WEALTH AND PROPERTY TAXATION IN THE UNITED STATES

Sacha Dray World Bank

LSE

Camille Landais Stefanie Stantcheva Harvard



The US General Property Tax

- A US innovation at the turn of the 19th Century:
 - Comprehensive tax on all property, not just on real estate
 - For over a century, US relied heavily on local taxation of all forms of property.
 - Tax administration left detailed paper trails.
- Source of new historical data on US property & wealth:
 - We constructed wealth measures for the US, all US states, counties, and 300 largest cities from early 1800s to 1935 (depending on aggregation level). Based on many historical records.
 - While there are existing national wealth estimates, GPT offers coherent, high-frequency, long-run source.
 - No existing consistent & coherent subnational measures.

WE USE THIS NEW DATA TO ANSWER THREE QUESTIONS

- How did **aggregate wealth** evolve in this crucial period of US development?
- How was property distributed across space and how did **spatial inequality** change over time?
 - New, fine-grained local economic measure over a long time period.
 - Other historical local economic measures tend to be lower-frequency and/or imputed (e.g., income).
- What factors shaped **local capital accumulation**?

OUTLINE

- 1. A Brief History of the US Property Tax
- 2. Data
- 3. Wealth in the US: Growth and Spatial Inequality
- 4. The Correlates of Capital Accumulation

OUTLINE

1. A Brief History of the US Property Tax

2. Data

3. Wealth in the US: Growth and Spatial Inequality

4. The Correlates of Capital Accumulation

A BRIEF HISTORY OF THE US PROPERTY TAX

	Active state governments financed by asset income	Active local governments financed by property tax	National government financed by income tax
		1839-42: states in default; constitutions put limits on investment & debt	
1790 PT is t main state & local t	 1810 Decline in states' reliance on PT Increase in asset income: banks, canals, railroads, transportation 	 1840 State constitutions: uniformity & universality principles (already earlier on) PT is 50-80% of all state revenues State government activity declines Local governments take on water, sanitation, transportation, public works, schools PT is on average 65% of city revenue 	 1930 PT criticized as economy changes National govt. expanded (New Deal, SS) New sources of financing (income & sales tax) Increase in

6/92

exemptions

The Principles of the General Property Tax

- **Universality**: all property should be taxed, including moveable and intangible property. Exemptions strictly defined and limited.
- Ad valorem: solely based on value; same tax schedule applies to all types of property. Makes the valuation of property essential.
- **Uniformity**: taxable property should be taxed at the same rate. Not aimed at progressivity.
- Localism: local taxes to fund local gvt & spending enforced by local elected officials.
 - Based on Jeffersonian/Jacksonian views of local democracy
 - Spending closely tied to revenues which made it politically sustainable.

\Rightarrow The US implemented a comprehensive tax on all forms of property

Historical Table - Introduction of Univ. & Uniformity

PROPERTY TAX: TAX BASE

- Real Property: Value of land, buildings & improvements
- **Personal Property**: Varies by state but includes most other forms of property:
 - Tangible property (furniture, livestock, merchandise, valuables).
 - Intangible property (money and bank deposits, mortgages, debts and credits, stocks, bonds). Example real and personal property : CT
- **Exemptions**: Vary by state but are limited. Typically public, religious property, hospitals, schools.
- **Double taxation** avoided through provisions on mortgages, loans, and debt.
- **Corporate property** taxed like individual property (classified as real or personal): no double taxation within state.
- **Enslaved people** assessed as property pre Civil-war. We will consider series with and without.

A LAYERED TAX TO SUPPORT LOCAL GOVERNMENT

Layered tax on property: assessed once locally, then taxed by all residing jurisdictions (state, counties, cities, special districts (e.g., schools, roads)).



VARIATION IN TOTAL PROPERTY TAX RATES IN 1920 Effective Total Property Tax Rate on True Property Value: 1920



1920 Average rate: 1.4%. Av. municipality: 0.97%. Av. state: 0.16%.

TOTAL PROPERTY TAX REVENUES AS SHARE OF GDP 1850-2020



OUTLINE

1. A Brief History of the US Property Tax

2. Data

3. Wealth in the US: Growth and Spatial Inequality

4. The Correlates of Capital Accumulation

NEW DATA ON WEALTH

Collected, digitized, harmonized many new primary sources & built a catalog. Extracted data on tax rates, assessed property, assessment ratios, tax enforcement.

State-level

- Annual State reports (Auditor's, Treasurer's, Comptroller's, etc); State Tax Commissions and Board of Equalization reports.
- Census Financial Statistics of States (1915-1939)
- Covers all 50 States (+DC and Puerto Rico) annually typically since after statehood until 1930s , N = 4,583
 Coverage (State level)
 Coverage (Overall population)

County-level

- Census' Wealth, Debt, Taxation
- Covers all counties every decade for 1850-1930, N = 18,242

City-level

- Census' Annual Financial Statistics (1899-1938)
- Covers 327 large U.S. cities (> 30k 1899-1930, > 100k 1931-1938), N=7,026.
- + 259 small cities in 1903 (8,000 25,000 population)

FROM REPORTED STATISTICS TO MEASURES OF PRIVATE PROPERTY AND WEALTH

• Wealth is always difficult to measure, even today.

Historical GTP directly assessed wealth.

Substantial and serious efforts were put into carefully valuing property, in hands-on manner.

Provides us with new measure of local economic activity over long time period

- Two key measurement issues to discuss:
 - 1. From assessed value to market value.
 - 2. Wealth vs. property

FROM ASSESSED TO MARKET VALUE

We want to measure market value \neq assessed value

- "Assessment ratio": $\gamma = \frac{b}{h} = \frac{\text{Assessed val.}}{\text{Market val.}}$
- In practice, $\gamma < 1$. But we have a solution!

Rich information on assessment practices & assessment ratios that we compile from several sources: • Maps • Validation • IPUMS-state • IPUMS-county

• Wealth, Debt, and Taxation series (decennial 1850 to 1920), State reports (esp. Boards of Equalization and Tax Commissions), secondary sources, *Financial Statistics of States* (annually 1915-1930; self-reported).

• Ohio Property Series • Kansas Property Series • Indiana Property Series

FROM ASSESSED TO MARKET VALUE

We want to measure market value \neq assessed value

- "Assessment ratio": $\gamma = \frac{b}{h} = \frac{\text{Assessed val.}}{\text{Market val.}}$
- In practice, $\gamma < 1$. But we have a solution!

Rich information on assessment practices & assessment ratios that we compile from several sources: • Maps • Validation • IPUMS-state • IPUMS-county

• Wealth, Debt, and Taxation series (decennial 1850 to 1920), State reports (esp. Boards of Equalization and Tax Commissions), secondary sources, *Financial Statistics of States* (annually 1915-1930; self-reported).

• Ohio Property Series • Kansas Property Series • Indiana Property Series

Assigning "wealth" to the right place

- Location of property and location of owner may be different.
 - Real estate and real assets taxed at location, which may be different than residence of owner.
- At city, county, and state levels, we measure **property** rather than wealth.
 - Property is valuable measure of local economic activity, even if \neq wealth.
 - At local level, private property < wealth if residents own real property elsewhere and vice-versa.
 - Gap between property & wealth smaller at higher levels of aggregation.
 IPUMS-state
 IPUMS-county
 - At national level, we measure wealth, modulo net foreign assets.

Net Asset Positions of States in $1880\,$



Info from Census.

Net Asset Positions of States in $1880\,$



Bulk of states have net asset positions of -10% to +20%.

Net Asset Positions of States in $1880\,$



Mountain & South West states (WY, ID, NV, AZ) have biggest disconnect between local property & wealth.

Net Asset Positions of States in 1880



Again, local property is valuable measure of local economic activity, even if different from wealth.

OUTLINE

1. A Brief History of the US Property Tax

2. Data

3. Wealth in the US: Growth and Spatial Inequality

4. The Correlates of Capital Accumulation

THE GROWTH IN US WEALTH 1800-1935

US PRIVATE WEALTH-TO-GDP RATIO 1795-1935



Private wealth per capita in 2012 USD: In 1800 = \$5,000, in 1930 = \$40,000. \Rightarrow Private wealth $\approx \times 8$ in 130 years • Levels

Comparison with Existing Wealth Estimates



The US Overtook the UK & France in WWI



The Composition of US Wealth 1840-1935



THE DECLINE OF THE RICH SOUTH AND THE GROWTH OF THE WEST?

Property per Capita By Region, as % of US GDP (1795-1935)



THE CIVIL WAR AND SOUTHERN WEALTH

Composition of Property In the South 1840-1935



Share of Enslaved Property in 1860



PERSISTENCE OF PROPERTY AT THE STATE LEVEL AROUND CIVIL WAR



Decline in Property after the Civil War & Enslavement

Decline in Property during Civil War beyond Enslaved Property by Share of Enslaved Property • Map



FINANCING THE WAR AND POST-WAR TAX RATES BY REGION



THE PERSISTENCE OF SPATIAL INEQUALITY 1870-1930

SPATIAL INEQUALITY IN THE US PROPERTY PER CAPITA AS FRACTION OF US GDP PER CAPITA BY COUNTY **1850**










Spatial Inequality in the US property Per Capita As Fraction of US GDP Per Capita By County 1900









Correlation with Geography of Income Today

PROPERTY IN 1920 VS OPPORTUNITY ATLAS INCOME



Correlation with Geography of Income Today Property in 1920 vs Opportunity Atlas Income (corr = 0.6)



PERSISTENCE OF PROPERTY AND INCOME TODAY (OPPORTUNITY ATLAS DATA)



SPATIAL INEQUALITY IS VERY PERSISTENT

PROPERTY RANK PERSISTENCE FOR COUNTIES



SPATIAL INEQUALITY IS VERY PERSISTENT PROPERTY RANK PERSISTENCE FOR COUNTIES

100 -90 80 $1880 \rho = 0.78$; $R^2 = 0.65$ 70 - $1890 \rho = 0.68$; $R^2 = 0.50$ 60 $1900 \rho = 0.71$; $R^2 = 0.54$ Rank 50 ------ 1910 $\rho = 0.62$; $R^2 = 0.41$ 40 $---1920 \rho = 0.62$; $R^2 = 0.41$ $-1930 \rho = 0.67 : R^2 = 0.48$ 30 20 ------10 10 20 30 40 50 60 70 80 90 100 Rank 1870

Spatial wealth concentration: Share of national wealth in richest 10% counties has increased. PDetails

No σ -convergence: Spatial variance in property per capita has not decreased. \bullet Details

β -Convergence



β -Convergence

Slow convergence driven by Southern counties (in red). β much higher ($\beta = 0.028$) excluding South.



β -Convergence

Including geography, demographics, occupational shares controls, β increases to 0.025.



OUTLINE

1. A Brief History of the US Property Tax

2. Data

3. Wealth in the US: Growth and Spatial Inequality

4. The Correlates of Capital Accumulation

CORRELATES OF INITIAL PROPERTY AND GROWTH

Correlates of Property per Capita at the County Level (1870-1930)



▶ Table

Geography is strongly correlated with initial conditions, less so with subsequent growth.

Correlates of Property per Capita at the County Level (1870-1930)



▶ Table

Literacy rates strongly associated with both initial conditions and growth.

CORRELATES OF PROPERTY PER CAPITA AT THE COUNTY LEVEL (1870-1930) 1870: initial property 60-year conditional growth



▶ Table

Population levels positively associated with initial levels and growth. But in short run, population growth correlated with lower wealth (migration is a convergence channel, newcomers are poorer).

CORRELATES OF PROPERTY PER CAPITA AT THE COUNTY LEVEL (1870-1930) 1870: initial property 60-year conditional growth



▶ Table

The Shadow of Inequality



Top 10% Wealth Share in County in 1870

The Blight of Enslavement



Notes: The sample is restricted to counties with a positive value of enslaved property.

THE ROLE OF PUBLIC POLICIES AND TAXATION

PROPERTY TAXATION & CAPITAL ACCUMULATION

- How does property taxation affect capital accumulation?
- We leverage our city-level data for this question because it has:

1. Geographical depth of data: large variation in property tax rates across 300+ municipalities • City Effective Tax Rates

2. Historical depth: annual frequency over long time period (40 years)

- Local public finances matter, explain 30% of variance in local property. Variance
- Large tax changes within city are common Tax Change Distribution
- Tax changes exhibit little serial correlation Serial Correlation
- Distributed leads and lags model: residualize on city *i* FE, state *s* × year *t* FE, + rich set of covariates **X**_{ist} (incl. local public expenditures & tax enforcement)

The Dynamic Impact of Property Tax Changes



The Dynamic Impact of Property Tax Changes



r = 2.5%, average for US Treasury bonds over period

	(1)	(4)		
Estimated Elast. $\hat{\varepsilon}$	0.516^{***} (0.108)	0.700^{***} (0.149)	$\begin{array}{c} 0.713^{***} \\ (0.130) \end{array}$	0.592^{***} (0.125)
5 Leads Net-of-Tax Rate	x	х	X	x
Year + City FE	х	Х	Х	Х
Public Policy Covariates		Х	Х	Х
Occupational Shares			Х	Х
Demographic Covariates			Х	Х
State-Year FE				Х

$$Y_{it} = \varepsilon \ln(1 - \bar{\tau}_{i,t,t-10}/\bar{r}) + \sum_{k=1}^{k=5} \gamma_k \ln(1 - \tau_{i,t+k}/\bar{r}) + X'_{it}\gamma + \eta_i + \zeta_t$$

	(1)	(2) A. Log of Total	(3) Property Value	(4)
Estimated Elast. $\hat{\varepsilon}$	0.516^{***} (0.108)	0.700^{***} (0.149)	0.713^{***} (0.130)	0.592^{***} (0.125)
	B. Log of Population			
Estimated Elast. $\hat{\varepsilon}$	-0.141 (0.088)	$\begin{array}{c} 0.111 \\ (0.088) \end{array}$	0.154^{**} (0.078)	0.204*** (0.077)
	C. Log of Total Property Value Per Capita			
Estimated Elast. $\hat{\varepsilon}$	0.669^{***} (0.104)	0.593^{***} (0.141)	0.559^{***} (0.118)	0.388^{***} (0.112)
5 Leads Net-of-Tax Rate Year + City FE Public Policy Covariates Occupational Shares Demographic Covariates State-Year FE	X X	X X X	X X X X X X	X X X X X X X

\approx 35% of elast. of K stock = extensive margin

• Comparison to migration literature

	(1)	(2) A. Log of Total	(3) Property Value	(4)	
Estimated Elast. $\hat{\varepsilon}$	0.516^{***} (0.108)	0.700^{***} (0.149)	0.713^{***} (0.130)	0.592^{***} (0.125)	
	B. Log of Population				
Estimated Elast. $\hat{\varepsilon}$	-0.141 (0.088)	$\begin{array}{c} 0.111 \\ (0.088) \end{array}$	0.154^{**} (0.078)	0.204^{***} (0.077)	
	C. Log of Total Property Value Per Capita				
Estimated Elast. $\hat{\varepsilon}$	0.669^{***} (0.104)	0.593^{***} (0.141)	0.559^{***} (0.118)	0.388*** (0.112)	
5 Leads Net-of-Tax Rate Year + City FE Public Policy Covariates Occupational Shares Demographic Covariates State-Year FE	X X	X X X	X X X X X X	X X X X X X X	

 \approx 65% of elast. of K stock = intensive margin

	(1)	(2) D. Log Real prop	(3) erty Per Capita	(4)	
Estimated Elast. $\hat{\varepsilon}$	0.710*** (0.117)	0.617*** (0.134)	0.572*** (0.112)	0.353*** (0.108)	
	E. Log Personal property Per Capita				
Estimated Elast. $\hat{\varepsilon}$	0.498^{*} (0.293)	0.697^{*} (0.293)	0.744^{**} (0.285)	$0.275 \\ (0.255)$	
5 Leads Net-of-Tax Rate	X	x	X	x	
Year + City FE	х	X	X	X	
Public Policy Covariates Occupational Shares		Х	X X	X	
Demographic Covariates			x	x	
State-Year FE				Х	

Significant capitalization in asset prices • Capitalization

The Role of Tax Competition



Migration response (extensive margin) strongly decreasing with municipality size

The Role of Tax Competition



Elast. of K stock decreasing with municipality size

The Role of Tax Competition



Additional evidence of tax competition:

• City's tax rate change positively correlated with past changes of neighbors' tax rates

CONCLUSION

- New data on wealth and property over the long-run for the US, all US states, counties, and large cities.
- The US experienced very rapid wealth accumulation after the Civil war and until the Great Depression.
- Spatial inequality has been highly persistent, slow convergence.
- Strong effects of the GPT (a local "wealth tax") on local K accumulation on intensive & extensive margins.

Evidence for tax competition.

Property tax paid for valuable services, which made it politically sustainable.

Paper here:



Thank you!
APPENDIX

UNIFORMITY & UNIVERSALITY PRACTICES

Dates of admission in the Union, Constitution requirement and actual practice of universality and uniformity

		First observed practice	First observed practice	First appearance of	First appearance of
State	Admission to Union	of universality in	of uniformity for	universality requirements	uniformity requirements
		assessment of property	taxation of property	in State Constitution	in State Constitution
Alabama	1819	1850	1870		
Alaska	1959	1906			
Arizona	1912	1870	1893		
Arkansas	1836	1838	1838	1868	1836
California	1850	1850	1850	1849	1849
Colorado	1876	1870	1876		
Connecticut	1788	1808	1795		
Delaware	1787	1776	1776		1897
District of Columbia	N/A	1850	1903		
Florida	1845	1850	1884	1868	1838
Georgia	1788	1755	1796		1868
Hawaii	1959	1881	1912		
Idaho	1890	1870	1887		
Illinois	1818	1839	1839		
Indiana	1816	1835	1835	1851	1851
Iowa	1846	1850	1858		
Kansas	1861	1860	1861	1858	1855
Kentucky	1792	1795	1795	1890	1890
Louisiana	1812	1850	1870		1845
Maine	1820	1820	1820		1819
Maryland	1788	1793	1793		
Massachusetts	1788	1792	1792		
Michigan	1837	1838	1838		
Minnesota	1858	1850	1858		1857
Mississippi	1817	1850	1880	1868	1868
Missouri	1821	1850	1860		1820
Montana	1889	1870	1888	1889	1868
Nebraska	1867	1860	1867		
Nevada	1864	1865	1869	1864	1864
New Hampshire	1788	1772	1793		



UNIFORMITY & UNIVERSALITY PRACTICES

		First observed practice	First observed practice	First appearance of	First appearance of
State	Admission to Union	of universality in	of uniformity for	universality requirements	uniformity requirements
		assessment of property	taxation of property	in State Constitution	in State Constitution
New Jersey	1787	1794	1794		1844
New Mexico	1912	1850	1882		
New York	1788	1788	1788		
North Carolina	1789	1868	1868	1868	1868
North Dakota	1889	1890	1890	1889	1868
Ohio	1803	1826	1826	1851	1851
Oklahoma	1907	1890	1891		
Oregon	1859	1850	1858	1857	1857
Pennsylvania	1787	1788	1788		
Puerto Rico	N/A	1901	1909		
Rhode Island	1790	1796	1769		
South Carolina	1788	1794	1794	1868	1868
South Dakota	1889	1879	1881	1889	1868
Tennessee	1796	1836	1836		1834
Texas	1845	1846	1846	1845	1845
Utah	1896	1850	1886	1895	1895
Vermont	1791	1796	1796		
Virginia	1788	1793	1793	1850	1850
Washington	1889	1860	1890	1889	1868
West Virginia	1863	1870	1880	1863	1863
Wisconsin	1848	1848	1850		1848
Wyoming	1890	1870	1887	1889	1868

Source: Jensen (1931) and Benson (1965) for the first appearance in State constitutions; State reports for the first observed practices (see Appendix table on State coverages and Sources); Wolcott (1796) and Rabushka (2008) for additional information on practice of assessment and uniformity prior to 1800 in the Thirteen Colonies, Kentucky, Tennessee and Vermont.

▶ Back

EXAMPLE OF PRIVATE PROPERTY: CONNECTICUT Categories of Personal Wealth



AVERAGE EFFECTIVE RATES OF TAXATION



Private Wealth as Share of GDP (%) in all States



▶ Back

DATA COVERAGE OF OVERALL POPULATION OF PRIVATE WEALTH DATA



National average : 83%



National average : 71%



National average : 47%



National average : 39%



National average : 41%



National average : 38%



National average : 39%



National average : 43%



VALIDATION USING DATA ON MARKET VALUES

ESTIMATED VALUE OF TAXABLE LAND VS CENSUS OF AGRICULTURE VALUE OF LAND (STATE-YEAR LEVEL)



Estimated True Log Value of Taxable Land and Improvements (Million \$)

Back

Comparison with IPUMS

RATIO OF TAX-BASED PROPERTY AND IPUMS USA FULL COUNT WEALTH MEASURES

1860

1870





Ratio of Tax-based Property to IPUMS Wealth



▶ Back to Assessement Ratio

▶ Back to Assigning Wealth

Comparison with IPUMS in 1870

RATIO OF TAX-BASED PROPERTY AND IPUMS USA FULL COUNT WEALTH MEASURES

Total Property in 1870

Ratio of Tax-based Property to IPUMS Wealth





• Back to Assigning Wealth

WEALTH SERIES: OHIO



"Under the direction of the newly created tax com mission, [assessment] differed materially from former assessments, property being listed for taxation at its true value instead of about one-third of such value, as in previous years." (Census 1912, p28)

WEALTH SERIES: KANSAS



Before 1908, "spirit of non-observance of the assessment-at-money-value" by assessors, and assessment "slightly in excess of 16.5%." (Howe 1908, pp443-444)

▶ Back

WEALTH SERIES: INDIANA



1891: Newly created State Board of Tax Commissioners revised in the basis of assessments, served subpoenaes, and ordered increases to corporations and individuals (STC1919).1919 Tax law: broadened the powers and duties of all taxing officials, particularly the State Board of Tax Commissioners, with the object of strengthening the administration of tax laws" and respect of the full assessment of property (STC1919 p122)

PRIVATE WEALTH PER CAPITA AND GDP PER CAPITA 1800-1935



PERSISTENCE IN PROPERTY IN SOUTHERN STATES AROUND THE CIVIL WAR

Per capita wealth by state (current

Including Wealth from Enslaved People 1860

1850







1870

Excluding Wealth from Enslaved People

1850



Per capita wealth (\$)







Decline in Property from 1860 to 1870 beyond Enslaved Property Proc



SPATIAL INEQUALITY IS VERY PERSISTENT PROPERTY RANK PERSISTENCE FOR STATES



37 States

σ -convergence

Evolution of US counties' wealth and income dispersion



EVOLUTION OF SPATIAL INEQUALITY

Evolution of Spatial Inequality across Counties Based on Share of National Property Owned by the Top 10%



COUNTY DETERMINANTS

	Den	endent variable	Los Totel Ho	webald Propert	w Value Per Ci	nile
	(1)	(2)	(3)	(4)	(5)	(6)
	10-Year Δ	10-Year Δ	10-Year Δ	10-Year Δ	60-Year Δ	in 1870
Log Total Household Property Value Per Capita	-0.261*** (0.008)	-0.410**** (0.011)	-0.503*** (0.013)	-0.520*** (0.012)	-0.718*** (0.025)	
A. Geography						
Temperature in Hottest Month		-0.062*** (0.017)	-0.032" (0.017)	-0.023 (0.017)	0.169*** (0.053)	-0.315*** (0.090)
Temperature in Coldost Month		-0.001	0.038**** (0.014)	0.024* (0.014)	-0.007	0.061 (0.043)
Summer Precipitation		-0.107**** (0.007)	-0.063*** (0.008)	-0.070***	-0.022	0.028 (0.022)
Winter Precipitation		-0.081*** (0.012)	-0.094*** (0.012)	-0.087*** (0.012)	-0.051* (0.027)	-0.148*** (0.030)
Elevation in meters		-0.003 (0.014)	-0.030** (0.013)	-0.037*** (0.013)	0.082 (0.056)	-0.344*** (0.068)
Ruggedness		-0.042*** (0.009)	-0.010 (0.009)	-0.010 (0.009)	-0.009 (0.028)	-0.127*** (0.028)
Soil Net Primary Productivity		0.061**** (0.009)	0.082*** (0.010)	0.074*** (0.010)	0.058** (0.024)	0.031 (0.027)
Distance to Coast		0.007 (0.009)	0.053*** (0.009)	0.058*** (0.008)	-0.130*** (0.025)	0.238*** (0.029)
Crossed by Navigated River		0.014 (0.010)	-0.003 (0.010)	-0.006 (0.010)	-0.027 (0.021)	0.089*** (0.026)
Crossed by Canal		0.069*** (0.018)	0.092*** (0.020)	0.090*** (0.020)	0.008 (0.030)	0.010 (0.038)
B. Demographics						
% Literate			0.197***	0.177***	0.102***	0.377***
% Foreigners			(0.011) 0.061***	(0.011) 0.055***	(0.019) 0.023	-0.069***
Log Population			-0.033***	-0.049***	0.055***	0.082***
Δ Log Population			-0.093***	-0.093***	(0.010)	-0.073
% Males			0.022	0.023**	0.087***	0.087***
% White			-0.097***	-0.094***	-0.048**	-0.343***
C. Occupational shares: Top % of Population in:			(0.005)	(0.008)	(0.019)	(0.054)
Public Administration				0.026**** (0.010)	0.071 ^{***} (0.025)	-0.032 (0.033)
Production				0.014 (0.011)	-0.098*** (0.029)	0.118**** (0.032)
Mining				0.008 (0.012)	0.024 (0.028)	0.097*** (0.031)
Commerce				0.023** (0.011)	0.034 (0.025)	0.092*** (0.031)
Agriculture				-0.092*** (0.011)	-0.185*** (0.028)	-0.040 (0.032)
D. Inequality						
Top 10% Property Share					-0.155*** (0.025)	
% of Enslaved Property in 1860					-0.009** (0.027)	-0.257*** (0.034)
Observations	18,128	15,033	12,742	12,730	1,568	1,583
Number of units	3,080	2,519	2,518	2,518	1,568	1,583
Adjusted R ²	0.37	15/0-1930	0.52	0.53	11000	1870
Implied Convergence	0.030	0.053	0.070	0.073	0.021	



Standard errors clustered at the county level. Year FEs are included.

COUNTY DETERMINANTS

	Dea	ondent variable.	Log Total Ho	usehold Propert	ty Value Per G	arcite
	(1)	(2)	(3)	(4)	(5)	(6)
	10-Year Δ	10-Year Λ	10-Year Δ	10-Year Δ	60-Year Δ	in 1870
Log Total Household Property Value Per Capita	-0.489*** (0.010)	-0.523*** (0.011)	-0.573*** (0.013)	-0.589*** (0.012)	-0.728*** (0.025)	
A. Geography						
Temperature in Hottest Month		0.027 (0.022)	0.033 (0.024)	0.043" (0.024)	0.060 (00.0)	-0.046 (0.080)
Temperature in Coldest Month		-0.018 (0.019)	-0.009 (0.020)	-0.023 (0.020)	-0.037 (0.056)	0.085 (0.062)
Summer Precipitation		-0.005 (0.012)	0.005 (0.013)	-0.003 (0.012)	0.001 (0.029)	0.014 (0.031)
Winter Precipitation		-0.073*** (0.011)	-0.102 ^{***} (0.013)	-0.101*** (0.013)	-0.070** (0.032)	-0.196*** (0.034)
Elevation in meters		0.084*** (0.019)	0.050** (0.021)	(0.047^{**}) (0.021)	0.091 (0.060)	-0.124* (0.072)
Ruggedness		-0.052*** (0.009)	-0.017* (0.009)	-0.026" (0.009)	-0.020 (0.029)	-0.084*** (0.028)
Soil Net Primary Productivity		0.031*** (0.012)	0.052*** (0.013)	0.048**** (0.013)	0.034 (0.026)	0.028 (0.028)
Distance to Coast		-0.053*** (0.013)	-0.001 (0.014)	0.007 (0.014)	-0.228*** (0.030)	0.062 (0.039)
Crossed by Navigated River		0.024** (0.010)	-0.000 (0.010)	-0.005 (0.010)	-0.015 (0.019)	0.065*** (0.024)
Crossed by Canal		0.101 ^{***} (0.021)	0.112 ^{****} (0.024)	0.106**** (0.024)	0.071* (0.039)	0.017 (0.037)
B. Demographics						
% Literate			0.125***	0.107***	0.055***	0.396***
% Foreigners			0.052***	0.045***	0.028*	-0.052***
Log Population			-0.032***	-0.049***	0.077***	-0.012
Λ Log Population			-0.100***	-0.105***	(0.010)	-0.144**
% Males			0.014	0.007	0.068**	-0.009
% White			-0.115***	-0.113***	-0.043**	-0.198***
C. Occupational shares: Top % of Population in:			(0.000)	(0.000)	(((())))	(0.040)
Public Administration				0.016" (0.020)	0.032 (0.024)	0.035 (0.030)
Production				0.049*** (0.011)	-0.054** (0.027)	0.164*** (0.029)
Mining				0.003 (0.011)	-0.011 (0.026)	0.081*** (0.027)
Commerce				0.032*** (0.010)	0.033 (0.023)	0.086*** (0.028)
Agriculture				-0.073*** (0.011)	-0.153*** (0.026)	-0.057** (0.027)
D. Inequality						
Top 10% Property Share					-0.103*** (0.024)	
% of Enshwed Property in 1860					-0.061 ^{**} (0.029)	-0.140^{***} (0.031)
Observations	18,128	15,033	12,742	12,730	1,568	1,583
Number of units Basical	3,080	2,519	2,518	2,518	1,568	1,583
Adjusted R ²	0.53	0.55	0.59	0.59	0.67	0.71
Implied Convergence	0.067	0.074	0.085	0.089	0.022	



Standard errors clustered at the county level. State and Year FEs are included.

STRUCTURAL TRANSFORMATION OF THE ECONOMY Occupational Shares in Employment and Property Per Capita by County Agriculture Manufacturing 0/ .05 Share of Total Employment Share of Total Employment .04 03 5 02 0 10 10 Log Property Per Capita (2012 Prices) - Period 1860-1940 Log Property Per Capita (2012 Prices) - Period 1860-1940 Services Share of Total Employmen 3 10 ú. Log Property Per Capita (2012 Prices) - Period 1860-1940

LOCAL PUBLIC FINANCES MATTER

VARIANCE DECOMPOSITION OF PROPERTY AT THE MUNICIPAL LEVEL (1931)



VARIANCE DECOMPOSITION USING RANDOM FOREST VARIABLE IMPORTANCE PLOT FOR PREDICTION OF PROPERTY PER CAPITA (1930)



▶ Back to Variance decomposition ▶ Back to city events

DISTRIBUTION OF EFFECTIVE TAX RATES



DISTRIBUTION OF RESIDUAL TAX RATES CHANGES



TAX RATES CHANGES EXHIBIT LITTLE SERIAL CORRELATION



ESTIMATES OF MIGRATION ELASTICITIES IN LITERATURE


CAPITALIZATION INTO REAL ESTATE VALUES



Years Since Tax Change

Strong evidence of immediate response of real estate values



Spillovers and Tax Competition

Own Tax Rate as function of Past Own Tax Rate and Neighbors' Tax Rates

Dependent variable: Average	ge log of eff. 1	net of tax rate fr	rom t+1 to t+5	
	(1)	(2)	(3)	(4)
$\overline{Log(1 - \frac{\tilde{\tau}_{i,t-10,t-1}}{\tilde{\pi}})}$	0.581***	0.574***	0.476**	0.510**
	(0.145)	(0.148)	(0.185)	(0.231)
$OtherLog(1 - \frac{\tilde{\tau}_{i,t-10,t-1}}{\tilde{r}})$	0.321^{**}	0.344^{**}	0.406^{**}	0.447^{**}
	(0.143)	(0.148)	(0.166)	(0.193)
Observations	6573	6488	4785	4098
Number of cities	273	273	264	220
Adjusted R^2	0.710	0.711	0.715	0.727
Year Fixed Effects	Х	Х	Х	Х
City Fixed Effects	Х	Х	Х	Х
Tax Enforcement Covariates	х	Х	Х	Х
Occupational Shares		Х	Х	Х
Demographic Covariates			Х	Х
Assessment Ratio				Х
Assessment Ratio (Neighbors)				Х
Government Expenditures				Х
Government Expenditures (Neighbors)				Х

Back