

Long-Term Effects of Equal Sharing: Evidence from Historical Inheritance Rules for Land

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Introduction

- ▶ Long-standing debate regarding consequences of wealth inequality for economic outcomes (e.g., Becker and Tomes '79, Galor and Zeira '93, Banerjee and Newman '93, Dell '10)
- ▶ This paper: analyze sharp geographic variation in historical inheritance rules for land in Germany:
 - ▶ Unequal sharing (Anerbenrecht): primogeniture or ultimogeniture (oldest or youngest son inherits farm)
 - ▶ Equal sharing (Realteilung): equal sharing of parental farm land

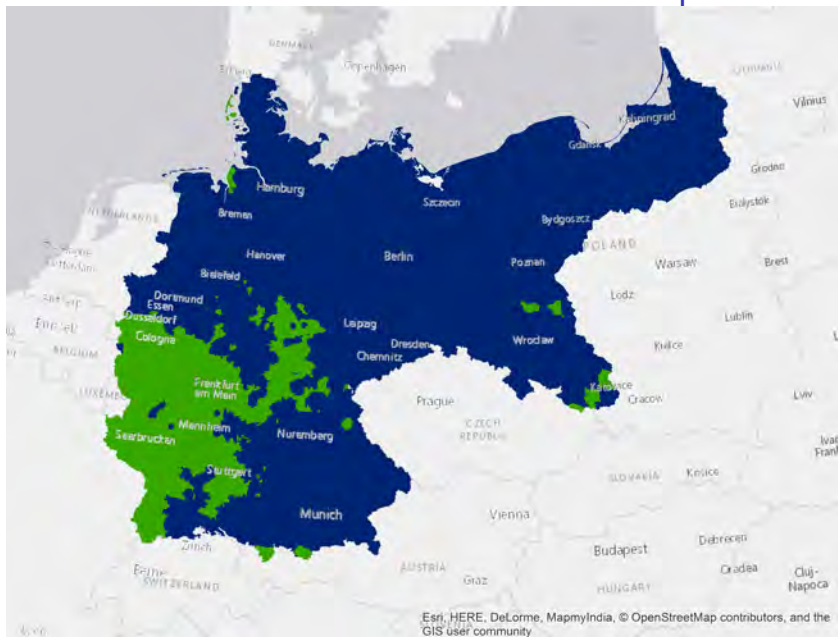
→ What are the economic effects of equal sharing on economic outcomes and their distribution?

Introduction: An Early View On Inheritance Rules

Ferdinand von Weckherlin, finance minister in Württemberg, argued in 1825 that Württemberg's economic strength was:

- ▶ "Württemberg is not distinguished by the existence of individual large factories. But all of Württemberg is a factory, a Manufactory. No matter where one looks, one finds everywhere industrious artisans, highly skilled manufacturers and thoughtful merchants. That is the character of industry in this land."
- ▶ "Supported by their small farms ... they are at least able to salvage a meager existence until luck or genius brings to them better times."

Historical Inheritance Rules in the German Empire



Examples: Aerial Views of Land Plots (2015)

Unequal sharing area

Mecklenburg-Vorpommern



Equal sharing area

Rheinland-Pfalz



This Paper

- ▶ Leverage spatial discontinuities in prevalence of inheritance norms (equal vs. unequal sharing)
- ▶ Broad geographic variation and more local spatial RD Design (Dell 2010)
 - ▶ Find that other fundamental drivers of growth (geography, soil quality, etc.) are smooth at the boundary
- ▶ Historic data to study outcomes and mechanisms during the transition from an agrarian to an industrial economy
- ▶ Modern data to study long-run effects of equal sharing

Preview of results

- ▶ **More landholding equality** in equal sharing areas.
- ▶ During transition from agrarian to industrial economy, farmers in equal sharing areas increasingly engaged in **innovative**, highly-specialized **industrial by-employment** and, ultimately, became **entrepreneurs**.
- ▶ **Higher GDP pc, higher education, higher labor productivity, more creative industry** in equal sharing areas today.
- ▶ Substantial capital accumulation over time results in **higher top incomes** (from business), **higher income concentration** and **higher top wealth** in equal sharing areas today.

Outline

Institutional Setting: Geography and Origins of Inheritance Rules
in Germany

Empirical Strategy and Data

Effects of Equal Sharing

- 19th century

- Modern outcomes

- Mechanisms

Conclusion

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Institutional Setting: Historical Inheritance Rules

Historically, two different inheritance rules for land predominant across German regions

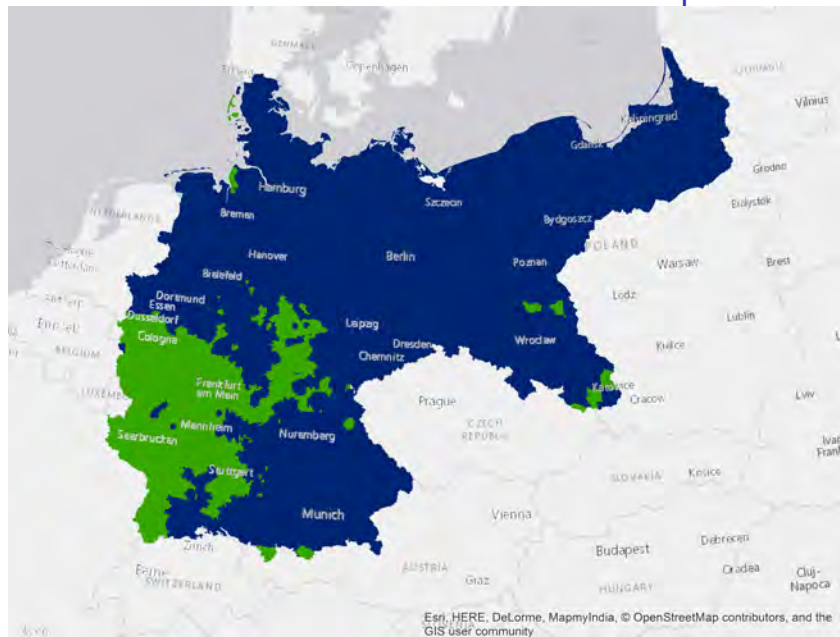
▶ **Equal sharing**

- ▶ Partible inheritance
- ▶ Land split equally among all children
- ▶ Developed into customary law that land has to be divided equally among all children
- ▶ Abolished in 1933 by Nazi *Reichserbhofgesetz*

▶ **Unequal sharing**

- ▶ Land considered “indivisible” or entailed
- ▶ Decrees or writs prohibit division of land or farms
- ▶ Primogeniture or ultimogeniture
- ▶ No side payments to other children

Historical Inheritance Rules in the German Empire



Institutional Setting: Geography of Inheritance Rules

- ▶ Rules or customs date back to pre-industrial times
- ▶ Variation is fine-grained and varies sharply geographically
 - ▶ Crosses religious, linguistic, political boundaries
- ▶ We draw on first comprehensive survey conducted by economist Max Sering in late 19th century
 - ▶ Survey of local courts, parishes in Prussia
 - ▶ Digitize Sering data and complement with information from von Miaskowski, Fick (Bavaria), Krafft (Württemberg), Hartke and Westermann

Institutional Setting: Origins of Inheritance Rules

What caused variation in inheritance rule across places?

- ▶ No clear consensus among historians (Rösener '12)
- ▶ Sphere of influence of Roman vs. Germanic law? Dismissed (Rouette, '03)
- ▶ Frankish Law: Lex Salica (507) enacted by Merovingian king Clovis I prescribes equal sharing of assets among male offspring
 - ▶ In contrast: Sachsenspiegel (1220) prescribes indivisibility of farms
- ▶ Features of terrain: ruggedness limits returns to farm scale

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Empirical strategy

We estimate the following model:

$$Y_{cs} = \alpha + \gamma \cdot \text{Equal Division}_c + X'_{cs}\beta \dots + f(\text{Geographic Location}_c) + \phi_s + \epsilon_{cs}. \quad (1)$$

- ▶ Outcome Y_{cs} for county c in state s
- ▶ Coefficient of interest: γ
- ▶ Rich set of control variables:
 - ▶ Protestantism, legal environment (dummies for Preußisches Landrecht, etc.), Hanseatic League, elevation, soil quality, temperature and precipitation
 - ▶ State fixed effects
- ▶ Estimation:
 1. OLS

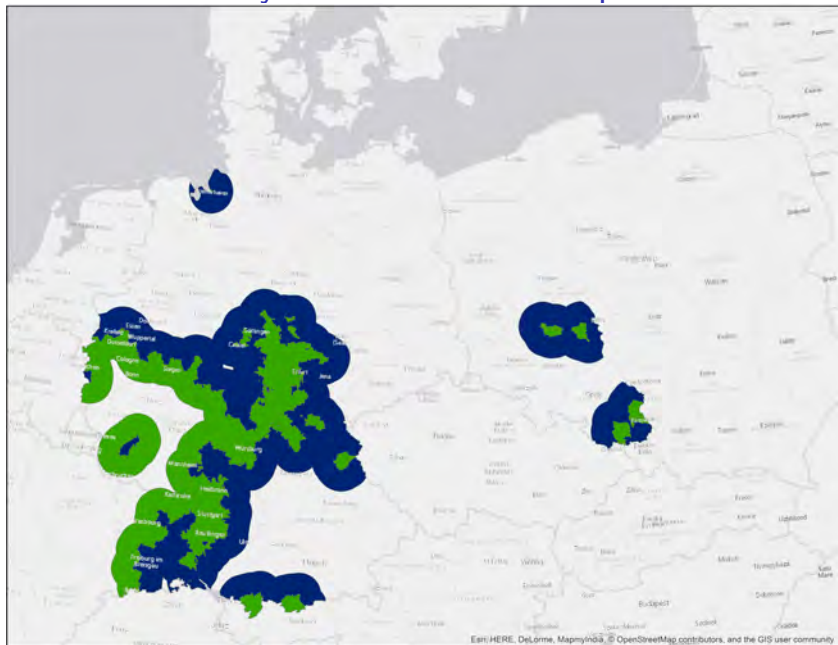
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 1. OLS
 2. Regression Discontinuity Design (following Dell '10)
 - ▶ Flexible geographic controls (latitude/longitude)
 - ▶ Sample restricted to districts adjacent to opposite inheritance regime

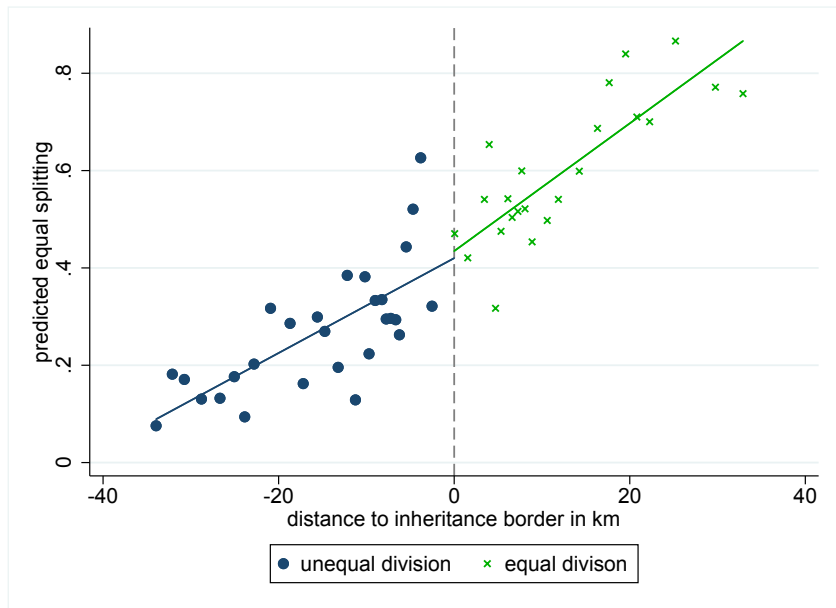
Spatial Discontinuity Model: Border Sample



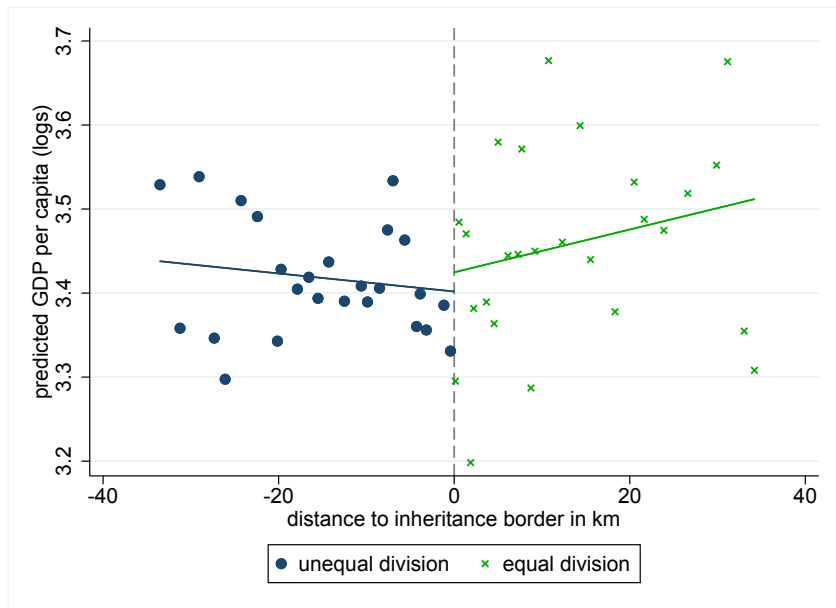
Empirical strategy

- ▶ Key regressor:
EqualSharing index either 0 (Anerbenrecht) or 1 (Realteilung)
- ▶ Unit of analysis: district (Kreise)
- ▶ Standard errors clustered at the Regierungsbezirk level

Identification assumption: Predicted equal division



Identification assumption: Predicted GDP per capita



Data Sources

- ▶ Prevalence of inheritance rules: Sering, von Miaskowski, Fick, Krafft Hartke and Westermann
- ▶ Historical data on inequality, development: ifo Prussian Economic History Database (iPEHD, Becker et al. '12), Reichsstatistik 1895 and 1907, Ziblatt ('12), conscript data from Baten (1845), county-level income tax records
- ▶ Modern outcomes: Volkszählungen (1925 onward), INKAR data ('14), county-level income tax and wealth tax records
- ▶ Additional data sources:
 - ▶ Bairoch et al. ('88)
 - ▶ Geographic data (terrain, soil quality, etc.): ESDB, Fastenmayer ('09)

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Effects of Equal Sharing

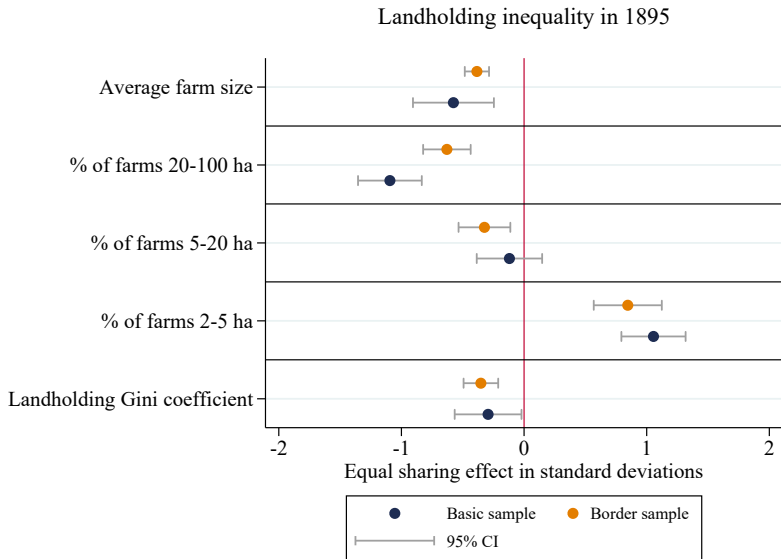
- 19th century

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- Mechanisms

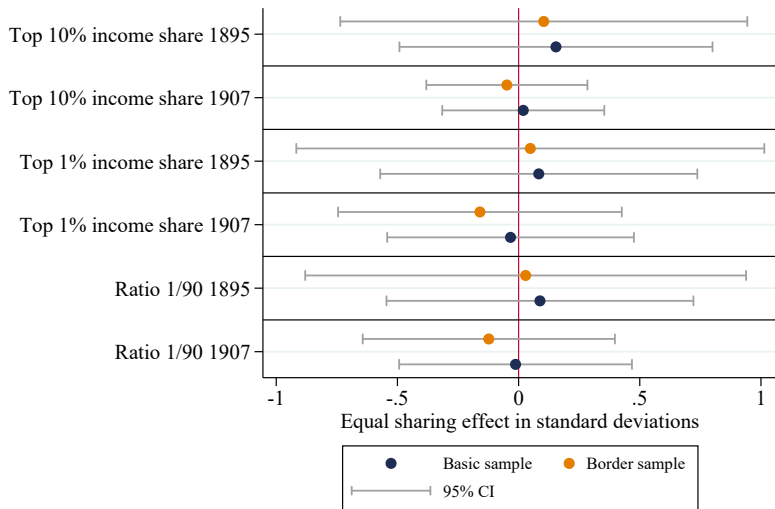
Conclusion

Equal Sharing \Rightarrow Less Land-Holding Inequality (19th c.)

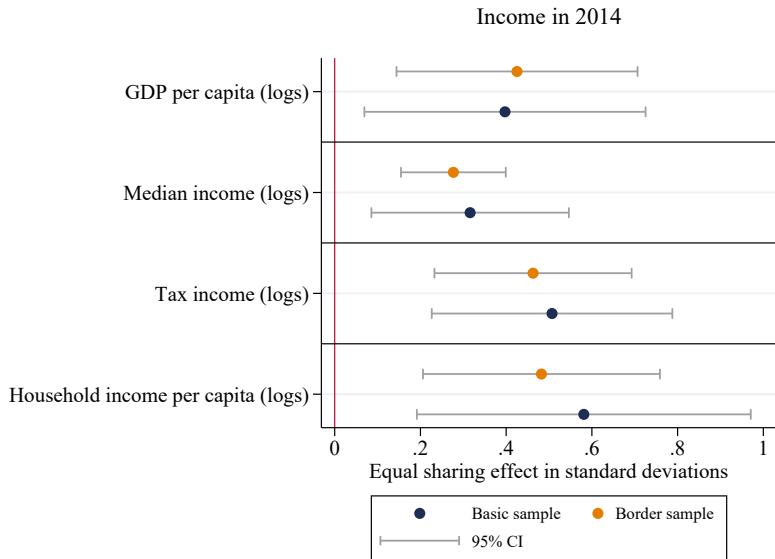


No Detectable Differences in Income Inequality

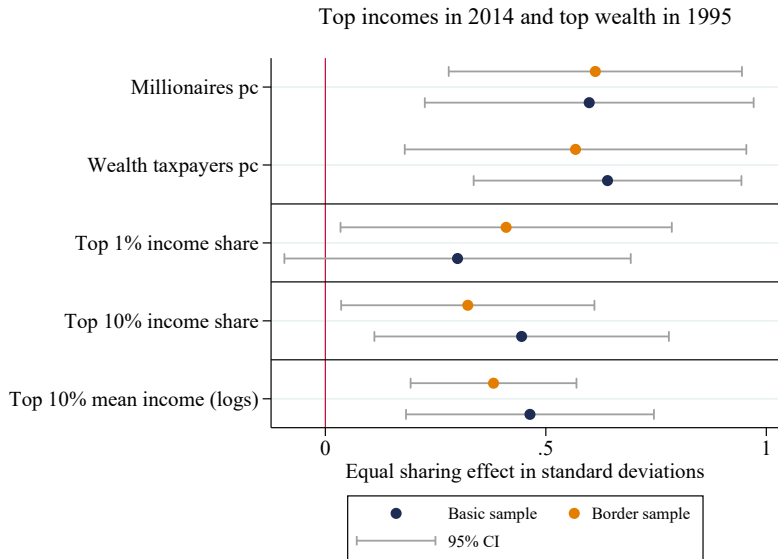
Income inequality in 1895 and 1907



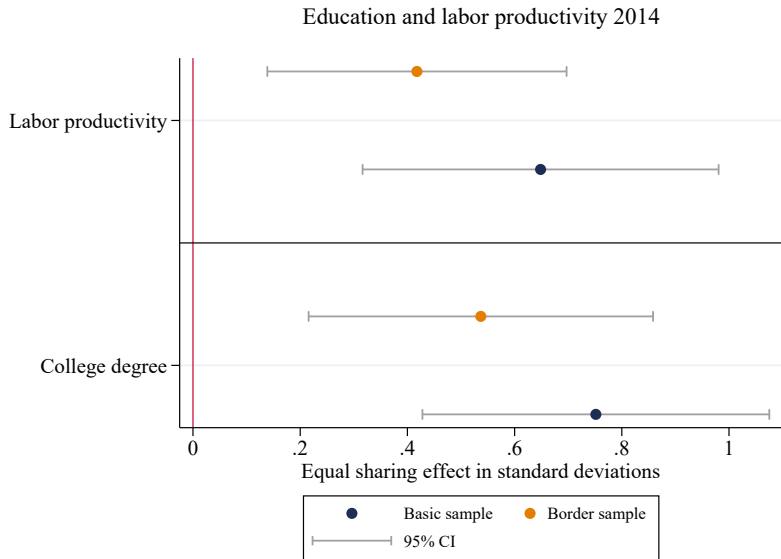
Today: Equal Sharing Areas Feature Higher Incomes



...Higher Top Income and Top Wealth,



... More Human Capital and Higher Labor Productivity



No Differences in Other Drivers of Growth

- ▶ **Similar agricultural productivity** caloric output per hectare before 1500 (Galor and Özak, 2016); grain yields in Prussia 1878
- ▶ **Similar population density** urban population data since 1500 (Bairoch et al., 1988), population density in Prussia 1816 and in German Empire 1895
- ▶ **No significant differences in early industrialization, income and wages** factories, mills and looms in 1821, employment in manufacturing in 1882, income and county taxes 1878, daily wages 1892
- ▶ **Similar human capital** literacy rates in Prussia 1871, school density and pupils in Prussia 1816 and 1886

Potential mechanisms

Smaller farms with smaller agricultural income in equal sharing areas

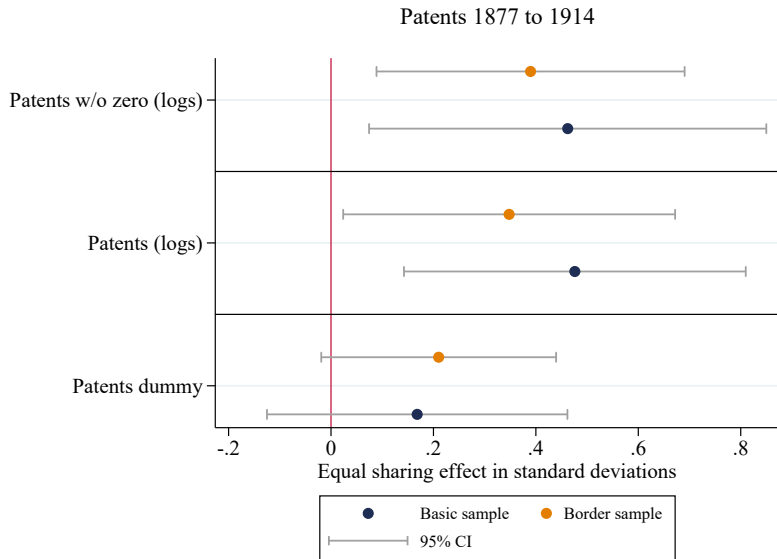
- ▶ incentive for **industrial by-employment** (Herrigel, 2000)
 - ▶ with the economy gradually shifting out of agriculture, side-employment turned into entrepreneurship
- ▶ opportunity to invest in **innovation** (Galor/Zeira 1993, Banerjee/Newman 1993, Ghatak et al., 2002, Galor/Moav 2004)
 - ▶ buffer to absorb the potential risks
 - ▶ alleviating credit constraints

⇒ combination of incentive and opportunity for entrepreneurship lead to an **earlier industrial take-off**.

Incentive for Industrial By-Employment

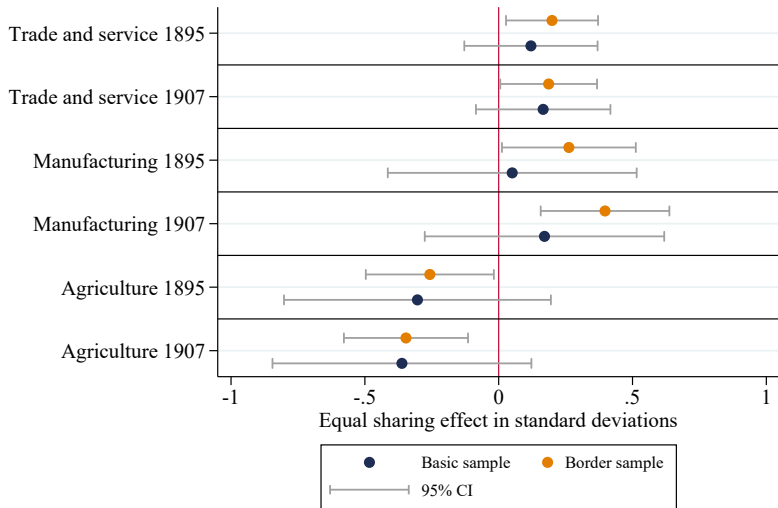
- ▶ Industrial by-employment as compensatory strategy (Herrigel, 2000)
- ▶ Small farms with less than 3 ha too small to nourish a family (Eiler, 1984)
 - ▶ equal sharing areas had significantly more farms with less than 2 ha or with 2-5 ha
 - ▶ significant effect of farm size and soil quality on (innovative) manufacturing interacting equal sharing with farm size
- ▶ Joint production of manufacturing and agricultural products under one roof = widespread phenomenon until the 1950s (Lerner, 1965)

More Innovation from 1877 to 1914

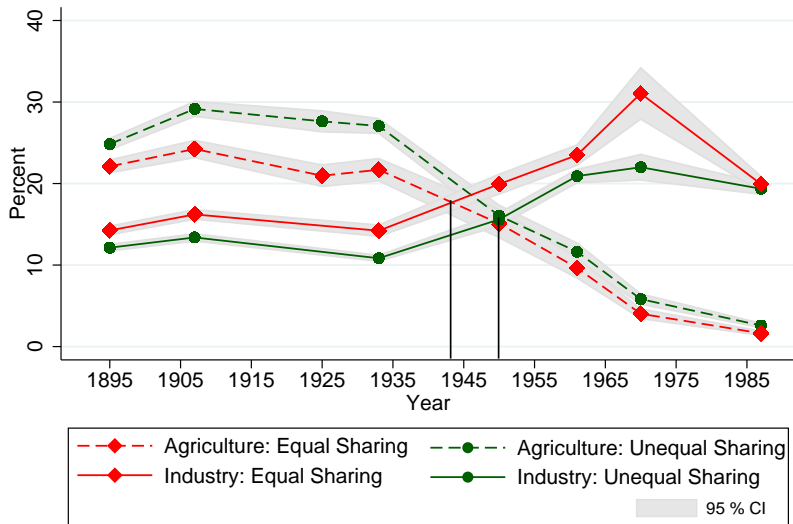


Earlier Industrial Take-Off in Equal Sharing Areas I

Sectoral employment 1895 and 1907



Earlier Industrial Take-Off in Equal Sharing Areas II



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- ▶ During transition from agrarian to industrial economy, farmers in equal sharing areas increasingly engaged in **innovative**, highly-specialized **industrial by-employment** and, ultimately, became **entrepreneurs**.
- ▶ Today: **higher GDP pc, higher education, higher labor productivity, more creative industry** in equal sharing areas.
- ▶ But higher growth disproportionately benefited top of distribution: **higher top incomes** (from business), **higher top income shares** and **higher top wealth** in equal sharing areas today.

Thank you for your attention!

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Equal division on the composition of income and wealth

	(1) Business income (pc)	(2) Real estate income (pc)	(3) Capital income (pc)	(4) Labor income (pc)	(5) Business assets (pc)	(6) Real estate assets (pc)	(7) Financial assets (pc)
<i>Panel A. OLS</i>							
equal splitting	40.99* (21.06)	-4.810 (9.933)	23.31 (27.24)	91.75 (58.27)	54.92 (59.65)	-302.7** (121.5)	-248.1 (380.2)
Observations	115	115	115	115	70	70	70
<i>Panel B. With controls</i>							
equal splitting	22.07* (10.88)	-14.01 (9.242)	4.020 (12.09)	41.83 (25.71)	-23.45 (100.5)	-571.1*** (126.9)	-452.1 (326.9)
Observations	115	115	115	115	70	70	70
<i>Panel C. Distance to border</i>							
equal splitting	21.24* (10.62)	-13.92 (9.730)	3.573 (13.64)	39.98 (25.22)	31.80 (85.35)	-473.2*** (101.2)	-210.1 (299.3)
Observations	106	106	106	106	64	64	64
mean outcome	109.0	127.1	57.14	188.0	574.3	2668.7	1240.0
SD outcome	116.8	54.75	114.0	245.3	441.1	931.0	954.0

Notes: The table uses county level aggregates from the wealth tax collection in Baden 1908 and Hesse 1907 as well as income tax collection in Baden 1908 and Wurttemberg 1907. Income tax statistics included roughly a third of the population. Real estate includes both land and buildings. Panel A includes longitude, latitude, and state-fixed effects. Panel B additionally includes geographic and cultural controls as specified in summary statistics. Column 3 reduces the sample to counties in 35 km distance to the border of the inheritance rule. Independent cities are excluded. Regressions are weighted by population in 1907. Standard errors clustered on district (Regierungsbezirk) level. * = $p < 0.1$, ** = $p < 0.05$, *** = $p < 0.01$