Inheritance Customs, the European Marriage Pattern and Female Empowerment*

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Abstract

Through high celibacy rates and late ages at first marriage, the European Marriage Pattern (EMP) limited fertility in Western Europe well before the Industrial Revolution. While the EMP is considered an early determinant of European development, few studies have examined the roots of this institution. In this paper, we show that inheritance customs shaped the EMP and allowed to sustain it over time. We construct a novel atlas of local inheritance customs for pre-industrial France and Belgium and examine individual-level marriage decisions from genealogical records for the 18th and 19th centuries. Our preliminary findings show that inheritance customs affected marriage patterns through two distinct channels: women's autonomy and eased economic constraints to form a household.

JEL classification: D10, J10, K11, N33, O10.
Keywords: *European Marriage Pattern, Celibacy, Customs, Inheritance.*

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1 Introduction

West of a line from St. Petersburg to Trieste, the European Marriage Pattern (EMP) reduced pre-industrial fertility and population growth (Hajnal 1965). The EMP was characterized by late marriage, frequent lifetime celibacy, low fertility, and a predominance of nuclear families. Because this pattern coincides with divergent economic growth and Western Europe's rise to riches, past research has focused on examining the EMP as a causal factor contributing to economic development (Carmichael et al. 2016, De Moor and Van Zanden 2010,Greif 2006,Foreman-Peck 2011,Foreman-Peck and Zhou 2018,Voigtlander and Voth 2009,Voigtländer and Voth 2013,Dennison and Ogilvie 2014). However, far less attention has been paid to the origins of the EMP and to the institutions that allowed to sustain it over centuries (De Moor and Van Zanden 2010; Voigtländer and Voth 2013).[1]

In this paper, we highlight a novel institutional factor that shaped the EMP and allowed it to persist over time: inheritance customs. Before the introduction of civil codes, inheritance was regulated by local customs, resulting in substantial variation in inheritance rules within European countries. For sociologists, there has always existed an "iron chain" between inheritance rules and marriage decisions Lanzinger (2003). The economics literature has suggested two competing channels through which inheritance affected marriage in the context of the EMP. On the one hand, De Moor and Van Zanden (2010) argue that including women in the inheritance empowered them and allowed to delay marriage or remain celibate (henceforth, *empowered celibacy*). On the other hand, Dennison and Ogilvie (2016) point out that marriage is also subject to an income effect, as marriage typically requires the formation of a neo-local household. Hence, where women and younger siblings are excluded from inheriting, marriage is delayed and celibacy is high, as constraints over the formation of a new household are not eased by the income gains of inheriting (henceforth, *constraint celibacy*). Distinguishing between these two channels is important, as their economic implications are fundamentally different: while the first channel predicts a positive association between the EMP and economic development, the second suggests that the EMP would manifest in economically stagnant areas.

We reconcile these two opposing mechanisms by showing that there is a U-shaped relationship between financial independence and celibacy. In areas with few economic opportunities for women and where the elderly depended on their children to survive, the constraint-celibacy channel was stronger: the EMP's high celibacy rates emerged where inheritance customs excluded women and restrained their financial independence. In areas where single women had access to labor markets, the empowered-celibacy channel dominated: the EMP's high celibacy rates emerged where women could receive an

[1] De Moor and Van Zanden (2010) links the origin of the EMP to female empowerment, while Voigtländer and Voth (2013) highlight the Black Death and the subsequent rise of the pastoral sector, where unmarried women could be employed as farm servants.

inheritance, and hence, were more financially independent.

We investigate the relationship between inheritance rules and the EMP in three steps. First, we construct an atlas of inheritance customs at the local level for pre-industrial France and Belgium. Using secondary sources on local customs, we classify how egalitarian inheritance rules were. Second, we link these customs to individual data on marriage from genealogical records for the 18$^{\text{th}}$ and 19$^{\text{th}}$ centuries from www.geni.com, a MyHeritage Company. Third, we use local variation in inheritance rules to show that these affected decisions regarding whether to marry. We distinguish between two broad types of inheritance over non-movable assets: *egalitarian inheritance*—where an equal partition occurs among several heirs, including women; and *impartible inheritance*—where women are excluded and/or one heir is favored over the rest. Our findings suggest that more egalitarian inheritance rules are associated with lower celibacy in areas where women's financial independence is restricted, and with higher celibacy in areas where women had access to labor markets.

Our first contribution is to build a novel atlas of inheritance customs in pre-industrial France and Belgium. To the best of our knowledge, we are the first to provide such a dataset for Belgium. Our work complements and expands Gay, Gobbi, and Goñi (2023) map of inheritance rules in Ancient-Regime France. To construct our new geographical dataset, we first create a political map of the area covered by contemporary Belgium for the 18$^{\text{th}}$ century. Next, we assign each judicial subdivision its corresponding custom using Gilissen (1979). Finally, we classify the inheritance rules in each custom, distinguishing partible versus impartible inheritance and systems that excluded versus included women.

Our second contribution is to link the atlas of customs to individual-level data on marriage outcomes. Our main data source are the family trees uploaded to www.geni.com, a MyHeritage Company. To our knowledge, we are the first to study marriage patterns using a large database of user-generated family trees. We link individuals to geographic subdivisions by assigning each record in www.geni.com a latitude and longitude. To do so, we use the GeoNames geographical database. This data source provides us with individual-level completed-fertility records for men and women born as early as 1670. In addition, it provides substantial within-country variation in celibacy rates, allowing us to estimate the link between inheritance customs and the EMP, as well as the U-shaped relationship between women's financial independence and celibacy. That said, given that the quality of amateur genealogies is inconsistent, we use the family reconstitution for France from Henry and Houdaille (1979) as a benchmark to develop several quality control filters.

Our third contribution is to examine how inheritance customs affected celibacy. Using a variety of fixed-effects, cross-border pair, and regression discontinuity analyses, we show that egalitarian inheritance is associated, on average, with large reductions in celibacy rates for women in France and Belgium between the 1670s and 1750s. This

aggregate effect, however, masks substantial heterogeneity in the relationship between inheritance customs and celibacy. We document that two different channels, constraint and empowered celibacy, were prevalent in different areas depending on the degree of women's financial independence and access to labor markets. To account for heterogeneity in women's financial independence, we rely on the fact that animal husbandry was a common source of jobs for many women in sixteenth- and eighteenth-century rural Europe (Kussmaul 1981; Voigtlander and Voth 2009). Specifically, we conduct heterogeneity analysis on the pasture suitability index developed by the Food and Agriculture Organization (FAO). This index provides us with local, exogenous, environment-determined conditions that favor the development of the animal husbandry sector, and hence, that enhances women's access to labor markets. Our findings suggest that egalitarian inheritance is associated with large reductions in celibacy rates for women in areas that are less suitable for animal husbandry, providing evidence of *constraint celibacy.* In contrast, we document that egalitarian inheritance increases celibacy rates for women in areas that are more suitable for animal husbandry. This is in line with the *empowered celibacy* channel whereby women with outside labor options are able to remain celibate.

To deal with possible omitted variable bias, we undertake three empirical strategies. First, we report OLS fixed-effects' estimators accounting for time-invariant regional factors, and general trends in marriage by cohort. Second, we narrow the focus on individuals born in a judicial subdivision on either side of the inheritance border and carry-out a cross-borders fixed effects analysis. Restricting attention to judicial subdivision borders is meant to increase the comparability of individuals subject to egalitarian and non-egalitarian inheritance in dimensions other than the inheritance system. Third, we estimate the causal effect of egalitarian inheritance systems on celibacy using a regression discontinuity (RD) design, using the distance to inheritance border as our running variable. The results broadly agree across specifications. Moreover, our findings are robust to the inclusion of a genealogical quality filter control, the horizontal lineage sample restriction constructed by Blanc (2022). Our results also hold when we examine celibacy rates for men, suggesting that male marriage opportunities depend on the supply of potential brides.

Relative to the existing literature, our paper makes several contributions. First, we highlight a novel factor that contributed to the EMP: institutions. In particular, we provide micro-level evidence showing that legal institutions regulating inheritance crucially determined celibacy rates in pre-industrial Europe, and hence, contributed to sustaining the EMP for centuries. In addition, we are the first to provide empirical evidence showing that inheritance customs can explain sub-national variation in the EMP. By showing evidence for both the constraint- and empowered-celibacy channels, our paper sheds new light on the drivers of family formation and marital decisions. In modern settings, female celibacy is often U-shaped with respect to education or income (Greenwood et al. 2016; Baudin, de la Croix, and Gobbi 2020). We show that similar

mechanisms were also at play in the past.

Second, our findings contribute to the ongoing debate over the link between the EMP and economic growth. One theory is that the EMP led to higher levels of female autonomy, which, in turn, increased investments in female human capital and allowed population growth to adjusted to economic trends (e.g. De Moor and Van Zanden 2010). Similarly, Voigtländer and Voth (2013) find a positive impact of the EMP on per-capita incomes, sustained over time by the employment of unmarried young women as farm servants in pasture. Opponents argue it was the wider institutional framework, and not the EMP itself, that mattered for female empowerment and economic growth (e.g. Dennison and Ogilvie 2016). Our results show that the EMP is related to empowered celibacy in areas with economic opportunities for women, but that elsewhere the roots of high celibacy lie in economic constraints to form new households. In other words, our findings reconcile the mixed evidence on whether the EMP manifested in economically buoyant or stagnant areas.

Third, we contribute to the literature on the role of culture for economic growth. Because measuring culture is challenging, the number of empirical studies linking culture, demography, and economic growth remain scarce (e.g. Giuliano 2007; Fernandez and Fogli 2009). When codified, inheritance customs are legal institutions, but they are also the product of centuries of local cultural norms. Customary laws are thus a novel way to study the quantitative impact of culture on economic development.

In summary, inheritance customs affect marriage decisions. Mediated by local economic conditions, inheritance regulated marriage patterns and thus mattered for economic development in pre-industrial Western Europe.

The rest of the paper is structured as follows. In Section 2, we describe European Marriage Pattern (EMP), and the link with economic growth. We also provide a brief historical background on the origins of customs. In Section 3, we describe the data sources used to construct the historical judicial subdivisions for France and Belgium as well as the atlas of inheritance customs. We also describe our demographic data. Section 4 outlines our empirical strategy and results. Section 5 concludes.

2 Background

2.1 The European Marriage Pattern

The Hajnal line, an imaginary line running between Trieste to St. Petersburg divides Europe into two areas characterized by distinctive demographic features: high age of marriage, high percentage of lifetime celibacy, low fertility, and a predominance of nuclear families (Hajnal 1965). This phenomenon, the European Marriage Pattern (EMP), coincided with economic divergence, leading to a debate about the relationship between family patterns and economic development.

A first strand of literature argues that the EMP increased economic development in

Europe through various channels: increased female autonomy, greater access of women to labour and capital markets, greater human capital investment, regulating population growth in response to economic trends, or fostering corporative institutions (Carmichael, De Moor, and van Zanden 2011, Carmichael et al. 2015, Carmichael et al. 2016, De Moor and Van Zanden 2010, Foreman-Peck 2011, Van Zanden, De Moor, and Carmichael 2019). In particular, De Moor and Van Zanden (2010) and Carmichael et al. (2016) argue consensus marriages and neo-locality are the key principles that strengthen the position of women under the EMP.[2]

A second strand of the literature perceives the EMP as a "homeostatic regime" linking population growth to economic conditions (e.g. Le Bris and Tallec 2022). In areas where neo-locality is the norm, couples marry only after saving enough to start a new household. If good economic conditions are prevalent, then couples married earlier (Carmichael et al. 2016). On the other hand, Voigtländer and Voth (2013) argue that the Black Death triggered a shift toward animal husbandry, increasing in female employment opportunities and delaying marriages.

A final strand of the literature argues that the EMP was a consequence, not a cause, of the rise of Western Europe. Empirical studies reveal that marriage behaviour was far from homogenous within countries (Dennison and Ogilvie 2014). Some regions had relatively strong versions of the EMP and high levels of female empowerment and yet still lagged in economic development (Palma, Reis, and Rodrigues 2021). These counter examples lead Dennison and Ogilvie (2016) to argue that while female labour force participation benefited economic growth, the fundamental causes were the institutions governing the the labour market, not family systems. Absent a thriving labour market, delayed or egalitarian marriages did not lead to economic growth.

2.2 Inheritance customs

Customs constitute the main, if not the only, origin of non-written laws.[3] A custom, is *"a group of usages of the legal order, which have acquired obligatory force within a given socio-political group, through repetition of peaceable and public acts over a relatively long lapse of time"* (Gilissen 1979, p. 37). In other words, customs are non-written laws, entrenched by repetitive usage and applied openly. In order to endure, they must not be opposed by the majority of a social group.

Customary law was dominant in Europe between the 10^{th}–12^{th} centuries, with most communities having their own customs serving as local laws. The diversity of peoples co-residing in many territories made it complicated to distinguish between various per-

[2]Neo-locality means that partners can set up an independent household, which provides autonomy from the in-laws. Consensus marriage emerged in the Catholic doctrine in the ninth century, emphasizing the importance of consensual marriage and strengthening the bargaining position of brides.

[3]Others sources include general and permanent orders issued by the people in power of a given social group, that relates to behavioral rules, and that are regularly announced by the chief, or the eldest of a given clan. Additionally, judiciary precedents, proverbs and adages are alternative sources for non-written laws (Gilissen 1979).

sonal laws (Chénon 1926, p. 128). Meanwhile, the rise of feudalism meant that people would obey the same feudal lord. Thus, the legal system shifted from the principle of personality, where laws were based on an individual's tribe or ethnic group, to the principle of territoriality, where laws applied to all residents of a particular territory.

Following the feudal era, the equivalent of the present day notion of *state* started manifesting as of the 13th century resulting in the creation of new laws which particularly covered administrative and economic domains. Customs however remained the main origin for these civil codes, which were based on compendiums of local and regional customs. These compendiums were written private documents authored by individuals, normally law practitioners or justice officials, to expose the customary laws of a specific location (Gilissen 1979, p. 252).[4]

Customary law documents did not have an official character before the 15th century in France and 16th century in Belgium, when the respective Kings, Charles VII and Charles V, formally requested the codification of customs. This transformed customs into formal laws that judges were required to apply. The codification of customs was necessary given that they could change over time and they were often complex for judges to apply.

We focus on the early modern era between the 16th and mid-18th century. During this time, the 17 provinces *(XVII Provinces des Pays-Bas)* covered the Low Countries or what is now the Netherlands, Belgium, Luxembourg, and most of the French departments of Nord (French Flanders and French Hainaut) and Pas-de-Calais (Artois). On October 7 1531, Charles V ordered for the codification of customs in a 6 months period, and due to local resistance, he had to renew this order in 1532, 1540, and 1546 (Gilissen 1979, p. 250 and 262). About 600 different territorial customs existed at this time (Gilissen 1979, p. 238). The codification and ratification of customs persisted during following period, but the vast majority occurred during the reign of Charles V. This process led to some standardization, with only about 100 various customs surviving by the end of the 18th century (Gilissen 1979, p. 238 and 267). For instance, in 1564 the customs of the County of Namur (Compté de Namur) replaced at least five local customs (Gilissen 1979, p. 238).

3 Data

3.1 Mapping inheritance systems in historical Europe

We construct an atlas of inheritance customs at the local level for pre-industrial Belgium. Our work complements and expands the work of Gay, Gobbi, and Goñi (2023) which

[4]Some examples are the *"Libri Feudorum"* for the North of Italy; *"De Legibus et Consuetudinibus Regni Angliae"* by Ranulf de Glanville and *"De Legibus et Consuetudinibus Angliae"* by Henry de Bracton for England; *"Summa De Legibus Normaniae," "Conseil à un Ami,"* or *"Le Livre de Jostice et de Plet"* for France.

solely considers the French context. Belgium is relevant for two reasons. First, its legal institutions were representative, in a small scale, of the judicial situation of all occidental Europe. Second, it had substantial variation in its written customs.

To construct our database for Belgium, we consider three steps. First, we rely on various historical maps using the Moravian Library's Moll's Map Collection[5] and the 1972 Lambert sub-municipal boundaries to create GIS shapefiles for the provinces, independent counties, and duchies, as well as their component judicial subdivisions: *bailliages*, *comtés*, *châtellenies*, *mairie*, *prévôtés*, *seigneuries*, and other feudal entities. Second, we assign to each judicial subdivision an existing custom name. To do so, we rely on the historical map of customary boundaries for the North of France and Belgium from (Gilissen 1979). Lastly, after assigning customs to judicial subdivisions, we classify each customs' inheritance rules related to non-movable goods. If customs had multiple writing or codification dates, we adopt the most recent version available per custom. We provide a detailed discussion on each of these steps in the following sub-sections.

3.1.1 Judicial subdivisions in eighteenth-century Belgium and France

To map the historical judicial regions and subregions, we take historical maps for provinces and independent feudal states that fall into present-day Belgian and French boundaries. Next, we georeference the old maps using the latitude and longitude of cities and QGIS's thin plate spline algorithm. Then, we overlay sub-commune level Belgian boundaries from 1972.[6]. Finally, we manually traced the region and subregion borders using polygons from the Belgian shapefiles.

Figure 1 displays the final map of the historical judicial subdivisions in the eighteenth century within the current boundaries of France and Belgium. France's subdivisions are taken from Gay, Gobbi, and Goñi (2023).

3.1.2 Assigning customs to judicial units

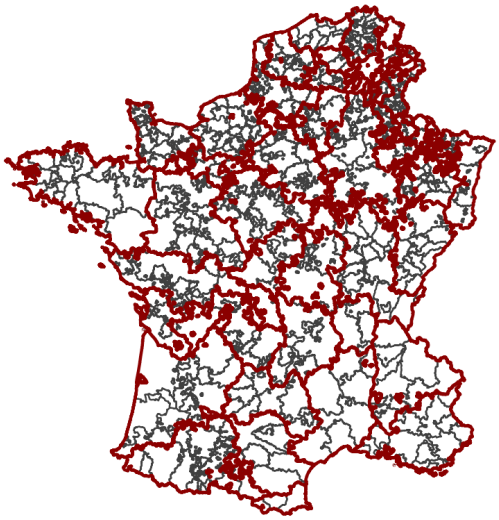
Our list of customs for Belgium is based on several secondary sources (Gilissen 1979, Gilissen 1950, Gilissen 1960, and Gilissen (1970)). We end up with a total of 59 customs. We link these customs to our map using lists of locations where they applied and an overlaid historical map from Gilissen (1979) Note that while many cities had independent customs, when more than one custom existed in a given judicial subdivision we use the custom that covers the largest area.

Figure 2 shows the final map of customs applicable in our constructed historical boundaries for judicial subdivisions in Belgium. The blue lines represent customary boundaries and the gray lines represent judicial subdivisions boundaries. Comparing

[5] https://mapy.mzk.cz/en/.

[6] 1972 Lambert sections from the *Atlas de Belgique database*; https://www.atlas-belgique.be/index.php/fr/ressources/donnees-cartographiques/

Figure 1: Historical judicial subdivisions, Belgium and France



Notes: Authors' Compilation.

Figures 1 and 2 reveals that while there is a one-to-one correspondence between subdivisions and customs in some of the Belgian provinces (like Flanders), this is not the case in others (like Luxembourg). France's customary boundaries are taken from Gay, Gobbi, and Goñi (2023).

3.1.3 Inheritance customs

After assigning customs to judicial subdivisions, we assign to each custom an inheritance rule. We distinguish between partible inheritance, where each child inherits equally, and impartible inheritance, where one child can be favored over the rest.

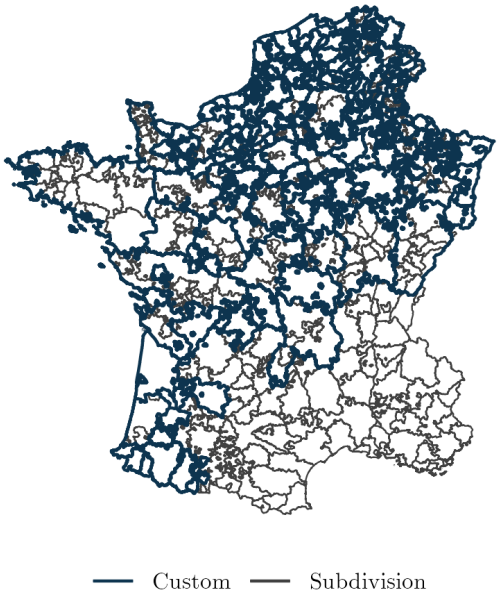
This classification follows that of scholars who have studied these laws Yver (1966). Importantly, the classification is based on inheritance of non-movable goods and not of movable goods. According to the custom of Uccle (article 39), everything that is not nailed down is movable.[7]

This also follows Gilissen's categorization of inheritance rules from the "Recueil des Anciennes Coutumes de la Belgiques." We construct a database that contains information on the custom name, custom publication date, whether the custom is local or general, whether the custom allows for partible or impartible inheritance partition and whether women were included or excluded from inheritance. Our main reference for written customary laws is de Richebourg (1724).

We also confirm the classification of inheritance rules using additional secondary

[7]There are different types of non-movable goods. We abstract from feudal non-movable goods, which follow feudal rules and are in most of the cases transmitted to the first born son. We focus on the family house or farm.

Figure 2: Belgian and French historical customary boundaries



Notes: Authors' Compilation. Each color represents a different custom.

sources. Particularly, we rely on (Meijers 1929), (Meijers 1932) and (Meijers 1936). While our list of customs is more comprehensive, these secondary sources confirm our classification for the subset of customs for Belgium that appear across various sources.

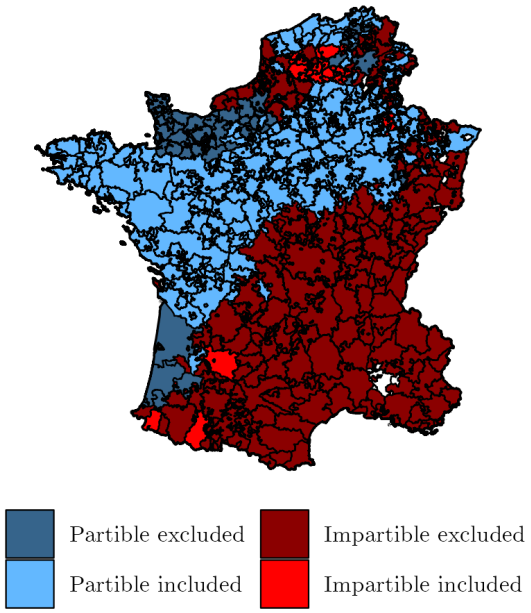
In Figure 3 we plot the distribution of inheritance types for Belgium and France. To the best of our knowledge, we are the first to provide a mapping of different inheritance customs for Belgium. Our work complements that of Gay, Gobbi, and Goñi (2023), which does so solely for France.

3.2 Celibacy

To measure celibacy, we rely on genealogical records from `www.geni.com`, a MyHeritage Company. To build our sample, we follow a number of steps. First, we rely on various geographical variables to filter and keep any location of birth that includes the term France, Belgium, or an equivalent. This yields a sample of genealogical profiles with accurate location information. As a second step, we do multiple iterations of linking that merge profiles to unions files. We then link individuals to geographic subdivisions by assigning each record in `www.geni.com` a latitude and longitude using the GeoNames geographical database `https://www.geonames.org`.

Data quality controls are necessary given that there are potential biases that arise when using family trees created by amateur genealogists. The most obvious issue is patriline bias, where a genealogist only follows their direct paternal linage. To address this, we show that all our results are robust to the horizontal lineage restriction developed by Blanc (2022). Specifically, this sample restriction considers only individuals in

Figure 3: Map of inheritance customs



Notes: We later define egalitarian inheritance as both partible inheritance and women included.

lineages where at least one ancestor in the preceding four generations had two or more children.

We use a definition of celibacy based on death records: definite celibacy (Henry and Houdaille 1978). Because celibacy is the absence of marriage, it is important to avoid classifying individuals who would have married if they had not died. Therefore, we restrict the sample to those dying at age forty or older. Celibacy is then defined as absence of any spouses in the family trees.

4 Inheritance customs and celibacy

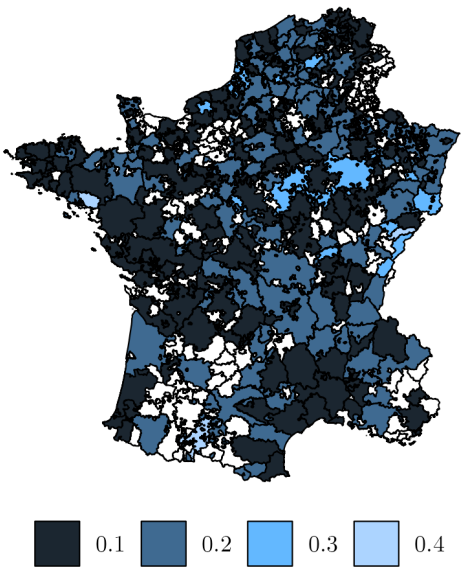
4.1 Sample description

Our main sample of analysis includes women born in France or Belgium between 1670 and 1753. Genealogical data becomes noisy by the end of the 17$^{\text{th}}$ century. Descriptive statistics start to become reliable for cohorts born after 1670. Our sample stops at women who had completed their fertile life (were 40) when France harmonized inheritance customs, in 1793 (Gay, Gobbi, and Goñi 2023). The sample hence excludes women born after 1753.

In Figure 4, we plot the average celibacy rate by subregion for our sample of women born in France and Belgium between 1670 and 1753. Comparing Figures 3 and 4 reveals that celibacy rates correlate with inheritance patterns.

We provide summary statistics in Table 1 for men and women in our sample. About

Figure 4: Average celibacy rate by subregion



Notes: Sample restricted to women dying at age 40 or older. Subregions with fewer than 30 observations left blank.

Table 1: Summary Statistics for men and women born 1670–1753.

	Mean	Std. deviation	Observations
Men's sample			
Celibacy rate	0.10	0.30	50,911
Age at first marriage	28.5	7.4	31,594
Completed fertility of spouses	3.1	3.1	39.760
Egalitarian inheritance	0.45	0.49	50,911
Born in Belgium	0.26	0.43	50,911
Women's sample			
Celibacy rate	0.10	0.30	42,394
Age at first marriage	24.88	6.05	27,288
Completed fertility of mothers	3.03	3.05	32,864
Egalitarian inheritance	0.45	0.49	42,394
Born in Belgium	0.26	0.44	42,394

Notes: This table shows summary statistics for men and women born between 1670 and 1753.

26% of men and women in our sample are born in Belgium, while the remaining are born in France. We document that while celibacy rates of 10% prevail across genders, the average age at first marriage is higher for men than for women. Exploring the distribution across inheritance types, we show that 45% of our sample for both men and women are born in areas with egalitarian inheritance systems.

4.2 OLS fixed effects' results

We begin by presenting simple OLS estimates describing the relationship between inheritance systems and celibacy. Our specification is based on comparing women born in judicial subdivisions with egalitarian- and non-egalitarian-inheritance, accounting for time-invariant regional factors and general trends in marriage by cohort. Our OLS fixed-effects specification takes the form:

$$Y_{icmr} = \alpha + \beta \text{ Egalitarian}_m + \mu_c + \mu_r + \epsilon_{icm} \ , \tag{1}$$

where Y_{icmr} is an indicator variable equal to one if women i, born in decade c at locality m in region r remained celibate throughout her life.[8] Egalitarian is an indicator variable equal to one for women born in a judiciary subdivision with egalitarian inheritance. That is, it indicates individuals from areas where inheritance was shared across all offspring, including women. The terms μ_c and μ_r represent birth decade and region fixed effects and account for average differences in celibacy across time and space. The coefficient of interest is β, which captures the association between egalitarian inheritance and celibacy rates.

Table 2 presents estimates of Equation (1) on a pooled sample of 42,394 women born in France or Belgium between 1670 and 1753. This sample is restricted to women who died after age 40 and whose geni-record could be precisely geo-located. The estimates in column (1) suggest that, on average, egalitarian inheritance is associated with large reductions in celibacy rates in pre-industrial France and Belgium. Specifically, female celibacy was 2 percentage points lower in areas where inheritance was shared across all offspring including women. Given the sample average of 10-percent celibacy, this effect corresponds to a 20-percent lower celibacy where inheritance was egalitarian. In column (2), we show that this estimate is robust to applying quality filters to our baseline sample from geni. We use the horizontal lineage sample restriction developed by Blanc (2022), which retains observations for which at least one parent in any of the four generations preceding an individual's observation is recorded as having a fertility rate that is strictly greater than one. Altogether, these estimates support Dennison and Ogilvie (2016)'s constraint-celibacy channel. Where women were excluded from inheriting, celibacy rates were high, reflecting constraints over the formation of a new household. Where women were entitled to inherit, these constraints were eased, resulting in lower celibacy rates.

This aggregate effect, however, masks substantial heterogeneity in the relationship between inheritance customs and celibacy. Next, we investigate this heterogeneity by exploiting the rich spatial variation in our data. Specifically, we test whether the constraint-celibacy channel prevailed in areas with few economic opportunities for women; and, conversely, whether areas where women had access to labor markets show

[8] Regions are *Généralité* for France, and provinces, independent counties, and duchies for Belgium. These are aggregate judicial divisions, larger than the judicial subdivisions where inheritance rules were applied (*bailliages*, *comtés*, *châtellenies*, *mairie*, *prévôtés*, *seigneuries*, and other feudal entities).

signs of empowered celibacy. To do so, we rely on the fact that animal husbandry was a common source of jobs for many women in sixteenth- and eighteenth-century rural Europe (Kussmaul 1981; Voigtlander and Voth 2009). We estimate the heterogeneous effects of inheritance rules by the pasture suitability index (PSI) developed by the Food and Agriculture Organization (FAO). This index provides us with local, exogenous, environment-determined conditions that favor the development of the animal husbandry sector, and hence, that enhances women's access to labor markets. Formally, we augment the model in Equation (1) using the following specification:

$$Y_{icmr} = \alpha + \beta_1 \text{ Egalitarian} + \beta_2 \text{ Egalitarian} \times \text{Pasture SI}_m + \delta \text{ Pasture SI}_m + \mu_c + \mu_r + \epsilon_{icm} \ , \quad (2)$$

where Pasture SI is the FAO pasture suitability index in locality m. Specifically, FAO provides a pasture suitability index for 5 arc-minutes grid cells (approximately 10 km), which ranges from zero (lowest pasture suitability) to one (highest pasture suitability). The coefficients of interest are β_1 and β_2. They capture, respectively, the association between egalitarian inheritance and celibacy in areas with low (β_1) and high (β_2) pasture suitability. According to our theory, we expect $\beta_1 < 0$, reflecting the fact that including women in inheritances in areas where they had relatively few economic opportunities may ease constraints over the formation of neo-local households and hence reduce constraints on celibacy (constraint-celibacy channel). In addition, $\beta_2 > 0$ would reflect the fact that including women in inheritances in areas where they had relatively more access to labor markets empowered them to delay marriage or remain celibate (empowered-celibacy channel).

Columns (3) and (4) of Table 2 report estimates of Equation (2) on our baseline sample and on our restricted sample of horizontal lineages. As before, the coefficient on the Egalitarian inheritance indicator is negative, but its magnitude is substantially larger. The estimate suggest that, in areas where women had relatively fewer job opportunities in the husbandry sector, egalitarian inheritance is associated with 5-8 percentage point reductions in celibacy rates, or 50- to 80-percent lower celibacy than in similar areas where women were excluded from inheriting. This reinforces our previous findings of a constrained-celibacy channel, and highlights that this was more prevalent in areas with few economic opportunities for women. In contrast, we document a positive, significant differential effect of egalitarian inheritance on celibacy in areas that are more suitable for animal husbandry, and hence, where women had larger access to labor markets. In particular, the differential effect of being included in the inheritance ranges between 4-8 percentage points, or 40- to 80-percent of the sample average. This is in line with the empowered-celibacy channel, whereby women with outside labor market options who, in addition, are entitled to an inheritance are able to remain celibate.

In the appendix, we report several extensions of this analysis. First, we estimate

Table 2: The relationship between celibacy and inheritance, OLS fixed-effects results

	(1) geni	(2) h-sample	(3) geni	(4) h-sample
Egalitarian inheritance	-0.020***	-0.024**	-0.051***	-0.083***
	(0.006)	(0.012)	(0.016)	(0.031)
Egalitarian × Pasture SI			0.042*	0.082*
			(0.022)	(0.042)
Observations	42,394	20,045	42,394	20,045
Region FE	Y	Y	Y	Y
Birth decade FE	Y	Y	Y	Y
Pasture SI	.	.	Y	Y
Sample	women	women	women	women
Mean dep var	0.10	0.10	0.10	0.10

Note: Sample is women born in 1670-1753, who died after 40, and whose geni records could be precisely geo-located; Robust SE in parenthesis; *p<.05; **p<.01; ***p<.001.

Equations (1) and (2) on a comparable sample of men (see Appendix Table 5). Results are similar across genders, suggesting that male marriage opportunities depend on the supply of potential brides. Second, we examine heterogeneous effects by an additional characteristic: the proximity to a city. Areas close to a city may be inherently different, as urban areas provided additional economic opportunities for rural men and women who decided to emigrate and may have also followed a specific marriage patterns. Potentially, our heterogeneous effects by pasture suitability may confound the differential fertility by proximity to cities. To address these concerns, Appendix Table 6 provides a horse-race between pasture suitability and proximity to cities. We find no evidence of a differential effect of egalitarian inheritance based on distance from cities.[9] In addition, this extended specification confirms our previous findings that pasture suitability matters for celibacy decisions even across areas with egalitarian inheritance systems.

4.3 Cross-border fixed-effects' results

The OLS fixed-effects' results provide important insights into the relationship between inheritance rules and celibacy, as well as descriptive evidence on both the constraint- and the empowered-celibacy channel. That said, to interpret these estimates as causal evidence, our identification strategy requires that there exists no omitted characteristic correlated with both the inheritance systems and individual choices regarding marriage. To address the possibility of omitted variable bias in our OLS results, this section and the following undertake two additional estimation strategies that compare localities in close geographic proximity with different inheritance systems. By narrowing the

[9] We find similar estimates for the interaction between egalitarian inheritance and proximity to city when we exclude pasture suitability from the analysis (available upon request).

focus to localities at the borders of the different inheritance systems, we increase the comparability of individuals subject to egalitarian and non-egalitarian inheritance in dimensions other than the inheritance system.

Here we carry-out a cross-borders fixed effects analysis, whereby we compare individuals located at the borders of geographically close judicial subdivisions but where one subdivision followed an egalitarian inheritance system and the other did not. Our results are derived from 3,506 pairs of judicial subdivisions that share a border and have different inheritance systems, and from 3,298 pairs when imposing the horizontal sample restriction. Specifically, we report estimates of Equation (1) and (2) on these 3,506 (and 3,298) border-pairs, and augment the specifications with border-pair fixed effects.

Table 3 reports estimates of our cross-borders fixed effects analysis. The estimates confirm our previous OLS results. Across specifications, we find that egalitarian inheritance systems reduce celibacy rates (Columns (1) and (2)). However, we find substantial heterogeneity in the relationship between inheritance and celibacy across different areas. As before, the heterogeneity analysis suggests that, in areas where women had relatively fewer job opportunities in the husbandry sector, egalitarian inheritance is associated with 9-10 percentage point reductions in celibacy rates relative to similar areas where women were excluded from inheriting. This supports the existence of a constrained-celibacy channel in areas with few economic opportunities for women. In contrast, we document a positive, similarly-sized, differential effect of egalitarian inheritance on celibacy in areas that are more suitable for animal husbandry, and hence, where women had larger access to labor markets. This is in line with the empowered-celibacy channel, whereby women with outside labor market options who, in addition, are entitled to an inheritance are able to remain celibate.

4.4 Regression discontinuity results

In addition to the cross-border fixed-effects estimates reported above, we undertake a regression discontinuity (RD) design to estimate the causal effect of egalitarian inheritance systems on celibacy. Our RD strategy exploits the fact that individuals born in different sides of the judicial border are subject to different inheritance systems, despite the fact that they are born in nearby, otherwise similar localities. Specifically, the discontinuities we use arise from the development of different inheritance systems in the high middle ages and codified only around the thirteenth century (see Section 2 for details). Formally, we restrict our sample to individuals born within a 15-kilometer bandwidth around the border between egalitarian and non-egalitarian inheritance systems, determined by Calonico et al. (2022)'s MSE-optimal bandwidth selector. On this

Table 3: The relationship between celibacy and inheritance, cross-border pair results

	(1) geni	(2) h-sample	(3) geni	(4) h-sample
Egalitarian inheritance	-0.02***	-0.02	-0.09***	-0.010***
	(0.01)	(0.01)	(0.03)	(0.05)
Egalitarian × Pasture SI			0.10**	0.12*
			(0.04)	(0.07)
Observations	3,506	3,506	3,298	3,298
Pair FE	Y	Y	Y	Y
Region FE	Y	Y	Y	Y
Pasture SI	.	.	Y	Y
Sample	women	women	women	women
Mean dep var	0.11	0.23	0.11	0.23

Note: Sample is cross-border subregion pairs; weighted by number of individuals. Individual celibacy based on women born in 1670-1753, who died after 40, and whose geni records could be precisely geo-located; SE clustered by border-pair in parenthesis; *p<.05; **p<.01; ***p<.001.

sample, we estimate the following RD specification:

$$Y_{icmr} = \alpha + \beta\ \mathbf{1}\left[d_m \geq 0\right] + \mathbf{1}\left[d_m \geq 0\right] \times f_E(d_m, B_E) + \\ + \mathbf{1}\left[d_m < 0\right] \times f_N(-d_m, B_N)\ + \mu_c + \mu_r + \epsilon_{icm}\ , \quad (3)$$

where Y_{icmr} is an indicator variable equal to one if women i, born in decade c at locality m in region r remained celibate throughout her life. Our running variable, d, is the distance to the inheritance border in meters, normalized around zero such that $d \geq 0$ corresponds to localities with egalitarian inheritance, and $d < 0$ to localities with non-egalitarian inheritance. $\mathbf{1}[.]$ is the indicator function, such that $\mathbf{1}\left[d_m \geq 0\right]$ is equal to one for localities with egalitarian inheritance. f_E and f_N are unknown functions with parameter vectors B_E and B_N, capturing location-specific factors on both sides of the inheritance border which can affect celibacy. As before, μ_c and μ_r correspond to decade and region FE. The coefficient of interest is β, which captures the estimated discontinuity in celibacy rates of being born just across the border where the inheritance system turns from non-egalitarian to egalitarian.

We first present graphical evidence on the relationship between inheritance systems and celibacy within a 15-kilometer bandwidth of the inheritance border. Figure 5 shows the average celibacy within IMSE-optimal evenly-spaced bins (circles) on each side of the inheritance border. The figure suggests a sharp discontinuity in celibacy at the cutoff between non-egalitarian (left) and egalitarian (right) inheritance areas, decreasing by around 2 to 3 percentage points. Hence, consistent with our previous findings, the

graphical evidence indicate that, on aggregate, egalitarian inheritance systems reduce celibacy rates.[10]

Table 7 reports the corresponding RD estimates based on Equation (3). Columns (1) and (2) use our baseline geni sample; columns (3) and (4) apply the horizontal sample restriction. Across specifications, the estimates are in line with the graphical evidence, suggesting a sharp discontinuity at the inheritance border of 1.3 to 3.4 percentage points.

In addition, we document heterogeneous effects of egalitarian inheritance systems on celibacy, depending on women's labor market opportunities in the local husbandry sector. To do so, we estimate Equation (3) on two samples: areas with low pasture suitability (below the 75th percentile), and areas with high pasture suitability (above the 75th percentile). Figure 8 presents the graphical evidence; Table 4 the corresponding RD estimates. BOth the figure and the table document a sharp discontinuity across the inheritance border, which differs in sign depending on the pasture suitability index, that is, on the labor market opportunities for women. Specifically, the heterogeneity analysis suggests that, in areas where women had relatively fewer job opportunities in the husbandry sector, there is a sharp discontinuity in the inheritance border, with celibacy rates between 3 and 5 percentage points lower where egalitarian inheritance prevailed. In contrast, we document a positive discontinuity in areas that are more suitable for animal husbandry, and hence, where women had larger access to labor markets. The magnitude of this discontinuity, between 5 and 6 percentage points, is larger in magnitude than the previous RD estimates. This evidence suggests that inheritance affected celibacy through two distinct channels. Where husbandry jobs were absent, the constraint-celibacy channel dominated—women receiving an inheritance could ease the constraints of forming a neo-local household, hence decreasing celibacy. In contrast, where husbandry jobs were prevalent, the empowered-celibacy channel dominated—women with outside labor market options who, in addition, are entitled to an inheritance are able to remain celibate.

5 Conclusion

This paper empirically investigates the relationship between inheritance customs and marital decisions. Inheritance customs serve as a reflection of both legal institutions and local cultural norms, making them crucial factors influencing the formation of families. By examining this association, we contribute to the understanding of the drivers behind the European Marriage Pattern and shed light on the interplay between societal norms, economic constraints, and individual choices.

To analyze the impact of inheritance customs on marital decisions, we construct a novel Atlas of inheritance customs in pre-industrial France and Belgium and use large

[10] In addition, we depict balanced distribution of pasture suitability index and proximity to city at the borders in Figures 6 and 7.

Table 4: RD estimates, heterogeneity by pasture suitability

	(1) $> p75$ PSI	(2) $< p75$ PSI	(3) $> p75$ PSI	(4) $< p75$ PSI
Egalitarian inheritance	-0.0266***	0.0699***	-0.0520***	0.0508
	(0.00827)	(0.0257)	(0.0165)	(0.0427)
Observations	22,497	3,010	10,921	1,425
Region FE	Y	Y	Y	Y
Birth decade FE	Y	Y	Y	Y
Sample	geni	geni	h-sample	h-sample
Mean dep. var.	0.109	0.116	0.222	0.242
MSE optimal bw	15284	15807	14412	18941
Order polynomial	1	1	1	1

Note: Sample is women born in 1670–1753, who died after 40; Bandwith in km calculated using MSE-optimal selector; Triangular kernel; h-sample restricts the sample to horizontal linages; i.e., where at least one ancestor in the preceding four generations had two or more children (Blanc 2022). Nearest-neighbor robust SE in parenthesis; *p<.05; **p<.01; ***p<.001.

genealogical dataset to link individual-level data on marriage outcomes to the corresponding inheritance customs.

Our empirical analysis, employing an ordinary-least-squares estimation with regional fixed effects, uncovers intriguing insights into the relationship between inheritance customs and marital decisions. Specifically, we document that the EMP is related to empowered celibacy in areas with economic opportunities for women. In contrast, in regions characterized by economic constraints, the roots of high celibacy can be traced back to the challenges of forming new households.

To validate our findings, we employ several additional empirical strategies. Both the cross-borders fixed effects analysis and the regression discontinuity design confirm the observed relationships between inheritance customs and marital decisions.

This paper thus revisits the link between the European Marriage Patterns, female autonomy, and economic growth. Our analysis reveals a U-shaped relationship between financial independence and celibacy, reconciling the opposing mechanisms presented in the existing literature.

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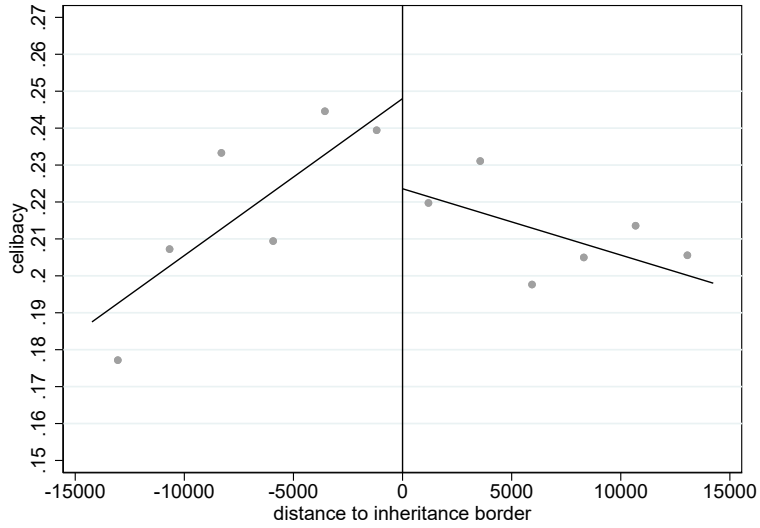
Appendix

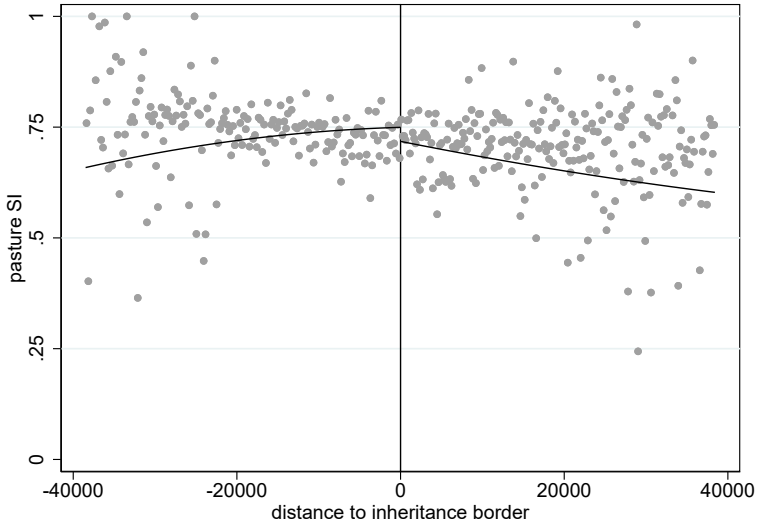
Figures

Figure 5: RD plot



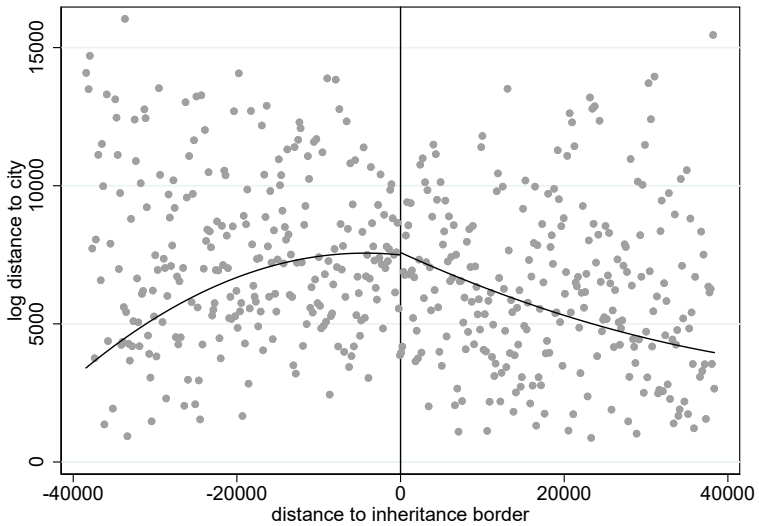
Notes: Sample is women in Geni with h-sample, who were born in 1670–1753 within 14 km of inheritance border, and who died after 40; bandwith of 10.651 km (MSE-optimal selector).

Figure 6: RD balancedness (1/2)- Pasture suitability index



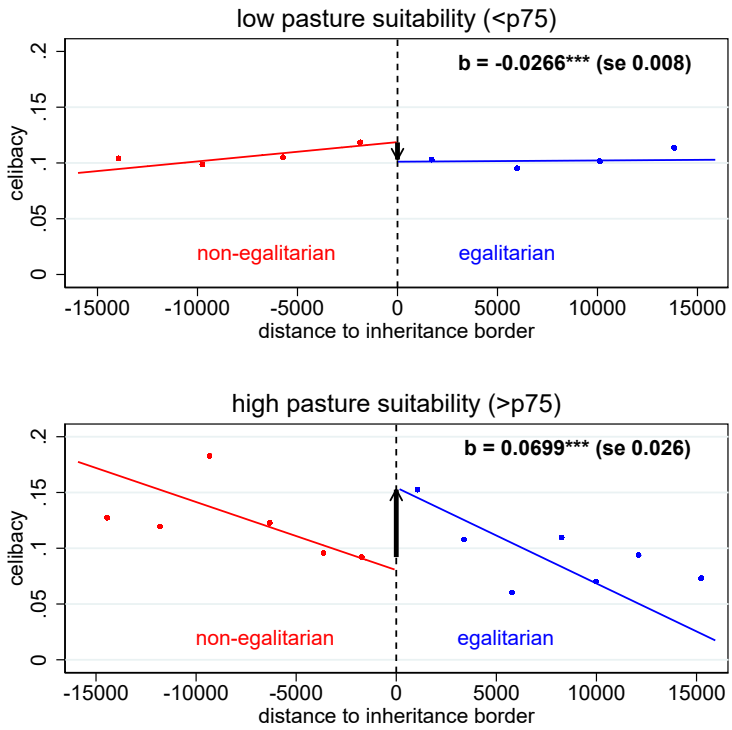
Notes: Estimates of equation 2 on pasture suitability index. Sample is women in Geni born in 1670–1753 who died after 40; bandwith of 38 km (MSE-optimal selector)

Figure 7: RD balancedness (2/2)-log-distance to city



Notes: Estimates of equation 2 on log distance to city. Sample is women in Geni born in 1670–1753 who died after 40; bandwith of 38 km (MSE-optimal selector).

Figure 8: RD Heterogeneity



Notes: Sample is women born in 1670-1753, who died after 40; bandwith of ca. 16 km (MSE-optimal selector). Circles show sample average celibacy within IMSE-optimal evenly-spaced bins. Celibacy residualized for birth decade FE and region FE. Reported RD estimates (bold) from Table 4, cols. (1) and (2).

Tables

Table 5: Baseline Fixed Effects Celibacy Estimation (Men)

	(1) Geni	(2) Geni	(3) H-Sample	(4) H-Sample
Egalitarian inheritance	-0.009	-0.069***	-0.011	-0.110***
	(0.005)	(0.015)	(0.009)	(0.025)
Egalitarian X Pasture SI		0.084***		0.139***
		(0.020)		(0.035)
Observations	50,911	50,911	26,697	26,697
Region FE	Y	Y	Y	Y
Birth decade FE	Y	Y	Y	Y
Pasture SI	.	Y	.	Y
Sample	Men	Men	Men	men
Mean dep var	0.10	0.10	0.10	0.10

Geni born 1670-1753 + geolocated + died>40
Robust SE; *p<.05; **p<.01; ***p<.001

Table 6: Effect of inheritance and working possibilities on celibacy

	(1) Geni	(2) Geni	(3) Geni	(4) H-Sample	(5) H-Sample	(6) H-Sample
Egalitarian inheritance	-0.051***	-0.015**	-0.046***	-0.083***	-0.035**	-0.095***
	(0.016)	(0.007)	(0.017)	(0.031)	(0.015)	(0.033)
Egalitarian X Pasture SI	0.042*		0.042*	0.082*		0.083**
	(0.022)		(0.022)	(0.042)		(0.042)
Egalitarian X Proximity to city		0.000	0.000		-0.000	-0.000
		(0.000)	(0.000)		(0.000)	(0.000)
Observations	42,394	42,394	42,394	20,045	20,045	20,045
Region FE	Y	Y	Y	Y	Y	Y
Birth decade FE	Y	Y	Y	Y	Y	Y
Pasture SI	Y	.	Y	Y	.	Y
log proximity to city	.	Y	Y	.	Y	Y
Sample	Women	Women	Women	Women	Women	women
Mean dep var	0.10	0.10	0.10	0.10	0.10	0.10

Geni born 1670-1753 + geolocated + died>40
Robust SE; *p<.05; **p<.01; ***p<.001

Table 7: RD results

	(1) Celibate	(2) Celibate	(3) Celibate	(4) Celibate
RD_Estimate	-0.0137*	-0.0142*	-0.0340**	-0.0339**
	(0.00791)	(0.00790)	(0.0157)	(0.0157)
Observations	25507	25507	12346	12346
Region FE	Y	Y	Y	Y
Birth decade FE	Y	Y	Y	Y
Pasture SI p75	.	Y	.	Y
Sample	Women	Women	H-Sample	H-Sample
Mean dep. var.	0.109	0.109	0.224	0.224
MSE Opt BW	15161	15182	14244	14201
Order polyn.	1	1	1	1

Geni born 1670-1753 + geolocated + died>40
Triangular kernel; MSE-optimal bandwidth selector
Nearest-neighbor robust SE; *p<.05; **p<.01; ***p<.001