

Democracy, War, and Wealth: Evidence from Two Centuries of Inheritance Taxation

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Introduction

Theory

- Research question

- Mechanisms

Data Set

- Main data

- Concerns about inferring progressivity

Empirical Strategy

- First Specification

- Second Specification

Estimation Results

- The Effects of Democracy and War Mobilization

- Expediency or Mobilization?

Conclusions

Some Criticism



Bequest tax and progressivity

Debate over taxing the transfer of estates...

- Pros: raises gov't revenues and reduces inequality of opportunity for future generations
- Cons: arbitrary timing, unfair to parents accumulating for children, efficiency losses



Bequest tax and progressivity

Debate over taxing the transfer of estates...

- Pros: raises gov't revenues and reduces inequality of opportunity for future generations
- Cons: arbitrary timing, unfair to parents accumulating for children, efficiency losses

...but for the purposes of the paper

- Lends itself easily to progressive rates
- Easy to collect and so less endogeneity with bureaucratic capacity building (but others remain...)



Research question

What factors prompt a society to begin significantly taxing inherited wealth?



Research question

What factors prompt a society to begin significantly taxing inherited wealth?

- Expanding the suffrage to more citizens has no effect
- Mobilizing a large fraction of the population for has a large effect



Democracy

Farhi & Werning(2008) suggest positive and progressive taxation of capital:

democracy with infinite horizon and all citizens vote

- Capital taxes chosen repeatedly - ex-post expropriation if excessive wealth inequality from accumulation
- Leads to electoral platforms with progressive taxation



War

Exigencies of war - incentive for administrative/legal capacity building

- Expediency effect: Gov't survival v. reputation
- Mobilization effect: Mass mobilization - demand for wealthy to bear a larger share of financial cost



Data types

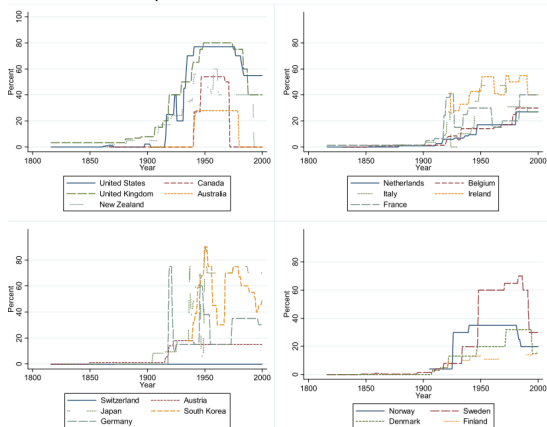
- Annual observations spaced at 5& 10 year intervals for policy lags
 - Top tax rates for 19 countries:
Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Japan, Korea, the Netherlands, New Zealand, Norway, Sweden, the UK, and the US
- Detailed history of suffrage and mobilization (UK and Sweden)
- Inheritance tax volumes (5 countries)
- Detailed tax schedules (6 countries)
 - In WWI: UK, US and France; not in WWI: Netherlands, Japan, Sweden

(Estate/beneficiary/stamp rates lumped together)



Historical view

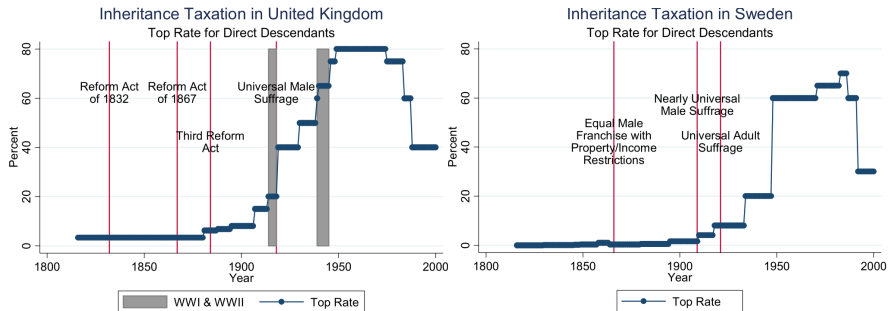
Inheritance Taxation, 1816-2000 Top Rate for Direct Descendants



Very low rates, then big spike in early 20th century followed by modern reversals
Some countries raise tax after suffrage, others before (JP)



Historical view



-UK: Gradual extension of suffrage with no visual tax correlation and good synchronisation with major war effort

-Sweden: Still no correlation of suffrage with taxes and differently timed shifts than war-mobilizing UK



Concerns

Do people actually pay?

- Most countries set up legal fences (inter-vivos transfer tax)
- Top rates do not account for estate valuations & loopholes
- 5-country sample of volumes: sharp rise in revenue with sharp rise in tax



Concerns

How many are affected and how? 1/2

- Progressivity - top rates vs. full schedule
- 6-country sample of tax schedules: marginal tax rates by estate size



Concerns

How many are affected and how? 2/2

Country	Estate Size	1850	1900	1925	1950	1975	2000
United Kingdom	1	0.0	0.0	0.0	0.0	0.0	0.0
	10	2.5	1.0	2.0	1.0	5.0	0.0
	100	4.1	3.0	4.0	15	43	40
	1000	3.4	4.5	19	60	70	40
	10,000	3.1	7.0	29	80	75	40
United States	1	0.0	0.0	1.0	3.0	7.0	22
	10	0.0	0.0	1.0	11	28	34
	100	0.0	0.8	2.0	30	37	55
	1000	0.0	1.5	12	45	73	55
	10,000	0.0	2.3	30	77	77	55
France	1	1.2	1.3	4.8	15	5	0
	10	1.2	1.3	9.6	25	20	0
	100	1.2	1.3	18	30	20	40
	1000	1.2	1.3	29	30	20	40
	10,000	1.2	1.3	42	30	20	40
Japan	1	0.0	1.5	1.0	25	10	15
	10	0.0	1.5	1.2	30	25	25
	100	0.0	2.0	2	60	55	50
	1000	0.0	4.5	5.5	85	75	70
	10,000	0.0	7.0	9.5	90	75	70
Sweden	1	0.1	0.5	0.6	2.0	10	10
	10	0.1	0.7	1.8	7.0	44	30
	100	0.2	1.3	3.4	40	58	30
	1000	0.3	1.5	8.0	52	65	30
	10,000	0.3	1.5	8.0	60	65	30
Netherlands	1	0.0	0.0	1.5	4.0	7.0	8.0
	10	0.0	1.0	3.0	7.0	13	23
	100	0.0	1.0	4.5	13	17	27
	1000	0.0	1.0	6.0	17	17	27
			1.0	6.0	17	17	27



Concerns

Are countries taxing wealth in other ways?

- Taxes on visible wealth not targeted at the rich (number of windows)
- Wealth taxes were very low in early 20th century (bouclier - tax ceiling)



Generalized Difference in Difference

Model 1

A three model strategy

$$T_{it} = \alpha + \beta_1 D_{it-1} + \beta_2 W_{it-1} + \gamma X_{it-1} + \eta_i + \theta_t + \epsilon_{it} \quad (1)$$

Where:

- T_{it} is the top inheritance tax rate for direct descendants.
- D is a measure of Democracy / Universal Male Suffrage / Boix-Rosiato¹ / No upper house with veto power.
- W denotes war mobilization: interstate warfare & 2% or more of the population was serving in the military.
- Some Specifications include interaction terms.

¹Free multiparty elections & Executive directly or indirectly elected & 50% or more of adult males has a right to vote.



Generalized Difference in Difference

Some additional considerations:

To account for some time varying factors:

- X state level controls: Partisan Government / GDP per capita.

Some specifications include additionally:

- Country Specific Time Trends.

Other Considerations:

- Since it is impossible a priori to determine how long it takes for democratization or war mobilization to influence policy choices, models with observations spaced in five and ten year intervals will be reported.
- Models are estimated by OLS and country clustered standard errors are reported.



Generalized Difference in Difference

Hypothesis Tested:

Increases in democracy (variously measured) cause the adoption of higher inheritance taxes on the largest fortunes.

- Expected Result: $B_1 > 0$

Mass mobilization for warfare cause the adoption of higher inheritance taxes on the largest fortunes.

- Expected Result: $B_2 > 0$



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Do we know the direction of the bias?

Lagged Dependent Variable Specification

Model 2

$$T_{it} = \alpha + \rho T_{it-1} + \beta_1 D_{it-1} + \beta_2 W_{it-1} + \gamma X_{it-1} + \theta_t + \epsilon_{it} \quad (2)$$

- This model adds the lagged dependent variable and suppresses country fixed effects η_i
- Model Estimated by OLS, panel corrected standard errors are reported.
- Model 3 is the same as model 2 but it includes η_i , the estimated OLS coefficients will be biased but if sample size is large enough they will be consistent.



There is no evidence to support the idea that the expansion of democracy (Universal Male Suffrage) has an effect on the top marginal rate of inheritance taxation, there is robust evidence regarding the effect of war mobilization.

	5-year Data						10-year Data	
	Country Fixed Effects			Lag DV			Country FE	Lag DV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Top Rate</i> _{<i>t</i>-1}				0.866 (0.040)	0.868 (0.037)	0.656 (0.063)		0.359 (0.128)
<i>War Mobilization</i> _{<i>t</i>-1}	23.379 (6.046)	21.368 (5.803)	20.083 (5.765)	17.884 (3.913)	17.898 (4.021)	16.517 (4.219)	30.074 (12.007)	26.774 (11.103)
<i>Universal Male Suffrage</i> _{<i>t</i>-1}	0.001 (7.202)	0.002 (6.704)	0.003 (4.097)	0.000 (1.553)	0.000 (1.564)	0.000 (1.671)	0.022 (5.264)	0.016 (2.846)
<i>Left Executive</i> _{<i>t</i>-1}		0.290 (5.544)	0.879 (3.638)	0.060	0.030 (1.615)	0.711 (1.677)	0.972 (6.070)	0.207 (3.094)
<i>GDP per capita</i> _{<i>t</i>-1}		0.558 (0.921)	4.271 (0.256)		3.391 (0.036)	4.577 (0.006)	5.750 (0.001)	4.703 (0.128)
		0.001 (0.002)	0.000 (0.001)		-0.000 (0.000)	0.001 (0.000)	0.001 (0.002)	0.001 (0.001)
Period Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific Time Trends	No	No	Yes	No	No	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	No	No	No	Yes	No
R-squared	0.713	0.723	0.842	0.878	0.876	0.892	0.848	0.840
Number of Observations	510	489	489	509	488	488	240	239

Table 2: *War Mobilization, Democracy, and Inheritance Taxation, 1816-2000: Universal Male Suffrage Measure of Democracy.* The table reports the results of pooled-cross-sectional OLS regressions of the variable *Top Rate* on the variable *War Mobilization* lagged one period and the variable *Universal Male Suffrage* lagged one period. The specifications in columns 1-3 and 7 include country fixed effects and report robust standard errors clustered by country in parentheses and p-values. The specifications in columns 4-6 and 8 include a lagged dependent variable and report panel corrected standard errors in parentheses and p-values. Specifications in columns 2, 3, and 5-8 include control variables for lagged partisan control of government and lagged GDP per capita. All specifications include period fixed effects.



With Boix-Rosato Measure of Democracy previous results hold.

	5-year Data					10-year Data		
	Country Fixed Effects			Lag DV		Country FE	Lag DV	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Top Rate</i> _{<i>t</i>-1}				0.871 (0.039)	0.877 (0.037)	0.660 (0.062)		0.382 (0.126)
				0.000	0.000	0.000		0.002
<i>War Mobilization</i> _{<i>t</i>-1}	23.860 (6.183)	23.278 (6.309)	20.126 (5.948)	16.869 (4.002)	16.539 (4.172)	16.479 (4.308)	29.808 (12.463)	27.549 (11.359)
	0.001	0.002	0.003	0.000	0.000	0.000	0.028	0.015
<i>Boix-Rosato</i> _{<i>t</i>-1}	0.071 (7.856)	3.118 (6.191)	0.380 (2.870)	-1.424 (1.287)	-1.899 (1.207)	-0.462 (1.225)	-0.774 (3.711)	-0.106 (2.062)
	0.993	0.621	0.896	0.272	0.115	0.706	0.837	0.959
<i>Left Executive</i> _{<i>t</i>-1}		0.497 (5.581)	4.193 (3.758)		3.213 (1.615)	4.691 (1.708)	5.835 (6.328)	5.118 (3.235)
		0.930	0.279		0.036	0.006	0.369	0.114
<i>GDP per capita</i> _{<i>t</i>-1}		0.001 (0.002)	0.000 (0.001)		-0.000 (0.000)	0.001 (0.000)	0.001 (0.002)	0.001 (0.001)
		0.599	0.738		0.941	0.083	0.600	0.164
Period Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific Time Trends	No	No	Yes	No	No	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	No	No	No	Yes	No
R-squared	0.711	0.719	0.842	0.877	0.875	0.892	0.848	0.839
Number of Observations	510	489	489	509	488	488	240	239

Table 3: *War Mobilization, Democracy, and Inheritance Taxation, 1816-2000: Boix-Rosato Measure of Democracy.* The table reports the results of pooled-cross-sectional OLS regressions of the variable *Top Rate* on the variable *War Mobilization* lagged one period and the variable *Boix-Rosato* lagged one period. The specifications in columns 1-3 and 7 include country fixed effects and report robust standard errors clustered by country in parentheses and p-values. The specifications in columns 4-6 and 8 include a lagged dependent variable and report panel corrected standard errors in parentheses and p-values. Specifications in columns 2, 3, and 5-8 include control variables for lagged partisan control of government and lagged GDP per capita. All specifications include period fixed effects.



With No upper Measure of Democracy, mixed evidence.

	5-year Data				10-year Data			
	Country Fixed Effects			Lag DV	Country FE			Lag DV
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Top Rate</i> _{t-1}				0.866 (0.039) 0.000	0.872 (0.037) 0.000	0.644 (0.064) 0.000		0.343 (0.128) 0.007
<i>War Mobilization</i> _{t-1}	27.593 (6.088)	26.027 (6.600)	21.772 (6.158)	20.295 (3.406)	20.099 (4.172)	19.924 (3.686)	31.176 (12.473)	30.102 (11.454)
<i>No Upper</i> _{t-1}	0.000 (6.047)	0.001 (7.145)	0.002 (6.021)	0.000 (1.040)	0.000 (1.049)	0.000 (1.489)	0.022 (5.628)	0.009 (2.919)
<i>Left Executive</i> _{t-1}	0.029	0.036	0.357	0.247	0.389	0.001	0.376	0.002
		0.552	4.147		2.977	4.690	5.687	5.031
		(5.602)	(5.602)		(1.578)	(1.671)	(6.425)	(3.162)
		0.930	0.304		0.059	0.005	0.388	0.112
<i>GDP per capita</i> _{t-1}		0.001	0.000		-0.000	0.001	0.001	0.001
		(0.002)	(0.001)		(0.000)	(0.000)	(0.002)	(0.001)
		0.647	0.753		0.756	0.160	0.580	0.072
Period Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-specific Time Trends	No	No	Yes	No	No	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	No	No	No	Yes	No
R-squared	0.731	0.742	0.843	0.879	0.877	0.896	0.849	0.846
Number of Observations	509	488	488	508	487	487	240	239

Table 4: *War Mobilization, Democracy, and Inheritance Taxation, 1816-2000: No Upper Measure of Democracy.* The table reports the results of pooled-cross-sectional OLS regressions of the variable *Top Rate* on the variable *War Mobilization* lagged one period and the variable *No Upper* lagged one period. The specifications in columns 1-3 and 7 include country fixed effects and report robust standard errors clustered by country in parentheses and p-values. The specifications in columns 4-6 and 8 include a lagged dependent variable and report panel corrected standard errors in parentheses and p-values. Specifications in columns 2, 3, and 5-8 include control variables for lagged partisan control of government and lagged GDP per capita. All specifications include period fixed effects.



Including interaction terms.

	5-year Data					
	Democracy and War		Interacted		Partisanship and War Interacted	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Top Rate</i> _{<i>t</i>-1}		0.869 (0.041)		0.878 (0.039)		0.879 (0.039)
		0.000		0.000		0.000
<i>War Mobilization</i> _{<i>t</i>-1}	48.930 (7.946)	10.406 (6.876)	21.204 (14.505)	27.058 (5.762)	22.525 (6.344)	18.682 (4.457)
	0.000	0.130	0.161	0.000	0.002	0.000
<i>Universal Male Suffrage</i> _{<i>t</i>-1}		5.259 (6.861)	-3.226 (1.591)			
		0.453	0.043			
<i>Universal Male Suffrage</i> _{<i>t</i>-1} * <i>War Mobilization</i> _{<i>t</i>-1}		-28.330 (9.039)	8.298 (6.786)			
		0.006	0.224			
<i>Boix-Rosato</i> _{<i>t</i>-1}			-0.231 (8.700)	-0.242 (1.218)		
			0.979	0.843		
<i>Boix-Rosato</i> _{<i>t</i>-1} * <i>War Mobilization</i> _{<i>t</i>-1}			3.995 (14.809)	-15.605 (6.216)		
			0.790	0.012		
<i>Left Executive</i> _{<i>t</i>-1}				0.722 (6.237)	3.183 (1.614)	
				0.909	0.017	
<i>Left Executive</i> _{<i>t</i>-1} * <i>War Mobilization</i> _{<i>t</i>-1}				4.553 (9.464)	-5.318 (8.052)	
				0.636	0.509	
Period Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	No	Yes	No	Yes	No
R-squared	0.716	0.878	0.712	0.879	0.712	0.878
Number of Observations	510	509	510	509	510	509

Table A-5: *War Mobilization, Democracy, and Inheritance Taxation, 1816-2000: Interactions between War Mobilization and Democracy and Partisanship Measures.* Columns 1-4 report results of pooled-cross-sectional OLS regressions of the variable *Top Rate* on the variable *War Mobilization* lagged one period, selected democracy measures lagged one period, and the interaction between the measures. Columns 5-6 report results of pooled-cross-sectional OLS regressions of the variable *Top Rate* on the variable *War Mobilization* lagged one period, the variable *Left Executive* lagged one period, and the interaction between the measures. Specifications 1, 3, and 5 include country and period fixed effects and report robust standard errors clustered by country in parentheses and p-values. Specifications 2, 4, and 6 include a lagged dependent variable and period fixed effects and report panel corrected standard errors in parentheses and p-values.



War a Story of Expediency or Mobilization?

The data set does not allow to distinguish whether the effect of war mobilization is primarily that of Expediency (not related to progressive taxation) or to Mobilization.

- The Ideal World Experiment.

“compare the pattern of taxation in a country that fights a war of mass mobilization with that of a country that fights a war in which a more limited fraction of the population is mobilized but which is equally expensive and which places an equal strain on public finances”



War a Story of Expediency or Mobilization?

An approximation to the experiment using the Napoleonic War and the First World War.

Some facts for Great Britain:

- The napoleonic war required at its peak the mobilization of 2.1% of the population, while pick mobilization in first world war was 10.2% of population.
- The cost of the Napoleonic war was estimated at 22% of GDP, while the cost of the first world war was equivalent to 39% of GDP
- In 1799 public debt was 166% of GDP, in 1914 public debt was 25% of GDP.
- The Napoleonic war seemed to provide an appropriate environment to observe an increase in the inheritance tax motivated by the expediency effect, however the observed hike is related to the first world war for which the case of mobilization is much stronger.
- It must be kept in mind that data from the from napoleonic wars is bound to be measured with less accuracy, and that the political environment was significantly different between the two periods.



Conclusions

- Democracy as measured by universal suffrage is not a sufficient condition for significant increases in inheritance taxation to occur.
- There is some evidence to suggest that upper chambers can curtail the implementation of substantial inheritance taxation.
- Mass warfare (involving the mobilization of a substantial part of the population) has been a major force leading to heavy taxation of inherited wealth.
- There are some indications that the mobilization effect is likely to be considerable.



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- There are some indications that the mobilization effect is likely to be considerable.

Is the shift away from heavy taxation currently observed in some countries the result of a more common context in which large mobilizations are no longer required?



Mild criticism

- Serial correlation could lead to underestimation of standard errors and hence to overestimation of the DiD treatment effects. Bertrand, Duflo & Mullainathan (2004).
- Democracy is weakly defined -it requires qualifiers to control for political maturity (education Acemoglu et al (2005), unionization.) and other factors such as social mobility.
- Settling the mobilization v. expediency by case study is simplistic and disappointing at best.
- There is a considerable number of time varying unobservables not accounted for (war-like tendencies, tax loop-hole behaviour, the production function of war etc.)
- Overall government balances are not taken in to account, increased taxation could be the result of tighter credit markets for those who participated in war.