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The Fetters of Inheritance? Equal Partition and Regional Economic Development*

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Abstract

Did European regions industrialize first because their institutions fostered urbanization? We argue that culture, precisely an agricultural inheritance tradition that would immobilize the rural population, was no obstacle to economic growth (as commonly thought). Instead, equal partition tied excess labor to the land and fostered the establishment of a low-wage low-skill industry there. Using European data, we document that these equal partition areas are richer than primogeniture areas today. With a focus on identification, we conduct fuzzy spatial RDD and IV regressions for the German state of Baden-Württemberg in 1895, the 1950s, and today. We find that inheritance rules caused—in line with our theoretical predictions—higher incomes, population densities, and industrialization levels in equal partition areas. We document that equal partition reduced emigration. Results suggest that more than a third of the overall inter-regional difference in average per capita income in present-day Baden Württemberg—or 598 Euro—can be attributed to equal partition. The reasons for Europe's uniqueness do not lie in the supremacy of primogeniture, and have to be searched elsewhere.

JEL Codes: *D02 · D31 · N09 · N05 · O18 · Z01*
Keywords: *Inheritance rules · structural change · regional economic development · Baden-Württemberg · spatial inequalities*

Why are some regions poor, and others rich? A standard narrative in economic history is that urbanization was the driving force behind Europe's escape from the Malthusian trap (Voigtländer and Voth 2013). Scholars on regions across the globe followed the lead of Lewis (1954), and Harris and Todaro (1970) have identified factors that inhibit urbanization as obstacles to structural change. Areas—so the argument goes—where either geography or institutions hindered the rural population from migrating to cities would be left behind. A prominent example of such an institu-

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tion is the equal partition of agricultural estates, when the heirs of a farmer would receive each a small share of the land. It is commonly argued that these heirs of small estates would be "fettered" to their farm, and be convicted to remain in the agricultural sector. In contrast, in the primogeniture tradition only the oldest would receive land while all other (traditionally only male) siblings would not inherit at all, or receive mobile assets. The impression that primogeniture is more favorable to growth is inspired by the literature on the British Industrial Revolution and Enclosures (see O'Brien 1996, for an overview); as we show in this paper, it does not pass the test of European data. This puts the validity of the argument for supremacy of primogeniture compared to even more dissimilar regions (e.g. Fairbank 1978, on China) in doubt, and thus highlights the role of history on economic development and geography through path dependence (Bleakley and Lin 2012; Voigtländer and Voth 2012).

Using a natural experiment allowing us to assemble several historical data sets and rely on various identification strategies, we find that equal partition was not (at least not unconditionally) an obstacle to economic growth. Instead it shaped the regional distribution of non-agricultural activity. Data on Europe, Germany, and the state of Baden-Württemberg, reveals that equal partition areas are significantly richer today. In a companion paper, we show that the inheritance traditions here cannot be fully explained by first nature geography, settlement history, Roman influence, the political economy of feudal lords, or the Industrial Revolution (Huning and Wahl 2021). Regional differences which have to be regarded as "cultural" have shaped the economic geography of Europe. We argue that the inheritance tradition decided where development took place, and provide evidence that equal partition areas faced less emigration and instead established more employment outside agriculture. Our findings suggest that the reasons for Europe's early escape from the Malthusian trap cannot be found in institutions that foster emigration from the countryside, or agricultural inheritance traditions.

Our paper contributes to the literature on informal institutions in four ways. First, we argue that particular types of social norms—agricultural inheritance traditions like primogeniture and equal partition—have a profound and persistent effect on economic development. We show, based on historical and theoretical arguments, that equal partition was no obstacle to regional development. Second, we outline our neoclassical theory in which the countryside has given inheritance traditions and is capitalized—conditional on local capital rents,–to become the cities' extended workbenches. The putting-out system gave non-agricultural employment to the rural population, which was more willing to take this employment in areas of equal partition, as they could not make a living of their small estates. As third contribution, our results imply that equal partition is an institution that reduces spatial labor mobility but, counter-intuitively, aids economic development. Fourth, we contribute to a small literature on the development of rural areas during the Industrial Revolution (see e.g. Becker and Woessmann 2009; Kopsidis and Wolf 2012; Cinnirella and Hornung 2016; Rosés and Wolf 2018). This is crucial for the understanding of regional economic development, as historically most of the population lived in rural areas or small towns. Yet, cities have received most of the attention of research so far (Bosker, Buringh, and Van Zanden 2013; Bosker and Buringh 2017; Börner and Severgnini 2014; Dittmar and Meisenzahl 2019; Jacob 2010).

To test our theory empirically, we use different data sets. First, a map by Todd (1990) on inheritance practices in European regions. We build a grid cell data set spanning over twelve European countries. OLS regressions with geographic control variables and country fixed effects show that equal partition is significantly—positively—related to night light intensity. Second, we base the core analysis on the data set by Röhm (1957), and focus on the German federal state of Baden-Württemberg. We digitized the borders of the 3,382 historical municipalities in 1953. Baden-Württemberg is interesting from a development perspective and with an eye on identification. It was not an early center of industrialization in Germany and remained an agrarian, rural state until the late 19th century. Since then it has become one of the economically most prosperous and innovative regions in Germany, and the whole of Europe. It is famous for its uniquely decentralized industrial structure, with small and mediums sized firms spread over urban and rural areas. Baden-Württemberg today tops the German productivity statistics in the craftsmanship sector.[1] From the perspective of identification, and causal inference, the focus on this state comes with three major advantages. First, there was a single state government. Second (and importantly) its industrialization coincided with the collection of reliable and detailed statistics. Third, it provides small-scale variation in inheritance traditions; these include not only the basic forms but also transitional and mixed traditions. Furthermore, Baden-Württemberg is the only area with an identifiable historical border between inheritance traditions in Germany. There is no clear spatial distribution in its other areas.

We exploit this spatial discontinuity using a fuzzy spatial RDD approach. We find that equal partition has influenced the structure of the agricultural sector significantly. In equal partition municipalities, farms are on average smaller, there are less helping family members, and more common lands. We proceed by investigating the theoretical mechanism through which equal partition should have affected industrialization in the 19th century. We find evidence for a higher prevalence of part-time farming, and tobacco-growing in the equal partition area. We show that the equal partition area was first to industrialize. This supports the idea that the putting-out system was more widespread in the equal partition area which hence industrialized earlier. To shed light on historical mobility patterns, we collected data on the family names of fallen or severely insured soldiers from World War I casualty lists. We use the geographic distribution of family names of World War I casualties to suggest that (on average) the more frequent a name is in the equal partition area the lower is the number of municipalities in which it is present. We find that names are more spatially concentrated in the equal partition area than in the primogeniture area. The implication is that people from the equal partition area were less mobile. This supports our theory that equal partition limits the mobility of heirs, since their inheritance is immobile. As the spatial distribution of family names is the result of century-long migration, these results also provide suggestive evidence for the relative stability of equal partition before the 20th century. Furthermore, we show that equal partition municipalities had a more positive migration balance in the 1950, which suggests that (also in the 20th century) the equal partition area still profits from immigration.

Studying the relationship between equal partition and economic development, we consider economic outcomes from 1950 as dependent variables. Our fuzzy RDD results imply that equal partition municipalities in 1950 were more industrialized, and more densely populated. These results are robust to a host of checks including placebo border tests, the inclusion of additional control variables, the exclusion of the region around the state's capital city (Stuttgart), and different dis-

1. Statistical Office of Baden-Württemberg, https://www.statistik-bw.de/Presse/Pressemitteilungen/2016330. This lead survives adjusting for purchasing power. Data from GfK Kaufkraft Deutschland 2015

tance polynomials.

To minimize bias caused by unobserved heterogeneity, our alternative identification strategy focuses on the area around Stuttgart. This area is known to have a highly integrated market, especially compared to the Swabian Jura ("Schwäbische Alb") and the Black Forest. Its minor cultural heterogeneity suggest this has been the case for centuries (today's dialects for example are indistinguishable). Our identification strategy rests on two specific properties of the wine plant. First, it is relatively labor intensive to cultivate (fostering equal partition, all else equal). Second, it is better suited to more seasonal rainfall conditions than other plants. Its long roots can reach the water stored from the winter months. We collect data on the spread of wine-growing in Baden-Württemberg before 1624. Seasonality of precipitation indeed predicts historical wine-growing well, and is also connected to equal partition in a statistically significant way. It is unrelated to the local growing conditions of other important agricultural crops grown in the area (barely, maize, potatoes or winter wheat) making it an ideal candidate for an instrumental variable (IV). We estimate IV regressions for a sub-sample of municipalities that are within 50 km of the states' capital Stuttgart. The IV results also imply a statistically, and economically, significant positive relationship between equal partition and measures of industrialization.

To further corroborate the robustness and generalizability of our results, we present evidence using additional data sets in the Online Appendix. We show that the baseline results remain intact with outcomes from and 1961 and today, when analyzing the whole of today's West Germany, as well as the kingdom of Württemberg in 1895. Finally, we test the link between demography and equal partition, finding no sizable effect.

The remainder of the paper is structured as follows. In section I, we summarize the literature on the consequences of inheritance traditions on economic development, followed by our model in section II and empirical evidence on Europe in section III. In section IV, we introduce our data on Baden-Württemberg. In section V we provide empirical evidence. We conclude in section VI.

I. LITERATURE REVIEW

Inheritance is the largest re-allocation of resources between individuals outside markets. As such, it is expected to influence wealth, income, and gender inequality, human capital (e.g. Galor, Moav, and Vollrath 2009), migration, urbanization, economic development, and the political system (e.g. Bertocchi 2006; Popa 2019; Hager and Hilbig 2019; Galasso and Profeta 2018).

Regional differences in European agricultural inheritance have persisted at least since they bewildered Tacitus, and have hardly changed during history (Church and Brodribb 1876). In Huning and Wahl (2021), we provide an overview of the literature on the emergence of these traditions, and find strong evidence for the idea that inheritance traditions were relatively static, and can be considered exogenous to the industrialization of the countryside. Our results for Baden-Württemberg are in line with Bloch (1961, p. 250), who argued that European "[...] rules of [agricultural] succession were fixed by old regional usages, without any interference by the lords, save for their efforts, at certain periods and districts, to ensure the indivisibility of the property which was considered necessary for the accurate levying of the taxes", despite major variation over time and space in the way medieval society itself was organized (Bloch 1961).

While the theoretical literature on the consequences of inheritance tradition is rich (e.g. Blinder 1973; Baker and Miceli 2005), empirical investigations have often relied on crude data inferring inheritance traditions from family systems, such as provided by Todd (1983, 1990) for NUTS-2 regions in several European countries, have compared a small set of countries with each other (Habakkuk 1955; Ekelund, Hébert, and Tollison 2002), or simply described variation within the North American British colonies (Alston and Schapiro 1984).

A notable exception is Hager and Hilbig (2019), who use village-level data to show that agricultural inheritance rules matter for today. In this paper, we use village-level data from the same source to establish another crucial point: Regions with a tradition of equal partition are today richer, and have more manufacturing. This is true despite the fact that equal partition was historically a norm that made everyone poorer because it led to land overfragmentation, hampered capital accumulation, and even led to the desertion of villages due to an excessively high population of farmers endowed with too little land. Hager and Hilbig (2019)—like this paper—use German data on the municipality level. They study the link between inheritance traditions and social, political and economic inequality.[2] They find that equal partition (compared to the unequal primogeniture) is positively linked to more social and political equality, but also to higher levels of today's economic inequality. They argue that the socially and politically more equal society created by equal partition rewarded talent more than status, resulting in faster growth and higher contemporary development levels—which in turn explains the higher income inequality today. This suggests that there is a potential connection between equal partition and economic development, running through pro-egalitarian preferences and wealth inequality.[3]

Economic historians proposed ample theories linking inheritance practice to development. O'Brien (1996) hypothesizes that landless workers were a crucial source of industrializing (primogeniture) Britain. Compared to equal partition France (especially after its 1789 Revolution guided by egalitarian ideas of land distribution Tocqueville (see 1835)), its growth can in parts be attributed to the urbanization caused by the migration of the landless.

An alternative view—dominant but not exclusively prevalent in the German-speaking literature (e.g., Habakkuk 1955; Karg 1932; Röhm 1957; Schröder 1980)—is that equal partition fostered industrial development. The first wave of rural industrialization was usually the establishment of putting-out systems by one or more entrepreneurs who provided farmers with raw materials (e.g. tobacco leafs), sometimes even tools, and contracted them to perform certain manual tasks (e.g. rolling cigars) in a predetermined time frame.[4] Wehler (2008, p. 94) argues that employees from rural regions offered two main advantages for the entrepreneurs. First, they avoided the regulation of city guilds. Second, peasants were seasonally unemployed for most of the year, and were seeking other modes of employment, also to hedge against the risk of harvest failure. For Wehler, entrepreneurs exploited low wages, long and unregulated working hours, high interests on the raw materials to penalize lateness, and payment in kind instead of coin. Grant (2005) uses data from Imperial Prussian counties to support this view. He reports lower wages within

2. Menchik (1980), in a similar attempt, studied the influence of inheritance traditions for the wealth distribution in the United States.

3. Another study investigating the long-run effect of equal partition is Bartels, Jäger, and Obergruber (2020). They also focus on the long-run effects of equal partition on inequality, but also on other outcomes like human capital as well as innovative and entrepreneurial activity.

4. See for example Karg (1932), who provides a detailed case study on the putting-out system and its connection to equal partition for early 20th century Baden.

agriculture in regions with high levels of household employment, and finds a statistically weak link between equal partition and "a slightly larger increase in the agricultural labour force" (Grant 2005, p. 206). He hypothesizes that regions with a mix between agriculture and manufacturing were most prepared to absorb the massive population growth of the time.

The economic history of England regards the rural area predominantly as a source of capital for urban development. The (traditionally) German literature however provides ample evidence for the close link of the putting-out system and equal partition. Karg (1932) and Strobel (1972) describe the impact industrialization on inheritance traditions, farm sizes, and rural industrialization in 19^{th} century Baden. Herrigel (1996) argues that equal partition was the reason that Southwestern German proto-industry was able to move to the countryside, and is crucial in understanding the outstandingly decentralized structure of the German economy of today. Braun (1990) finds evidence for the close relationship of equal partition and rural proto-industry for the Swiss region of upland Zurich. There is also quite a bit of qualitative evidence for the existence of this relationship outside of the German-speaking area. For England, for example, both Habakkuk (1955) and Thirsk (1984) explain a relationship between partible inheritance practices in some English regions and their engagement in rural handicraft. Habakkuk (1955), for example, links the emergence of the wool industry in East Anglia to the practice of equal partition.

It is also well-documented that putting-out systems were less successful in primogeniture areas. Non-inheriting siblings here were more mobile—they were likely to inherit animals, or even money. This eased their decision to leave the municipality and move into cities. Hence, primogeniture areas were subject to a higher emigration. We expect these areas to be less populous.[5] Among others, Wegge (1998), Karg (1932) (for Baden) and Krafft (1930) (for Württemberg) provide historical evidence on this emigration from the primogeniture area. The emigration from rural primogeniture areas put their population growth on hold (or into decline), and led to a population increase in the industrializing areas of equal partition. People who left the agricultural sector of the primogeniture area became mostly industrial workers of the equal partition area. Those who stayed in the primogeniture area remained mostly farmers. This contributed to structural change in the equal partition area and to its population density. This pattern was amplified by agglomeration economics, but not created by it.

There is a close relation between our theory and other two-sector models of urban and rural labor markets, going back to Harris and Todaro (1970). The change from a predominantly Malthusian economy of the countryside to an industrial economy is famously discussed in Hansen and Prescott (2002). Another idea related to this paper is that immobile property affects economic growth, known as the Oswald-hypothesis (Oswald 1996). Proponents of this idea believe that homeownership induces labor market frictions, causes unemployment, and hampers economic growth.[6] We augment this short-run view with the implications of immobility on long run outcomes.

The literature on agricultural inheritance traditions (e.g., Hager and Hilbig 2019; Röhm 1957) in

5. Habakkuk highlights the smaller migration pressure (and the less mobile inheritance of children in the equal partition area). To provide a representative quote "Where the peasant population was relatively dense but immobile, industry tended to move to the labor; where the peasant population was more mobile even if less fertile, the industrialist had much greater freedom to choose his site with reference to the other relevant considerations." (Habakkuk 1955, p. 9)

6. Wolf and Caruana-Galizia (2015) test this for Germany, and use aerial bombing as an instrumental variable. They find–as expected—a positive link between home-ownership positively and unemployment.

Baden-Württemberg has highlighted that they were slow to adapt to the changes of the industrial revolution and were more or less stable over time before.

II. THE MODEL

The purpose of our model is to derive predictions on how different given agricultural inheritance traditions decided on the allocation of labor in two sectors (agriculture and manufacturing), migration, capital allocation, and overall income differences.[7] We rely on the basic notation of Hansen and Prescott (2002), and consider a world in which different places have these two sectors, as well as their endowment with our basic factors land, labor, and capital. We focus on the development of a manufacturing sector in the countryside (an area we take as initially not endowed with production capital) to study how the nature of this development is dependent on local inheritance traditions.

Consider a world of places W, to start with $W = \{v_1, v_2, v_3\}$. In each of these places, we have a set of individuals (for example, initially each one). We first model the two life decisions of these individuals. They are each endowed with one unit of labor L. They might also be endowed with land N, dependent on their parents' endowment and the inheritance rule (see below). There is also capital K, but since it is irrelevant to individuals' decisions in this model, it is held at the place level. Any individual x born in village b decides on the allocation of its labor by choosing a place to work in v_x, and the share of its labor working in agriculture, as follows.

$$\max_{v_x, L_{Sx}} \left(Y_{Sx}\left(A_{St}, N_x, L_{Sx}\right) + Y_{Mx}\left(A_{Mt}, \left(1 - L_{Sx}\right), \tau_t, v_x, b_x\right)\right), \tag{1}$$

where income from agriculture and manufacturing is given by

$$Y_{Sx} = A_{St} L_{Sx}^{\sigma_{SLt}} N_x^{\sigma_{SNt}} \tag{2}$$

$$Y_{Mx} = \tau_t(v_x, b_x) A_{Mt} \left(1 - L_{Sx}\right)^{\sigma_{MLt}} \left(\frac{K_{vt}}{L_{Mvt}}\right)^{\sigma_{MKt}}. \tag{3}$$

Technical change in agriculture A_S and manufacturing A_M can be taken as exogenous, or subject to learning-by doing, i.e. aligned with a growth in Y_{Mx}. It is established to assume that the state of technology in agriculture grows faster over time than in manufacturing, which is yielded by either specification.[8] In our example calibration, we chose the elasticities of substitution σ to each sum up to one to assume constant returns to scale.[9] The function $\tau(v, b) \in (0, 1)$ from (3) returns a given commuting factor smaller than one iff $v \neq b$ and $L_{Sx} > 0$, else one. For simplicity, we assume that this commuting factor is common across all place pairs (b, v). τ introduces a penalty individuals

7. A Python script of this model can be downloaded from https://thilohuning.com/inheritance.py

8. We are not concerned to endogenize technical change, as in Hansen and Prescott (2002), Cinnirella and Hornung (2016), or Galor, Moav, and Vollrath (2009), and take it as given.

9. Our predictions are robust to different specifications (the endowment with land is fixed). Both increasing and diminishing returns to scale are not unreasonable for the case of urban 19$^{\text{th}}$ century Southern Germany. Wehler (2008) for example argues for strong diseconomies of scale in manufacturing behind the emergence of rural industrialization, driven by cities' strong guilds, overcrowding, pollution, and increasing social unrest.

face if they work both on a farm in one place and in manufacturing in another. It also models commuting and costs faced by an unfamiliarity with the manufacturing's place labor market. As such, individuals can avoid this penalty by either working full-time in manufacturing in the place that is not their birthplace (i.e. they move there), or by working only in their birth place.[10] Individuals decide sequentially, and the decision of one individual to move to another place is shared with all other individuals. This is important, as the per capita endowment with capital in v is dependent on the sum of all units of labor employed in manufacturing in v, L_{Mv}.

After individuals created output this way in a single round, they reproduce and bequeath their land. We assume that each individual has two children, who form the labor stock of the next period in the place they live in. Children of parents who decided to move are conveniently born in their new home. Inheritance is processed according to the tradition in v. If there is land to inherit, children in the equal partition area are each endowed with half of their parents' endowment. In the primogeniture area, one individual inherits the total land endowment and the other does not get any land.[11]

Lastly, places decide collectively on how to invest any output surpluses which were not consumed in this generation. Assuming that this consumption is fixed, they then decide where this capital would yield the highest returns. There is no punishment to investing in other places, which is equal to the assumption of perfect capital mobility and complete information within our world. As such, any place compares all endowments with labor in the next period (i.e. they monitor the population), assume that all this labor could be endowed in manufacturing, and their expected endowment with capital, and compute the marginal return to capital from

$$\frac{\partial A_{M(t+1)} L_{v(t+1)}^{\sigma_{ML(t+1)}} \left(\frac{K_{v(t+1)}}{L_{v(t+1)}}\right)^{\sigma_{MK(t+1)}}}{\partial K_{v(t+1)}}, \tag{4}$$

and then invest the full sum there.[12] Places decide sequentially, and their decisions are common knowledge.

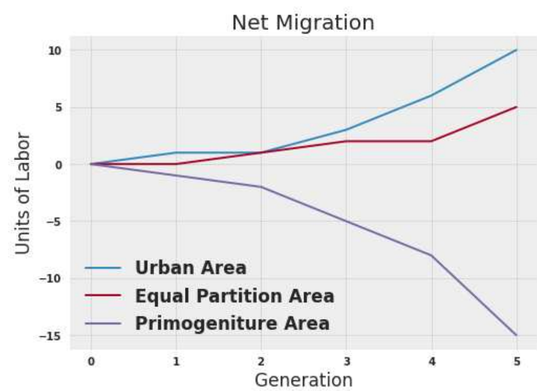
1. Predictions

To visualize the predictions of our theory, we have run several example calibrations (see Figure 1). We created three places, where we initialized an urban area with one unit of capital (and no land), and two agricultural places endowed with each one unit of land (but no capital). First, we would like to understand the individuals' migration decisions. We gain our first prediction from the formulation of (2) and (3). Individuals who are not endowed with their own land have no income

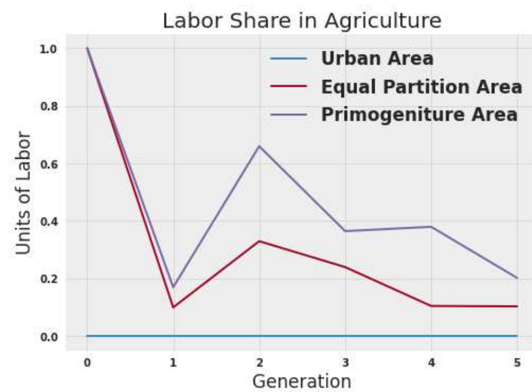
10. If individuals who are endowed with land decide to work full-time elsewhere, their endowment with land stays with them but is not employed in output any longer. This also allows us to abstain from the modeling of land markets, which does not add much to our predictions. Land markets cannot have been efficient enough to allow the inheritors of small land endowments to rent or sell their land to others in an efficient way. As Baker and Miceli (p. 97 2005) write "in a world in which land markets function well, the inheritance rule is irrelevant". Markets, especially land markets, must have been imperfect if we should observe variation in economic outcomes depending on inheritance forms, and as such the modeling of land markets would not change our central predictions.

11. Since the life decisions of individuals in (1) are independent of any capital endowment, this allows us to abstract from the fact that younger brothers usually retrieved some compensation.

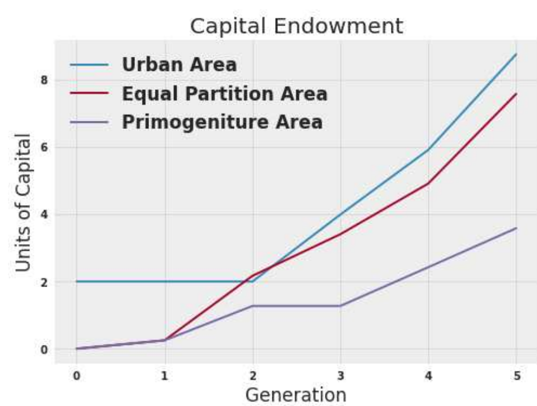
12. Partial investments would not change the long run predictions, provided constant returns to scale.



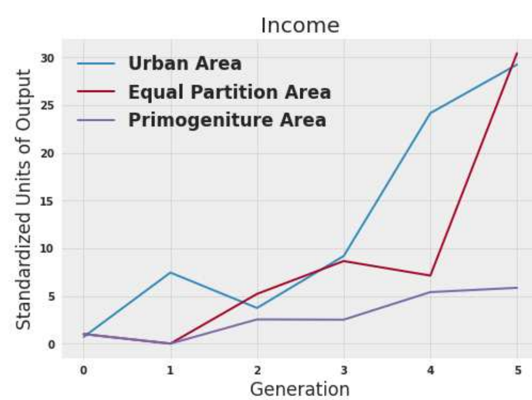
(a) *This chart shows how the younger, non-inheriting brothers of the primogeniture area leave their place of birth, first exclusively to the cities, but increasingly to the equal partition area.*



(b) *The model predicts an oveall decreasing, yet higher share of labor allocated to farming in the primogeniture area than in the equal partition area*



(c) *Outputs above a given consumption are invested at the end of each generation. While the urban area starts as the only place with capital, the other areas attract capital in due course*



(d) *This chart suggests higher absolute income in the equal partition area, compared to the primogeniture area*

Note: These figures show central outcomes of an example calibration. We initialize the endowment of the urban area with one unit of capital and one individual endowed with one unit of labor. The equal partition area and the primogeniture are each endowed with one unit of land and labor. Each individual has two children. In this specification, to model the dynamic 19th and the beginning of the 20th centuries, the state of technology A_M grows from 0.5 at generation zero by 20 % with each generation, and A_S rises from one by 10 % respectively. Returns to scale are constant, and all factor elasticities at 0.5. In this specification, commuting here reduces the output created from manufacturing by 25 % to also account for different skill-levels for those not accustomed to the city's customs and labor markets. Our predictions hold for smaller penalties. The consumption is 0.75 output units.

Figure 1: *Predictions of the Theory with an Example Calibration*

from working in agriculture at all, individuals with a little endowment face a trade-off from the loss in their manufacturing output they face through τ. This can also be seen from our example calibration in Figure 1, Panel (a), where the primogeniture area faces a constant emigration while the urban and equal partition area experience immigration. Hence our theory predicts that

Prediction 1. *Ceteris paribus, an individual's likelihood of migrating is dependent on its inheritance. Younger, non-inheriting siblings from primogeniture municipalities migrate most. They have a strictly higher probability to migrate compared to individuals from the equal partition area. The oldest, inheriting sibling is least likely to migrate.*

Our second (and related) prediction analyzes individuals' decisions regarding L_{Sx}. With an increase of capital stock, it is straightforward to assume that the average units of labor L_{Sx} across all individuals working in each place will be decreasing. Given that the individuals of the primogeniture area who decide to work in agriculture have an overall higher endowment with land, it follows from (2) and (3) that the average share of labor they allocate to agriculture will be higher than in the equal partition area. To reformulate,

Prediction 2. *Ceteris paribus, we expect individuals in the primogeniture area to devote a higher share of their time to agriculture, compared to the equal partition area.*

Our third prediction regards the capital allocation. As in Figure 1 Panel (c), the equal partition area attracts a large share of the investments, and experiences a growing capital stock.[13] With an increase of the endowment of capital, these regions could adjust to new managerial innovations which eventually led to the emergence of factories to perform manual tasks more centrally.[14] There was also a considerable change from one industry to another—from the textile to the tobacco industry (dominant in 1900) to the conquest of industries of the Second Industrial Revolution (here especially machinery, chemistry) which were established in form of decentralized industries from the 1860s (Karg 1932, p. 12). The equal partition areas was more integrated in this process. Capital gains made some substantially wealthy (outside the scope of our model). The establishment of factories in equal partition areas also provided work for those that commuted before.

Prediction 3. *Ceteris paribus, an outside capital investor will find a higher rent in areas of equal partition, relative to areas of primogeniture*

As visualized in Panel (d) of Figure 1, the total of capital inflow and a more favorable migration balance allow us predictions on the aggregate output of the places,

Prediction 4. *In equilibrium, income in the equal partition area is lower than in the primogeniture area.*

2. Discussion and Limitations

This model builds on standard classical assumptions, and follows the lead of Hansen and Prescott (2002) in sketching a two-sector economy, hereby allowing each place to have each sector and explain a transition from specialized manufacturing and agricultural places (the countryside) to an

13. Whether the urban and equal partition area overtake each other depends on calibration. However, our prediction in regards to the relative development of equal partition and primogeniture areas are robust.

14. A representative quote of the downsides of the putting down system is provided by Nipperdey (2013, p. 227): "Within the putting-out system and home-based work system a lot of time was lost to waiting, collection, and delivery, working hours were erratically long or short, decided by free will—if only the whole thing was finished" (own translation).

economy in which there is some manufacturing activity across all places. It is also general enough to allow us to modify assumptions on economics of scale, technological progress, or variations in labor mobility. One could also easily introduce limitations to the capital mobility.

The model explains how the countryside (in our example 19th century Germany) attracted investment in manufacturing, and here mostly the equal partition area. Historically, this was first in the format of proto-industry, often relying on the putting-out system and farmers that would work some part of their day on a batch of cloth they collected from a depot, and they had to deliver to their contractor when finished (Wehler 2008). Compared to factories, putting-out systems needed little capital to be established and could rely on time in which peasants work on the side, especially outside harvest seasons.[15]

Labor mobility in the 18th century was still highly restricted. Peasants in many places were still tied to their lands, unfree, and/or unable to leave or settle elsewhere. This, in combination with the small parcels of land in the equal partition area led to its relative poverty and overpopulation. The inheritors of the primogeniture area inherited larger parcels. Those younger siblings who wished to leave their village could be equipped with the capital to find their luck elsewhere.[16] A large step towards integrated labor markets was the 1815 Constitution of the German Confederation ("Bundesakte") which established free movement in principle (p. 10). However, "strangers" (people not born in the same locality) could still be forbidden to marry (p. 19).[17] Migration was often seen as an un-social act (Dasgupta 1993; Grant 2005). Xenophonia was also widespread.[18] However, as Nipperdey (2013, p. 219) emphasizes, it was common to seek alternative employments in the intermediate surrounding of one's birthplace already since the beginnings of industrialization.[19]

Capital in the German lands of the 19th century was scarce compared to labor (Grant 2005). Financing via corporate shares was uncommon or illegal; the industrialization was financed by its own gains, and the entrepreneurs network of family and friends (Nipperdey 2013, p. 194). Mid-century, banks became the central mediator between savings of an increasing share of the population and appropriate uses of capital (Gerschenkron 1962; Guinnane 2002). Especially local saving banks, which were often the first bank in rural areas, became widespread around 1850 (Lehmann-Hasemeyer and Wahl 2021). These relied on personal interaction between savers and banks on the one hand, and then banks and creditors on the other. In consequence, credit markets were often restricted to cities and their immediate surroundings. In our model, we try to capture how the decision whether to invest in an urban area, in an equal partition area nearby, or a primogeniture

15. This was especially true for the tobacco industry, which demanded more labor outside of intensive agricultural seasons (p. 20 Karg 1932).

16. Fuchs (1930, p. 470) provides data on Württemberg and Hohenzollern. He finds that the main occupations taken up by those leaving primogeniture farms were public service, followed by self-employment. For the equal partition area, these were self-employment, followed by agriculture.

17. The process of establishing free movement started with a set of reforms which liberated the peasants (such as the 1810 reform in Prussia). The right to move freely in Prussia was then established shortly after the Congress of Vienna. For the whole of Germany, the "Heimat- and Unterstützungsrecht" (lit. "home and support right") the right to settle, work, and marry in a given place, allowed localities to charge a small fee in return for the allowance to settle for good, and marry. This privilege of communities to regulate their immigration was abolished in the Northern German Federation in 1867, and 1870 in the German Empire as a whole.

18. Immigrants, often distinguishable by local dialects, could be identified and were often discriminated on the basis of their heritage, confession, or nation, throughout the 19th century (Nipperdey (2013, p. 234); Kersting, Wohnsiedler, and Wolf (2020)).

19. This process was of course related to the infrastructure at the time. For the 1930s, Karg (1932, p. 20) argues that even 40km of commuting were not seldom.

around the same distance would be decided upon. For example, how would an entrepreneur from Heilbronn, surrounded by both primogeniture and equal partition villages, decide where to set up a putting-out system? Our model suggests the higher availability of labor would lead most capital westwards or southwards (the equal partition areas), and only to a lesser extend eastwards into the primogeniture area.

An important prerequisite for these industries was the abolition of trade barriers such as internal tariffs. Differences in regulation and standards were largely abolished in the German lands. A main driver here was the Zollverein, which increased the degree to which capital moved to where it was dearest (Hahn and Kreutzmann 2012). Although labor mobility increased during this period, especially with the freeing of the peasants across Germany, and the improved transport infrastructure (both the expansion of the railroad and the improvements of roads), this did not lead to a total evacuation of the countryside. As shown in this model, areas with an established tradition of part-time agriculture and part-time manufacturing were able to keep their population and attract the capital necessary for industrialization. Karg (1932, p. 20) shows that only 50 % of Württemberg's industry workers were employed in its largest sixteen cities; as many as 450 municipalities were industrialized, and 81 % of workers lived outside cities.

This model comes with some simplification which we can accept for the analysis of small regions. We do not discuss heterogeneity in transport costs; any place to commute to (and any place to invest in) is as good as any other. If one wishes to analyze geographically larger markets, this should be accounted for. Fertility in our theory is exogenous, because our results suggest no correlation.[20] This might be idiosyncratic for Germany or Western Europe (see Van Zanden, De Moor, and Carmichael 2019).[21]

III. EQUAL PARTITION AND EUROPEAN NIGHT LIGHT INTENSITY

Our theory (Prediction 4) suggests a positive relationship between the prevalence of equal partition and economic development. This link should not be limited to Germany. The labor abundance caused by equal partition should have eased development also in rural France, Spain, and other European countries. Therefore, as a first step, we document a positive link between equal partition and luminosity as a proxy for regional economic development in 24 European countries. Luminosity is a commonly accepted indicator of small-scale economic development (recent examples include Dalgaard et al. (2020), Henderson, Storeygard, and Weil (2012), Henderson et al. (2017) and Wahl (2017)). It is measured as radiance levels, and provided by the National Geophysical Data Center (NGDC) of the National Oceanic and Atmospheric Administration (NOAA) of the US with a spatial resolution of $15 \cdot 15$ arc seconds.[22] These data are obtained from the NASA/NOAA satellite's Visible Infrared Imaging Radiometer Suite (VIIRS). We use the most current version (1.0), and the night light intensity of 2016. These raster files allow a higher spatial resolution

20. Data from Baden presented in Karg (1932, p. 100) suggests that fertility was higher in rural areas before 1900, and lower afterwards.

21. We also abstract from personal capital holdings, changes in consumption shares (i.e. Engel's Law), or the emergence of intergenerational transfers (e.g. the pension system, see Galasso and Profeta (2018)). There is no variation in outcomes within Germany. Since we are not interested in establishing a novel way to explain endogenous technical change. We are also silent about any personal capital, especially human capital as the long-run influence on land inequality and human capital is modeled and explored by Galor, Moav, and Vollrath (2009) and Cinnirella and Hornung (2016).

22. This is roughly 0.225 km^2 at the equator.

than their predecessors, and are not subject to their issues, such as top-coding. Results confirm our theory, and its validity beyond German borders.

Data on regional inheritance practices for Western European countries are available from Todd (1990).[23] Todd derives inheritance traditions from family types assuming that the prevalence of absolute nuclear and stem families is linked to primogeniture. He associates the egalitarian nuclear, incomplete stem, and communitarian family types to equal partition.[24] These data were used widely by previous research into the historical origins and political consequences of inheritance traditions within Europe (e.g. Popa 2019; Willenbacher 2003). To our knowledge, Todd's data are the only source for regional variation in inheritance traditions across European countries empirical researchers have relied on. These data have their limitations: Their units of observation are comparatively large regions (NUTS-2 regions), and they infer inheritance tradition from family types (instead from original information on inheritance traditions). Results from NUTS-2 regions are hard to interpret, foremost because their sizes are endogenous (they have been drawn with economic or political considerations) and vary systematically. Small-scale data (preferably municipal data), which we will later rely on, are not readily available for the whole of Europe.

To address these problems, we overlay Western Europe with a fishnet of 3,618 grids cells, each measuring 50 km · 50 km. After excluding Scandinavian countries from the data set (it is not fully covered by Todd's map), we arrive at a sample of 864 grid cells. This also excludes cells which are mostly water, and we also we follow Popa (2019) by excluding cells located in areas with mixed inheritance (mainly the Eastern part of the UK, the Netherlands and Denmark). Todd's original map is provided in Figure A.4 of the Appendix. Overlaid by grid cells used for the empirical analysis, and the inheritance tradition we coded from this map. We calculate the share of each grid cell's area that Todd views as a primogeniture or equal partition region. From this, we construct an *equal partition dummy* variable equal to one if more than 75 % of the grid cell's area fall into an equal partition region.

We proxy each grid cell's state of development with median luminosity.[25] As luminosity is a highly left-skewed variable and often sensitive to few, very large values, we think that the grid cell median is better suited than the mean. We also present results using mean luminosity in each grid cell as dependent variable and show that the results are robust to this.

Regressions feature grid cells' average elevation, terrain ruggedness, caloric suitability post-1500, present days soil quality, minimum latitude and longitude (in degrees), the length of navigable rivers passing through, the distance to the coast line and the national capital, and the size of coal fields in the grid cell as controls. We account for the important legacies of ancient civilizations by including variables reporting the kilometers of Roman roads intersecting the grid cell, as well

23. We code the area of the former German Democratic Republic, which is not included in his data, according to the data of Hager and Hilbig (2019) as having primogeniture.

24. In Todd (1990) he identifies four major family types in Europe, alongside intermediate forms and he additionally also distinguishes between matrilineal and patrilineal types. He distinguishes families according to two dimensions, strong and weak authority, and egalitarian and nonegalitarian. The egalitarian dimension is the dimension where inheritance practices are the decisive aspect, meaning that families in which inheritance is divided equally among the children are considered to be egalitarian, while families in which only one son inherits are considered to be non-egalitarian (Todd 1990; Duranton, Rodriguez-Pose, and Sandall 2009).

25. To calculate the median luminosity of each grid cell, we only consider luminosity cells that are fully located on land in order to avoid overglow. We divide the median luminosity of each grid cell by the share of the grid cell covered with land to account for the part of the grid cell that is on water.

as the number of Roman cities and ancient mines in a grid cell. These variables are included to account for factors likely correlated with both equal partition and economic development. The control variables are similar to the ones used by Dalgaard et al. (2020), who follow this empirical approach to study the impact of proximity to a Roman road on luminosity in one degree grid cells spanning the area of the historical Roman Empire. We also follow them in taking the natural logarithm of all the variables, except for our equal partition dummy and latitudinal and longitudinal coordinates.[26] This reduces the proneness of the results for outliers and allows an easy interpretation and comparison of the coefficients as they represent elasticities.[27] We again follow Dalgaard et al. (2020) and include country fixed effects to account for time-invariant unobserved heterogeneity.[28]

The bar for what passes as a natural experiment is set high; an adequate identification strategy (for example with an instrumental variable) is unlikely to pass in this sample. Table 1 hence only documents partial correlations in the form of cross-sectional OLS regressions with the natural logarithm (ln) of luminosity as dependent variable, the equal partition dummy as our explanatory variables, along with varying sets of controls. Standard errors are heteroskedasdicity robust. To account for possible spatial autocorrelation we also calculate standard errors according to the method of Conley (1999), in column(6). Our results indicate a robust and both statistically and economically significant positive correlation between luminosity and equal partition. The estimations suggest that equal partition areas have on average 15-20 % higher levels of luminosity than cells with primogeniture. The size of this effect is stable across specifications. If we use mean instead of median luminosity we arrive at a slightly smaller, yet still marginally significant elasticity of around 10 %.

This documents a positive correlation between equal partition and regional economic development across European regions. To study causality with more scrutiny, we focus on Germany and the state of Baden-Württemberg, where we study municipality-level survey data on inheritance practices for several points in time. We collected a novel data set featuring historical variables which allow causal inference, relying on spatial RDD and IV regressions.

26. Taking the natural logarithm of longitude would imply to lose all grid cells with negative longitudinal coordinates, that is, everything to the west of London.

27. In the case the variable has zero values, we add one to the variable when taking the natural logarithm to keep these.

28. The Online Appendix A provides a descriptive overview of the data set (Table A.1), and a detailed explanation of the sources and definitions of the control variables which are coded from external sources.

Table 1: *Equal Partition and Economic Development in European Grid Cells*

	ln(Median Luminosity)							ln(Mean Luminosity)
	(1)	(2)	(3)	(4)	(5)	(6) Conley SEs	(7)	(8)
Equal Partition	0.178**	0.138*	0.187**	0.167**	0.158*	0.158*	0.141*	0.103*
	(0.072)	(0.083)	(0.085)	(0.084)	(0.082)	(0.081)	(0.082)	(0.062)
Longitude	0.039***	0.023*	0.027**	0.024*	0.025*	0.025*	0.022	0.040***
	(0.004)	(0.013)	(0.013)	(0.014)	(0.013)	(0.013)	(0.013)	(0.011)
Latitude	0.016	0.031*	0.035*	0.029	0.024	0.024	0.032	-0.017
	(0.012)	(0.018)	(0.018)	(0.020)	(0.019)	(0.019)	(0.019)	(0.016)
ln(Elevation)	-0.259***	-0.144*	-0.172**	-0.175**	-0.223***	-0.223***	-0.184**	-0.293***
	(0.070)	(0.076)	(0.077)	(0.077)	(0.076)	(0.075)	(0.078)	(0.064)
ln(Terrain Ruggedness)	0.095	0.037	0.040	0.054	0.092	0.092	0.058	0.129**
	(0.066)	(0.069)	(0.069)	(0.072)	(0.073)	(0.072)	(0.075)	(0.062)
ln(Soil Suitability)	0.127*	0.200***	0.223***	0.230***	0.189***	0.189***	0.166**	0.003
	(0.066)	(0.071)	(0.071)	(0.070)	(0.069)	(0.068)	(0.070)	(0.049)
ln(Caloric Suitability Post-1500)	0.257***	0.221**	0.186**	0.165*	0.112	0.112	0.121	0.168**
	(0.087)	(0.095)	(0.093)	(0.094)	(0.090)	(0.088)	(0.090)	(0.069)
ln(Distance to Coast)	-0.031	-0.057**	-0.054**	-0.057***	-0.052**	-0.052**	-0.055***	-0.061***
	(0.020)	(0.022)	(0.022)	(0.022)	(0.021)	(0.021)	(0.021)	(0.019)
ln(Rivers (km))	0.068***	0.074***	0.073***	0.074***	0.054***	0.054***	0.058***	0.049***
	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)	(0.016)	(0.017)	(0.013)
ln(Coal Area)			0.055***	0.056***	0.059***	0.059***	0.058***	0.051***
			(0.018)	(0.018)	(0.017)	(0.017)	(0.017)	(0.014)
ln(Distance to Capital)				-0.065	-0.093	-0.093	-0.068	-0.079
				(0.080)	(0.075)	(0.074)	(0.079)	(0.072)
ln(Number of Ancient Mines)					-0.083	-0.083	-0.086	-0.100
					(0.105)	(0.103)	(0.103)	(0.085)
ln(Roman Roads (km))					0.042***	0.042***	0.037***	0.046***
					(0.006)	(0.006)	(0.007)	(0.005)
ln(Number of Roman Cities)							0.191**	
							(0.074)	
Country Dummies	–	✓	✓	✓	✓	✓	✓	✓
Observations	864	864	864	864	864	864	864	864
R^2	0.295	0.337	0.346	0.347	0.380	0.380	0.385	0.374

Notes. Heteroskedasticity robust standard errors are in parentheses. In column (7) the standard errors are accounting for spatial autocorrelation using the Conley (1999) method, and a cut-off point at 25 km. Coefficient is statistically different from zero at the ***1 %, **5 %, and *10 % level. The unit of observation is a grid cell of 50 · 50km. All regressions include a constant not reported.

IV. DATA FOR BADEN-WÜRTTEMBERG

1. Inheritance Traditions

The core of our analysis relies on municipality level data on agricultural inheritance traditions in Baden-Württemberg as assembled by Röhm (1957). After World War II, the federal state of Baden-Württemberg was founded with 3,382 municipalities, each on average only 10.56 km^2 in size. In 1953, Röhm sent a one-page questionnaire to each municipality's major. Questions included the predominant inheritance tradition in the municipality at the time. Respondents had to pick a "main form" (*Hauptform*), primogeniture or equal partition, and could also choose from different transitional and mixed forms. Such a transitional form is that small farms are subject to equal partition, while primogeniture applies for large farms. The survey also asked the majors whether their municipality moved away from one main form to the other within the last hundred years, and if so, to note the "original form". If the majors indicated that a transitional or mixed form was prevalent they were had to select the "original" form from either primogeniture or equal partition. Only 22 (0.7 %) of these municipalities experienced such a change in the main form between 1850 and today. This suggests that the traditions were relatively persistent.[29] An outcome of the survey

29. In the majority of the switches, municipalities went from equal partition to primogeniture.

was that there were almost no transitional or mixed forms in 1850. This supports historians' claims that most of the transitional forms have emerged only during the 20th century (Röhm 1957; Krafft 1930; Fuchs 1930). Based on the information about the origins of mixed forms and about switches in the main form between 1850 and 1953, he drew the border (which he called "historical main border of inheritance rules") between the main forms, which we study using an RDD approach. Röhm's border separates between the area in which only equal partition was originally prevalent from the area in which only primogeniture was the original form. Exclaves of the respective other form were as excluded. The downside of Röhm's approach is its reliance on best knowledge of the majors, and to a minor extent also on their honesty.[30] We compare this data with other earlier data, and do not find this critical.

Respondents were asked whether commons existed—and where they did, if they were partitioned. The survey resulted in a map depicting for each municipality, one of nine predominant inheritance traditions, each with a different color or shading (Figure A.1 in the Online Appendix shows the original map). While it distinguishes nine inheritance practices, six of them are transitional forms of primogeniture or equal partition. There is also a "mixed" category. We aggregate these nine categories to five different inheritance traditions.[31] In our empirical analysis, we focus on the impact of one of them—equal partition—and compare it to the others.

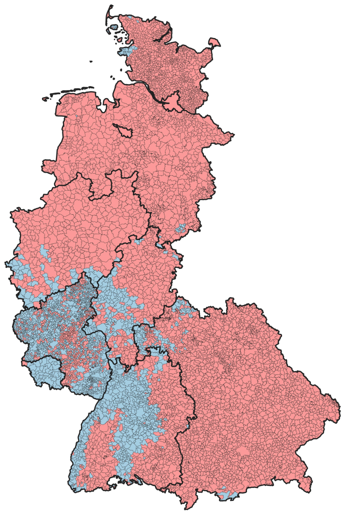
We use maps on the prevalence of inheritance traditions from 1905 as printed in Krafft (1930), and Fuchs (1930). They distinguish between the two basic forms (equal partition and primogeniture), and mixed traditions. They are based on a survey of the ministry of law of Württemberg asking notaries about the inheritance traditions prevalent in their jurisdiction. The maps confirm the location of the border and that mixed traditions were less prevalent in 1905.[32] We also use the municipality level data on inheritance traditions in West Germany from Hager and Hilbig (2019) to validate Röhm's map for Baden-Württemberg. These were published later and cover West Germany.

Figure 2(a) is a map of contemporary West German municipalities, and inheritance traditions in 1953. Predominantly equal partition areas are blue, primogeniture areas red. We base these map on the data set from Hager and Hilbig (2019). Figure 2(b) depicts Krafft's map from 1905. Equal partition municipalities are blue, primogeniture ones are red, and mixed ones orange. Figure 2(c) is the digitized version of Röhm's map, colorized by inheritance tradition. Primogeniture is the most frequent, prevalent in roughly 38 % of all municipalities; transitional and mixed forms apply in around ⅓ of the municipalities. Figures 2(b) and (c) show several exclaves.

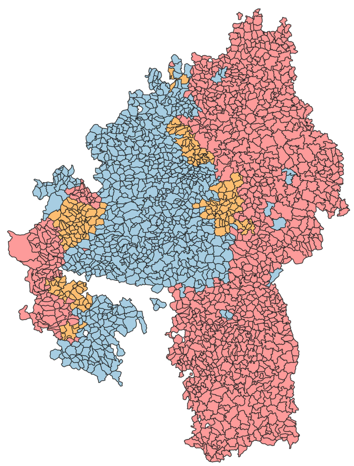
30. This could be a problem just eight years after World War II. The national socialists portrayed primogeniture as the "true" Germanic—and superior—tradition.

31. The application of one or the other tradition was not restricted by any laws, the standard German inheritance law was that the farm owners would be free in their will. If farmers wished to apply primogeniture they had to register their farms in the "Höferolle", a trade register for farms, expressing their will that primogeniture law of the respective state is applied. If they changed their mind, they still could pass the farm in another way. Farms were usually passed down to the children during the lifetime of the parents, at parents age around 60 (Krafft 1930), so that the oldest son would be around 25 years old (Karg 1932).

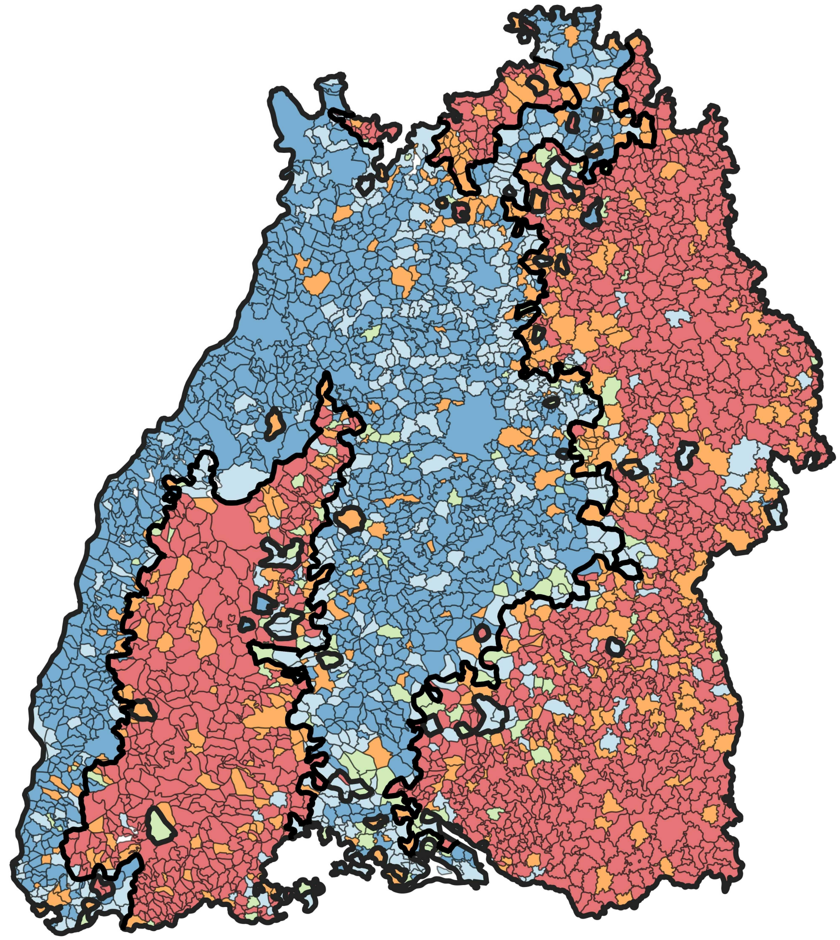
32. We also had a look on the maps depicted in Huppertz (1939) and Karg (1932) to get an idea about the accuracy of Röhm's map. From the comparison, we conclude that Röhm's map is accurate and the most detailed available.



(a) *Inheritance Traditions in Contemporary West-German Municipalities after Hager and Hilbig (2019)*



(b) *Inheritance Practices in Württemberg in 1905 after Krafft (1930)*



(c) *Inheritance Practices and the Historical Main Border of the Equal Partition (with Exclaves) in 1953, after Röhm (1957)*

Note: Blue municipalities predominantly apply equal partition, light blue are municipalities with transitional form of equal partition, red is primogeniture, orange represents transitional forms of primogeniture. The green areas in 2(c) represent mixed traditions. The black line in 2(c) denote the historical borders of the equal partition area based on Röhm (1957).

Figure 2: *Three different data sets on regional variation of inheritance tradition*

2. Dependent Variables and Controls

Our data on industrialization, agriculture, and employment structure rely on the official municipal and county statistics of Baden-Württemberg from 1950 and 1961 ("Gemeinde- und Kreisstatistik Baden-Württemberg"). The municipal statistics of 1950 features population in 1939. For information on part-time farmers, we rely on the municipal statistics from 1971/72 (Statistical Office of Baden-Württemberg 1952, 1964, 1974). These two data years are the closest point in time to Röhm's survey. Not all information is available both in 1950 and 1961 (for example, we only have the migration balance for 1950). For the baseline analysis, we stick to the situation in 1950, the year closest to Röhm's survey. In both 1950 and 1961, the number of municipalities differs slightly from that in 1953, as some few municipalities were merged or created in between.[33] We digitized these information on the location of proto-industrial facilities in 1770-80, and early industrial ones in 1829/30 from two maps in the "Historischer Atlas von Baden-Württemberg" (Historical Atlas of Baden-Württemberg) (Kommission für geschichtliche Landeskunde in Baden-Württemberg 1988). These maps are based on several different (archival) official statistics. We are especially interested in the location of the tobacco and textile (cotton, linen and wool) facilities, as these two were the lead sectors of the putting-out system.

We rely on casualty lists from the First World War to find evidence on internal migration during the industrialization period. The casualty lists contain the name and residence of 397,620 fallen and wounded soldiers in each year of the war, and the type of the army unit the soldiers served in. The lists provide information on casualties in 3,352 of the overall 3,382 municipalities in our data set. They are available from the private website wiki-de.genealogy.net which is run by the "Verein für Computergenealogie" (Association of Computer Genealogy) and hosts several different genealogical data sets (also for example historical address books).[34] Assuming that soldier were born in the last decades of the 19th century and conscripted in their hometown, we compare absolute frequency of family names with their spatial distribution as an indicator of migration in earlier periods, mostly the 19th century. Historians such as Wehler (1995) suggests this as the expected period of asymmetric emigration from our theory.

Concerning contemporary data, Asatryan, Havlik, and Streif (2017) provide us with the share of industry buildings per municipality in 2010, and income per capita in 2006 (the last full year before the world financial crisis) for 1,105 municipalities. We also use the areas of municipalities' industrial zones, which we extract from openstreetmap.org.[35]

Table A.2 of the Online Appendix summarizes our data set with municipalities as of 1953, Table A.4 our contemporary data. For example, the area in which wine or fruits are grown (as a share of the municipality's area) is taken from official municipal statistics of 1961. Data on the location of pre-medieval forest areas were digitized from a map by Ellenberg (1990). Most historical control variables (Distance to the closest Imperial city, historical political instability and fragmentation, location in church territories) are from Huning and Wahl (2021). Talbert (2000) provides the distance

33. For 1971/72, the number of municipalities is much lower (around 1,200) as in 1971, a fundamental reform of the administrative regions was conducted with the results that a lot of counties and municipalities were merged together and the number of municipalities decreased by around 2/3. We do also not have each information for all the municipalities, which can also lead to a slightly smaller number of observations than 3,382 in some regressions.

34. The website of this sub-project is http://wiki-de.genealogy.net/Verlustlisten_Erster_Weltkrieg/Projekt.

35. Our data represents the state of 10th March 2019, 12pm. We extracted the polygon shapefile by using the QGIS plug-in QuickOSM.

of a municipality to the next certain Roman road network. Data on the location of Celtic graves, the geographic spread of wine-growing before 1624, of tobacco-growing in 1865, and 19th century railway lines were digitized from the "Historischer Atlas von Baden-Württemberg". The shape of the French occupation zones is from Schumann (2014).

V. THE CONSEQUENCES OF AGRICULTURAL INHERITANCE TRADITIONS IN BADEN-WÜRTTEMBERG

In this section we test our theoretical propositions, using our data on Baden-Württemberg. We start with our spatial RDD, our main identification strategy, using the eastern part of the historical border of the equal partition area. We present evidence for the effect of equal partition on farm sizes, and the structure of the agricultural sector. We then discuss evidence for our theoretical mechanism by analyzing the effect of equal partition on the frequency of part-time farming, tobacco-growing, and migration patterns. Finally, we focus on the reduced-form effect of equal partition on economic development and industrialization levels.

1. Main Identification: Spatial RDD

In this section we discuss our fuzzy spatial RDD design with its assumptions and challenges to identification that arise in our historical and geographical setting. We also explain our estimation approach.

1.1 Challenges to Identification

The validity of a spatial RDD rests on three assumptions: the border is drawn in an (economically) unsystematic way, there is no compound treatment, and there is no selective sorting (manipulation of the running variable). The first two are the most critical in our context.[36] The most crucial assumption is that the border is not an endogenous outcome of unobserved factors. We cannot proof the validity of this assumption, but we can test whether relevant observables vary smoothly at the border. As depicted in Figure 2(c), the border in the Southeast, shaped like an inverted U, is almost identical to the Black Forest. This border reflects discontinuous changes in other variables, such as elevation. Therefore, we exclude this border from the analysis. We also ignore the small northern primogeniture area, since it has a long border with another state (Hesse). What remains is the eastern part of the border, stretching roughly from the South to the North of Baden-Württemberg, with a slight eastern-wards tendency. Röhm (1957) already noted that apparent geographical or historical features cannot explain this segment of the border.

Regarding the determinants of the border, Schröder (1980) and Huppertz (1939) argue that cultural diffusion and imitation played a decisive role in the spread of equal partition in particular. Schröder (1980) develops the argument that equal partition occurred first in the wine-growing areas, either as original development —or (as suggested by others) based on Germanic traditions, or Roman ideas of property—and spread from there fast in a classical process of cultural diffusion

36. Selective sorting usually is an important issue when people are aware of the fact that treatment occurs at a certain value of the running variable, i.e. income or can manipulate their own values of the running variable accordingly leading to a higher density of observations around the threshold. In our case, the observations are municipalities and not individuals and the border is fuzzy and implicit making it unlikely that this is a big issue.

through imitation.[37] The presence of exclaves, and a lot of transitional forms along the border that is suggested by the results of Huning and Wahl (2021) support this reasoning.[38] Schröder (1980) supports this argument further by showing that equal partition emerged spontaneously in some areas of the duchy of Württemberg. Together with the fact of continuous natural factors like soil quality or elevation along the border, this suggests that the historical border resulted from idiosyncratic circumstances which stopped the diffusion of these tradition across the border. Residuals from a regression in our companion paper (Huning and Wahl 2021) also uphold this notion.[39] Figure A.5 in the Online Appendix visualizes them. Darker shades of red display higher residuals. The residuals of the prediction are largest around the border, implying that this area is among the locations in which we can least predict equal partition.

Inheritance practices are a part of an area's culture; the border between inheritance tradition may simply reflect more general cultural differences, putting our mechanism in doubt. We collected three variables to proxy for different cultural characteristics in our area: Confession, language, and the tradition of sport shooting. All of these are known to vary significantly within the state. To rule out that this variation drives our results, we test whether they show a discontinuity at the Eastern part of the border.

The prevalence of Protestantism or Catholicism may be an important cultural factor itself, and related to unobserved differences. Religion is one of the most important aspects of culture, and especially Lutheranism is argued to be connected to a host of social, political, and economic outcomes, and is also a proxy for shared history (Becker, Pfaff, and Rubin 2016).[40] There is small-scale variation in dialects of German within Baden-Württemberg. They can be grouped into Alemannic, Frankish and Swabian dialects. Language differences are known to reflect cultural differences. They may also affect people's thinking.[41] Dialects reflect historical trade, and today's cultural ties.[42] Finally, we test whether the local prevalence of shooting clubs is discontinuous at the historical inheritance border. Shooting clubs are an integral part of past and contemporary culture in the Southwest of Germany.[43] Their local prevalence can proxy for social capital (as in Buggle 2016), and traditionalism.[44] The sub-figures of Figure A.6 in the Online Appendix show the historical inheritance border, alongside municipalities with a majority of Protestants in 1950, the three dialect areas, and whether a municipality has at least one shooting club. Visual inspection of those pictures suggests that the inheritance border does not follow the border of any dialect area and that there is no discontinuity in the share of Protestants or the prevalence of shooting clubs at the border.

We then run spatial RDD estimations where these three measures (we introduce three different

37. We discuss this idea and empirically test it in Huning and Wahl (2021).

38. Röhm (1957) puts it differently in saying that from today's perspective inheritance traditions seem to result from arbitrariness and randomness. From a historical perspective, he argues, they seem to be characteristics of the cultural of the area, which are transmitted from generation to generation.

39. The residuals originate from an OLS estimation of the probit regression in Table 5, column (4) of the companion paper.

40. Ekelund, Hébert, and Tollison (2002) goes as far as to suggest equal partition as one of the factors responsible for the spread of Protestantism, suggesting reverse causality.

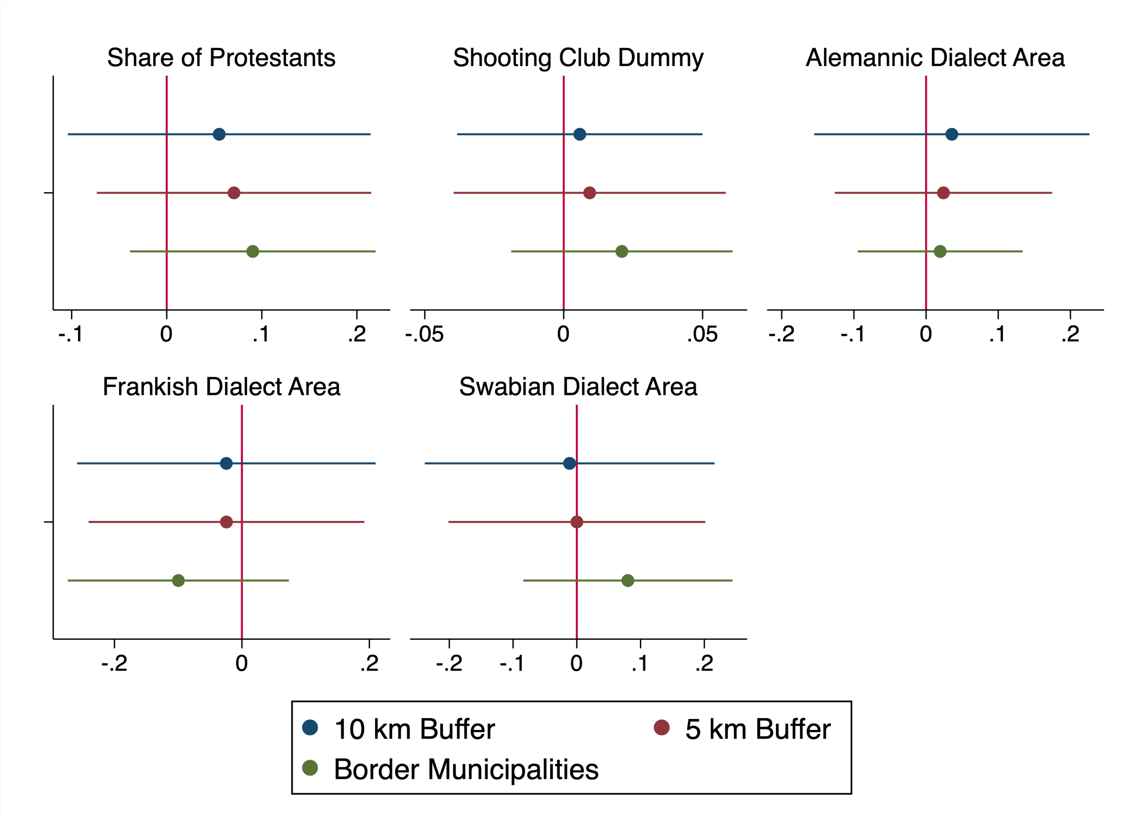
41. The idea that languages shape our thinking and perception of the world is the "Sapir-Whorf Hypothesis" (Lucy 2001).

42. Lameli et al. (2015) argue that linguistic similarities between regions are likely reflecting cultural ties and similarities. They find that the more similar the local dialect of two regions, the more the regions trade with each other.

43. The annual sport shooting festival is the most important local festivity in some areas, and sponsoring of (or membership in) such a club is an often vital part of a local business owner's social networking activities.

44. Detailed Information on the sources of those variables and their computation is given in Online Appendix A.2.1 and Table A.2 provides a descriptive overview of the variables.

dummies or the three different dialect areas) act as dependent variables. We estimate the spatial RDD for a five and a ten kilometer buffer area around the border, and also for the municipalities immediately to the East and West of the border only. As running variable, we introduce a linear distance polynomial measuring distance to the border. We cluster standard errors on county level. Figure 3 visualizes the results. It shows the coefficient of the equal partition area dummy, and 95 % confidence intervals. Results reveal that, as suggested by the visual evidence, all the cultural variables are continuous at the historical inheritance border. This reassures us that the inheritance border (supporting arguments by historians) are unrelated to other cultural borders.

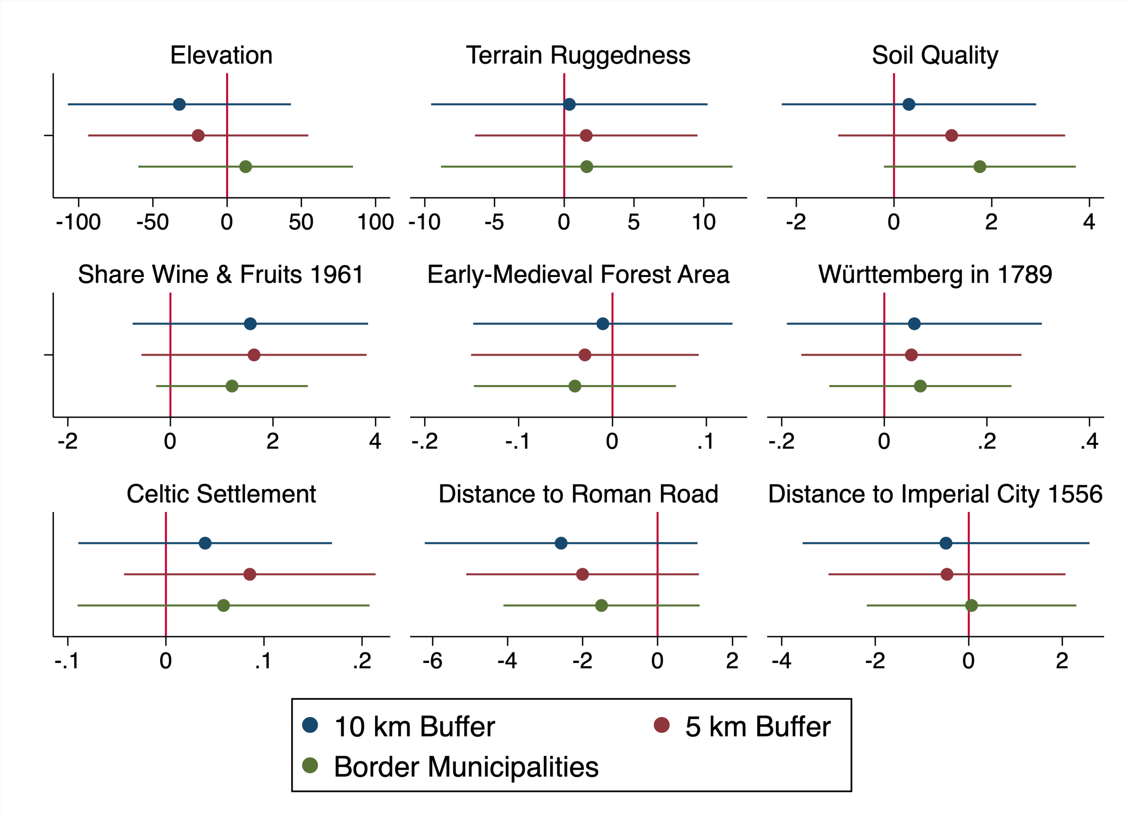


Note: The figures displays the coefficients of the equal partition area dummy resulting from spatial RDD regressions for several bandwidths and dependent variables using a linear distance polynomial, and their 95 % confidence intervals. In the case of the border municipalities sample, the coefficient is the result of a bivariate OLS regression.

Figure 3: *Testing for Cultural Discontinuities at the Border*

We show that other relevant non-cultural observables are continuous at our eastern border segment. We consider nine relevant geographic, ancient, medieval, and contemporary variables as outcomes in the same spatial RDD regression as for the cultural variables. Among those are the variables which predict the equal partition area in Huning and Wahl (2021). Figure 4 reports the results. These variables are continuous at the border.[45]

45. In the case of soil quality, the equal split area dummy would become significant at 10 % level when focusing on the border municipalities only. The marginally significant coefficient however would then be caused by two small mu-



Note: The figures show coefficients of the equal partition area dummy resulting from spatial RDD regressions for several bandwidth and dependent variables using a linear distance polynomial. In the case of the border municipalities sample, the coefficient is the result of a bivariate OLS regression. The shown confidence intervals are 95 % confidence intervals.

Figure 4: *Testing for Discontinuities in Observables at the Border*

This reassures us that the comparison of municipalities close to the border satisfies the preconditions for a spatial RDD.

No compound treatment means that the border between the equal partition and the primogeniture areas is not identical to any other existing or historical border of relevance. Figure 5 depicts the eastern part of the equal partition border, the area of the three predecessor states of Baden-Württemberg (Baden, Hohenzollern, and Württemberg), and the location of the states' four largest cities—which are all located in the equal partition area. The border is not related to any state's, and even cuts right through the center of both Württemberg (dark blue) and Hohenzollern (light blue) with small but significant share of territory in the southeast of Baden (gray). It is also not identical to the border of the French occupation zone after World War II (the dashed black line). This is relevant since Schumann (2014) shows that the French zone was demographically distinct from the other zones until the 1970s because refugees from former eastern territories of Germany were not allowed to settle here. The inheritance border is also distinct from to the course of the

nicipalities on the primogeniture side of the border that have soil quality values close to zero. If we remove those two municipalities, the coefficient turns insignificant.

major rivers, Rhine and Neckar—although its course to some extent mirrors those of the Neckar flowing through the state's center. To rule out that this biases our results, we control for distance to Rhine and Neckar in our spatial RDD specifications.

Figure A.7 in the Online Appendix overlays the borders of historical states in Baden-Württemberg in 1648 (after the Peace of Westphalia) and 1789 (close to the French Revolution). It also shows the location of Imperial cities and ecclesiastical territories. The figures suggest that the border is also not identical to those of historical states, especially not to related to borders that likely shaped inheritance traditions.[46] To test this further, we include a dummy for municipalities in the Duchy of Württemberg in 1789, and (as a robustness check) a complete set of historical state dummies.

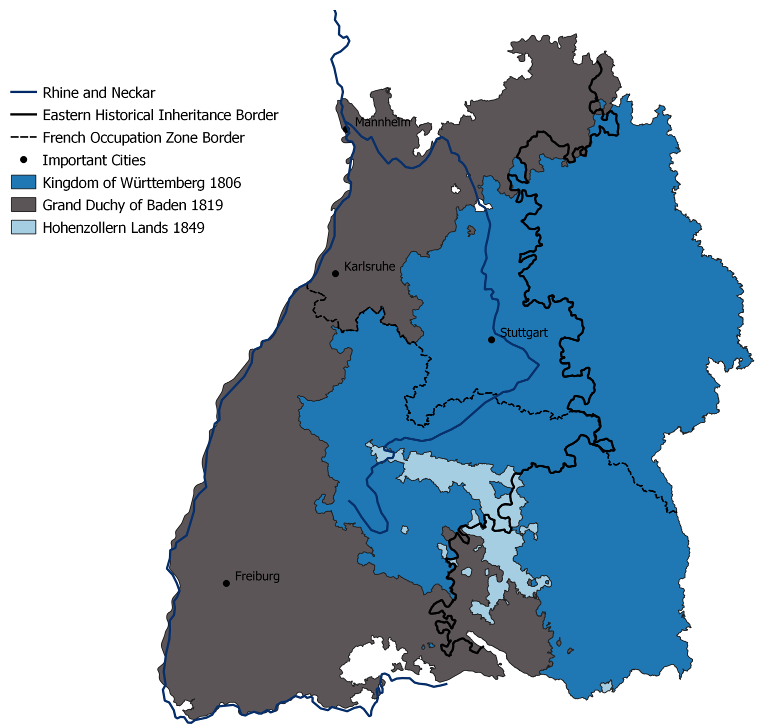


Figure 5: *Baden-Württemberg, Important Historical Political Borders, Cities, and Major Rivers*

1.2 Estimation Approach

The idea of our identification strategy is to model municipal economic development as function of distance to the border. If equal partition has a positive effect, we expect a significant upward shift in the intercept of that function at the border. We estimate this shift in the intercept using a spatial RDD approach or Boundary Discontinuity Design (BDD). A BDD is a special case of a standard RDD but with a two-dimensional forcing variable (Keele and Titiunik 2014). Because of the transitional forms, we estimate a fuzzy BDD. This allows us to use the course of the border to

46. In Huning and Wahl (2021), we find that the historical Duchy of Württemberg (which was the large state in the center of the area) successfully fostered equal partition.

identify municipalities located either in the equal partition area or in the primogeniture area. We then use this variable to instrument actual prevalence of equal partition with location in the equal partition area. A fuzzy BDD amounts to estimating a standard 2SLS model including a variable measuring the distance from each municipality to the closest border segment. We estimate the following equations:

$$EqualPartition_{s,m} = \alpha_1 + \beta_1 EqualPartitionArea_{s,m} + f(D_m) + \gamma_1' \mathbf{X_{s,m}} + \delta_s + \epsilon_{s,m} \tag{5a}$$

$$Outcome_{s,m} = \alpha_2 + \beta_2 \widehat{EqualPartition}_{s,m} + f(D_m) + \gamma_2' \mathbf{X_{s,m}} + \zeta_s + \eta_{s,m} \tag{5b}$$

Where $EqualPartitionArea_{s,m}$ is a binary variable that indicates whether municipality m in border segment s was located in the historical area of equal partition inheritance practices. This variable is used as instrument for the potentially endogenous dummy $EqualPartition_{s,m}$ which is equal to one if a municipality applied equal partition of agricultural inheritance by 1953. $f(D_m)$ is a flexible linear function of the geodesic distance of each municipality's border to the closest point on the eastern part of the historical border. "Flexible" means that we allow the distance polynomial to differ in the treated and non-treated area by interacting the distance terms with the treatment variable. $Outcome_{s,m}$ are various socio-economic variables in border segment s in 1950. We employ the population and industry firm density (firms per hectare) as measures for municipal industrialization, and industrial and agricultural employment shares as measures of structural change, as outcomes.

$\mathbf{X_{s,m}}$ is a vector of control variables; we include geographic and historical variables. This reduced biases arising from confounding variation that explains the potential determinants of both agricultural inheritance traditions, and economic development. Our companion paper (Huning and Wahl 2021) studies the determinants of equal partition. The results from this paper are the basis for selecting the control variables included here. It highlights the role of geographic factors like soil quality or elevation, but also of settlement history, Roman presence, and political developments in the Middle Ages for the emergence of equal partition. These factors may matter for economic development and are therefore relevant control variables. These include measures of past development, urbanization, settlement patterns, and variables on the historical political environment The historical control variables include distance to the closest Imperial city as of 1556 and to the next Roman road, a dummy variable for municipalities with at least one Celtic grave (capturing municipalities that were settled early), historical political fragmentation and instability, the share of a municipalities total area that is located in ecclesiastical territories in 1556[47], pre-medieval forest areas, the share of Protestants in 1961, and a dummy for municipalities which belonged to the Duchy of Württemberg in 1789.

The geographic covariates include mean elevation, terrain ruggedness, soil suitability, the share of agricultural area used to grow wine and fruits in 1961, and the minimal distance to Rhine or

47. Controlling for location in historical ecclesiastical territories makes sense particularly because, as discussed in Huning and Wahl (2021), the historical literature argues that the church was in favor of primogeniture and tried to enforce it in its territories. Becoming a monk or a priest, however, might have been an attractive outside option for non-inheriting children from the primogeniture area. This could be a second channel through which the church influenced inheritance practices, and that would only partly be picked-up by our control variable. The survey of the fate of non-inheriting sons in the primogeniture area in north-eastern Württemberg conducted by Krafft (1930), however, reveals that in the 1920s less than 3 % of those sons became priests or monks. Therefore, we do not think that this is an important factor through which the church influenced the persistence of primogeniture.

Neckar. These factors likely affect both economic development and inheritance traditions through various channels (e.g., conditions for agriculture). We add a measure for distance to the closest urban center (either Freiburg, Heidelberg, Karlsruhe, Mannheim or Stuttgart).

To be on the safe side with respect to a possible effect of the French occupation Zone after World War II, we include a dummy for municipalities in the French Zone to all the regressions.[48]

Where for some variables it is hard to decide whether they are "bad" or essential controls (for example, distance to urban centers), we provide results including and excluding them. δ_s and ζ_s represent five border segment fixed effects.

The standard spatial RDD (using geodesic distance to the border as running variable) does not take into account that municipalities with the same geodesic distance to the border could be distant to each other. Introducing border segment fixed effects reduces this problem. We also follow Dell (2010) and treat the border as a two-dimensional threshold to control for the exact geographic location of a municipality (its longitude and latitude), and modify the 2SLS estimation as follows:

$$EqualPartition_{s,m} = \alpha_1 + \beta_1 EqualPartitionArea_{s,m} + f(x_m, y_m) + \gamma_1' \mathbf{X_{s,m}} + \delta_s + \epsilon_{s,m} \quad \text{(6a)}$$

$$Outcome_{s,m} = \alpha_2 + \beta_2 \widehat{EqualPartition}_{s,m} + f(x_m, y_m) + \gamma_2' \mathbf{X_{s,m}} + \zeta_s + \eta_{s,m} \quad \text{(6b)}$$

With $f(x_m, y_m)$ we have a flexible function of a municipalities minimum longitudinal and latitudinal coordinates (x_m and y_m). We use a linear coordinates polynomial.[49]

We apply a semi-parametric operationalization of the fuzzy BDD, using three different bandwidths (buffer areas) around the border for the estimation of the sample. These are ten and five kilometers, and lastly only municipalities directly at the western and eastern side of the border. Figure A.8 in the Online Appendix shows the estimation samples corresponding to the three different buffer areas and links the municipalities to their five border segments. We cluster the standard errors on county level to account for likely spatial correlation of inheritance practices, and outcomes. In robustness checks, we show that our results are robust to the use of quadratic distance polynomials. We exclude exclaves of the respective other inheritance practice from all estimations.

Are the 1950s representative? To test this, we investigate whether the effect of equal partition persists (given that the agricultural sector itself is today of minor economic relevance). We cannot replicate the analysis for 1950 for contemporary municipalities and economic outcomes—there are no modern data on the prevalence of inheritance traditions. It is however likely that they persist. For example, Hager and Hilbig (2019) conducted qualitative interviews with present-day German farmers, and found that most of them carry on with their traditional way of inheritance. This may be inaccurate, assuming a trend towards more transitional and mixed forms during the 20$^{\text{th}}$ century. Second, the number of municipalities has been (after an administrative reform in the 1970s) reduced to around a third of their number in 1953. As such, we use a different approach for

48. Table A.8 in the Online Appendix shows bivariate correlations between the numerical control variables included. It shows that no correlation is larger than 0.45 and many are below 0.2. Thus, we do not expect a multicollinearity problem in these regressions.

49. The polynomial has the following form: $f(x, y) = x + y + xy$.

the contemporary analysis. We assume the historical borders of equal partition, and assign each of today's municipalities if over 90 % of their area today intersect with the historical inheritance area.

We then run a standard sharp BDD using the equal partition area dummy as treatment indicator, and estimate the following equation when using distance to the eastern border as forcing variable:

$$Outcome_{s,m} = \alpha + \beta EqualPartitionArea_{s,m} + f(D_m) + \gamma' \mathbf{X_{s,m}} + \delta_s + \epsilon_{s,m} \quad (7)$$

As previously, an alternative specification includes a linear polynomial in a municipality's latitude and longitude as forcing variables, which modifies equation 7 to

$$Outcome_{s,m} = \alpha + \beta EqualPartitionArea_{s,m} + f(x_m, y_m) + \gamma' \mathbf{X_{s,m}} + \delta_s + \epsilon_{s,m}, \quad (8)$$

where $f(x_m, y_m)$ are again the coordinates polynomial. This sharp BDD relies on the idea that no changes in the basic form have occurred since the 19^{th} century. As we can assume that such changes and transitions happened, but likely because of endogenous reasons, the sharp BDD relies on an intention-to-treat model, and provides us with a lower bound estimate of the effect. It assumes that municipalities are still treated with equal partition that today likely have transitional forms—which should have smaller or no effects.

We include the same control variables (included in $\mathbf{X_{s,m}}$) as in the previous analysis for the 1950s.[50] We choose a larger maximum and minimum bandwidth of 25 and five kilometer for our analysis, as the number of observations is lower today than it was in 1950. Unlike before, we cannot cluster the standard errors on county level. The number of counties is so small today that clustering is not feasible anymore (there are just 18 counties in the five kilometer buffer area).

We use the share of industrial buildings in a municipality in 2010, and the natural logarithm of income per capita in 2006 as dependent variables. We also consider the share of industrial area in a municipality's total area as of March 2019.

2. Consequences of Equal Partition for the Structure of the Agricultural Sector

Consider the consequences of inheritance traditions on the structure of agriculture in the 1950s. Table 2 shows the results of estimating equation 5 with border segment fixed effects, and no other controls. We estimate the BDD for a ten kilometer buffer area around the eastern border of the equal partition area. We include four different dependent variables, including two measures of farm size (share of large farms and farms per hectare), the share of helping family members in all employees in 1950, and common land as reported by Röhm (1957). Röhm (1957) argues that common lands are more frequent in equal partition municipalities, as they stabilize this tradition by buffering short-term land shortages. As expected, farms are on average significantly smaller in the equal partition area, with fewer family members working on the farms, and the probability

50. We include however, the share of Protestants in 1950 and the share of agricultural areas used to grow wine and fruits.

that common land is present in a municipality is significantly higher. The F-value of the equal partition area dummy in the first stage is overall high, and well above the common threshold of ten. This makes it a credible candidate for an instrument.

Table 2: *Equal Partition and its Consequences for the Structure of Agriculture in Baden-Württemberg in 1950*

Dependent Variable	Share of Farms>40 ha	Farms per Hectare	Share of Helping Family Members 1950	Commons
	(1)	(2)	(3)	(4)
Buffer Area		10 km around the border		
Equal Partition	-0.543***	14.42***	-0.121***	0.567***
	(0.124)	(3.889)	(0.0348)	(0.179)
Linear Dist. Polynomial	Yes	Yes	Yes	Yes
Border Segment FEs	✓	✓	✓	✓
F-Value of Excluded IV	50.48	50.48	50.35	50.46
Observations	869	869	869	870

Notes. Standard errors are in parentheses and clustered on county (Landkreis) level. Coefficient is statistically different from zero at the ***1 %, **5 %, and *10 % level. The unit of observation is a municipality in 1953. The F-Value of Excluded IVs refers to the F-values of the equal partition area dummy as instrument for equal partition in 1953 on the first stage.

3. Evidence on Mechanisms

In this section we present empirical evidence for the theoretical mechanisms through which equal partition affects industrialization and structural change. First, we explore the prevalence of part-time farming, and tobacco growing, as indicators for the intensity of rural industrial activities. Then we present evidence on historical mobility patterns and the per capita migration balance of municipalities in 1950.

3.1 Consequences of Equal Partition for the Prevalence of the Putting-Out System

It is essential for our argument that the putting-out system was more widespread in the equal partition area than in the areas of primogeniture (see Prediction 2). While we cannot test this directly, our data from the early 1970s allow us to compare the shares of part-time farmers. Prediction 2 suggests that this is higher in the equal partition area. We test this by running the fuzzy BDD as in the section before, with additional controls. We also use a linear coordinates polynomial as additional forcing variable and rely on the ten kilometer buffer to keep the number of observations constant.

Table 3 displays the results. The upper panel presents the results using distance to the border as forcing variable, and the lower panel reports the results with geographic coordinates as forcing variable. The first column of the upper panel reports the coefficient of a standard 2SLS regression without a forcing variable for the complete sample. Column (2) shows BDD estimates without controls and column (3) with controls. In the first three columns, the overall share of part-time farmers in all farmers of a municipality in 1972 is the dependent variable, in column (4) we also inspect the share of the category of "mainly part-time farmers" (again without any controls).

In all estimations, the share of part-time (or mainly part-time) farmers is statistically significantly higher than in the equal partition area. Conservatively put, the results imply an average share around 12 % (column 1). This provides robust empirical support for our link between equal partition and the putting-out system via part-time farming.

Table 3: *Equal Partition and Part-time Farmers in Baden-Württemberg in 1972*

Dependent Variable	Part-time Farmers (Share)			Mainly part-time farmers (Share)
	(1)	(2)	(3)	(4)
Buffer Area	All Obs.	10 km	10 km	10 km
	Panel A: Linear Distance Polynomial			
Equal Partition	0.120***	0.222***	0.233***	0.468***
	(0.016)	(0.081)	(0.09)	(0.102)
F-Value of Excluded IV	921.86	43.43	29.85	126.95
	Panel B: Linear Coordinates Polynomial			
Equal Partition	0.122***	0.201***	0.275***	0.417***
	(0.02)	(0.046)	(0.085)	(0.056)
F-Value of Excluded IV	604.05	176.87	29.06	43.15
Border Segment FEs	✓	–	✓	–
Geographic Controls	–	–	✓	–
Historical Controls	–	–	✓	–
French OZ Dummy	–	–	✓	–
Distance to Urban Center	–	–	✓	–
Intersects Major Railway	–	–	✓	–
Intersects Minor Railway	–	–	✓	–
Observations	1,114	314	314	320

Notes. Standard errors in parentheses are clustered on county level (Landkreisebene). Coefficient is statistically different from zero at the ***1 %, **5 %, and *10 % level. The unit of observation is a municipality in 1953. All regressions include a constant not reported. Geographic controls include mean elevation, terrain ruggedness and soil suitability as well as the share of agricultural area used to grow wine and fruits in 1961, and distance to Rhine or Neckar. Historical controls encompass distance to the closest Imperial city as of 1556, distance to the next certain Roman road, a dummy variable for municipalities with at least one Celtic grave, historical political fragmentation and instability, the share of a municipalities area that is located in ecclesiastical territories in 1556, pre-medieval forest areas, the share of Protestants in 1961, and a dummy for municipalities which belonged to the Duchy of Württemberg in 1789.

Evidence for Prediction 3 comes from the tobacco industry (a classical example of a putting-out system reliant proto-industry). Part-time home workers collected filler tobacco along with wrappers, and were paid per-unit for the hand-rolled cigars they returned. This work was relatively simple to learn, and can be considered low-skilled. Tobacco arrived in Germany around the late 16th century, but was not widely grown before the Thirty Years War (Nüske 1977). To save transport costs, it was planted close to the locations of tobacco producers. We have data on the prevalence of tobacco farming in Baden-Württemberg for the year 1865. The likelihood of tobacco production in an equal partition municipality (24.5 %) was about 18.5 percentage points higher than in a primogeniture municipality (6.2 %).[51].

Our data on the spatial distribution of proto-industrial facilities in 1770–80 (the late mercantilist era) and early industrial facilities in 1829/32 include information on the most important sectors of the putting-out system, textiles and tobacco. Maps of these data are provided in Figure A.9 of the Online Appendix. They document a movement from the few centers of late mercantile proto-industry in 1770–80 predominantly into the equal partition area during the first phase of

51. The difference is statistically significant at 1 % level with a t-value=-15.82

the Industrial Revolution. To test this statistically, we apply a Difference-in-Differences (DiD) approach and estimate two types of regressions. First, we create two dummy variables equal to one for all municipalities within 10 km of a tobacco or textile facility in 1780 or 1832. We create a third dummy variable indicating whether either facility is within 10 km. We then interact a dummy equal to one for 1832 with a dummy variable for municipalities in the historical equal partition area. Our population-averaged (PA) models rely on the General Estimation Equation (GEE) approach with the dummies for proximity to facilities as dependent variables and the time-varying equal partition dummy as right-hand side variable. We include a dummy variable for 1832 as control. Second, we estimate standard two-way fixed effects regressions. Instead of dummies, our dependent variables here are the log-distances to the closest facility.[52] In these regressions, standard errors are clustered on municipality level. Table 4, Panel A shows the average marginal effects resulting from estimating the PA model. The statistical significance of the results implies that equal partition municipalities in 1832 were more likely to be close to an early industrial facility than primogeniture areas. The results of the FE regressions in Panel B indicate that equal partition areas are significantly closer to early industrial facilities than primogeniture ones, at least regarding textile facilities, or the minimal distance to either a tobacco or textile facility.

Table 4: *Equal Partition and the Spread of Proto-Industry Before (1780) and During (1832) the Industrial Revolution*

	(1)	(2)	(3)
		Panel A: GEE Population-averaged Model	
Dependent Variable	Tobacco Facility within 10 km	Textile Facility within 10 km	Tobacco or Textile Facility within 10 km
Equal Partition × 1830	0.483***	0.282***	0.383***
	(0.048)	(0.043)	(0.042)
		Panel B: Two-way FE Model	
Dependent Variable	ln(Distance to Tobacco Facility)	ln(Distance to Textile Facility)	ln(Distance to Tobacco or Textile Facility)
Equal Partition × 1830	0.005	-0.144***	-0.0822***
	(0.021)	(0.119)	(0.03)
Within-R^2	0.072	0.119	0.033
Observations	6,764	6,764	6,764

Notes. Heteroskedasticity robust standard errors are in parentheses in Panel A. In Panel B standard errors are clustered on municipality level (there are 3,382 clusters). The regressions in Panel A include year fixed effects. Those in Panel B include municipality and year fixed effects. The coefficients in Panel A are average marginal effects. Coefficient is statistically different from zero at the ***1 %, **5 %, and *10 % level. The unit of observation is a municipality in 1953.

3.2 Consequences of Equal Partition on Migration Patterns

In this section, we use casualty lists from World War I to show that the mobility of the population in the equal partition area was historical lower than of those from the primogeniture area, testing Prediction 4. We focus on the family names of the soldiers, 397,620 individuals with 30,645 different family names. We study the distribution of these names across municipalities in Baden-Württemberg in the early 20[th] century. Many of these family names are place names, presumably where its first holders originated from (e.g. people called "Esslinger" have ancestors from Esslingen). Given this fact, the spatial distribution of family names informs us about historical migration

52. A descriptive overview of the dependent variables is provided in Table A.3 in the Data Appendix.

patterns within today's Baden-Württemberg. If a name was relatively widespread, it indicates that the holders of the name were more mobile—however, omnipresent names are likely common and not a sign of migration. We therefore control for the name's frequency.[53]

Table 5 shows Poisson regressions with the number of municipalities in which a particular family name is present as dependent variable, and the share of this family name in the historical equal partition area as left-hand side variable of interest. In these regressions, the unit of observation is a family name. We obtain it by collapsing the original lists first by municipality and family name, and alternatively only by family name. In column (1), no controls are included and we report only the bivariate relationship between both variables. We then sequentially add more controls, starting with the total number of list entries per municipality, proxying a municipality's population, and the overall number of casualties with this family name in Baden-Württemberg. Next, we add geographical controls on the remoteness of places with a particular family name and their conditions for agricultural activities (elevation, intersection with a major river, soil quality and terrain ruggedness). We also add a dummy variable equal to one if the municipalities in which a certain name was prevalent were majorly protestant. This decision follows Beatton, Skali, and Torgler (2019), who argued that Protestants have a significantly higher probability of war injury or death because of their (Protestant) ethic. Again, we add distance to Roman roads and Imperial cities in column (3) to control for the costs of migrating, the degree of interaction between rural and urban places, and the remoteness of a place. To rule out a bias arising from different casualty rates in different parts of the German army, we control for the share of soldiers with a certain family name who served in infantry, artillery, or a reserve unit. To rule out that military administrators considered soldiers from remote areas "cannon fodder" (leading to an over-representation in the casualty data), we also control for the mobilization rate in 1914. [54] The results with the full set of controls (similar to the ones before) are displayed in column (4). The results in Table 5 confirm Prediction 1.[55] In addition, since family names began to emerge during the early modern period, the spatial distribution of family names at the end of the 19th century was the result of century-long migration movements. These results suggest that inheritance traditions indeed were historically stable.

Another way of testing our predictions about migration patterns is to look at the per capita migration balance of each municipality. We estimate a BDD with the municipal migration balance per capita in 1950 as dependent variable (Table 6). In column (1) we show the BDD with the distance or coordinates polynomial. In the other columns, we include the full set of controls.

53. For example, names referring to common occupations, like "Müller" or "Schmidt".

54. A descriptive overview of the family name level data set can be found in the Online Appendix in Table A.5.

55. There is a notable decrease in the size of the coefficient from the bivariate model in column (1) to the specification in column (2). This decrease in the coefficient is, however, only caused by the inclusion of two variables, elevation and the number of entries per municipality. Both variables are expected to have pronounced effects on historical mobility, market access, transport cost and other relevant aspects. We therefore expect them to have an effect on the coefficient of equal partition. The inclusion of the other twelve control variables does leave the coefficient essentially unchanged. Thus, the results are not sensitive to covariates in general but to these two only, particularly relevant factors.

Table 5: *The Frequency of Family Names and Equal Partition*

Dependent Variable	No. of Municipalities with this Family Name			
	(1)	(2)	(3)	(4)
Method	Poisson			
Share of Entries in Equal Partition Area	-0.3826***	-0.0578***	-0.0402*	-0.0591**
	(0.016)	(0.021)	(0.022)	(0.023)
No. of Entries per Municipality	–	✓	✓	✓
Total Entries with this Family Name	–	✓	✓	✓
Geographic Controls	–	✓	✓	✓
Protestant Municipality	–	✓	✓	✓
Mobilization Rate 1914	–	✓	✓	✓
Historical Controls	–	–	✓	✓
Army Type Shares	–	–	–	✓
Observations	30,649	30,645	30,645	30,645
Pseudo R^2	0.008	0.205	0.205	0.205

Notes. Heteroskedasticity robust standard errors are in parentheses. Coefficient is statistically different from zero at the ***1 %, **5 %, and *10 % level. The unit of observation is a family name. All regressions include a constant not reported. The set of geographic controls includes mean elevation, terrain ruggedness and soil quality, as well as distance to Rhine and Neckar. Historical controls are distance to the next certain Roman road, and to the closest Imperial city.

Table 6: *Equal Partition and Inter-regional Migration in Baden-Württemberg in 1950*

Dependent Variable	Migration Balance p.c. 1950			
	(1)	(2)	(3)	(4)
Buffer Area	10 km	10 km	5 km	Border Munics
	Panel A: Linear Distance Polynomial			
Equal Partition	0.019	0.01	0.02**	0.019**
	(0.018)	(0.006)	(0.008)	(0.01)
F-Value of Excluded IV	48.3	53.75	35.41	18.83
	Panel B: Linear Coordinates Polynomial			
Equal Partition	0.013***	0.006	0.011**	0.016*
	(0.005)	(0.004)	(0.005)	(0.01)
F-Value of Excluded IV	126.95	77.73	59.79	17.83
Observations	842	839	569	261
Border Segment FEs	–	✓	✓	✓
Geographic Controls	–	✓	✓	✓
Historical Controls	–	✓	✓	✓
French OZ Dummy	–	✓	✓	✓
Distance to Urban Center	–	✓	✓	✓
Intersects Major Railway	–	✓	✓	✓
Intersects Minor Railway	–	✓	✓	✓

Notes. Standard errors in parentheses are clustered on county level (Landkreisebene). Coefficient is statistically different from zero at the ***1 %, **5 %, and *10 % level. The unit of observation is a municipality in 1953. All regressions include a constant not reported. Geographic controls include mean elevation, terrain ruggedness and soil suitability as well as the share of agricultural area used to grow wine and fruits in 1961, distance to Rhine or Neckar. Historical controls encompass distance to the closest Imperial city as of 1556, distance to next certain Roman road, a dummy variable for municipalities with at least one Celtic grave, historical political fragmentation and instability, the share of a municipalities total area that is located in ecclesiastical territories in 1556, pre-medieval forest areas, the share of Protestants in 1961 and a dummy for municipalities which belonged to the Duchy of Württemberg in 1789.

We find our expectations confirmed as the per capita migration balance of equal split municipality is on average significantly more positive (by around 1 to 2 %) than of municipalities that applied another inheritance tradition—although the coefficient is not significant for 10 km buffer area when using the linear distance polynomial (Panel A, columns (1) and (2)). These 2 % are roughly corresponding to an increase by one standard deviation of the per capita migration balance, a sizable effect.

4. Consequences of Equal Partition for Industrialization and Structural Change

In a next step, we investigate the effects of equal partition on industrialization and structural change (testing Predictions 3 and 4). The four sub-figures of Figure 6 provide visual evidence to suggest a presence of a discontinuity in industrialization and structural change at the historical border of the inheritance traditions. They show the spatial distribution of our four outcome measures (population and firms per hectare, agricultural and industrial employment shares) in Baden-Württemberg together with the location of the historical inheritance border.

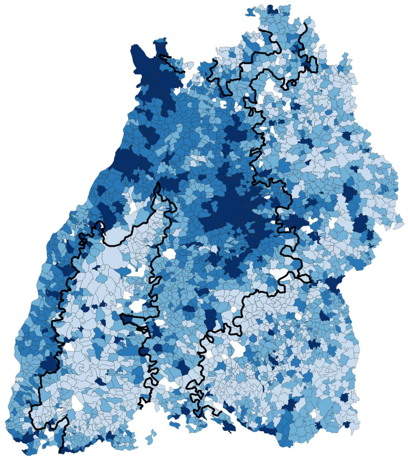
These maps suggest discontinuity of outcomes at the historical inheritance border. Population and firm density, and industrial employment share appear higher in the equal partition area, while the agricultural employment share looks significantly lower.

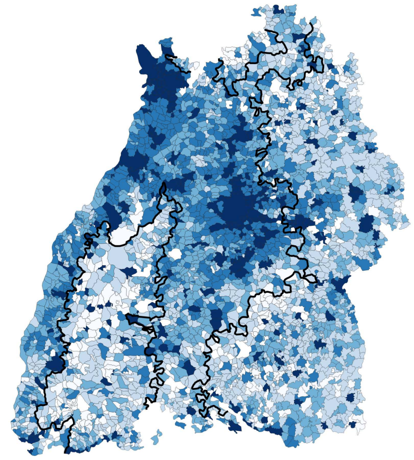
In Figure 7 we show two types of these BDD plots, the simplest possible BDD evidence. These plot our outcomes against distance to the inheritance border, where the outcomes are modeled as a linear function of distance to the border. This shows the effect of the inheritance tradition on our outcomes in form of a significant shift in the intercept of the linear distance functions at the border.

There is one plot of each of the outcomes as linear function of distance to the border, for all municipalities in Baden-Württemberg, and using the complete historical inheritance border as discontinuity (the left-hand side plots). Second, we show the distribution of outcomes (in 2 km bins) 10 km to the (East) and (West) of the eastern part of the historical border and we also show the 95 % confidence intervals for each of the bin averages. This allows us to assess the significance of a potential discontinuity at the border, which is given, when the confidence intervals immediately to the left and right of the border do not overlap. Both figures show that there is a sizable, and statistically significant discontinuity in the outcomes at the historical inheritance border. Population and firm density, as well as the industrial employment share are higher, and the agricultural employment share is lower in the equal partition area (to the East of the border, as depicted by positive km values)—as suggested by our theory.

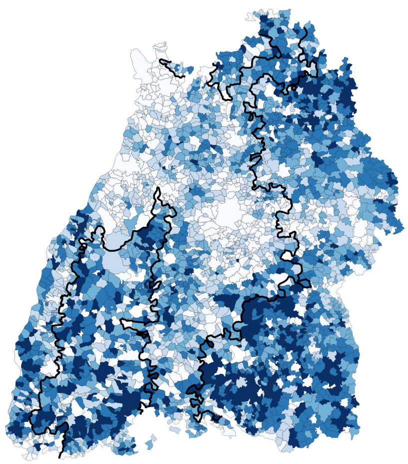
Moving on on to more elaborate BDD estimations, we estimate the same specification as in Table 3, but we also consider a smaller, five kilometers buffer area and consider only the municipalities closest to the border. Table 7 shows the results of these BDD estimations.[56] The first half of the table shows the results for our two measures of industrialization.

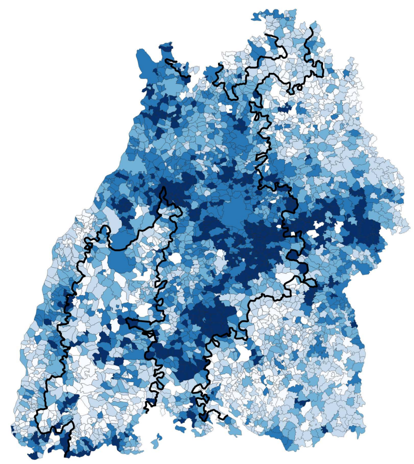
56. We also present the results of standard OLS estimations of the regressions in this table for the whole sample of municipalities in the Online Appendix, section A.4.1, Table A.14. They show a significant and positive influence of equal partition on municipal economic development in all the cases.





(a) *ln(Population Density 1950)* **(b)** *ln(Firms per Hectare 1950)*

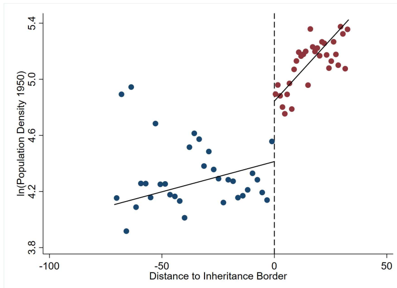




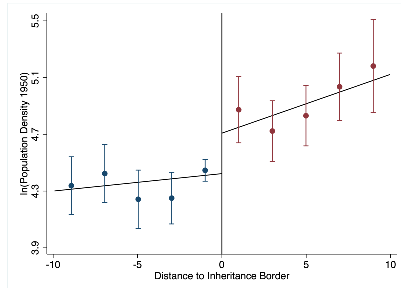
(c) *Employment Share Agriculture 1950* **(d)** *Employment Share Industry 1950*

Note: Figure (a) shows the population density among municipalities in Baden-Württemberg in 1950. The darker blue the municipalities are colored the higher is their population density. Figure (b) shows the firms per hectare among municipalities in Baden-Württemberg in 1950. The darker blue the municipalities are colored the higher is their firm density. Figure (c) shows the share of agricultural employment among municipalities in Baden-Württemberg in 1950. The darker blue the municipalities are colored the higher is their share of agricultural employment. Figure (d) shows the share of industrial employment among municipalities in Baden-Württemberg in 1950. The darker blue the municipalities are colored the higher is their share of industrial employment. The solid black line depicted in all sub-figures is the historical border of the equal partition area according to Röhm (1957).

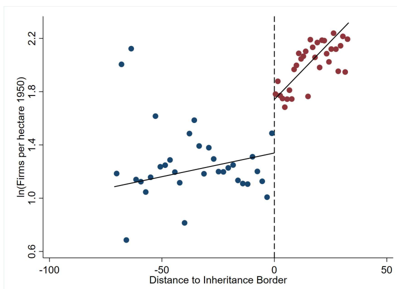
Figure 6: *Historical Inheritance Practices, Industrialization and Structural Change in Baden-Württemberg*



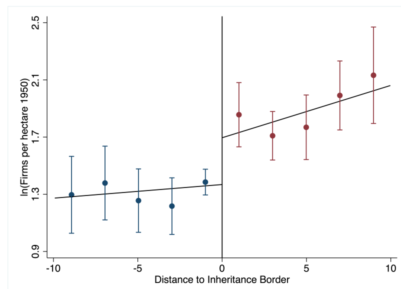
(a) *ln(Population Density 1950)*



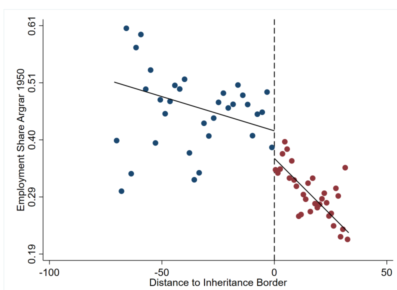
(b) *ln(Population Density 1950)*



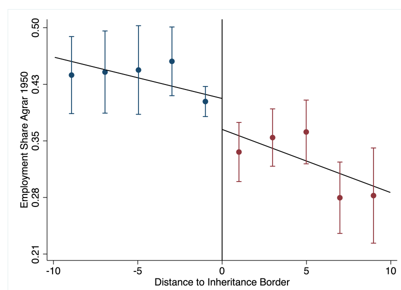
(c) *ln(Firms per Hectare 1950)*



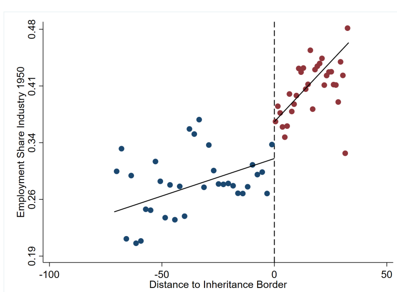
(d) *ln(Firms per Hectare 1950)*



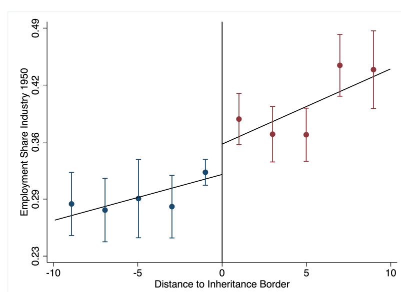
(e) *Employment Share Agriculture 1950*



(f) *Employment Share Agriculture 1950*



(g) *Employment Share Industry 1950*



(h) *Employment Share Industry 1950*

Note: Figure (a) shows the ln of population density among municipalities in Baden-Württemberg modeled as linear function of distance to the historical inheritance border. The blue dots (and negative km values) represent the ln of population density of municipalities in the historical primogeniture area. Red dots values (and positive km values) represent the ln of population density in the equal partition area. Figure (b) shows 2 km bin averages of the ln population density, the 95 % confidence intervals of each of those bin averages as well as linear trend overlaid over the ln population density values, separately for each side of the border. The other figures show the same for the other outcomes.

Figure 7: *Historical Inheritance Practices, Industrialization and Structural Change in Baden-Württemberg*

Columns (1) to (4) report the results for the natural logarithm of population density, and columns (5) to (8) for ln firms per hectare. There is a full set of controls in all columns except for columns (1) and (5), which have none at all. These results confirm Prediction 3. The most conservative regressions (where we consider the border municipalities and include all controls) in column (4) suggest that on average the population density of an equal partition municipality is around 84 % higher. Reassuringly, the results do not depend on a distance or a coordinates polynomial, and also not on the inclusion of covariates. This underlines their robustness to a more precise modeling of geographic location.

In the lower part of Table 7, we present our results on the effect of equal partition on structural change and industry structure. We estimate the BDD regressions with the share of employees in industry and agriculture as our outcomes. We find that equal partition is positively and significantly related to structural change, as the share of workers in industry is at 10 to 20 % higher in equal partition municipalities. The coefficients are almost unchanged by different bandwidth choice, inclusion of control variables or different polynomials. This indicates a robust effect of equal partition on the structure of the economy.

We move to the investigation of contemporary municipalities and economic outcomes. Table 8 shows the results of the sharp BDD. For all three outcomes, share of industry buildings in 2010 (columns (1)–(3)), share of industrial area in 2019 (columns (4)–(6)), and income per capita in 2006 (columns (7)–(9)), we find a positive and statistically and economically significant effect of being in the equal partition area. Municipalities in the historical equal partition area have on average an income per capita around 4 % larger than those in the primogeniture area (columns (7)–(9)). To quantify this effect, we re-estimate the regressions with the smallest coefficients (those in column (9)) using non-logarithmic income per capita in 2006 in 1000 € as dependent variable (column (10)). The resulting coefficient of 0.5978 (column (10), Panel A), is statistically significant and implies that in the equal partition area income per capita in 2006 was on average around 598 € higher—over one third of the overall difference in per capita income between both regions.[57]

Given that the equal partition area has around 7.4 million inhabitants in 2006, this amounts to an extra of 4.4 billion € of income. The share of industry buildings (columns (1)–(3)) is around 0.04 percentage points larger which is a sizable effect given an average of 1.2 % (the maximum is 14.5 %). The share of industrial area is on average 30 percentage points larger, also a large effect.

To conclude our results, the historical equal partition area is better developed, and more industrialized, even though the agricultural sector is today of minor importance. Our results suggest that inheritance traditions have put their respective area's development on different trajectories in the past.

57. The average difference in per capita income between the equal partition and primogeniture area in 2006 is 1,590 €.

Table 7: *Equal Partition and Industrialization in Baden-Württemberg in 1950*

Dependent Variable		ln(Population Density 1950)				ln(Firms per hectare 1950)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
					Industrialization Measures			
Buffer Area	10 km	10 km	5 km	Border Munics	10 km	10 km	5 km	Border Munics
					Panel A: Linear Distance Polynomial			
Equal Partition	1.026**	0.665***	0.752***	0.909***	1.179**	0.641***	0.744***	0.994***
	(0.481)	(0.227)	(0.247)	(0.306)	(0.464)	(0.243)	(0.276)	(0.330)
F-Value of Excluded IV	43.91	48.41	34.34	18.43	42.95	48.41	34.34	18.43
					Panel B: Linear Coordinates Polynomial			
Equal Partition	1.107***	0.618***	0.762***	0.837**	1.079***	0.641***	0.786***	0.969**
	(0.365)	(0.210)	(0.218)	(0.367)	(0.307)	(0.225)	(0.231)	(0.464)
F-Value of Excluded IV	113.47	68.54	58.09	17.57	110.64	68.54	58.09	17.57
Observations	868	865	586	267	865	865	586	267
					Structural Change Measures			
Dependent Variable		Employment Share Industry 1950				Employment Share Agriculture 1950		
					Panel A: Linear Distance Polynomial			
Equal Partition	0.188*	0.158**	0.172**	0.205**	-0.239**	-0.154**	-0.163*	-0.212**
	(0.098)	(0.067)	(0.078)	(0.085)	(0.0101)	(0.074)	(0.086)	(0.091)
F-Value of Excluded IV	43.91	48.41	34.34	18.43	43.91	48.41	34.34	18.43
					Panel B: Linear Coordinates Polynomial			
Equal Partition	0.21***	0.111**	0.102**	0.168**	-0.225***	-0.110**	-0.115**	-0.184**
	(0.058)	(0.047)	(0.048)	(0.075)	(0.064)	(0.0563)	(0.053)	(0.084)
F-Value of Excluded IV	113.47	68.54	58.09	17.57	113.47	68.54	58.09	17.57
Observations	868	865	586	267	868	865	586	267
5 Border Segment Fixed Effects	–	✓	✓	✓	–	✓	✓	✓
Geographic Controls	–	✓	✓	✓	–	✓	✓	✓
Historical Controls	–	✓	✓	✓	–	✓	✓	✓
French OZ Dummy	–	✓	✓	✓	–	✓	✓	✓
Distance to Urban Center	–	✓	✓	✓	–	✓	✓	✓
Intersects Major Railway	–	✓	✓	✓	–	✓	✓	✓
Intersects Minor Railway	–	✓	✓	✓	–	✓	✓	✓

Notes. Standard errors in parentheses are clustered on county level (Landkreisebene). Coefficient is statistically different from zero at the ***1 %, **5 %, and *10 % level. The unit of observation is a municipality in 1953. All regressions include a constant not reported. Geographic controls include mean elevation, terrain ruggedness and soil suitability as well as the share of agricultural area used to grow wine and fruits in 1961, and distance to Rhine or Neckar. Historical controls encompass distance to the closest Imperial city as of 1556, distance to next certain Roman road, a dummy variable for municipalities with at least one Celtic grave, historical political fragmentation and instability, the share of a municipalities total area that is located in ecclesiastical territories in 1556, pre-medieval forest areas, the share of Protestants in 1961 and a dummy for municipalities which belonged to the Duchy of Württemberg in 1789.

Table 8: *Equal Partition and Contemporary Municipal Development in Baden-Württemberg*

Dependent Variable	Share of Industry Buildings 2010			Share of Industrial Area 2019			ln(Income per capita 2006)			Income per capita 2006
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Buffer Area	25 km	15 km	5 km	25 km	15 km	5 km	25 km	15 km	5 km	5 km
	Panel A: Linear Distance Polynomial									
Equal Partition	0.0045***	0.0025*	0.0043***	0.286**	0.286**	0.307**	0.0464***	0.0481**	0.0377*	0.5978**
	(0.001)	(0.001)	(0.001)	(0.117)	(0.117)	(0.118)	(0.017)	(0.019)	(0.023)	(0.298)
R^2	0.280	0.314	0.334	0.160	0.165	0.246	0.572	0.614	0.612	0.49
	Panel B: Linear Coordinates Polynomial									
Equal Partition	0.0044***	0.0032**	0.0035**	0.284**	0.276**	0.228*	0.0658***	0.0565***	0.0393*	0.6197**
	(0.001)	(0.001)	(0.001)	(0.111)	(0.121)	(0.127)	(0.016)	(0.019)	(0.022)	(0.285)
R^2	0.315	0.324	0.36	0.169	0.177	0.25	0.425	0.453	0.522	0.521
5 Border Segment FEs	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Geographic Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
French OZ Dummy	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Distance to Urban Center	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	537	375	211	537	375	211	537	375	211	211

Notes. Standard errors in parentheses are clustered on county level (Landkreisebene). Coefficient is statistically different from zero at the ***1 %, **5 %, and *10 % level. The unit of observation is a municipality in 1953. All regressions include a constant not reported. Geographic controls include mean elevation, terrain ruggedness and soil suitability as well as the share of agricultural area used to grow wine and fruits in 1961, and distance to Rhine or Neckar. Historical controls encompass distance to the closest Imperial city as of 1556, distance to next certain Roman road, a dummy variable for municipalities with at least one Celtic grave, historical political fragmentation and instability, the share of a municipalities total area that is located in ecclesiastical territories in 1556, pre-medieval forest areas, and a dummy for municipalities which belonged to the Duchy of Württemberg in 1789.

5. Results Using Seasonality of Precipitation as Instrument

An alternative path to causal inference relies on specific geographic conditions that can serve as an instrumental variable. Inheritance traditions have been shaped by geography, in particular suitability for intensive agriculture. Equal partition is more prevalent where conditions allowed wine and fruits to be grown, crops that can sustain families on comparatively small plots (see Huning and Wahl 2021, for an overview). Our instrument is a climatic variable specifically relevant for wine-growing, but not for growing other types of agricultural plants. This variable is the seasonality of precipitation measured as the coefficient of variation in monthly precipitation in the period from 1970 to 2000. We obtain this variable from the WorldClim database.[58]

The idea behind this variable is to relate the seasonality of precipitation to equal partition via its influence on the historical adoption of wine-growing. For the instrumental variables regressions, we limit our data set to a 50 km perimeter circle around Stuttgart. This limits unobserved heterogeneity, especially by avoiding the potentially idiosyncratic mountainous areas of the Swabian Jura and the Black Forest. We also study an area which is quite balanced with respect to religion, and culture in general. Focusing on the area around Stuttgart also is valuable as it is the historical nucleus of wine-growing in Baden-Württemberg (the other one being around Freiburg in Baden). Historically, the adoption of wine-growing was much more driven by geographic and climatic factors than it was later when demand-side and quality considerations became more important (Nüske 1977). This leaves us with 892 municipalities of which 460 applied equal partition. Hence, regarding inheritance traditions, our sample is almost balanced.

To grow wine, a lot of specific factors have to come together, and the required micro-climatic conditions are characterized by a complex interplay of terrain features like slope, elevation, and soil, but also climatic factors like temperature, humidity, solar radiation and precipitation levels (Sommers 2008). As temperature and rainfall are known to vary systematically with elevation, it is among the most important determinants of wine growing. This is why wine usually grows in modest elevation levels (in Germany typically below 500 m). It is also known that locations close to rivers are favorable for growing wine as they reflect and bundle solar radiation, and lead to warmer and wetter winters. Similarly, hills orientated to the South with a slope of around 45° get the most solar radiation. Therefore, a south-oriented hill, with the correct steepness, located next to a river, and in an area with modest elevation levels (like in the valley of the German rivers of Mosel, Neckar, or Rhine) can be considered optimal for growing wine. These locations are often not favorable for general agriculture, as large slopes or hilly terrain make it difficult to grow most other crops. The seasonality of climate plays a larger role in the growth of grapes than for other agricultural crops. Wine is sensitive to rain in the growing season, but is adaptable to little water supply during the summer if its roots reach winter reservoirs. Excessive summer rain leads to overshooting growth, early ripeness, and also makes grapes vulnerable to pests. In consequence, a highly seasonal precipitation pattern with a lot of rain during the winter and spring but modest levels of rain in the summer is optimal (Sommers 2008). Winter wheat, barley, potatoes, or maize, which are the most important agricultural crops grown in Baden-Württemberg, have short roots and depend on rain during growing season (Koller and Flaig 2014).

58. The variable we use is part of the WorldClim bioclimatic variables data set which can be accessed here: https://www.worldclim.org/data/bioclim.html. We use the variable Bio15. We downloaded the version of the bioclimatic variables with the highest spatial resolution (30 arc seconds), and calculated the average value of the variables for the area of a 1953 municipality.

In Online Appendix Table A.19, we show the results of regressions where we predict historical (before 1624) wine-growing by seasonality of precipitation, geographic factors like elevation, terrain ruggedness, distance to major rivers, suitability to grow barley, maize, potatoes, and winter wheat, as well as historical factors like distance to Roman roads or Imperial cities—capturing the fact that demand could have driven the adoption of wine-growing by farmers.[59] We find (as expected) seasonality of precipitation is robustly and positively related to historical wine-growing. Elevation, distance to rivers and imperial cities, as well as location outside ecclesiastical territories matter.[60] Reassuringly, the suitability for other crops like winter wheat or potatoes is not relevant.[61]

With respect to the validity of the exclusion restriction, it is important to show that seasonality of precipitation is not important for growing winter wheat, potatoes, maize or barley. To test this, we run OLS regressions in which we predict a municipality's suitability to grow either one of these crops using the same set of variables as for wine-growing (columns (1) to (4)). We find that seasonality of precipitation does not play a role in the suitability to grow any of these crops. As such, precipitation seasonality is not another proxy for natural conditions in general.

Another test of the exogeneity of our instrument are placebo-like OLS regressions where we check whether seasonality of precipitation explains local economic development in areas in which no wine is grown and primogeniture is applied. If seasonality of precipitation is a valid instrument, the exclusion restriction holds and there is no direct effect of it on economic development over and above its effect on equal partition via wine-growing. Therefore, seasonality of precipitation should not be significantly related to economic development in areas in which neither wine-growing nor equal partition is applied. To test this, we utilize the data set of Hager and Hilbig (2019), who provide municipality-level information for equal partition and economic development measures for the whole of West-Germany in 2014. Based on these data, we run reduced-form regressions with seasonality of precipitation as left-hand side variable and a municipality's average wage income in 2014 as dependent one. Instead of limiting the sample to the region 50 km around Stuttgart, however, we consider the areas 50 km around the state capitals of Munich (Bavaria), Bremen, Hamburg, Hanover (Lower Saxony), and Kiel (Schleswig-Holstein). In the area around these cities only primogeniture is applied and no wine is grown. This makes them suitable for such kind of empirical exercise. Table A.20 in the Online Appendix shows the results.[62] In all of

59. A descriptive overview of the data set used for these regressions and the IV estimations, later on, can be found in the Online Appendix, Table A.6. The suitability measures and the other variables originate from the same sources as before. Data on historical wine-growing municipalities we take from a digitized map on the spread of wine-growing in Baden-Württemberg until 1624 form the "Historischer Atlas von Baden-Württemberg" (Nüske 1977).

60. There is no reason to believe that contemporary seasonality in precipitation should have decisively changed compared to that in the 17th century. This is why we think it can act as a valid proxy. Predicting contemporary wine-growing seems also not to be a preferable option, as nowadays through selective breeding and genetic-manipulation most widely grown grapes are less sensitive to natural conditions than historical grapes. Today, wine is no longer produced in all areas which would be suitable; the quality bar has been raised since the early modern period. Wine-growing today is likely more endogenous to economic development than it was historically.

61. Of course, maize and potatoes were not widely planted in 1624 or before, however, it is nevertheless useful to control for their suitability to grow these, as we want to get an idea about whether we capture just "good natural conditions" with the seasonality of precipitation variable. Both maize and potatoes are widely planted in Baden-Württemberg today. Another concern is that the insignificance of the different suitability measures is driven by huge correlations between those. This is, however, only the case for the suitability of winter wheat and barley (bivariate correlation is 0.93). The correlations between the other suitability measures are significant but less strong. We also checked what happens if we introduce the catch-all suitability variable we have used before. This variable represents the average suitability for 16 crops— including the ones considered separately here. It turns out that this variable would be insignificant too.

62. We actually estimate the regression in Table A.18, column (3), in the Online Appendix, where we show that the positive relationship between equal partition and economic development we have shown for Baden-Württemberg is also

these regressions, seasonality of precipitation shows a small, and insignificant coefficient (leaning towards negative). This suggests that the exclusion restriction holds, and the absence of a channel through which seasonality of precipitation influences local economic development. We rely on these specific determinants of wine-growing, measured by seasonality of precipitation as instrumental variable.

Figure A.10 in the Online Appendix visualizes the relationship between historical wine-growing and equal partition on the one hand (Panel a), and seasonality of precipitation and equal partition (the first stage relationship) on the other hand. Both figures suggest a positive relationship between wine-growing and equal partition, and seasonality of precipitation and equal partition, respectively. This confirms that seasonality of precipitation is significantly and specifically related two wine-growing, and a valid instrument. We estimate 2SLS regressions of the following form:

$$EqualPartition_m = \alpha_1 + \beta_1 PRECVAR_m + \gamma_1' \mathbf{X_m} + \epsilon_m \quad (9a)$$

$$Outcome_m = \alpha_2 + \beta_2 \widehat{EqualPartition}_m + \gamma_2' \mathbf{X_m} + \eta_m, \quad (9b)$$

where $PRECVAR_m$ is the seasonality of precipitation in municipality m, and $Outcome_m$ are the same measures of local industrialization as in Tables 7–6. The vector of controls $\mathbf{X_{c,m}}$ comprises of geographical control variables (elevation, terrain ruggedness, and distance to Rhine or Neckar). The geographic variables are meant to account for the effect of geography on economic development and inheritance traditions. They are specifically included to net out the variation in seasonality of precipitation that is caused by these factors. Historical control variables are the share of a municipality historically located in an ecclesiastical territory, distance to the next Imperial city or Roman road, historical political fragmentation, and the market potential in 1500. They account for factors that could be related to wine-growing, equal partition, and economic development alike. It also includes suitability measures for barley, maize, potato, and winter wheat, and distance to Stuttgart (to account for the effect of the capital city and its agglomeration). Since the area studied is more homogeneous concerning most aspects (especially geography), our set of controls is smaller than before.

Table 9 reports the 2SLS results alongside the coefficient estimates of the reduced form estimated with OLS. Panel A shows the second stage, Panel B the first stage, and Panel C the reduced form results.

For each of the five outcomes variables, we first estimate bivariate regressions without any controls (columns with odd numbers), and then include the full set of controls (columns with even numbers). Panel B suggests that the seasonality of precipitation is a significant predictor of equal partition in all regressions. The F-value of the excluded instrument is above the common threshold of ten. In conclusion, the instrument is relevant and sufficiently strong.

significant for the whole of West Germany. There the reader can also find more information on the Hager and Hilbig (2019) data set and the included control variables. A descriptive overview of the five data sets is provided in Table A.7.

Table 9: *Equal Partition and Economic Development When Using Seasonality of Precipitation as Instrument*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Panel A: 2SLS Second Stage									
Dependent Variable	ln(Population Density 1950)		ln(Firms per hectare 1950)		Employment Share Agriculture 1950		Employment Share Industry 1950		Migration Balance p.c. 1950	
Equal Partition	1.446***	1.164***	1.134**	0.887**	-0.234***	-0.264***	0.232***	0.238***	0.0483***	0.0582***
	(0.493)	(0.437)	(0.450)	(0.431)	(0.082)	(0.076)	(0.071)	(0.062)	(0.019)	(0.017)
	Panel B: First Stage (Dependent Variable: Equal Partition)									
Seasonality of Precipitation	0.0312***	0.0354***	0.311***	0.0304***	0.0312***	0.0304***	0.0312***	0.0304***	0.0307***	0.0287***
	(0.007)	(0.011)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)	(0.007)	(0.008)
F-Value of Excluded IV	19.48	13.43	19.31	13.43	19.48	13.43	19.48	13.43	19.09	12.57
	Panel C: Reduced Form									
Dependent Variable	ln(Population Density 1950)		ln(Firms per hectare 1950)		Employment Share Agriculture 1950		Employment Share Industry 1950		Migration Balance p.c. 1950	
	0.0451***	0.0354***	0.0352**	0.0270*	-0.0073***	-0.0080***	0.0072***	0.0072***	0.0015***	0.0017***
	(0.015)	(0.011)	(0.014)	(0.013)	(0.0026)	(0.002)	(0.002)	(0.002)	(0.000)	(0.000)
Geographic Controls	–	✓	–	✓	–	✓	–	✓	–	✓
Soil Suitability Measures	–	✓	–	✓	–	✓	–	✓	–	✓
Historical Controls	–	✓	–	✓	–	✓	–	✓	–	✓
Distance to Stuttgart	–	✓	–	✓	–	✓	–	✓	–	✓
Observations	887	887	887	887	887	887	887	887	858	858

Notes. Standard errors in parentheses are clustered on county level (Landkreisebene). Coefficient is statistically different from zero at the ***1 %, **5 %, and *10 % level. The unit of observation is a municipality in 1953. All regressions include a constant not reported. Geographic controls include elevation, terrain ruggedness, and distance to Rhine or Neckar. Historical controls encompass distance to the closest Imperial city, the next certain Roman road, historical political fragmentation, the share of a municipalities total area that is located in ecclesiastical territories, and market potential in 1500.

The second stage results show a significant relationship of instrumented equal partition on the outcome variables. The coefficients all have the expected sign and the estimated effects are larger than those from the fuzzy spatial RDDs. As both methods estimate a different LATE are based on different samples and variables, a direct comparison is not meaningful. The second stage results imply, for example, that population density is on average 220 % larger (column (2)) in an equal partition municipality.[63] Given the extraordinary variation in population density in our sample (it varies between 0.48 and 2,396), and the fact that all major agglomerations and most of the large cities in Baden-Württemberg are located in the equal partition area, this it is not unreasonable. It implies that a primogeniture municipality with median population density (around 127 inhabitants per hectare) would become a third quantile population density municipality if it were (counterfactually) an equal partition municipality. Panel C shows a significant positive influence of seasonality of precipitation on the outcome variables, which is overall economically sizable. The reduced form is estimated with OLS and is, provided the validity of our instrument, unbiased regardless of whether the 2SLS estimations suffer from a weak instrument. Because of this, the significant reduced form results are reassuring.

To conclude on the instrument, these 2SLS estimations confirm that our empirical results are robust to alternative identification strategies.

6. Robustness Checks

Our results are robust to various standard sensitivity tests. These are shown and explained in more detail in the Online Appendix, section A.3, Tables A.9 to A.12. We run placebo border tests where we shift the border 15 and 20 km to the East and West and search for discontinuities at these placebo borders. We show the results of estimating a sharp instead of a fuzzy RDD for the 1950 outcomes. We then conduct a "Donut BDD". We exclude the municipalities immediately to the East and West of the border when estimating the fuzzy BDD. We address the concern that the states' capital city and largest agglomeration (Stuttgart) is part of the sample, but its size may be unrelated to inheritance traditions and therefore bias our estimates. Consequently, we estimate the fuzzy BDD regressions without the border segment in which Stuttgart (and its agglomeration) are located. We present BDD estimates using 15 instead of five border segments and re-estimate the baseline fuzzy BDD. In another check, we include dummy variables for each historical state a municipality was located in 1789 to the full set of baseline controls, and we also look what happens if we control for coal access, and market potential in 1500. We also test a quadratic distance polynomial instead of a linear one for the fuzzy BDD, and we include exclaves of the an inheritance tradition in the regression sample. Finally, we test the sensitivity of the results for the presence of spatial autocorrelation using the method of Conley (1999) and various cut-off points, as well as for the use of heteroskedasticity robust (Huber-White) standard errors (Figures A.2 and A.3 in the Online Appendix).

7. Additional Results

We estimated various additional regression specifications to underpin the validity and generalizability of our results, and to provide further insights into the effect of equal partition on other

63. In the case of a log-level model with a dummy variable as a regressor, the semi-elasticity of population density concerning equal partition can be calculated as $[(e^{1.164}) - 1] \cdot 100 \approx 220$.

relevant outcomes. We complement our results for 1950 with estimations for 1961 (Online Appendix section A.4.2, Table A.15) and, in Table A.16, we report the results of BDD regressions for demographic outcomes (death and birth rates, age structure etc.). There is no sizable link between equal partition on the age structure, or birth and death rates. In section A.4.4, we present evidence on the relationship between equal partition and municipal industrialization in Württemberg in 1895. For this we use alternative, and historically earlier inheritance data from Krafft (1930). It turns out that our results hold for this earlier period, and this alternative source on municipal inheritance traditions. Finally, in section A.4.5 we explore the relationship between equal partition and measures of local economic development (population density and wage income) for the whole of West Germany in 2014 using the data set of Hager and Hilbig (2019). To conclude, there is a positive and significant relationship between local economic development and equal partition in a data set of all municipalities in Western Germany.

VI. CONCLUSION

We study the consequences of agricultural traditions on the degree of industrialization, and structural change from the 19th to the 21st century. In line with our predictions, equal partition was conducive to growth. It fettered the population to their small plots, but when the putting-out system allowed them to allocate a portion of their working time to non-agricultural activities, these equal partition area became the centers of rural industry. This home-based labor was replaced by factories, also in the equal partition system, and formed the nucleus of today's decentralized industry in Southern Germany. Equal partition areas saw a lower level of emigration, attracted capital, and became richer.

Small-scale differences in agricultural inheritance traditions can explain parts of the well-known, uniquely decentralized industrial structure in this area. They may also explain why its economic prosperity (and high level of innovation) rests on small and medium-sized firms instead of large, multinational companies. Our results support the view of German historians that—unlike for example in England–the (comparatively late) industrialization of Germany was a rural phenomenon. Remote areas, where small firms and part-time farmers part-time craftsmen, textile, or tobacco workers, are a crucial part for the understanding of German development. This sheds light on the development of domestic demand, and industrialization processes in other world regions.

On a more general level, this paper questions the perception that European regions developed earlier where their rural population was less constrained from migrating to cities. Our variation within Europe, specifically on inheritance norms, suggests that the conditions of regional development for Europe's industrialization are more complex, and historical accuracy is key for the understanding of regions' individual development paths.

This paper proposes a channel through which agricultural inheritance norms affected the pattern of economic development. It is a natural follow-up question to derive counterfactuals on how Europe, Germany, or Baden-Württemberg would have developed if there was historically only a single (optimal?) inheritance norm. If equal partition had for example never existed, this would have increased migration to cities. How much larger would Stuttgart be today? Would Baden-Württemberg, or Germany, be richer now? All these questions call for more theory, and yet more data.

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A.1. The Map of Inheritance practices of Röhm (1957)

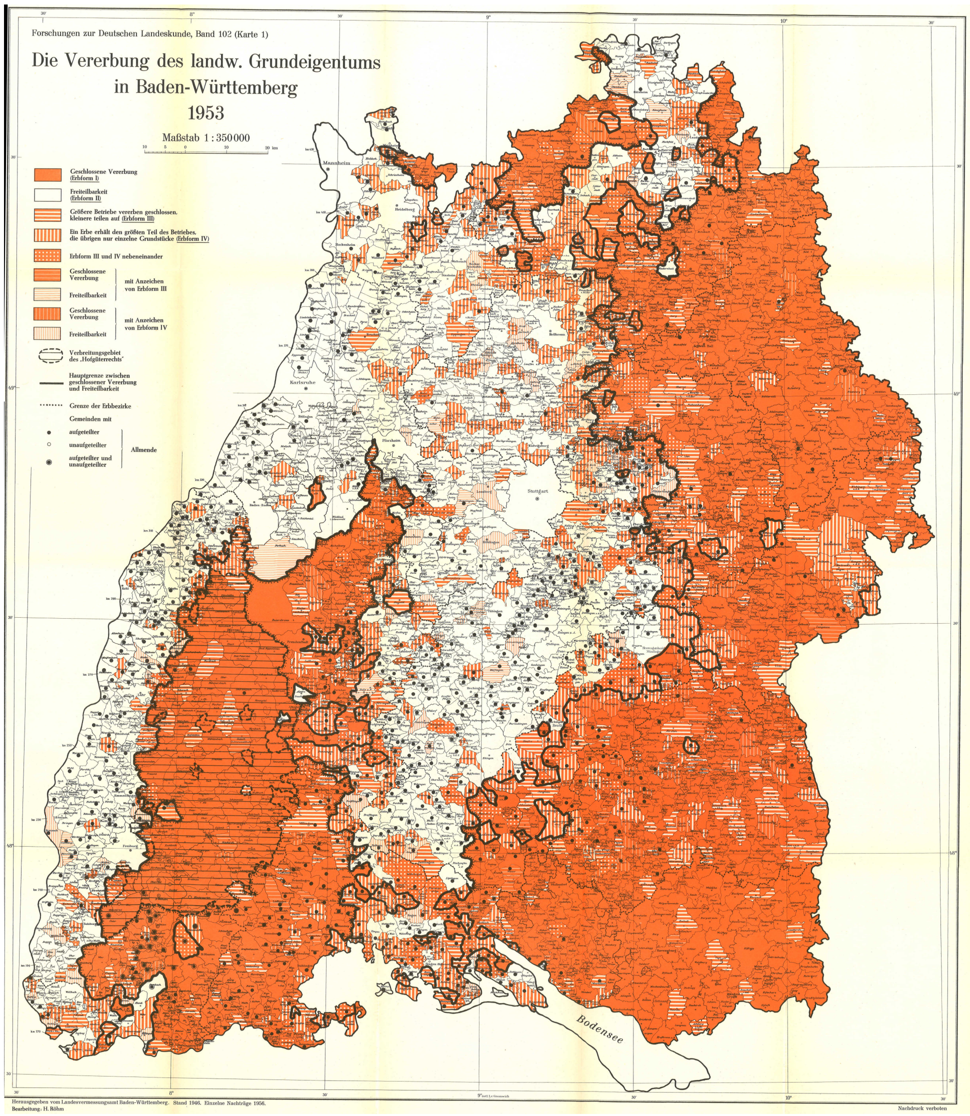


Figure A.1: *Map of Inheritance Practices and Partitioned Common Land in 1953 according to Röhm (1957).*

A.2. Data Set and Variables Description

Table A.1: *Descriptive Overview of the European Grid Cell Data Set*

Variable	Obs	Mean	Std. Dev.	Min	Max
Equal Partition	864	0.520	0.500	0	1
Latitude	864	3.164	7.341	-9.852	17.99
ln(Caloric Suitability Post-1500)	864	7.243	0.639	2.872	7.846
ln(Coal Area)	864	0.902	2.033	0	7.526
ln(Distance to Capital)	864	5.569	0.708	1.488	6.853
ln(Distance to Coast)	864	3.554	2.114	0	6.046
ln(Elevation)	864	5.670	1.116	1.058	7.703
ln(Mean Luminosity)	864	2.425	0.823	0.179	5.280
ln(Median Luminosity)	864	1.905	1.022	0	5.197
ln(Number of Ancient Mines)	864	0.125	0.343	0	1.609
ln(Number of Roman Cities)	864	0.311	0.518	0	2.890
ln(Rivers (km))	864	4.561	2.718	0	7.603
ln(Roman Roads (km))	864	6.554	5.349	0	13.50
ln(Soil Suitability)	864	3.443	0.700	-0.772	4.286
ln(Terrain Ruggedness)	864	4.381	1.003	1.374	6.564
Longitude	864	45.89	5.151	36.39	58.30

Table A.2: *Descriptive Overview of the Data Set for Municipalities as of 1953*

Variable	Obs	Mean	Std. Dev.	Min	Max
Alemannic Dialect	3,382	0.285	0.452	0	1
Birth p.c. 1950	3,372	0.019	0.006	0.002	0.175
Celtic Grave	3,382	0.428	0.991	0.000	13.000
Coal Potential	3,382	209.954	5.895	199.727	227.442
Commons	3,382	0.267	0.442	0.000	1.000
Distance to Eastern Border	3,382	-2.263	41.643	-100.476	85.063
Distance to Imperial City 1556	3,382	11.331	9.843	0.000	51.745
Distance to Rhine or Neckar	3,380	23.572	20.471	0.000	88.011
Distance to Roman Road	3,382	9.713	9.573	0.000	48.148
Elevation (mean)	3,380	474.774	200.677	96.333	1216.923
Employment Share Agriculture 1950	3,378	0.338	0.139	0.011	0.817
Employment Share Industry 1950	3,378	0.389	0.19	0.007	0.893
Equal Partition Area	3,382	0.488	0.500	0.000	1.000
Equal Partition Transition	3,382	0.153	0.360	0.000	1.000
Exclave Equal Partition	3,382	0.012	0.107	0.000	1.000
Exclave Primogeniture	3,382	0.012	0.111	0.000	1.000
Farms per hectare	3,379	13.988	10.027	0.000	259.130
Frankish Dialect	3,382	0.292	0.455	0	1
French Occupation Zone	3,382	0.565	0.496	0.000	1.000
Historical Political Fragmentation	3,379	20075.080	27898.930	71.574	118850.000
Historical Political Instability	3,382	3.724	1.438	0.000	10.000
Intersects Major Railway	3,382	0.17	0.376	0	1
Intersects Minor Railway	3,382	0.304	0.46	0	1
Latitude	3,382	5376216.000	62732.270	5267568.000	5513552.000
Latitude*Longitude	3,382	2690000000000.000	287000000000.000	2060000000000.000	3280000000000.000
ln(Firms per hectare 1950)	3,373	1.542	0.901	-2.596	6.360
ln(Population 1939)	3,378	6.527	0.973	3.258	13.115
ln(Population Density 1950)	3,378	4.631	0.782	1.861	8.608
ln(Population Density 1961)	3,381	4.675	0.892	1.485	8.611
Longitude	3,382	500216.700	51094.990	389401.900	606720.000
Marriages p.c. 1950	3,347	0.010	0.003	0.000	0.112
Market Potential in 1500	3,382	13.016	0.412	12.431	18.337
Migration Balance p.c. 1950	3,263	0.002	0.027	-0.132	0.353
Min. Distance to Urban Center	3,382	41.497	26.546	0.000	125.878
Mixed Inheritance	3,382	0.039	0.193	0.000	1.000
Primogeniture Transition	3,382	0.121	0.326	0.000	1.000
Share <6 Years old	3,375	0.090	0.024	0.006	0.845
Share >65 Years	3,376	0.101	0.051	0.007	1.168
Share 15–20	3,376	0.085	0.034	0.009	0.734
Share 20–45	2,297	0.341	0.083	0.031	3.946
Share 45-65	2,297	0.223	0.032	0.022	0.649
Share 5–15	3,376	0.169	0.038	0.014	1.486
Share Ecclesiastical Territory 1556	3,382	0.124	0.3	0.000	1.000
Share mainly part-time Farmers 1972	1,164	0.553	0.220	0.000	1.000
Share Big Farms	3,375	0.378	0.257	-0.006	1.909
Share Helping Family Members	3,380	0.144	0.081	0.003	0.463
Share part-time Farmers (total) 1972	1,145	0.686	0.181	0.121	1.000
Share Pre-Medieval Forest Area	3,382	0.234	0.4	0	1
Share Protestants 1950	3,378	0.431	0.37	0.000	1
Share Wine and Fruits 1961	3,381	1.765	4.078	0.000	36.500
Shooting Club	3,374	0.0491	0.216	0	1
Soil Suitability (Mean)	3,380	22.258	8.282	0.000	52.000
Swabian Dialect	3,382	0.422	0.494	0	1
Terrain Ruggedness (mean)	3,380	100.496	71.543	2.366	460.234
Tobacco in 1865	3,382	0.119	0.323	0	1
Württemberg in 1789	3,382	0.231	0.421	0.000	1.000

Table A.3: *Descriptive Overview of the Panel Data Set on Proto-Industry Locations used in Table 4*

Variable	Obs	Mean	Std. Dev.	Min	Max
ln(Distance to Textile Facility)	6,764	2.375	0.760	-2.148	4.321
ln(Distance to Tobacco Facility)	6,764	3.214	0.811	-1.915	4.643
ln(Distance to Tobacco or Textile Facility)	6,764	2.261	0.723	-2.148	4.059
Textile Facility within 10 km	6,764	0.434	0.496	0	1
Tobacco Facility within 10 km	6,764	0.131	0.338	0	1
Tobacco or Textile Facility within 10 km	6,764	0.490	0.500	0	1

Table A.4: *Descriptive Overview of the Data Set for Contemporary Municipalities*

Variable	Obs	Mean	Std. Dev.	Min	Max
Alemannic Dialect Area 3,382	0.285	0.452	0	1	
Celtic Grave	1,105	0.405	0.491	0.000	1.000
Coal Potential	3,382	209.954	5.895	199.727	227.442
Distance to Imperial City 1556	1,105	9.467	8.994	0.000	47.45
Distance to Rhine or Neckar	1,105	12.916	12.992	0.000	64.653
Distance to Roman Road	1,105	7.865	8.446	0.000	40.900
Elevation (mean)	1,101	469.448	204.369	95.824	1150.703
Equal Partition Area	1,105	0.514	0.500	0.000	1.000
Exclave Equal Partition	1,105	0.018	0.133	0.000	1.000
Exclave Primogeniture	1,105	0.018	0.133	0.000	1.000
Frankish Dialect Area	3,382	0.29	0.455	0	1
French Occupation Zone	1,105	0.5312217	0.4992502	0	1
Historical Political Fragmentation	1,105	18735.050	24752.880	108.754	99351.710
Historical Political Instability	1,105	4.474	1.937	1.000	13.000
ln(Income per capita 2006)	1,101	2.64	0.145	2.005	3.564
Market Potential in 1500	3,382	11.72	0.307	11.412	14.332
Min. Distance to Urban Center	1,105	35.920	27.763	0.000	122.201
Share Ecclesiastical Territory 1556	1,105	0.128	0.28	0.000	1.000
Share Industrial Area 2019	1,105	0.690	1.043	0.000	11.005
Share Industry Buildings 2010	1,105	0.013	0.014	0.000	0.145
Share Pre-Medieval Forest Area	1,105	0.24	0.388	0	1
Shooting Club Dummy	3,374	0.049	0.216	0	1
Soil Suitability (mean)	1,105	58.572	15.890	0.000	84.667
Swabian Dialect Area	3,382	0.422	0.494	0	1
Terrain Ruggedness (mean)	1,101	101.590	71.159	3.267	394.681
Latitude	1,105	5375100.000	59102.100	5267375.000	5510273.000
Longitude	1,105	500146.000	50903.090	392342.400	604822.000
Latitude*Longitude	1,105	2690000000000.000	283000000000.000	2070000000000.000	3270000000000.000
Württemberg in 1789	1,105	0.246	0.431	0.000	1.000

Table A.5: *Descriptive Overview of the Data Set of Family Names from WWI Casualties Lists*

Variable	Obs	Mean	Std. Dev.	Min	Max
Distance to Imperial City	30,649	6.72981	6.94244	0.00000	46.76791
Distance to Major River	30,649	11.45856	12.10523	0.00000	72.14777
Distance to Roman Road	30,649	6.46192	7.63433	0.00000	48.14753
Elevation (mean)	30,647	374.07630	174.54170	96.33333	1100.66700
ln(No. of Municipalities with this Family Name)	30,649	0.72009	1.01907	0.00000	6.98194
ln(Share of Entries in Equal Partition Area)	30,649	0.48925	0.27123	0.00000	0.69315
Mobilization Rate 1914 (mean)	30,649	0.00677	0.01217	0.00000	0.05893
No. of Entries per Municipality	30,649	2328.59400	3838.80300	1.00000	16262.00000
No. of Entries with this Family Name	30,649	12.97334	66.57548	1.00000	5248.00000
No. of Municipalities with this Family Name	30,649	5.00822	18.60883	1.00000	1077.00000
Protestant Dummy	30,649	0.64276	0.47919	0.00000	1.00000
Share Artillery Mobilization (mean)	30,649	0.00002	0.00004	0.00000	0.00023
Share Infantry Mobilization (mean)	30,649	0.03652	0.06138	0.00000	0.27438
Share of Entries in Equal Partition Area	30,649	0.68664	0.39707	0.00000	1.00000
Share Reserve (mean)	30,649	0.00604	0.01003	0.00000	0.04272
Soil Suitability (mean)	30,647	22.05572	6.66950	0.00000	52.00000
Terrain Ruggedness (mean)	30,647	88.94053	56.48000	3.54959	460.23380

Table A.6: *Descriptive Overview of the "50km around Stuttgart" data set*

Variable	Obs	Mean	Std. Dev.	Min	Max
Barely Suitability	892	60.214	18.677	3.000	85.000
Distance to Imperial City	892	7.013	6.679	0.000	27.183
Distance to Rhine or Neckar	892	13.852	9.641	0.000	39.972
Distance to Roman Road	892	4.023	4.307	0.000	18.448
Distance to Stuttgart	892	23.167	11.374	0.000	41.553
Elevation (mean)	890	419.025	152.293	169.625	820.800
Employment Share Agriculture 1950	889	0.309	0.162	0.011	0.710
Employment Share Industry 1950	889	0.418	0.121	0.098	0.817
Equal Partition	892	0.516	0.500	0.000	1.000
Historical Political Fragmentation	892	10818.090	17199.100	159.942	92386.520
ln(Firms per hectare 1950)	887	1.969	0.765	-2.596	5.005
ln(Population Density 1950)	889	4.994	0.761	-0.741	7.782
Maize Suitability	892	10.458	5.131	0.000	28.636
Market Potential in 1500	892	13.116	0.286	12.655	14.787
Migration Balance p.c. 1950	860	0.001	0.021	-0.072	0.107
Potato Suitability	892	38.885	6.269	18.704	48.000
Seasonality of Precipitation	892	17.699	5.057	10.672	28.871
Share Ecclesiastical Territory	892	0.048	0.189	0.000	1.000
Terrain Ruggedness (mean)	892	151.060	80.694	24.203	494.897
Wine Growing before 1624	892	0.635	0.482	0	1
Winter Wheat Suitability	892	56.056	17.850	3.000	83.000

Table A.7: *Descriptive Overview of the Data Sets used for the Placebo IV Tests in Table A.18*

	Obs	Mean	Std. Dev.	Min	Max
	Sample: 50km around Munich				
Distance to Munich	302	31.65	12.39	0	49.93
Distance to Wittenberg	302	422.7	25.71	369.7	481.5
Elevation	302	280.7	48.88	210.9	532.0
ln(Average Wage Income 2014)	290	10.38	0.186	9.703	11.41
Peasant Wars Dummy	302	0.055	0.131	0	0.907
Roman Dummy	302	0.997	0.058	0	1
Seasonality of Precipitation	302	32.37	2.428	26.80	38.26
	Sample: 50km around Bremen				
Distance to Bremen	158	32.81	12.49	0	49.87
Elevation	158	13.34	7.849	-0.074	31.04
ln(Average Wage Income 2014)	158	10.14	0.104	9.709	10.46
Roman Dummy	158	289.5	26.11	237.0	349.9
Seasonality of Precipitation	158	16.00	1.508	14.41	21.12
	Sample: 50 km around Hamburg				
Distance to Hamburg	496	34.76	10.02	0	49.93
Elevation	496	16.12	10.78	-2.464	63.43
ln(Average Wage Income 2014)	493	10.25	0.155	9.942	11.64
Roman Dummy	496	261.7	27.14	204.4	310.6
Seasonality of Precipitation	496	16.40	1.255	13.81	19.28
	Sample: 50km around Hanover				
Distance to Hanover	182	34.05	11.88	0	49.96
Elevation	182	48.07	32.16	11.63	173.3
ln(Average Wage Income 2014)	176	10.14	0.097	9.862	10.48
Roman Dummy	182	211.4	29.50	152.0	262.4
Seasonality of Precipitation	182	14.13	0.891	11.97	16.43
	Sample: 50km around Kiel				
Distance to Kiel	470	31.04	13.08	0	49.92
Elevation	470	14.25	7.771	-0.507	54.33
ln(Average Wage Income 2014)	465	10.15	0.160	8.619	11.10
Roman Dummy	470	323.2	26.84	270.1	375.0
Seasonality of Precipitation	469	18.76	1.594	15.42	23.18

Table A.8: *Descriptive Overview of the Data Set for 1895 Württemberg Municipalities*

Variable	Obs	Mean	Std. Dev.	Min	Max
Celtic Grave	1,912	0.292	0.455	0.000	1.000
Distance to Imperial City 1556	1,912	7.392	6.791	0.000	32.553
Distance to Rhine or Neckar	1,912	17.924	16.456	0.000	72.528
Distance to Roman Road	1,912	7.140	8.712	0.000	48.456
Distance to Urban Center	1,912	45.137	22.230	0.004	106.217
Elevation (mean)	1,912	496.541	155.836	165.800	934.500
Equal Partition	1,912	0.395	0.489	0.000	1.000
Historical Political Fragmentation	1,909	14510.030	22129.960	74.152	105329.100
Historical Political Instability	1,912	3.602	1.418	0.000	8.000
Intersects Major Railway	1,912	0.154	0.361	0.000	1.000
Intersects Minor Railway	1,912	0.144	0.352	0.000	1.000
Latitude	1,912	48.625	0.427	47.599	49.580
ln(Farms per hectare 1895)	1,910	-1.906	0.663	-4.808	1.920
ln(Firms per hectare 1895)	1,363	-2.721	0.790	-5.352	1.553
ln(Population Density 1834)	1,909	-0.307	0.898	-3.520	3.496
ln(Population Density 1895)	1,909	-0.193	0.927	-3.219	3.981
Longitude	1,912	9.403	0.494	8.304	10.454
Share Ecclesiastical Territory 1556	1,912	0.083	0.247	0.000	1.000
Share Pre-Medieval Forest Area	1,912	0.164	0.347	0.000	1.000
Share Protestants	1,832	0.649	0.442	0.001	1
Soil Suitability	1,912	63.301	12.892	0.000	85.000
Terrain Ruggedness (mean)	1,912	74.901	43.597	7.652	299.750
Württemberg 1789	1,912	0.434	0.496	0.000	1.000

Table A.9: *Bivariate Correlations of the Predictor Variables of Historical Inheritance Traditions*

Variables	Distance to Imperial City 1556	Distance to Roman Road	Distance to Rhine or Neckar	Distance to Urban Center	Elevation	Historical Political Fragmentation	Historical Political Instability	Share Ecclesiastical Territory 1556	Share Pre-Medieval Forest Area	Share Protestants 1950	Share Wine and Fruits 1961	Soil Suitability	Terrain Ruggedness
Distance to Imperial City 1555	1.000												
Distance to Roman Road	0.258	1.000											
	(0.000)												
Distance to Rhine or Neckar	-0.157	0.410	1.000										
	(0.000)	(0.000)											
Distance to Urban Center	-0.373	0.317	0.691	1.000									
	(0.000)	(0.000)	(0.000)										
Elevation	-0.052	0.208	0.286	0.334	1.000								
	(0.003)	(0.000)	(0.000)	(0.000)									
Historical Political Fragmentation	0.162	0.012	-0.121	0.016	0.245	1.000							
	(0.000)	(0.504)	(0.000)	(0.345)	(0.000)								
Historical Political Instability	-0.153	0.033	0.140	0.230	0.114	-0.010	1.000						
	(0.000)	(0.052)	(0.000)	(0.000)	(0.000)	(0.579)							
Share Ecclesiastical Territory 1556	0.083	0.071	0.158	0.177	-0.102	-0.161	0.028	1.000					
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.108)						
Share Pre-Medieval Forest Area	0.297	0.125	-0.159	-0.313	0.211	0.079	-0.041	-0.082	1.000				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.018)	(0.000)					
Share Protestants 1950	-0.048	0.006	-0.136	-0.218	-0.140	-0.214	-0.091	-0.180	0.035	1.000			
	(0.005)	(0.738)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.040)				
Share Wine and Fruits 1961	0.021	-0.109	-0.258	-0.234	-0.383	0.019	-0.075	-0.045	-0.115	0.072	1.000		
	(0.213)	(0.000)	(0.000)	(0.000)	(0.000)	(0.274)	(0.000)	(0.008)	(0.000)	(0.000)			
Soil Suitability	-0.226	-0.086	0.126	0.184	-0.004	-0.135	0.034	0.015	-0.410	0.057	-0.015	1.000	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.795)	(0.000)	(0.047)	(0.377)	(0.000)	(0.001)	(0.370)		
Terrain Ruggedness	0.265	0.162	-0.177	-0.204	0.297	0.150	-0.021	-0.102	0.447	-0.028	0.029	-0.271	1.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.224)	(0.000)	(0.000)	(0.105)	(0.091)	(0.000)	

A.2.1. Definitions and Sources of the Variables

The spatial data sets were each converted into ETRS89 UTM 32N projection. GIS computations were performed with the QGIS software. Variables from the official statistics of Baden-Württemberg are explained in detail in the main text and are not included in the list below.

Celtic Grave. Dummy variable equal to one if in a municipality archaeologists have found at least one Celtic grave. Variable calculated using a digitized version of the following map from Kommission für geschichtliche Landeskunde in Baden-Württemberg (1988): https://www.leo-bw.de/media/kgl_atlas/current/delivered/bilder/HABW_03_02.jpg (accessed latest on 27th March 2019).

Coal Area. The size of the coal fields within a grid cell. Data on the size and location of carboniferous geological areas is taken from Asch (2005).

Coal Potential. A municipality's access to coal is measured as the as the size of the late carboniferous geological areas around it in km^2, weighted by their distance to the municipality in km. Data on the size and location of carboniferous geological areas is taken from Asch (2005).

Dialect Areas. Dummy variables equal to one if a municipality is located in one of three dialect areas in Baden-Württemberg, which are the Alemannic, Frankish and Swabian dialect areas. Municipalities are assigned to dialect areas based on a map of dialect areas in the "Sprachatlas Baden-Württemberg" (Language Atlas of Baden-Württemberg) a project hosted by the University of Tübingen and financed by the federal ministry of Science and Arts of Baden-Württemberg. The atlas map can be accessed here: https://escience-center.uni-tuebingen.de/escience/sprachatlas/#8/48.675/8.987 (accessed last on 3rd March, 2021) . The atlas is a so called "speaking language atlas" meaning that its dialect areas are identified by differences in the way actual people (question by the creators) pronounce certain key words in certain villages. The original map identifies 3 main dialect areas and overall 15 different sub-dialects (like southern Swabian, central-east Swabian or eastern Frankish). We do not consider these sub-dialect areas in our analysis.

Distance to Capital. Distance f . Location of National capitals is taken from the shapefile "National & Provincial Capitals of Europe". Downloaded from http://tapiquen-sig.jimdo.com. Carlos Efrain Porto Tapiquen. Orogenesis Soluciones Geograficas.

Distance to Imperial City 1556. Distance to city states is calculated as follows: Points with random location were generated until 1,000 points fell in into each municipality. In a second step, the Euclidean distance from each of the 1,000 points per municipality to the closest Imperial city was calculated. In a last step, these distances were aggregated by municipality. The location of city states follows the maps of territories of the HRE in 1556 by Wolff (1877) but we have corrected/ supplemented them—if necessary—with information from Köbler (1988), Keyser and Stoob (1939–1974) and Jacob (2010).

Distance to Neolithic Settlement Area. Distance to Neolithic settlement area is calculated as follows: Points with random location were generated until 1,000 points fell in into each municipality.

In a second step, the Euclidean distance from each of the 1,000 points per municipality to the closest segment of the Neolithic settlement area polygons was calculated. In a last step, these distances were aggregated by municipality. Variable calculated using a digitized version of the following map from Kommission für geschichtliche Landeskunde in Baden-Württemberg (1988): https://www.leo-bw.de/media/kgl_atlas/current/delivered/bilder/HABW_03_01.jpg (accessed latest on 27th March 2019).

Distance to Rhine and Neckar. Distance to those rivers is calculated as follows: Points with random location were generated until 1,000 points fell in into each municipality. In a second step, the Euclidean distance from each of the 1,000 points per municipality to the closest of both rivers was calculated. In a last step, these distances were aggregated by municipality. For the location of the rivers, we used the data set for 'WISE large rivers' shapefile, which can be downloaded here: https://www.eea.europa.eu/data-and-maps/data/wise-large-rivers-and-large-lakes(last accessed May, 30th 2016).

Distance to Roman Roads. Distance to (minor and major) Roman roads is calculated as follows: Points with random location were generated until 1,000 points fell in into each municipality. In a second step, the Euclidean distance from each of the 1,000 points per municipality to the closest Roman road was calculated. These distances were aggregated by municipality. Locations of Roman roads (minor and major) originate from a shapefile included in the "Digital Atlas of Roman and Medieval Civilizations" (McCormick et al. 2013). The shapefile is based on the map of Roman roads in the Barrington Atlas of the Greek and Roman World (Talbert 2000). It can be downloaded here: http://darmc.harvard.edu/icb/icb.do?keyword=k40248&pageid=icb.page601659 (last accessed September, 24th 2015).

Elevation (mean). Mean elevation of each municipality in meters. Data is based on the Digital Elevation Model (DEM) of the U.S. Geological Survey's Center for Earth Resources Observation and Science (EROS), namely the GTOPO30 data set, which can be downloaded here https://lta.cr.usgs.gov/GTOPO30 (last accessed May, 30th 2016). The GTOPO30 has a spatial resolution of 30 arc seconds.

Equal Partition. Dummy variable equal to one if more than 90 % of a grid cell's area has equal partition as dominant inheritance practice. Based on a map of the spatial distribution of inheritance practices in Europe printed in Todd (1990).

French Occupation Zone. Dummy variable equal to one if the majority of a municipality was located within the French Occupation Zone. Assignment of municipalities to the French Occupation Zone is based on the shapefile of the French Occupation zone provided by Schumann (2014).

Historical Political Fragmentation. Historical average state size of the states intersecting the municipality in km^2. Variable is calculated using digitized versions of the maps of the HRE printed in Wolff (1877).

Historical Political Instability. The variable reports the number of different historical states intersecting a municipality. Variable is calculated using digitized versions of the maps of the HRE printed in Wolff (1877).

Intersects Major Railway. Dummy Variable if a major railway line ("Haupteisenbahnlinie") intersects the area of a municipality. The Variable is based on a digitized version of the following map from Kommission für geschichtliche Landeskunde in Baden-Württemberg (1988): https://www.leo-bw.de/media/kgl_atlas/current/delivered/bilder/HABW_10_04.jpg (accessed latest on 27$^{\text{th}}$ March 2019). The map shows the railway network after its last wave of expansion in 1934.

Intersects Minor Railway. Dummy Variable if a minor railway line ("Regionale Eisenbahnlinie"or "Nebeneinsenbahnlinie") intersects the area of a municipality Variable is based on a digitized version of the following map from Kommission für geschichtliche Landeskunde in Baden-Württemberg (1988): https://www.leo-bw.de/media/kgl_atlas/current/delivered/bilder/HABW_10_04.jpg (accessed latest on 27$^{\text{th}}$ March 2019). The map shows the railway network after its last wave of expansion in 1934.

Market Potential in 1500. A municipality's market potential is calculated following the methodology of Crafts (2005). Unlike Crafts measure of regional economic potential, our measure is not based on the GDP of all other municipalities, but on the population size of the historical cities included in the database of Bairoch, Batou, and Chevre (1988).

Minimum Distance to Urban Center. Distance to the closest of these urban centers, namely Freiburg, Heidelberg, Mannheim, Karlsruhe or Stuttgart is calculated as follows: Points with random location were generated until 1,000 points fell in into each municipality. In a second step, the Euclidean distance from each of the 1,000 points per municipality to the closest of those cities was calculated. In a last step, these distances were aggregated by municipality. Location of the cities is determined by the minimum latitudinal and longitudinal coordinates of the city and based on the shapefile of municipalities resulting from digitization of the map of Röhm (1957).

Number of Ancient Mines. No of ancient gold, silver, iron, copper and lead mines in a grid cell. Information on the locations of the mines originate from a shapefile included in the "Digital Atlas of Roman and Medieval Civilizations" (McCormick et al. 2013). The shapefile is based on the map of Roman roads in the Barrington Atlas of the Greek and Roman World (Talbert 2000). It can be accessed here: https://harvard-cga.maps.arcgis.com/apps/View/index.html?appid=b38db47e08ca40f3a409c455ebb688db (last accessed March, 3rd 2021)

Latitude. Minimum longitudinal coordinates a municipality's centroid (mid-point) in meters.

Longitude. Minimum longitudinal coordinates of a municipality's centroid (mid-point) in meters.

Rivers (km). Variable giving the kilometers of major rivers passing through the area of a grid cell.

For the location of the rivers, we used the data set for 'WISE large rivers' shapefile, which can be downloaded here: https://www.eea.europa.eu/data-and-maps/data/wise-large-rivers-and-large-lakes(last accessed May, 30th 2016).

Roman. Dummy variable equal to one if a grid cell is located in the historical Roman Empire as of 200 AD, when it had reached its largest extent. Assignment of grid cells to the Roman Empire is based on a shapefile of the Roman border from the "Digital Atlas of Roman and Medieval Civilizations" (McCormick et al. 2013). The shapefile is based on the map of Roman roads in the Barrington Atlas of the Greek and Roman World (Talbert 2000). It can be accessed here: https://harvard-cga.maps.arcgis.com/apps/View/index.html?appid=b38db47e08ca40f3a409c455ebb688db (last accessed March, 3rd 2021)

Seasonality of Precipitation. Variable is the coefficient of variation of monthly precipitation in mm, averaged over the period from 1970 to 2000. It originates from the bioclimatic variables provided by the WorldClim database version 2.1 (https://www.worldclim.org/data/bioclim.html). We aggregated the 30*30 arc seconds raster data provided by WorldClim to the level of municipalities by averaging over all the pixels located within area of a municipality.

Share Ecclesiastical Territory 1556. Variable is the share of a municipality's area that was located in an ecclesiastical state in 1556. The map of territories within the current state of Baden-Württemberg originates from Huning and Wahl (2020).

Share Equal Partition. Share of a grid cell's area that has equal partition as dominant inheritance practice. Based on a map of the spatial distribution of inheritance practices in Europe printed in Todd (1990).

Share Industrial Area 2019. Variable that indicates the share of a municipalities area that is used for industrial purposes. This variable is generated by extracting industry area polygons from OpenStreetMap data using the respective tool in QGIS. Data represents the situation as of 10^{th} March 2019.

Share Industry Buildings 2010. Represents the share of industry buildings (factories etc.) of all buildings in a municipality as of 2010. Variable originates from the data set of Asatryan, Havlik, and Streif (2017).

Share Pre-Medieval Forest Area. The share of each municipality's area that is located in pre-medieval forest area. Variable is calculated based on a digitized version of a map by Ellenberg (1990).

Shooting Club Dummy. Dummy variable equal to one if a municipality has at lase one shooting club in 1950. The source of this data is a dissertation by Plett (1991). He assembled a data base of shooting clubs based on reports given by the clubs themselves, archival materials, and membership lists of subordinate provincial level associations. The data set can be downloaded after registration at the GESIS-histat catalogue here: https://search.gesis.org/research_data/ZA8112 (accessed last on 3rd March, 2021).

Slope (mean). Average terrain slope of each municipality. Data is based on the Digital Elevation Model (DEM) of the U.S. Geological Survey's Center for Earth Resources Observation and Science (EROS), namely the GTOPO30 data set, which can be downloaded here https://lta.cr.usgs.gov/GTOPO30 (last accessed May, 30th 2016). The GTOPO30 has a spatial resolution of 30 arc seconds.

Soil Suitability. Soil Suitability is based on the agricultural suitability measure developed in Zabel, Putzenlechner, and Mauser (2014).[1] The measure used in the paper is average agricultural suitability in the period 1961–1990. Zabel, Putzenlechner, and Mauser (2014) measure agricultural suitability by considering climate (temperature, precipitation, solar radiation), soil (pH, texture, salinity, organic carbon content, etc.), and topography (elevation and slope) of a grid cell of 30 arc seconds*30 arc seconds (0.86 km^2 at the equator) size. They consider rain-fed conditions as well as irrigation (what could, among other things, give rise to endoeneity issues). To compute agricultural suitability, they contrast these factors with growing requirements of 16 plants (Barley, Cassava, Groundnut, Maize, Millet, Oilpalm, Potato, Rapeseed, Rice, Rye, Sorghum, Soy, Sugarcane, Sunflower, Summer wheat, Winter wheat).

Terrain Ruggedness (Mean). Following Riley, DeGloria, and Elliot (1999) average ruggedness of a municipality's territory is calculated as the negative value of the derivative of the ruggedness index of a digital elevation model. The calculations are based on the elevation raster of Nunn and Puga (2012) (see above).

Württemberg 1789. Dummy Variable equal to one if the majority of a municipality was located in the Duchy of Württemberg in 1789. Assignment of municipalities to the historical duchy is based on the map of territories in 1789 from Huning and Wahl (2020).

A.3. Robustness Checks

Our results are robust to various sensitivity tests and empirical exercises. A common robustness check for spatial RDDs is a placebo border test. In such a test, one shifts the border a certain amount to the north, east, west, or south and re-assigns treatment units accordingly to the new, (placebo) treatment area. There should be no significant effect at this 'false' border—as it is located entirely in either the treated or untreated area. In our case, we shift the border 15 and 20 kilometers to the west and to the east and re-run the spatial RDDs using the ten kilometer buffer. We run placebo tests with the outcome variables from Table 6 in the main text. We always include the full set of control variables and cluster standard errors on county level. A fuzzy RDD like we have conducted before would not yield reliable estimates, as the new equal partition area dummy would be a bad proxy for being an actual equal partition municipality. This is because almost none of them are actually equal partition municipalities but primogeniture or transitional

1. The data set is described further here: http://geoportal-glues.ufz.de/stories/globalsuitability.html (last accessed on January 22, 2016), where it also can be downloaded.

ones. Therefore, we can conduct this placebo test only be estimating a sharp RDD using the equal partition area dummy as treatment variable. This is however also an insightful robustness check.

We report the results of the sharp RDD using the actual equal partition area dummy as treatment variable in Panel A of Table A.10. We consider only border municipalities for the sharp RDD as this is the most demanding specification. Results show statistically and economically significant coefficients that are nevertheless smaller than those got with the fuzzy-RDD. Given that a sharp BDD could be seen as an intention-to-treat model, it should give us the lower bound of the actual effect of equal partition. Panel B of that table shows results of shifting the border 15 kilometer eastwards—all observations are actually in the primogeniture area. Panel C shows a shift of the border 15 kilometer westwards—all observations are actual in the equal partition area. Panel D shows the consequences of shifting the border 20 kilometers eastwards, and in Panel E, the border is shifted 20 kilometer westwards. Reassuringly, for all placebos borders, almost all coefficients are notably smaller and statistically insignificant. There are two exceptions in columns (3) and (4) of Panel C, when the border is shifted westwards. There, we find significant coefficients for the employment shares in industry and agriculture. Those, however, have the wrong sign. We can conclude from the placebo test that the baseline results seem not to be due to statistical coincidence.

In TableA.11, we present the results of two further robustness checks. First, Panel A shows the result of the 'Donut BDD'. This means we leave out the municipalities immediately to the east and west of the border when estimating the fuzzy BDD. This can be useful to account for selective sorting, measurement error (wrongly assigned municipalities) and to account for the fact that along the border, it could occur that someone had a farm in the equal partition area but some fields were located in the nearby primogeniture area—introducing noise in our measure of inheritance traditions. Because we lose a significant amount of observations by leaving out the border municipalities, we enlarge the buffer area for those regressions to twenty kilometer. All results but those for the migration balance per capita remain intact and show statistically and economically significant effects.

In Panel B, we address the concern that Stuttgart is part of the sample, but its size could be unrelated to the inheritance rule. This historical residential city, today one of the largest agglomerations in Europe, could drive the results in favor of the equal partition area it is part of. Our results are robust to estimating the BDD just for the rural areas to the south and north of Stuttgart. We exclude the border segment containing Stuttgart and the eastern part of it agglomeration.

We choose the five kilometer buffer area to ensure that the included municipalities are further away from Stuttgart and its suburbs. The resulting coefficients are highly statistically significant and of qualitatively the same size as the original ones. Hence, Stuttgart and its large agglomeration and industry area are not behind our results.

We show the results of further robustness checks. In Table A.12, Panel A, we present BDD estimates using 15 instead of five border segments and re-estimate the BDD from the baseline applying the ten kilometer buffer area. This leaves on average only 33 municipalities on each side of the border and within each segment as observations. We find quantitatively and qualitatively similar results to the baseline estimates. If anything results regarding the migration balance per capita are stronger than in the baseline case and remain statistically significant.

Table A.10: *Robustness Checks I—Sharp BDD and Placebo Border*

Dependent Variable	ln(Population Density 1950)	ln(Firms per Hectare 1950)	Employment Share Industry 1950	Employment Share Agriculture 1950	Migration Balance p.c. 1950
	(1)	(2)	(3)	(4)	(5)
			Panel A: Sharp BDD (Border Municipalities)		
Equal Partition	0.23***	0.252**	0.052**	-0.054**	0.005**
	(0.072)	(0.084)	(0.019)	(0.021)	(0.002)
Observations	267	267	267	267	261
R^2	0.514	0.399	0.495	0.482	0.575
			Panel B: Shifted 15 km Eastwards		
Equal Partition	-0.128	-0.176	-0.0081	0.002	-0.0023
	(0.079)	(0.116)	(0.016)	(0.022)	(0.004)
Observations	594	593	594	594	569
R^2	0.378	0.285	0.514	0.466	0.423
			Panel C: Shifted 15 km Westwards		
Equal Partition	-0.125	-0.179	-0.0418**	0.0575**	-0.0004
	(0.01)	(0.132)	(0.019)	(0.027)	(0.004)
Observations	462	462	462	462	446
R^2	0.561	0.463	0.403	0.452	0.555
			Panel D: Shifted 20km Eastwards		
Equal Partition	0.111	0.0840	0.0187	0.0024	0.003
	(0.01)	(0.128)	(0.012)	(0.018)	(0.004)
Observations	542	541	542	542	516
R^2	0.274	0.231	0.462	0.417	0.452
			Panel E: Shifted 20km Westwards		
Equal Partition	0.0589	0.0692	0.0208	-0.0346	0.0025
	(0.085)	(0.110)	(0.017)	(0.023)	(0.003)
Observations	420	420	420	420	409
R-squared	0.481	0.390	0.392	0.462	0.582
Border Segment FEs	✓	✓	✓	✓	✓
Geographic Controls	✓	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓	✓
French OZ Dummy	✓	✓	✓	✓	✓
Distance to Urban Center	✓	✓	✓	✓	✓
Intersects Major Railway	✓	✓	✓	✓	✓
Intersects Minor Railway	✓	✓	✓	✓	✓

Notes. Standard errors clustered on county (Landkreis) level are in parentheses. Coefficient is statistically different from zero at the ***1 %, **5 % and *10 % level. The unit of observation is a municipality in 1953. All regressions include a constant not reported. Geographic controls include mean elevation, terrain ruggedness and soil suitability as well as the share of agricultural area used to grow wine and fruits in 1961, and distance to Rhine or Neckar. Historical controls encompass distance to the closest Imperial city as of 1556, distance to next certain Roman road, a dummy variable for municipalities with at least one Celtic grave, historical political fragmentation and instability, the share of a municipalities total area that is located in ecclesiastical territories in 1556, pre-medieval forest areas, the share of Protestants in 1961 and a dummy for municipalities which belonged to the Duchy of Württemberg in 1789.

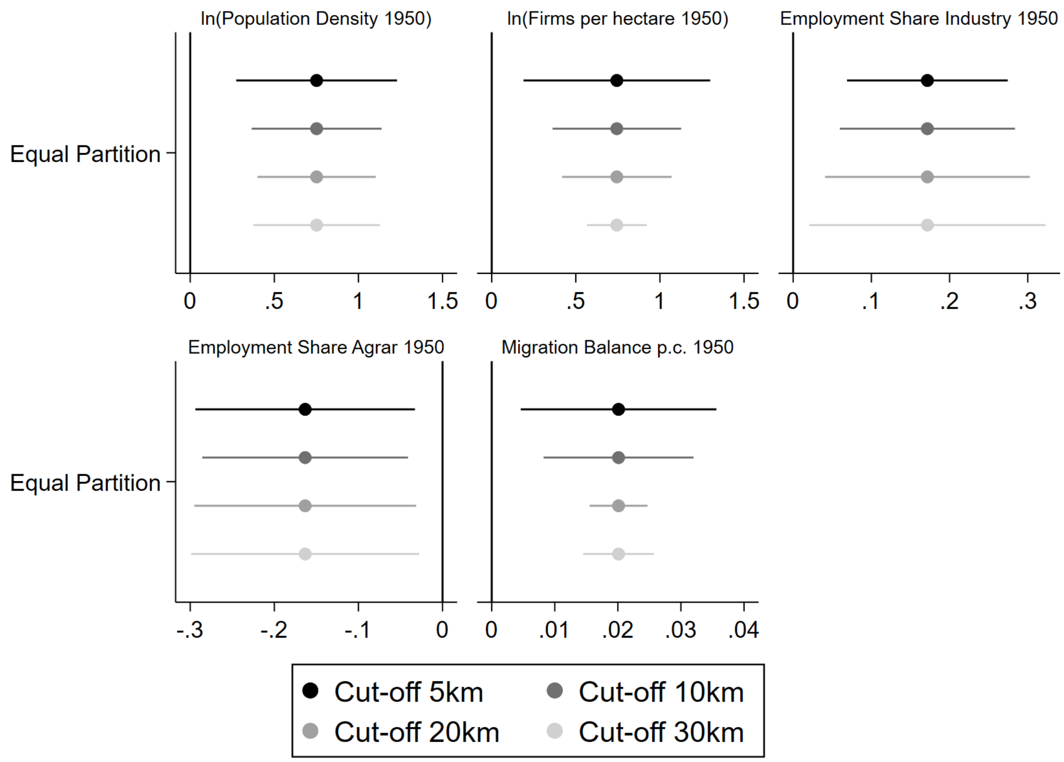
As the effect size remains large, we attribute this to the low number of observations and the the problem that maybe too less variation was left to estimate the coefficient precisely enough. In Panel B, we include dummy variables for each historical state a municipality was located in 1789 to the full set of baseline controls and re-estimate the BDD. We gain virtually identical results. In Panel C, we control for coal access, as measured by the size of late carboniferous geological areas in km^2, weighted by their distance to the municipality in km. We also control for market potential in 1500 AD (based on the Bairoch data set of historical city populations) which is calculated according to the methodology of Crafts (2005).[2] While market potential in 1500 AD is significant in two cases, coal access is never, and thus, the results are almost identical to those of the baseline estimations.[3]

Table A.13 presents the results of two more checks. In Panel A, we again use the 5 km buffer and include a quadratic distance polynomial instead of a linear one in the regression. Results are almost unchanged. Thus, the exact shape of the polynomial of the forcing variable is not a decisive point for our results. In Panel B, we include exclaves of the respective other basic inheritance tradition in the regression sample. As before, results change little with the exclaves included.

Next, we test whether our results are robust to spatial autocorrelation. We test this by re-estimating the baseline fuzzy BDD regressions, but this time calculating standard errors adjusted for spatial autocorrelation according to the method of Conley (1999). We compute Conley Standard errors for 5,10,20, and 30km cut-off points after which the spatial autocorrelation is assumed to be zero. Results are shown graphically in Figure A.2. The coefficients stay significant regardless of the applied cut-off point. Thus, our results are robust to spatial autocorrelation. To further test the sensitivity of the BDD results for the use of different types of standard errors, we finally, estimate the BDD using heteroskedasticity robust (Huber-White) standard errors. Figure A.3 shows the results. Again, the coefficients remain significant, if anything their significance increases due to the use of such standard errors.

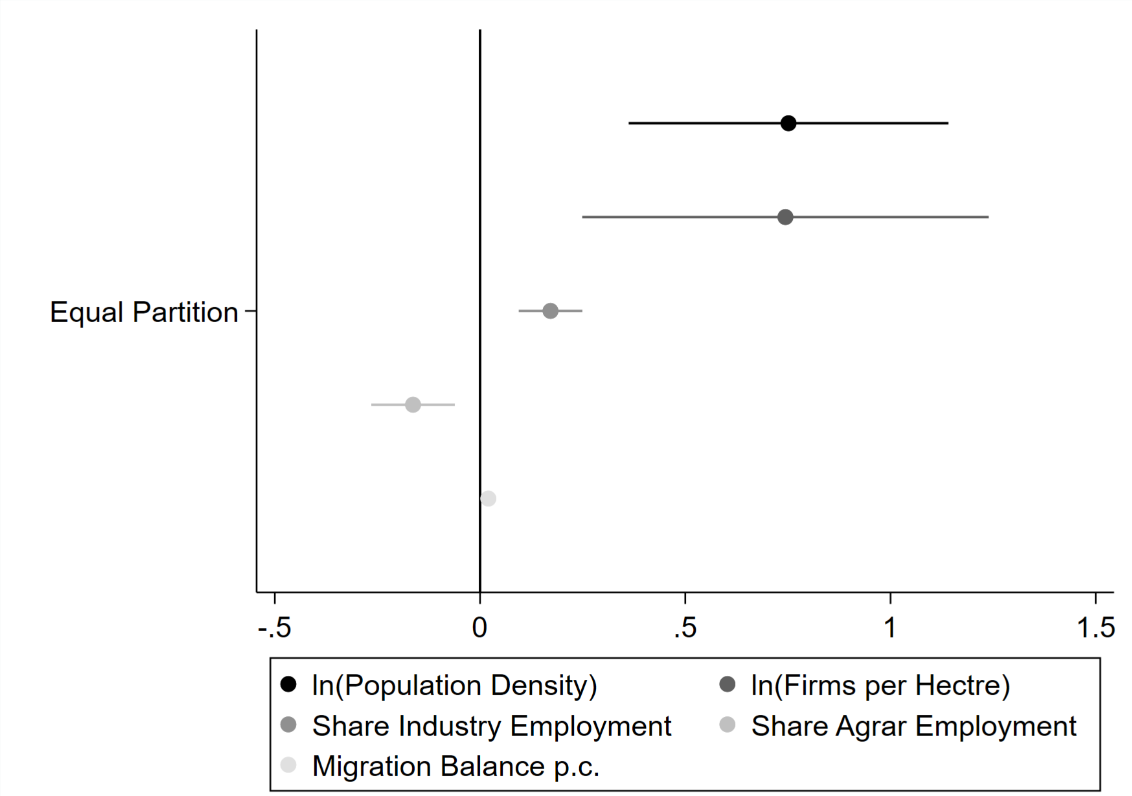
Our baseline results have proven to be robust to a battery of commonly applied and useful robustness checks. This raises our confidence that the effects we have identified are actually representing the effect of equal partition on industrialization and structural change and not something else.

2. For a comprehensive description of both variables, the reader is referred to the Data Appendix.
3. If we had included market potential in 1800 or 1900 results would be almost unaffected.



Note: The different panels of this figure show the coefficient estimates (as dots) of the baseline BDD estimation (with the 5 km buffer, linear distance polynomials and all controls) for different outcome variables and cut-off points. The solid lines represent 90% confidence intervals.

Figure A.2: *BDD Results Using Standard Errors Adjusted for Spatial Autocorrelation (according to Conley (1999))*



Note: The different panels of this figure show the coefficient estimates (as dots) of the baseline BDD estimation (with the 5 km buffer, linear distance polynomials and all controls) for different outcome variables. The solid lines represent 90% confidence intervals.

Figure A.3: *BDD Results Using Heteroskedasticity Robust Standard Errors*

Table A.11: *Robustness Checks II—Donut BDD and Estimation without the Border Segment Containing Stuttgart*

Dependent Variable	ln(Population Density 1950)	ln(Firms per Hectare 1950)	Employment Share Industry 1950	Employment Share Agriculture 1950	Migration Balance p.c. 1950
	(1)	(2)	(3)	(4)	(5)
		Panel A: Buffer Area 20km without Border Municipalities			
Equal Partition	0.525***	0.523***	0.127***	-0.105***	0.001
	(0.157)	(0.186)	(0.042)	(0.040)	(0.004)
Observations	1,157	1,156	1,157	1,157	1,116
F-value of Excluded IV	114.08	113.97	114.08	114.08	123.52
		Panel B: Buffer Area 5km Without 3rd Border Segment			
Equal Partition	0.735***	0.623**	0.184**	-0.194**	0.022**
	(0.225)	(0.258)	(0.086)	(0.095)	(0.011)
Observations	449	449	449	449	438
F-value of Excluded IV	27.06	27.06	27.06	27.06	26.55
Border Segment FEs	✓	✓	✓	✓	✓
Geographic Controls	✓	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓	✓
French OZ Dummy	✓	✓	✓	✓	✓
Distance to Urban Center	✓	✓	✓	✓	✓
Intersects Major Railway	✓	✓	✓	✓	✓
Intersects Minor Railway	✓	✓	✓	✓	✓

Notes. Standard errors clustered on county (Landkreis) level are in parentheses. Coefficient is statistically different from zero at the ***1 %, **5 % and *10 % level. The unit of observation is a municipality in 1953. All regressions include a constant not reported. Geographic controls include mean elevation, terrain ruggedness and soil suitability as well as the share of agricultural area used to grow wine and fruits in 1961, and distance to Rhine or Neckar. Historical controls encompass distance to the closest Imperial city as of 1556, distance to next certain Roman road, a dummy variable for municipalities with at least one Celtic grave, historical political fragmentation and instability, the share of a municipalities total area that is located in ecclesiastical territories in 1556, pre-medieval forest areas, the share of Protestants in 1961 and a dummy for municipalities which belonged to the Duchy of Württemberg in 1789.

Table A.12: *Robustness Checks III—Including More Border Segments, Historical State Dummies, Coal and Market Potential*

Dependent Variable	ln(Population Density 1950)	ln(Firms per Hectare 1950)	Employment Share Industry 1950	Employment Share Agrar 1950	Migration Balance p.c. 1950
	(1)	(2)	(3)	(4)	(5)
	Panel A: Including 15 Border Segment Fixed Effects				
Equal Partition	0.688***	0.719***	0.149**	-0.140*	0.016*
	(0.222)	(0.258)	(0.073)	(0.082)	(0.009)
Observations	586	586	586	586	569
F-value of Excluded IV	24.22	25.24	25.24	25.24	26.85
R^2	0.408	0.370	0.474	0.482	0.507
	Panel B: Including 1789 State Fixed Effects				
Equal Partition	0.825***	0.832***	0.185**	-0.180**	0.019**
	(0.240)	(0.283)	(0.073)	(0.087)	(0.008)
Observations	568	568	568	568	553
F-value of Excluded IV	26.59	29.55	29.55	29.55	30.28
R^2	0.455	0.344	0.424	0.446	0.103
	Panel C: Including Coal Potential and Market Potential in 1500				
Equal Partition	0.805***	0.824***	0.136**	-0.147*	0.019**
	(0.253)	(0.275)	(0.075)	(0.080)	(0.008)
Observations	586	586	586	586	569
F-value of Excluded IV	25.32	25.32	25.32	25.32	27.13
R^2	0.441	0.324	0.467	0.444	0.057
Border Segment FEs	✓	✓	✓	✓	✓
Geographic Controls	✓	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓	✓
French OZ Dummy	✓	✓	✓	✓	✓
Distance to Urban Center	✓	✓	✓	✓	✓
Intersects Major Railway	✓	✓	✓	✓	✓
Intersects Minor Railway	✓	✓	✓	✓	✓

Notes. Standard errors are clustered on county (Landkreis) level are in parentheses. Coefficient is statistically different from zero at the ***1 %, **5 % and *10 % level. The unit of observation is a municipality in 1953. All regressions include a constant not reported. R^2 is the centered R^2 of the second stage. Geographic controls include mean elevation, terrain ruggedness and soil suitability as well as the share of agricultural area used to grow wine and fruits in 1961, distance to Rhine or Neckar. Historical controls encompass distance to the closest Imperial city as of 1556, distance to next certain Roman road, a dummy variable for municipalities with at least one Celtic grave, historical political fragmentation and instability, the share of a municipalities total area that is located in ecclesiastical territories in 1556, pre-medieval forest areas, the share of Protestants in 1961 and a dummy for municipalities which belonged to the Duchy of Württemberg in 1789.

Table A.13: *Robustness Checks IV—Quadratic Distance Polynomial and Inclusion of Exclaves*

Dependent Variable	ln(Population Density 1950)	ln(Firms per Hectare 1950)	Employment Share Industry 1950	Employment Share Agriculture 1950	Migration Balance p.c. 1950
	(1)	(2)	(3)	(4)	(5)
			Panel A: With Quadratic Distance Polynomial		
Equal Partition	0.757***	0.792***	0.172**	-0.172**	0.018**
	(0.240)	(0.257)	(0.079)	(0.085)	(0.008)
Observations	586	586	586	586	569
F-value of Excluded IV	32.30	32.30	32.30	32.30	33.58
R^2	0.452	0.327	0.394	0.418	0.066
			Panel B: With Exclaves		
Equal Partition	0.723***	0.702**	0.162**	-0.160*	0.018**
	(0.255)	(0.300)	(0.077)	(0.088)	(0.008)
Observations	617	617	617	617	600
F-value of Excluded IV	39.76	39.76	39.76	39.76	41.38
R^2	0.464	0.345	0.413	0.422	0.057
Border Segment FEs	✓	✓	✓	✓	✓
Geographic Controls	✓	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓	✓
French OZ Dummy	✓	✓	✓	✓	✓
Distance to Urban Center	✓	✓	✓	✓	✓
Intersects Major Railway	✓	✓	✓	✓	✓
Intersects Minor Railway	✓	✓	✓	✓	✓

Notes. Standard errors are clustered on county (Landkreis) level are in parentheses. Coefficient is statistically different from zero at the ***1 %, **5 % and *10 % level. The unit of observation is a municipality in 1953. All regressions include a constant not reported. R^2 is the centered R^2 of the second stage. Geographic controls include mean elevation, terrain ruggedness and soil suitability as well as the share of agricultural area used to grow wine and fruits in 1961, distance to Rhine or Neckar. Historical controls encompass distance to the closest Imperial city as of 1556, distance to next certain Roman road, a dummy variable for municipalities with at least one Celtic grave, historical political fragmentation and instability, the share of a municipalities total area that is located in ecclesiastical territories in 1556, pre-medieval forest areas, the share of Protestants in 1961 and a dummy for municipalities which belonged to the Duchy of Württemberg in 1789.

A.4. Additional Results

A.4.1. OLS Results for Baden-Württemberg in 1950

Table A.14 shows the OLS results of the regressions investigating the relationship between equal partition and economic development in 1950. We find that equal partition has an economically and statistically significant effect for all dependent variables, except for the migration balance per capita. For example, the number of firms per hectare is on average around 12 % larger in the equal partition areas, and the share of workers in the industrial sector is on average around 4 % higher.

Table A.14: *Equal Partition and Industrialization, Structural Change, and Migration Patterns 1950—OLS Estimations*

Dependent Variable	ln(Population Density 1950)	ln(Firms per Hectare 1950)	Employment Share Industry 1950	Employment Share Agriculture 1950	Migration Balance p.c. 1950
	(1)	(2)	(3)	(4)	(5)
Equal Partition	0.132***	0.121**	0.042***	-0.029***	0.001
	(0.044)	(0.048)	(0.011)	(0.011)	(0.001)
Border Segment FEs (25)	✓	✓	✓	✓	✓
Geographic Controls	✓	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓	✓
French OZ Dummy	✓	✓	✓	✓	✓
Distance to Urban Center	✓	✓	✓	✓	✓
Intersects Major Railway	✓	✓	✓	✓	✓
Intersects Minor Railway	✓	✓	✓	✓	✓
Observations	3,371	3,365	3,370	3,370	3,256
R^2	0.488	0.365	0.428	0.438	0.418

Notes. Standard errors clustered on county (Landkreis) level are in parentheses. Coefficient is statistically different from zero at the ***1 %, **5 % and *10 % level. The unit of observation is a municipality in 1953. All regressions include a constant not reported. Geographic controls include mean elevation, terrain ruggedness and soil suitability as well as the share of agricultural area used to grow wine and fruits in 1961, and distance to Rhine or Neckar. Historical controls encompass distance to the closest Imperial city as of 1556, distance to next certain Roman road, a dummy variable for municipalities with at least one Celtic grave, historical political fragmentation and instability, the share of a municipalities area that is located in ecclesiastical territories in 1556, pre-medieval forest areas, the share of Protestants in 1961 and a dummy for municipalities which belonged to the Duchy of Württemberg in 1789.

A.4.2. Results for Outcomes in 1961

We complement our results for 1950 with results for 1961. For 1961, we do not have a migration balance in the official statistics but the other four outcomes from the baseline analysis (population and firm density, employment shares of industry and agriculture) we have available. Consequently, we present the result of BDD estimations using these four dependent variables measured in 1961, using the five kilometer buffer and including all baseline controls. The results are available in Table A.15. They are qualitatively and quantitatively very similar to those for 1950. Thus, a potential bias from the distortions of World War II does not affect our baseline results for 1950.

Table A.15: *Equal Partition, Industrialisation and Economic Structure in 1961*

Dependent Variable	ln(Population Density 1961)	ln(Firms per Hectare1961)	Employment Share Industry 1961	Employment Share Agrar 1961
	(1)	(2)	(3)	(4)
Buffer Area		10 km		
Equal Partition	0.908***	0.729***	0.120**	-0.135**
	(0.309)	(0.257)	(0.049)	(0.065)
Border Segment FEs	✓	✓	✓	✓
Geographic Controls	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓
French OZ Dummy	✓	✓	✓	✓
Distance to Urban Center	✓	✓	✓	✓
Intersects Major Railway	✓	✓	✓	✓
Intersects Minor Railway	✓	✓	✓	✓
Observations	586	586	586	586
F-value of Excluded IV	34.34	34.34	34.34	34.34
R^2	0.465	0.386	0.394	0.386

Notes. Standard errors are clustered on county (Landkreis) level are in parentheses. Coefficient is statistically different from zero at the ***1 %, **5 % and *10 % level. The unit of observation is a municipality in 1953. All regressions include a constant not reported. R^2 is the centered R^2 of the second stage. Geographic controls include mean elevation, terrain ruggedness and soil suitability as well as the share of agricultural area used to grow wine and fruits in 1961, distance to Rhine or Neckar. Historical controls encompass distance to the closest Imperial city as of 1556, distance to next certain Roman road, a dummy variable for municipalities with at least one Celtic grave, historical political fragmentation and instability, the share of a municipalities total area that is located in ecclesiastical territories in 1556, pre-medieval forest areas, the share of Protestants in 1961 and a dummy for municipalities which belonged to the Duchy of Württemberg in 1789.

A.4.3. Results for Demographic Outcomes

Based on a case study of the primogeniture area of northeastern part Württemberg, Krafft (1930) concluded that the number of children in the primogeniture area was smaller. He supposes that people found one son enough to guarantee the future of the family property, and avoided to compensate the other children. Another argument brought forward by him is that the higher marriage age in the primogeniture areas limited the number of children a couple could get and contributed to the lower population growth in the primogeniture area. Other scholars argued that it could be the other way round and equal partition lead to fewer children as parents want to restrict further fragmentation of property (Habakkuk 1955). Geographically more broad analyses like Fuchs (1930) however could not find a clear relationship between inheritance traditions and fertility numbers or marriage ages.

Table A.16: *Equal Partition and Demography in 1950*

Dependent Variable	Share<6 Years	Share 5–15	Share 15–20	Share 20–45	Share 45–65	Share > 65	Births p.c.	Marriages p.c.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Buffer Area				10 km				
Equal Partition	0.001	-0.006	-0.008***	0.029**	0.006	-0.003	0.001	-0.000
	(0.008)	(0.009)	(0.003)	(0.013)	(0.007)	(0.007)	(0.001)	(0.001)
5 Border Segment FEs	✓	✓	✓	✓	✓	✓	✓	✓
Geographic Controls	✓	✓	✓	✓	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓	✓	✓	✓	✓
French OZ Dummy	✓	✓	✓	✓	✓	✓	✓	✓
Distance to Urban Center	✓	✓	✓	✓	✓	✓	✓	✓
Intersects Major Railway	✓	✓	✓	✓	✓	✓	✓	✓
Intersects Minor Railway	✓	✓	✓	✓	✓	✓	✓	✓
Observations	864	864	864	743	743	864	863	859
F-Value of Excluded IV	47.77	47.77	47.77	36.63	36.63	47.77	47.91	48.09
R^2	0.073	0.048	0.100	0.152	0.060	0.162	0.090	0.025

Notes. Standard errors are clustered on county (Landkreis) level are in parentheses. Coefficient is statistically different from zero at the ***1 %, **5 % and *10 % level. The unit of observation is a municipality in 1953. All regressions include a constant not reported. R^2 is the centered R^2 of the second stage. Geographic controls include mean elevation, terrain ruggedness and soil suitability as well as the share of agricultural area used to grow wine and fruits in 1961, distance to Rhine or Neckar. Historical controls encompass distance to the closest Imperial city as of 1556, distance to next certain Roman road, a dummy variable for municipalities with at least one Celtic grave, historical political fragmentation and instability, the share of a municipalities total area that is located in ecclesiastical territories in 1556, pre-medieval forest areas, the share of Protestants in 1961 and a dummy for municipalities which belonged to the Duchy of Württemberg in 1789.

Hence, there is no consensus on whether and how inheritance traditions influence demographic outcomes like birth rates. In Table A.16, we report the results of BDD regressions for demographic outcomes (death and birth rates, age structure etc.). We do not see a large influence of equal partition on the age structure or birth and death rates. Giving the ambiguous arguments about the influence of equal partition on these outcomes this is not surprising.

A.4.4. Results for late 19th Century Württemberg

We show that we find similar impacts of inheritance traditions on economic development when using alternative, and historically earlier inheritance data from Krafft (1930)[4], which is for 1895 but restricted to the area of Württemberg. Industrialization in this area was ongoing at least since 1850, but also as we know that the 20th century has seen the frequent emergence of transitional and mixed inheritance practices. Looking at an earlier period when more municipalities still applied the traditional basic inheritance practices primogeniture and equal partition should give a clearer picture about their effects than the more complex picture in the mid-20th century. Furthermore, studying an earlier period based on a different source for the inheritance traditions, could reassure us that our results are not depending on the particular survey of Röhm (1957).

As dependent variables, we consider population density in 1834 and 1895, and the number of industry firms and farms per hectare, all in 1895. Information necessary to calculate these variables comes from the official statistics of the kingdom of Württemberg from 1895 (Statistical Office of Württemberg 1900). We use the same control variables as before, but we only consider the railway network as of 1894 and the share of Protestants in 1895 (also from the official statistics). We do not include the share of agricultural area in which wine or fruits are grown, as there are no data for this period. Distance to urban center we adjust to take into account that the kingdom of Württemberg only had two large urban centers, Stuttgart and Ulm.[5]

The Data Appendix (Table A.7) provides a descriptive overview of the data set for 1895 Württemberg.

As the map of Krafft (1930) does not include a border and given that it is unclear what the original inheritance practice of his "mixed traditions" is, we are not able to draw one. OLS regressions are therefore the only feasible choice. Table A.17 reports the results of estimations with the equal partition dummy as variable of interest and the four dependent variables, introduced above. The estimated coefficients suggest that, as in 1950 and today, municipalities applying equal partition have significantly lower farm sizes, higher population densities and are more industrialized. This implies that our results from other periods are not coincidence or depend on Röhm's map.

4. We thank Sebastian Braun for making available to us his shapefile of municipalities in Württemberg as of 1890, which is the basis for our data set. There were no changes in municipalities between 1890 and 1905.

5. We also include latitudinal and longitudinal coordinates of a municipality's centroid as controls to account for general spatial development patterns. This is important, as we are not able to include county fixed effects into the regression. Around 1900, Württemberg had more than 60 counties ("Oberämter") and, based on the Krafft (1930) map, there is not a lot of variation in inheritance traditions within these comparatively small counties.

Table A.17: *Equal Partition and Municipal Economic Development in the 19th Century Württemberg*

Dependent Variable	ln(Farms per hectare 1895)	ln(Population Density 1834)	ln(Population Density 1895)	ln(Firms per hectare 1895)
	(1)	(2)	(3)	(4)
Equal Partition	0.357***	0.28***	0.282***	0.205**
	(0.067)	(0.078)	(0.078)	(0.084)
Geographic Controls	✓	✓	✓	✓
Historical Controls	✓	✓	✓	✓
Distance to Urban Center	✓	✓	✓	✓
Intersects Major Railway	✓	–	✓	✓
Intersects Minor Railway	✓	–	✓	✓
Observations	1,828	1,828	1,828	1,316
R^2	0.416	0.203	0.232	0.177

Notes. Standard errors clustered on county (Oberamt) level are in parentheses. Coefficient is statistically different from zero at the ***1 %, **5 % and *10 % level. The unit of observation is a municipality in 1890. All regressions include a constant not reported. Geographic controls include mean elevation, terrain ruggedness and soil suitability, as well as distance to Rhine or Neckar and latitude and longitude of a municipality's centroid. Historical controls encompass distance to the closest Imperial city as of 1556, distance to next certain Roman road, a dummy variable for municipalities with at least one Celtic grave, historical political fragmentation and instability, the share of a municipalities total area that is located in ecclesiastical territories in 1556, pre-medieval forest areas, the share of Protestants in 1895 and a dummy for municipalities which belonged to the Duchy of Württemberg in 1789.

A.4.5. Results for Contemporary Municipalities and Outcomes in West Germany

Next, we study the effect of equal partition on economic development for the whole of West Germany, using data from Hager and Hilbig (2019). They digitized a map drawn by Röhm in the publication "Atlas der deutschen Agrarlandschaft", with data from a survey for all West German municipalities (for more details see Hager and Hilbig (2019)). They code the inheritance traditions for contemporary West German municipalities by overlaying Röhm's map with a shapefile of contemporary municipalities. Then they count the number of pixels within each current municipality associated with either inheritance tradition. The authors assign the inheritance tradition with the highest share of pixels to a contemporary municipality.[6] A dummy variable is obtained which is equal to one if a contemporary municipality in 1953 applied equal partition. Figure 1(a) in the main text shows West Germany, the borders of contemporary federal states and municipalities. In the figure, municipalities with equal partition in 1953 are blue and the ones applying primogeniture are red. A look at the map clarifies that equal partition was present mostly in Baden-Württemberg, Rhineland Palatine, the Saarland and the south of Hesse. It was virtually absent in Bavaria and the north of Germany. Baden-Württemberg was the only state with closed equal partition and primogeniture areas. All other states were scattered. We use this advantage of Baden-Württemberg to employ a spatial RDD approach.

Their data set also contains a host of geographical and historical control variables alongside contemporary socio-economic outcomes (measured in 2014). Among those, the average wage income and population density are relevant for our analysis. These two will be the dependent variables in OLS regressions with the equal partition dummy as variable of interest and following historical and geographic control variables that could potentially have an influence on both equal partition

6. In order to arrive at a dichotomous measure, they treat transitional forms of equal partition as equal partition and transitional forms of primogeniture as primogeniture.

and economic development: A municipality's distance to Wittenberg, average elevation, the intensity of the Peasant Wars of 1522-1525 in the historical state of the municipality, and dummy variables for historical states of the German Empire of 1871, for municipalities historically located in the Roman part of Germany, and in which the code civil was the prevailing law in 1894.[7] We include either federal state or county fixed effects into the regressions.

Table A.18 reports results of the OLS regressions. Regardless of which combination of fixed effects and control variables, equal partition municipalities have a statistically and economically significantly higher population density (around 15 to 58 %) and higher average wage incomes (around 1.6 to 5 %). In conclusion, the results confirm that there is a positive relationship between equal partition and municipal economic prosperity in today's West Germany.

Table A.18: *Equal Partition and Current Municipal Development in West Germany*

Dependent Variable	ln(Population Density 2014)			ln(Average Wage Income 2014)		
	(1)	(2)	(3)	(4)	(5)	(6)
Equal Partition	0.567***	0.325***	0.154***	0.0468***	0.0211***	0.0159***
	(0.0754)	(0.065)	(0.054)	(0.009)	(0.006)	(0.006)
Federal State Dummies	✓	–	–	✓	–	–
Latitude and Longitude	✓	–	–	✓	–	–
County Dummies	–	✓	✓	–	✓	✓
Further Controls	–	–	✓	–	–	✓
Observations	4,021	4,021	4,001	7,977	7,977	7,896
R^2	0.183	0.504	0.579	0.132	0.388	0.405

Notes. Standard errors are clustered on county (Landkreis) level are in parentheses. Coefficient is statistically different from zero at the ***1%, **5% and *10% level. The unit of observation is a municipality in 2014. All regressions include a constant not reported. Controls include a municipality's distance to Wittenberg, average elevation, a variable reporting the intensity to which the county in which a municipality is located was involved in the Peasant Wars of 1522-1525, dummy variables for historical states of the German Empire of 1871, for municipality's historically located in the Roman part of Germany, and for municipalities in which the code civil was the prevailing civil code in 1894.

7. For descriptive statistics of those variables, the reader is referred to the Data Appendix of the Hager and Hilbig (2019) paper.

A.4.6. Additional Tables for the IV regressions in section 5.4

Table A.19: *Seasonality of Precipitation, Crop Suitabilities and Historical Wine-growing*

Dependent Variable	Winter Wheat Suitability	Potato Suitability	Maize Suitability	Barley Suitability	Wine Growing before 1624
	(1)	(2)	(3)	(4)	(5)
Method			OLS		Probit
Seasonality of Precipitation	0.109	-0.0215	-7.42e-05	0.0293	0.0613***
	(0.145)	(0.083)	(0.057)	(0.189)	(0.024)
Elevation (mean)	-0.0256**	0.0072	0.0296***	0.0005	-0.006***
	(0.011)	(0.006)	(0.002)	(0.01)	(0.002)
Ruggedness (mean)	-0.0124**	-0.0061	-0.0072***	0.0195**	0.0005
	(0.005)	(0.004)	(0.002)	(0.008)	(0.001)
Distance to Major Rivers	0.171**	-0.0723	-0.0779***	-0.135*	-0.0205*
	(0.065)	(0.043)	(0.025)	(0.079)	(0.01)
Share Church Territory	-2.737	-0.982	1.141	4.568**	-0.931**
	(1.675)	(1.486)	(0.816)	(1.970)	(0.375)
Distance to Imperial City	-0.133	-0.0623	0.120***	0.0317	-0.0256**
	(0.081)	(0.051)	(0.031)	(0.108)	(0.012)
Distance to Roman Road	0.250***	0.0207	-0.131***	-0.249**	0.0146
	(0.051)	(0.055)	(0.037)	(0.098)	(0.027)
Suitability for Potatoe	0.404***		-0.0422	-0.0712	0.0087
	(0.074)		(0.033)	(0.08)	(0.013)
Suitability for Maize	1.086***	-0.173		-0.450	0.0209
	(0.332)	(0.171)		(0.277)	(0.048)
Suitability for Barley	0.666***	-0.0335	-0.0518**		-0.0186
	(0.066)	(0.040)	(0.024)		(0.013)
Suitability for Winter Wheat		0.302***	0.199***	1.059***	0.0187
		(0.059)	(0.021)	(0.04)	(0.0173)
R^2 \Pseudo-R^2	0.933	0.594	0.852	0.902	0.355
Observations	890	890	890	890	890

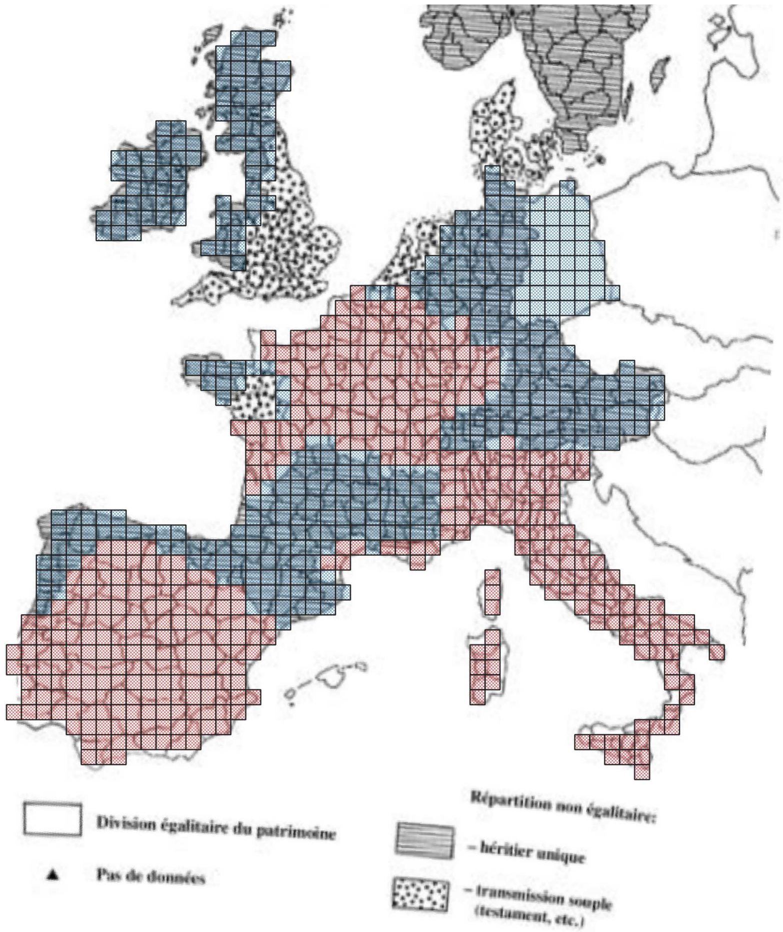
Notes. Standard errors clustered on county (Landkreis) level are in parentheses. Coefficient is statistically different from zero at the ***1 %, **5 % and *10 % level. The unit of observation is a municipality in 1953. All regressions include a constant not reported. Column (5) reports average marginal effects.

Table A.20: *Seasonality of Precipitation and Economic Development in Primogeniture Regions Outside Wine Areas*

Dependent Variable	ln(Average Wage Income 2014)				
	(1)	(2)	(3)	(4)	(5)
Sampling Area 50km around	Munich	Bremen	Hamburg	Hanover	Kiel
Seasonality of Precipitation	0.0081	-0.0105	0.0167	0.0198	-0.0112
	(0.007)	(0.014)	(0.0184)	(0.016)	(0.008)
County Dummies	✓	✓	✓	✓	✓
Further Controls	✓	✓	✓	✓	✓
Distance to State Capital	✓	✓	✓	✓	✓
Observations	464	158	493	176	464
R^2	0.171	0.377	0.226	0.426	0.171

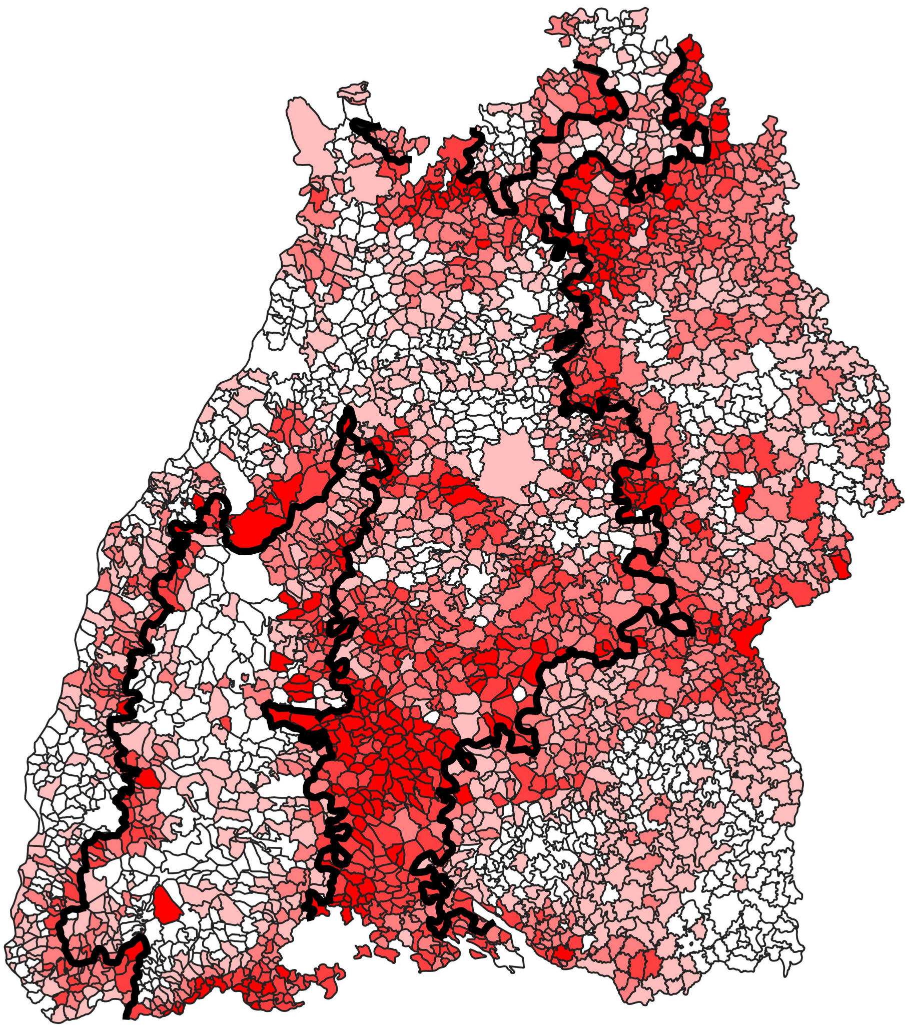
Notes. Heteroskedasticity robust standard errors are in parentheses. Coefficient is statistically different from zero at the ***1%, **5%, and *10% level. The unit of observation is a municipality in 2014. All regressions include a constant not reported. Controls include a municipality's distance to Wittenberg, average elevation, a variable reporting the intensity to which the county in which a municipality is located was involved in the Peasant Wars of 1522-1525, dummy variables for historical states of the German Empire of 1871, for municipality's historically located in the Roman part of Germany, and for municipalities in which the code civil was the prevailing civil code in 1894.

A.5. Additional Figures



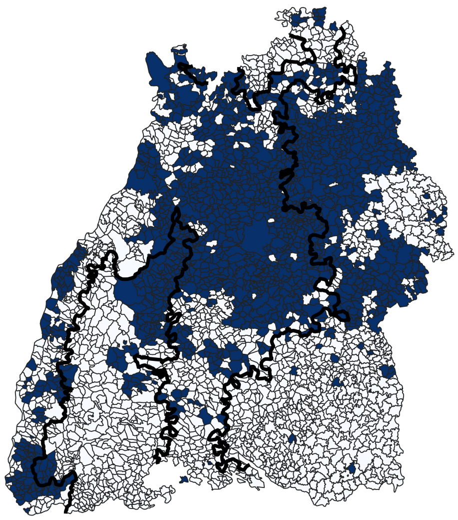
Note: The figure shows our data set of grid cells in Europe. Cells shaded in red are those in which equal partition is applied (in more than 75 % of their area). Grid cells in which primogeniture is applied (in more than 75 % of their area) are shaded in blue. Grid cells in Western Europe are assigned to equal partition based on Todd (1990). Below the grid cells a geo-referenced scan of Todd's original map as printed in Willenbacher (2003) is shown.

Figure A.4: *Equal Partition in Europe—Grid Cell Data Set based on Todd (1990)*

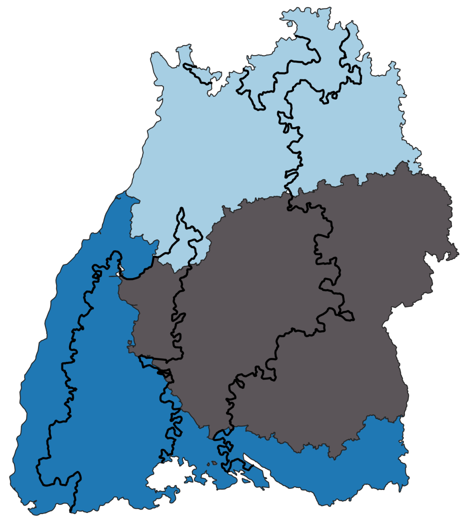


Note: The figure shows residuals of a linear probability model explaining the historical equal partition area. The darker red the municipalities are colored, the higher is the residual.

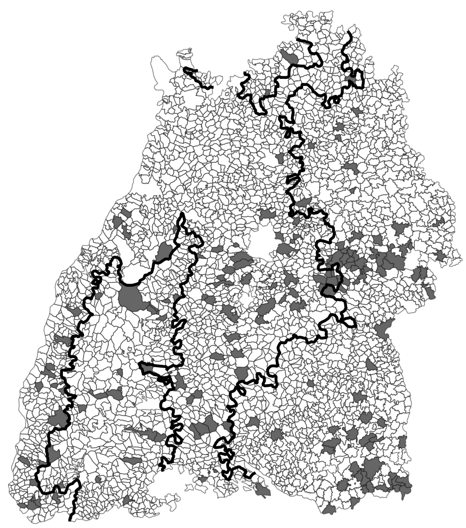
Figure A.5: *Predicted Equal Partition Area, Prediction Residuals and the Historical Inheritance Border*



(a) *Protestant Areas in Baden-Württemberg in 1950*



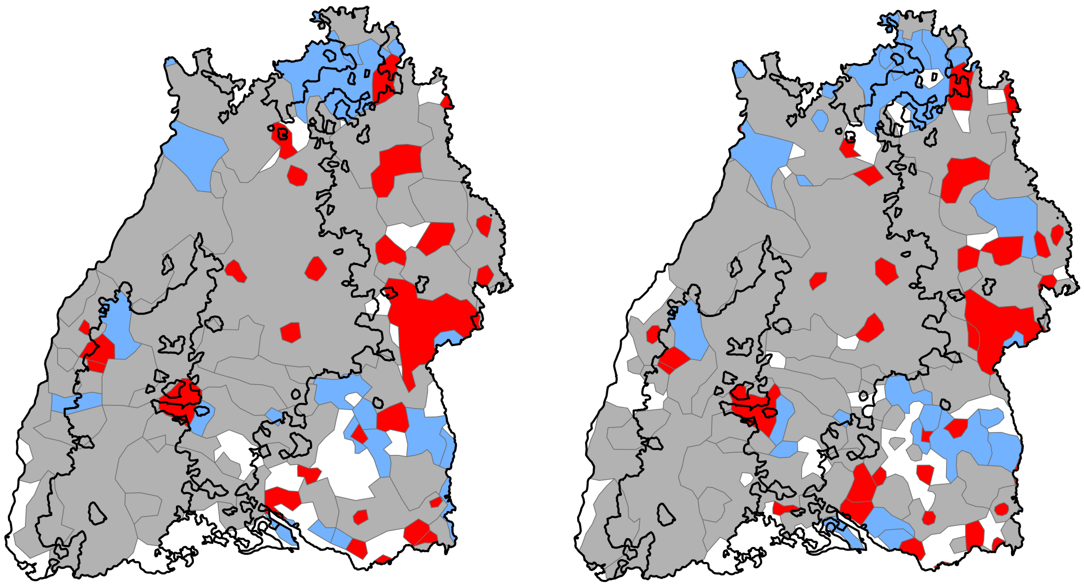
(b) *Dialect Areas in Baden-Württemberg*



(c) *Local Prevalence of Shooting Clubs*

Note: All Figures show the historical inheritance border. Figure (a) shows municipalities with a majority of Protestants in 1950 in blue. Figure (b) depicts the different dialect areas in Baden-Württemberg, where the Alemmanic dialect area is shown in dark blue, the Swabian one in gray, and the Frankish one in light-blue. Figure (c) shows municipalities with at least one shooting club in 1950 in gray.

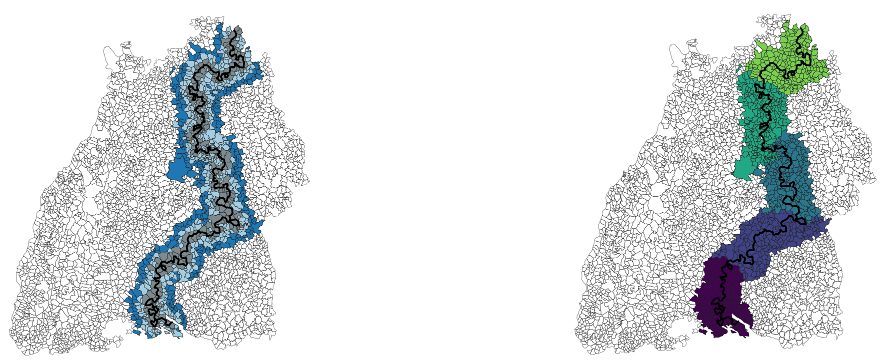
Figure A.6: *Important Cultural Factors in Baden-Württemberg*



(a) *The Historical Border and States 1648* **(b)** *The Historical Border and States 1789*

Note: Figures (a) and (b) show the eastern border of equal partition and the historical states in 1648 (a) and 1789 (b), and secular states are depicted in gray, city states in red, and ecclesiastical states in blue.

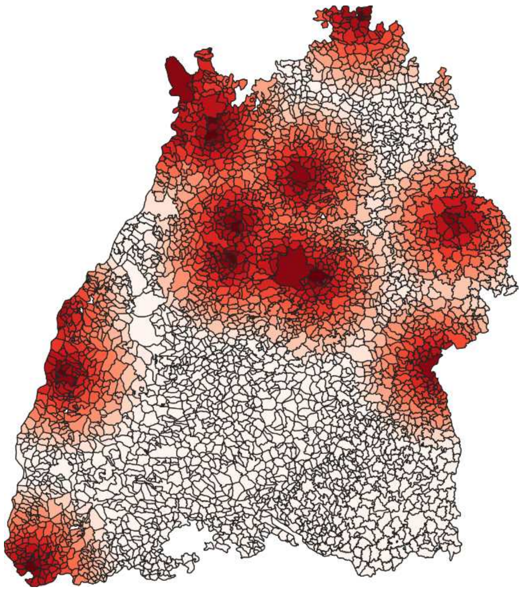
Figure A.7: *Maps of important control variables on historical borders and rivers*



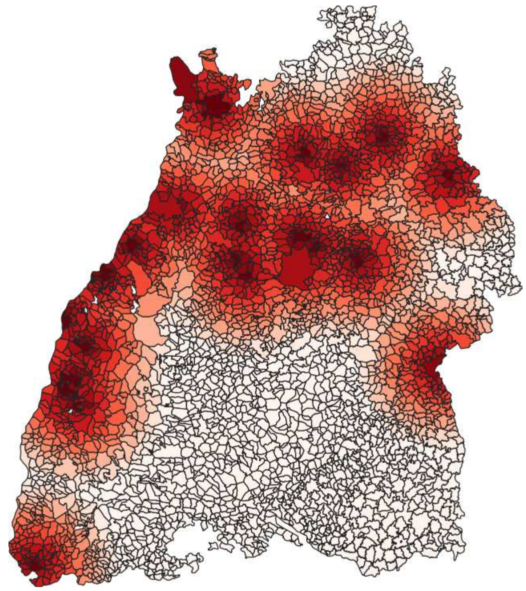
(a) *Buffer Areas around the Eastern Main Border* **(b)** *Border Segments around the Eastern Main Border*

Note: These figures show the eastern part of the historical border of equal and unequal partition inheritance areas. In panel (a) municipalities to the left and right of the border are depicted in gray, those five kilometers away from the border are depicted in light-blue and those ten kilometer away in dark-blue. Panel (b) shows how municipalities in the buffer area are assigned to one of five border segments to which they are closest.

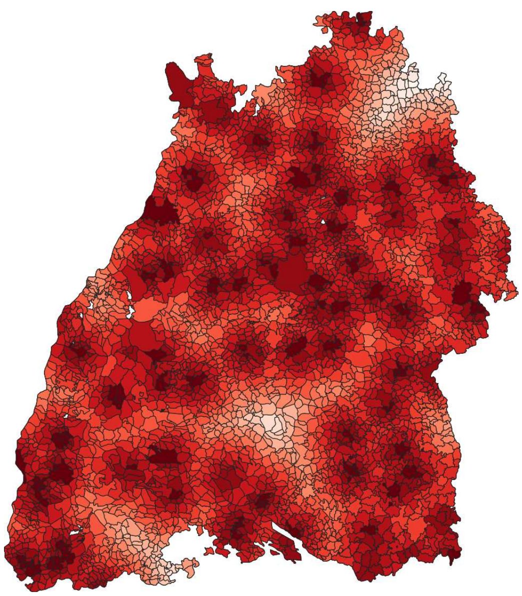
Figure A.8: *Buffer Areas and Border Segments around the Historical Main Border of Inheritance Practices*



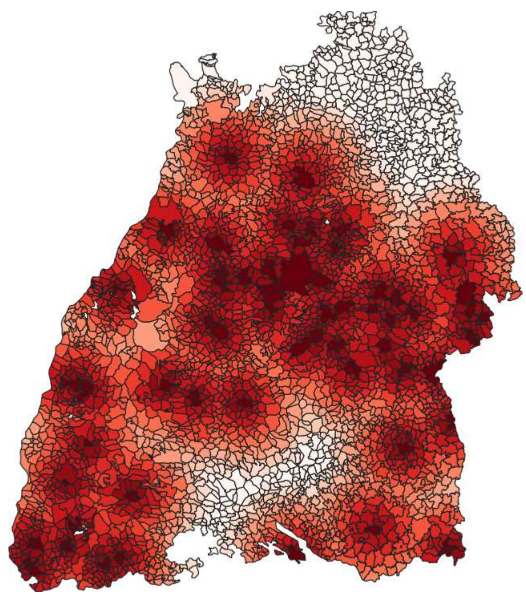
(a) *Distance to Closest Tobacco Facility in 1780*



(b) *Distance to Closest Tobacco Facility in 1832*



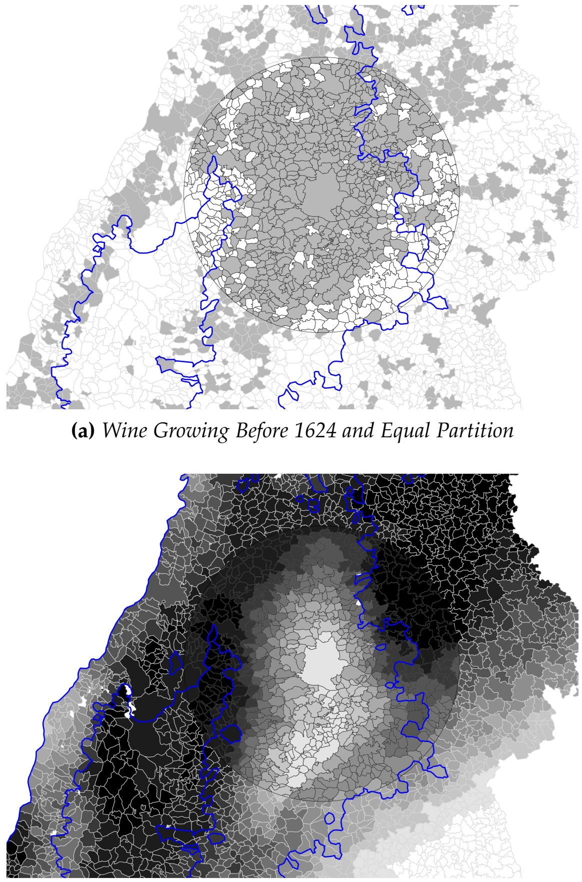
(c) *Distance to Closest Textile Facility in 1780*



(d) *Distance to Closest Textile Facility in 1832*

Note: These figures show the distances to the location of tobacco and textile facilities in their respective years. Darker reds indicate municipalities that are closer to such industrial facilities. Textile facilities include ribbon works, bleaching sites, spinning and weaving facilities for cotton, linen, and wool, dyeing and printing, as well as fulling facilities.

Figure A.9: *Distances from Industry Facilities in 1770–80 and 1829/32 as Digitized from Maps Created by Boelcke (1977) and Feyer (1973)*



(a) *Wine Growing Before 1624 and Equal Partition*

(b) *Seasonality of Precipitation, and the Historical Inheritance Border*

Note: Figure (a) shows in gray the municipalities in which wine was grown already prior to 1299. The historical border of the equal partition area is depicted in blue. The circle marks the area 50km around Stuttgart. Figure (b) shows seasonality (the coefficient of variation) of monthly precipitation. The brighter the municipalities are shaded the larger is seasonality in precipitation. The historical border of the equal partition area is depicted in blue. The circle marks the area 50km around Stuttgart.

Figure A.10: *Wine Growing, Variability of Precipitation and Inheritance Traditions 50km around Stuttgart*

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