdings ≥ 200 hectares and the Gini coefficient. The results indicate that land concentration is higher in the Castilian part of Andalusia than in the former Kingdom of Granada, with mean differences being highly significant in the three samples. It is remarkable that when focusing on municipalities within 25 kilometers of the frontier, even today we can still observe differences between both sides of the border. This implies the presence of extraordinary persistence in inequality over the centuries, and this is so despite the attenuating effects due to spatial integration.[22]

[Insert Table 1 about here]

5. Econometric Approach

Although the initial evidence from the analysis of mean differences is appealing, it may be plagued by omitted variables bias. For example, factors related to geographic and climatic conditions left uncontrolled or unobservable characteristics may differ on both sides of the frontier, and influence positively the concentration of land on the Castilian side, thus creating an upward bias in the treatment effect. In dealing with the bias caused by omitted observables we include a wide range of geographic and climatic characteristics, whereas unobservable heterogeneity is handled through a twofold strategy. First, we estimate a border specification that compares municipalities within a 25-kilometer strip on either side of the frontier of Granada in order to determine the statistically significant average treatment effect. By limiting the analysis to the area 25 km from the frontier, one

[21] Figure A3 in Appendix E depicts the sample of municipalities studied in each case.

[22] Spatial integration may act against our hypothesis that there are significant differences in economic and political power concentration across the frontier when we narrow the sample down to observations close to the border, especially when the frontier ceased to exist at the end of the fifteenth century, and our dependent variables correspond to the eighteenth century. It is possible that during that period, social and economic factors on one side of the former frontier affected municipalities on the other side. For example, a village in which the initial level of land concentration was high may have increased the level of land concentration in its neighbors if landowners from that village expanded their large estates by purchasing land in neighboring villages.

implicitly assumes that any set of unobservable confounders is relatively unimportant when looking at the subset of data close to the threshold. Second, we apply a spatial RDD in order to shed more light on the causal effect of the frontier of Granada on the five outcomes considered. This is aimed at identifying a spatial pattern of economic and political power concentration by showing discontinuous jumps in the frontier for a sample of municipalities falling within 25 kilometers on each side of it. The focus on this restricted sample can be considered as the most rigorous way to test our hypothesis and provides a sufficiently good fit to the polynomials in our forcing variables.[23] In addition to spatial integration, the possibility that power concentration was prevalent on both sides of the frontier may also attenuate any differences in power concentration,[24] thus creating a downward bias in the treatment effect. To the extent that observed and unobserved heterogeneity are properly accounted for in the empirical analysis, our estimates of the treatment effect can be taken as a lower bound of the true effect.

5.1 Testing for Geographic, Climatic and Preexisting Differences across the Frontier

The validity of the border specification, and particularly of the spatial RDD, requires all the relevant factors besides the treatment to vary smoothly at the Granada frontier, and as such there cannot be any discontinuous jumps in any of these features. We test the existence of statistically significant differences across both sides of the border in the following geographic and climatic dimensions: altitude, ruggedness, terrain with a steep slope, direct access to the sea, rainfall, temperature, aridity, and Mediterranean phytoclimate. We also test for cross-border differences in soil quality and in several soil dimensions, such as moderate or high erodibility, low topsoil carbon, and fine soil texture, as well as in the proportion of arable land, and the percentage of land devoted to herbaceous crops. As shown in Panel A of Table 2, it is worth noting that there are no statistically significant jumps at the frontier of Granada in any of the eight climatic and geographic features considered. Likewise, Panel B discards the existence of cross-border differences in soil quality, soil characteristics, percentage of arable land, or the type of crops.

Finally, it is necessary to discard the possibility that differences between the two sides of the border were in place before the formation of the frontier. Accordingly, we check for the existence of

[23] We follow Becker et al. (2015), who recommend the use of this twofold strategy for settings of treatment effects of long-gone borders. This is because in a setting with sharp spatial discontinuities in treatment, the spatial RDD identifies more cleanly (than the border specification) any short-term treatment effects, but is also subject to attenuation bias due to diffusion and interaction effects across the frontier in settings of long-term effects of historical borders that ceased to exist in the distant past.

[24] See Section 5.5 for a detailed account of the existence of a relatively high power concentration on the Muslim side of the frontier (though lower than on the Castilian side).

discontinuous jumps in the presence of Roman roads, distance to urban centers in 1200 and 1400, and in pre-Christian land uses in al-Andalus between the tenth and twelfth centuries measured through the percentage of surface area in each municipality made up of forest, pastureland, intensive agriculture, and non-intensive agriculture. The evidence, reported in Panel C, does not support the existence of statistically significant cross-border differences in either Roman roads or distance to urban centers, or in any of the four pre-Christian land uses. This dismisses the possibility that differences in economic and political power concentration between both sides of the frontier merely reflect a perpetuation of pre-existing differences in land uses or in access to trade routes or commercial centers.[25]

[Insert Table 2 about here]

5.2 Border Specification

We next estimate the following border specification:

$$Y_{i,j} = \alpha_0 + \phi_j + \alpha_1 \cdot Castilian\_Andalusia_i + X_i'\beta + \varepsilon_i \quad (1)$$

where $Y_{i,j}$ is our dependent variable in municipality *i* along segment *j* of the Granada frontier, α_0 is a constant term, ϕ_j is a set of four equal-length segments of the frontier (boundary fixed effects) representing the closest one to the municipality centroid,[26] $Castilian\_Andalusia_i$ is a dummy variable indicating that the municipality belonged to the Castilian part of Andalusia, X_i represents a vector of control variables, and ε_i is the error term. The equation is estimated with ordinary least squares (OLS).

Regarding the vector of control variables, we first include indicators related to suitability for agriculture and land productivity, which affect the size and profitability of landholdings. These indicators are altitude, ruggedness of the terrain, a direct measure of soil quality, annual rainfall, and average temperature. We also include a coast dummy that can proxy for access to external markets

[25] As a robustness check, Appendix F provides regression discontinuity (RD) figures plotting the actual values and the local averages of each of these factors in terms of their distance to the frontier along with 90% confidence intervals. It also contains the regression counterparts to these graphs, which provide point estimates of the jump using a quadratic polynomial in distance to frontier. In essence, the balancedness testing indicates that balance generally holds across both sides of the border (in only one out of the 21 dimensions considered –the percentage of non-intensive agricultural surface– there is evidence of marginally significant differences at the 10% level).

[26] These segments allow us to compare municipalities across the same segment of the frontier. They can be thought of as capturing geographic treatment effect heterogeneity (Dell, 2010), as the treatment effect may vary along the geographic frontier. For other studies incorporating segment fixed effects in the RD specification, see Dell (2010) and Dell, Lane and Querubín (2015).

in which agricultural products could be sold. The results are reported in Panel A of Table 3 and appear to confirm the evidence from unconditional mean differences in Table 1.[27]

[Insert Table 3 about here]

5.3. Spatial Regression Discontinuity Analysis

Once we have determined the existence of a statistically significant average effect of the Castilian dummy on the concentration of economic and political power through the border specification, we now shift to the application of a semiparametric spatial RDD, as in Dell (2010) and Becker et al. (2015). In the presence of a causal impact of the frontier, there must be a spatial pattern of economic and political power concentration with discontinuous jumps at the frontier. The aim is to identify causal effects by distinguishing between, on the one hand, the treatment effect of the frontier, which is nonlinear and discontinuous in terms of both longitude and latitude, distance to the frontier, and distance to Madrid (depending on the definition of the forcing variable), and on the other, the smooth effects of the climatic and geographic characteristics (see more details in Angrist and Pischke 2009, and Dell 2010). The baseline regression in the RDD takes the form:

$$Y_{i,j} = \alpha_0 + \phi_j + \alpha_1 \cdot Castilian\_Andalusia_i + X_i'\beta + f(geographic\ location_i) + \varepsilon_i \qquad (2)$$

where $f(geographic\ location_i)$ is the RD polynomial, which controls for smooth functions of geographic location, and the rest is as described in Equation (1). Before presenting the results from the application of the RDD, we need to determine our baseline specification for the RD polynomial, i.e., the order of the polynomial. In this regard, Gelman and Imbens (2014) have recently shown that linear and quadratic polynomials in the forcing variable perform much better than cubic or higher-order polynomials, which often provide misleading confidence intervals based on such regressions. For completeness purposes, we present the results for the case of several forcing variables: the geographic coordinates, distance to the frontier, distance to Madrid and distance to Seville (the latter appearing in the supplementary appendix). Table 3 presents the estimation of our baseline RD specifications: one of a quadratic multidimensional RD polynomial in latitude and longitude (Panel B), and one of a quadratic single-dimensional polynomial in either distance to the frontier (Panel C) or distance to Madrid (Panel D). The basic control set includes the six geographic-climatic controls

[27] The results indicate that the fact a municipality is located on the Castilian side of the frontier (and hence affected by the treatment) is associated with a 10.8% rise in the percentage of landless workers, a rise in *mayor hacendado*'s income over land area of 1025.4 *reales*/*km*^{2}, and a 25.8% increase in the percentage of municipalities under the jurisdiction of privileged orders.

and the four segment fixed effects. The analysis is conducted with both heteroskedasticity-consistent standard errors and Conley (1999) standard errors robust to spatial correlation of unknown form.[28]

It is worth stressing that the frontier dummy exerts a statistically significant positive effect on the five outcomes in the case of the single-dimensional RD polynomial in distance to the frontier or distance to Madrid. In the case of the more flexible, but also more demanding specification, i.e., the quadratic multidimensional RD polynomial in latitude and longitude, the frontier dummy appears statistically significant at the 5% level or higher for four outcomes (all but privileged orders jurisdiction). This pattern of results should not come as a surprise, since the higher flexibility associated with the multidimensional RD polynomial comes at the expense of fewer degrees of freedom, which in the case of a relatively small number of observations and measurement errors in the dependent variables may inflate the standard errors and reduce the precision of the estimation (see more details in Dell 2010, and references therein).

For robustness purposes, we next provide a full set of specification tests that includes the use of linear and cubic polynomials in the three forcing variables considered. More specifically, the results from the estimation of a spatial RD specification of linear and cubic polynomials in latitude and longitude (Panels A and D in Table 4), and in distance either to the frontier (Panels B and E) or to Madrid (Panels C and F), fully corroborate the findings from the spatial RD specification of quadratic form. It is worth noting that when the highly demanding cubic specification in longitude and latitude is used, the results in favor of a statistically significant treatment effect is slightly lower (being significant for three outcomes). However, given the simulation evidence by Gelman and Imbens (2014), we base our conclusions primarily on the linear and quadratic functions of geographic location. In addition, we let the geographic location function differ on both sides of the frontier by including interacted quadratic polynomials in distance to the frontier (assessed at different percentiles of its distribution), distance to Madrid and distance to Seville. As shown in Table A4 in Appendix G, our baseline findings remain fairly robust to allowing polynomials to have different coefficients on both sides of the frontier by interacting the frontier dummy with the respective polynomials.

[Insert Table 4 about here]

[28] Thus, we control for spatial correlation through a polynomial in geographic location when using robust standard errors, whereas we double correct for spatial correlation by further using Conley standard errors on top of the RDD.

Figures 5 and 6 are RD plots that provide graphical evidence of the discontinuity in outcomes at the frontier, using the quadratic specification. First, in Figure 5 we follow the standard approach of ordering observations (expressed as local averages of the outcomes) along a one-dimensional line, in our case distance to the frontier. It appears that there is a clear jump at the frontier in the percentage of landless workers, *mayor hacendado*'s income over land area and privileged orders jurisdiction, whereas in the current inequality measures the difference across both sides of the frontier is much less clear.[29] Second, Figure 6 presents two-dimensional RD plots that are analogous to the ones in Dell (2010). Each plot represents dots with the municipality values for the outcome variables, with each data point being located in the municipality centroid (with its latitude on the *y* axis and its longitude on the *x* axis). The background color in each plot represents the predicted values for a one-kilometer grid, from a regression on a quadratic polynomial in latitude-longitude and the Castilian dummy, with a darker color indicating a higher predicted value. In support of our hypothesis, we can observe that both real and predicted values are higher on the Castilian side of the frontier. As in Dell (2010), if we compare the shades of the real data points to those of their associated predicted values, we observe that the RDD properly averages the data across space.

[Insert Figures 5 and 6 about here]

5.4 Additional Robustness Checks

Next, we examine whether the results are robust to controlling for the distribution of land uses across the Andalusian territory in the period of al-Andalus between the tenth and twelfth centuries. It may well be the case that large estates are more common in those places where extensive agriculture was the historical form of land use, while small holdings are more frequent in areas of previously intensive agriculture. This is also a general check on the importance of initial conditions in the territory, as areas with intensive agriculture in Muslim times were generally more densely populated and wealthier. As shown in Appendix H, the inclusion of the historical form of land use does not overturn our baseline findings.

[29] An explanation for this could be that differences –leading to sharp discontinuities just at the border– may have dissipated over time due to spatial integration. Hence, it seems reasonable to assess the existence of an effect a bit further from the frontier. In addition, there are no municipalities whose centroids are just on the border –the closest municipality to the frontier on the Castilian side is 1,300 m and 75% of them are at least 7 km far off the frontier–, which implies that the discontinuity at the border is based on extrapolation. For these reasons, we examine the presence of a frontier effect not only at the frontier, but also at the 25, 50 and 75 percentiles of the distance to the frontier distribution. As shown in Table A4 in Appendix G, the existence of a significant frontier effect at the 25, 50 and 75 percentiles of the distribution of distance to the frontier indicates that the effect of the frontier of Granada on land inequality has persisted over time right through to the present day.

In Section 3, we argued in favor of defining the frontier as it was in 1481, before the beginning of the Granada war and the conquest of Granada itself. We thus ensure that the control group, to which the Castilian part of Andalusia (forming the treatment group) is compared, does not contain municipalities that have ever been treated (i.e., exposed to the frontier treatment at some point in time). Nevertheless, Appendix I checks for the robustness of our baseline results to 1) controlling for those municipalities that were subjected to treatment for a shorter period, i.e., those conquered during the fourteenth and fifteenth century, respectively, 2) including the duration of the frontier treatment, and 3) redefining the frontier circa 1300 and circa 1400. It is remarkable that none of these sensitivity checks alters our baseline findings. Interestingly, the coefficient on the duration variable (which measures whether the duration of the frontier treatment changes the impact on the outcomes) is statistically insignificant. This indicates that what matters is to have ever been part of the Castilian side of Andalusia, rather than the years under the frontier treatment.

Appendix J provides further robustness checks, such as the use of distance to Seville as an alternative forcing variable and of alternative bandwidths of 40 and 60 kilometers, controlling for municipality size and transportation costs measured through distance to roads in the eighteenth century and distance to the capital city of the respective province, as well as removing the westernmost segment that covers the area near the Gibraltar Strait which exhibited high instability (particularly during the second half of the thirteenth century due to Beni Merin incursions). It is worth noting that they all corroborate our baseline findings.

Another potential concern with the findings presented so far is that rather than capturing a genuine effect of the frontier of Granada, they might only reflect structural differences in the northwest-southeast dimension. To dismiss this possibility, we apply a falsification test that consists in moving the frontier 50 kilometers northwestward, that is, inland. In this way, we again divide Andalusia into two parts, but this time with a spurious frontier. We then check whether the new "frontier" has any effect on the dependent variables. The results provided in Appendix K show that this placebo frontier does not generate statistically significant differences between municipalities located on both sides of the frontier.[30]

[30] Appendix K also contains a map with the location of this spurious frontier. In addition, we show that very similar results are obtained when moving the frontier 50 kilometers northward.

To further examine the possibility that our results might simply be due to chance, we conduct a more systematic falsification test consisting in drawing 1,000 random placebo borders.[31] Then we run our baseline RD specifications with these placebo frontiers and compare the coefficients obtained from this exercise with the "true" coefficients reported in Panels B, C and D of Table 3. As suggested by Abadie, Diamond and Hainmueller (2015), placebo studies constitute an alternative way to analyze the significance of the results. Applied to our case study, the confidence in our findings about the effect of the frontier would be undermined if we frequently find effects of similar or greater magnitudes using placebo borders. Appendix L provides a figure plotting the cumulative distributions of coefficients from this placebo exercise for the specifications with a polynomial in the geographic coordinates, distance to frontier and distance to Madrid. The vertical lines indicate the value of the Castilian dummy in our baseline RD estimations. In all cases but two the "true" effect is higher than the 95% of the placebo effects. Taking the average of the 15 distributions, the likelihood of obtaining an estimate greater than or equal to the one obtained for the real frontier is lower than 5%. This makes us confident that our findings are not due to chance, but to the distinct influence that the frontier of Granada has exerted on political and economic inequality in Andalusia.

5.5 Discussion

The evidence suggests that the frontier of Granada led to a high concentration of economic and political power on the Castilian side, and that this effect has persisted down to the present day. Another possible interpretation of our findings could be that the Muslim Kingdom of Granada was particularly egalitarian, and that the social structure of this region endured over time, thus failing to converge with the remainder of Andalusia and Castile. However, this interpretation does not match the historical facts and empirical evidence. The social order in the Nasrid Kingdom of Granada was no more equal than in other Muslim kingdoms in al-Andalus prior to their conquest. According to Lévi-Provençal (1932) and Brenan (1950), the greater part of the land in eleventh and twelfth-century al-Andalus belonged either to the state or to small peasant farmers. State lands normally had the best soil, and were cultivated by serfs who handed over two-thirds of their crop to the state, with private settlers having to deliver an even higher proportion. According to Brenan (1950, p. 127), in

[31] More specifically, we draw frontiers between latitudes 37°N and 38°N. For each centesimal fraction of a longitude degree we generate a latitude coordinate following a random walk process. Municipalities are then assigned to the placebo treatment group if their centroids are to the north of the randomly drawn frontier. Given the novelty of this falsification exercise, Appendix L provides the details about how we operationalize it.

al-Andalus "nothing was permitted to infringe upon the powers of the central government."[32] This was indeed the case with the Sultan of the Nasrid Kingdom of Granada, who had absolute power over his subjects. This power was reflected in a complex tax system fully controlled by the state that taxed heavily the Nasrid population (Arié, 1992; Viguera Molins, 1995; Molina-López, 2002).[33] In order to control tax collection, the Nasrid territory was divided into large jurisdictional areas (that were considered as administrative and fiscal units) in which state agents operated. The local powers controlling these units were not autonomous and depended entirely on the Sultan (Ladero Quesada, 1989). Not surprisingly, the maximum beneficiary of the Nasrid tributary system was the Sultan and his family, whose personal wealth in terms of land, fortresses and palaces was very high (Viguera Molins, 2000; Molina-López, 2002).[34]

Importantly, the *Reconquista* changed the kind of society and power relations encountered by the Kingdom of Castile upon the conquest of Granada. This was particularly the case after the forced conversion of the Muslim population in 1501, by which the Capitulations of Granada were unilaterally declared to be null. Conversion not only brought about the suppression of the legal, fiscal and religious status of the Muslim population, but also the replacement of their political institutions by the legal-administrative order of the rest of Castile (Pérez Boyero, 2002). The new fiscal system simplified the Nasrid system and was based on the *diezmo* and *alcabala*, which were levied mainly on the *Morisco* population.[35] In addition, the Catholic Monarchs implemented a policy of fragmenting the former Nasrid jurisdictions, some of which were granted as lordships to nobles. According to Pérez Boyero (2002), this served as an instrument for breaking the sociopolitical organization of the Muslim population, which ensured their control. The Crown articulated the social organization and power relations around major urban centers in which the feudal legal-administrative apparatus prevalent in the rest of Castile was implanted. The main positions in the town councils (*regidores* and *jurados*) were elected directly by the Crown among the influential groups, eventually becoming part of the elites' patrimony. The exploitation of the *Morisco* population and its general rejection by the old Christians resulted in a great revolt and the final expulsion of about 100,000 *Moriscos* in 1570. With this event, economic equilibrium and fiscal

[32] This accords with Blaydes and Chaney (2013), who provide evidence of the high concentration of power in the hands of Muslim sultans during the Middle Ages.
[33] According to Trillo San José (2002), religion was considered the key element of social cohesion and obedience to the central power, whose clear manifestation was the payment of taxes.
[34] According to Arié (1992), vast large estates in the hands of the Sultan were located in the most fertile part of the Granada's plain.
[35] Under the new feudal structure, the surplus would be appropriated by the lordships, whereas in the tributary society of Nasrid Granada it would be appropriated by the state (Trillo San José, 2002).

sufficiency in the former Kingdom of Granada came to a halt (Galán-Sánchez, 2012). The intensive agrarian system based on irrigated arboriculture and horticulture was fully replaced by the Castilian model of extensive agriculture based on cereal crops and cattle (Caro Baroja, 1957).

In sum, all these events show that the Nasrid socioeconomic and political apparatus was fully dismantled at the expense of a feudal structure controlled by the urban oligarchies and landowning nobility, who would progressively become the main social and political players of the newly conquered territory. However, a key difference in this case is that the new territory was not a frontier region (the frontier ceased to exist), and the dynamics affecting a frontier region did not therefore apply to it. Consequently, despite eventually converging to the Castilian feudal socioeconomic and political structure, society did not evolve toward such high levels of inequality, as in the case of the other part of Andalusia. It then becomes apparent that the existence of a frontier played a key role in generating such high levels of political and economic inequality on the Castilian side. In this regard, it is important to note that it was the frontier region of Andalusia that recorded particularly high levels of inequality relative to the rest of Castile, and not that the Kingdom of Granada was particularly egalitarian. The 1787 census indicates that the Castilian part of Andalusia had the highest percentage in Spain of landless workers in terms of overall agricultural population (87.4%), much higher than the Castilian average (51%), while the former Kingdom of Granada also had a relatively high percentage (72%).

6 Spatial RDD Using Microdata

We next complement the above results obtained for measures of land concentration at municipal level with an analysis conducted with microdata from the 1982 agricultural census, which provides us with almost 129,000 observations of agricultural holdings located within 25 kilometers of the frontier. The two variables used are the size of the respective landholding measured by its UAA, and a dummy variable indicating whether the agricultural holding is greater than or equal to 200 hectares in terms of UAA. In both cases, we consider only private agricultural holdings (owned by private individuals or legal entities). In order to compare the two sides of the frontier (using microdata) in a meaningful way, individual observations are weighted by the total size of the holding given by its total surface area. Therefore, in those specifications that use as dependent variable the large estate dummy, the coefficient on the Castilian dummy represents the difference in the percentage of agricultural area belonging to large estates on each side of the border. In other words, it indicates the difference in the probability of being part of a large estate for a randomly selected hectare of land. Note that what matters is not the number of large estates in absolute terms, but the area occupied by

large estates.[36] A similar reasoning applies when the dependent variable is a holding's utilized agricultural area. In this case, the coefficient on the Castilian dummy represents the expected difference in landholding size for a randomly selected hectare of land.

Table 5 presents the results for quadratic polynomials in latitude and longitude, as well as in distance to the frontier and to Madrid. Columns 1 and 2 control for boundary fixed effects. Columns 3 and 4 incorporate a set of individual controls that includes the variable "company", indicating whether the holding is managed by a legal entity rather than by a private individual, "the ratio of utilized agricultural area to total surface area" as an indirect measure of land quality –since it represents the percentage of the landholding area that is usable–, "pastureland" reflecting whether the holding has no arable land, and a set of dummies indicating the type of tenure system at micro level. To this set of individual controls, columns 5 and 6 incorporate the set of municipality-level geographic and climatic controls, and columns 7 and 8 also add the measures of pre-Christian land uses in al-Andalus. Standard errors are clustered at municipal level. As shown in Table 5, the coefficients on both utilized agricultural area and the large estate dummy are positive and highly significant across different specifications. Taking the coefficients in Panel B, columns 7 and 8, we find that the Castilian part of Andalusia has landholdings that are 148.4 ha bigger and 11% more surface area in large estates than the former Kingdom of Granada. This again supports a higher concentration of land on the Castilian side of the frontier.

[Insert Table 5 about here]

7. The Effect of the Frontier on Contemporary Outcomes

The general thrust of Acemoglu and Robinson's work is that political and economic inequality is harmful to development. Given the above results regarding the persistent effect that the presence of a stable frontier between Castile and the former Kingdom of Granada had on inequality, this constitutes an opportunity for testing the empirical validity of Acemoglu and Robinson's hypothesis within the context of the frontier of Granada. The line of argument is that the frontier of Granada created a high level of inequality, which persisted over time, thus inhibiting long-term development.

This is operationalized empirically via a two-stage least squares (2SLS) analysis. In a first stage, we try to explain historical inequality on the basis of the frontier dummy as follows:

[36] See Appendix M for an example illustrating this, and the results of the RDD without weighting by the total size of the holding, which appear to confirm the existence of a statistically significant frontier effect.

$$historical\_inequality_i = \gamma_0 + \gamma_1 \cdot Castilian\_Andalusia_i + X_i'\beta + \varepsilon_i \quad (3)$$

where $historical\_inequality_i$ is our preferred proxy for historical inequality given by the percentage of landless workers in the eighteenth century,[37] $Castilian\_Andalusia_i$ and X_i are as described in Equation 1. In a second stage, several current development outcomes are regressed on the predicted value of historical inequality and the set of exogenous controls, such that:

$$current\_outcomes_i = \delta_0 + \delta_1 \cdot historical\_inequality_i + X_i'\varphi + \nu_i \quad (4)$$

where $current\_outcomes_i$ represent several contemporary outcomes linked to economic development such as a municipality's average socieconomic condition, the ratio of cars to population, the education level of the population between 30 and 39 years, the percentage of labor force employed in industry and services, and long-term population growth over the 1950-2010 period. In addition, we employ two measures of current political power concentration: the number of changes in the political party at the local government level affecting the election of the mayor, and the number of political parties that have controlled the town council since 1979 (with a higher value implying greater political competition and alternation). We also use the level of local public debt with financial entities per capita in 2008, with a lower value indicating a more responsible fiscal management and in turn higher institutional quality. Finally, we use the number of immigrants per 1,000 inhabitants. According to the theoretical setting of regional development in Gennaioli et al. (2013, 2014), more dynamic and prosperous regions tend to receive more immigrants and only the most skilled workers choose to migrate.[38]

At this point, it is important to mention that the purpose of this analysis is only to determine whether historically rooted inequality has had an adverse effect on current development outcomes. However, it is not our intention to show that the frontier of Granada is uncorrelated with any determinants of current development, other than historical inequality. In other words, we acknowledge that the exclusion restriction that, –conditional on the exogenous control set– the frontier of Granada affects current development only through its impact on political and economic inequality, is likely to be violated. In statistical terms, $corr(Castilian\_Andalusia_i, v_i) \neq 0$. Therefore, the evidence in this section can be thought of as correlational, but not causal. Indeed, there could be other channels

[37] Note that similar results follow when we measure the extent of inequality through the percentage of UAA in holdings with 200 hectares or more in 1982. The results appear in Table A20 in Appendix N. We prefer to leave in the main text the results obtained with historical inequality, since the exclusion restriction is likely to be violated to a greater extent for current measures of inequality.

[38] For our municipalities sample, there is indeed a highly statistically significant and positive correlation between the immigration rate and the other outcome variables related to development.

through which the existence of the frontier may have affected current outcomes. They include the level of trust and social capital that could result from living in frontier areas usually subjected to war and incursions. Frontier warfare could also affect the preservation of agricultural technologies and irrigation infrastructure, and it is possible that on the Castilian side they were more severely destroyed. Since there are no historical data at municipal level to account for all these potential channels, we focus on the inequality channel, but bearing in mind that the frontier of Granada is likely to affect contemporary development outcomes also through other channels.

The 2SLS analysis, reported in Table 6 for the nine contemporary development outcomes considered, provides clear-cut evidence that in the first stage the frontier treatment increases historical inequality on the Castilian side, as measured by the percentage of landless workers in 1787. In the second stage, the part of historical inequality that is due to the frontier has a highly significant negative effect on contemporary economic development (as measured by average socioeconomic condition, cars per capita, education level of the population between 30 and 39 years, percentage of employment in industry and services, long-term population growth and the immigration rate) and on our measures of political competition, as well as a positive effect on local public debt per capita, which indicates lower institutional quality. It is worth noting that the first stage appears strong across the different specifications of the polynomials in geographic location,[39] whereas the second stage's key coefficient appears highly significant for the specifications with no polynomial and those with single-dimensional polynomials in distance either to the frontier or to Madrid.

To have an idea of the magnitudes of the effect, the bottom row of Table 6 provides the average value of each outcome variable. For instance, column 4 of Panel C indicates that a 1% rise in the part of the percentage of landless workers that is due to the frontier is associated with a 0.65% decline in the share of employment in industry and services. In addition, column 9 indicates that a 1% increase in the part of historical inequality that is due to the frontier is associated with a 0.84% fall in the average immigration rate over the 1988-2014 period. Economically relevant effects are also found for the other contemporary outcomes.[40] Thus, we can conclude that there is evidence

[39] The first-stage F-statistic generally exceeds the "rule-of-thumb" value of 10 (Staiger and Stock, 1997), which in a pure instrumental variables framework would indicate the absence of a weak-instrument problem.

[40] Table A21 in Appendix N contains the results from a 2SLS exercise in which the frontier dummy is used to predict historical inequality in the first stage, and then current inequality measures are regressed on the predicted value of historical inequality, in both stages controlling for the baseline control set. As expected, there is correlational evidence to support the existence of an adverse effect of the frontier on historical inequality, which has persisted over time right through to the twentieth century. Appendix N also contains Table A22 that presents the estimates of the reduced-form

favoring the empirical validity of Acemoglu and Robinson's hypothesis that structural inequality caused by arguably exogenous events (in our case the presence of a frontier) inhibits long-term development.

[Insert Table 6 about here]

8. Conclusions

This paper has explored the political economy that leads frontier regions to be unequal. We establish the hypothesis that, in the presence of a military threat, frontiers must be defended and this fact biases the political equilibrium in favor of the military elite, which ends up accumulating an enormous amount of economic and political power. We empirically test this hypothesis by exploiting the existence of a frontier between Castile and the Nasrid Kingdom of Granada in the late Middle Ages. Through the application of a border specification and a spatial RDD, we find that municipalities on the Castilian side have a significantly higher percentage of landless workers, a greater accumulation of wealth, and more jurisdictional rights among the privileged orders, as measured in the eighteenth century. These findings support the argument that the dynamics of being an insecure frontier region created the conditions on the Castilian side for a high concentration of power. We use current indicators of land inequality and development to show that the effect of the frontier of Granada persists even today.

These results are robust to controlling for a large number of observable characteristics, employing a border specification or a semiparametric spatial RDD, and using microdata for a sample of almost 129,000 holdings. The results are also robust to a series of falsification tests checking for differences in climatic, geographic, and pre-existing conditions across the two sides of the frontier as well as to a series of falsification tests consisting in either drawing 1,000 random placebo borders or moving the true frontier northwestward and northward.

The hypothesis introduced in this paper is consistent with the "conditional frontier thesis" proposed by García-Jimeno and Robinson (2011), since the negative consequences of the frontier were due to a political equilibrium characterized by a high concentration of political power in the hands of the privileged orders (particularly the nobility). As documented above, the fact it was an insecure frontier region led to a balance of power that clearly favored the nobles' interests. The consequences of the frontier decisively affected the repopulation and social organization of the Castilian part of Andalusia and, in this way, the future of this Spanish region. In conclusion, this article has

effect of the frontier of Granada on contemporary development outcomes. Again, the evidence indicates that the existence of the frontier exerts a statistically significant negative effect on current outcomes.

contributed to the still very scarce and novel literature on the political-economic effects of historical frontiers. It has also contributed to the vibrant literature that seeks to explain the development paths of societies on the basis of historical events occurring in the distant past, as well as to answer the question of why Andalusia has suffered such a high level of inequality throughout its modern history.

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TABLE 1. THE FRONTIER OF GRANADA: ANALYSIS OF MEAN DIFFERENCES

	Whole sample			Within 50 km of the Frontier			Within 25 km of the Frontier		
	Castilian part of Andalusia	Former Kingdom of Granada	Mean difference	Castilian part of Andalusia	Former Kingdom of Granada	Mean difference	Castilian part of Andalusia	Former Kingdom of Granada	Mean difference
	Mean values			Mean values			Mean values		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Land and political power concentration in the 18th century									
Percentage of landless workers	75.575 *403*	68.925 *348*	6.65** (3.241)	78.648 *172*	71.173 *210*	7.474** (3.621)	80.142 *87*	71.327 *115*	8.815** (3.917)
Mayor Hacendado/ surface	1558.268 *309*	674.068 *319*	884.2** (415.857)	1639.222 *117*	876.943 *197*	762.279* (444.846)	1643.889 *51*	724.937 *105*	918.952 (584.186)
Privileged Orders jurisdiction	0.651 *413*	0.425 *358*	0.227*** (0.085)	0.733 *176*	0.419 *215*	0.314*** (0.104)	0.722 *90*	0.415 *118*	0.307*** (0.103)
Panel B: Land concentration in 1982									
Land concentration in holdings ≥ 200ha	23.07 *412*	6.297 *357*	16.773*** (2.746)	19.183 *176*	8.842 *215*	10.341** (4.338)	19.299 *90*	10.251 *118*	9.049** (4.325)
Gini index of land distribution	70.773 *412*	59.491 *357*	11.282*** (1.567)	68.655 *176*	62.027 *215*	6.628*** (1.794)	67.064 *90*	62.253 *118*	4.811** (2.115)

Notes: Variables descriptions are provided in Table A1. The number of observations is in italics. Standard errors corrected for spatial dependence are in parentheses. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

TABLE 2. GEOGRAPHIC, CLIMATIC AND PREEXISTING DIFFERENCES ON BOTH SIDES OF THE FRONTIER

	Castilian part of Andalusia	Former Kingdom of Granada	Mean difference
	Mean values		
Panel A: Differences in geography and climate			
Altitude	622.65	690.47	-67.819
			(92.691)
Ruggedness	152.95	146.78	6.169
			(40.769)
Surface area with a steep slope (%)	43.35	49.80	-6.445
			(12.835)
Coast dummy	0.03	0.04	-0.009
			(0.027)
Rainfall	783.81	780.28	3.533
			(112.022)
Temperature	14.84	14.41	0.433
			(0.399)
Aridity	0.53	0.52	0.017
			(0.039)
Mediterranean phytoclimate (%)	96.19	98.09	-1.895
			(2.714)
Panel B: Differences in soil quality			
Soil quality	1.78	1.65	0.131
			(0.229)
Moderate or high erodibility (% surface area)	76.30	80.95	-4.650
			(6.981)
Low topsoil carbon (% surface area)	81.45	86.66	-5.211
			(7.744)
Fine soil texture (% surface area)	49.04	46.60	2.440
			(8.837)
Arable land (% surface area)	55.90	54.33	1.565
			(10.162)
Crops (% surface area)	23.63	28.07	-4.435
			(11.171)
Panel C: Differences in preexisting conditions			
Presence of Roman roads	0.34	0.25	0.099
			(0.078)
Distance to urban centers in 1200	51.21	46.02	5.196
			(6.959)
Distance to urban centers in 1400	41.65	39.87	1.779
			(6.361)
Forest (% surface area, in the 10^{th}-12^{th} centuries)	7.33	4.51	2.818
			(4.509)
Pastureland (% surface area, in the 10^{th}-12^{th} centuries)	22.92	18.84	4.087
			(4.845)
Intensive agriculture and irrigation (% surface area, in the 10^{th}-12^{th} centuries)	1.66	4.13	-2.466
			(1.598)
Non-intensive agriculture (% surface area, in the 10^{th}-12^{th} centuries)	16.69	20.78	-4.083
			(3.493)
Number of observations	90	118	208

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Standard errors corrected for spatial dependence are in parentheses. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

TABLE 3. THE EFFECT OF THE FRONTIER OF GRANADA ON INEQUALITY: SPATIAL RDD

	Land and political power concentration in the 18th century			Land concentration in 1982	
Dependent variable	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: OLS-Border specification					
Castilian part of Andalusia	10.788	1025.383	0.258	9.707	4.598
	(2.888)***	(312.572)***	(0.071)***	(2.61)***	(1.533)***
	[2.744]***	[325.022]***	[0.106]**	[2.376]***	[1.06]***
R^2	0.26	0.37	0.22	0.29	0.21
Panel B: Quadratic polynomial in latitude and longitude					
Castilian part of Andalusia	9.552	1035.264	0.061	12.149	4.719
	(3.36)***	(389.623)***	(0.11)	(4.311)***	(2.185)**
	[3.578]***	[250.194]***	[0.159]	[3.751]***	[1.974]**
R^2	0.31	0.42	0.29	0.35	0.25
Panel C: Quadratic polynomial in distance to the Frontier					
Castilian part of Andalusia	10.523	1104.757	0.245	9.463	4.348
	(2.838)***	(320.537)***	(0.07)***	(2.666)***	(1.518)***
	[2.529]***	[345.112]***	[0.103]**	[2.372]***	[0.986]***
R^2	0.26	0.38	0.24	0.29	0.22
Panel D: Quadratic polynomial in distance to Madrid					
Castilian part of Andalusia	15.119	1381.763	0.215	11.910	5.121
	(3.134)***	(353.718)***	(0.086)**	(3.182)***	(1.819)***
	[2.607]***	[316.83]***	[0.16]	[2.652]***	[1.149]***
R^2	0.29	0.39	0.23	0.31	0.22
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	202	156	208	208	208

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. The set of geographic-climatic controls includes altitude, ruggedness, soil quality, rainfall, temperature and a coast dummy. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

TABLE 4. SPECIFICATION TESTS

Dependent variable	Land and political power concentration in the 18th century			Land concentration in 1982	
	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: Linear polynomial in latitude and longitude					
Castilian part of Andalusia	9.148	1162.491	0.031	12.098	3.394
	(3.171)***	(497.23)**	(0.1)	(4.556)***	(2.003)*
	[3.455]***	[337.728]***	[0.137]	[4.926]**	[1.838]*
R^2	0.29	0.39	0.26	0.3	0.22
Panel B: Linear polynomial in distance to the Frontier					
Castilian part of Andalusia	10.540	1102.671	0.245	9.461	4.348
	(2.833)***	(321.643)***	(0.071)***	(2.661)***	(1.511)***
	[2.519]***	[347.081]***	[0.102]**	[2.397]***	[0.973]***
R^2	0.26	0.38	0.23	0.29	0.22
Panel C: Linear polynomial in distance to Madrid					
Castilian part of Andalusia	13.310	1365.859	0.206	12.901	4.853
	(3.048)***	(369.804)***	(0.083)**	(3.37)***	(1.76)***
	[2.713]***	[286.887]***	[0.152]	[3.152]***	[1.023]***
R^2	0.27	0.39	0.23	0.3	0.21
Panel D: Cubic polynomial in latitude and longitude					
Castilian part of Andalusia	9.441	1136.215	0.060	9.519	3.346
	(3.405)***	(391.143)***	(0.116)	(4.26)**	(2.207)
	[3.73]**	[348.083]***	[0.227]	[4.263]**	[2.968]
R^2	0.31	0.46	0.32	0.36	0.26
Panel E: Cubic polynomial in distance to the Frontier					
Castilian part of Andalusia	10.571	1096.695	0.249	9.453	4.216
	(2.814)***	(319.741)***	(0.07)***	(2.679)***	(1.507)***
	[2.473]***	[346.411]***	[0.10]**	[2.301]***	[0.956]***
R^2	0.26	0.38	0.24	0.29	0.23
Panel F: Cubic polynomial in distance to Madrid					
Castilian part of Andalusia	14.252	1398.948	0.243	9.882	4.433
	(2.987)***	(356.857)***	(0.087)***	(3.231)***	(1.844)**
	[2.464]***	[327.573]***	[0.162]	[2.068]***	[1.065]***
R^2	0.29	0.39	0.23	0.33	0.22
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	202	156	208	208	208

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. The set of geographic-climatic controls includes altitude, ruggedness, soil quality, rainfall, temperature and a coast dummy. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

TABLE 5. SPATIAL REGRESSION DISCONTINUITY SPECIFICATIONS- MICRODATA FROM THE 1982 AGRICULTURAL CENSUS

			Individual controls		Geog.-climatic controls		Preexisting land uses (10^{th} to 12^{th} centuries)	
Dependent variable	Utilized agricultural area	Large estate dummy (≥ 200 ha)	Utilized agricultural area	Large estate dummy (≥ 200 ha)	Utilized agricultural area	Large estate dummy (≥ 200 ha)	Utilized agricultural area	Large estate dummy (≥ 200 ha)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: OLS-Border specification								
Castilian part of Andalusia	101.043***	0.108***	77.318***	0.085***	67.923***	0.089***	69.649***	0.087***
	(31.94)	(0.028)	(24.411)	(0.025)	(17.071)	(0.022)	(16.741)	(0.021)
R^2	0.10	0.06	0.25	0.12	0.26	0.14	0.26	0.14
Panel B: Quadratic polynomial in latitude and longitude								
Castilian part of Andalusia	208.231***	0.167***	164.703***	0.131***	151.829***	0.114***	148.358***	0.114***
	(78.58)	(0.052)	(51.475)	(0.043)	(44.998)	(0.034)	(46.879)	(0.034)
R^2	0.16	0.09	0.28	0.15	0.31	0.16	0.32	0.16
Panel C: Quadratic polynomial in distance to the Frontier								
Castilian part of Andalusia	90.842***	0.098***	69.048***	0.077***	65.03***	0.087***	67.297***	0.085***
	(26.985)	(0.025)	(21.349)	(0.023)	(15.915)	(0.02)	(15.789)	(0.019)
R^2	0.11	0.08	0.26	0.13	0.26	0.14	0.27	0.15
Panel D: Quadratic polynomial in distance to Madrid								
Castilian part of Andalusia	129.053***	0.137***	92.224***	0.100***	107.701***	0.111***	108.079***	0.126***
	(38.655)	(0.034)	(28.83)	(0.03)	(23.963)	(0.026)	(25.107)	(0.027)
R^2	0.15	0.07	0.27	0.13	0.31	0.15	0.31	0.15
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	No	No	No	No	Yes	Yes	Yes	Yes
Preexisting land uses	No	No	No	No	No	No	Yes	Yes
Number of clusters	203	203	203	203	203	203	203	203
Number of observations	128,628	128,628	128,628	128,628	128,628	128,628	128,628	128,628

Notes: The units of observation are private agricultural holdings (with legal status of natural person or company). Individual controls are "company" (whether the holding is managed by a company rather than by a natural person), "utilized agricultural area over total surface area (%)", "pastureland" (whether the holding does not have arable land), and a set of dummies indicating the type of tenure system. Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Regressions are weighted by holdings' total surface area. The specifications are estimated with a semiparametric RD approach. Robust standard errors clustered at the municipal level are in parentheses. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

TABLE 6. THE EFFECT OF THE FRONTIER ON CONTEMPORARY OUTCOMES: A 2SLS MODEL

Outcome variable →	Average socio-economic condition	Number of cars over population	Education level of population 30-39 years	Employment in industry and services (%)	Long-term population growth 1950-2010 (%)	Changes in the local government since 1979	Number of political parties that have controlled the town council	Local public debt per capita	Average immigration rate 1988-2014
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Without polynomial indicating geographic location									
2nd Stage: Percentage of landless workers in 1787	-0.003**	-0.004***	-0.006**	-0.621**	-2.517**	-0.062*	-0.042**	11.33**	-0.89***
	(0.001)	(0.001)	(0.003)	(0.26)	(1.071)	(0.033)	(0.018)	(4.469)	(0.252)
1st Stage: Castilian part of Andalusia	10.626***	10.626***	10.626***	10.626***	10.829***	10.788***	10.788***	10.626***	10.788***
	(2.891)	(2.891)	(2.891)	(2.891)	(3)	(2.888)	(2.888)	(2.891)	(2.888)
Partial-R^2 instrument	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
F-stat instrument	13.51	13.51	13.51	13.51	13.03	13.95	13.95	13.51	13.95
Panel B: Quadratic polynomial in latitude and longitude									
2nd Stage: Percentage of landless workers in 1787	-0.002	-0.001	-0.006	-0.207	-1.564	-0.072	-0.017	6.893	-0.665**
	(0.002)	(0.001)	(0.004)	(0.304)	(1.566)	(0.054)	(0.021)	(6.333)	(0.305)
1st Stage: Castilian part of Andalusia	9.306***	9.306***	9.306***	9.306***	8.559**	9.552***	9.552***	9.306***	9.552***
	(3.387)	(3.387)	(3.387)	(3.387)	(3.409)	(3.36)	(3.36)	(3.387)	(3.36)
Partial-R^2 instrument	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
F-stat instrument	7.55	7.55	7.55	7.55	6.30	8.08	8.08	7.55	8.08
Panel C: Quadratic polynomial in distance to the Frontier									
2nd Stage: Percentage of landless workers in 1787	-0.003**	-0.004***	-0.007**	-0.651**	-2.324**	-0.071**	-0.045**	12.004**	-0.84***
	(0.001)	(0.001)	(0.003)	(0.268)	(1.015)	(0.035)	(0.019)	(4.669)	(0.248)
1st Stage: Castilian part of Andalusia	10.375***	10.375***	10.375***	10.375***	10.507***	10.523***	10.523***	10.375***	10.523***
	(2.843)	(2.843)	(2.843)	(2.843)	(2.948)	(2.838)	(2.838)	(2.843)	(2.838)
Partial-R^2 instrument	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
F-stat instrument	13.31	13.31	13.31	13.31	12.70	13.75	13.75	13.31	13.75
Panel D: Quadratic polynomial in distance to Madrid									
2nd Stage: Percentage of landless workers in 1787	-0.002*	-0.002***	-0.004**	-0.229	-2.229***	-0.051*	-0.023*	3.615	-0.689***
	(0.001)	(0.001)	(0.002)	(0.176)	(0.854)	(0.027)	(0.012)	(2.815)	(0.171)
1st Stage: Castilian part of Andalusia	14.952***	14.952***	14.952***	14.952***	14.587***	15.119***	15.119***	14.952***	15.119***
	(3.141)	(3.141)	(3.141)	(3.141)	(3.156)	(3.134)	(3.134)	(3.141)	(3.134)
Partial-R^2 instrument	0.08	0.08	0.08	0.08	0.08	0.09	0.09	0.08	0.09
F-stat instrument	22.66	22.66	22.66	22.66	21.37	23.27	23.27	22.66	23.27
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	201	201	201	201	194	202	202	201	202
Average value of the outcome variable	0.76	0.29	2.41	75.68	-15.63	3.16	2.71	232.40	26.82

Notes: 2SLS regressions, in which the left-hand side variable is the percentage of landless workers in 1787 in the first stage, and as indicated in the headings in the second stage. The coefficients on the relevant variables in each stage are shown in the entries. Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. The set of geographic-climatic controls includes altitude, ruggedness, soil quality, rainfall, temperature and a coast dummy. Robust standard errors are in parentheses. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

TABLE A1 - DESCRIPTION OF VARIABLES

Variable	Description	Source
Dependent variables		
Gini index of land distribution	The Gini index of utilized agricultural area (UAA) in 1982. We focus on private agricultural holdings (with legal status of natural person or company), which represent 95% of total UAA. This variable is multiplied by 100 so that values range from 0 to 100.	Authors' elaboration using the 1982 agricultural census (Instituto Nacional de Estadística –INE–, 1982).
Land concentration in holdings ≥ 200ha	Percentage of UAA in holdings equal to or greater than 200 hectares of UAA, in 1982. We focus on private agricultural holdings (with legal status of natural person or company), which represent 95% of total UAA.	Authors' elaboration using the 1982 agricultural census (INE, 1982).
Mayor Hacendado/Surface	Total amount of income earned by the individual that in each municipality earns the highest income in the middle of the 18th century (between 1750 and 1753), divided by the surface area of the municipality.	*Catastro de Ensenada* -Books of *El Mayor Hacendado* (1750-1753).
Privileged Orders jurisdiction	Dummy variable indicating whether the jurisdiction of the municipality at the end of the 18th century (1787) belonged to the nobility, the military orders or the Church.	Authors' elaboration using the 1787 population census (INE, 1987).
Percentage of landless workers	Percentage of landless workers over the total active agricultural population in 1787, where the total agricultural population is composed of farmers and landless day laborers.	Authors' elaboration using the 1787 population census (INE, 1987).
Independent variables		
Altitude	Average altitude in meters, computed using GIS software.	Authors' elaboration using geo-referenced data from Hijmans et al. (2005).
Arable land (% surface area)	Percentage of arable land over the total surface area, corresponding to the 1982 agricultural census.	Instituto de Estadística y Cartografía de Andalucía –IECA– (2014b).
Aridity	Average aridity of the municipality surface area, corresponding to the period 1950-2000. The indicator ranges from 0 to 1, with higher values indicating more humid conditions. It is computed using GIS software.	Authors' elaboration using geo-referenced data Trabucco and Zomer (2009).
Castilian part of Andalusia	Dummy variable indicating whether the municipality belonged to the Castilian part of Andalusia.	Authors' elaboration using maps from Instituto de Cartografía de Andalucía (2009).
Coast dummy	Dummy variable indicating whether the municipality has access to the coast.	Authors' elaboration.
Conquered during the 14th Century/ Conquered during the 15th Century	Dummy variables indicating whether the municipality was conquered during the 14th Century, or during the 15th Century (prior to the beginning of the War of Granada [1481-1492]).	Mestre-Campi and Sabaté (1998), official web pages of municipalities, and the tourism website of the Andalusian Government (http://www.andalucia.org/).
Crops (% surface area)	Percentage of land devoted to herbaceous crops over the total surface area, corresponding to the 1982 agricultural census.	IECA (2014b).
Distance to the frontier	Linear distance between the centroid of the municipality and the closest point of the former Frontier of Granada (in meters), computed using GIS software. The frontier of Granada is defined as it was at the beginning of the War of Granada (1481-1492).	Authors' elaboration using maps from Instituto de Cartografía de Andalucía (2009).
Distance to Madrid	Linear distance between the centroid of the municipality and Madrid (in meters), computed using GIS software.	Authors' elaboration.
Distance to urban centers in 1200 and in 1400	Distance to urban centers in 1200 and 1400 (in kilometers), considering an urban center that having at least 5000 inhabitants at some time between 800 and 1800. It is computed using GIS software.	Authors' elaboration using information from Bairoch (1988).
Fine soil texture (% surface area)	Percentage of land for which the dominant surface textural class is fine (35 % < clay < 60 %), computed using GIS software.	Authors' elaboration using geo-referenced data from Panagos et a. (2012), Liedekerke et al. (2006) and Panagos (2006).
Latitude	Latitude (in decimal degrees) corresponding to the centroid of the municipality urban center.	Geographic Nomenclature of Municipalities and Local Population (IGN, 2012).

TABLE A1 - DESCRIPTION OF VARIABLES (Continued)

Variable	Description	Source
Longitude	Longitude (in decimal degrees) corresponding to the centroid of the municipality urban center.	Geographic Nomenclature of Municipalities and Local Population (IGN, 2012).
Low topsoil carbon (% surface area)	Percentage of area with low or very low topsoil carbon content, computed using GIS software.	Authors' elaboration using geo-referenced data from Panagos et a. (2012), Liedekerke et al. (2006) and Panagos (2006).
Preexisting land uses (10^{th} to 12^{th} centuries)	Four indicators indicating the percentage of surface area in each municipality made up of: i) forest, ii) intensive agriculture and irrigation, iii) non-intensive agriculture, and iv) pastureland, in al-Andalus times (10^{th} to 12^{th} centuries). It is computed using GIS software.	Authors' elaboration using maps from Instituto de Cartografía de Andalucía (2009).
Presence of Roman roads	Dummy variable indicating whether any Roman road passes through the municipality surface area, computed using GIS software.	Authors' elaboration using geo-referenced data from McCormick et al. (2013).
Rainfall	Annual precipitation. It is expressed in hundreds of millimeters, except in Table 2 where it is expressed in millimeters.	Authors' elaboration using geo-referenced data from IECA (2014a).
Ruggedness	Standard deviation of altitude in meters, computed using GIS software.	Authors' elaboration using geo-referenced data from Hijmans et al. (2005).
Soil quality	Indicator of soil quality calculated as: 4*(% surface area with excellent soil capacity) + 3*(% surface area with good soil capacity) + 2*(% surface area with moderate soil capacity) + 1*(% surface area with marginal soil capacity), with values ranging from 1 (low soil quality) to 4 (excellent soil quality). It is computed using GIS software.	Consejería de Medio Ambiente. Junta de Andalucía (1996).
Surface area with a steep slope (%)	Percentage of surface area with a steep slope (higher than or equal to 15 percent).	IECA (2014b).
Mediterranean phytoclimate (%)	Percentage of surface area corresponding to Mediterranean phytoclimate, which is related to specific potential types of vegetation such as Quercus ilex rotundifolia or Quercus ilex ilex. It is computed using GIS software.	Authors' elaboration using geo-referenced data from Allué (1990).
Moderate or high erodibility (% surface area)	Percentage of surface area with moderate or high erodibility, computed using GIS software.	Authors' elaboration using geo-referenced data from Panagos et a. (2012), Liedekerke et al. (2006) and Panagos (2006).
Temperature	Annual average temperature (in degrees Celsius).	Authors' elaboration using geo-referenced data from IECA (2014a).
Years under the frontier effect	Number of years between the conquest of the municipality by Castile and the beginning of the War of Granada (1481-1492). Municipalities conquered during the War of Granada have a value equal to 0.	Mestre-Campi and Sabaté (1998), official web pages of municipalities, and the tourism website of the Andalusian Government (http://www.andalucia.org/).
Contemporary outcomes indicators		
Average socioeconomic condition	Average of class marks of socioeconomic conditions of individuals, combining information from occupation, activity and professional situation. To illustrate the construction of this variable, a (maximum) class mark of 3 is given to non-agricultural entrepreneurs with employees, and a (minimun) class mark of 0 to those unemployed who have not worked previously. Year 2001.	Censos de Población y Viviendas, INE (2001).
Number of cars over population	Cars registered in the municipality over population. Year 2001.	IECA (2014b).
Education level of population 30-39 years	Average of class marks of the education level of individuals, with class marks ranging from 0 (illiterate) to 4.5 (PhD). Year 2001.	Censos de Población y Viviendas, INE (2001).
Employment in industry and services (%)	Percentage of workers in the industrial and service sectors over the total economy.	Censos de Población y Viviendas, INE (2001).

TABLE A1 - DESCRIPTION OF VARIABLES (Continued)

Variable	Description	Source
Long-term population growth 1950-2010	Population growth over the period 1950-2010.	1950 population census and 2010 municipal census, INE (ww.ine.es)
Changes in the local government since 1979	Number of changes (alternation) in the political party of the town mayor since the first local democratic elections in 1979 (until 2014).	Database of Mayors, Ministerio de Hacienda y Administraciones Públicas (2015a).
Number of political parties that have controlled the town council	Number of different political parties that have controlled the town council since the first local democratic elections in 1979 (until 2014).	Database of Mayors, Ministerio de Hacienda y Administraciones Públicas (2015a).
Local public debt per capita	Debt of the town council with financial entities divided by population. Year 2008 (first year of availability of data).	Debt of Local Authorities, Ministerio de Hacienda y Administraciones Públicas (2015b).
Average immigration rate 1988-2014	Average immigration rate during the period 1988-2014. Immigration rate is equal to the number of people entering the municipality each year per 1,000 inhabitants.	IECA (2014b).
Variables at the agricultural holding level		
Utilized agricultural area	UAA of the agricultural holding measured in hectares. We only consider private agricultural holdings (with legal status of natural person or company).	Authors' elaboration using the 1982 agricultural census (INE, 1982).
Large estate dummy (>= 200 ha)	Dummy variable indicating whether the agricultural holding is equal to or greater than 200 ha in UAA. We only consider private agricultural holdings (with legal status of natural person or company).	Authors' elaboration using the 1982 agricultural census (INE, 1982).
Individual controls	Individual controls are "company" (whether the holding is managed by a company rather than by a natural person), "utilized agricultural area over total surface area (%)", "pastureland" (whether the holding has no arable land), and a set of dummies indicating the type of tenure system.	Authors' elaboration using the 1982 agricultural census (INE, 1982).

Notes and additional references:

The basic layer with the administrative limits of the Andalusian municipalities, used in the variables computed with GIS software, comes from IECA (2014a).

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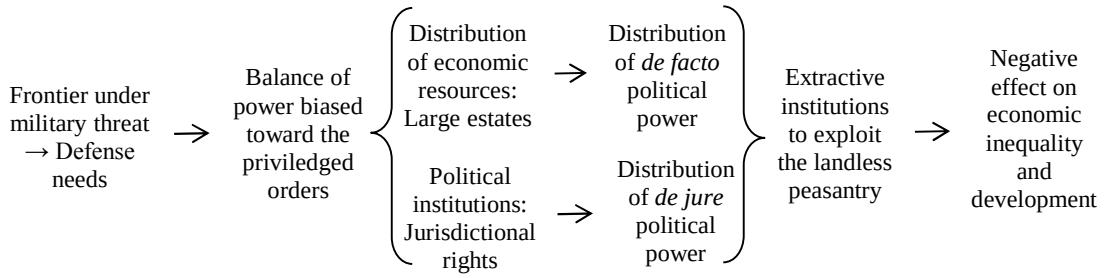


Figure 1. A sketch of the mechanisms at work

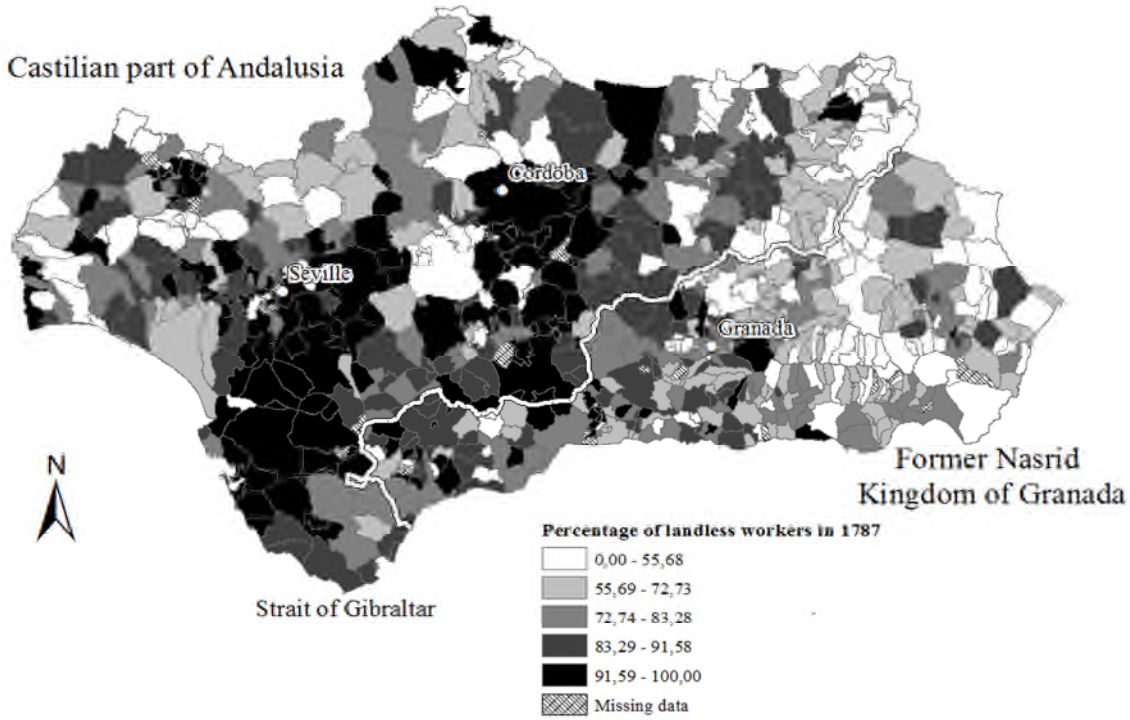


Figure 2. Andalusia, the frontier of Granada and the percentage of landless workers in 1787

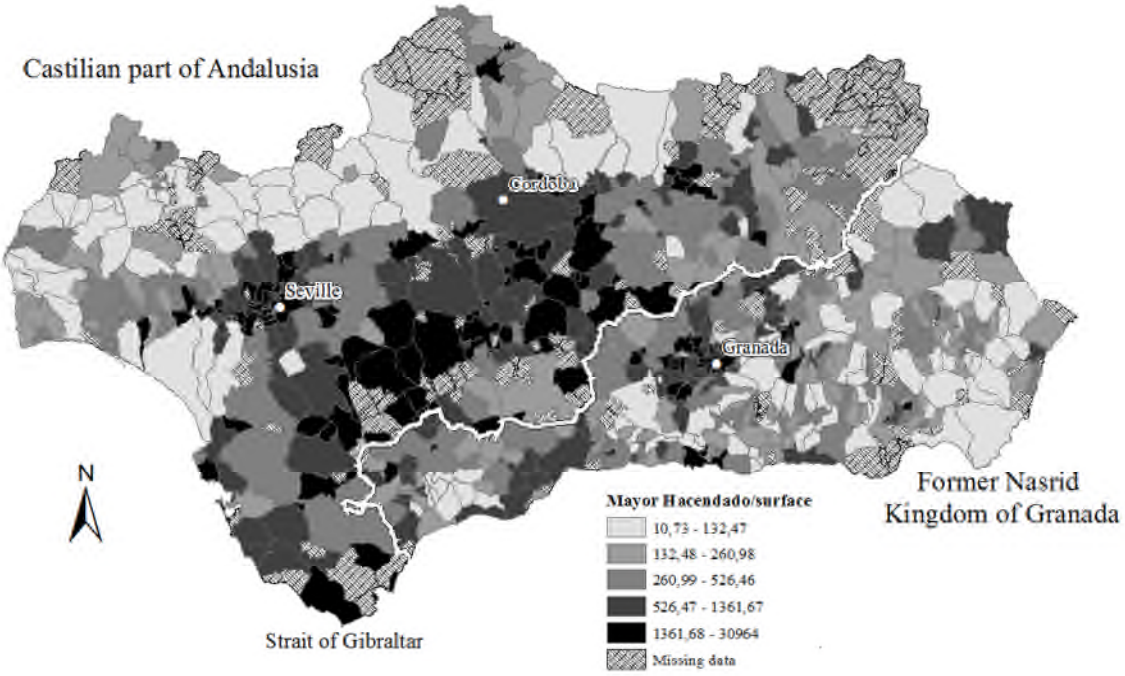


Figure 3. Andalusia, the frontier of Granada and "Mayor hacendado/surface" in the 1750s

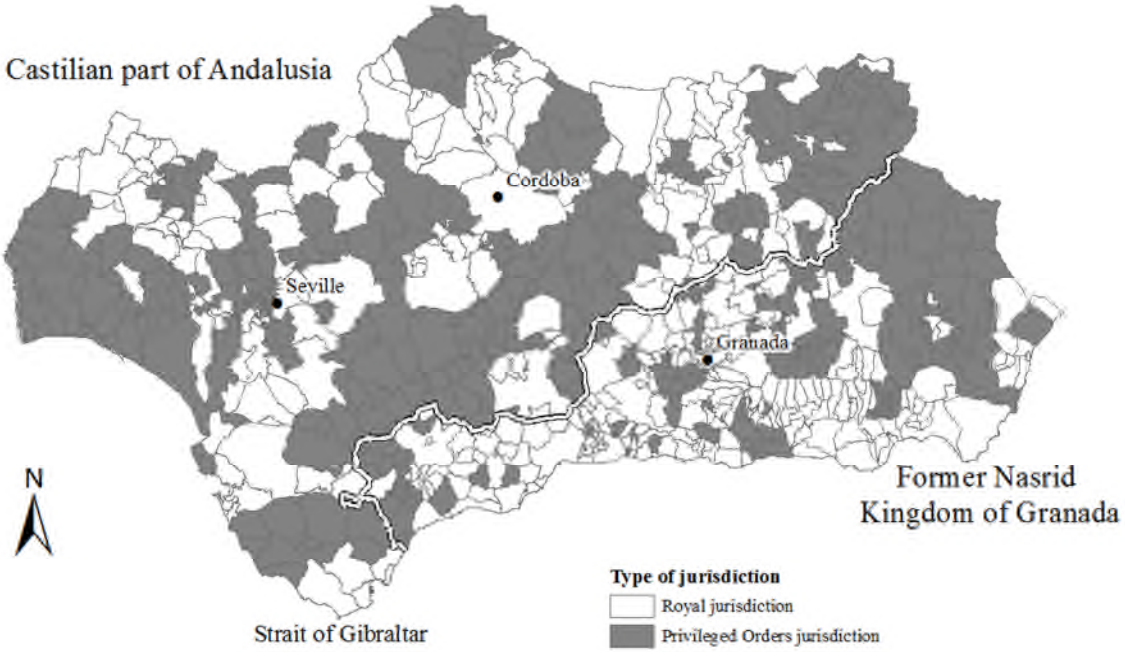


Figure 4. Andalusia, the frontier of Granada and Privileged Orders jurisdiction in 1787

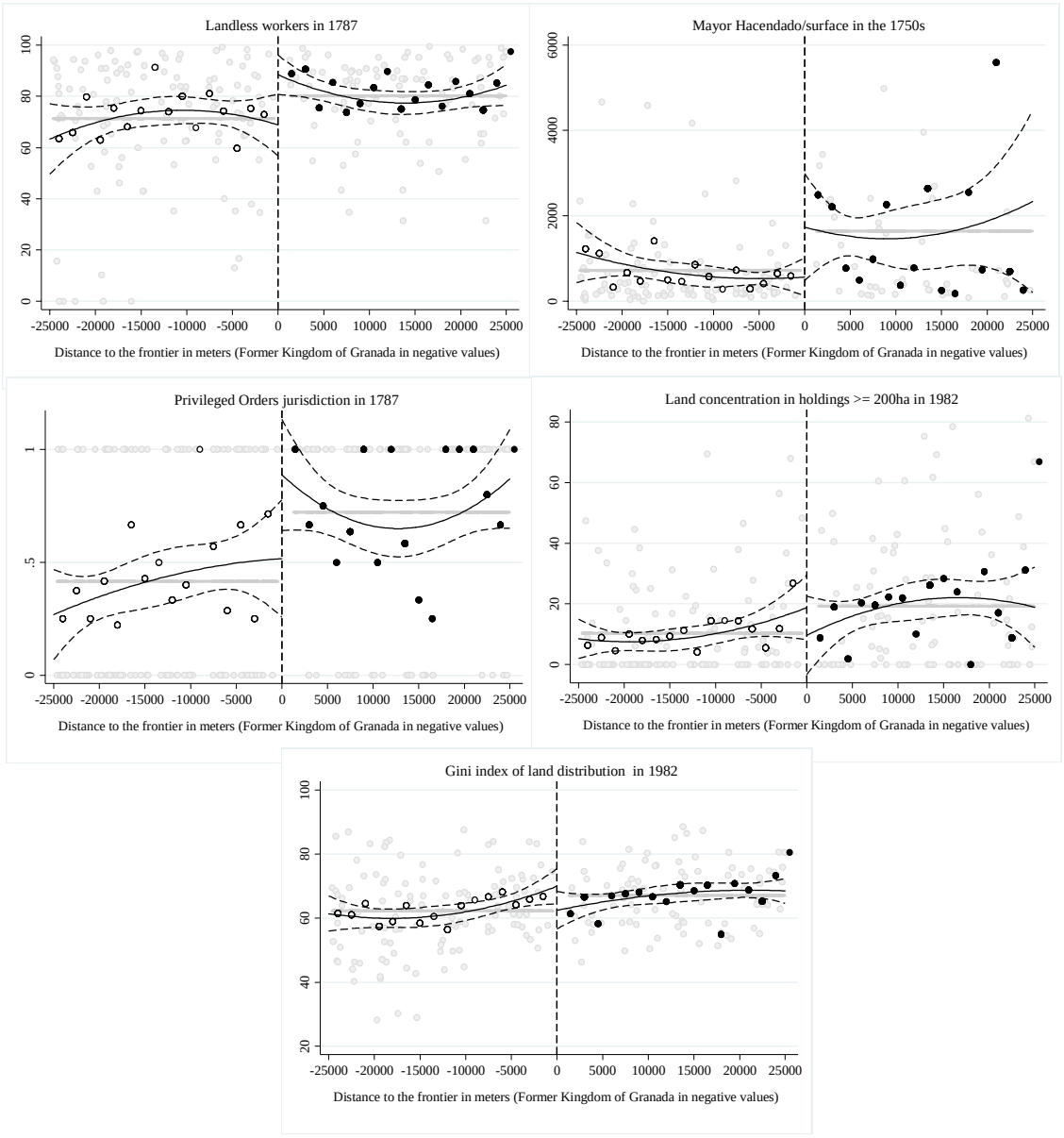
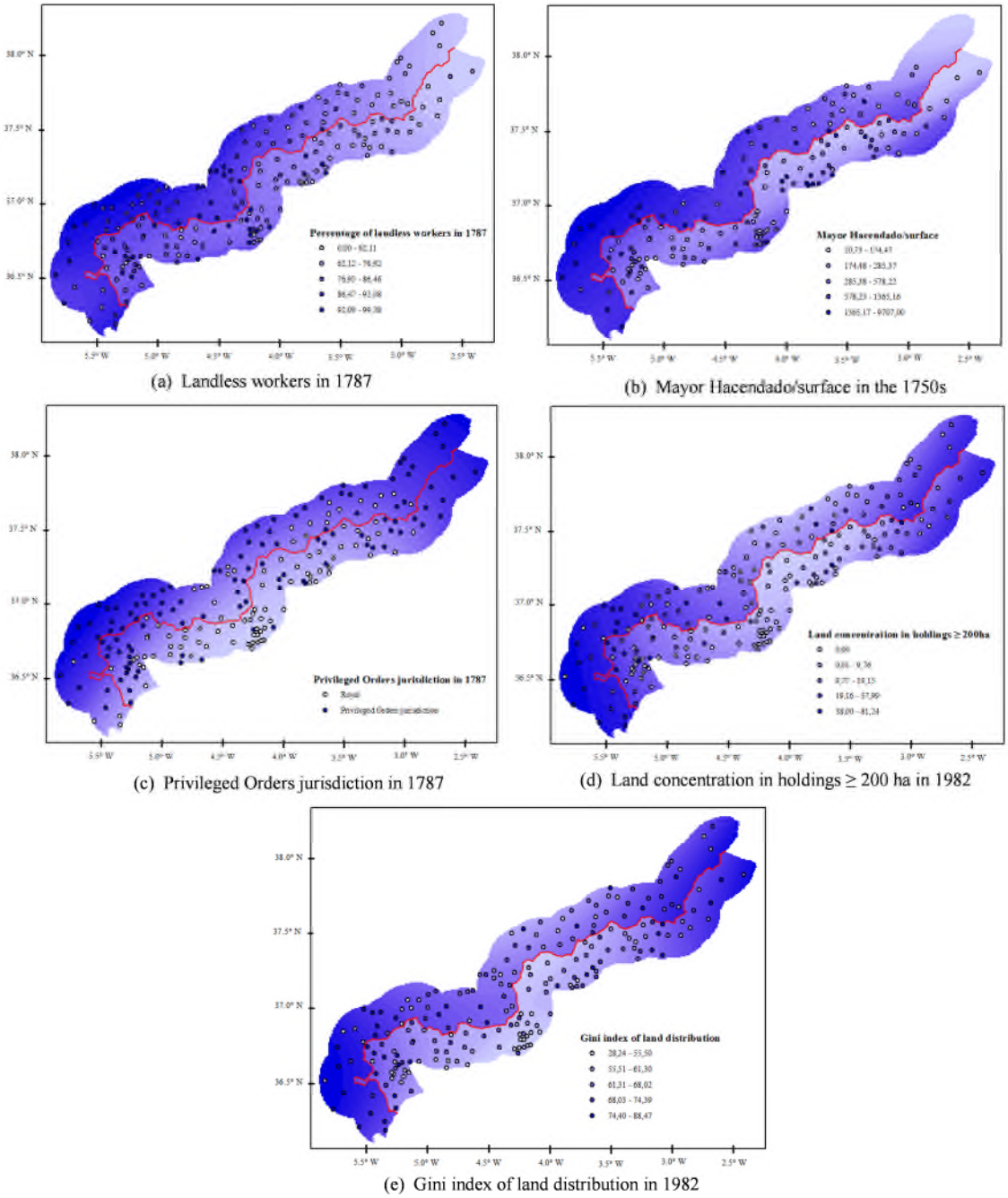


Figure 5. One-Dimensional RDD graphs in distance to the frontier

Notes: Black lines represent 90% confidence intervals for the quadratic polynomial in distance to the frontier. Gray lines indicate the global average value on each side of the frontier. Dots show the local average of the variable for municipalities in 1,5 km bins of their distance to the frontier. The actual values for each municipality are represented through light grey dots.



(a) Landless workers in 1787

(b) Mayor Hacendado/surface in the 1750s

(c) Privileged Orders jurisdiction in 1787

(d) Land concentration in holdings ≥ 200 ha in 1982

(e) Gini index of land distribution in 1982

Figure 6- Two-Dimensional RDD graphs in latitude and longitude

Notes: Dots represent the municipality values for the outcome variables, with each data point being located in the municipality centroid. The background color represents the predicted values for a 1-km grid, from a regression on a quadratic polynomial in latitude-longitude and the Castilian dummy, with a darker color indicating a higher predicted value.

Supplementary appendices

to

"Historical Frontiers and the Rise of Inequality. The Case of the Frontier of Granada"

DANIEL OTO-PERALÍAS and DIEGO ROMERO-ÁVILA

December 2015

Appendix A – Frontiers of settlement and defense along history.

Appendix B –The Brenner debate.

Appendix C – Figure A1. Andalusia, the frontier of Granada and land concentration in 1982; and Figure A2. Andalusia, the frontier of Granada and the Gini index of land distribution in 1982.

Appendix D – Table A2. Descriptive statistics.

Appendix E - Figure A3. Sample of municipalities.

Appendix F – Figures A4 to A24 and Table A3. Geographic, climatic and preexisting differences on both sides of the border.

Appendix G – Tables A4. Additional specification tests: Interacted polynomials.

Appendix H – Table A5. Additional controls related to preexisting land uses (10th to 12th centuries).

Appendix I – Tables A6 to A9. Robustness to changes in the frontier.

Appendix J – Tables A10 to A15. Further robustness checks.

Appendix K – Tables A16 and A17, and Figure A25. Falsification tests.

Appendix L – Falsification exercise consisting of assigning treatment status to municipalities according to non-straight random borders. Figure A26.

Appendix M – Example about weighting observations in regressions using microdata**.** Tables A18 and A19. Robustness checks to regressions using microdata.

Appendix N – Tables A20 to A22. The effect of the frontier of Granada on current outcomes.

Appendix A – Frontiers of settlement and defense along history

Frontiers have shaped the economic geography in many places throughout history. Well-known examples of frontiers include those of settlement in the North-American West (Turner, 1920; Gerhard, 1959), in Latin America with, among others, the northward advance of the Spaniards in New Spain shaping the Anglo-Hispanic frontier (Bolton and Marshall, 1920), the Araucanian indian frontier in Chile (Solberg, 1969) or the expansions toward the highlands of Costa Rica, Antioquia in Colombia, the three southern states of Brazil (James, 1941), Eastern Bolivia (Fifer, 1982) and the Pampas in Argentina (Hennessy, 1978).[1] Other important frontiers along history include the eastward expansion of the Russian Empire toward central Asia with the occupation of Siberia (Moon, 1997) and the Russian expansion into the North Pacific motivated by the search for furs (Goucher, Le Guin and Walton, 1998),[2] the German eastward movement from Carolingian times to the late nineteenth century (Gerhard, 1959; Thompson, 1928), the Australian frontier from the coastal belt to the interior mainly led by capitalist wool-growing squatters (Gerhard, 1959; Goucher, Le Guin and Walton, 1998), the New Zealand frontier in which settlers' social values were crucial in shaping New Zealand society (Coleman, 1958), and the Boers Great Trek into South African inlands until they clashed with the Bantu frontier (Gerhard, 1959).

Besides settlement frontiers, frontiers of defense and/or conquest (in military sense) have also been prevalent along history.[3] The northern frontier that separated settled Han China from northern nomadic peoples for over two millennia giving rise to the construction of the Great Wall (Barfield, 1989; Bai and Kung, 2011); The Hadrian's Wall which delimited the northern end of the Roman occupation of Britain (Luttwak, 1976); the Arab-Byzantine frontier in the Middle Ages (Haldon and Kennedy, 1980; Holmes, 2002); the frontiers that separated Anglo-Norman territories from Scotland, Ireland and Wales in the Middle Ages (Barrow, 1989; Davies, 1989); the frontier that

[1] According to Hennessy, most Latin American countries, with the exception of Haiti, have a frontier.

[2] Over the seventeenth century, in the Pacific Far East, Manchu China constituted an almost insurmountable barrier to Russian expansion, with the Russians abandoning the area after acknowledging Chinese rule over it through the Treaty of Nerchinsk in 1689. It would not be until 1858-60 that the Pacific Far East became part of Russia (Moon, 1997).

[3] When a frontier is not associated with a process of continuous attempts to advance, it is considered to be a static frontier, a frontier of exclusion in Lattimore's (1955) terms.

separated western Europe from al-Andalus until the reconquest of the Nasrid Kingdom of Granada in 1492 (Oto-Peralías and Romero-Ávila, 2014) or the crusades of the Teutonic knights against the Pruss in the early German eastern colonization; the political boundaries of Russia, after the break-up of the Mongol empire,[4] which were bounded to the South and East by the Tartar khanates of Kazan' and Astrakhan' on the middle and lower Volga, Crimea to the North of the Black Sea and Siberia across the Ural Mountains (Moon, 1997); the frontiers of exclusion that separated the Ottoman, Habsburg and Russian Empires and Prussia in Central, Eastern and South Eastern Europe from the early thirteenth century to the beginning of World War I (Stein, 2007; Grosjean, 2011a; Becker et al., 2014).

[4] Russian principalities were part of the Mongol Empire, which constituted its westernmost division from the mid-thirteenth to the mid-fifteenth centuries, and in turn forming a defense frontier with central Europe. The Mongol Empire originated in the steppes of central Asia, and at its apogee, it stretched from central Europe to the Sea of Japan, extending northwards into Siberia, eastwards and southwards into the Indian subcontinent, Indochina and Iran, and westwards into Arabia (Wikipedia, 2014).

Appendix B – Brenner's Debate

Behind the decline in serfdom West of the Elbe versus the persistence and tightening of peasant control through the imposition of extra-economic controls in eastern Europe was the character of landlord-peasant class relations, rather than the rate of population growth leading to changes in the man/land ratio, as suggested by Postan (1966).[5] The latter advocated that in periods of high population growth, when land becomes scarce, competition for land leads the peasantry to accept a serious degradation of their tenurial status in order to remain in the land, whereas when the reverse occurs, scarcity of peasants leads to a fall in landlords' rent and in their capacity to restrict peasant mobility. Similar arguments are posed by Le Roy Ladurie (1966) for the case of Languedoc in France. However, Brenner (1976, p.40) argues that this process "was subject to prior determination of the qualitative character of landlord-peasant class relations". Indeed, Brenner (1976, 1982) note that it is these relations that determined whether increasing population and commerce would lead to a shift from small-scale peasant cultivation to capitalist agriculture, as occurred in England versus France.

According to Brenner, two conditions embedded in the social property relations had to be met for the agricultural revolution to succeed. First, that lords had the economic incentives to rationalize agriculture in order to raise productivity, and second, that they had sufficient power to oppose peasant resistance to these changes. Both conditions were met in the case of the local English economy while at least one failed in the case of France (where peasants were powerful enough to prevent landlords from engaging in capitalist agriculture) and Eastern Europe (where lords had no economic interest in engaging in agricultural development because it was easier for them to "squeeze" the peasantry by strengthening serfdom ties).

Brenner (1976) seeks to explain the different outcomes across both sides of the Elbe on the basis of the differing landlord-peasant class relationship. According to him, by the

[5] According to Brenner (1976, p. 57), the reason for this must be sought in the landlord-led organization of the frontier settlements in the region East of the Elbe. Indeed, "[t]he relative absence of village solidarity in the east appears to have been bound up with the entire evolution of the region as a colonial society –its relatively "late" formation, the "rational" and "artificial" character of its settlement, and especially the leadership of the landlords in the colonizing process". Brenner (1982) also notes that East of the Elbe capitalist agriculture did not prosper as in England because lords had no economic interest in engaging in agricultural development because it was easier for them to "squeeze" the peasantry by strengthening feudal ties.

later middle ages in western Germany, peasants managed, after a prolonged period of anti-lord resistance conducted at village level, to constitute for themselves a large network of village-level inclusive institutions for economic regulation and political self-government. This allowed them to fix rents, protect common rights, ensure rights of inheritance and replace the "landlord-installed village mayor" by their own elected magistrates. In contrast, East of the Elbe self-government of peasant villages was almost inexistent, peasant cooperation across villages was small (as were the communal aspects of the village economy) and the constitution of independent political institutions failed since the lord's representative of the settlement could not be replaced by a peasants' elected one. As a result of this differing landlord-peasant class relationship on each side of the Elbe, East German peasants were much less prepared to resist the tightening of seigneurial controls leading to serfdom, than the West German peasantry.

Brenner's arguments were highly contested. As a matter of fact, Postan and Hatcher (1978) and Le Roy Ladurie (1978) question Brenner's focus on feudal relationships as the prime determinants of higher rents, giving precedence to population growth trends and market forces. Other criticisms of Brenner's view are made by, on the one hand, Croot and Parker (1978) and Cooper (1978), and on the other, Wunder (1978) who expressed doubts about Brenner's account of the agrarian histories of early modern France and England as well as of western and trans-Elbian Germany. Besides, Postan (1973) argues that serfdom spread in Eastern Europe in the sixteenth and seventeenth century rather than in the late Middle Ages when population was falling, as held by Brenner (1976). In addition, Bois (1978) suggests that it is the tendency for the rate of seigneurial levies to fall in the feudal system when economic expansion comes to a halt that explains the shift from feudalism to agrarian capitalism.

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Appendix C – Figure A1. Andalusia, the frontier of Granada and land concentration in 1982.

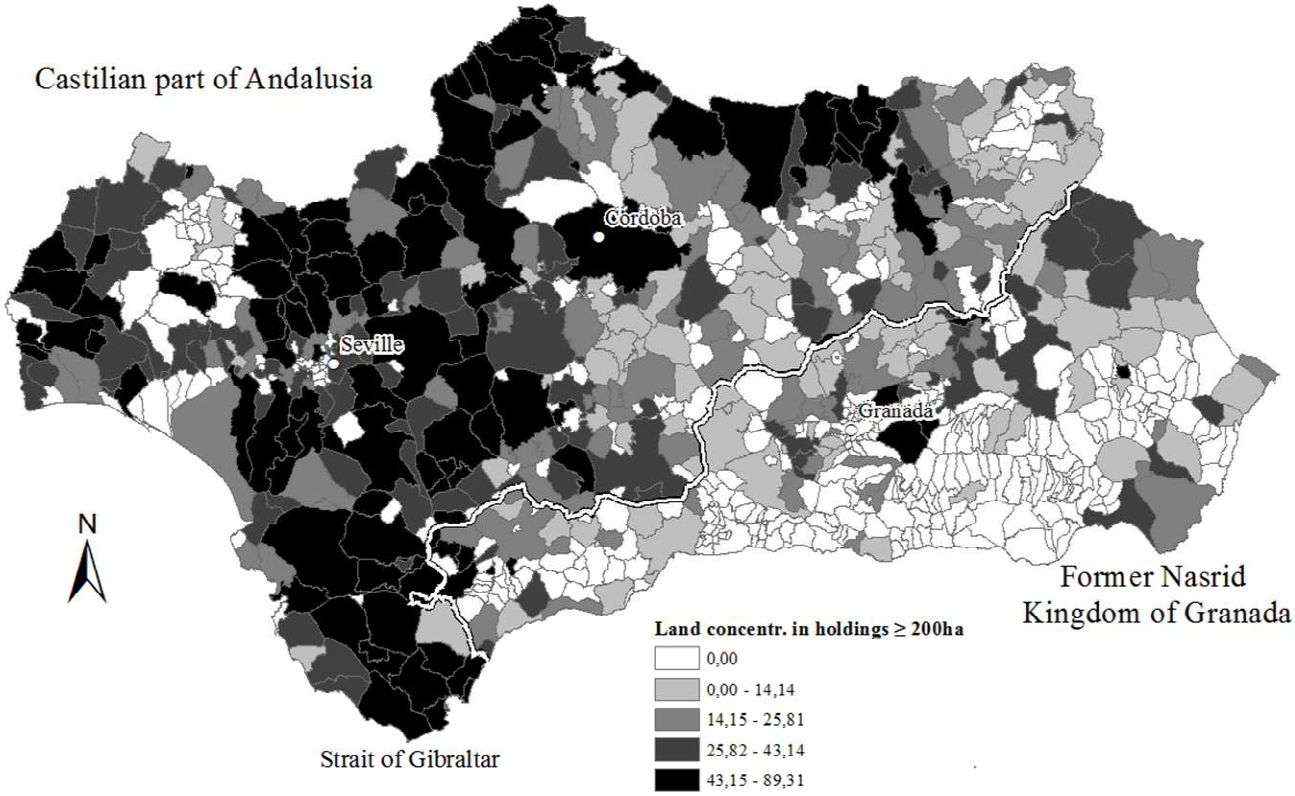


Figure A1. Andalusia, the frontier of Granada and land concentration in 1982

Figure A2. Andalusia, the frontier of Granada and the Gini index of land distribution in 1982.

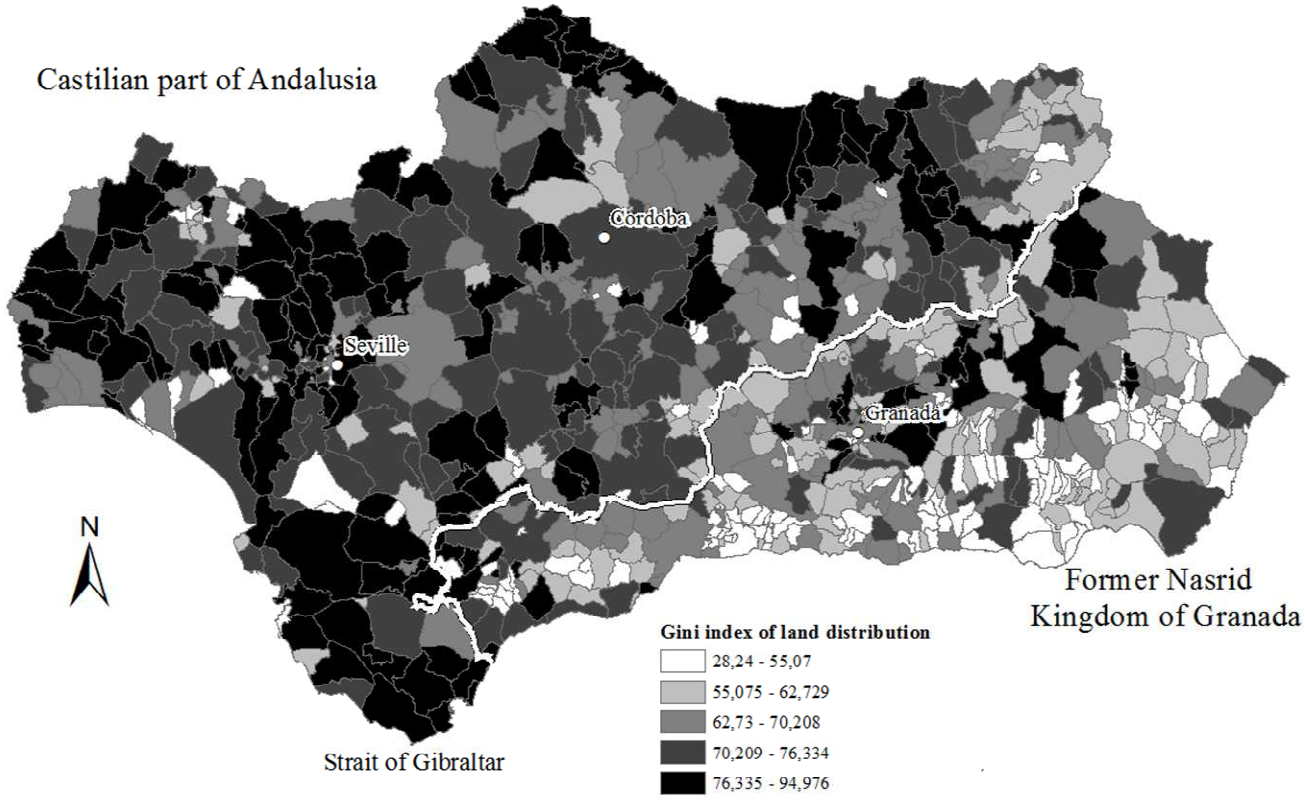


Figure A2. Andalusia, the frontier of Granada and the Gini index of land distribution in 1982

Appendix D – Table A2. Descriptive statistics.

TABLE A2. DESCRIPTIVE STATISTICS (I): WHOLE SAMPLE

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent variables					
Gini index of land distribution	769	65.54	12.43	28.24	94.98
Land concentration in holdings ≥ 200ha	769	15.28	20.79	0.00	89.31
Mayor Hacendado/surface	628	1109.13	2407.04	10.73	30964.05
Privileged Orders jurisdiction	771	0.55	0.50	0.00	1.00
Percentage of landless workers	751	72.49	22.52	0.00	100.00
Independent variables					
Altitude	771	585.55	416.37	2.02	2434.41
Ruggedness	771	138.63	120.16	0.61	893.33
Soil quality	771	1.86	0.66	1.00	4.00
Rainfall	771	676.30	224.02	200.00	1929.62
Temperature	771	15.04	1.88	6.86	19.00
Coast dummy	771	0.08	0.27	0.00	1.00
Latitude	771	37.34	0.49	36.02	38.60
Longitude	771	-4.37	1.39	-7.47	-1.74
Distance to the frontier	771	59631	45301	481	194821
Distance to Madrid	771	365460	58109	224275	506342
Surface area with a steep slope (%)	767	39.96	35.88	0.00	100.00
Aridity	771	0.47	0.11	0.22	1.02
Mediterranean phytoclimate (%)	771	98.70	7.53	0.10	100.00
Moderate or high erodibility (% surface area)	771	82.04	25.77	0.00	100.00
Low topsoil carbon (% surface area)	771	94.55	16.53	0.00	100.00
Fine soil texture (% surface area)	771	30.95	34.42	0.00	100.00
Arable land (% surface area)	757	50.93	32.50	0.70	100.00
Crops (% surface area)	757	26.29	25.88	0.00	99.03
Presence of Roman roads	771	0.38	0.49	0.00	1.00
Distance to urban centers in 1200	771	46.20	26.16	1.30	127.99
Distance to urban centers in 1400	771	42.44	23.84	1.30	127.99
Forest (% surface area, in the 10^{th}-12^{th} centuries)	771	9.85	24.87	0.00	100.00
Pastureland (% surface area, in the 10^{th}-12^{th} centuries)	771	17.48	29.96	0.00	100.00
Intensive agriculture and irrigation (% surface area, in the 10^{th}-12^{th} centuries)	771	12.56	26.09	0.00	100.00
Non-intensive agriculture (% surface area, in the 10^{th}-12th centuries)	771	25.89	35.05	0.00	100.00
Conquered during the 14th Century	771	0.01	0.12	0.00	1.00
Conquered during the 15th Century	771	0.04	0.19	0.00	1.00

TABLE A2. DESCRIPTIVE STATISTICS (I): WHOLE SAMPLE (Continued)

Variable	Obs	Mean	Std. Dev.	Min	Max
Contemporary outcome variables					
Average socio-economic condition	770	0.78	0.09	0.55	1.09
Number of cars over population	769	0.31	0.08	0.00	0.97
Education level of population 30-39 years	770	2.50	0.19	1.73	3.25
Employment in industry and services (%)	770	77.32	15.25	22.00	100.00
Long-term population growth 1950-2010 (%)	741	29.09	242.46	-85.00	3446.97
Changes in the local government since 1979	770	3.16	1.87	0.00	10.00
Number of political parties that have controlled the town council	770	2.70	0.97	1.00	6.00
Local public debt per capita	770	254.53	316.95	0.00	3867.23
Average immigration rate 1988-2014	770	30.79	16.61	7.97	120.91

TABLE A2. DESCRIPTIVE STATISTICS (II): WITHIN 25 KM OF THE FRONTIER

Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent variables					
Gini index of land distribution	208	64.33	11.68	28.24	88.47
Land concentration in holdings ≥ 200ha	208	14.17	19.17	0.00	81.24
Mayor Hacendado/surface	156	1025.36	1589.73	10.73	9707.00
Privileged Orders jurisdiction	208	0.55	0.50	0.00	1.00
Percentage of landless workers	202	75.12	22.06	0.00	99.38
Independent variables					
Altitude	208	661.12	295.45	41.77	1367.94
Ruggedness	208	149.45	88.53	7.06	477.59
Soil quality	208	1.71	0.51	1.00	4.00
Rainfall	208	781.81	282.15	362.66	1929.62
Temperature	208	14.60	1.38	11.27	18.00
Coast dummy	208	0.04	0.19	0.00	1.00
Latitude	208	37.13	0.44	36.17	38.30
Longitude	208	-4.29	0.86	-5.86	-2.44
Distance to the frontier	208	13214	7180	481	24967
Distance to Madrid	208	373717	55248	255121	492700
Surface area with a steep slope (%)	206	47.04	31.88	0.00	100.00
Aridity	208	0.52	0.12	0.33	0.79
Mediterranean phytoclimate (%)	208	97.27	10.70	18.74	100.00
Moderate or high erodibility (% surface area)	208	78.94	27.82	0.00	100.00
Low topsoil carbon (% surface area)	208	84.40	26.38	0.00	100.00
Fine soil texture (% surface area)	208	47.66	34.24	0.00	100.00
Arable land (% surface area)	203	55.00	27.83	1.20	99.85
Crops (% surface area)	203	26.17	22.77	0.01	95.46
Presence of Roman roads	208	0.29	0.45	0.00	1.00
Distance to urban centers in 1200	208	48.26	22.67	5.20	113.08
Distance to urban centers in 1400	208	40.64	17.12	4.65	94.02
Forest (% surface area, in the 10^{th}-12^{th} centuries)	208	5.73	19.75	0.00	100.00
Pastureland (% surface area, in the 10^{th}-12^{th} centuries)	208	20.61	30.34	0.00	100.00
Intensive agriculture and irrigation (% surface area, in the 10^{th}-12^{th} centuries)	208	3.06	9.44	0.00	50.91
Non-intensive agriculture (% surface area, in the 10^{th}-12th centuries)	208	19.01	28.06	0.00	100.00
Conquered during the 14th Century	208	0.05	0.21	0.00	1.00
Conquered during the 15th Century	208	0.14	0.35	0.00	1.00
Years under the frontier effect	208	70.23	100.63	0.00	255.00

TABLE A2. DESCRIPTIVE STATISTICS (II): WITHIN 25 KM OF THE FRONTIER (Continued)

Variable	Obs	Mean	Std. Dev.	Min	Max
Contemporary outcome variables					
Average socio-economic condition	207	0.76	0.08	0.55	0.99
Number of cars over population	207	0.29	0.07	0.00	0.55
Education level of population 30-39 years	207	2.42	0.17	1.73	2.97
Employment in industry and services (%)	207	76.03	15.30	22.00	99.00
Long-term population growth 1950-2010 (%)	200	-12.89	84.04	-77.46	588.79
Changes in the local government since 1979	207	3.18	2.09	0.00	10.00
Number of political parties that have controlled the town council	207	2.71	1.05	1.00	6.00
Local public debt per capita	207	233.21	246.85	0.00	1264.85
Average immigration rate 1988-2014	207	27.15	12.53	8.72	84.35

Appendix E - Figure A3. Sample of municipalities.

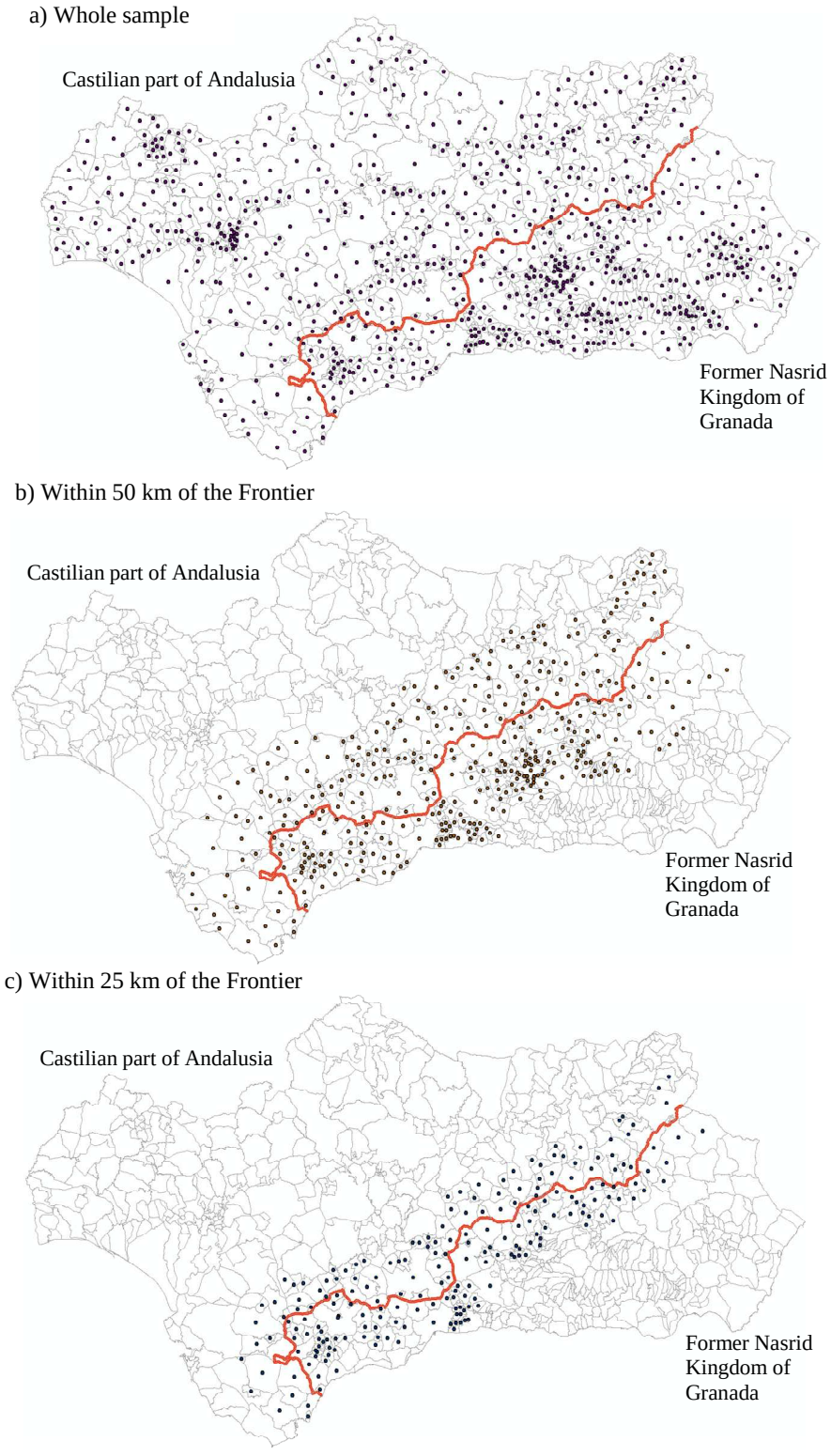
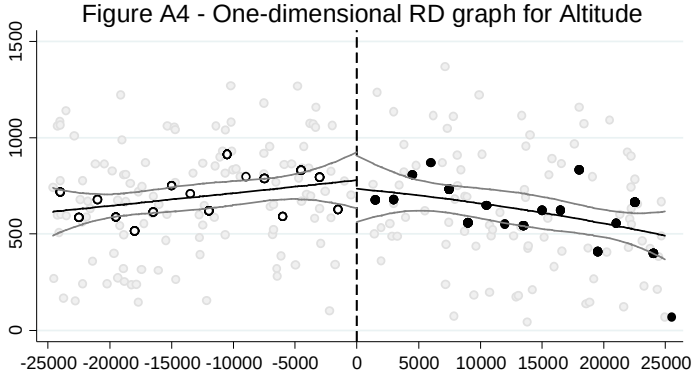


Figure A3. Sample of municipalities

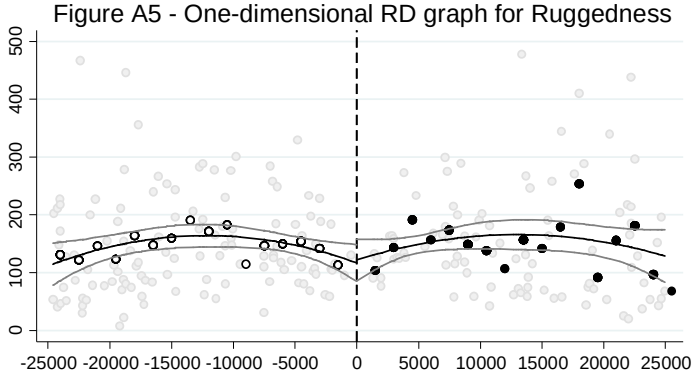
Appendix F – Figure A4 to A25 and Table A3. Geographic, climatic and preexisting differences on both sides of the border.

Figure A4 - One-dimensional RD graph for Altitude



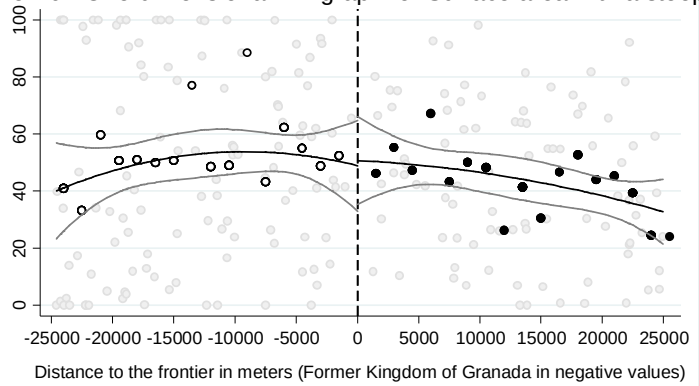
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A5 - One-dimensional RD graph for Ruggedness



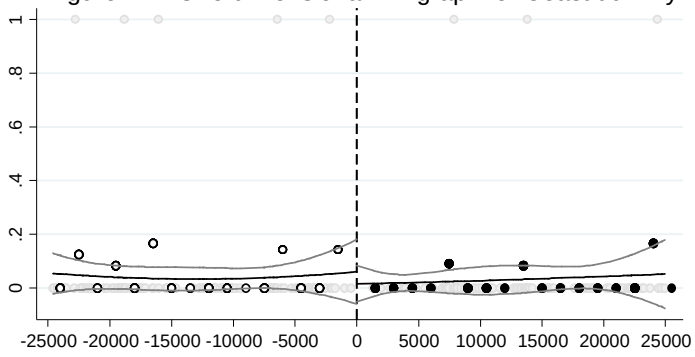
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A6 - One-dimensional RD graph for Surface area with a steep slope



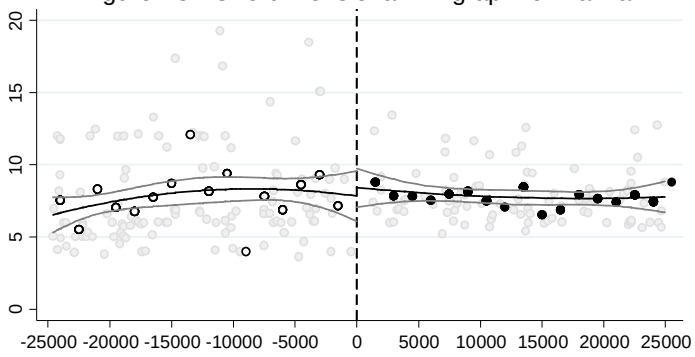
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A7 - One-dimensional RD graph for Coast dummy



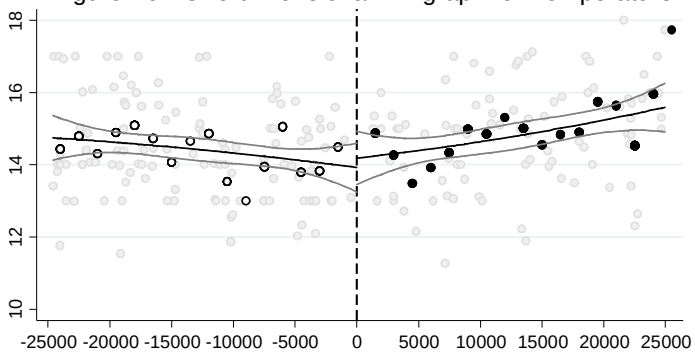
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A8 - One-dimensional RD graph for Rainfall



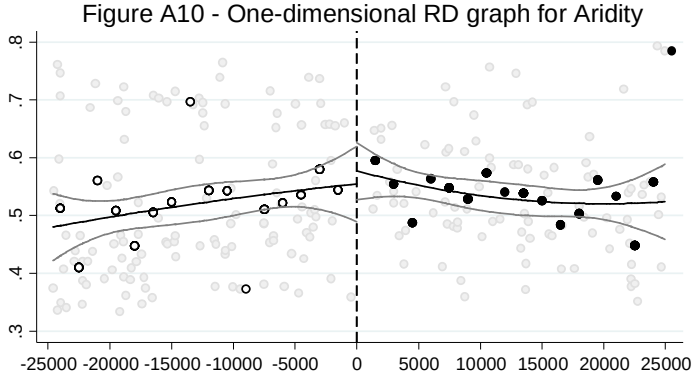
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A9 - One-dimensional RD graph for Temperature



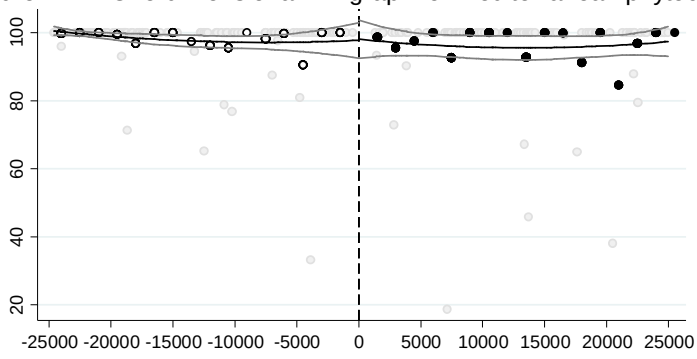
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A10 - One-dimensional RD graph for Aridity



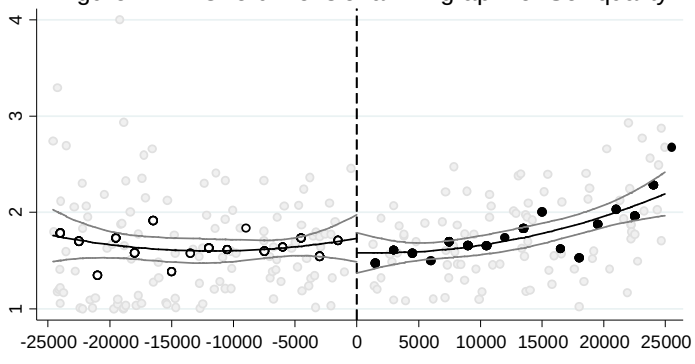
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A11 - One-dimensional RD graph for Mediterranean phytoclimate



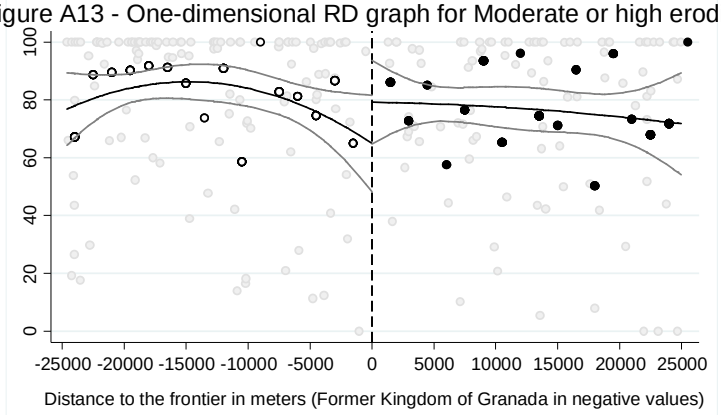
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A12 - One-dimensional RD graph for Soil quality



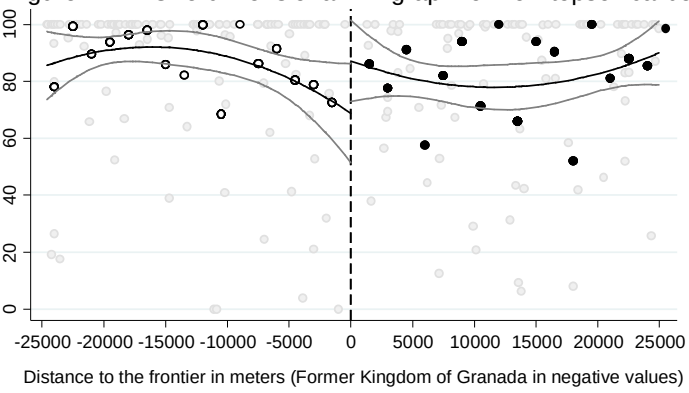
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A13 - One-dimensional RD graph for Moderate or high erodibility



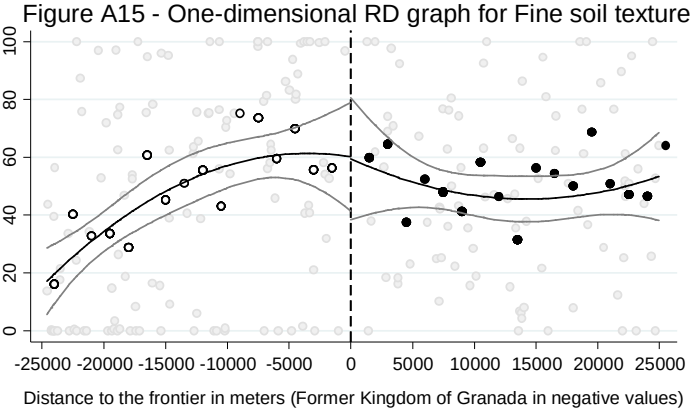
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A14 - One-dimensional RD graph for Low topsoil carbon



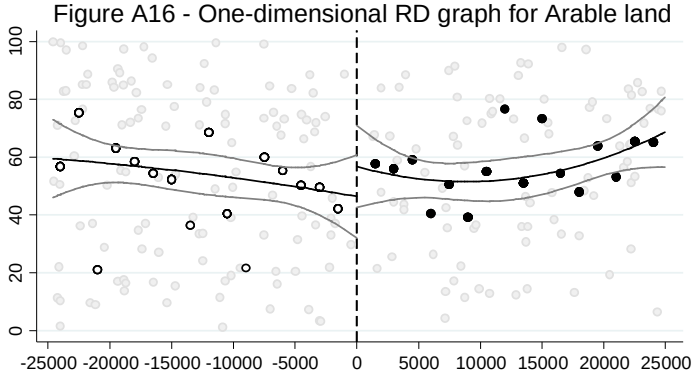
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A15 - One-dimensional RD graph for Fine soil texture



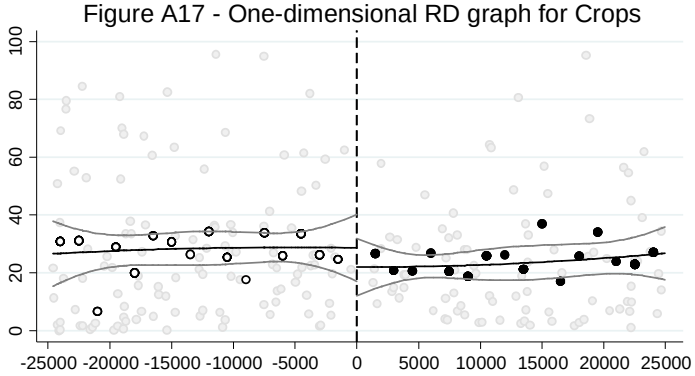
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A16 - One-dimensional RD graph for Arable land



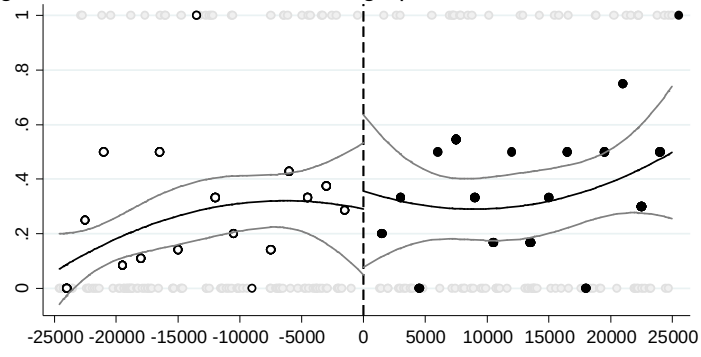
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A17 - One-dimensional RD graph for Crops



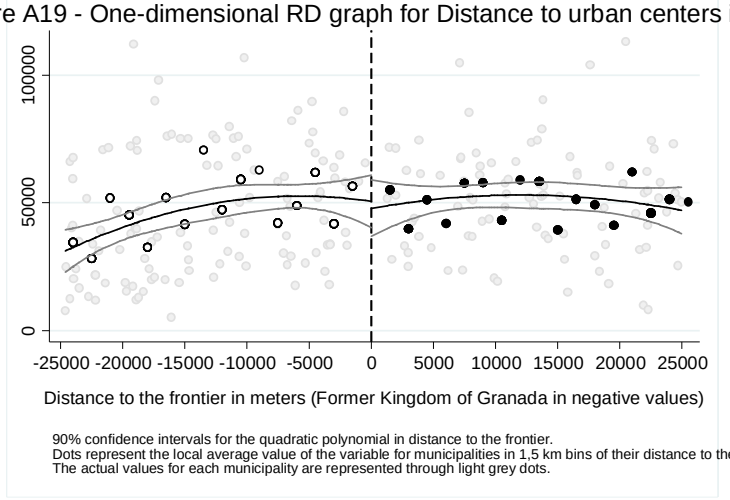
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A18 - One-dimensional RD graph for Presence of Roman roads



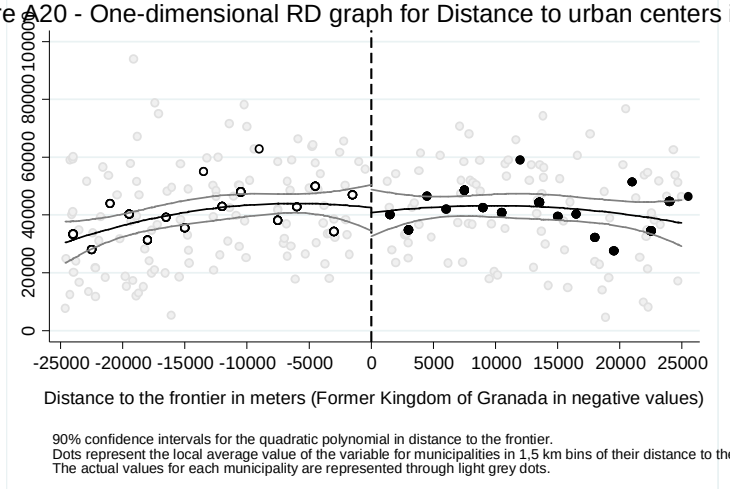
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A19 - One-dimensional RD graph for Distance to urban centers in 1200



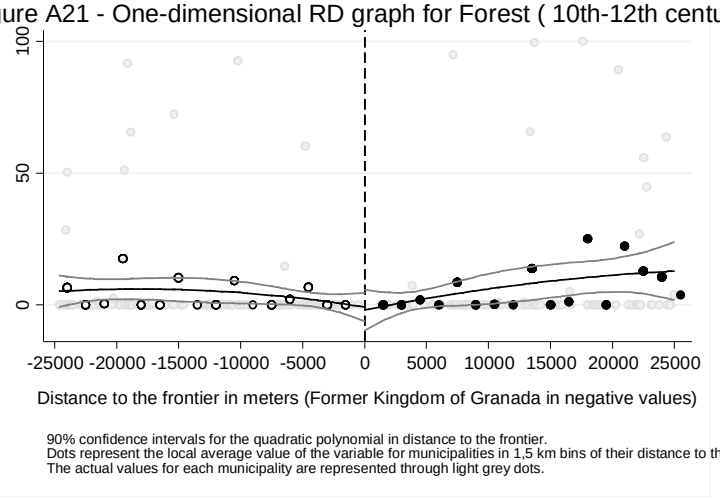
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A20 - One-dimensional RD graph for Distance to urban centers in 1400



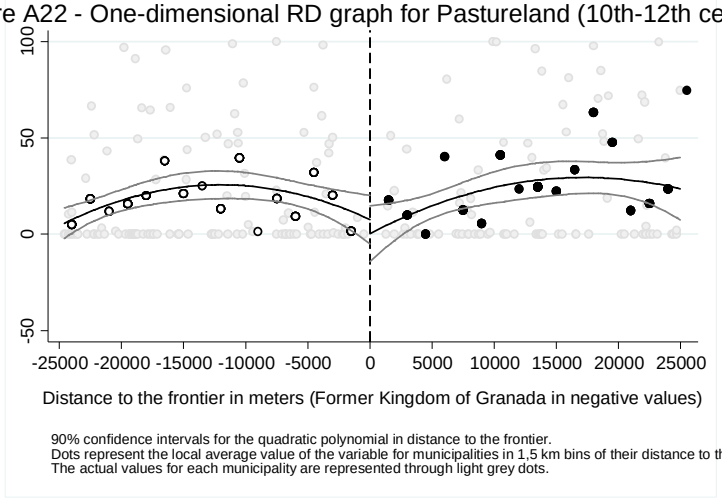
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A21 - One-dimensional RD graph for Forest (10th-12th centuries)



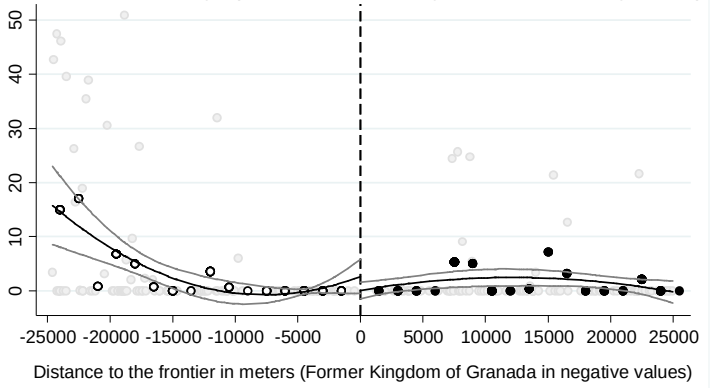
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A22 - One-dimensional RD graph for Pastureland (10th-12th centuries)



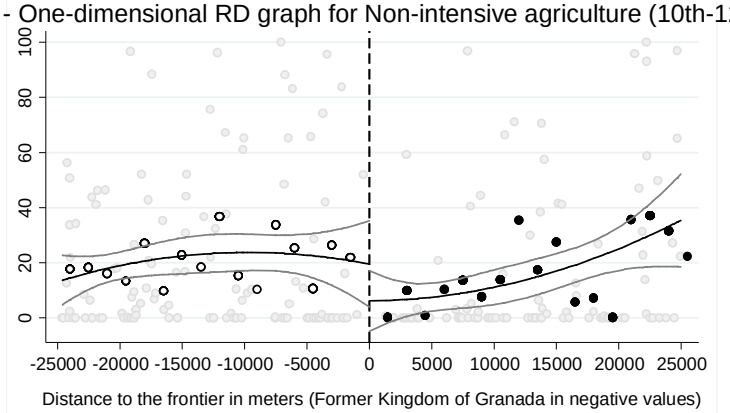
90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A23 - One-dimensional RD graph for Intensive agriculture and irrigation (10th-12th centuries)



90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

Figure A24 - One-dimensional RD graph for Non-intensive agriculture (10th-12th centuries)



90% confidence intervals for the quadratic polynomial in distance to the frontier.
Dots represent the local average value of the variable for municipalities in 1,5 km bins of their distance to the frontier.
The actual values for each municipality are represented through light grey dots.

TABLE A3. DISCONTINUITIES AT THE BORDER IN GEOGRAPHIC, CLIMATIC AND PREEXISTING CONDITIONS: REGRESSION COUNTERPARTS TO FIGURES A4 TO A24

Dependent variable in each regression (↓)	Coefficient on Castilian part of Andalusia	
	Robust SEs	Conley SEs
Altitude	-44.048	
	(135.972)	[83.735]
Ruggedness	5.390	
	(28.975)	[17.956]
Surface area with a steep slope (%)	1.828	
	(13.373)	[9.906]
Coast dummy	-0.045	
	(0.083)	[0.06]
Rainfall	0.584	
	(1.33)	[0.966]
Temperature	0.265	
	(0.6)	[0.43]
Aridity	0.022	
	(0.049)	[0.043]
Mediterranean phytoclimate (%)	0.343	
	(4.592)	[2.242]
Soil quality	-0.148	
	(0.194)	[0.178]
Moderate or high erodibility (% surface area)	14.283	
	(13.333)	[12.163]
Low topsoil carbon (% surface area)	18.366	
	(13.563)	[11.728]
Fine soil texture (% surface area)	-0.675	
	(17.023)	[14.155]
Arable land (% surface area)	10.372	
	(12.218)	[10.495]
Crops (% surface area)	-6.634	
	(9.206)	[5.405]
Presence of Roman roads	0.066	
	(0.222)	[0.116]
Distance to urban centers in 1200	-2711.899	
	(9101.047)	[5607.582]
Distance to urban centers in 1400	-1763.413	
	(6836.943)	[4005.074]
Forest (% surface area, in the 10^{th}-12^{th} centuries)	-1.102	
	(5.632)	[5.363]
Pastureland (% surface area, in the 10^{th}-12^{th} centuries)	-7.333	
	(11.593)	[7.784]
Intensive agriculture and irrigation (% surface area, in the 10^{th}-12^{th} centuries)	-2.605	
	(2.117)	[1.724]
Non-intensive agriculture (% surface area, in the 10^{th}-12^{th} centuries)	-13.400	
	(11.482)	[7.492]*

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

Appendix G – Tables A4. Additional specification tests: Interacted polynomials.

TABLE A4 - ADDITIONAL SPECIFICATION TESTS (II): INTERACTED POLYNOMIALS IN DISTANCE TO THE FRONTIER, DISTANCE TO MADRID AND DISTANCE TO SEVILLE

	Land and political power concentration in the 18th century			Land concentration in 1982	
	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: Interacted quadratic polynomial in distance to the Frontier					
Castilian side dummy (evaluated at 0 km of dist. to the frontier)	15.207	1456.464	0.396	-6.602	-5.460
	(8.162)*	(718.858)**	(0.211)*	(9.456)	(4.346)
	[5.801]***	[732.343]**	[0.178]**	[9.335]	[4.356]
Castilian side dummy (evaluated at percentile 25 of dist. to the frontier)	5.724	1100.041	0.209	8.226	3.081
	(3.024)*	(306.921)***	(0.089)**	(3.193)**	(1.822)*
	[3.122]*	[277.825]***	[0.177]	[2.275]***	[1.372]**
Castilian side dummy (evaluated at percentile 50 of dist. to the frontier)	5.800	993.879	0.170	14.191	6.902
	(3.814)	(433.025)**	(0.102)*	(3.895)***	(2.408)***
	[3.414]*	[386.602]**	[0.143]	[4.695]***	[2.265]***
Castilian side dummy (evaluated at percentile 75 of dist. to the frontier)	13.186	1075.139	0.242	13.601	7.255
	(4.344)***	(553.435)*	(0.095)**	(3.586)***	(2.17)***
	[3.133]***	[606.64]*	[0.092]***	[4.425]***	[1.897]***
R^2	0.28	0.38	0.24	0.31	0.24
Panel B: Interacted quadratic polynomial in distance to Madrid					
Castilian side dummy (evaluated at the mean distance to Madrid)	17.067	859.630	0.522	8.180	3.199
	(4.12)***	(503.734)*	(0.098)***	(3.68)**	(2.486)
	[3.73]***	[320.056]***	[0.113]***	[2.934]***	[2.054]
R^2	0.29	0.42	0.35	0.35	0.24
Panel B: Interacted quadratic polynomial in distance to Seville					
Castilian side dummy (evaluated at the mean distance to Seville)	13.818	281.642	0.223	11.159	5.108
	(3.926)***	(465.13)	(0.105)**	(3.529)***	(2.055)**
	[2.532]***	[318.065]	[0.082]***	[4.203]***	[1.864]***
R^2	0.32	0.41	0.32	0.31	0.24
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	202	156	208	208	208

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively. We did not interact the quadratic polynomial in longitude and latitude, because the coefficient on the frontier dummy was omitted from the estimation output, due to perfect collinearity caused by the inclusion of so many terms.

Appendix H – Table A5. Additional controls related to preexisting land uses (10th to 12th centuries).

TABLE A5. ADDITIONAL CONTROLS RELATED TO PREEXISTING LAND USES (10TH TO 12TH CENTURIES)

Dependent variable	Land and political power concentration in the 18th century			Land concentration in 1982	
	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentr. in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: OLS-Border specification					
Castilian part of Andalusia	8.806	1033.900	0.251	9.666	5.410
	(2.949)***	(303.69)***	(0.072)***	(2.622)***	(1.619)***
	[2.236]***	[317.839]***	[0.103]**	[2.43]***	[1.361]***
R^2	0.3	0.37	0.24	0.3	0.26
Panel B: Quadratic polynomial in latitude and longitude					
Castilian part of Andalusia	9.486	1031.071	0.058	11.441	4.261
	(3.503)***	(387.739)***	(0.11)	(4.489)**	(2.123)**
	[3.399]***	[250.912]***	[0.153]	[3.476]***	[1.504]***
R^2	0.34	0.43	0.32	0.37	0.31
Panel C: Quadratic polynomial in distance to the Frontier					
Castilian part of Andalusia	8.837	1095.637	0.232	9.377	5.171
	(2.963)***	(313.539)***	(0.074)***	(2.647)***	(1.604)***
	[2.228]***	[331.418]***	[0.101]**	[2.427]***	[1.244]***
R^2	0.3	0.38	0.26	0.3	0.26
Panel D: Quadratic polynomial in distance to Madrid					
Castilian part of Andalusia	13.999	1447.729	0.202	12.096	5.791
	(3.338)***	(355.604)***	(0.087)**	(3.43)***	(1.905)***
	[2.20]***	[328.975]***	[0.151]	[2.494]***	[1.236]***
R^2	0.33	0.41	0.26	0.33	0.26
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	202	156	208	208	208

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

Appendix I – Tables A6 to A9. Robustness to changes in the frontier.

TABLE A6. THE FRONTIER OF GRANADA: CONTROLLING FOR MUNICIPALITIES CONQUERED LATER

	Land and political power concentration in the 18th century			Land concentration in 1982	
Dependent variable	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: OLS-Border specification					
Castilian part of Andalusia	11.373	1134.135	0.327	9.475	4.366
	(3.393)***	(453.784)**	(0.085)***	(3.788)**	(2.074)**
	[3.191]***	[474.649]**	[0.114]***	[2.264]***	[1.238]***
Conquered during the 14th Century	-3.595	-375.889	-0.044	4.549	2.939
	(4.234)	(809.504)	(0.191)	(7.188)	(3.416)
	[3.471]	[515.588]	[0.282]	[5.777]	[3.182]
Conquered during the 15th Century	-0.179	-90.511	-0.161	-1.042	-0.460
	(3.297)	(561.75)	(0.109)	(4.741)	(2.229)
	[3.607]	[502.187]	[0.092]*	[3.439]	[1.956]
R^2	0.26	0.37	0.23	0.29	0.22
Panel B: Quadratic polynomial in latitude and longitude					
Castilian part of Andalusia	10.023	1247.324	0.018	11.834	4.186
	(4.799)**	(701.493)*	(0.154)	(6.652)*	(3.297)
	[5.304]*	[334.239]***	[0.224]	[4.745]**	[2.609]+
Conquered during the 14th Century	-3.682	-429.587	0.062	3.105	2.382
	(5.152)	(805.755)	(0.186)	(7.36)	(3.643)
	[4.461]	[418.294]	[0.283]	[6.715]	[4.036]
Conquered during the 15th Century	0.235	-182.993	0.047	-0.296	0.194
	(4.165)	(692.815)	(0.136)	(5.397)	(2.858)
	[4.043]	[442.473]	[0.144]	[4.339]	[3.377]
R^2	0.31	0.43	0.29	0.35	0.25
Panel C: Quadratic polynomial in distance to the Frontier					
Castilian part of Andalusia	11.669	1117.375	0.338	9.681	4.542
	(3.497)***	(454.33)**	(0.088)***	(3.829)**	(2.127)**
	[3.204]***	[481.593]**	[0.113]***	[2.266]***	[1.268]***
Conquered during the 14th Century	-4.667	-241.613	-0.071	3.692	2.418
	(4.32)	(822.338)	(0.196)	(7.568)	(3.454)
	[3.641]	[499.089]	[0.271]	[5.934]	[3.014]
Conquered during the 15th Century	-1.316	91.880	-0.225	-1.973	-1.432
	(3.626)	(573.392)	(0.113)**	(4.926)	(2.387)
	[3.706]	[481.512]	[0.1]**	[3.637]	[2.226]
R^2	0.26	0.38	0.25	0.29	0.22

TABLE A6. (CONTINUED)

Dependent variable	Land and political power concentration in the 18th century			Land concentration in 1982	
	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel D: Quadratic polynomial in distance to Madrid					
Castilian part of Andalusia	18.885	1872.049	0.288	13.465	5.124
	(4.231)***	(623.891)***	(0.115)**	(5.317)**	(2.755)*
	[3.433]***	[468.219]***	[0.206]	[2.802]***	[1.817]***
Conquered during the 14th Century	-7.374	-766.295	-0.014	1.594	2.608
	(4.394)*	(819.167)	(0.196)	(7.317)	(3.647)
	[3.313]**	[480.873]	[0.277]	[5.733]	[3.76]
Conquered during the 15th Century	-4.731	-623.403	-0.136	-3.554	-0.885
	(3.623)	(660.955)	(0.121)	(5.248)	(2.539)
	[3.254]	[535.126]	[0.127]	[2.959]	[2.294]
R^2	0.29	0.4	0.23	0.31	0.22
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	202	156	208	208	208

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. +, *, ** and *** denote statistical significance at the 11, 10, 5 and 1% level, respectively.

TABLE A7. THE FRONTIER OF GRANADA: CONTROLLING FOR DURATION

Dependent variable	Land and political power concentration in the 18th century			Land concentration in 1982	
	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: OLS-Border specification					
Castilian part of Andalusia	10.789	1057.291	0.121	9.551	4.023
	(3.81)***	(480.433)**	(0.114)	(4.083)**	(2.018)**
	[4.012]***	[407.286]**	[0.117]	[4.31]**	[1.885]**
Years under the frontier effect	0.000	-0.227	0.001	0.001	0.004
	(0.016)	(2.685)	(0.001)	(0.023)	(0.011)
	[0.017]	[2.247]	[0.000]*	[0.019]	[0.009]
R^2	0.26	0.37	0.23	0.29	0.21
Panel B: Quadratic polynomial in latitude and longitude					
Castilian part of Andalusia	10.068	1020.359	0.065	12.033	4.525
	(3.828)***	(483.077)**	(0.128)	(4.492)***	(2.395)*
	[3.75]***	[358.822]***	[0.148]	[4.476]***	[2.844]+
Years under the frontier effect	-0.006	0.195	0.000	0.001	0.002
	(0.021)	(3.234)	(0.001)	(0.026)	(0.014)
	[0.018]	[2.102]	[0.001]	[0.021]	[0.016]
R^2	0.31	0.42	0.29	0.35	0.25
Panel C: Quadratic polynomial in distance to the Frontier					
Castilian part of Andalusia	9.633	1279.645	0.052	8.569	2.953
	(3.809)**	(499.402)**	(0.112)	(4.3)**	(2.027)
	[3.725]**	[419.87]***	[0.111]	[4.57]*	[2.017]
Years under the frontier effect	0.006	-1.186	0.001	0.006	0.009
	(0.018)	(2.73)	(0.001)**	(0.023)	(0.011)
	[0.017]	[2.104]	[0.001]**	[0.02]	[0.011]
R^2	0.26	0.38	0.25	0.29	0.22
Panel D: Quadratic polynomial in distance to Madrid					
Castilian part of Andalusia	12.800	1126.176	0.119	9.961	4.349
	(3.639)***	(459.939)**	(0.117)	(3.823)**	(2.074)**
	[3.328]***	[450.643]**	[0.134]	[3.759]***	[1.953]**
Years under the frontier effect	0.019	2.212	0.001	0.016	0.006
	(0.018)	(3.075)	(0.001)	(0.025)	(0.012)
	[0.015]	[2.511]	[0.001]	[0.016]	[0.011]
R^2	0.29	0.4	0.23	0.31	0.22
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	202	156	208	208	208

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. +, *, ** and *** denote statistical significance at the 11, 10, 5 and 1% level, respectively.

TABLE A8. THE FRONTIER OF GRANADA CIRCA 1300

Dependent variable	Land and political power concentration in the 18th century			Land concentration in 1982	
	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: OLS-Border specification					
Castilian part of Andalusia	8.817	439.473	0.369	8.116	5.217
	(3.519)**	(252.103)*	(0.074)***	(2.876)***	(1.826)***
	[3.183]***	[241.59]*	[0.088]***	[2.088]***	[1.443]***
R^2	0.21	0.26	0.29	0.3	0.24
Panel B: Quadratic polynomial in latitude and longitude					
Castilian part of Andalusia	9.266	949.246	-0.008	10.704	2.054
	(5.452)*	(537.265)*	(0.133)	(6.177)*	(3.194)
	[5.738]+	[287.203]***	[0.167]	[4.347]**	[2.624]
R^2	0.23	0.3	0.36	0.38	0.29
Panel C: Quadratic polynomial in distance to the Frontier					
Castilian part of Andalusia	8.187	490.777	0.356	7.065	4.693
	(3.585)**	(242.302)**	(0.075)***	(3.007)**	(1.815)**
	[3.075]***	[217.878]**	[0.087]***	[1.932]***	[1.451]***
R^2	0.22	0.27	0.29	0.31	0.25
Panel D: Quadratic polynomial in distance to Madrid					
Castilian part of Andalusia	11.882	1193.600	0.242	17.335	5.782
	(4.715)**	(438.539)***	(0.125)*	(5.135)***	(2.744)**
	[3.955]***	[324.071]***	[0.174]	[3.659]***	[2.121]***
R^2	0.22	0.3	0.31	0.33	0.25
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	196	162	201	201	201

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Municipalities conquered between 1300 and the beginning of the War of Granada are omitted to avoid having treated municipalities in the control group. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. +, *, ** and *** denote statistical significance at the 11, 10, 5 and 1% level, respectively.

TABLE A9. THE FRONTIER OF GRANADA CIRCA 1400

Dependent variable	Land and political power concentration in the 18th century			Land concentration in 1982	
	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: OLS-Border specification					
Castilian part of Andalusia	9.063	634.191	0.315	10.085	5.904
	(3.4)***	(290.734)**	(0.073)***	(2.726)***	(1.701)***
	[2.914]***	[299.04]**	[0.102]***	[2.269]***	[1.17]***
R^2	0.21	0.28	0.26	0.33	0.25
Panel B: Quadratic polynomial in latitude and longitude					
Castilian part of Andalusia	10.757	949.582	-0.018	12.275	4.027
	(4.753)**	(477.775)**	(0.127)	(4.967)**	(2.509)+
	[5.128]**	[287.822]***	[0.196]	[4.137]***	[1.73]**
R^2	0.23	0.33	0.34	0.38	0.29
Panel C: Quadratic polynomial in distance to the Frontier					
Castilian part of Andalusia	8.299	704.027	0.297	9.314	5.281
	(3.477)**	(282.804)**	(0.074)***	(2.898)***	(1.704)***
	[2.826]***	[291.88]**	[0.103]***	[2.149]***	[1.078]***
R^2	0.22	0.29	0.27	0.33	0.26
Panel D: Quadratic polynomial in distance to Madrid					
Castilian part of Andalusia	13.937	1306.073	0.257	15.067	6.217
	(3.813)***	(379.954)***	(0.105)**	(3.863)***	(2.135)***
	[3.188]***	[306.173]***	[0.172]	[3.046]***	[1.586]***
R^2	0.22	0.32	0.29	0.34	0.26
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	201	164	206	206	206

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Municipalities conquered between 1400 and the beginning of the War of Granada are omitted to avoid having treated municipalities in the control group. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. +, *, ** and *** denote statistical significance at the 11, 10, 5 and 1% level, respectively.

Appendix J – Tables A11 to A15. Further robustness checks.

TABLE A10 - ADDITIONAL SPECIFICATION TESTS (I): DISTANCE TO SEVILLE AS THE FORCING VARIABLE

	Land and political power concentration in the 18th century			Land concentration in 1982	
Dependent variable	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: Linear polynomial in distance to Seville					
Castilian part of Andalusia	8.223	937.628	0.234	9.748	4.108
	(2.81)***	(328.33)***	(0.073)***	(2.773)***	(1.541)***
	[2.507]***	[332.657]***	[0.084]***	[2.893]***	[1.193]***
R^2	0.29	0.37	0.23	0.29	0.22
Panel B: Quadratic polynomial in distance to Seville					
Castilian part of Andalusia	9.458	862.361	0.143	8.638	3.317
	(2.967)***	(334.909)**	(0.077)*	(2.947)***	(1.567)**
	[2.685]***	[311.312]***	[0.096]	[3.073]***	[1.176]***
R^2	0.3	0.38	0.30	0.3	0.23
Panel C: Cubic polynomial in distance to Seville					
Castilian part of Andalusia	10.207	771.914	0.147	8.144	3.082
	(2.923)***	(359.222)**	(0.077)*	(3.026)***	(1.59)*
	[2.162]***	[315.463]**	[0.092]	[3.098]***	[1.181]***
R^2	0.31	0.39	0.30	0.3	0.23
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	202	156	208	208	208

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

TABLE A11 - ROBUSTNESS TO DIFFERENT BANDWIDTHS (I): RESULTS FOR A BANDWIDTH OF 60 KM

Dependent variable	Land and political power concentration in the 18th century			Land concentration in 1982	
	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: OLS-Border specification					
Castilian part of Andalusia	9.941	784.952	0.290	11.307	5.553
	(2.605)***	(284.866)***	(0.065)***	(2.446)***	(1.42)***
	[2.621]***	[302.392]**	[0.099]***	[2.309]***	[1.021]***
R^2	0.23	0.36	0.23	0.31	0.22
Panel B: Quadratic polynomial in latitude and longitude					
Castilian part of Andalusia	11.009	1078.737	0.120	11.372	3.618
	(3.364)***	(396.8)***	(0.104)	(3.93)***	(2.009)*
	[3.441]***	[268.274]***	[0.142]	[3.86]***	[1.964]*
R^2	0.26	0.42	0.3	0.38	0.27
Panel C: Quadratic polynomial in distance to the Frontier					
Castilian part of Andalusia	9.838	845.162	0.274	11.085	5.228
	(2.607)***	(292.018)***	(0.066)***	(2.513)***	(1.411)***
	[2.427]***	[310.065]***	[0.097]***	[2.371]***	[0.954]***
R^2	0.23	0.36	0.24	0.31	0.23
Panel D: Quadratic polynomial in distance to Madrid					
Castilian part of Andalusia	14.164	1255.559	0.271	14.102	6.231
	(2.891)***	(341.439)***	(0.08)***	(3.003)***	(1.69)***
	[2.657]***	[298.76]***	[0.132]**	[2.676]***	[1.212]***
R^2	0.25	0.39	0.25	0.33	0.23
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	241	194	248	248	248

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 30 km of the frontier. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

TABLE A12 - ROBUSTNESS TO DIFFERENT BANDWIDTHS (II): RESULTS FOR A BANDWIDTH OF 40 KM

	Land and political power concentration in the 18th century			Land concentration in 1982	
Dependent variable	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: OLS-Border specification					
Castilian part of Andalusia	7.942	1068.377	0.262	9.361	4.260
	(2.884)***	(312.207)***	(0.076)***	(2.947)***	(1.784)**
	[1.99]***	[347.649]***	[0.124]**	[2.511]***	[1.495]***
R^2	0.28	0.4	0.23	0.26	0.17
Panel B: Quadratic polynomial in latitude and longitude					
Castilian part of Andalusia	6.735	728.738	0.150	11.857	6.152
	(3.446)*	(375.099)*	(0.119)	(4.88)**	(2.522)**
	[2.666]**	[262.208]***	[0.16]	[3.759]***	[2.455]**
R^2	0.32	0.49	0.3	0.32	0.25
Panel C: Quadratic polynomial in distance to the Frontier					
Castilian part of Andalusia	7.322	1120.609	0.267	9.147	3.534
	(2.646)***	(322.817)***	(0.075)***	(3.029)***	(1.721)**
	[1.896]***	[358.509]***	[0.119]**	[2.439]***	[1.394]**
R^2	0.29	0.4	0.24	0.26	0.2
Panel D: Quadratic polynomial in distance to Madrid					
Castilian part of Andalusia	12.655	1180.739	0.240	10.310	4.976
	(3.334)***	(319.135)***	(0.091)***	(3.335)***	(2.03)**
	[1.813]***	[377.797]***	[0.156]	[2.484]***	[1.379]***
R^2	0.31	0.4	0.23	0.28	0.18
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	158	123	162	162	162

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 20 km of the frontier. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

TABLE A13 - ROBUSTNESS TO ADDITIONAL CONTROL VARIABLES (I): MUNICIPALITY SIZE

	Land and political power concentration in the 18th century			Land concentration in 1982	
Dependent variable	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: OLS-Border specification					
Castilian part of Andalusia	10.556	1265.912	0.269	7.998	3.606
	(2.809)***	(320.923)***	(0.072)***	(2.511)***	(1.445)**
	[2.605]***	[388.591]***	[0.109]**	[1.96]***	[0.938]***
R^2	0.26	0.42	0.22	0.34	0.26
Panel B: Quadratic polynomial in latitude and longitude					
Castilian part of Andalusia	8.797	1351.091	0.092	10.416	3.546
	(3.34)***	(379.831)***	(0.111)	(4.285)**	(2.129)*
	[3.475]**	[306.074]***	[0.16]	[3.499]***	[1.69]**
R^2	0.31	0.49	0.31	0.37	0.28
Panel C: Quadratic polynomial in distance to the Frontier					
Castilian part of Andalusia	10.379	1326.067	0.254	7.819	3.352
	(2.782)***	(334.586)***	(0.072)***	(2.574)***	(1.443)**
	[2.482]***	[415.407]***	[0.107]**	[1.997]***	[0.904]***
R^2	0.26	0.42	0.24	0.34	0.27
Panel D: Quadratic polynomial in distance to Madrid					
Castilian part of Andalusia	14.802	1653.013	0.226	9.964	3.874
	(3.053)***	(367.617)***	(0.088)**	(3.061)***	(1.728)**
	[2.474]***	[360.513]***	[0.166]	[2.266]***	[0.955]***
R^2	0.29	0.45	0.23	0.36	0.27
Surface area	Yes	Yes	Yes	Yes	Yes
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	202	156	208	208	208

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively. The source of surface area (in sq km) is IECA (2014b).

TABLE A14 - ROBUSTNESS TO ADDITIONAL CONTROL VARIABLES (II): TRANSPORTATION COSTS

Dependent variable	Land and political power concentration in the 18th century			Land concentration in 1982	
	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: OLS-Border specification					
Castilian part of Andalusia	10.094	995.375	0.180	9.443	4.100
	(2.831)***	(307.986)***	(0.071)**	(2.71)***	(1.531)***
	[2.169]***	[320.957]***	[0.081]**	[2.525]***	[0.975]***
R^2	0.27	0.37	0.31	0.29	0.22
Panel B: Quadratic polynomial in latitude and longitude					
Castilian part of Andalusia	8.072	978.239	0.112	11.983	4.589
	(3.389)**	(388.63)**	(0.109)	(4.304)***	(2.236)**
	[3.211]**	[253.14]***	[0.154]	[3.4]***	[2.055]**
R^2	0.32	0.43	0.34	0.35	0.25
Panel C: Quadratic polynomial in distance to the Frontier					
Castilian part of Andalusia	9.917	1078.565	0.176	9.289	3.909
	(2.827)***	(314.988)***	(0.07)**	(2.738)***	(1.524)**
	[2.121]***	[334.977]***	[0.08]**	[2.486]***	[0.98]***
R^2	0.27	0.38	0.32	0.29	0.23
Panel D: Quadratic polynomial in distance to Madrid					
Castilian part of Andalusia	14.653	1340.679	0.118	11.234	4.524
	(3.099)***	(340.271)***	(0.085)	(3.236)***	(1.842)**
	[2.229]***	[309.082]***	[0.13]	[2.606]***	[1.102]***
R^2	0.29	0.4	0.32	0.32	0.22
Distance to roads (18th cent.) and distance to the own capital city	Yes	Yes	Yes	Yes	Yes
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	202	156	208	208	208

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively. Distance to current capital city measures the linear distance between the centroid of the municipality and the provincial capital (in km) (authors' elaboration using geo-referenced data from IECA (2014a)). Distance to roads in the 18th century measures the linear distance between the centroid of the municipality and the closest road in the 18th century (1760-1788) (in km) (authors' elaboration using maps from Instituto de Cartografía de Andalucía (2009) and geo-referenced data from IECA (2014a)).

TABLE A15 - ROBUSTNESS TO REMOVING THE WESTERNMOST SEGMENT OF THE FRONTIER

	Land and political power concentration in the 18th century			Land concentration in 1982	
Dependent variable	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: OLS-Border specification					
Castilian part of Andalusia	11.165	566.131	0.334	7.934	4.375
	(3.178)***	(329.013)*	(0.085)***	(2.561)***	(1.665)***
	[3.079]***	[225.929]**	[0.131]**	[1.596]***	[0.938]***
R^2	0.26	0.27	0.2	0.16	0.19
Panel B: Quadratic polynomial in latitude and longitude					
Castilian part of Andalusia	8.228	847.510	0.195	5.825	0.647
	(4.715)*	(383.392)**	(0.151)	(3.89)	(2.363)
	[5.445]	[219.433]***	[0.243]	[2.46]**	[1.958]
R^2	0.32	0.32	0.3	0.24	0.25
Panel C: Quadratic polynomial in distance to the Frontier					
Castilian part of Andalusia	10.382	588.929	0.329	7.852	4.275
	(3.146)***	(328.52)*	(0.085)***	(2.596)***	(1.663)**
	[2.86]***	[228.138]**	[0.134]**	[1.559]***	[0.981]***
R^2	0.27	0.27	0.22	0.17	0.19
Panel D: Quadratic polynomial in distance to Madrid					
Castilian part of Andalusia	13.080	1090.583	0.347	10.274	4.731
	(3.201)***	(391.189)***	(0.103)***	(3.33)***	(2.123)**
	[3.019]***	[286.795]***	[0.196]*	[2.323]***	[1.421]***
R^2	0.31	0.33	0.20	0.17	0.19
Panel E: Quadratic polynomial in distance to Seville					
Castilian part of Andalusia	8.823	325.229	0.222	4.639	2.163
	(3.427)**	(284.218)	(0.092)**	(2.497)*	(1.636)
	[3.394]**	[151.33]**	[0.11]**	[1.335]***	[0.954]**
R^2					
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	162	124	165	165	165

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

Appendix K – Tables A16 and A17, and Figure A25. Falsification tests.

TABLE A16. FALSIFICATION TEST: MOVING THE FRONTIER NORTHWESTWARD

Dependent variable	Moving the frontier 50 km northwestward				
	Land and political power concentration in the 18th century			Land concentration in 1982	
	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentr. in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: OLS-Border specification					
Castilian part of Andalusia	-0.901	468.404	-0.174	2.329	0.797
	(5.004)	(514.781)	(0.085)**	(3.283)	(1.799)
	[4.044]	[736.248]	[0.107]	[3.497]	[1.691]
R^2	0.2	0.14	0.16	0.29	0.12
Panel B: Quadratic polynomial in latitude and longitude					
Castilian part of Andalusia	-0.27	923.533	-0.154	-1.112	-0.247
	(5.955)	(672.088)	(0.098)	(3.841)	(2.041)
	[4.501]	[891.096]	[0.089]*	[3.5]	[1.867]
R^2	0.22	0.2	0.26	0.35	0.16
Panel C: Quadratic polynomial in distance to the Frontier					
Castilian part of Andalusia	-0.256	551.321	-0.134	1.394	0.616
	(5.011)	(597.412)	(0.086)	(3.295)	(1.84)
	[3.898]	[826.461]	[0.117]	[3.063]	[1.617]
R^2	0.2	0.14	0.20	0.34	0.16
Panel D: Quadratic polynomial in distance to Madrid					
Castilian part of Andalusia	0.257	888.522	-0.169	2.575	0.393
	(4.972)	(580.39)	(0.094)*	(3.31)	(1.957)
	[4.339]	[861.15]	[0.125]	[3.218]	[1.941]
R^2	0.22	0.18	0.16	0.33	0.14
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	159	119	163	163	163

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the relevant frontier. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

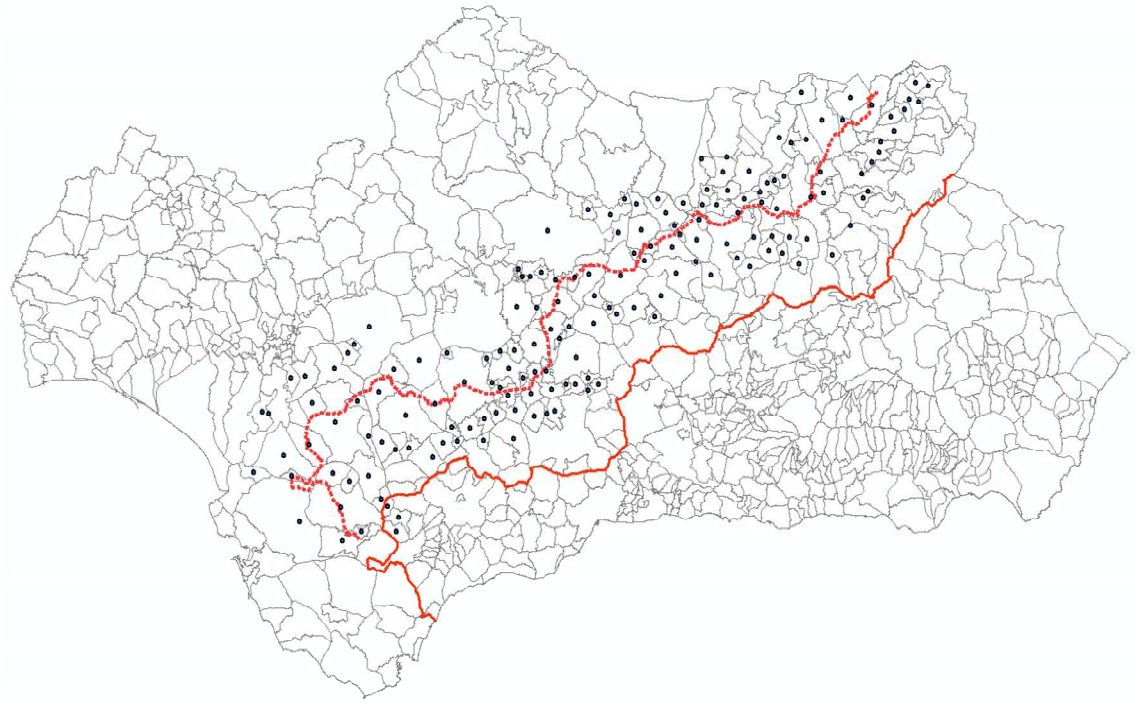


Figure A25. Falsification test: moving the frontier northwestward

TABLE A17 - FALSIFICATION TEST: MOVING THE FRONTIER NORTHWARD

Dependent variable	Moving the frontier 50 km northward				
	Land and political power concentration in the 18th century			Land concentration in 1982	
	Percentage of landless workers	Mayor Hacendado/ surface	Privileged Orders jurisdiction	Land concentr. in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)	(3)	(4)	(5)
Panel A: OLS-Border specification					
Castilian part of Andalusia	-6.548	-226.56	-0.026	-0.967	0.295
	(4.384)	(664.966)	(0.094)	(3.408)	(1.679)
	[3.688]*	[328.448]	[0.056]	[3.9]	[1.539]
R^2	0.17	0.14	0.07	0.27	0.22
Panel B: Quadratic polynomial in latitude and longitude					
Castilian part of Andalusia	1.111	212.632	0.022	-3.933	-0.884
	(4.679)	(784.47)	(0.087)	(4.134)	(1.924)
	[3.292]	[335.97]	[0.061]	[3.599]	[1.374]
R^2	0.27	0.2	0.29	0.31	0.25
Panel C: Quadratic polynomial in distance to the Frontier					
Castilian part of Andalusia	-7.473	-108.072	0.007	-0.475	0.432
	(4.391)*	(696.785)	(0.096)	(3.268)	(1.647)
	[3.94]*	[319.861]	[0.054]	[3.01]	[1.26]
R^2	0.18	0.15	0.12	0.3	0.22
Panel D: Quadratic polynomial in distance to Madrid					
Castilian part of Andalusia	-0.33	344.408	0.111	-1.22	-0.522
	(4.172)	(694.97)	(0.096)	(3.676)	(1.909)
	[2.891]	[304.002]	[0.072]	[3.671]	[1.409]
R^2	0.22	0.19	0.15	0.28	0.23
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes
Number of observations	163	117	166	166	166

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the relevant frontier. Robust standard errors are in parentheses, and standard errors corrected for spatial dependence are in brackets. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

Appendix L – Falsification exercise consisting of assigning treatment status to municipalities according to non-straight random borders.

In this Appendix we explain the details about how to operationalize the falsification exercise conducted in Section 5.4, which consists of drawing 1,000 random placebo borders. First, we explain the algorithm used to create non-straight random borders, and then we describe how we assign the treatment status to municipalities based on these random borders.

1. Drawing non-straight random placebo borders.

Firstly, we set the geographic window in which borders will be drawn. We set the following coordinate points: from -7.5 to -1.5 decimal degrees in longitude, and from 37 to 38 decimal degrees in latitude. We choose this range of latitude to ensure that we have a sufficiently large treatment and control sample for each random border. It is also necessary to take into account the geographic orientation of the region studied. The major axis of Andalusia follows a West–East orientation. Therefore, we draw random borders according to this orientation. At this point it is important to note that we construct borders as a sequence of points.

We create non-straight random borders following these steps:

1) We begin in the longitude coordinate (x) -7.5º, and then we randomly choose a latitude coordinate (y) between latitudes 37º and 38º following a uniform distribution of probabilities. This is the first point of the border.
2) Next, for $x = x_{-1}+0.01$ (i.e., x = -7.49), we set $y= y_{-1}+ (U(1,0)-0.5)*0.1$.
   Where "$U(1,0)$" indicates a random value following a uniform distribution. "-0.5" is subtracted in order to give the same probability to the event of a positive or negative value within the parenthesis. In practice, this implies that the border evolves randomly in latitude, that is, a trend needn't be imposed. The parenthesis is multiplied by "0.1" to smooth the variation in latitude along the border. A value higher than 0.1 makes the border be more erratic, and a lower value makes the border flatter.

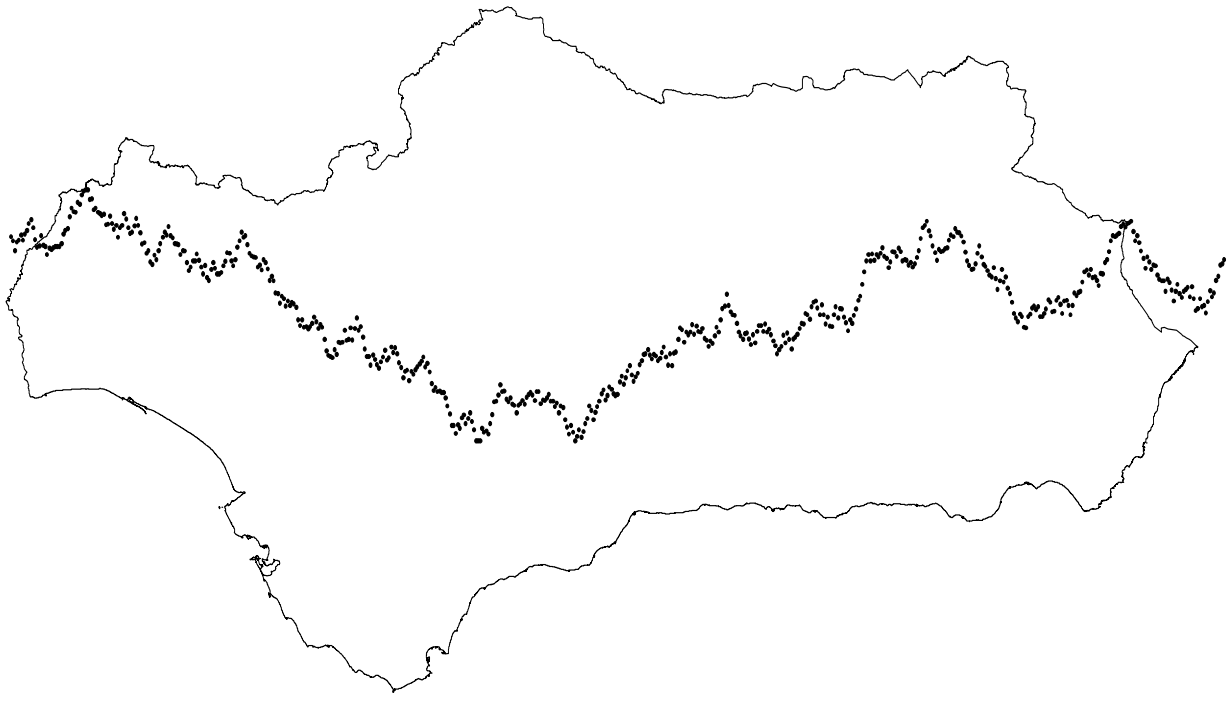
We restrict *y* to be in the range [37ºN,38ºN] for the reasons given above.

3) We repeat step 2 until *x*= -1.5

In Stata, the code is as follows:

```
local a=1
forvalues long_i= -7.5(0.01)-1.5 {
if `a'==1 {
local lat_i= runiform()+37
}
else {
local lat_i= `lat_i'+(runiform()-0.5)*0.1
if `lat_i'<37 local lat_i=37          // Minimum
if `lat_i'>38 local lat_i=38          // Maximum
}
matrix long_fr=nullmat(long_fr) \ `long_i'
matrix lat_fr=nullmat(lat_fr) \ `lat_i'
matrix iteration=nullmat(iteration) \ `a'
local a=`a'+1
}
```

Here is an example of a border:



2. Assignment of the treatment status to municipalities.

In this falsification exercise, municipalities are assigned to the placebo treatment group if their centroids are to the north of the randomly drawn frontier. We use two Stata modules: –geonear– (Picard, 2010) and –nearmrg– (Booth, 2012).

To implement our exercise, we need to assign the treatment, but also to calculate the distance to the placebo border, since this variable is used in one of the specification.

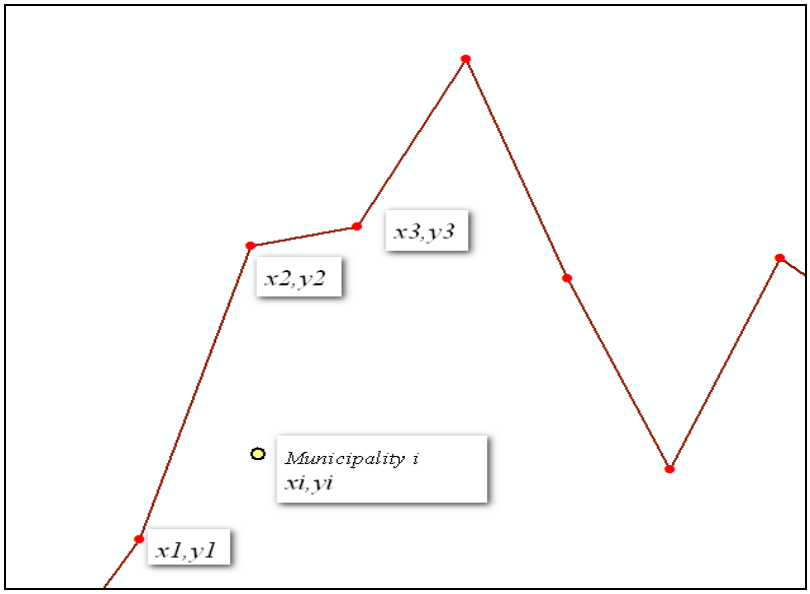
We proceed in the following steps:

1) For each municipality, we need to find the nearest point in the placebo border and measure the distance. In other words, we create a variable measuring the nearest distance to the border. We employ –geonear– in this step.
2) We merge our dataset of municipalities with the dataset that makes up the placebo border. The placebo border dataset contains one column with the longitude coordinate (*x*) and another column with the latitude coordinate (*y*). Importantly, we use *x* as the link variable: each municipality is associated with the nearest point of the border in terms of longitude. We can do this thanks to the –nearmrg– module. Matching each municipality using *x*, rather than using the nearest point to the border, is important in order to assign the treatment correctly.
3) One municipality is assigned to the placebo treatment group if its latitude coordinate is higher than *y* (being *y* the latitude coordinate corresponding to the nearest point of the border in terms of longitude).

In Stata, the code is as follows:

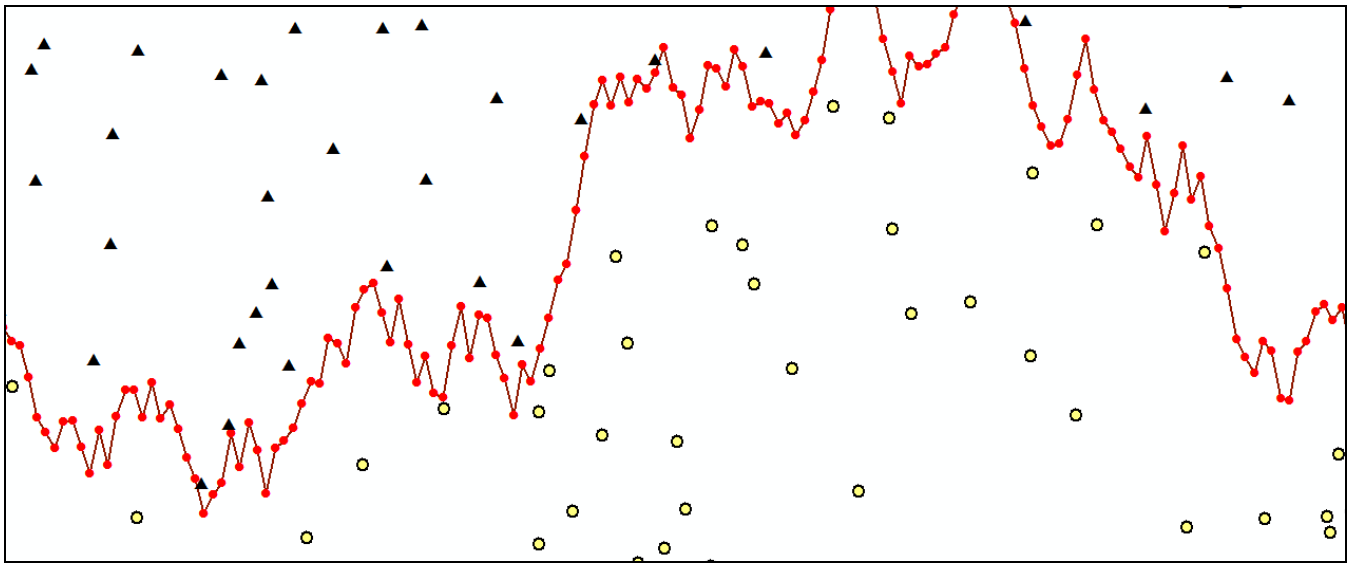
```
geonear mun_code latlon using placebo_border, n(iteration lat_fr long_fr) near(1)
gen long_fr=lon
nearmrg using placebo_border, nearvar(long_fr) genmatch(longfr_matched)
drop if _merge==2
gen treatplac=(lat>lat_fr)
```

The next figure shows an example of how the assignment of the placebo treatment is made:



The points that make up the border are [*x1,y1*],[*x2,y2*], etc. The line has been drawn for illustrative purposes. Municipality *i* is matched to point *x2,y2*, which is the nearest point in longitude. Then, municipality *i* is not assigned to the treatment group because its latitude coordinate is lower than the latitude coordinate of *x2,y2* (that is, $yi<y2$). Consequently, municipality *i* is assigned to the control group.

Here is another example at a larger geographical scale:



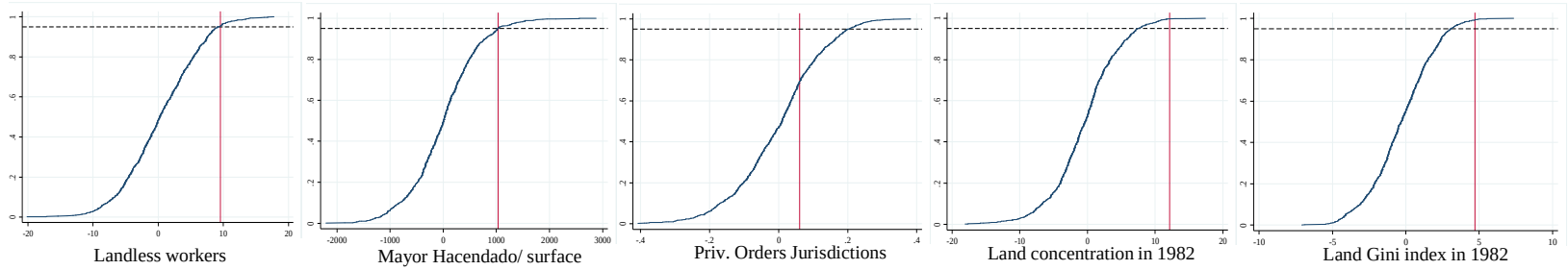
Triangles represent treated municipalities, while circles are observations assigned to the control group.

References:

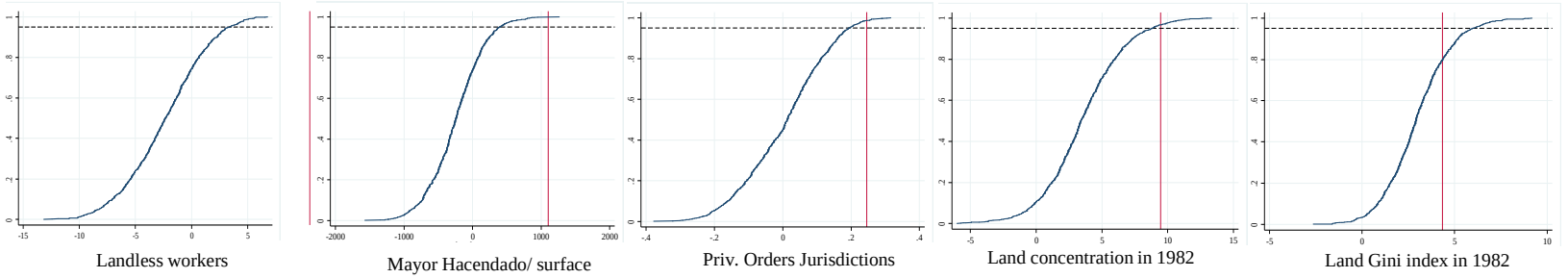
Picard, Robert. 2010. “GEONEAR: Stata module to find nearest neighbors using geodetic distances”. Boston College Department of Economics.

Booth, Eric.2012. “NEARMRG: Stata module to provide nearest-match merging of datasets.” Statistical Software Components S434901, Boston College Department of Economics.

A) Quadratic polynomial in latitude and longitude



B) Quadratic polynomial in distance to the frontier



C) Quadratic polynomial in distance to Madrid

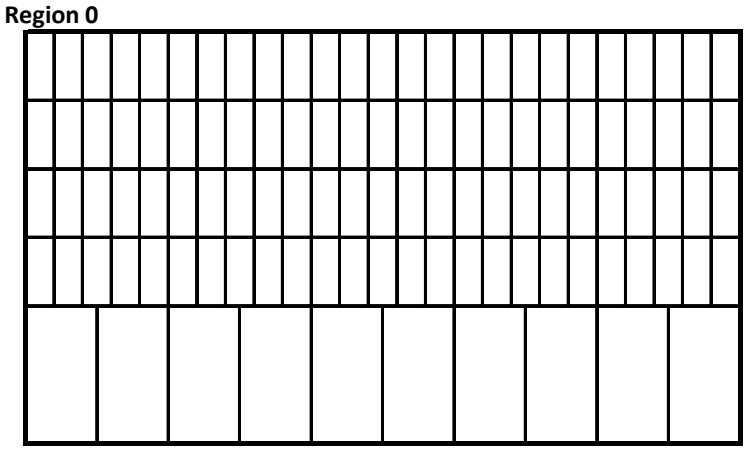
Figure A26. Cumulative distribution of coefficients from a simulation of 1,000 random placebo frontiers

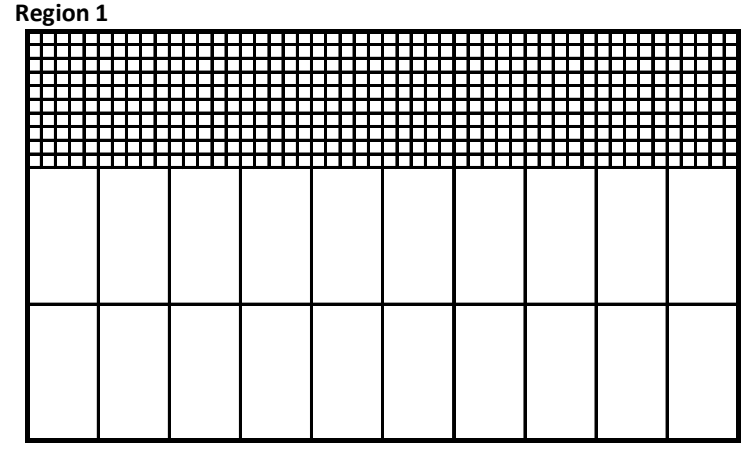
Notes: The curved lines represent the cumulative distribution of coefficients from a simulation of 1,000 random placebo borders, where the *y*-axis indicates the point in the distribution and the *x*-axis the value of the coefficients. The vertical lines show the value of the Castilian dummy in our baseline RDD estimations (Panels B, C and D of Table 3). The dashed horizontal lines cross the *y*-axis at the 95% of the cumulative distribution.

Appendix M – Example about weighting observations in regressions using microdata. Tables A18 and A19. Robustness checks to regressions using microdata.

Example about weighting observations in regressions using microdata.

In this section we argue about the appropriateness of weighting observations (agricultural holdings) by their surface area in regressions using microdata. To illustrate this question, let us consider two regions with equal total surface area (15,000 ha). Region 0 has 100 holdings of 100 ha, and 10 holdings of 500 ha. Region 1 has 500 holdings of 10 ha, and 20 holdings of 500 ha. The following figures represent the structure of agricultural holdings in both regions:





Land distribution is more unequal in Region 1. We arrive at this conclusion using different criteria. For example, the GINI index is 0.63 in Region 1, while only 0.24 in

Region 0. Land concentration in large estates is also higher in Region 1: 2/3 of its total surface area belongs to holdings larger than 200 ha, while only 1/3 in Region 0.

Now, let us estimate a simplify version of the regressions included in Table 8:

$$Large\ estate\ dummy_i = \alpha + \beta * region_i + \varepsilon_i \qquad \text{(Eq. 1)}$$

$$Average\ holding\ size_i = \alpha + \beta * region_i + \varepsilon_i \qquad \text{(Eq. 2)}$$

where $Large\ estate\ dummy_i$ and $Average\ holding\ size_i$ are the dependent variables used in Table 8, α is the constant term, and $region_i$ indicates whether the agricultural holding belongs to Region 0 or 1.

Without weighting the results are the following:

Large estate dummy = 0.091 - 0.052**region*

Average holding size= 136.36 -107.52**region*

These results seem to indicate that land concentration is lower in Region 1. They mean that 9% of agricultural holdings are large estates in Region 0, while only 4% in Region 1. Likewise, they indicate that the average holding size is 136.36 in Region 0, while only 28.8 in Region 1. Therefore, these results are against the fact that land distribution is more unequal in Region 1, as argued above.

In order to focus on how land is actually distributed, we must weight observations by their surface area. Then, we obtain the following results:

Large estate dummy = 0.33 + 0.33**region*

Average holding size= 233.33 + 103.33**region*

Now, the coefficients indicate that land concentration is *higher* in Region 1. They mean that 66.67% of the total surface area in Region 1 belongs to large estates, while only 33.3% in Region 0. In other words, the coefficient on *region* (for the specification with *Large estate dummy* as the dependent variable) indicates the difference in the probability of being part of a large estate for a randomly selected hectare of land. It is important to note that what matters is not the number of large estates in absolute terms, but the area occupied by large estates. For the case when *Average holding size* is the

dependent variable, the coefficient on *region* indicates that the expected landholding size for a randomly selected hectare of land in Region 1 is 103.33 ha larger than in Region 0.

Tables A18 and A19. Robustness checks to regressions using microdata.

TABLE A18. SPATIAL REGRESSION DISCONTINUITY SPECIFICATIONS- MICRODATA FROM THE 1982 AGRICULTURAL CENSUS: RESULTS WITHOUT WEIGHTING

			Individual controls		Geog.-climatic controls		Preexisting land uses (10^{th} to 12^{th} centuries)	
Dependent variable	Utilized agricultural area	Large estate dummy (>= 200 ha)	Utilized agricultural area	Large estate dummy (>= 200 ha)	Utilized agricultural area	Large estate dummy (>= 200 ha)	Utilized agricultural area	Large estate dummy (>= 200 ha)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: OLS-Border specification								
Castilian part of Andalusia	2.505*	0.003**	2.565*	0.004**	4.196***	0.005***	3.622**	0.005***
	(1.439)	(0.002)	(1.398)	(0.002)	(1.391)	(0.002)	(1.49)	(0.002)
R^2	0.01	0.00	0.04	0.02	0.05	0.02	0.05	0.02
Panel B: Quadratic polynomial in latitude and longitude								
Castilian part of Andalusia	3.69	0.006*	3.341	0.005*	2.599	0.004*	3.287	0.005**
	(2.574)	(0.003)	(2.512)	(0.003)	(2.216)	(0.003)	(2.213)	(0.003)
R^2	0.02	0.01	0.05	0.02	0.06	0.03	0.06	0.03
Panel C: Quadratic polynomial in distance to the Frontier								
Castilian part of Andalusia	2.439*	0.003**	2.498*	0.003**	4.1***	0.005***	3.624**	0.005***
	(1.402)	(0.002)	(1.36)	(0.001)	(1.312)	(0.001)	(1.431)	(0.002)
R^2	0.01	0.00	0.05	0.02	0.05	0.02	0.06	0.03
Panel D: Quadratic polynomial in distance to Madrid								
Castilian part of Andalusia	4.446**	0.005***	4.256**	0.005***	5.429***	0.006***	5.742***	0.007***
	(1.716)	(0.002)	(1.656)	(0.002)	(1.642)	(0.002)	(1.684)	(0.002)
R^2	0.01	0.00	0.05	0.02	0.05	0.02	0.06	0.03
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Individual controls	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	No	No	No	No	Yes	Yes	Yes	Yes
Preexisting land uses	No	No	No	No	No	No	Yes	Yes
Number of clusters	203	203	203	203	203	203	203	203
Number of observations	130,951	130,951	128,628	128,628	128,628	128,628	128,628	128,628

Notes: The units of observation are private agricultural holdings (with legal status of natural person or company). Individual controls are "company" (whether the holding is managed by a company rather than by a natural person), "utilized agricultural area over total surface area (%)", "pastureland" (whether the holding does not have arable land), and a set of dummies indicating the type of tenure system. Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. The specifications are estimated with a semiparametric RD approach. Robust standard errors clustered at the municipal level are in parentheses. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

TABLE A19 - ROBUSTNESS TO SPATIAL REGRESSION DISCONTINUITY SPECIFICATIONS- MICRODATA FROM THE 1982 AGRICULTURAL CENSUS

	Dependent variable is Log of utilized agricultural area			
		Individual controls	Geog.-climatic controls	Preexisting land uses (10^{th} to 12^{th} centuries)
	(1)	(2)	(3)	(4)
Panel A: OLS-Border specification				
Castilian part of Andalusia	0.47***	0.386**	0.415***	0.413***
	(0.179)	(0.173)	(0.138)	(0.133)
R^2	0.09	0.15	0.21	0.21
Panel B: Quadratic polynomial in latitude and longitude				
Castilian part of Andalusia	0.935***	0.786***	0.524***	0.559***
	(0.294)	(0.259)	(0.175)	(0.18)
R^2	0.13	0.19	0.23	0.24
Panel C: Quadratic polynomial in distance to the Frontier				
Castilian part of Andalusia	0.432***	0.351**	0.404***	0.403***
	(0.165)	(0.16)	(0.132)	(0.128)
R^2	0.1	0.16	0.21	0.21
Panel D: Quadratic polynomial in distance to Madrid				
Castilian part of Andalusia	0.705***	0.606***	0.710***	0.793***
	(0.208)	(0.193)	(0.151)	(0.149)
R^2	0.11	0.16	0.22	0.22
Boundary fixed effects	Yes	Yes	Yes	Yes
Individual controls	No	Yes	Yes	Yes
Geog.-climatic controls	No	No	Yes	Yes
Preexisting land uses	No	No	No	Yes
Number of clusters	203	203	203	203
Number of observations	125,919	125,919	125,919	125,919

Notes: The units of observation are private agricultural holdings (with legal status of natural person or company). Individual controls are "company" (whether the holding is managed by a company rather than by a natural person), "utilized agricultural area over total surface area (%)", "pastureland" (whether the holding does not have arable land), and a set of dummies indicating the type of tenure system. Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. Regressions are weighted by holdings' total surface area. The specifications are estimated with a semiparametric RD approach. Robust standard errors clustered at the municipal level are in parentheses. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

Appendix N – Tables A20 to A22. The effect of the frontier of Granada on current outcomes.

TABLE A20. THE EFFECT OF THE FRONTIER ON CONTEMPORARY OUTCOMES: A 2SLS MODEL

Outcome variable →	Average socio-economic condition	Number of cars over population	Education level of population 30-39 years	Employment in industry and services (%)	Long-term population growth 1950-2010 (%)	Changes in the local government since 1979	Number of political parties that have controlled the town council	Local public debt per capita	Average immigration rate 1988-2014
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Without polynomial indicating geographic location									
2nd Stage: Land concentration in holdings ≥ 200ha	-0.003**	-0.005***	-0.008**	-0.707**	-3.333**	-0.066*	-0.045**	13.885***	-0.99***
	(0.001)	(0.001)	(0.003)	(0.287)	(1.373)	(0.033)	(0.02)	(5.018)	(0.284)
1st Stage: Castilian part of Andalusia	9.288***	9.288***	9.288***	9.288***	8.948***	9.707***	9.707***	9.288***	9.707***
	(2.612)	(2.612)	(2.612)	(2.612)	(2.66)	(2.61)	(2.61)	(2.612)	(2.61)
Partial-R^2 instrument	0.07	0.07	0.07	0.07	0.06	0.07	0.07	0.07	0.07
F-stat instrument	12.64	12.64	12.64	12.64	11.31	13.83	13.83	12.64	13.83
Panel B: Quadratic polynomial in latitude and longitude									
2nd Stage: Land concentration in holdings ≥ 200ha	-0.001	0	-0.005	-0.162	-1.722	-0.055	-0.012	6.071	-0.531**
	(0.001)	(0.001)	(0.003)	(0.243)	(1.396)	(0.04)	(0.016)	(4.95)	(0.239)
1st Stage: Castilian part of Andalusia	11.357***	11.357***	11.357***	11.357***	10.933**	12.149***	12.149***	11.357***	12.149***
	(4.309)	(4.309)	(4.309)	(4.309)	(4.568)	(4.311)	(4.311)	(4.309)	(4.311)
Partial-R^2 instrument	0.05	0.05	0.05	0.05	0.04	0.05	0.05	0.05	0.05
F-stat instrument	6.95	6.95	6.95	6.95	5.73	7.94	7.94	6.95	7.94
Panel C: Quadratic polynomial in distance to the Frontier									
2nd Stage: Land concentration in holdings ≥ 200ha	-0.003**	-0.005***	-0.008**	-0.743**	-3.036**	-0.076**	-0.049**	14.638***	-0.917***
	(0.001)	(0.001)	(0.003)	(0.304)	(1.335)	(0.036)	(0.021)	(5.322)	(0.276)
1st Stage: Castilian part of Andalusia	9.078***	9.078***	9.078***	9.078***	8.662***	9.463***	9.463***	9.078***	9.463***
	(2.663)	(2.663)	(2.663)	(2.663)	(2.726)	(2.666)	(2.666)	(2.663)	(2.666)
Partial-R^2 instrument	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.06	0.07
F-stat instrument	11.62	11.62	11.62	11.62	10.10	12.60	12.60	11.62	12.60
Panel D: Quadratic polynomial in distance to Madrid									
2nd Stage: Land concentration in holdings ≥ 200ha	-0.002*	-0.003**	-0.006**	-0.316	-3.45**	-0.061*	-0.028*	5.595	-0.92***
	(0.001)	(0.001)	(0.003)	(0.228)	(1.372)	(0.033)	(0.016)	(3.651)	(0.265)
1st Stage: Castilian part of Andalusia	11.408***	11.408***	11.408***	11.408***	10.959***	11.91***	11.91***	11.408***	11.91***
	(3.208)	(3.208)	(3.208)	(3.208)	(3.284)	(3.182)	(3.182)	(3.208)	(3.182)
Partial-R^2 instrument	0.07	0.07	0.07	0.07	0.07	0.08	0.08	0.07	0.08
F-stat instrument	12.65	12.65	12.65	12.65	11.13	14.01	14.01	12.65	14.01
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	207	207	207	207	200	208	208	207	208
Average value of the outcome variable	0.76	0.29	2.42	76.03	-12.89	3.17	2.71	233.21	27.12

Notes: 2SLS regressions, in which the left-hand side variable is land concentration in holdings ≥ 200ha in 1982 in the first stage, and as indicated in the headings in the second stage. The coefficients on the relevant variables in each stage are shown in the entries. Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. The set of geographic-climatic controls includes altitude, ruggedness, soil quality, rainfall, temperature and a coast dummy. Robust standard errors are in parentheses. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

TABLE A21. THE EFFECT OF THE FRONTIER ON CURRENT INEQUALITY: A 2SLS MODEL

Current inequality →	Land concentration in holdings ≥ 200ha	Gini index of land distribution
	(1)	(2)
Panel A: Without polynomial indicating geographic location		
2nd Stage: Percentage of landless workers in 1787	0.93***	0.435***
	(0.317)	(0.164)
1st Stage: Castilian part of Andalusia	10.788***	10.788***
	(2.888)	(2.888)
Partial-R^2 instrument	0.06	0.06
F-stat instrument	13.95	13.95
Panel B: Quadratic polynomial in latitude and longitude		
2nd Stage: Percentage of landless workers in 1787	1.288**	0.505*
	(0.599)	(0.271)
1st Stage: Castilian part of Andalusia	9.552***	9.552***
	(3.36)	(3.36)
Partial-R^2 instrument	0.02	0.02
F-stat instrument	8.08	8.08
Panel C: Quadratic polynomial in distance to the Frontier		
2nd Stage: Percentage of landless workers in 1787	0.929***	0.423**
	(0.323)	(0.164)
1st Stage: Castilian part of Andalusia	10.523***	10.523***
	(2.838)	(2.838)
Partial-R^2 instrument	0.06	0.06
F-stat instrument	13.75	13.75
Panel D: Quadratic polynomial in distance to Madrid		
2nd Stage: Percentage of landless workers in 1787	0.792***	0.34***
	(0.241)	(0.123)
1st Stage: Castilian part of Andalusia	15.119***	15.119***
	(3.134)	(3.134)
Partial-R^2 instrument	0.09	0.09
F-stat instrument	23.27	23.27
Boundary fixed effects	Yes	Yes
Geog.-climatic controls	Yes	Yes
Number of observations	202	202
Average value of the outcome variable	14.33	64.43

Notes: 2SLS regressions, in which the left-hand side variable is the percentage of landless workers in 1787 in the first stage, and as indicated in the headings in the second stage. The coefficients on the relevant variables in each stage are shown in the entries. Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. The set of geographic-climatic controls includes altitude, ruggedness, soil quality, rainfall, temperature and a coast dummy. Robust standard errors are in parentheses. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

TABLE A22. THE EFFECT OF THE FRONTIER ON CONTEMPORARY OUTCOMES: THE REDUCED FORM EFFECT

Outcome variable →	Average socio-economic condition	Number of cars over population	Education level of population 30-39 years	Employment in industry and services (%)	Long-term population growth 1950-2010 (%)	Changes in the local government since 1979	Number of political parties that have controlled the town council	Local public debt per capita	Average immigration rate 1988-2014
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Without geographic polynomial indicating location									
Castilian part of Andalusia	-0.027	-0.043	-0.070	-6.569	-29.821	-0.638	-0.440	128.963	-9.609
	(0.011)**	(0.007)***	(0.023)***	(2.178)***	(9.41)***	(0.297)**	(0.149)***	(35.415)***	(1.481)***
R^2	0.216	0.365	0.266	0.226	0.450	0.086	0.086	0.207	0.296
Panel B: Quadratic polynomial in latitude and longitude									
Castilian part of Andalusia	-0.017	-0.005	-0.052	-1.846	-18.824	-0.669	-0.147	68.950	-6.454
	(0.016)	(0.012)	(0.033)	(2.835)	(14.203)	(0.479)	(0.204)	(57.498)	(2.175)***
R^2	0.242	0.423	0.276	0.249	0.471	0.123	0.123	0.269	0.357
Panel C: Quadratic polynomial in distance to the Frontier									
Castilian part of Andalusia	-0.025	-0.041	-0.068	-6.748	-26.298	-0.721	-0.466	132.883	-8.680
	(0.011)**	(0.007)***	(0.024)***	(2.198)***	(8.759)***	(0.3)**	(0.149)***	(35.994)***	(1.437)***
R^2	0.227	0.375	0.268	0.230	0.488	0.111	0.096	0.212	0.373
Panel D: Quadratic polynomial in distance to Madrid									
Castilian part of Andalusia	-0.026	-0.032	-0.073	-3.605	-37.808	-0.721	-0.331	63.824	-10.957
	(0.013)**	(0.01)***	(0.024)***	(2.54)	(11.472)***	(0.372)*	(0.179)*	(41.866)	(1.728)***
R^2	0.226	0.376	0.268	0.245	0.455	0.094	0.094	0.242	0.302
Boundary fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Geog.-climatic controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	207	207	207	207	200	208	208	207	208

Notes: Variables descriptions are provided in Table A1. Sample restricted to municipalities within 25 km of the frontier. The set of geographic-climatic controls includes altitude, ruggedness, soil quality, rainfall, temperature and a coast dummy. Robust standard errors are in parentheses. *, ** and *** denote statistical significance at the 10, 5 and 1% level, respectively.

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