Ethnic Cleansing and the Long-Term Persistence of Extractive Institutions: Evidence from the Expulsion of the Moriscos

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Abstract

This paper investigates the long-term effects of the institutions the Spanish created to exploit the Muslim population during their reconquest of the Iberian Peninsula. The 1609-1614 expulsion of the Hispano-Muslim population is used in conjunction with municipal-level variation in the pre-expulsion institutional framework to analyze both the long-term effects of extractive institutions and to investigate the mechanisms by which these endure. Results show that more than 150 years after the expulsion, many formerly Muslim municipalities retained their extractive institutional framework and were significantly underdeveloped. Archival evidence suggests that both the feudal lords and their creditors worked to preserve previous institutional arrangements to avoid financial ruin following the expulsion. In addition to providing a unique micro-level test of the long-term effects of extractive institutions, the paper highlights the mechanisms through which these persist.

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1 Introduction

In countless historical circumstances wealthy and powerful individuals have exploited the less fortunate for their own economic gain. Although this exploitation often served the short-term interests of the elites, recent research has highlighted the negative long-term effects of exploitative arrangements. Engerman and Sokoloff (2002) have argued that exploitative institutions created inequality across Central and South America which in turn discouraged economic growth for centuries. The empirical work of Acemoglu, Johnson and Robinson (2001, 2002) has shown a robust relationship between "extractive" colonization and sluggish long-term economic growth. Finally, Nunn (2008) has demonstrated that African countries hit hardest by the slave trade economically under-performed areas that were largely spared.

While these macro-relationships stress the long-lasting negative impact of extractive institutional arrangements, the mechanisms through which these arrangements endure to adversely influence economic outcomes generations after their establishment remain poorly understood. This paper investigates how the institutions the Spanish[1] created to exploit the Muslim population during the reconquest[2] endured to adversely affect economic outcomes hundreds of years after the last Muslim left the Iberian Peninsula.

Following the reconquest of the Muslim Kingdom of Valencia (bordering the Mediterranean in eastern Spain) in 1244, the Spanish conquerors established what Burns (1973, 1975) has dubbed "medieval colonial" institutions to exploit the local Muslim population. In 1609, after hundreds of years of exploitation and religious persecution (which culminated in the forced conversion of all Muslims to Christianity in 1525), the Spanish Crown expelled all crypto-Muslims (denominated Moriscos following their forced conversion) from the Iberian peninsula.

[1] These "Spaniards" (for the purposes of this paper) were primarily from the kingdom of Aragon which would unite with Castile in 1479.

[2] The reconquest refers to the Christian military conquest of Muslim lands in the Iberian Peninsula. These lands had been conquered by Islam in 711. The reconquest was completed in 1492 with the fall of Granada.

The 1609 expulsion of Valencia's 120,000 Moriscos provides a unique opportunity to observe the long-term persistence of extractive arrangements. On the eve of the expulsion, the Christian and Morisco populations were largely segregated. Although many times separated by little more than a few kilometers, these communities were subject to very different institutional arrangements. The Morisco populations were often treated like slaves. Their suspect religious affiliation led to heavy taxes and few rights. The neighboring Christian populations, in contrast, were subject to more benign institutional arrangements. When the last Morisco departed Valencia in 1609, there seemed little "justification" for the continuation of the exploitative arrangements that had previously governed Morisco lands. However, Christian resettlers of the formerly Morisco lands soon found that the lords and their creditors had little intention of changing the previous institutional framework.

This "natural experiment" created two sets of municipalities. The first had been inhabited by Christians for hundreds of years and were subject to relatively benign institutional frameworks. The second –formerly Morisco towns resettled by Christians– retained their extractive arrangements.

The empirical results show how the formerly Morisco towns remained underdeveloped more than 150 years after the expulsion, providing the first micro-level test of the long-lasting effects of "colonial" rates of extraction. Census data from 1787 show that previously Morisco municipalities were poorer and less developed than neighboring communities.

In addition to this unique empirical test of the long-term effects of extractive arrangements, detailed archival sources allow the investigation of the mechanisms by which the extractive institutions endured long after the expulsion of the Moriscos.

The archival evidence details how seignorial lords took out large loans guaranteed by the income streams from taxes on their Morisco lands. Following the expulsion, most of these lords faced financial destitution and attempted to default on their loans. Their creditors, also faced with large losses, lobbied the Spanish Crown to intervene on their behalf. The letters and petitions of both creditors and lords to the Crown detail how both worked to maintain the previous extractive arrangements in order to limit their respective losses.

Valencia's pre-expulsion economy developed financial arrangements predicated on the exploitation of the Moriscos. When this exploited class was expelled, the vested interests worked to maintain their positions by continuing to exploit the Christian re-settlers. These high extraction rates, in turn, discouraged the development of an artisanal and industrial class in the formerly Morisco towns more than 150 years after the expulsion. In sum, the micro-level test confirms the long-term negative effects of extractive arrangements and suggests the importance of elites and vested in interests in perpetuating these arrangements.

The remainder of the paper proceeds as follows: the next section provides a brief historical overview of the Moriscos and how the extractive institutions in the Morisco areas fit into the broader Valencian institutional framework. Section 3 details the persistence of these extractive institutions and outlines the mechanisms by which these persisted. Section 4 uses qualitative evidence to describe the evolution of the Morisco areas following the expulsion and then develops a model of taxation, innovation and class formation. Section 5 describes the data and presents the empirical results. Section 6 concludes.

2 The Moriscos and the Early Modern Valencian Economy

2.1 The Moriscos

In 1492 the armies of Castile conquered Granada, the last Muslim stronghold in the Iberian Peninsula. With the fall of Granada the *reconquista* –the seven hundred year military reconquest of the Iberian peninsula from Muslim forces– came to a close. The end of the military struggle with the Muslims, however, turned the attention of the newly unified Spanish Crown to the assimilation of Muslim and Jewish minorities living in the Iberian Peninsula. The Jewish population was given the choice between expulsion and conversion in 1492. Muslims residing in Castile were forcefully converted in 1502 (after an unsuccessful proselytizing campaign), and by 1525

the Iberian Peninsula's last Muslims were given the choice between expulsion and conversion.

After their "conversions" many Muslims and Jews continued to practice their original faiths behind closed doors. These crypto-Jews and crypto-Muslims came to be called *conversos* and *moriscos* respectively and were at best viewed with suspicion. The Christian population that did not possess either Jewish or Muslim heritage were known as *cristianos viejos* or "old" Christians.

The crypto-Muslim community remained a numerically significant part of the population long after the end of the reconquest (completed by 1244 in Valencia). In the provinces of Granada and Valencia, they represented a substantial share of the population well into the 16^{th} century. In Valencia in 1609, Moriscos remained roughly 26% of the population (Nadal 1976, pp. 54).

2.2 The Economic Evolution of the Muslim Population in Valencia

Crusader armies under king James I reconquered the Muslim kingdom of Valencia between 1229 and 1244. Before the reconquest, the kingdom was one of the richest in Spain and supported buoyant silk and paper manufactures in addition to advanced agricultural arrangements.[3] Following the reconquest, the Christian re-conquerors (from the Spanish kingdoms of Aragon and Catalonia) remained a small minority among the Muslim majority for over a century.

The wealth of Muslim Valencia and the small numbers of available immigrants led king James I and his immediate successors to rule in what Burns (1973) has described as a "colonial" manner. Christian overlords during this initial period appear to have granted the Muslim populations considerable autonomy in exchange for payments of a variety of tributes and taxes. While Christians initially imposed relatively light burdens on the Muslim population to discourage revolts, constant Muslim emigration to North Africa and Christian immigration from the kingdoms of Catalonia and

[3]The complex irrigation systems developed by Valencian Muslims continued to impress visitors long after the reconquest.

Aragon gradually reduced the Muslim population share to less than half sometime in the 15^{th} century. As the Christians' numerical position improved and the threat of Muslim revolt diminished, taxes on the Muslim inhabitants of Valencia increased.

By the end of the 15^{th} century, King Ferdinand II (1452-1516) could refer to the Muslim population as "our coffers." Meyerson (1991, pp 34) sums up the general attitude of the Christian rulers (the king and the landowning nobility) toward the Muslim population by explaining that "[the Muslim vassals] were [...] perceived by their lords primarily as exploitable labor. If the [Muslims] did not produce, there was nothing else, and least of all their religious affiliation, to justify their presence." This increased taxation and exploitation drove the majority of the Valencian Muslim population from prosperity into poverty by the eve of their forced conversion to Christianity in 1525.

After the forced conversion of Valencia's Muslims, the Morisco (crypto-Muslim) community faced increased pressure from the Spanish Inquisition. The nobles over the Morisco lands intervened to protect the Moriscos from the Inquisition. This protection came with a price as the landed nobility did not decrease the extraction rates in Morisco towns even after their conversion to Christianity.[4] An observer of the Morisco populations in 1595 compared the treatment of the Moriscos to that of the Native Americans in Spain's overseas colonies by noting that "the Lords are similar to the *Encomenderos de Indias:* they don't want them [the Moriscos] to [truly] convert so that they may continue to exact tribute" (Ciscar 1977, pp. 68). Casey (1979) describes the relationship between Moriscos and their Christian lords in the 16^{th} century as "semi-colonial."

On the eve of their expulsion, the Moriscos worked primarily on lands held by Christian nobles. While in theory Morisco and Christian peasants were subject to the same general feudal framework, Moriscos by the close of the 16^{th} century were

[4]When the Muslims of Valencia were forced to convert to Christianity in 1525, they petitioned to have their tax rates lowered to the Christian rate. These petitions were in practice denied, moving a contemporary to observe in 1565 that "these new converts are forced to live like Christians and pay like Muslims" (Ciscar 1977, pp. 68).

treated more like slaves than vassals (Ciscar 1977, pp. 90). The descent of the Muslim population from prosperity to extreme poverty did not occur overnight. The numerical and social position of the Valencian Muslim population gradually and sporadically declined after the reconquest. The high extraction rates imposed on the Muslim population, however, appear to be the most important constant in explaining this group's economic decline.

2.3 Moriscos, Christians and Taxes

The Spanish king, lesser nobles and the Catholic Church controlled the lion's share of the land in 16^{th} century Valencia. While some Moriscos worked on ecclesiastical lands, most worked lands controlled by the nobility. These Moriscos worked in generally segregated regions. Only a few worked in areas that had both Morisco and Christian peasants. The geographic distribution of Christian and Morisco areas had largely been determined following the reconquest of Valencia in the 13^{th} century and the Christian immigration of the 14^{th} century. After this date little changed until the expulsion (LaPeyre 1959, pp. 29). If a town had resisted in the reconquest, its Muslim population was expelled following its capture. If the town agreed to terms, the Muslim population was allowed to stay. As the Christian population increased in the 14^{th} century, the Moriscos were increasingly relegated to the hills away from the fertile irrigated coastal lands (Casey 1979, pp. 44).

Both Morisco and Christian peasants worked the lands under feudal arrangements. While the conditions governing each town and its surrounding area varied considerably, both Muslims and Christians paid the seignorial lords on a regular basis for the right to work the lands. The terms governing the payments between peasant and lord slowly evolved from those stipulated following the reconquest so that by the 14^{th} century payments in kind had been commuted for fixed cash payments. These changes were "enshrined in documents and charters which no subsequent *senyor* (Lord) could set aside" (Casey 1979, pp. 111).[5] The fixed cash payments were not

[5] As an example of the difficulty changing the initial laws agreed to in the 13^{th} century take the case of the silk tax. "[W]hen the tithing laws were promulgated in the thirteenth century there were

indexed for inflation, and their real value steadily decreased throughout the Spanish inflation of the 16^{th} century.[6] While Christian peasants appear to have gained from this devaluation of their seignorial dues, the lords were better able to maintain their revenues from the exploited Morisco populations by levying special taxes, increasing mandatory "gifts" and requiring unpaid labor.

In addition to dues on the harvest, both Christians and Moriscos paid for the use of "common areas" (such as mills, ovens...) maintained by the lords. Artisans also paid dues on their products. These dues were sometimes collected directly by the lord, and other times were farmed out to tax collectors in auction. Regardless of how the dues were collected, Moriscos almost always paid more than Christians. The proceeds of the dues went to the nobles, who usually lived in Valencia, the kingdom's coastal capital .

By the 16^{th} century, Moriscos faced generally higher feudal dues and labor demands than their Christian neighbors.

2.4 The Seignorial Lords

The seignorial lords reaped many benefits from the Moriscos' widespread exploitation. Due to the marginal religious and social position of Moriscos, the nobles extracted much higher rents from them than they could from their Christian subjects. Thus when the Inquisition and the Catholic Church began to suggest the expulsion of the Moriscos in the 1580s, the Valencian nobles staunchly defended their continued presence in Christian Spain despite their suspect religious practices.

Their desire to maintain their control over the Moriscos heightened as Valencian nobles faced increasing economic pressure in the late 16^{th} century. Inflation throughout the 16^{th} century decreased landowners' real incomes (Ciscar 1977, pp. 107). During this period, the Spanish Crown increasingly burdened these nobles with

so few mulberry trees in existence that the authorities did not think it worth while to lay down any 'definite rule' about them, which meant that the silk harvest was disgracefully undertaxed" (Casey 1979, pp. 60).

[6]Hamilton (1934) is the classic reference for the inflation caused by large imports of Spanish bullion from the Americas.

extraordinary levies to support the vast Spanish Empire. The combination of these two factors forced the nobles to take out ever larger loans to meet their expenditures. In exchange for loans, they promised lenders (usually from the Valencian merchant class) a fixed payment each year usually in perpetuity (*censos*). Payments came from the revenues provided by both Morisco and Christian peasants. A detailed study of the nobles' financial situation by Ciscar (1977) has shown that the annual interest payments on the debts acquired by nobles during the 16^{th} century at times came close to their total income.

Although the nobles attempted to extract more from their peasants as their financial situation worsened, the Christian populations resisted any tax increases. This resistance meant taking the seignorial lords to court and resulted in expensive and time-consuming suits. Often the courts ruled in favor of the peasants since these peasants possessed the original town charters from the 13^{th} and 14^{th} centuries which clearly stipulated their feudal dues. The socially and religiously marginalized Moriscos faced greater difficulties obtaining favorable verdicts.

On the eve of the expulsion, many nobles were bankrupt. Ciscar (1977) has argued that the Spanish Crown used this financial crisis to convince the nobles to acquiesce to the expulsion. In this interpretation, the Spanish Crown promised to intervene on behalf of the nobles with their creditors following the expulsion and to give them the goods of the expelled Moriscos to help them pay off their debts.

Regardless of the underlying reasons, it appears that the nobles were increasingly unable (or unwilling) to withstand pressure from the Catholic Church and the Crown to expel the Morisco population.

3 Exploitation after the Expulsion

On April 9, 1609 (the same day the "Twelve-Year Truce" was signed with the Dutch) Phillip III secretly[7] signed a decree authorizing the expulsion of the Moriscos from

[7]The crown worried that the Moriscos would revolt or least stop working if they learned of their expulsion. Both of these fears proved justified. When the Valencian Moriscos learned of their fate a group rose in rebellion. When the Moriscos in Aragon (Valencia's Moriscos were the first to be

Spanish lands.[8] The Spanish Armada was brought back to help ferry the Moriscos to North Africa, and the Spanish authorities contracted merchant ships to help when it became clear the Armada could not provide sufficient ships. The Spanish Crown directed this tremendous undertaking and the process generated statistics that have been studied in detail by LaPeyre (1959). Using these documents he estimates that between 1609 and 1614 roughly 300,000 Moriscos left the Iberian Peninsula. Approximately 120,000 of these came from the kingdom of Valencia. The remaining 180,000 were scattered throughout the rest of Spain. The Moriscos were generally shipped to North Africa (through the Spanish enclave of Oran in what is now Algeria) although the more skilled were allowed into northern Italy and others went to the Ottoman Empire.

The macroeconomic effects of the expulsion remain understudied. For many years historians attributed the decline of the Spanish economy in the 17^{th} century to this event. Although recent studies have questioned the long-term effects of the expulsion on the entire Spanish economy, there is a general agreement that the effects on the province of Valencia were grave.[9] Eugenio Ciscar Pallares, a historian of the effects of the expulsion in Valencia, states that the "principal effect [of the expulsion of the Moriscos] was the deepening of the economic crisis of the 17^{th} century [...] with other more long-lasting effects such as the disappearance of entire towns [...] and the duality of the seignorial regime" (Ciscar 1991, pp. 223-224).

The perpetuation of the Morisco institutional framework created two seignorial regimes among the Christian population following the expulsion. The first –that of the towns inhabited by Christians prior to the expulsion– reflected pre-expulsion arrangements and was relatively benign. The second regime maintained the extractive arrangements of the old Morisco towns and perpetuated the harsher conditions (Ciscar 1991, pp. 210).

expelled) learned of the plight of the Valencian Moriscos they ceased working in the fields.

[8]For a detailed overview of the process that led to the expulsion, see Harvey (2005) especially chapter nine.

[9]To the extent that an entire generation of Valencian historians attributed the failed Valencian industrialization of the 19^{th} century to the expulsion.

3.1 The Persistence of Extractive Institutions and the Repopulation following the Expulsion

Immediately following the expulsion, both the lords and their creditors were in a desperate financial situation. Since the Morisco municipalities were completely deserted, the lords of formerly Morisco lands had both lost their source of livelihood and the ability to pay their debts. The lords' creditors, who depended on interest payments from the lords, were hardly in a better position.

Following the expulsion, many lords attempted to default on their loans.[10] These defaults led the lords' creditors to appeal to the Spanish Crown for assistance. The exchange between the Valencian lords, their creditors and the Spanish Crown generated documentation that allows us to observe how both creditor and debtor worked to maintain the previous institutional framework as far as possible to limit their individual losses.

As the lords attempted to repopulate the Morisco municipalities by attracting the inhabitants of the surrounding Christian communities, they had to choose between charging the incoming Christian settlers heavy taxes or not paying their creditors.[11] As it became clear that widespread default was not an option, the lords attempted to exploit the incoming Christian population just as they had exploited the Moriscos. The Spanish Crown rapidly issued declarations prohibiting the most abusive practices (such as the *açofras* or forced services) and warned that the repopulation of the formerly Morisco lands would be difficult if the lords insisted on exploiting the Christian population as they had the Morisco inhabitants (AGS leg. 2640 dated September 8, 1610 reproduced in Boronat (1901, pp. 605-606)).

The Crown's worries proved justified as the repopulation continued. In light of the continued pernicious institutional framework in the formerly Morisco municipalities, the re-settlers were adversely selected from the surrounding Christian population. Ciscar (1991, pp. 189-190) sums up the evidence to conclude that

[10] By 1614 over 70 of the 157 Valencian lords had demanded debt relief from the Spanish Crown and were joined in 1625 by another 17 (Boronat 1901, pp. 637-657).

[11] Lapeyre (1959, pp. 70,71). The lords obviously did not see their own ruin as a viable option!

> [t]he re-population was carried out primarily by day laborers, peasants cultivating poor-quality land or by artisans that moved into the agricultural sector [...] The sources constantly describe the new settlers as "poor" [...] the Viceroy says of the re-colonizers in 1610 that they "were the day laborers of the rich and for the Moriscos" [...] the administrators of the Duke of Gandia following the expulsion states that the re-settlers are "miserable and poor," observing that they are not as able as the Moriscos were. Maestre Racional in 1619 said that the repopulators were "miserable, they don't possess the tools to cultivate the lands and can't support themselves."

Crown administrators mandated three interest rate reductions (on April 2, 1614, September 22, 1620 and September 28, 1622) in an attempt to lessen the lords' financial burden and to encourage these to reduce the extraction rates in the Morisco municipalities. In the end, these reductions did little to ameliorate the re-settlers' lot. When the dust settled, the formerly Morisco municipalities retained much of their extractive institutional framework (Ciscar 2006, pp. 151).

Two factors contributed to the continuity of the extractive arrangements in the formerly Morisco municipalities. First, the lords had accumulated large debts they had to pay. These debts were initially incurred under the expectation that the exploited population would remain. When the exploited population left, these lords could either refuse to pay their creditors or continue to exploit the incoming settlers. Since the creditors were considerably more powerful than the incoming peasants, the lords exploited the re-settlers.

Second, the financial crunch following the expulsion led both creditors and debtors to be especially prone to myopic behavior. Although there is some evidence the lords might have preferred to lessen extraction rates, their creditors cried foul when they deviated excessively from the Morisco rates (Ciscar 2006, pp. 139). The extractive institutional framework and the lords' precarious financial situation continued until the end of the Spanish *ancien regime* (Ciscar 1991, pp. 224).

4 The Repopulated Towns and their Evolution

The terms of the resettlements have been preserved for roughly 60 formerly Morisco municipalities. Torres (1969) uses the *cartas puebla* (town charters) from the re-settled municipalities to conclude that the re-population of the Morisco towns was "carried out, in the vast majority of cases, by the old Christian population of neighboring Valencian towns" (Torres 1969, pp. 28). Despite the previously described extractive institutional framework, the newly repopulated Morisco towns quickly began to recover from the expulsion. Figure 1 shows the evolution of the population of the Morisco municipalities between 1609 and 1787.[12] The recovery of the formerly Morisco areas is apparent.

Despite this initial recovery, observers continually noted the poverty and underdevelopment of the formerly Morisco areas. In 1648, an administrator wrote that the high extraction rates led peasants to "only give a half-hearted effort in agriculture" (Ciscar 1991, pp. 219). By the 18^{th} century observers had reached a general consensus that the extractive arrangements in formerly Morisco municipalities created much poverty (Casey 1979, pp. 44).

Perhaps the most convincing observations come from Cavanilles, a world renowned 18^{th} scholar. During his travels through the kingdom of Valencia between 1795 and 1797 he repeatedly commented on the extractive arrangements in the formerly Morisco municipalities:

> Everywhere [the inhabitants of the formerly Morisco municipalities] [...] are loaded with seignorial tributes and appear to only work to fill the coffers of their lords. The lord[s' ancestors] made onerous agreements with the re-settlers that replaced the Moriscos, and these new re-settlers left much of the land uncultivated.[13]

He also described in detail the reasons for the persistence of these extractive arrangements and their continued economic effects more than 150 years after the expulsion:

[12] These data will be described in detail in section 5.1.

[13] Cavanilles (1797, vol. II, pp. 202)

> Without doubt [the reason for the persistence of these extractive arrangements] can be traced to the fact that [following the expulsion] both lord and peasant had to make payments to the creditors from harvest proceeds [...] this arrangement is opposed to industrial and agricultural progress; since no one wants to sweat and work to enrich another; especially since there are other lands in the kingdom [those inhabited by Christians prior to the expulsion] where the tax burden is light.[14]

Cavanilles continues to explain how the expulsion created very different institutional arrangements in close proximity that endured to his day:

> [T]he lords stipulated onerous conditions [when the Morisco lands were resettled] giving rise to what are today known as "free" and "burdened" lands in the same estate and often in two adjacent fields, if one belonged to a Morisco and the other to a Christian. It is even more astounding to see in a same field "free" olive trees [...] next to "burdened" olive trees. The origin of this is that many Muslims who had converted to Christianity did not abide by Christian teachings and to punish them their Church fined them with the loss of a tree from their land.[15]

The empirical strategy in section 5 uses the institutional variation Cavanilles details in the last quote to identify the long-term effects of Valencia's extractive arrangements. The empirical results show how formerly Morisco municipalities remained underdeveloped at the end of the 18^{th} century, more than 150 years after the expulsion.

4.1 A Model of the Effect of Extractive Institutions on the "Industrial" and Artisanal Classes

There is evidence that the high extraction rates discouraged investment and innovation in the formerly Morisco municipalities (Ciscar 1991, pp. 219). Cavanilles, in

[14] Cavanilles (1797, vol. II, pp. 160)
[15] Cavanilles (1797, vol. II, pp. 161-162)

his description of Valencia, noted that the population of many of the towns in the textile regions would decrease by two-thirds without this industry (cited by Castello 1978, pp. 51). Indeed, he noted that the development of this textile industry allowed mountainous regions with mediocre agriculture to develop into sizeable towns. The formerly Morisco areas are conspicuously absent from Cavanilles' description of the most advanced areas in the kingdom. This is especially significant given that many of the most advanced textile regions were adjacent to formerly Morisco areas and were very similar geographically. Cavanilles' observations in conjunction with the previous discussion suggest that the extractive institutions that remained in the formerly Morisco towns discouraged the development of the textile industry in the Morisco regions.

In addition to discouraging innovation in the textile industry, one would expect the higher extractive rates to discourage the development of a sizeable middle class in the formerly Morisco towns. Castello notes that given sufficient wealth, the peasant population was the only group large enough to potentially generate enough demand to support a sizeable artisanal or manufacturing class (Castello 1978, pp. 53-54). A town with relatively wealthy peasants could thus spur the development of an artisan or manufacturing class, while a town with impoverished peasants would fail to do so. If the extractive institutions in the formerly Morisco towns suppressed the development of a middle class, we should see a smaller artisanal class in these towns.

The remainder of this section formally investigates the predicted effects of extractive institutions on both the artisanal and industrial class formation.

4.1.1 Extractive Institutions and the Formation of the Artisanal Class

Throughout this section we equate extractive institutions with a higher tax rate τ. Consider total consumption of agricultural goods in municipality i in region j at time t: Φ^c_{ijt}. If we assume that municipality i can only consume what it produces (i.e. there is no trade with surrounding towns[16]) in each time period then the following

[16]While this assumption is clearly violated by Valencia's largest cities, there is substantial evidence that all but the region's most developed cities largely consumed only what they produced.

inequality must hold:

$$\Phi^c_{ijt} \leq (1 - \tau_{\Phi ijt}) A_{\Phi ijt} F_{\Phi ijt}(K_{\Phi ijt}, L_{\Phi ijt}) \tag{1}$$

where $\tau_{\Phi ijt}$ is the tax rate on agricultural production, $A_{\Phi ijt}$ is the level of production technology, $F_{\Phi ijt}$ is a concave function, $K_{\Phi ijt}$ captures all non-labor inputs (including land quality) and $L_{\Phi ijt}$ represents the number of workers in the agricultural sector. If we assume food consumption is constant per capita ($\Phi^c_{ijt} = \overline{\varphi}_{ijt} N_{ijt}$) and we assume F to be a Cobb-Douglas production function with constant returns to scale then (1) yields (after dropping subscripts for ease of exposition):

$$L_\Phi = \left(\frac{\overline{\varphi} N}{(1 - \tau_\Phi) A_\Phi K_\Phi^{1-\sigma}}\right)^{\frac{1}{\sigma}} \tag{2}$$

If the whole population produces foodstuffs then (2) implies:

$$N = K_\Phi \left(\frac{(1 - \tau_\Phi) A_\Phi}{\overline{\varphi}}\right)^{\frac{1}{1-\sigma}} \tag{3}$$

The implications of this result are intuitive and straightforward. As technology and the capital stock (which we defined to include land quality) increase the town can support more inhabitants. An increase in per capita consumption and an increase in extraction rates lead to a decrease in the maximum possible population. Finally, an increase in the labor elasticity of agricultural production σ leads to an increase in the maximum number of inhabitants a given town can support.

Assume that the number of inhabitants in a given town are such that the "Malthusian" constraint does not bind (i.e. $N < K_\Phi \left(\frac{(1-\tau_\Phi) A_\Phi}{\overline{\varphi}}\right)^{\frac{1}{1-\sigma}}$). These inhabitants can produce either foodstuffs or artisanal goods. The only constraint on the number of workers in each sector is that they must produce enough to feed the entire population N. Thus, $L_\alpha = N - L_\Phi$ where L_α is the number of workers producing artisanal goods. This setup seems natural in subsistence economies, where individuals would tend to have lexicographic preferences. These individuals would first allocate labor to fulfill basic agricultural subsistence needs. If and only if there was a surplus would individuals leave the agricultural sector to specialize full time in providing "artisanal"

goods, otherwise these goods would be provided by each worker at home.[17]

Expression (3) implies that the percentage of a given town's population that is dedicated to producing artisanal goods can be expressed as:

$$\frac{L_\alpha}{N} = 1 - (\frac{\overline{\varphi} N^{1-\sigma}}{(1-\tau_{_\Phi}) A_{_\Phi} K_{_\Phi}^{1-\sigma}})^{\frac{1}{\sigma}} \tag{4}$$

A differential increase in the extraction rate would then change the proportion of the population producing artisanal goods by:

$$\frac{d}{d\tau}\frac{L_\alpha}{N} = -\frac{1}{\sigma}(\frac{\overline{\varphi} N^{1-\sigma}}{(1-\tau_{_\Phi}) A_{_\Phi} K_{_\Phi}^{1-\sigma}})^{\frac{1-\sigma}{\sigma}} [N^{-\sigma}\overline{\varphi}[\frac{(1-\tau)(1-\sigma)\frac{dN}{d\tau} + N}{(1-\tau)^2 A K^{1-\sigma}}]] \tag{5}$$

Equation (5) shows that in the framework of the model, the change in the percentage of the population working in the artisanal sector associated with an increase in the tax rate is just the negative of the change the increase in the tax rate causes in the percentage of the population working in the agricultural sector. We assume that an increase in the extraction rate does not encourage population growth ($\frac{dN}{d\tau} \leq 0$). Thus, an increase in the tax rate will lead to a decrease in the percentage of the population working in the artisanal sector if $(1-\tau)(1-\sigma)\frac{dN}{d\tau} + N > 0$ with implies (letting $\frac{-\frac{dN}{d\tau}}{N} = \xi$)

$$\sigma > \frac{\xi - \frac{1}{1-\tau}}{\xi} \tag{6}$$

Note that $\frac{d\ln(1-\tau)}{d\tau} = -\frac{1}{1-\tau}$, $\xi = -\frac{d\ln N}{d\tau} = -\frac{d\ln \overline{\varphi} N}{d\tau}$ and $\sigma = \frac{dF}{dL}\frac{L}{F}$. Thus $\frac{1}{1-\tau}$ is the percent increase in the crop the peasants need to maintain subsistence consumption due to the increase in the tax rate. The quantity ξ is both the percentage decrease in the population due to an increase in the tax rate and the percentage decrease in agricultural output needed to maintain subsistence consumption due to the exit of peasants caused by the increase in the tax rate. The constant σ is simply the labor elasticity of agricultural production.

[17] This point is supported by Cavanilles' observations during his travels through the kingdom. He notes that in the poorest regions the population produced clothes and other wares at home (Cavanilles 1797, vol. II, pp. 26).

To better understand (6) let $\xi = 3$ and $\frac{1}{1-\tau} = 2$ and $\Delta\tau = 0.01$ so that the increase in the tax rate needs to be accompanied by (approximately) a 2% increase in agricultural production all else equal to maintain subsistence consumption due to the loss of production to taxes. The increase in the tax rate, however, also leads to a 3% decrease in the population and in the agricultural production needed to maintain subsistence consumption. Equation (6) tells us that the increase in the tax rate will lead to a decrease in the percentage of the population working in the artisanal sector if $\sigma > \frac{1}{3}$.

Intuitively, $\xi - \frac{1}{1-\tau}$ is the percentage of agricultural production that is no longer necessary due to the rise in the tax rate (if $\xi - \frac{1}{1-\tau} < 0$ then the rise in the tax rate necessitates an increase in production and (6) holds trivially) or 1% in our example. Thus, the town needs 1% less agricultural output to meet subsistence needs which frees up $\frac{-\frac{dL}{d\tau}}{L} = \frac{1}{\sigma}$ percent of the labor force to engage in other activities. The only way the percentage of the population working in the artisanal sector can decrease is if the percentage decrease in the agricultural labor force is less than that in the general population or if $\frac{-\frac{dL}{d\tau}}{L} < \frac{-\frac{dN}{d\tau}}{N}$ which plugging in our numbers yields $\sigma > \frac{1}{3}$.

In sum, the model shows that unless an increase in the extraction rate leads to a "large" decrease in the population, areas subjected to higher extraction rates should have a smaller artisanal class. This is due to the fact that an increase in the extraction rate decreases the surplus available to the population, requiring the movement of individuals into the agricultural sector to meet subsistence needs.

4.1.2 Extractive Institutions and Innovation

The previous discussion showed that an increase in the extraction rate leads –under one relatively benign assumption– to a decrease in the percentage of the population working in the non-agricultural sector. We now turn our attention to the effect of an increase in the rate of extraction on innovation. Consider an infinitely lived representative peasant who seeks to maximize the objective function:

$$\max \int_0^\infty e^{-rt} U(C(t)) dt \tag{7}$$

subject to

$$C(t) = (1-\tau)AG(L) \tag{8}$$

where t denotes time, U is a concave function, C(t) is consumption at time t, A is the innovation "stock", L represents labor and G is a concave function mapping labor into the consumption good. As (8) shows, we assume that a higher innovation stock leads to higher consumption. We assume that in each "period" the individual can decide the amount of her time (η) to devote to work (L) and innovation (I). Aside from the opportunity cost of choosing one activity over the over, we assume both work and innovation are costless. Thus, the following identities hold

$$\begin{aligned} \dot{A} &= I; I + L = \eta & (9) \\ L &= \eta - \dot{A} & (10) \end{aligned}$$

and the Euler condition implies that

$$\frac{G}{G'} = [r - \frac{U''}{U'}\dot{C}]A - \dot{A} + \frac{G''}{G'}[A\ddot{A}] \tag{11}$$

In steady state (11) becomes:

$$\frac{G(\eta)}{G'(\eta)r} = A \tag{12}$$

If the individual does not discount future consumption, then the individual is constantly innovative. An increase in the discount rate (perhaps due to an increase in the probability of dying young) decreases the steady state innovation "stock." Alternatively an increase in the marginal product of labor $G'(\eta)$ is associated with a decrease in the steady state level of innovation. Intuitively, if an increase in labor inputs can lead to large increases in productivity in the absence of innovation, it makes sense to invest more each period in labor inputs. Alternatively, if an increase in labor has little effect on production $G'(\eta) \approx 0$ then in steady state A becomes increasingly large since the only way to increase production is to invest in innovation. This result

suggests that the areas with the WORST endowments should be the most innovative all else equal. Finally, an increase in the production level $G(\eta)$ increases innovation since a unit increase in innovation is multiplied by a larger factor. Extraction rates do not affect the steady state innovation "stock."

Suppose that extractive institutions affect the individual's ability to work (by taking time away for mandated chores, adding stress, inducing illness) so that $\frac{d\eta}{d\tau} < 0$, then $\frac{dA}{d\tau} = \frac{d\eta}{d\tau}\frac{1}{r} - \frac{G(\eta)G''(\eta)\frac{d\eta}{d\tau}}{(G'(\eta)r)^2} < 0$ since G is assumed concave. In this case, extractive institutions lead to a decrease in the optimal innovation "stock" by decreasing the individual's time endowment η.

If we assume that (8) is subject to a "subsistence constraint" so that $C(t) \geq \overline{c}$ (A_0 given) then extraction rates can directly affect the steady state level of innovation. Suppose A_0 is such that the constraint $C(t) \geq \overline{c}$ is binding, then it must be that $A(t)G(\eta - \dot{A}(t)) = \frac{\overline{c}}{(1-\tau)}$ which implies that $\frac{\dot{A}(t)}{\ddot{A}(t)}\frac{G}{G'} = A(t)$ and combining these two expressions we get that $\frac{\dot{A}(t)}{\ddot{A}(t)} = \frac{\overline{c}}{(1-\tau)}\frac{G'}{G^2}$. Since the right hand sign is positive by assumption, the previous expression tells us that the signs of $\dot{A}$ and $\ddot{A}$ must be the same. Since $\dot{A}, \ddot{A} < 0$ implies $L > \eta$ which is infeasible, it must be that $\dot{A}, \ddot{A} > 0$. Once A becomes large enough, the Euler equation (11) will govern motion and we will eventually arrive at the steady state (12). Thus, after a "slow" start the initially poor or technologically backward peasants will catch up and eventually attain the same steady-state level of innovation.

In the limiting case where the extraction rate drives the peasant to subsistence $\tau = (1 - \frac{\overline{c}}{A_0 G(\eta)})$. Substituting into (8) yields:

$$C(t) = \overline{c}\frac{AG(\eta - \dot{A})}{A_0 G(\eta)} \tag{13}$$

Equation (13) together with the constraint $C(t) \geq \overline{c}$ imply that $\dot{A} = 0, A = A_0 \forall t$.[18] Intuitively, if the peasant is taxed to the brink of death she has to dedicate all her energies to feed herself today and cannot invest in the future.

[18] To see this suppose there is a point in time for which $\dot{A} > 0$ and $C(t) \geq \overline{c}$, then $C(t) = \overline{c}\frac{AG(\eta-\dot{A})}{A_0 G(\eta)} < \overline{c}$.

In sum, the model predicts that an increase in the extraction rate curtails innovation inasmuch as this rate decreases the peasant's ability to work or drives the peasant to the brink of subsistence. Otherwise, innovation will obtain even in highly extractive environments although initially at a slower rate. Perhaps the most interesting prediction of the model is that the equilibrium level of innovation should decrease as the marginal productivity of labor increases. In an agricultural setting, this predicts that areas with the worst land should be the most innovative all else equal.

5 Quantitative Evidence

Theoretical considerations and the qualitative evidence suggest that the formerly Morisco municipalities should be underdeveloped[19] when compared to their non-Morisco neighbors. This section tests the prediction using data from the 1563, 1609, 1646 and 1787 censuses.

5.1 The Data

Data on Morisco and Christian towns in Valencia come from the 1563 and 1609 censuses.[20] Post-expulsion data comes from two additional censuses in 1646 and 1787.

The data from 1563 is from the register of the disarmament of the Moriscos in that year. Phillip II ordered the disarmament, and his commissioners were sent on February 8, 1563 to all the localities in which Moriscos lived. These individuals recorded –with a high level of detail– the number of weapons confiscated. The records also include those houses that possessed no weapons. The records indicate the number of Morisco households in each town where at least one Morisco family resided.

[19] Underdeveloped is defined as having a smaller proportion of the population in the "manufacturing" classes and in other non-religious services.

[20] This section follows Lapeyre (1959) and Castello (1978) closely.

The general census of 1609 was ordered immediately before the expulsion and appears to have been done very quickly. The estimates given are, again, the number of households in each town. This census also includes the population of entirely "old-Christian" towns.

Following the expulsion, the census of 1646 provides the number of households and is comparable in detail to the disarmament records of 1563.

Charles III ordered the 1787 census of Spain in order to evaluate the effects of the regime's modernization efforts. The quality of the census is universally recognized and has been dubbed "the most valuable census of the 18^{th} century" (Castello 1978, pp. 13) This census is of added value given that the original census data sheets from each municipality are still available. The census provides details on the number and ages of the population in a given municipality as well as the number of individuals in the following categories: laborers, day laborers, artisans, *fabricantes*, servants, lawyers, scribes, merchants, priests and students. The vast majority of the population are classified as laborers, day laborers, artisans or *fabricantes*.

The categories *fabricantes* and artisans in the 1787 census were designed to allow the Crown to "clearly differentiate individuals working in traditional artisanal activities (denoted artisans in the census) from those working in what were considered "innovative" sectors (denoted *fabricantes*)" (Castello 1978, pp. 60). Castello (1978) has shown that census officials identified "innovation" exclusively with the textile industry independent of the production techniques used. The artisan groups included tailors, carpenters, shoe makers, smiths, tavern keepers, butchers and locksmiths among other activities (Castello 1978, pp. 61). Although innovation in the production process could occur in other artisanal areas, the fact innovation was heavily concentrated in the textile industry suggests that something can be learned about innovation in the Morisco municipalities from this category.

Table 1 provides summary statistics for the data. The first group of summary statistics detail the geography of the towns included in the sample. I started with today's 541 municipal boundaries and used various records detailing the evolution of Valencia's municipal boundaries between 1609 and today to construct 484 municipal

boundaries that cover the entirety of the 1787 census.[21]

The first variable "Area" measures the area of a given municipality. Column (1) shows that the average municipality covers a relatively small area of 48.11 km^2 or a 6.94 km (approximately 4 miles) by 6.94 km square lot. This area is a rough measure of the agricultural "hinterlands" available to the towns.

In an attempt to get at the natural endowments in each municipality I calculate a measure of the "ruggedness" in the municipality surrounding city i in region j. I use the GTOPO30 (US Geological Survey) to create a measure of terrain variation that varies at the municipal level in the spirit of Nunn and Puga (2007). Instead of using the average uphill slope, I consider the standard deviations of measured heights within the municipality to construct the "ruggedness" measure $SDHeight_k = [\frac{1}{N_k}\sum_k (h_{ik} - \overline{h}_k)^2]^{\frac{1}{2}}$ where k indexes municipalities, i indexes the measured heights by GTOPO30 within the municipal boundary, N_k is the number of measured heights in the municipal boundary, h_{ik} is the height of each 30 by 30 arc-second cell and $\overline{h}_k$ is the mean height in municipality k.

Given the small geographic areas analyzed, it is likely that an increase in "ruggedness" captures a good deal of the variation in the municipalities' natural endowments. The first column in table 6 shows that the average municipality had a mean height ($\overline{h}_k$) of 375.52 meters. The standard deviation of this mean height across municipalities is 312.84 and is given in the second entry in column (2). The mean of the standard deviation of the GTOPO30 measurements WITHIN municipalities ($SDHeight_k$) is given in the third entry in column (1) and shows an average standard deviation of 93.42 meters within municipalities. This measurement, in turn, has a standard deviation of 62.98 as reported in the third entry of column (2).

The second group of summary statistics divides Valencia into 9 distinct subregions. These regions were constructed following Ardit (2008), a prominent scholar of Valencian history following the expulsion[22] and are detailed on the left hand map in Map 1. Column (1) in table 1 demonstrates that the municipalities are fairly

[21] See the appendix for a detailed description of the data construction.

[22] I thank Manuel Ardit for sharing this forthcoming article.

evenly split among the sub-regions.[23]

The third group of summary statistics measures the population of the municipalities. The variable Pop_{1787} measures the municipal population in 1787. Column (5) shows that in the 1787 census 482 municipalities (out of 484) reported their total population. The average municipality had 1652 inhabitants leading to an average population density of roughly $74\frac{Pop}{km^2}$(compare to the population density of $207\frac{Pop}{km^2}$ in Valencia today). The final entry in the third group of summary statistics details that 45 percent of all municipalities were inhabited by Moriscos in 1609.[24] The Morisco municipalities are detailed in Map 1 alongside the average altitude in each municipality. The map shows that each sub-region except for the "Highlands" had both Morisco and Christian municipalities.

The final group of summary statistics details the composition of the workforce in each of the 484 municipalities as detailed by the 1787 census. The first entry shows that roughly one quarter of the population was considered active in the 1787 census. The high and low entries stem from confusion among the census authorities and represent a very small number of the observations.[25] The remaining entries show that roughly 7% of the active population were classified as artisans, 2% as working in the "innovative" textile industry, 49% were agricultural peasants tied to the land and 31% were classified as day workers. Given the confusion of the census officials between artisans and *fabricantes* we construct the variable "Manufacture" which is the sum of the two and provides a reliable estimate of the percent of the active population engaged in producing textiles and artisanal goods in both an "innovative" and traditional manner.

These statistics show that the vast majority of the 18^{th} century Valencian economy (roughly 80%) engaged in agricultural activities. The previous discussion sug-

[23]In order to gauge the geographic extension of these sub-regions, it is important to remember that the entire Kingdom of Valencia is about the size of New Jersey. Thus, these sub-regions cover very limited geographic regions which perhaps best correspond with US counties or census tracts.

[24]Following LaPeyre (1959), we define a municipality as Christian or Morisco depending on the inhabitants of the largest town in the municipal boundries, see the data appendix for details.

[25]Since results are not sensitive to the exclusion or inclusion of these observations, we keep them for completeness and clarity.

gests that the formerly Morisco municipalities –"treated" with extractive institutions– should have smaller manufacturing classes than the non-Morisco municipalities.

5.2 Testing the Hypothesis: Empirical Strategy

The ideal test of the long-term effects of extractive institutions would require two observations on the same municipality in each time period: one treated with extractive institutions, the other treated with a benign institutional framework. Since this experiment is impossible, a close second best would randomly assign institutions to municipalities at time 0 before these were populated and then compare their evolution to identify the long-term effect of extractive institutions. The historical evolution of Valencia's institutional framework coupled with the expulsion provides us with an experiment that given a few plausible assumptions is remarkably close to this randomly assigned "gold standard."

As previously discussed, the geographic location of the Morisco population was largely determined by whether their ancestors had surrendered or fought the invading Christian armies in the 13^{th} century. While the Morisco populations were forced off the best coastal lands in the 14^{th} century, in the interior the location of these populations remained constant since the reconquest (LaPeyre 1959, pp. 29). If conditional on being in one of the 9 sub-regions resistance or surrender was independent of geographic endowment, the institutional framework in 1609 should not be systematically related to geography.

In 1609, however, Morisco towns were inhabited by Moriscos and Christian towns by Christians giving both towns –in addition to institutional differences– significant cultural differences.[26] Thus a comparison of outcomes on the eve of the expulsion would confound culture with institutions. The expulsion of the entire population eliminates this confounding factor, since the recolonizers were from the surrounding Christian towns.

[26]For the purposes of this paper, we assume that institutions do not include culture. In the Morisco towns, these extractive institutions primarily involved higher taxation rates and less representation and rights.

Although the repopulation of the formerly Morisco municipalities allows us to distinguish the effects of culture from those of institutions, the expulsion introduces two potential confounding factors. As previously noted, the re-settlers were adversely selected from the surrounding population. Thus, comparison of outcomes in formerly Morisco and Christian municipalities in 1787 would pick up the effects of this adverse selection inasmuch as its effects endured until 1787. The second potential difficulty involves the concept of path dependence. It may have been the case that by the time of the expulsion, the surrounding Christian towns had developed infrastructure that provided an advantage over the Morisco towns and proved reinforcing. While both of these possibilities are attributable to the extractive institutions established in the Morisco towns, they have different implications for the interpretation of the results.

5.2.1 The Identification Strategy and the "Manufacturing Class"

If the Morisco municipalities were not systematically related to unobserved geographical factors within the 9 sub-regions, we could identify the long-term effect of the extractive institutions in these municipalities in 1787 by simply running the regression:

$$Outcome_{ij1787} = \alpha_j + \beta morisco_{ij1609} + \varepsilon_{ij1787} \tag{14}$$

where $morisco_{ij1609}$ is an indicator variable equal to 1 if municipality i in region j was inhabited by Moriscos before the expulsion.

To investigate the plausibility of this assumption, we run the linear probability model

$$morisco_{ij1609} = \alpha_j + \beta X_{ij} + \varepsilon_{ij1609} \tag{15}$$

where X is a vector of geographic variables (here Height and SDHeight). If the geographic endowments of the Morisco municipalities do not substantially differ from that of their neighbors, we would expect β to be small and statistically insignificant. The results of (15) are reported in table 2. Column (3) shows that the Morisco municipalities in general terms were lower and more "rugged" than their Christian

counterparts. Further examination of the results, however, show that the differences between the Morisco and Christian municipalities primarily occurred in the Coastlands, Central Mountains and Northern Mountain regions.[27] Once these regions have been removed from the weighted average by adding interactions, column (4) shows that the differences between the geography of the Morisco and Christian municipalities become statistically insignificant.[28] Thus, the data do not reject the assumption that the Morisco municipalities are not systematically related to geographic factors in 6 of the 9 sub-regions.

Map 2 shows the distribution of the percentage of the active population[29] employed in the "manufacturing" sector in 1787 on the left, and the geographic distribution of the Morisco municipalities on the right. The Morisco municipalities were on average "treated" with more extractive institutional frameworks.[30] The left-hand map in Map 2 clearly shows that the formerly Morisco municipalities had a smaller percentage of their active population working in artisanal and "industrial" activities (white and light grey). Thus, the formerly Morisco municipalities appear to have been some combination of poorer (smaller surplus to sustain artisans) and less innovative (smaller "industrial" class) than their non-Morisco neighbors.

Table 3 tests the pattern in Map 2 statistically. The results in columns (1), (2) and (3) show that the results are robust to a variety of controls. The point estimate in column (3) of 3.26 (one-third of a standard deviation) suggests that the extractive institutions in the formerly Morisco municipalities caused 3.26% fewer active workers to be employed in the "manufacturing" sector.

[27] Perhaps the mountainous nature of the terrain made these areas the most prone to revolts, following which the Morisco populations were often expelled from the best lands.

[28] The coefficent on SDHeight in table 2 can be further reduced by taking additional regions out of the weighted average. Analysis with an even further reduced sample, however, does not change the general conclusions.

[29] The results normalizing by the total population are very similar, and we present the results using the percent of the active population for clarity.

[30] The non-Morisco municipalities were not subject to paradigmic institutional arragements. Their institutional, however, were significantly more benign (on average) than those of their Morisco counterparts.

The second panel in table 3 investigates the results by sub-region. Column (4) shows that in every sub-region, the formerly Morisco municipalities had smaller "manufacturing" classes than their Christian neighbors. Aside from the Coastland region (in which the Morisco municipalities were geographically different from their neighbors), the point estimates are sizeable. Column (5) removes the sub-regions with the two largest coefficients (which are driven by a few Christian municipalities that had developed into exporters of textiles) from the Morisco coefficient, and column (6) removes the sub-regions in which the Morisco municipalities were geographically different from their neighbors. The results are robust.

Tables 4 and 5 separate the "Manufacturing" class into *fabricantes* and artisans. As previously discussed, census officials were asked to code workers using "traditional" techniques as artisans, and those using "innovative" techniques as *fabricantes*. The results provide suggestive evidence that the formerly Morisco municipalities had less artisans and possibly less *fabricantes* (depending on the specification and tolerated type I error level).[31]

In sum, the results corroborate the qualitative evidence of contemporary observers that formerly Morisco municipalities were underdeveloped[32] when compared to their Christian counterparts.

5.2.2 Other Occupational Classes

The detailed nature of the 1787 census allows us to further investigate the composition of the active population in the formerly Morisco towns. The results in table 6 show that the formerly Morisco areas had significantly less lawyers, merchants and students than their neighbors. These results are consistent with the underdevelopment of the formerly Morisco municipalities.

Results in column (5) detail that the formerly Morisco areas had a larger percentage of their active population serving in the lay clergy. This result is robust to the

[31] These results should be treated with caution as previously discussed.

[32] Where underdeveloped is defined as having a smaller proportion of the population in the "manufacturing" classes and in other non-religious services.

inclusion of 1787 population level controls, suggesting that the formerly Morisco municipalities consumed more religious services than their non-Morisco counterparts.[33] Finally, column (6) shows that the Morisco regions were not significantly less populated than their neighbors.

5.2.3 Robustness Checks

The results show that the formerly Morisco municipalities were significantly underdeveloped when compared to their neighbors. Underdeveloped is defined as having a smaller proportion of the population in the "manufacturing" classes and in other non-religious services. In the context of the model, this over-representation of the agricultural class is due to an increase in the extraction rates associated with the institutions in the Morisco municipalities.

Although the underdevelopment of the formerly-Morisco towns is a statistical fact, it may be that the results are driven by geographic unobservables that have nothing to do with the extraction rate. In addition to the previous empirical attempts to eliminate any possible bias driven by geographic variables that determined municipal development and were systematically related to formerly Morisco municipalities, we examine the sensitivity of the results to "ruggedness" and the population in 1787.

Figure 2 examines the difference in means between Morisco and non-Morisco municipalities when "matched" by the level of "ruggedness." The horizontal axis in both graphs details the level of "ruggedness." The solid line in the top graph measures the percentage of all the municipalities with SDHeight greater than x that were Morisco in 1609. The dashed line measure the percentage of all municipalities with standard deviation greater than x. For x=200, the top graph tells us that roughly 35% of the municipalities with SDHeight greater than 200 where Morisco in 1609. These municipalities (with x>200) represent roughly 7% of the total sample.

The solid line in the bottom graph in figure 2 details the difference in means

[33] Although not included in table 6, this result casts doubt on the possible explanation that the result simply represents economies of scale argument for religious services.

in the percentage of artisans between Morisco and non-Morisco municipalities. The 95% confidence interval is outlined by the two dashed lines. The bottom graph shows that the difference in the artisanal class between Morisco and non-Morisco municipalities is remarkably constant and is statistically significant for almost all levels of "ruggedness." This result casts doubts on the possibility that the results are being driven by geographic factors and not the institutional framework.

Figure 3 performs the same exercise for the "industrial" class. While this result is less robust than the previous exercise, again it is clear that the result is not driven by the municipalities with the worst geographic endowment.

Finally, figure 4 again repeats the exercise, this time examining the sensitivity of the artisan results to the 1787 population. While the population in 1787 is endogenous (i.e. it likely depends on the institutional framework) it allows us to investigate if the results are being driven by the smallest municipalities. Figure 4 shows that the largest Morisco municipalities in 1787 had abnormally small artisanal classes. This result seems to be smaller for the smallest municipalities. Although the "treatment" effect seems to vary it is consistently negative, and shows that the results are not driven solely by the smallest municipalities. The general conclusions also hold for the *fabricante* class and are omitted.

5.3 Discussion

The combination of empirical and qualitative evidence provides substantial evidence that the extractive institutions that remained in the formerly Morisco municipalities following the expulsion dampened the development of the non-agricultural sector. While the data speak directly to this effect, they are silent with respect to the mechanisms through which these extractive institutions dampened development.

In the context of the model, extractive institutions strangled the non-agricultural sector by removing agricultural surplus. Innovation, in turn, could be slowed or aborted by extractive institutions by increasing the time needed to provide for subsistence consumption. While the empirical results and qualitative evidence are consistent with this interpretation, there are at least two other possible mechanisms by

which the extractive institutions in the formerly Morisco municipalities dampened the development of the non-agricultural sector.

The first alternative interpretation involves the adversely selected Christian re-settlers. If the low human capital of these re-settlers persisted until 1787 or if adverse immigration to the Morisco municipalities continued, the results might be picking up the effects of this difference in human capital. Although it is impossible to completely rule out this explanation, an examination of the age and gender structure of the municipalities in the 1787 census provides little support for strong immigration or emigration in the formerly Morisco municipalities during the 18^{th} century. In the absence of continued immigration or emigration, it seems difficult to imagine a situation in which the human capital of the Morisco municipalities would not have "mean reverted" without the extractive institutional framework.

The second alternative interpretation recognizes that the inhabitants of the Morisco municipalities were exploited well before the expulsion, causing these communities to be relatively underdeveloped on the eve of the expulsion. It may have been the case that by the time of the expulsion, the surrounding Christian towns had developed an infrastructure that provided an advantage over the Morisco towns and proved reinforcing. Perhaps the best argument against this interpretation is the documented rise of a number of small non-Morisco towns to economic prominence following the expulsion. The transformation of small towns into cities due to the development of diverse non-agricultural activities are detailed by Cavanilles and other 18^{th} century authors. Moreover, many small municipalities that remained relatively small developed considerable artisanal and textile industries. If the "path-dependence" explanation was decisive for the formerly Morisco municipalities, it seems strange that this same path-dependence did not affect the surrounding non-Morisco areas.

In sum, while it is impossible to completely rule out these 2 explanations based solely on the data these seem less plausible than the proposed explanation. Even if, however, these other interpretations are correct, they still represent the long-term effects of the institutions established to exploit the reconquered Muslim population.

6 Conclusion

What would the kingdom of Valencia have looked like in 1787 had the Moriscos remained? The evidence suggests that the share of workers in the artisan and textile sectors across the kingdom would not have been substantially different. The re-settlers of the Morisco towns were subject to an institutional framework similar to that of the Moriscos. Had the Moriscos remained, the lords would have continued to exploit them at an even greater rate than the Christian re-settlers. Thus, there is little evidence that the ethnic cleansing of the Morisco population was –in and of itself– a long-term drag on the Valencian economy.[34]

The institutions that the reconquerers originally developed to exploit Valencia's Muslims did have a long-term economic impact on the kingdom. Had the lords of the formerly Morisco areas imposed lower rates of extraction on the re-settlers, the estimates suggest that the "manufacturing" class would have been roughly 3% larger (one-third a standard deviation) in these municipalities. If Valencian industrialization required a certain "critical mass" of the Kingdom engaged in the artisanal and textile industries, then the legacy of the exploitation of the Moriscos plausibly stunted Valencia's industrialization in the 19^{th} century.[35]

Valencia following the expulsion of the Moriscos provides a unique opportunity to analyze the mechanisms through which extractive institutions persist. The evidence suggests that much of Valencia's financial and economic system was built around the exploitation of the Moriscos. After the expulsion, many of those who had become powerful due to the exploitation of the Moriscos had much to lose.

The nobles and their creditors attempted to minimize their losses by imposing onerous extraction rates on the Christian re-settlers. In Valencia we learn that extractive institutions led to the development of elites whose fate was directly linked to the persistence of these extractive arrangements. The link between the welfare of Valencia's elite and the persistence of the kingdom's extractive institutions explains much of their endurance following the expulsion.

[34] As recently argued by Ardit (2008).

[35] As has been argued by a generation of Valencian historians.

Valencian nobles were by no means unique in their exploitation of a group of people marginalized because of race, religion, or class. The case of Valencia holds important insights into the long-term implications of exploitation for both the exploited and for those who hold power. The economic exploitation of Valencian Muslims for over 300 years suggests that those who benefit from this exploitation may be dooming their descendants to poverty. While the Muslims of Valencia suffered under exploitative institutions for hundreds of years, these exploitative arrangements persisted even after their expulsion. The remaining Christian population remained poorer and less developed over 150 years after the expulsion due to the persistence of these extractive arrangements.

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Data Appendix

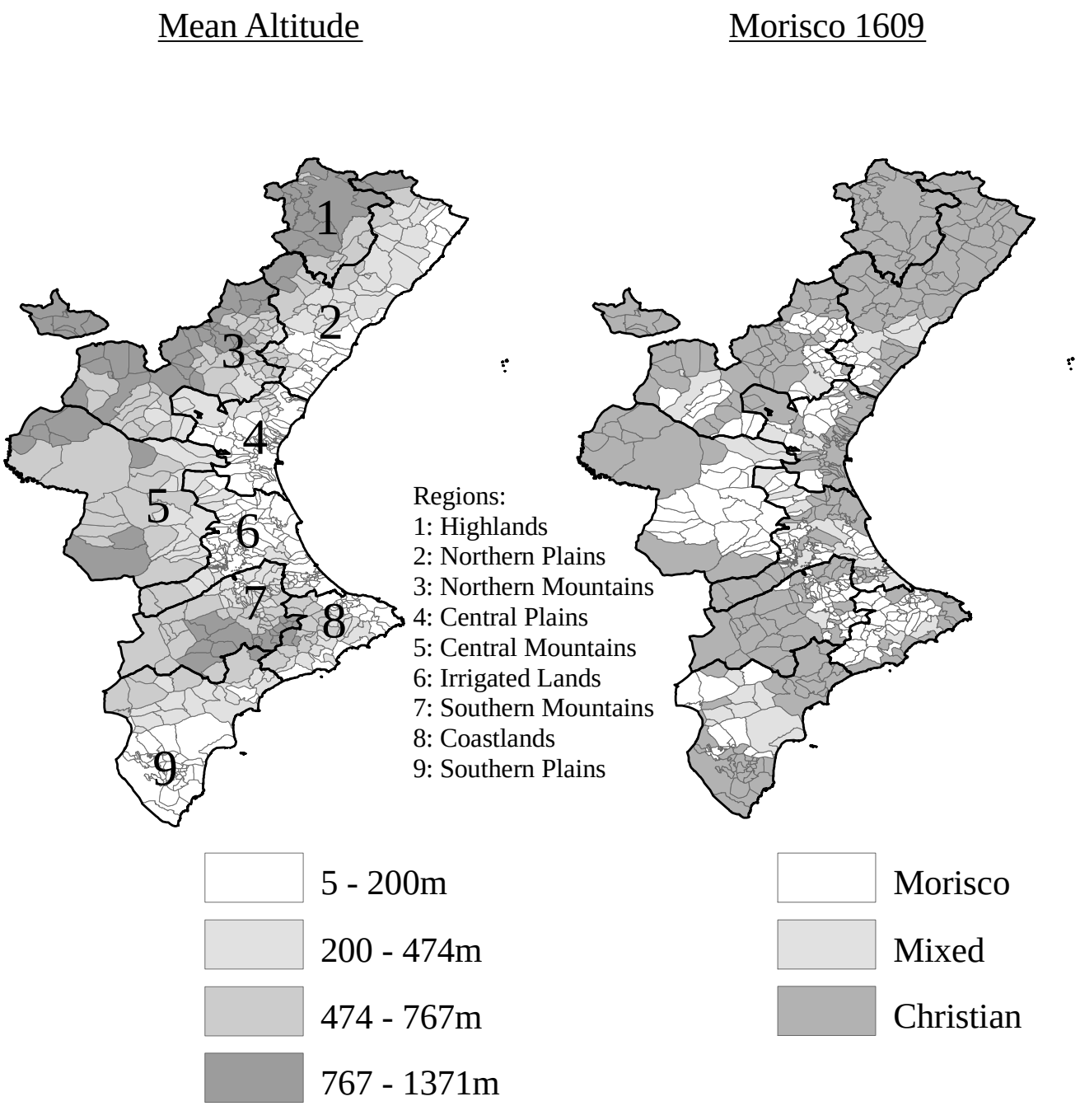
Data from the 1563, 1609 and 1646 censuses are taken from LaPeyre (1959) and Boronat (1901). The 1787 census data are taken from Castello (1978). The Morisco municipalities are matched to modern boundaries by LaPeyre (1959). I define a municipality as Morisco if its namesake town was inhabited solely by Moriscos in 1609. A municipality is coded as mixed if it was inhabited by both Moriscos and Christians prior to the expulsion.

I begin with the modern municipal boundaries of the *Comunidad Autónoma Valenciana* which contains 541 municipalities. The 1787 census details statistics for 554 municipal divisions. I used the *Instituto Nacional de Estadística*'s database on municipality boundary changes since 1842 and a variety of other sources to consolidate the 1787 data into 484 "super-municipalities." These 484 municipalities cover

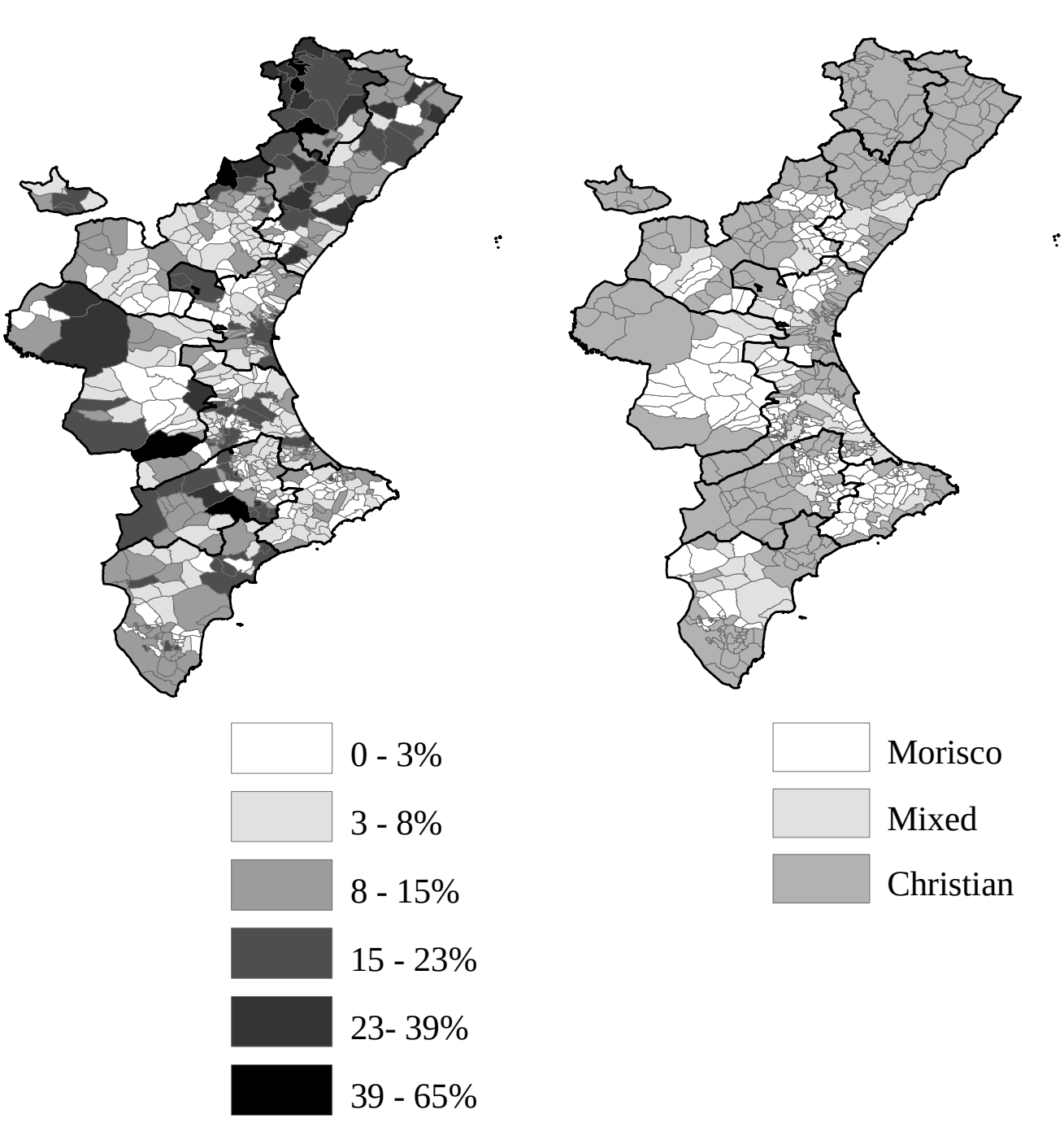
the entirety of the Valencian territory and would be the municipalities today if there had only been consolidation of municipalities and no splits between 1787 and today. Of these 484 municipalities 57 broke away between 1787 and the present day.

Consolidating the 1787 data into the 484 "super-municipalities" simply required adding together the values from the municipalities that merged into other municipal units. These are the 484 municipalities used in the regressions. The geographic variables (mean height and SDHeight) were calculated using the 541 present day boundaries. The values for the 57 municipalities that broke away between 1787 and today were added to the municipalities from which they broke away weighting the respective values by percentage of the "super-municipality's" area.

Map 1: Geographic Location of Morisco Municipalities



Map 2: The Development of the Artisanal and Industrial Classes



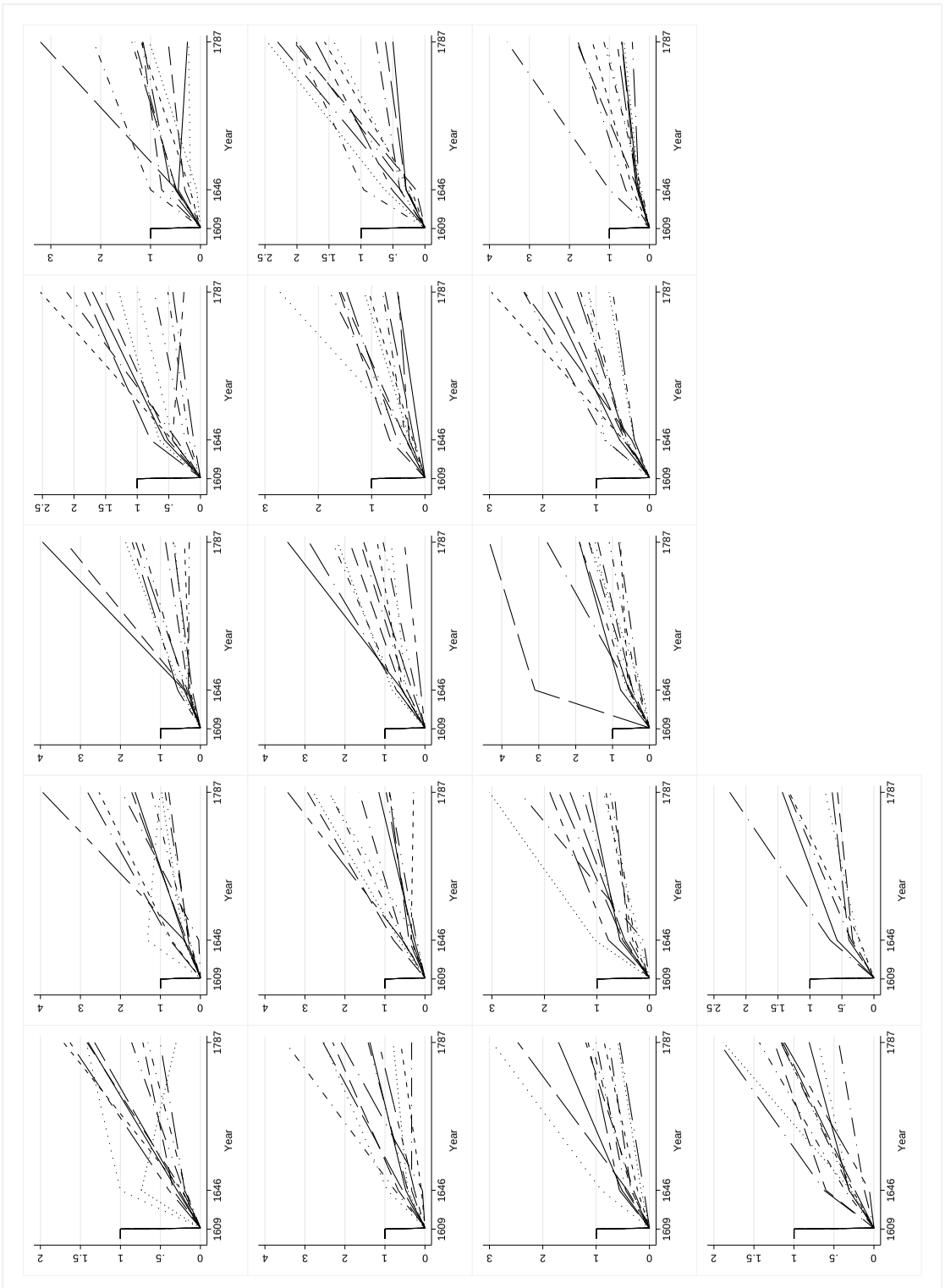


Figure 1: **Population Evolution in 168 Morisco Municipalities**
Population is normalized to 1 in 1609, on the eve of the expulsion

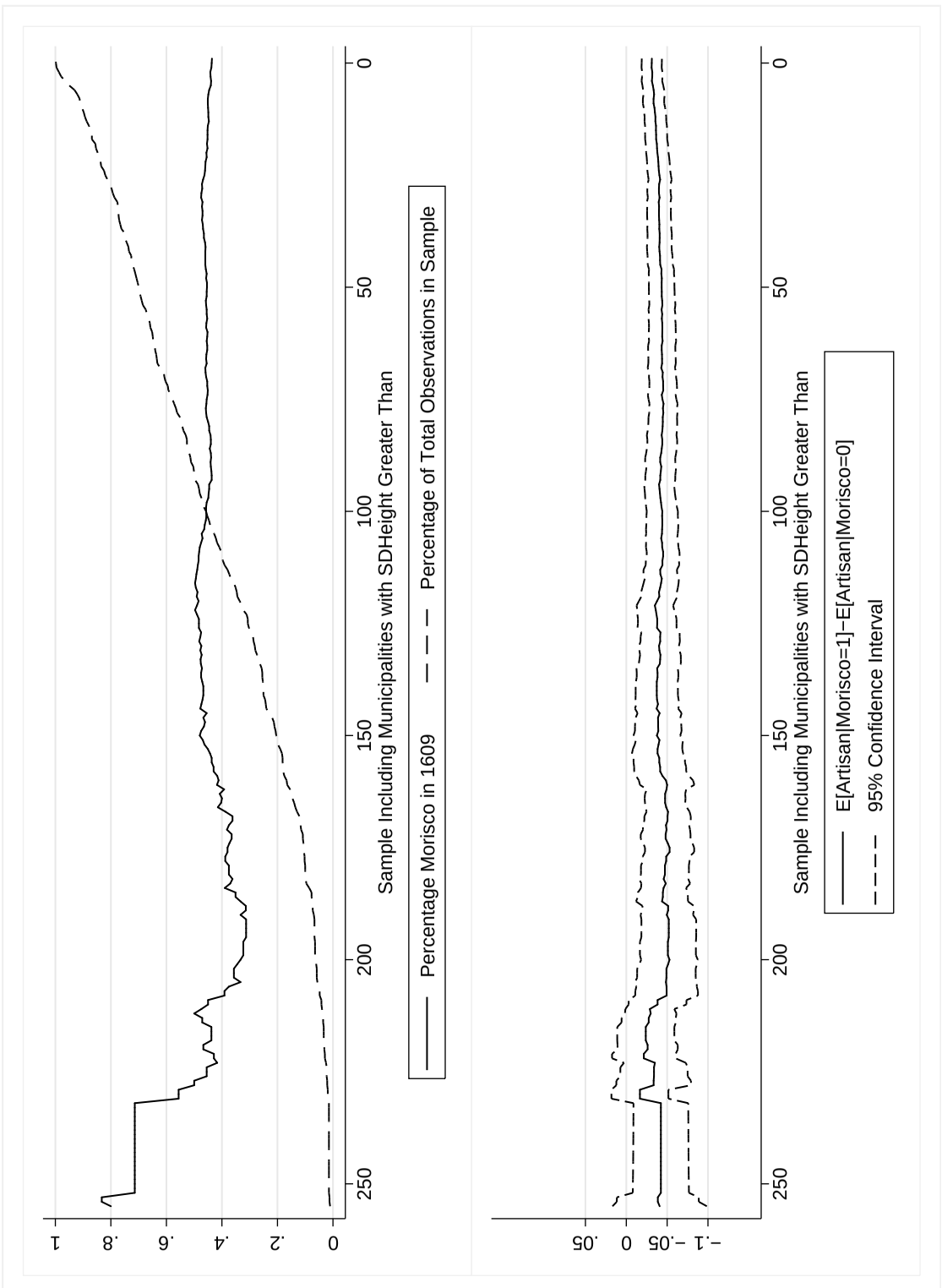


Figure 2: **Sensitivity to "Ruggedness"**
Difference in the artisanal class in 1787 between formerly Morisco and Christian municipalities

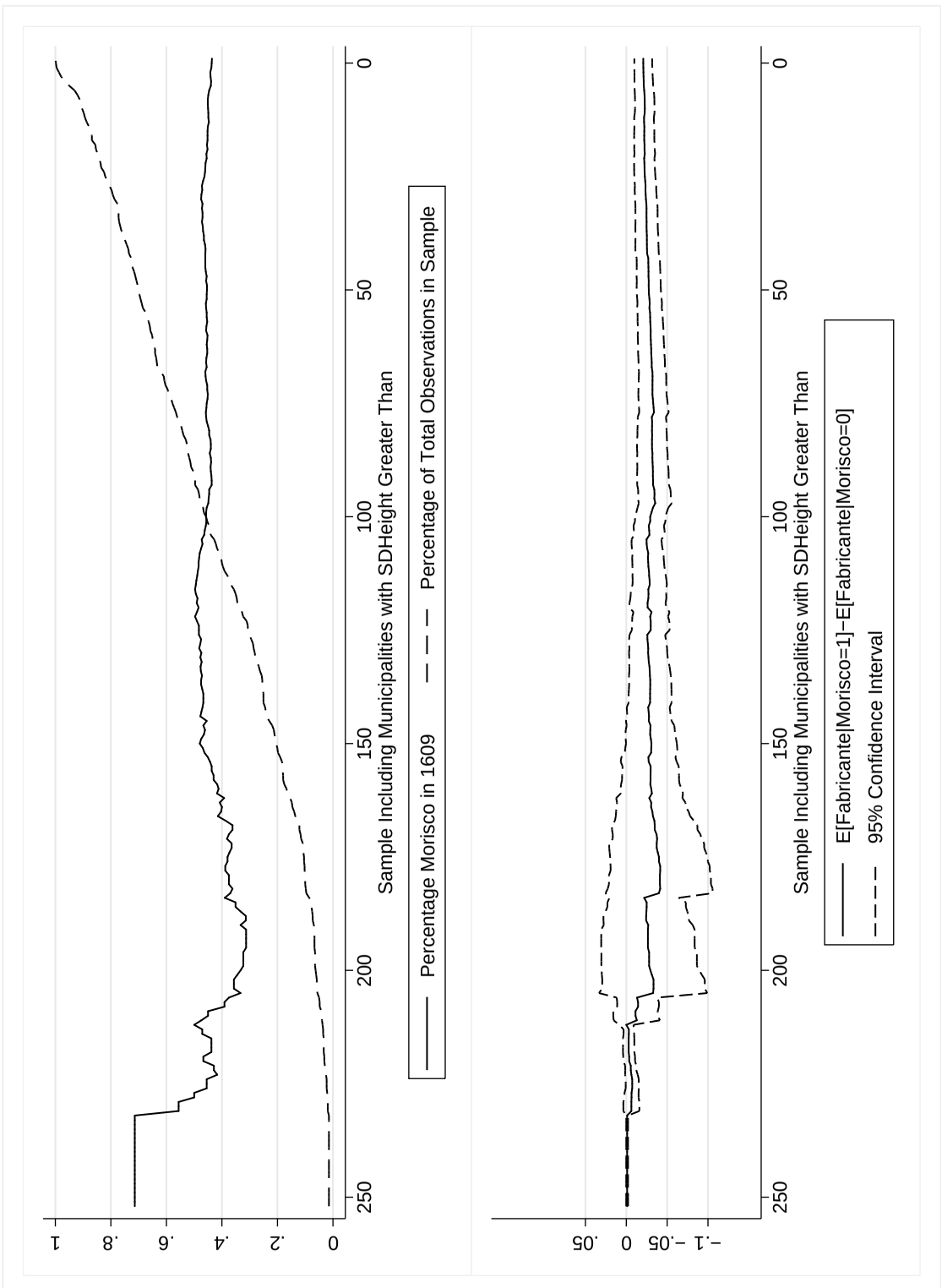


Figure 3: **Sensitivity to "Ruggedness"**
Difference in the "industrial" class in 1787 between formerly Morisco and Christian municipalities

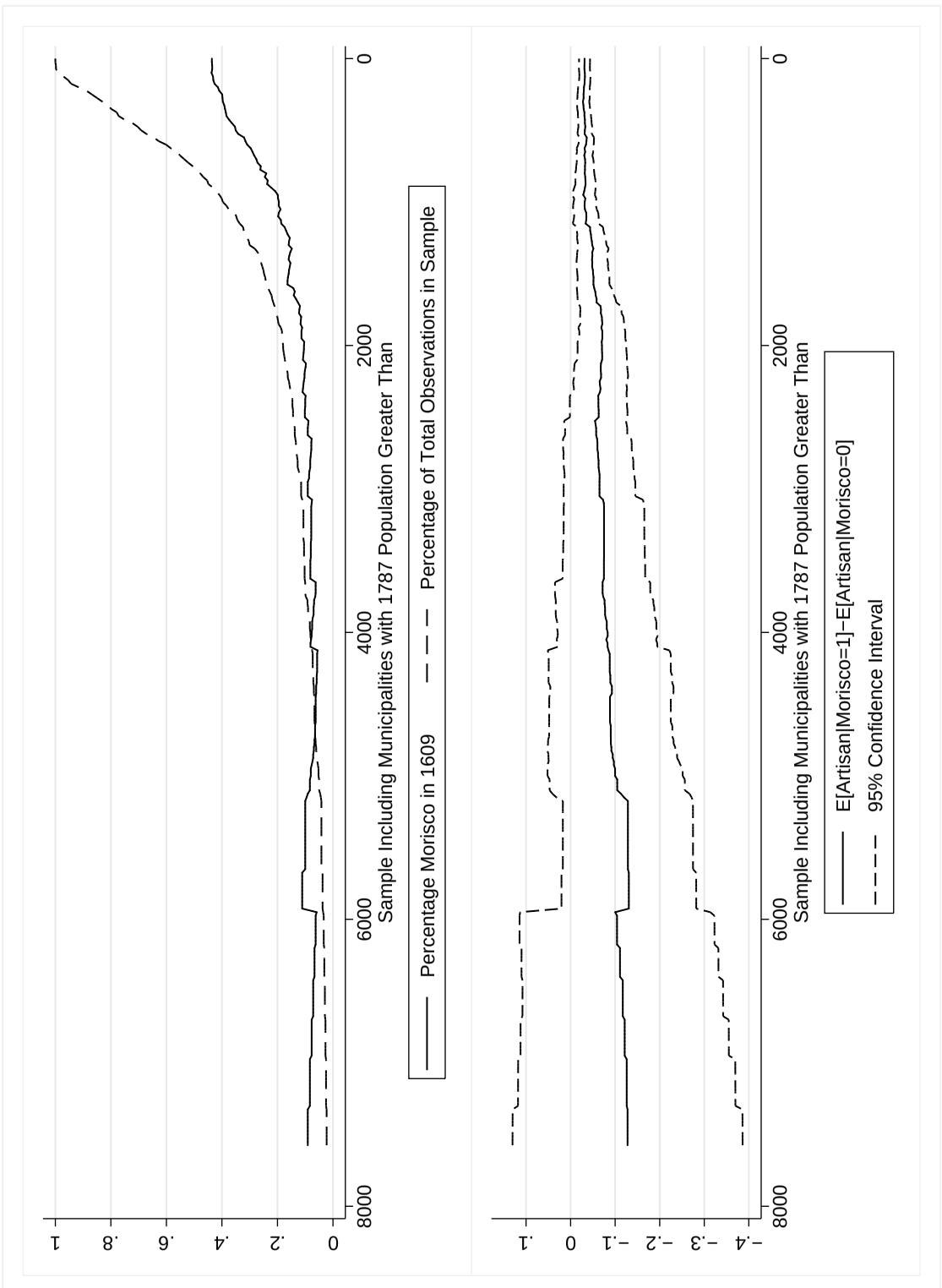


Figure 4: **Sensitivity to 1787 Population**
Difference in the artisanal class in 1787 between formerly Morisco and Christian municipalities

Table 1: **Summary Statistics**

Variable	*Description*	*Mean* (1)	*SD* (2)	*Min* (3)	*Max* (4)	*N* (5)
Geography						
Area (km^2)	Municipality Area	48.11	72.26	0.03	816	484
Height (m)	Mun. Mean Height	375.52	312.84	5	1371.25	484
SDHeight (m)	Mun. Height SD	93.42	62.98	0	304.80	484
Regions						
Highlands		0.05	0.21	0	1	484
Northern Plains		0.12	0.32	0	1	484
Northern Mountains		0.15	0.36	0	1	484
Central Plains		0.12	0.33	0	1	484
Central Mountains		0.07	0.25	0	1	484
Irrigated Lands		0.19	0.39	0	1	484
Southern Mountains		0.13	0.34	0	1	484
Coastlands		0.10	0.30	0	1	484
Southern Plains		0.07	0.26	0	1	484
Population						
Pop_{1787}	1787 (Individuals)	1652.32	5127.92	80	103337	482
$PopDen_{1787}$	$\frac{Inhabitants}{Area}(\frac{Pop}{km^2})$	73.83	204.43	1.85	3830.31	482
Morisco	Morisco in 1609	0.45	0.50	0	1	484
Labor Structure	(**1787**)					
Active	$\frac{Active}{Pop_{1787}}$	0.28	0.13	0.03	1.87	482
Artisan	$\frac{Artisan}{Active}$	0.07	0.07	0	0.49	484
"Fabricante"	$\frac{Textiles}{Active}$	0.02	0.06	0	0.61	484
Manufacture	$\frac{Artisan+Textiles}{Active}$	0.09	0.09	0	0.65	484
Laborers	$\frac{Peasant}{Active}$	0.49	0.23	0.02	1	484
"Jornaleros"	$\frac{DayWorkers}{Active}$	0.31	0.20	0	0.95	484

Table 2: **The Correlates of Morisco Municipalities**
Morisco in 1609, Linear Probability Model

	Morisco	***Morisco***	***Morisco***	***Morisco***
	(1)	(2)	(3)	(4)
$SDHeight/100$	0.06	0.19	0.12	0.08
	0.04	(0.04)	(0.05)	(0.06)
$Height/100$		-0.04	-0.04	-0.01
		(0.01)	(0.01)	(0.02)
$Coastlands(CL)$			0.69	0.63
			(0.09)	(0.14)
$Irrigated$			0.58	0.57
			(0.06)	(0.06)
$C.Mountains(CM)$			1.16	1.16
			(0.10)	(0.31)
$C.Plains$			0.33	0.32
			(0.06)	(0.06)
$S.Plains$			0.18	0.16
			(0.07)	(0.07)
$S.Mountains$			0.64	0.55
			(0.08)	(0.09)
$N.Mountains(NM)$			0.56	1.19
			(0.09)	(0.15)
$Highlands$			0.20	0.03
			(0.08)	(0.11)
$N.Plains$			0.21	0.16
			(0.07)	(0.07)
$Constant$	Yes	Yes	NO	NO
$Interactions?$	NO	NO	NO	SD,H
$Regions\ Interacted$	NO	NO	NO	CL, CM, NM
R^2	0.01	0.04	0.55	0.59
N	484	484	484	484

Notes: Heteroskedasticity robust standard errors in parentheses

Table 3: **The Determinants of the "Manufacturing" Class in 1787**
100*Percentage of Active Population Defined as either *Fabricante* or *Artesano*

	Manufact	***Manufact***	***Manufact***		***Manufact***	***Manufact***	***Manufact***
	(1)	(2)	(3)		(4)	(5)	(6)
Morisco	-5.13	-3.35	-3.26	*Morisco*		-2.30	-3.32
	(0.77)	(0.83)	(0.82)			(0.75)	(0.96)
Coastlands		6.94	4.58	$Mor * Coast$	-0.27		2.32
		(0.90)	(1.10)		(1.34)		(1.68)
Irrigated		8.46	7.47	$Mor * Irr$	-2.22		
		(0.75)	(0.75)		(1.15)		
C.Mountains		12.14	9.16	$Mor * C.Moun$	-9.20	-6.91	-5.49
		(2.50)	(2.54)		(5.54)	(5.57)	(5.74)
C.Plains		8.34	7.70	$Mor * C.Pl$	-2.61		
		(0.77)	(0.78)		(1.24)		
S.Plains		7.53	6.09	$Mor * S.Pl$	-1.90		
		(0.92)	(1.06)		(1.60)		
S.Mountains		10.70	7.75	$Mor * S.Moun$	-5.75	-3.46	
		(1.40)	(1.32)		(2.66)	(2.75)	
N.Mountains		9.35	5.91	$Mor * N.Moun$	-3.04		1.06
		(1.08)	(1.31)		(1.82)		(2.13)
Highlands		27.48	23.76	$Mor * High$	-		
		(2.70)	(3.24)				
N.Plains		12.05	10.08	$Mor * N.Pl$	-3.06		
		(1.15)	(1.34)		(3.86)		
$Height/100$			0.32	$Height/100$			0.24
			(0.23)				(0.18)
$SDHeight/100$			0.96	$SDHeight/100$			1.13
			(0.83)				(0.59)
Constant?	Yes	No	No	*RegionDummies*?	Yes	Yes	Yes
R^2	0.08	0.61	0.62	R^2	0.62	0.56	0.57
N	484	484	484	N	484	484	484

Notes: Heteroskedasticity robust standard errors in parentheses

Table 4: **The Determinants of the "Industrial" Class in 1787**
100*Percentage of Active Population Defined as *Fabricante*

	Fabricante	***Fabricante***	***Fabricante***		***Fabricante***	***Fabricante***	***Fabricante***
	(1)	(2)	(3)		(4)	(5)	(6)
$Morisco$	-2.02	-0.99	-0.92	$Morisco$		-0.71	-0.51
	(0.51)	(0.53)	(0.56)			(0.60)	(0.49)
$Coastlands$		0.96	-0.07	$Mor * Coast$	-0.50		-0.37
		(0.42)	(0.49)		(0.45)		(0.71)
$Irrigated$		1.13	0.70	$Mor * Irr$	-0.42		
		(0.38)	(0.32)		(0.40)		
$C.Mountains$		2.87	1.42	$Mor * C.Moun$	-4.81	-4.10	-4.03
		(2.13)	(2.05)		(4.98)	(4.97)	(5.30)
$C.Plains$		2.15	1.86	$Mor * C.Pl$	-1.79		
		(0.58)	(0.59)		(0.86)		
$S.Plains$		0.97	0.35	$Mor * S.Pl$	-0.17		
		(0.25)	(0.39)		(0.44)		
$S.Mountains$		2.10	0.70	$Mor * S.Moun$	-0.56	0.15	
		(0.63)	(0.68)		(1.11)	(1.19)	
$N.Mountains$		1.85	0.15	$Mor * N.Moun$	-1.50		-0.56
		(0.73)	(0.64)		(1.12)		(1.28)
$Highlands$		13.29	11.37	$Mor * High$	-		
		(3.30)	(3.49)				
$N.Plains$		1.96	1.06	$Mor * N.Pl$	1.23		
		(0.63)	(0.69)		(2.52)		
$Height/100$			0.19	$Height/100$			0.20
			(0.14)				(0.14)
$SDHeight/100$			0.26	$SDHeight/100$			0.28
			(0.63)				(0.62)
$Constant?$	Yes	No	No	$RegionDummies?$	Yes	Yes	Yes
R^2	0.03	0.25	0.26	R^2	0.26	0.25	0.26
N	484	484	484	N	484	484	484

Notes: Heteroskedasticity robust standard errors in parentheses

Table 5: **The Determinants of the "Artisanal" Class in 1787**
100*Percentage of Active Population Defined as *Artesano*

	Artisan	***Artisan***	***Artisan***		***Artisan***	***Artisan***	***Artisan***
	(1)	(2)	(3)		(4)	(5)	(6)
$Morisco$	-3.11	-2.36	-2.34	$Morisco$		-1.59	-2.81
	(0.60)	(0.63)	(0.61)			(0.62)	(0.96)
$Coastlands$		5.98	4.65	$Mor * Coast$	0.23		2.70
		(0.79)	(0.99)		(1.28)		(1.54)
$Irrigated$		7.32	6.77	$Mor * Irr$	-1.80		
		(0.65)	(0.68)		(1.09)		
$C.Mountains$		9.27	7.74	$Mor * C.Moun$	-4.40	-2.81	-1.46
		(1.59)	(1.73)		(3.35)	(3.39)	(3.38)
$C.Plains$		6.20	5.84	$Mor * C.Pl$	-0.82		
		(0.60)	(0.61)		(1.06)		
$S.Plains$		6.56	5.74	$Mor * S.Pl$	-1.73		
		(0.93)	(1.03)		(1.74)		
$S.Mountains$		8.61	7.06	$Mor * S.Moun$	-5.19	-3.60	
		(1.11)	(1.12)		(2.09)	(2.17)	
$N.Mountains$		7.49	5.76	$Mor * N.Moun$	-1.54		1.62
		(0.69)	(1.15)		(1.26)		(1.56)
$Highlands$		14.19	12.39	$Mor * High$	-		
		(2.67)	(2.75)				
$N.Plains$		10.09	9.01	$Mor * N.Pl$	-4.29		
		(1.03)	(1.17)		(3.01)		
$Height/100$			0.12	$Height/100$			0.12
			(0.18)				(0.18)
$SDHeight/100$			0.70	$SDHeight/100$			0.69
			(0.59)				(0.59)
$Constant?$	Yes	No	No	$RegionDummies?$	Yes	Yes	Yes
R^2	0.05	0.56	0.56	R^2	0.57	0.56	0.57
N	484	484	484	N	484	484	484

Notes: Heteroskedasticity robust standard errors in parentheses

Table 6: **The Determinants of Various Occupations in 1787**
100*Percentage of Active Population in a Given Class unless otherwise Noted

	Servants	***Lawyers***	***Merchants***	***Students***	***Clergy***[1]	***Population Density***[2]
	(1)	(2)	(3)	(4)	(5)	(6)
$Morisco$	-1.15	-0.16	-0.85	-1.53	0.99	-14.18
	(0.68)	(0.03)	(0.32)	(0.39)	(0.34)	(22.56)
$Mor * Coast$	0.86	0.08	-0.12	0.05	-0.50	6.04
	(1.68)	(0.12)	(0.69)	(0.74)	(0.41)	(28.10)
$Mor * C.Moun$	-1.69	0.02	0.60	1.14	-1.43	4.76
	(1.82)	(0.07)	(0.34)	(0.64)	(0.63)	(24.49)
$Mor * N.Moun$	-3.76	0.06	0.42	1.62	-1.65	32.00
	(1.36)	(0.05)	(0.38)	(0.72)	(0.85)	(35.93)
$Height/100$	-0.22	-0.01	-0.01	-0.04	0.04	-4.68
	(0.18)	(0.01)	(0.08)	(0.07)	(0.08)	(1.31)
$SDHeight/100$	0.03	0.05	0.25	0.02	-0.43	-53.20
	(0.57)	(0.03)	(0.25)	(0.27)	(0.26)	(14.32)
$RegionDummies?$	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.58	0.26	0.11	0.20	0.27	0.21
N	484	484	484	484	484	482

Notes: Heteroskedasticity robust standard errors in parentheses

1 10000 times the percentage of the active population in lay clergy

2 Measured in individual per km^2 and not multiplied by any factor