

# Social Mobility and Political Regimes in Hungary, 1780–2020

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Research question: Do mobility patterns differ across political regimes?

- ▶ We examine the **group-level, intergenerational mobility** of two social groups in Hungary:
  - Historically privileged group (surnames ending with “y”)
  - Group of “common people” (surnames that were ever in the top 20)
- ▶ We compare how the **representation** of surname groups evolved within **elite occupations**
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- ▶ Builds on our earlier work (Bukowski et al. 2022)

Why is this interesting?

### **What drives long-run patterns of social mobility?**

- ▶ **Modernization school** – Structural changes drive mobility  
(e.g., Lipset & Zetterberg, Treiman)
- ▶ **Institutional school** – Focus on the role of institutional changes  
(e.g., Parkin)
- ▶ **Social reproduction school** – Mobility does not actually change much  
(e.g., Sorokin, Bourdieu & Passeron)

### **Why is (East-)Central Europe interesting?**

- ▶ Frequent institutional transformations
- ▶ Rapid changes in economic structure (socialist industrialization, privatization)
- ▶ Frequent “elite turnovers”

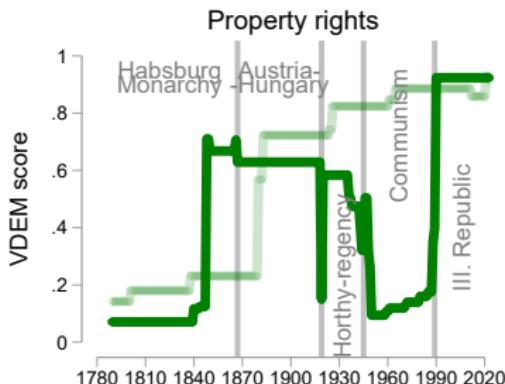
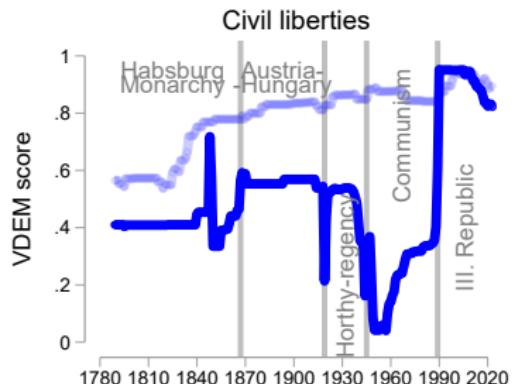
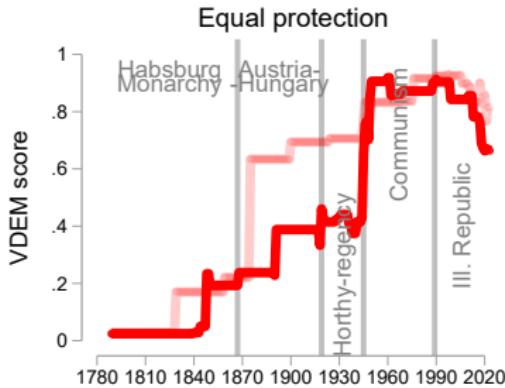
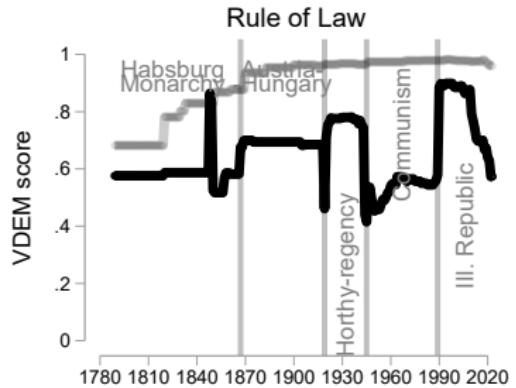
Research question: How did social mobility evolve across Hungarian regime changes?

Hungary experienced frequent regime changes:

- ▶ Habsburg Monarchy (1780–1867)
- ▶ Austro-Hungarian Dual Monarchy (1867–1918)
- ▶ First Republic (1918–1919)
- ▶ Soviet Republic (1919–1920)
- ▶ Horthy Regime (1920–1944)
- ▶ Szálasi Regime (1944–1945)
- ▶ Second Republic (1945–1949)
- ▶ People's Republic (1949–1989)
- ▶ Third Republic (1989–)

Huge **between-regime** and **within-regime** variation in political institutions, large **cross-country** variation

# Comparison with the UK (VDEM data)



# Outline of the presentation

1. Historical context and motivation
2. Methodology
3. Data and data processing methods
4. Illustrative results 1780-1867
5. Main results 1867-2020

## Habsburg Monarchy (1780-1867)

- ▶ After the 3-way partition of Hungary (1526-1689), Habsburgs become sole rulers; absolutist rule; limited role for the Hungarian Diet (=Parliament); summoned usually in crises only.
- ▶ Reform efforts (e.g., Joseph II): centralization; improvement of the tax base - promote basic education, upward mobility into public administration etc.
- ▶ This clashed with entrenched noble privileges.
- ▶ 1848 revolution briefly established constitutional monarchy and abolished some feudal institutions before suppression.
- ▶ Between 1849 - 1867: rule by decree; undermined by a series of military defeats.

## Austro-Hungarian Dual Monarchy (1867–1918)

- ▶ “Ausgleich” (Compromise) of 1867: Hungary gains internal autonomy under a **constitutional monarchy**.
- ▶ Dominated by Magyar liberal elite; **restricted suffrage**, rigged elections (Liberal Party wins all but one).
- ▶ Period of industrialization and modernization, **laissez-faire economy**.
- ▶ Rapid social change, ethnic tensions.
- ▶ Ended with WWI and collapse of the monarchy.

## Horthy Regency / Kingdom of Hungary (1920–1944)

- ▶ Got into power after turbulent two years: loss in WW I; revolution and dethronement of the Habsburgs; Soviet-style Communist takeover for 133 days; Romanian Occupation;
- ▶ Restored monarchy without a king over a reduced territory; authoritarian regency under admiral Miklós Horthy.
- ▶ Conservative-nationalist rule with **limited parliamentary democracy**.
- ▶ **Increasing state intervention** into the economy.
- ▶ Aligned with Nazi Germany in late 1930s; passed anti-Jewish laws and joined WWII.

## People's Republic (1949–1989)

- ▶ Soviet-aligned **one-party communist state** with centrally planned economy.
- ▶ Early years follow Stalinist patterns closely (Rákosi)
- ▶ Relative liberalization after the revolution of 1956 (Kádár's "Goulash Communism").
- ▶ Introduced limited reforms (1968 NEM); economy stagnated in 1980s, leading to transition.

## Third Republic (1989–)

- ▶ Democratic parliamentary republic with **free elections** and **market economy**.
- ▶ Underwent major privatization and liberal reforms.
- ▶ Considerable democratic backsliding since 2010

## Should we expect different mobility patterns under different regimes? (Hanley and Treiman 2004)

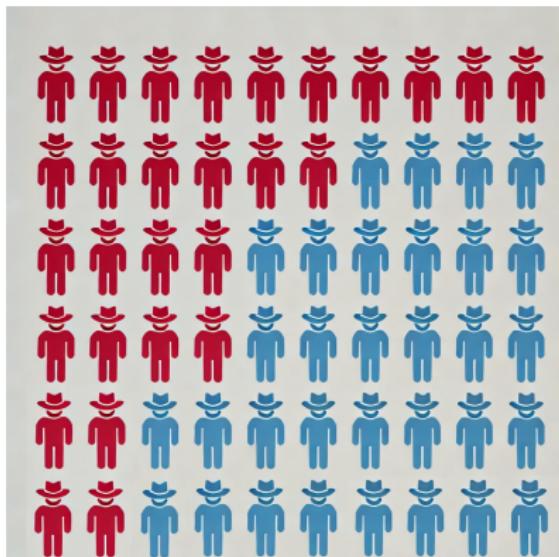
- ▶ Arguments for “yes”:
  - Exclusion of whole segments of society in some regimes
  - Deportations in the 1940s and 1950s
  - Stated mobility goals of certain regimes
  - Market forces and inequality
  - Restitution policies

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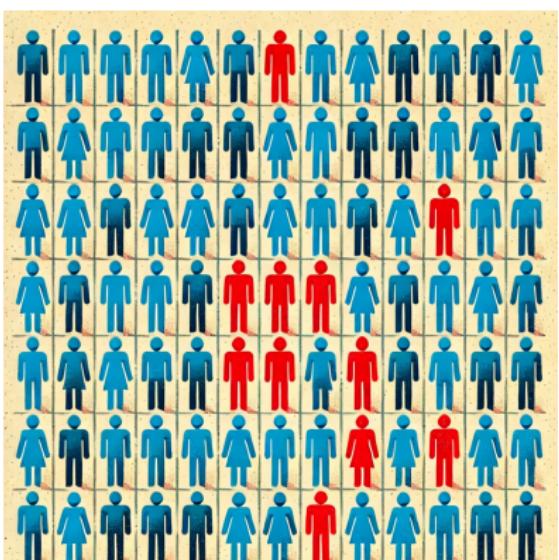
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- ▶ Arguments for “no”:
  - Even dictatorships rarely eliminate private property entirely
  - Status transmission through education and value transmission
  - Conversion across types of capital (human, social, material)

# Relative representation and social status

**Elite**



**Society**



## The essence of the methodology

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- ▶ Intergenerational mobility: RR → 1

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**Definition:** A group of people with similar surnames in some respect.

## **Advantaged group (RR>1):**

- ▶ Surnames ending in “y” – more common among nobility. Generally not adoptable. Around 2.5–5% of the population has such names. They usually refer to the family’s original estate or residence.

## **Disadvantaged group (RR<1):**

- ▶ Names that have ever ranked among the twenty most common surnames. Around 20–25% of the population bears such a name. They typically refer to occupations, physical traits, or origins.
- ▶ Szabó, Nagy, Kovács, Balogh, Tóth, etc.

## What data do we need?

### **Samples from the full name distribution to calculate population share of name groups over time**

- ▶ Census of 1720 (all records)
- ▶ Representative sample of 1869 census (MOSAIC project)
- ▶ Marriage certificates: 1895–1950 (Hand-coded by MACSE)
- ▶ Full surname lists: 1998, 2018 (Population Registry)

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- ▶ (We also have data on: engineering students, academics, inventors, celebrities, etc.)

## Two main periods of inquiry

Habsburg Empire (1780-1867)	↔↔↔	Modern Hungary (1867-2020)
Sparse population data (incomplete, low quality censuses)	↔↔	Good population data (representative census samples, marriage records)
Elite occupations not formed yet:	↔↔	Elite occupations are well defined:
<b>Consultative Diet</b>	↔↔	<b>Representative Parliament</b>
“Hungarian” military units	↔↔	National Army (Honvédség)
Almost no capitalist enterprise	↔↔	Commerce Bill of 1874
Legal diploma is not needed to practice law	↔↔	Diploma needed, graduate yearbooks exist

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### Illustration

### Main results

## The data processing revolution of the past 10 years

- ▶ **Manually entered data** – *marriage certificates, landholdings*  
Availability depends on luck and goodwill of others
- ▶ **Scanning, OCR software, manual correction** – *university and military yearbooks, minutes of parliament*  
Hundreds of hours of monotonous work for research assistants and ourselves; costly software licenses; not scalable
- ▶ **Machine learning pipeline** – *firm data from Hungarian Compass*  
Efficient, scalable

# The Hungarian Compass

546 IFJABOS VÁLLALATOK MINT RÉSZVÉNYTÁRSULATOK A VIDÉKEN.

MÉRLEG,		BILANZ,	
Vagyoni - Aktiva:	frt	Teher - Passiva:	frt
Wahlgebände	8,926	Aktion-Capital .....	480,000
Fabrikations-Geräte .....	69,692	Reservefonds .....	10,000
Maschinen und Apparate .....	307,551	Wertheverminderungs-Reservefond .....	758,734
Nestzähnen und Maschinen .....	129,583	Mastrisch-Schenkes Versicherung .....	120,000
Requisiten, Möbeln und Werkzeuge .....	6,983	Krankenfond .....	11,250
Ringe .....	145,554	Direktionsfond .....	7,500
Casse .....	10,595	Königl. eng. Finance-Direction .....	70,000
Bestände .....	283,904	Creditoren .....	190,716
Akkumulatoren .....	1,000	Hedgingwissen .....	40,804
Dobhármaton .....	149,619		
	1,712,881		

Rebitel összesen frt: 103,914. — Ebből: Nyárométer-állapot 1888-hez frt: 200. — A hizárt nyújtó  
szolg. frt: 63,314. — Trágya-bevétel frt: 40,000. — Kieás: Leiriskra frt: 94,951. — Jutalék  
frt: 7,086. — Összes gyári kifelleges frt: 31,023. — Tisza nyároményre frt: 40,054. — Ebből:  
Ostalákkal frt: 49,000; a felgyűlt-hozzájárulásnak frt: 600; jölkony csíra frt: 254.

MÉRLEG,		BILANZ,	
Vagyoni - Aktiva:	frt	Teher - Passiva:	frt
Fertzerellák	10,344	Részvénytípus .....	46,900
Párpipes	6,000	Rendes tartalékalap .....	610
Külföldi működési	139	Felkerülési tartalékalap .....	5,121
Teket és ház .....	7,549	Ház-arcássokneműi tartalékalap .....	1,621
Előlegyek .....	64	Ki'nem fizetett osztályok .....	779
Adók, leírások, törleszítések .....	13,294	Vezetések .....	596
Haz és telek használata .....	41	Tisza haszon .....	1,876
Rakályai kölcsön értéke .....	2,036		
Összes teljes haszon .....	34,011		
A Tisza bank részvénysége .....	5,189		
Tur.-szl.-műszori takarékpénztár .....	0,926		
Készségi .....	1,143		
	56,903		56,903

207. Ungvár. — Ungvári pörcezállám és nyagipar-részvénytársaság. (6). — Ungvári Pörcezállam- und Thon-Industrie-Aktiengesellschaft. — [1889. —] — Rege: Ung. — Alaptíkó: 60,000 forint, — bennműdra szóló 300 darab részvénny 200 forint belthalossal. — Igazgatóság: dr. Novák Endre, Popper István, Deutsch Emő. — A magyar vagy német vezető jegyző: kit igazgatónak tag, — vagy egy a tanácsú tiszteletvesztő együttségben. — Alapszabályok: 1889, november 23.

208. Ungvár. — Ungvári butorgyárrészvénytársaság. — Ungvári Műtelepháru-Altagyesszékhely. — Rege: Ung. — [1886—1896.] — Alaptíkó: 60,000 forint, — névre szóló 600 db részvénny 100 forint belthalossal. — A címbejegyzés: magyar és német.

209. Villágos. — Magyar-Franziai cognacgyár mint szövetkezet. — Rege: Arad. — [1884—1889.] — Alaptíkó: 55,000 forint. — Igazgató: Bohm István. — Ügyvezető: Mariy René. — A címbejegyzés: magyar.

210. Zenta. — Zentai gőz- és kádfürdő-részvénytársaság fejlesztéséről slatl. — Rege: Bács-Bodrog. — [1859—1909.] — Alaptíkó: 15,000 forint, — névre szóló 300 darab részvénny 50 forint belthalossal. — A címbejegyzés: magyar.

► Published between 1874 and 1944

*“a register of financial, insurance, mutual aid, industrial joint-stock companies, transport and other enterprises within the territory of Hungary, including exhaustive balance sheets and lists of officers from the previous year”*

► 92,723 pages, available on Arcanum

## Workflow

1. Download from Arcanum and identify relevant sections (for now, we exclude financial institutions, insurers, and cooperatives)
2. Train a machine learning model to detect company descriptions (excluding headers, footers, commentary text, and—at this stage—balance sheets, though the model also detects those)
3. Extract text content from company descriptions (OCR)
4. Use an LLM to clean and structure the unstructured text

# Data extraction – the visual model

DIVERSE INDÜSTRIEUNTERNEHMUNGEN ALS A.-G. IN BUDAPEST.		841
<b>Alapításuk: 800,000 K.</b> — bennműdra szóló 4,000 darab 200 K-kból részvénnyel. — (Aktien 800,000 K, ükörvel. 1911-ig 1,500 db új részvénnyel 800 K-en rendel.) — <b>Igazgatóság:</b> Horváth Imre, Szily Tamás, dr. Kofler István, Hollókői Ödön, Stern Samu, Molnár Ferenc, Reichl N. János, Munkácsy József, dr. Magyar Károly, dr. Blaich Ottó, Gyérfi Richárd, <b>Felügyelt-hivatalos:</b> Első Károly, Elek Károly, Guszler János, dr. Szandtner Endi, <b>Cégegyletszám:</b> Döntős Miksa. — A cégéget jegyzí: két igazgatói tag, vagy egy, egy <i>per procurationem</i> cégéget. — <b>Hivatalosítás:</b> — Almasz, 1911 március 6. — <b>Kifelhívás:</b> —		
<b>MÉRLEG.</b>	1912 decembert 31-én.	<b>BILANZ.</b>
Vagyos — Aktien : K	Túker — Passiva : K	
Készpénz — Kaszta ... ... ... ... 3,705	Részvényalapék — Aktienkapital ... 700,000	
Elszállított — Gelejtszám ... ... ... ... 1,000	Hitelezések — Kreditorok ... 400,454	
Áru és anyag — Ware und Material ... ... ... ... 70,280		
Aktien — Débütálás ... ... ... ... 100,204		
Vesztetés — Verlust ... ... ... ... 68,935		
		1,230,454

1920. Budapesti Ilyenegylet részvénnytársaság. — Budapesti Reiterverein. — Budapest. — (1909—1918.) — VI. Büyükerületi-orsz. 84—36. nr. — TH. 94—98. — <b>Alapítás:</b> 210,000 K — néven száz 355-doh 400 K-kból részvénnyel. — (Az alapítók 400,000 koronára voltak 1.000 db K-kból részvénnyel, melyekből azoknak csak 625 darab lett kibocsátva. Az 1903. évi kláj, a többi részvénnyelbocsátási besorolásban a szolgáltók a törölköző körök részvénnyeiknek megfelelően a jelenlegi összegben állapította meg.) — <b>Altkéndekapital:</b> 210,000 K — is 325 Stück auf Namen lautende Aktien mit 400 K-Emissionsk. — 1 részv. 1 részv. — Ostalbék 1908—1912-ig K. 1. 0. 0. 0. 0. 0. — <b>Szolg. elv:</b> 5 évr. — <b>Elnöki</b> (Országos) Vizsgálótagozat: Dr. Pálffy Sándor, dr. Pálffy Sámuel, dr. Gömöri Gábor, dr. László Tóth, dr. Károlyi Ádám, dr. László Alföldi, Szászhely Gyula, Székely Ferenc, leány Ullmann Gyula. — <b>Felügyelt-hivatalos:</b> dr. Hegyi László, Herrfeldz Frigyes, Strasser Alfréd, Wollner Hugo. — <b>Cégegyleti igazgatói:</b> Györgyi Tóth, dr. Tóth Kálmán, Hossza Pál. — A cégéget jegyzí: két igazgatói tag, vagy egy, vagy társultan tisztviselő ügyelőként. — <b>Alapzat:</b> 1904 május 18. — F. 6. (XIX.) könygy, t. április 20.		
<b>MÉRLEG.</b>	1912 decembert 31-én.	<b>BILANZ.</b>
Vagyos — Aktien : K	Túker — Passiva : K	
Lovasadópályai és telkek — Reitelschule und Grundstücke ... ... ... ... 400,500	Részvényalapék — Aktienkapital 210,000	
Stációküzékek — Eisenbahn ... ... ... ... 19,971	Tártalakalap — Reservesfond ... 30,116	
Polyiszimontia — Konts.-Kontroll ... ... ... ... 6,900	Hitelezések — Hypothekar 30,544	
Pénzügyüzlet — Kasza ... ... ... ... 1,542	Hitelezések — Kreditorok ... 302,580	
	Nyerődug — Gewinn ... 3,930	
	Nyerődug — Gewinn ... 2,858	
		430,815

1921. „Collin“ eszterházyoldogó ipar. hevásárlási és eladási társaság. — K. I. — „Collin“ Gesellschaft zum Einkauf und Verkauf für die Knöchenerwerbende Industrie m. b. H. — Budapest. — (1913—1922.) — IX. County. 2. — Földesip. : Wien. — <b>Alapítás:</b> 150,000 K — <b>Társasági Részletevezető:</b> Ilau Gyula. — <b>Cégegyletszám:</b> dr. Ede Zsigmond, Margitai Ulrich, Bodnárhely Károly. — <b>Cégegyleti-helyettesek:</b> dr. László Tivadar, Kraft Hubert. — <b>A budapesti Rökötelep képviselői:</b> dr. László Béla, Mittnády Árpád. — A cégéget jegyzí: két igazgató, vagy két igazgató-helyettes, vagy egy igazgatóval egyigazgató-helyettes, vagy két igazgatóval egy <i>per procurationem</i> cégéget. — <b>Alapzat:</b> 1918 február 18.		
<b>MÉRLEG.</b>	1921 decembert 31-én.	<b>BILANZ.</b>
Vagyos — Aktien : K	Túker — Passiva : K	
Lovasadópályai és telkek — Reitelschule und Grundstücke ... ... ... ... 400,500	Részvényalapék — Aktienkapital 210,000	
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1922. Continental szab. Yasutí Hirtelekén Részvénnytársaság. — Continental szab. Eisenbahnh. Annonsen Aktiengeellschaft, — Continental Szab. annonsen brevetsz. pour publication des réclames en chemins de fer. — Budapest. — (1913—1938.) — V., Durotuya-n. 2. — <b>Alapítás:</b> 202,000 K — bennműdra szóló 1,010 db 200 K-kból részvénnyel. — <b>Aktienök:</b> Hoffer Aladár. — <b>Igazgatóság:</b> Domahidy István, Hoffer Aladár, Rákó Sándor, Rákó Gyula,		
<b>MÉRLEG.</b>	1922 decembert 31-én.	<b>BILANZ.</b>
Vagyos — Aktien : K	Túker — Passiva : K	
Lovasadópályai és telkek — Reitelschule und Grundstücke ... ... ... ... 400,500	Részvényalapék — Aktienkapital 210,000	
Stációküzékek — Eisenbahn ... ... ... ... 19,971	Tártalakalap — Reservesfond ... 30,116	
Polyiszimontia — Konts.-Kontroll ... ... ... ... 6,900	Hitelezések — Hypothekar 30,544	
Pénzügyüzlet — Kasza ... ... ... ... 1,542	Hitelezések — Kreditorok ... 302,580	
	Nyerődug — Gewinn ... 3,930	
	Nyerődug — Gewinn ... 2,858	
		430,815

- LayoutParser package, Melissa Dell & co., Harvard
- Detectron2, CNN (Convolutional Neural Network)
- We teach it using a few hundred pages; it finds the rest automatically

# Data processing – OCR

The visual model outputs image snippets like this:

**24. Kassa.** — Csányi műmalom-társulat. — Csányer Kunstmühlen-Gesellschaft. —  
Megye : Abauj-Torna. — [1876—1906.] — Alaptőke: 200,000 forint, — névre szóló 1,000 darab részvény 200 forint befizetéssel. — Osztalék 1885—1889 frt: 20, 8, 5, 10, 8 (= 10, 4, 2 50, 5, 40%). — Összforgalom frt: 626,147. — Elnök : Aranyossy László. Vezérigazgató : Weiss József. Igazgatósági tagok : Fiedler Károly, Flachbart Samu, Deil Jenő, Hollay Adolf. Felügyelő-bizottság : Jeger Károly, Stadler Sándor, Schlesinger Albert. Könyvelő : Wilhelm Mór. Pénztárnok : Szentistványi A. — A magyar vagy német czéget jegyzi: két igazgatósági tag együttesen. — Alapszabályok : 1876. október 27. — F. é. közgyűlése volt: Március hónapban.

From which, using the Tesseract OCR package, we get:

24. Kassa. — Csányi műmalom-társulat. — Csányer Kunstmühlen-Gesellschaft. —  
Megye : Abauj-Torna. — [1876—1906.] — Alaptőke: 200,000 forint, — névre szóló 1,000 darab részvény 200 forint befizetéssel. — Osztalék 1885—1889 frt: 20, 8, 5, (10, 8 (= 10, 4, 2 50, 5, 40%). — Összforgalom frt: 626,147. — Elnök: Aranyossy László. Vezérigazgató : Weiss József. Igazgatósági tagok : Fiedler Károly, Flachbart Samu, Deil Jenő, Hollay Adolf. Felügyelő-bizottság : Jeger Károly, Stadler Sándor, Schlesinger Albert. Könyvelő: Wilhelm Mór. Pénztárnok: Szentistványi A. — A magyar vagy német czéget jegyzi: két igazgatósági tag együttesen. — Alapszabályok : 1876. október 27. — F. é. közgyűlése volt: Március hónapban.]

# Data processing – LLM

- ▶ gpt-4.1-nano; 120k firm-year observations; 743k firm-year–person observations; ran for one week ( 5s per request)
- ▶ We extract basic firm data (industry, book value, for now) and people data (name and role)
- ▶ All program code is publicly available ([github.com/attilagaspar](https://github.com/attilagaspar))

```
"firm_name": "Csányi Műmalom-társulat",
    "industry": "malomipar / gabonaipar",
    "corrected_text": "24. Kassa. – Csányi Műmalom-társulat. – Csányi |",
    "personal_names": [
        {"name": "Aranyossy László", "title": "elnök"}, " // yellow bracket
        {"name": "Weiss József", "title": "vezérigazgató"}, " // yellow bracket
        {"name": "Fiedler Károly", "title": "igazgatósági tag"}, " // yellow bracket
        {"name": "Flachbart Samu", "title": "igazgatósági tag"}, " // yellow bracket
        {"name": "Deil Jenő", "title": "igazgatósági tag"}, " // yellow bracket
        {"name": "Hollay Adolf", "title": "igazgatósági tag"}, " // yellow bracket
        {"name": "Jeger Károly", "title": "felügyelő-bizottsági tag"}, " // yellow bracket
        {"name": "Stadler Sándor", "title": "felügyelő-bizottsági tag"}, " // yellow bracket
        {"name": "Schlesinger Albert", "title": "felügyelő-bizottsági ta"}, " // yellow bracket
        {"name": "Wilhelm Mór", "title": "könyvelő"}, " // yellow bracket
        {"name": "Szentistványi A.", "title": "pénztárnok"} ]
```

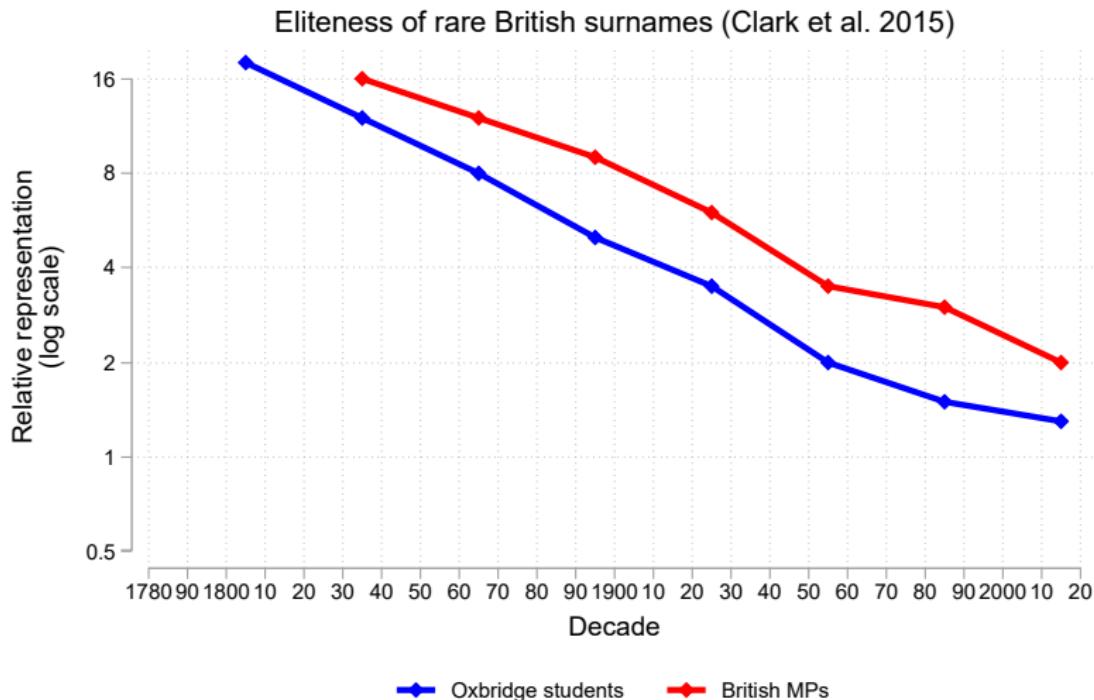
Our question: how did the relative representation of the two social groups (Y-ending, top20) evolve across different elite groups? How did representation change across regimes?

- ▶ Medical students
- ▶ Law students
- ▶ Business leaders
- ▶ Members of Parliament

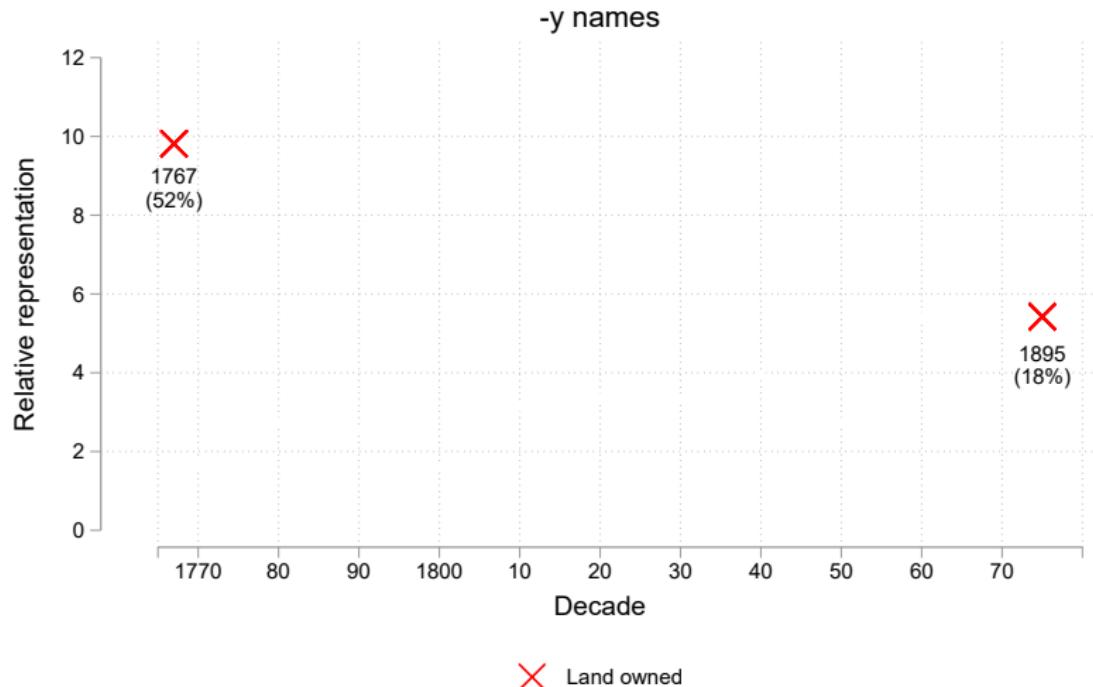
### **Was there mobility?**

- ▶ Mobility occurs if  $RR \rightarrow 1$
- ▶ (Y-ending names converge **from above**, Top20 converge **from below**)

# Benchmarking

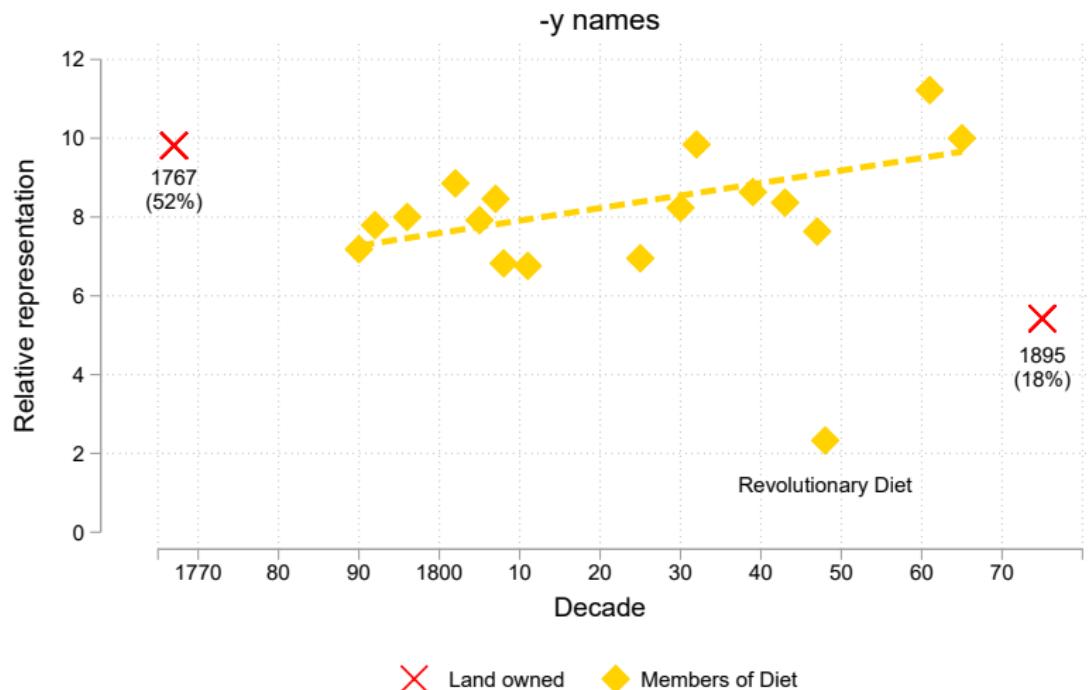


# Y-ending names in the Habsburg Empire: transition out of feudalism



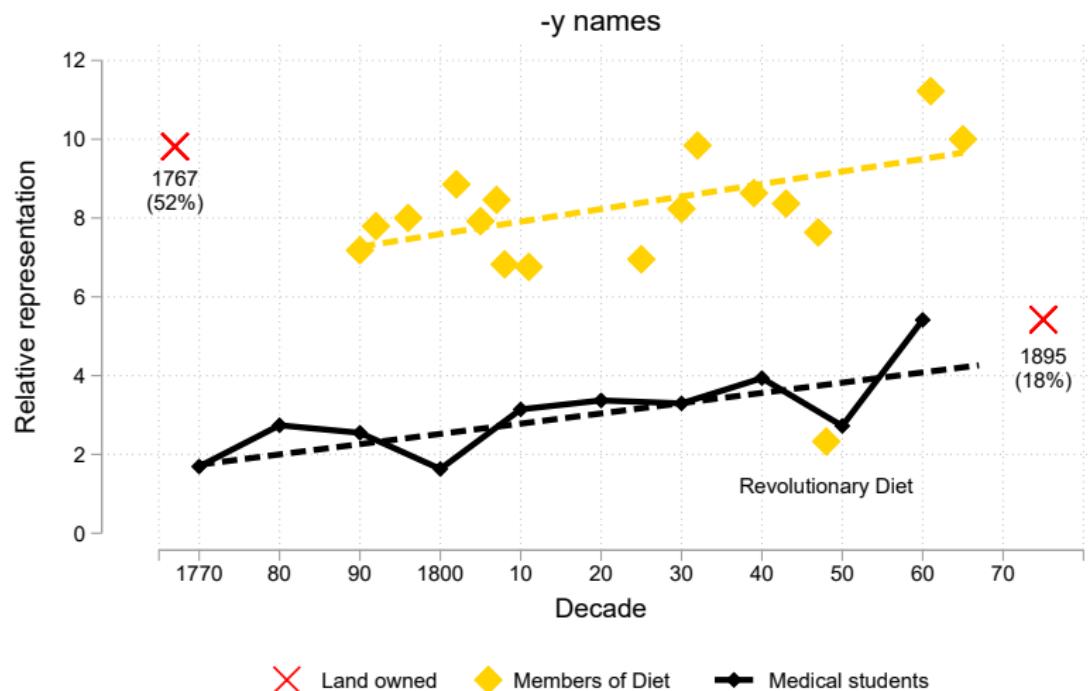
# Y-ending names in the Habsburg Empire: entry into public administration

[noframenumbering]



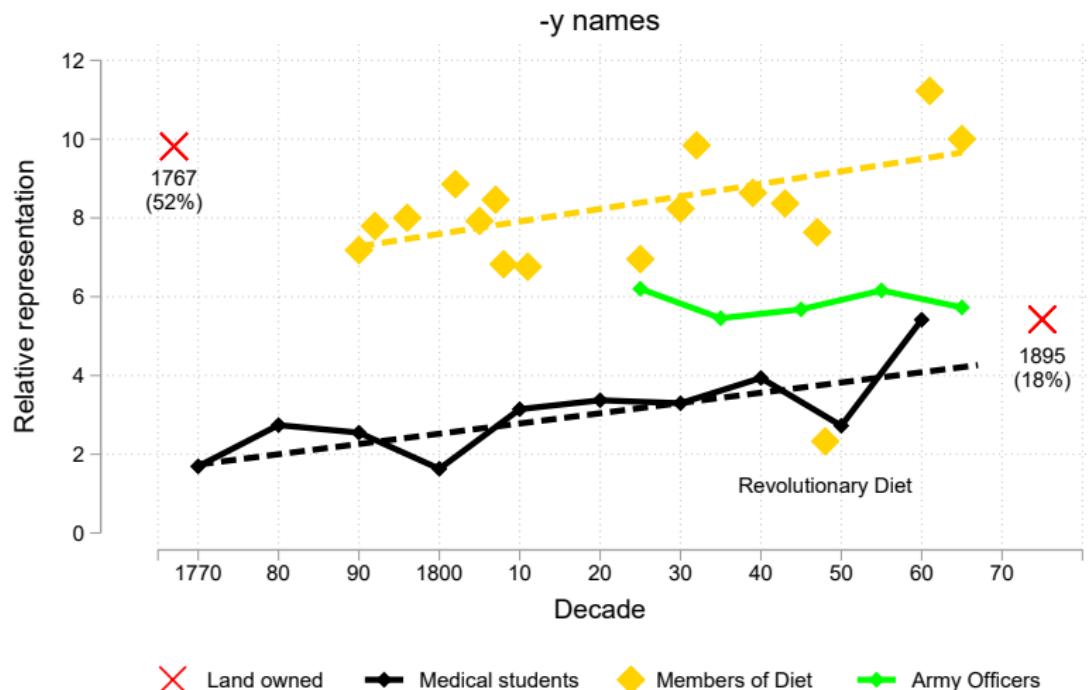
# Y-ending names in the Habsburg Empire: entry into the educational elite

[noframenumbering]



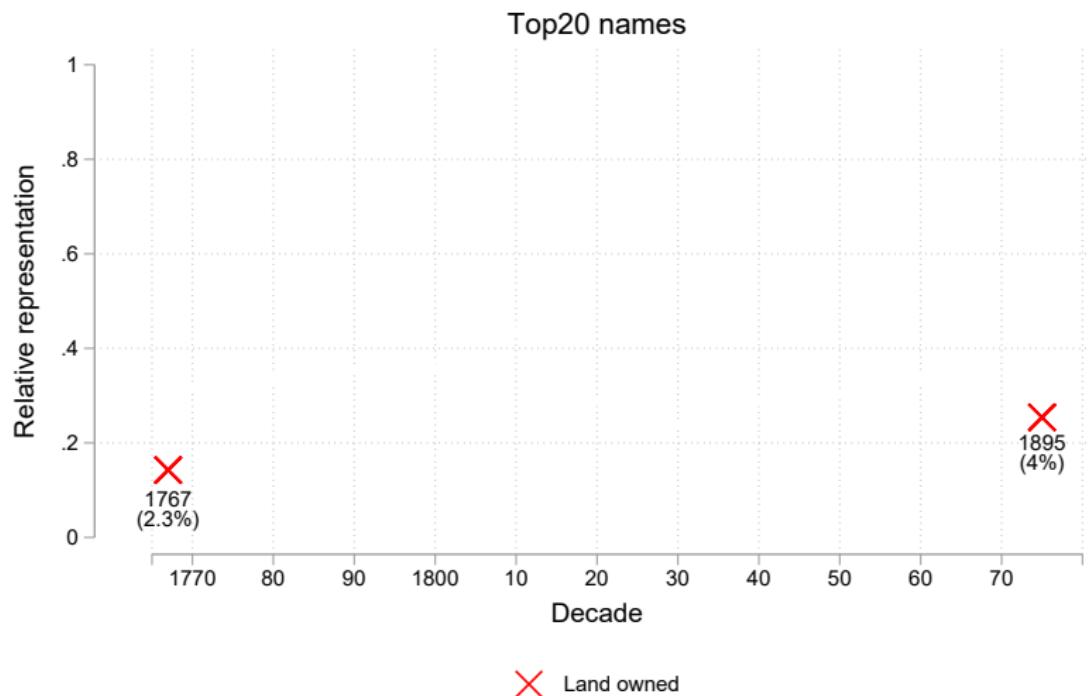
# Y-ending names in the Habsburg Empire: military

[noframenumbering]

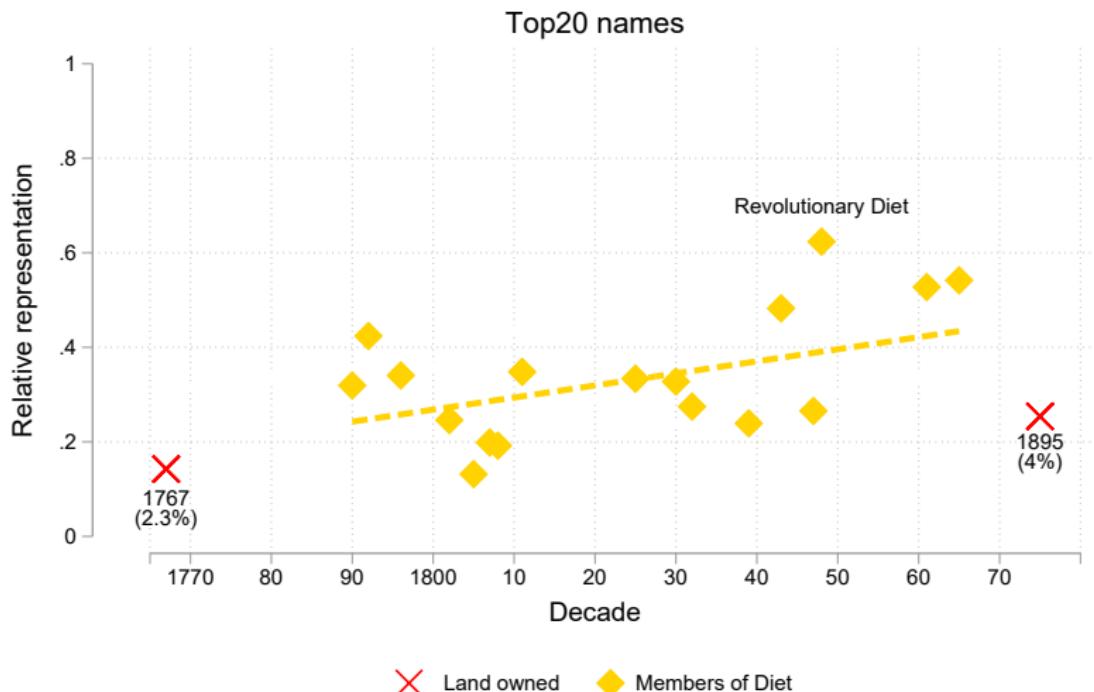


- ▶ In little more than the century 1/3 of ALL arable land is lost by -y names (34pp drop)
  - Fragmentation of landholdings
  - Impoverishment of the lower nobility
  - 1848 revolution abolishes entailment (*aviticitas*, prohibition of buying and selling land)
- ▶ In parallel with this, the ..y names capture elite occupations, such as public administration, education, military
- ▶ RR increased by 2 points in 70 years in the political elite (lower chamber!)
- ▶ RR increased by 2 points in 100 years in the educational elite
- ▶ (well-documented phenomenon in Hungarian history and literature)

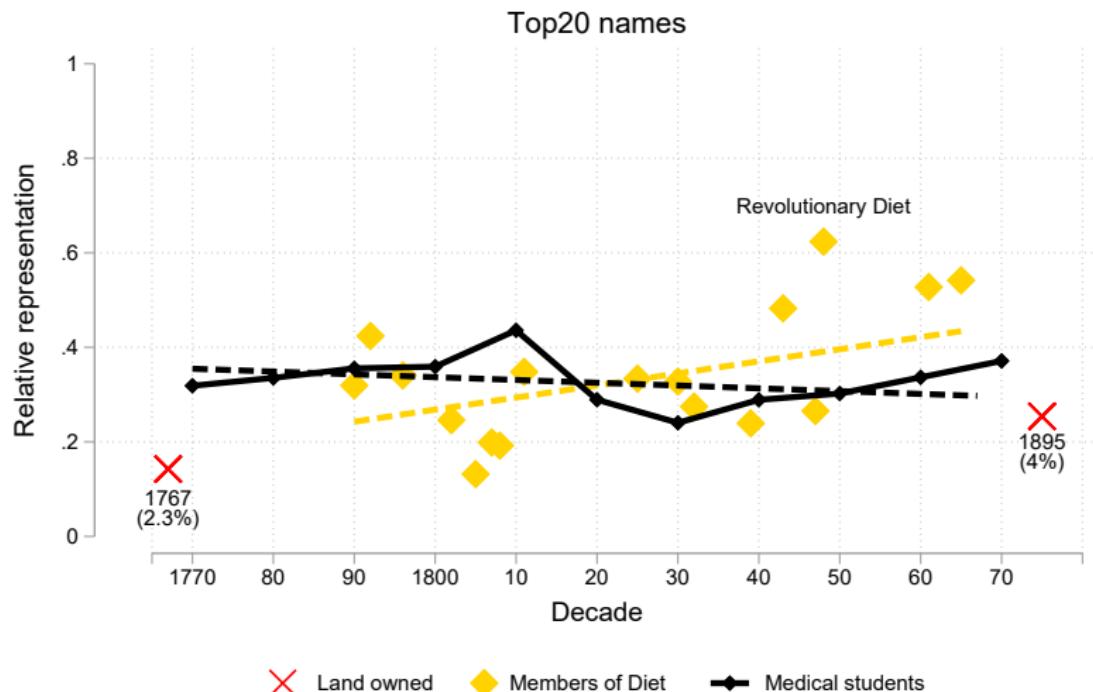
# Top 20 most common surnames in the Habsburg Empire: transition out of feudalism



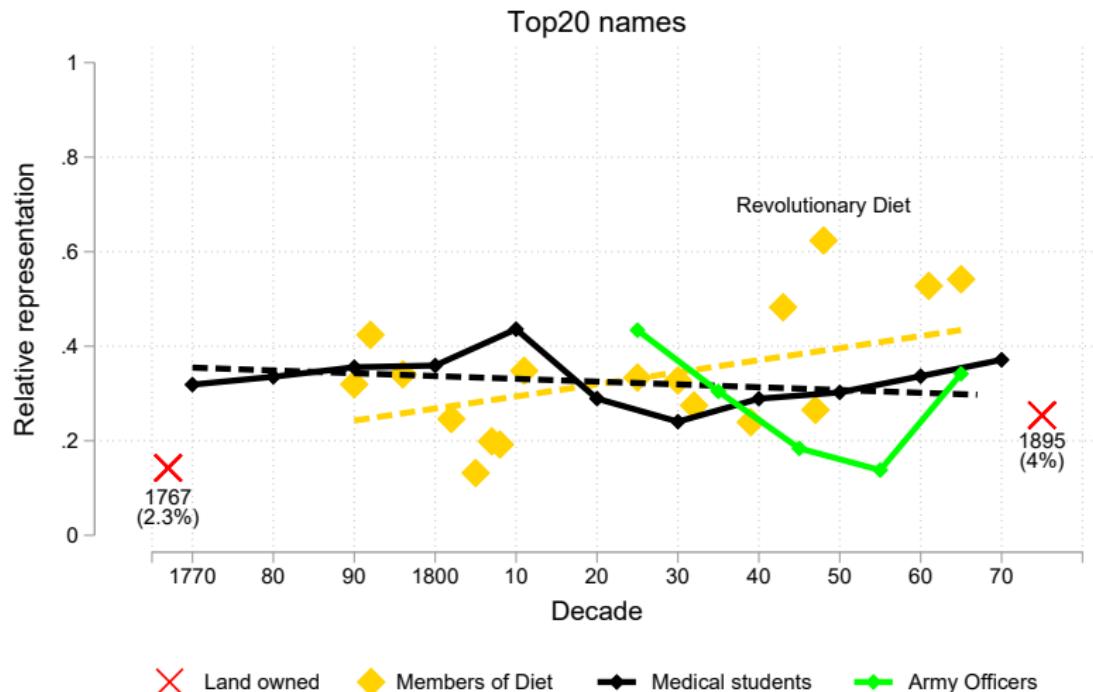
# Top 20 most common surnames in the Habsburg Empire: slow convergence in the Diet



# Top 20 most common surnames in the Habsburg Empire: educational elite



# Top 20 most common surnames in the Habsburg Empire: officers



## Social mobility and political regimes: Top20 names in the Habsburg Empire

- ▶ They did not own the land in the 18th century - this hardly changed.
- ▶ They very slowly (if at all) converged to mean social status 1867.
- ▶ Rather: alternating periods of convergence and divergence.

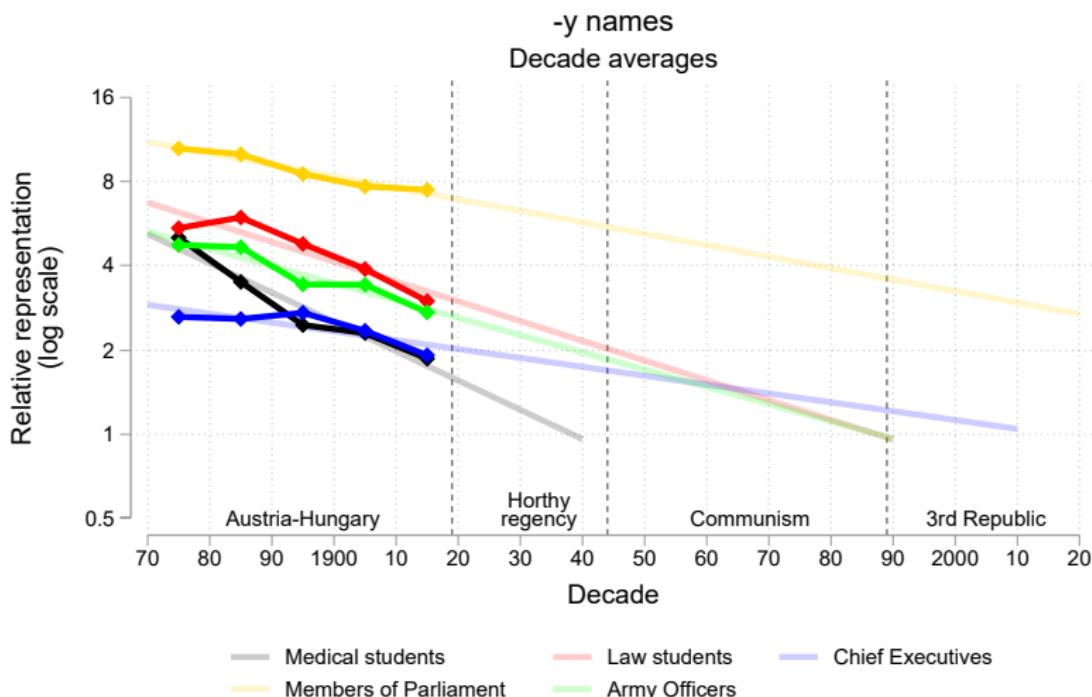
## Main results: 1870-2020

- ▶ Modern society was formed since the mid-19th century
- ▶ How does **observed** mobility look like?
- ▶ How does actual RR evolve relative to predicted RR?

## Main results: 1870-2020

- ▶ Modern society was formed since the mid-19th century
  - ▶ How does **observed** mobility look like?
  - ▶ How does actual RR evolve relative to predicted RR?
- 
- ▶ Assume **constant rate** of convergence, linear trend **in LOG relative representation.**

# Austria-Hungary: ...y surnames

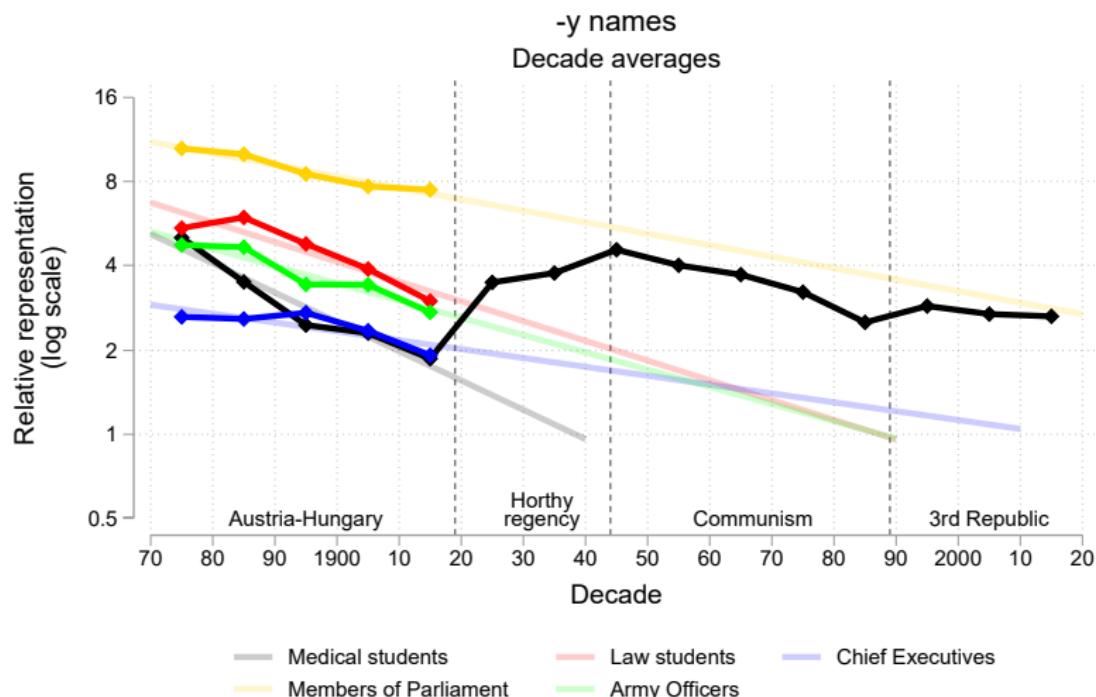


**Similar, and almost linear convergence to the mean in log-representation in all elites**

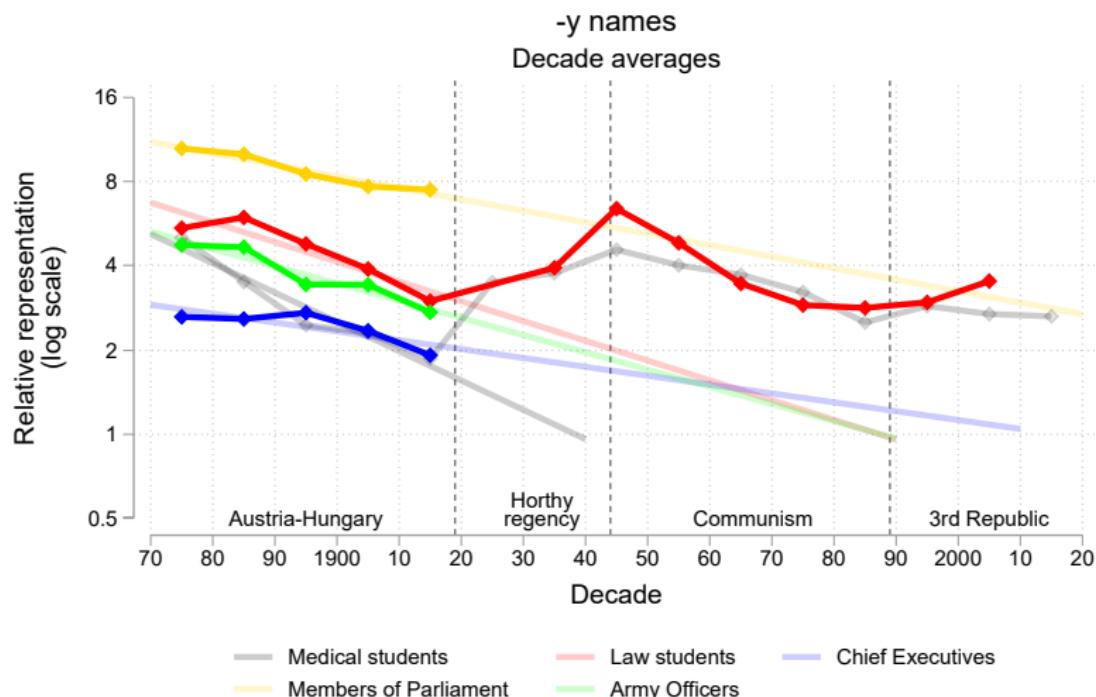
Proportional representation should have been reached by

- ▶ 1940 among doctors
- ▶ 1990 among lawyers and military officers
- ▶ 2010 in the business elite
- ▶ 2120 (!) in the political elite

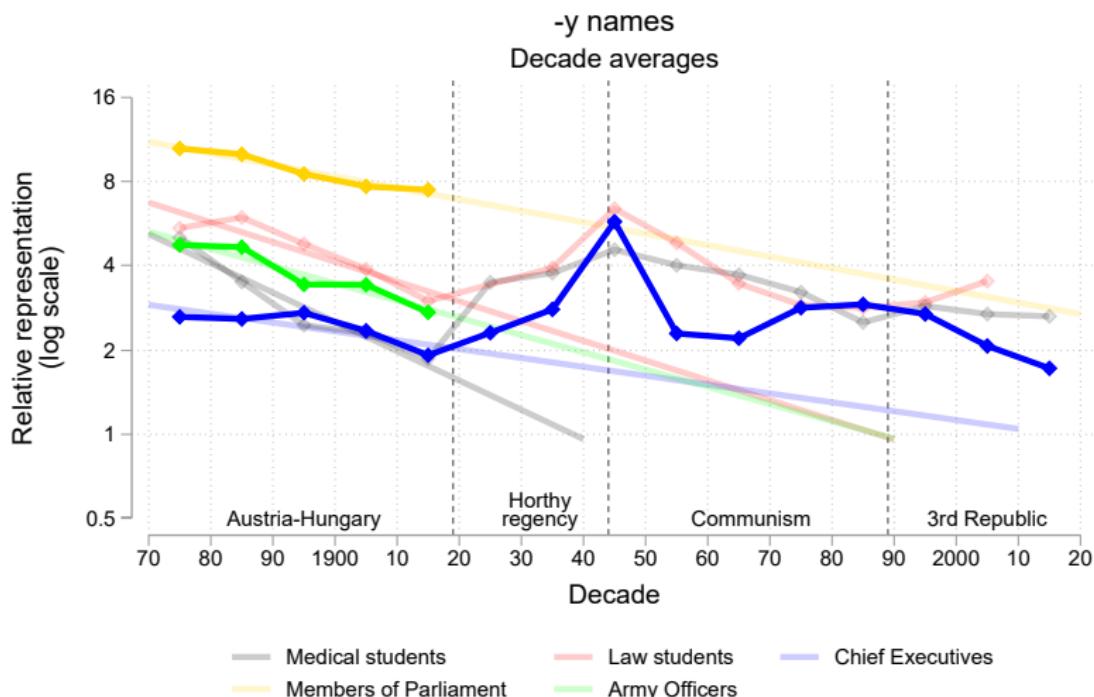
# ..y names shift trajectory under Horthy among doctors



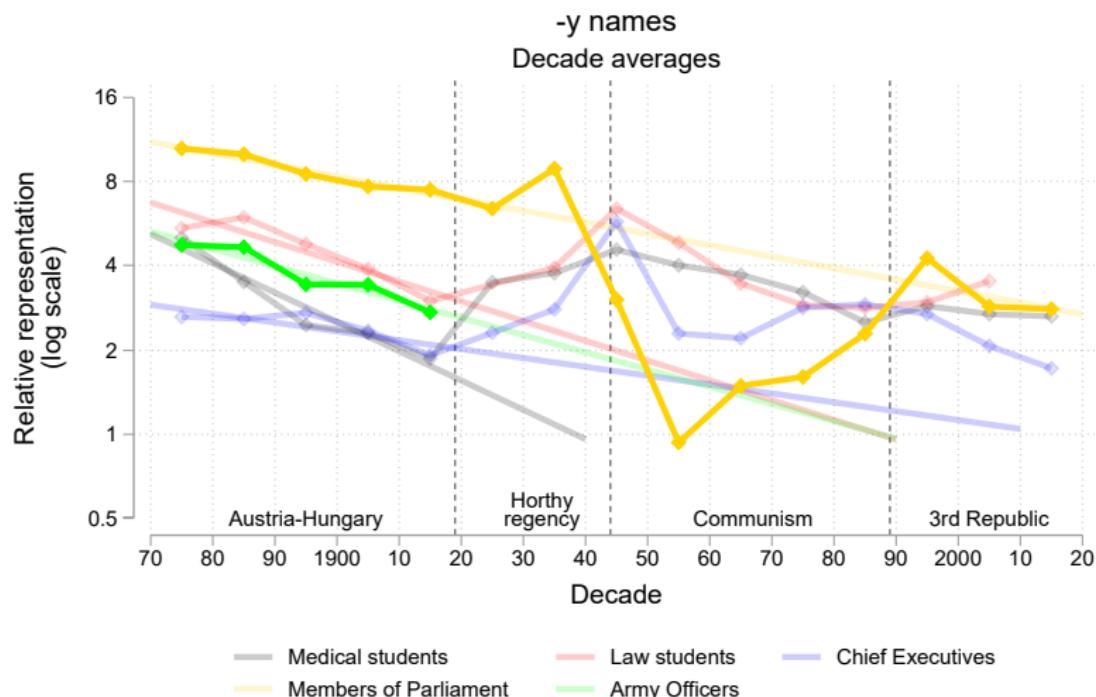
# ..y names shift trajectory under Horthy among lawyers



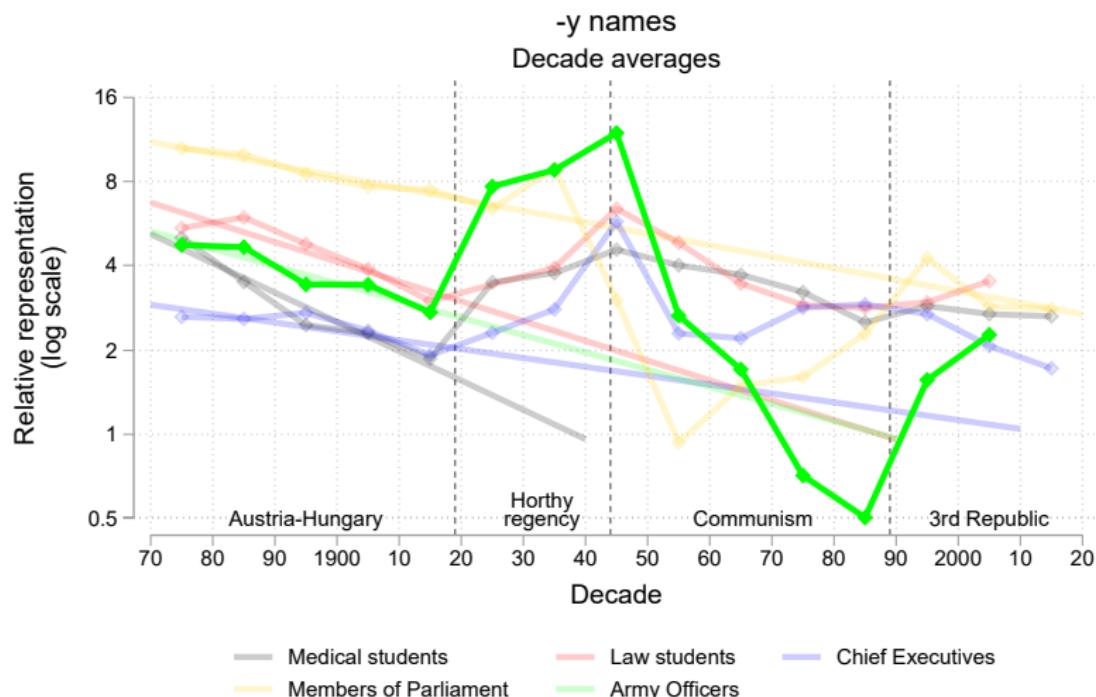
# ..y names shift trajectory under Horthy among business elites



..y names out from the political elite under Communism - temporarily

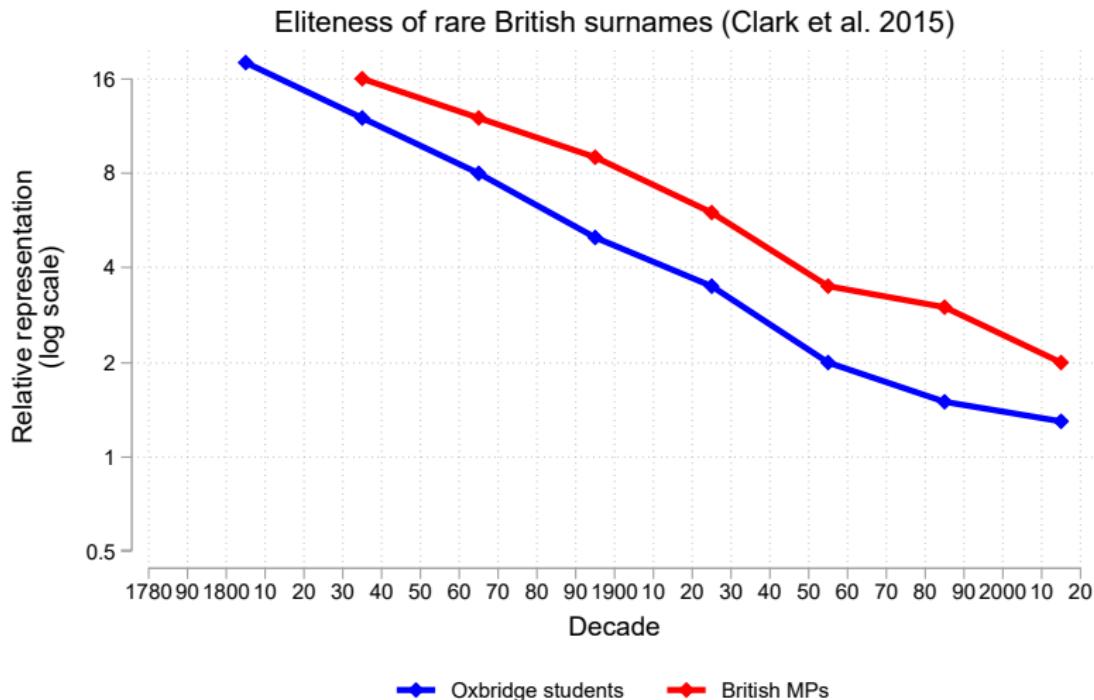


..y names out from the military under Communism - temporarily

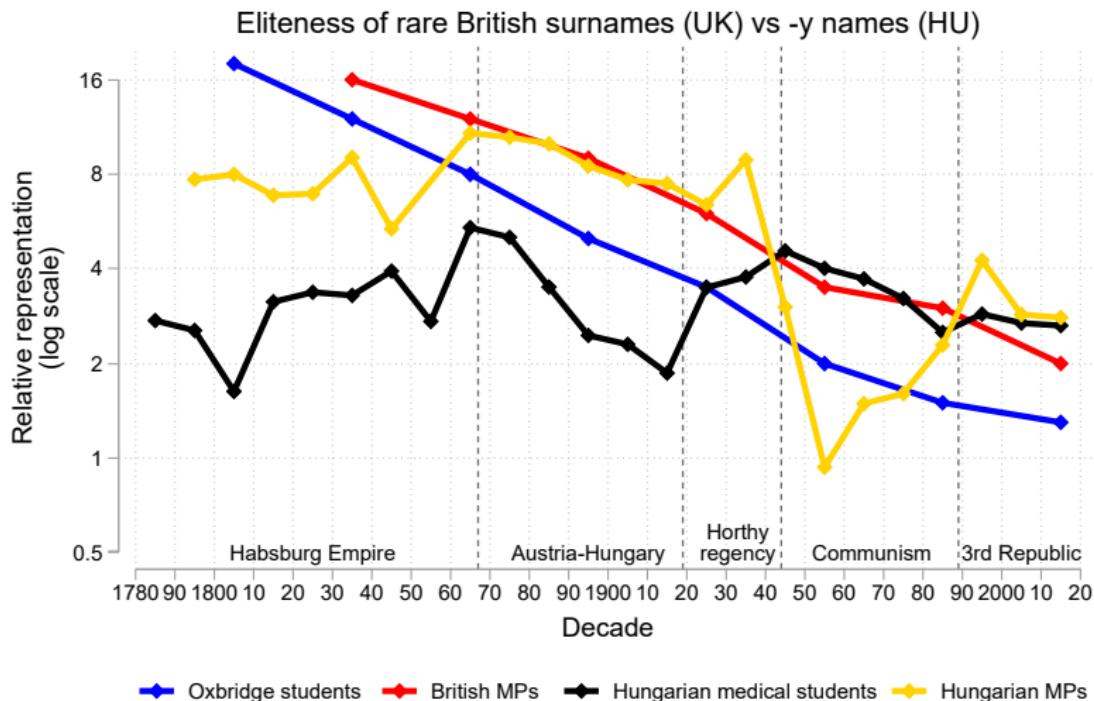


- ▶ The right-wing authoritarian Horthy-regime *permanently* decreased social mobility by pushing old elites on a higher status trajectory
- ▶ Communism's effect is either
  - **nonexistent**: social elites
  - **transitory**: economic, political, military elites - now regressing to the mean after rebounding to post-WWII status
- ▶ Representation in the political elite is *exactly* where predicted from 1918 - proportionality expected by 2120
- ▶ This seems to be the “steady-state” trajectory of downward social mobility for the ..y named group
- ▶ **Convergence to the mean will be late by at least a century**

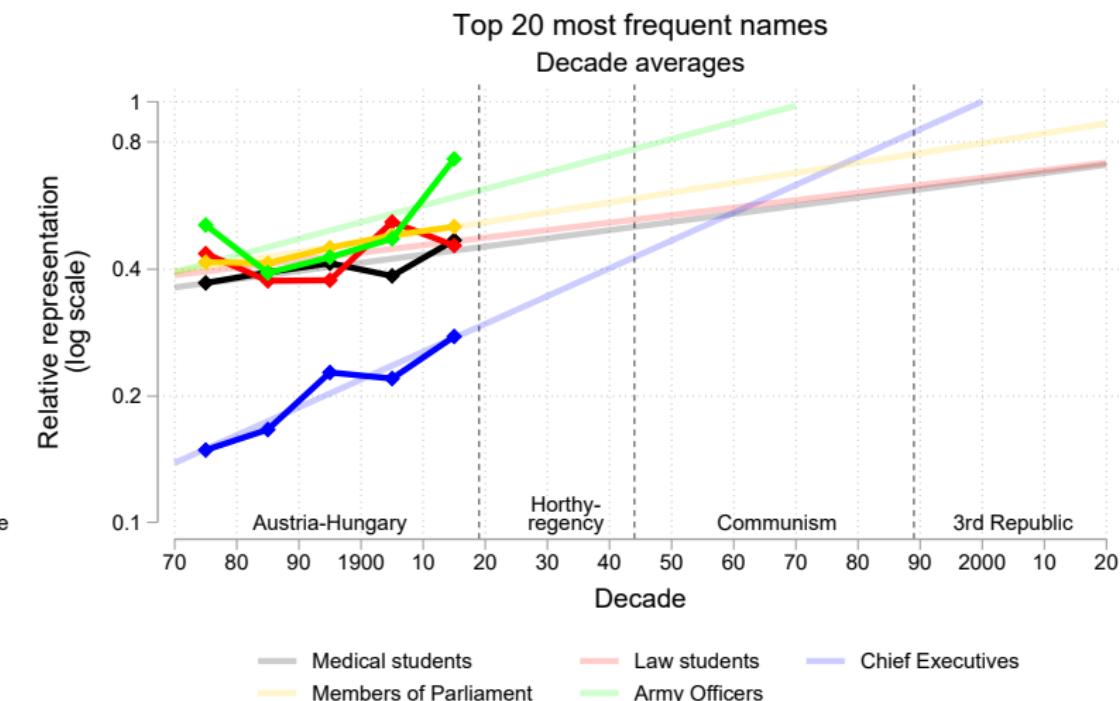
# Comparison: Hungary vs UK



# Comparison: Hungary vs UK



# Austria-Hungary: Top20 surnames



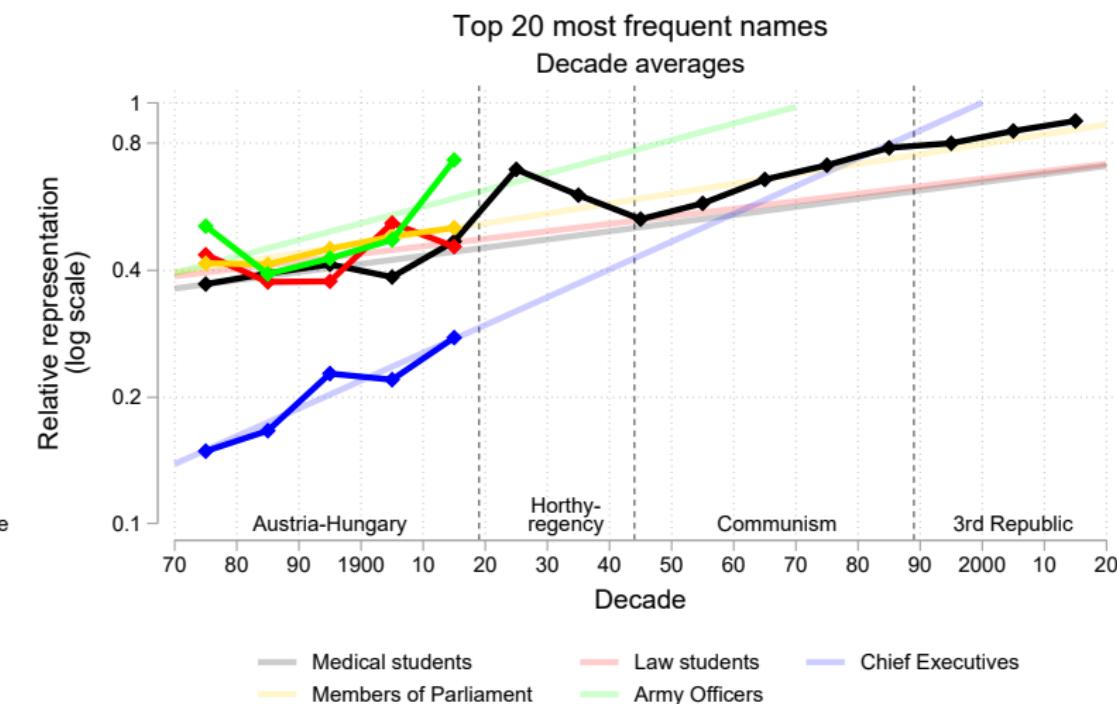
Proportional representation should have been reached by

- ▶ 1970 among army officers
- ▶ 2000 in the business elite
- ▶ 2040s among the political elite
- ▶ 2090s among law students and doctors

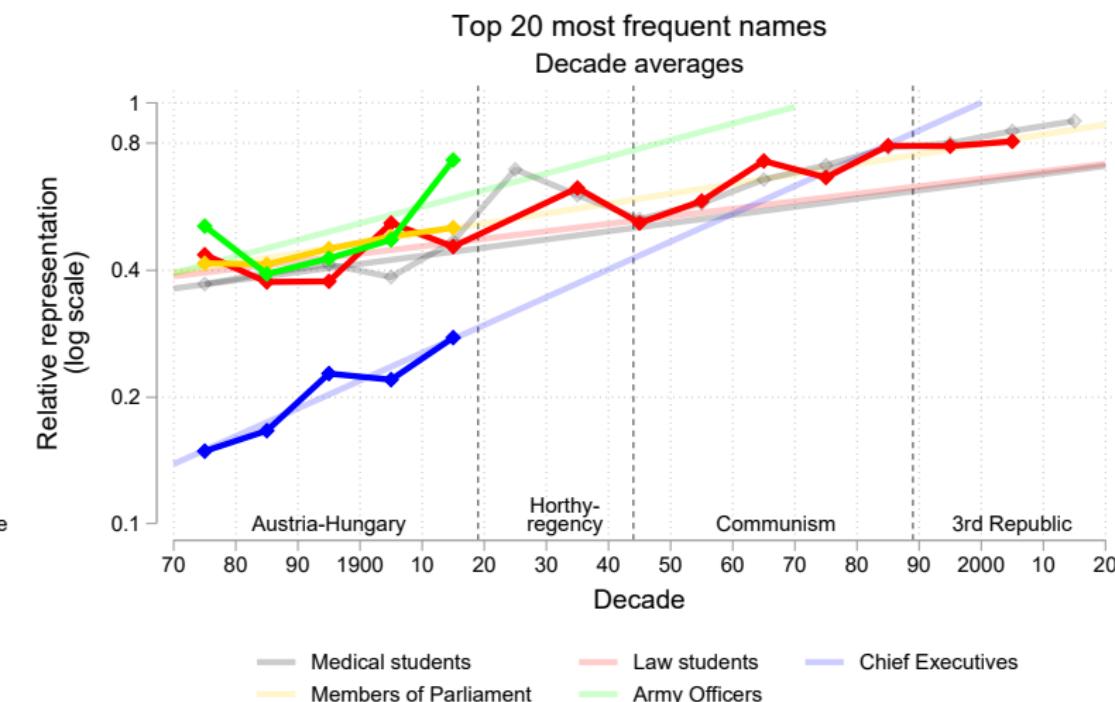
**Very similar rates of convergence among different elites.**

New institutions offer faster social mobility (national army, capitalist enterprise)

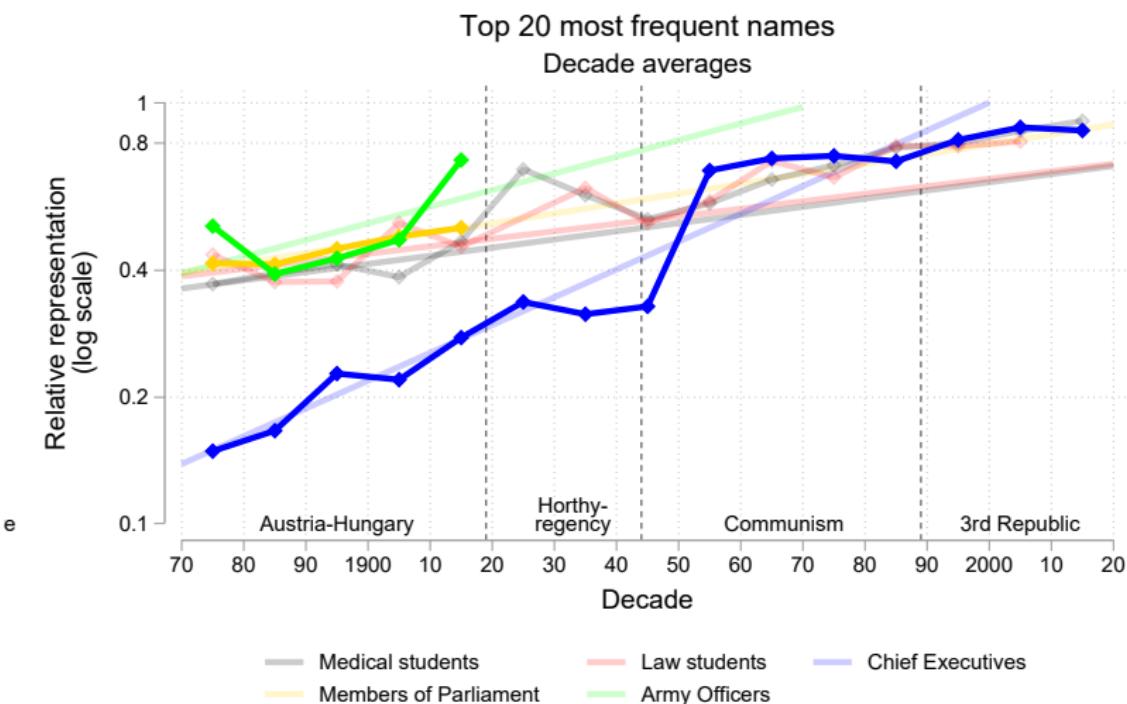
# Doctors: upward shift then reversal under Horthy, new trajectory under Communism



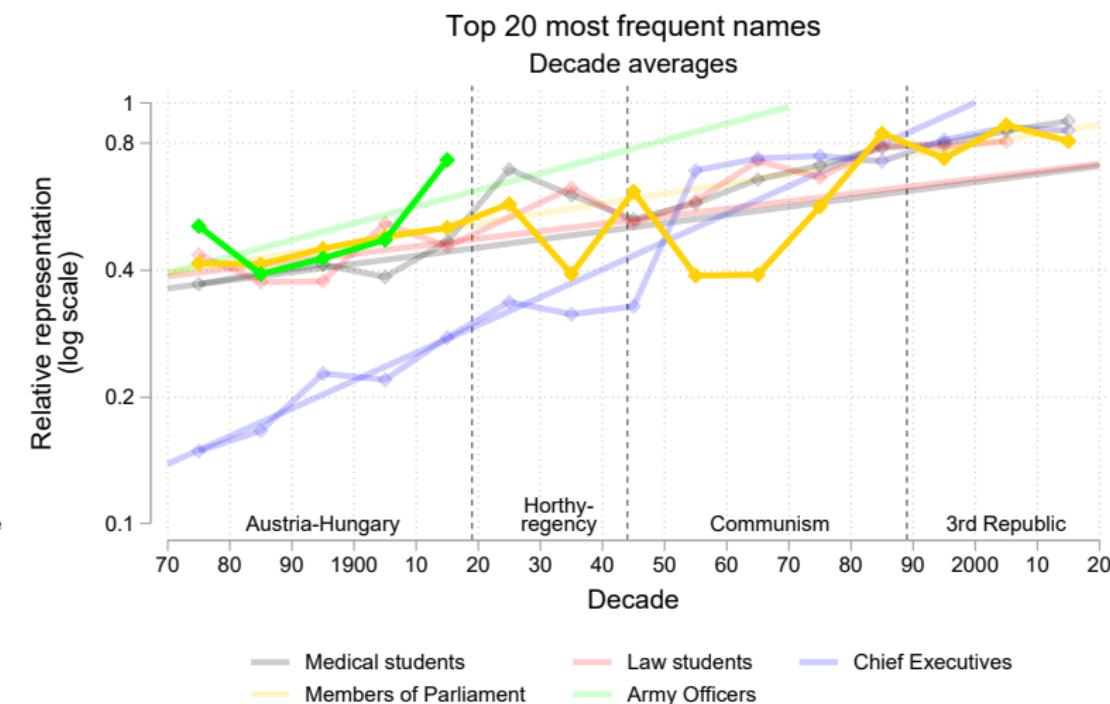
# Lawyers: upward shift then reversal under Horthy, new trajectory under Communism



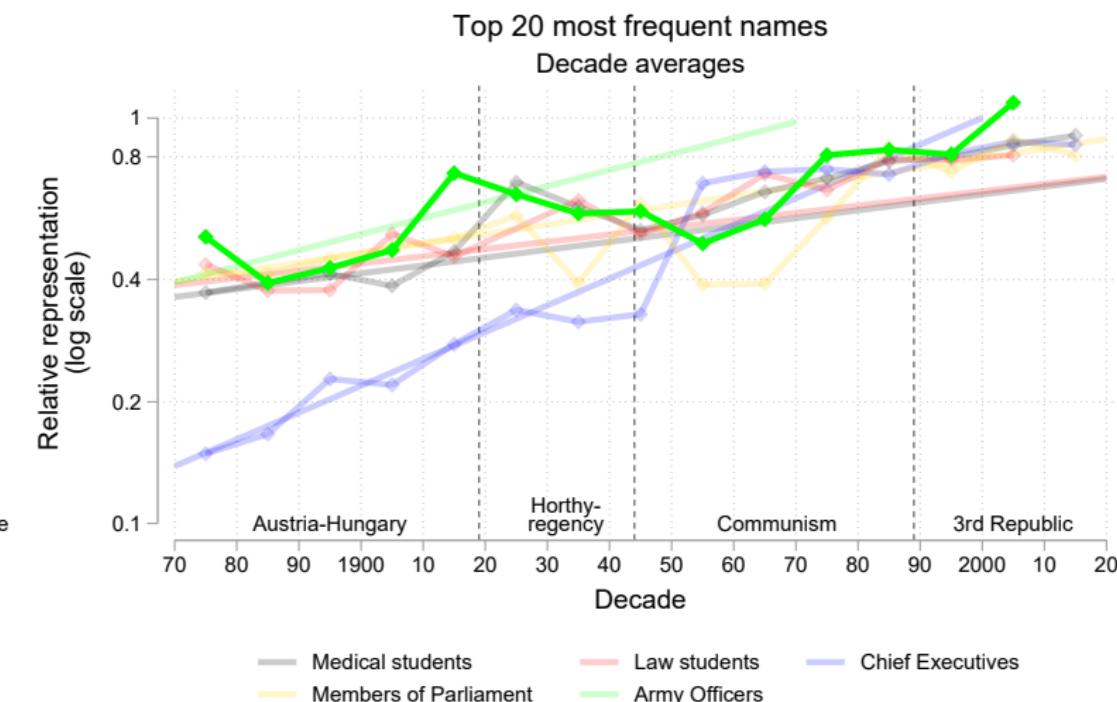
# Business: downwards shift under Horthy, new trajectory under Communism



# Political elite: downwards shift under Horthy, rebound then decline then rebound under Communism



# Military elite: downwards shift under Horthy, rebound under Communism, proportional representation by 2010

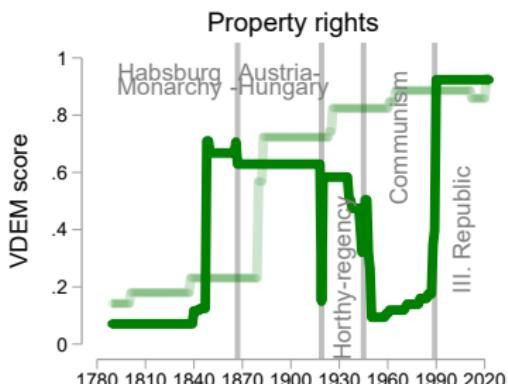
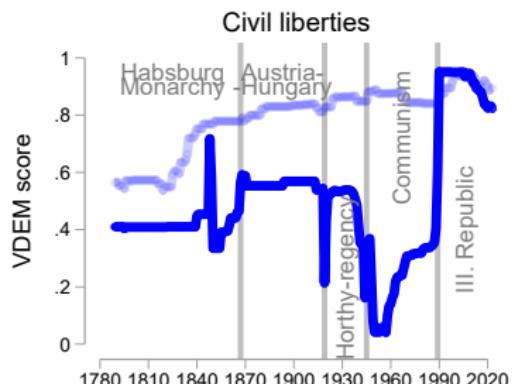
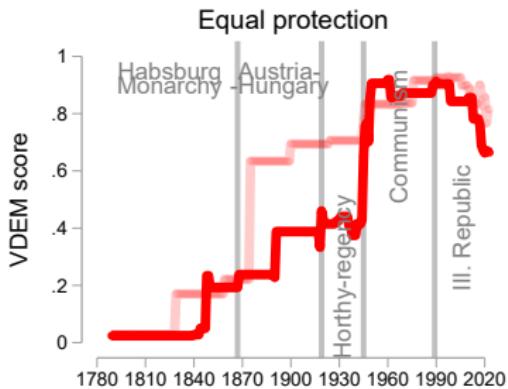
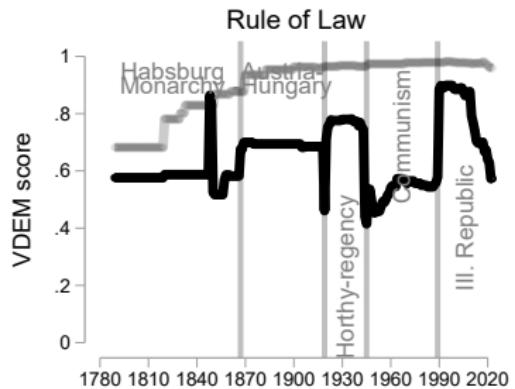


- ▶ The right-wing authoritarian Horthy-regime *temporarily* reversed the status convergence of the top20 most frequent surnames
- ▶ Convergence trajectories shift upward under Communism
- ▶ Again, trajectories “gravitate” towards the predicted trajectory within the political elite
- ▶ Convergence to the mean was achieved by 2010 in the military elite (40 years later than predicted)
- ▶ **Convergence to the mean is expected to be achieved in other elites in the 2040s** - 50 years earlier for educational elites, 50 years later for business elites than expected a century ago

## Conclusions

- ▶ We measured social mobility through the **relative representation** of initially high- and low-status Hungarian surname groups in Hungary through **250 years** and **5+ different elite occupations** using hundreds of thousands of pages of historical data
  - **Population shares of names:** Census records: 1720, 1869; Marriage records: 1895-1950; Modern population registry: 1998, 2018; Historical Agricultural censuses: 1767, 1895
  - **Members of Diet/Parliament:** Parliament yearbooks (1770s-1980s), Election Office Databases (1990-2022); **Medical graduates:** Medical graduate yearbooks: 1770-1970s; Official registry of medical practitioners: 1970s-2018; **Law graduates:** Law school yearbooks: 1870-2005; **Business elites:** Historical corporate yearbooks: 1870-1944; Modern firm data: OPTEN (based on Court of Registry data) 1950-2025; **Military elites:** Military Yearbook of the Austrian Empire: 1820-1870; Military Archive/Museum metadata: 1867-1919; Military Academy yearbooks: 1920-2005
- ▶ We digitized these during the last 10 years (initially by typing, OCR software, eventually by Deep Learning + AI)

Despite all of this...



...Social status is incredibly persistent

- ▶ The name group that owned the majority of the land in the **18th century** still enjoys above average social status - **will do so for another century** by current trends
- ▶ The interwar right-wing Horthy regime cemented the status of the old upper class
- ▶ Under Communist dictatorship, changes to mobility patterns are **either modest or temporary**
- ▶ Under more liberal regimes, social mobility is slower but more predictable
- ▶ Long-run trajectory of social mobility is comparable to the UK
- ▶ **Despite revolutions, wars, and institutional upheavals, long-run mobility trajectories are close to the pre-1918 convergence paths**

There is an old Hungarian joke:  
*“Communism is the longest and most painful transition from capitalism to capitalism”*

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*Thank you for your attention!*

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There is an old Hungarian joke:  
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*Thank you for your attention!*

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Acknowledgements:

- ▶ Miklós Koren, Tamás Mátyás
- ▶ NKFI Young Researcher Excellence Program; ELTE CERS Mentor–Mentee Program

## Backup slides

# Harmonizing corporate datasets: Compass (until 1944) + Opten (from 1945)

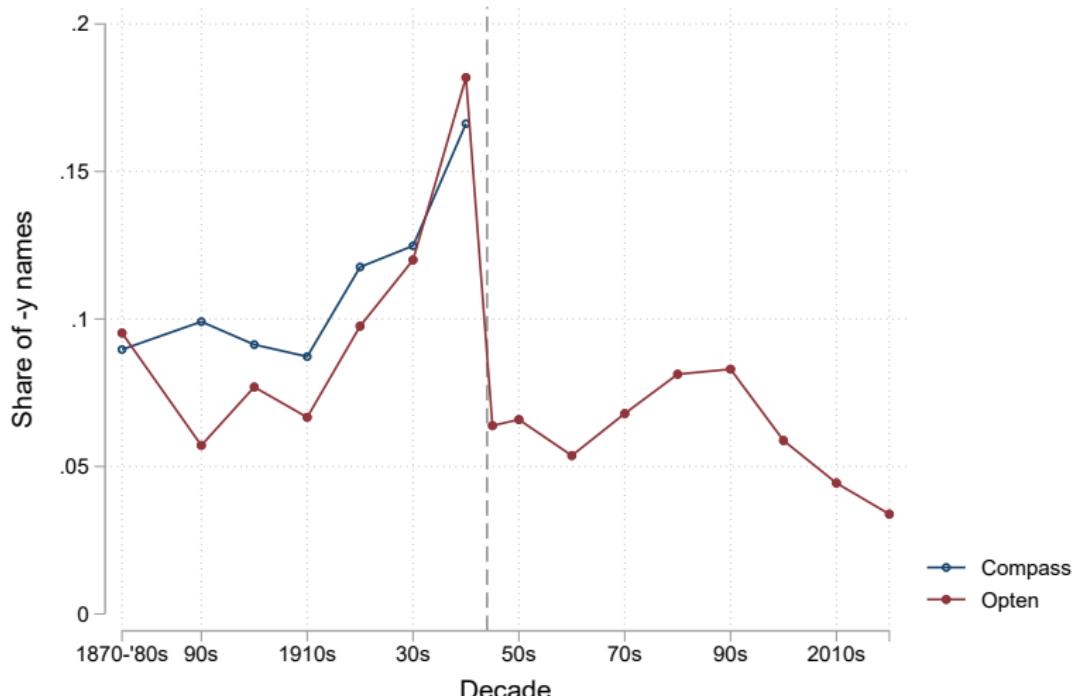
## COMPASS:

- ▶ Cleaned in Stata
- ▶ Filter for (chief) directors
- ▶ Identify name groups using the same scripts as for other elite groups
- ▶ Include later managers

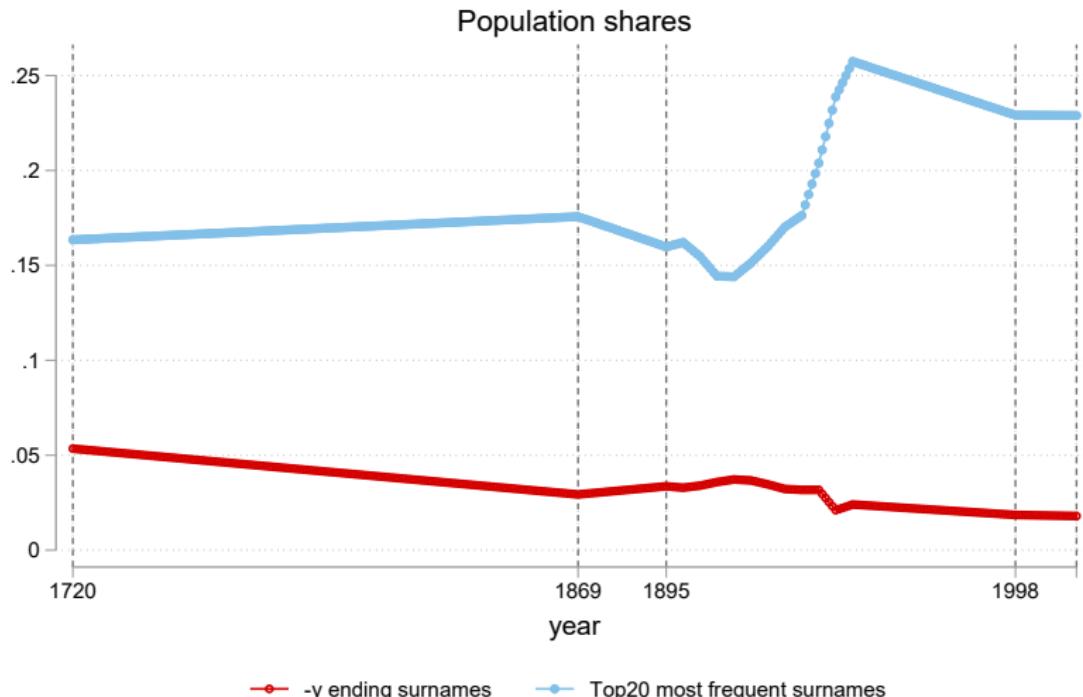
## OPTEN:

- ▶ Based on the company register (maintained by the Ministry of Justice)
- ▶ Observations available from the late 19th century, few before the regime change
- ▶ Year–surname frequency observations
- ▶ Dataset: joint-stock companies (and state firms that later/before became joint-stock)

# Do we believe the data content is roughly comparable?



# Population shares



"Don't give up, Ipszilon!"

Quote: Kálmán Mikszáth – \*Two Elections in Hungary\* (1899)

