

Online Appendix

The Online Appendix includes

- Data Details

- Table A-1: Summary Statistics.
- Table A-2: Value of the Vote-Tax Link on the Year of Adoption of the Income Tax.
- Figure A-1: Land Inequality Over Time vs. the Adoption of the Income Tax.
- Figure A-2: Rural Inequality Over Time vs. the Adoption of the Income Tax.

- Robustness Tests

- Table A-3: Dropping Cases with minimum variation in Rural Inequality.
- Table A-4: Germany replaced for Prussia.
- Table A-5: Additional Measures of War.
- Accounting for unit-level unobserved heterogeneity.
 - * Table A-6: Weibull Models with Shared Frailty.
 - * Table A-7: Splines and Conditional log-log models.
- Table A-8: Secret Ballot vs. the Vote-Tax Link with Aidt and Jensen (2009) specification.

Table A-1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N	Source
Income Tax Adoption Date	0.02	0.14	0	1	849	Aidt and Jensen (2009)
Franchise	49.818	38.357	0	107.35 ^a	849	Aidt and Jensen (2009)
Polity IV	1.678	6.866	-10	10	849	Marshall and Jaggers (2000)
Vote-Tax Link	0.244	0.43	0	1	849	Refer to Table 1
Secret Ballot	0.469	0.499	0	1	849	Aidt and Jensen (2009)
Landholding Inequality	60.398	16.509	29	100	849	Vanhanen (2003)
Rural Inequality	5108.682	1426.138	1980	9500	849	Vanhanen (2003)
War	0.161	0.368	0	1	849	Sarkees and Wayman (2010)
WWI Participant (temporal)	0.013	0.113	0	1	849	Own
WWI Participant (permanent)	0.015	0.123	0	1	849	Own
Military Size	1.343	1.836	0	12.263	703	Singer, Bremer and Stuckey (1972)
GDP per Capita	2421.901	1071.95	737	6390	849	Aidt and Jensen (2009)
Population	15658.777	20120.985	119	97606	849	Aidt and Jensen (2009)
Urban Population (%)	15.159	9.106	3	40	849	Vanhanen (2003)
Temporary Income Tax	0.687	0.464	0	1	849	Aidt and Jensen (2009)
Local Income Tax	0.417	0.493	0	1	849	Aidt and Jensen (2009)
Europe	0.759	0.428	0	1	849	Own
AVE Tariff	0.111	0.09	0.006	0.477	675	Lampe and Sharp (2013)

^aBetween 1887 and 1891, in New Zealand, the estimated electorate as a percentage of the enfranchised age and sex group is greater than 100.

Table A-2: Pre-existence of the Vote-Tax Link on the Year of Adoption of the Income Tax.

	Adoption year	Link		Adoption year	Link
UK	1842	no ^a	Denmark	1903	no
Austria	1849	yes	France	1911	no
Italy	1864	yes	Australia	1915	no
Japan	1887	no ^b	Canada	1917	no
New Zealand	1891	no	Finland	1920	no
Norway	1892	yes	Belgium	1922	no
Prussia	1891	yes	Germany	1920	no
Netherlands	1893	yes	USA	1913	no
Sweden	1902	yes	Switzerland	1939	no

^a From 1832 to 1865, enfranchisement for the national elections was conditional on paying local taxes, but not income taxes. ^bJapan adopted the income tax even before Parliamentarism. The first Diet convened in 1890, and it had a vote-tax link in place.

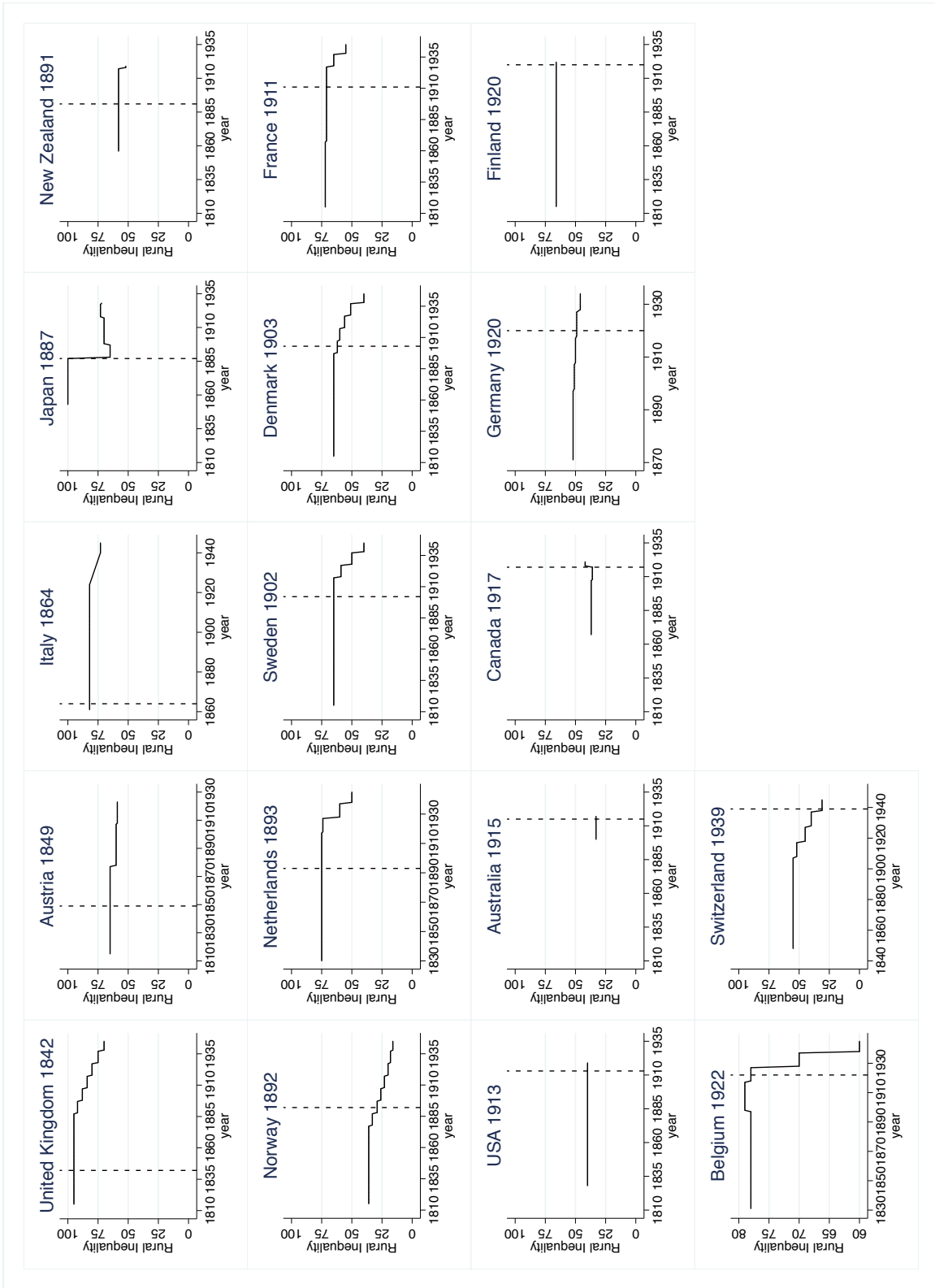


Figure A-1: Landholding Inequality (100-Family Farm) vs. Adoption of the Income Tax. Starting year varies by data availability and country's independence.

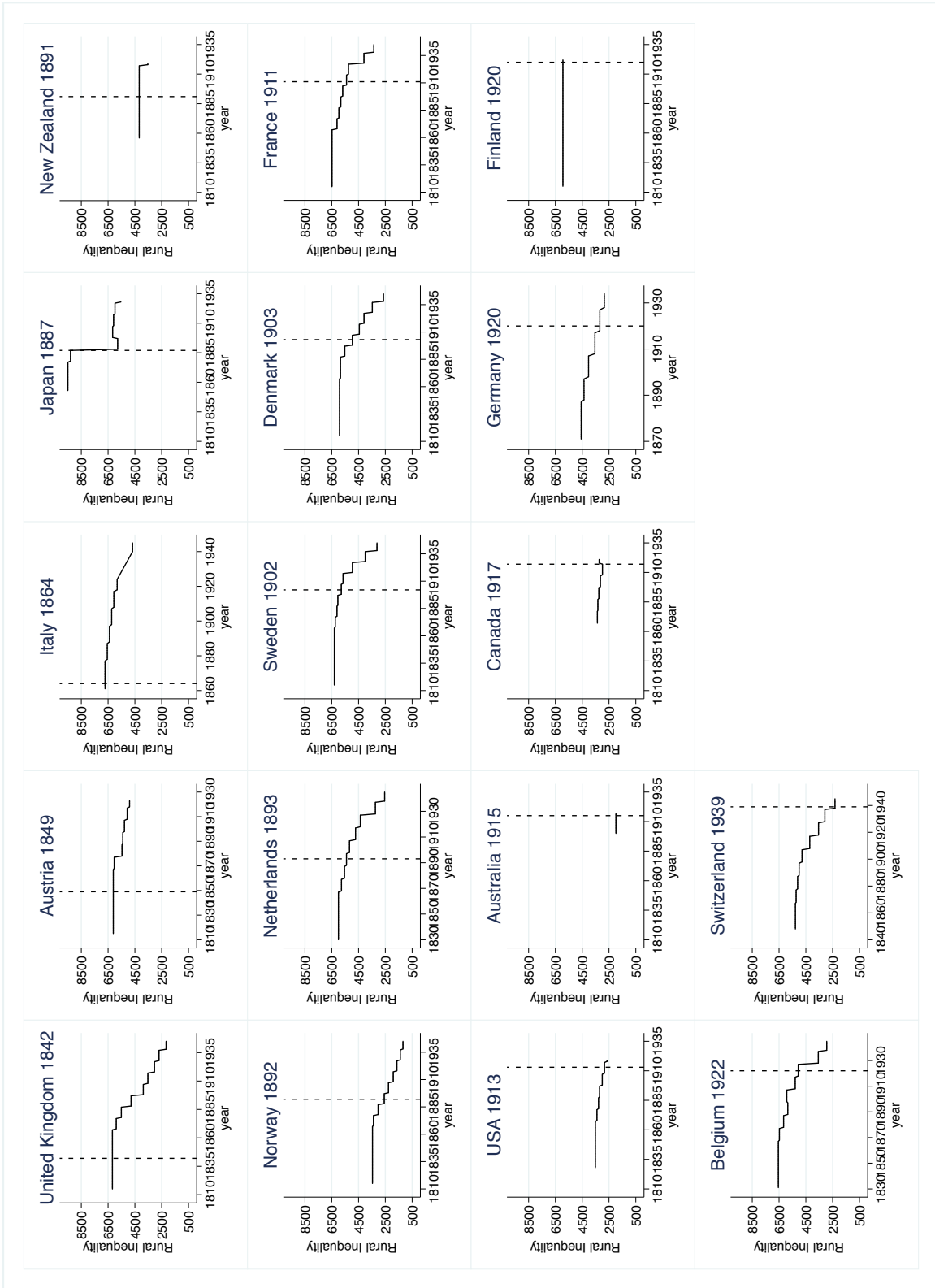


Figure A-2: Rural Inequality (100-Family Farm)(100-Urban Population) vs. Adoption of the Income Tax. Starting year varies by data availability and country's independence.

Dropping Cases with minimum in Rural Inequality

The first values of family farms *and* urbanization for Finland, New Zealand, and Australia in Vanhanen (2003) date as of 1918, 1908 and 1908, respectively. These values are extrapolated until the date of independence for Australia and New Zealand, and 1815 for Finland. This explains why the land inequality series for these countries are flat over the period, even for Rural Inequality, for which temporal variation is supposed to be high due to the rapid change in urbanization rates in this period. To ensure that the results are not driven by these *de facto* fixed effects, Table A-3 reruns the main specifications upon dropping these three countries from the sample. Results hold: high levels of Land and Rural Inequality, as well as the Vote-Tax Link, predict the adoption of the income tax also in the absence of Australia, New Zealand and Finland.

Table A-3: Main models rerun after dropping countries with low variation in Rural Inequality: Australia, New Zealand, and Finland.

	(1)	(2)	(3)
Franchise	-0.083*** (0.031)	-0.084*** (0.030)	-0.074** (0.034)
Polity	-0.418** (0.182)	-0.425** (0.194)	-0.313** (0.144)
Landholding Inequality	0.067* (0.035)		0.116 (0.074)
Rural Inequality		0.079** (0.037)	
Vote-Tax Link			2.982* (1.690)
War	1.840 (1.155)	1.859 (1.146)	2.092** (1.031)
WWI Participant	1.925 (1.597)	1.947 (1.741)	2.356 (2.198)
ln(Population)	1.086** (0.527)	1.027** (0.490)	0.901* (0.483)
ln(GDP/cap)	5.854* (3.054)	5.762* (2.953)	4.627 (2.856)
Urbanization	0.118 (0.096)	0.192 (0.119)	0.167 (0.116)
Temporary Income Tax	-6.309** (3.020)	-6.580** (3.238)	-6.068* (3.320)
Local Income Tax	4.016*** (1.414)	3.911*** (1.244)	6.359** (3.153)
Constant	-5.345 (3.760)	-6.596 (4.304)	-16.444 (10.228)
Observations	795	795	795
Duration Dependence	YES	YES	YES
Countries	14	14	14
Europe FE	YES	YES	YES

To model duration dependence, all models include a third-order flexible polynomial of the number of years elapsed without the income tax. Country-clustered robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Replacing Germany for Prussia

In Table A-4 we replace Germany for Prussia. The former adopted the federal income tax in 1920, after WWI. Prussia, as many other German principalities, adopted province-level income taxes earlier, as soon as 1891, when franchise was restricted and a vote-tax link was in place. Table A-4 replicates the main specifications replacing Germany for Prussia. Given the size of Prussia, we use the Germany values for Land Inequality, War, WWI Participant, $\ln(\text{GDP}/\text{cap})$, and Urbanization. Aidt and Jensen (2009) franchise variable is defined as the electorate (for parliamentary elections) in percentage of the enfranchised age and sex group, before women's suffrage, male population only. In Prussia, only men 20 years old or above were allowed to vote. We draw the electorate size for Prussia from [Wahlen in Deutschland](http://www.wahlen-in-deutschland.de) (<http://www.wahlen-in-deutschland.de>), and we approximate the share of male 20 years old or above based on census data from the Preussische Statistik and Becker et al. (2014). Total population is drawn from Flora, Kraus and Pfenning (1983). We set Temporary Income Tax to 1 (Prussia adopted one during the Napoleonic wars), and Local Income tax to 0, as Prussian municipalities had never operated this tax prior to 1891. Results suggest that both Landholding and Rural Inequality, as well as the Vote-Tax Link, predict the adoption of the income tax even if we replace Germany for Prussia.

Table A-4: Main Models Upon Replacing Germany for Prussia.

	(1)	(2)	(3)
Franchise	-0.042* (0.025)	-0.043* (0.025)	-0.028 (0.028)
Polity	-0.466*** (0.155)	-0.452*** (0.153)	-0.439*** (0.161)
Land Inequality	0.046** (0.018)		0.055** (0.024)
Rural Inequality		0.054*** (0.021)	
Vote-Tax Link			1.313* (0.777)
War	0.915 (1.133)	0.964 (1.143)	1.013 (1.197)
WW I Participant	1.923*** (0.724)	1.994*** (0.740)	1.951*** (0.732)
ln(Population)	0.826** (0.330)	0.798** (0.325)	0.700** (0.354)
ln(GDP/Cap)	5.879*** (2.123)	5.620*** (2.065)	5.015** (2.303)
Urbanization	0.096* (0.052)	0.134** (0.062)	0.108* (0.055)
Temporary Income Tax	-6.328*** (2.282)	-6.197*** (2.201)	-6.062** (2.386)
Local Income Tax	1.052 (0.718)	1.032 (0.763)	1.143 (0.723)
Constant	0.951 (3.003)	-0.204 (3.068)	-2.058 (4.436)
Observations	842	842	842
Duration Dependence	YES	YES	YES
Europe FE	YES	YES	YES

To model duration dependence, all models include a third-order flexible polynomial of the number of years elapsed without the income tax. Country-clustered robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Additional measures of War

Table 3 in the main text includes two controls for war: one is being at war at time t , the other participating in WWI between 1914-1918. We included these two covariates to investigate how robust the early adoption of the income tax among proto-democratic regimes is once we control for the main cause of fiscal innovations (Dincecco, 2011; Tilly, 1990; Scheve and Stasavage, 2010). Table A-5 considers additional measures of war. Columns 1 and 2 include the first and the second lag of war. The adoption the income tax might follow war if the latter created debt that has to be honored once armed conflict is over (we do not report models with additional lags as results do not vary). In column 4 we evaluate whether participation in WWI has any lasting effect. *WW1 Participant* in the main text is equal to one for WWI participants during war years and zero otherwise. *WW1 Participant (permanent)* equals one for WW participants during war years and all that follow. That is, it captures any lasting effect of participating in WWI. Finally, in column 5 we control for the magnitude of commitments to and preparation for war efforts by including a measure of military mobilization, measured by the share of military personnel to total population (source: Singer, Bremer and Stuckey (1972)). Irrespective of how we adjust for the effect of war on the adoption of income taxes, low franchise and low Polity IV are strong predictors of the adoption of this tax, thus confirming the intuition in Figure 1.

Table A-5: **Different Measures of War**

	(1)	(2)	(3)	(4)	(5)
Franchise	-0.041** (0.018)	-0.048** (0.021)	-0.054** (0.024)	-0.050** (0.023)	-0.084*** (0.021)
Polity	-0.442*** (0.151)	-0.484*** (0.164)	-0.522*** (0.190)	-0.391*** (0.151)	-0.474* (0.272)
War	1.656 (1.081)	1.447 (1.053)	1.720 (1.097)	1.571 (1.151)	1.672 (1.201)
First lag of War		1.298 (0.917)	0.962 (0.686)		
Second Lag of War			1.210 (0.894)		
WW I participant (permanent)				2.696*** (0.850)	
Military Personnel/Population					0.181 (0.362)
Temporary Income Tax	-5.702*** (1.747)	-6.047*** (1.784)	-6.367*** (1.904)	-4.976*** (1.642)	-8.014** (3.755)
Local Income Tax	0.906* (0.548)	1.073** (0.526)	1.227** (0.544)	0.598 (0.574)	2.744 (1.706)
ln(Population)	0.798 (0.518)	0.782 (0.517)	0.742 (0.526)	0.642 (0.520)	1.178** (0.540)
ln(GDP/cap)	3.894 (2.389)	4.546* (2.615)	5.057* (2.859)	3.405* (2.023)	3.131 (4.299)
Urbanization	0.172*** (0.066)	0.163** (0.070)	0.156** (0.076)	0.161*** (0.058)	0.239** (0.101)
Constant	-2.018 (6.790)	-0.412 (7.318)	0.893 (8.043)	-1.280 (5.109)	-6.412 (11.460)
Observations	849	844	837	849	703
Temporal Duration	YES	YES	YES	YES	YES
Europe FE	YES	YES	YES	YES	YES

To model duration dependence, all models include a third-order flexible polynomial of the number of years elapsed without the income tax. Country-clustered robust standard errors in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Accounting for unobserved heterogeneity

The models in the main text assume a common hazard rate for all countries, once we control for all relevant covariates. However, we cannot guarantee that we have controlled for every relevant variable. In an OLS framework, we would fit a country fixed effect to account for unobserved heterogeneity that simultaneously influence the unit-specific baseline hazard and the dependent variable. However, a full vector of country fixed effect cannot be fitted to BTSCS data, as they would completely determine the duration of the subject. There is still one option left to account for unit-specific heterogeneity: we can work with a Weibull duration model with gamma heterogeneity (Beck and Katz, 2001, pag.491) an shared frailty (Gutierrez, 2002), which accounts for unobserved unit heterogeneity in a similar fashion than random effects models.

Specifically, *frailty* models add randomness to each units' underlying propensity to adopt the income tax as a function of explanatory variables combined with a stochastic term. This kind of models are appropriate when we suspect that some units are more (less) likely to adopt the income tax regardless of the values of the observed independent variables (Beck and Katz, 2001). *Shared* frailty models are used when the unobserved frailty is shared among groups of observations (i.e. the same country over time). Accordingly, the shared frailty model is said to be equivalent to a random effect model for survival data (Gutierrez, 2002).

Shared frailty models are computationally demanding. Historical cross-national time-series data, like the one we have here, is not best suited to run this complex models, as variables tend to be slow moving, covariate correlations high, and left censoring to differ between units. Still, in Table A-6 we report two set of stable models: one without the covariates that we use to test our hypotheses, and one including all of them at once. Again, they are estimated with a Weibull model with gamma heterogeneity and unit-specific (or shared) frailty.

Results hold. That is, higher land or rural inequality, as well as the vote-tax link, predict

the adoption of the income tax when we adjust for unit-specific unobserved heterogeneity. More importantly, the variance of the frailty, $\hat{\theta}$, is not statistically significant or is only at 10%. This implies that the unobserved unit effect that these models account for is small. Accordingly, the common hazard rate that we assume in the main text seems reasonable, while making the estimation of the models less cumbersome.

For the sake of comprehensiveness, in Table A-7 we also fit splines models to account for duration dependence (Beck, Katz and Tucker, 1998) and complement them with complimentary-log log models (Carter and Signorino, 2010), which add full flexibility to the hazard rate by not assuming *ex ante* any particular shape (i.e. increasing, decreasing, or non-monotonic). Again, results hold.

Table A-6: Accounting for unobserved unit heterogeneity: Weibull models with gamma heterogeneity and shared frailty

	(1)	(2)
Franchise	-0.040** (0.017)	-0.002 (0.022)
Polity	-0.112 (0.124)	-0.187 (0.147)
Rural Inequality		0.003*** (0.001)
Vote-Tax Link		9.374*** (2.651)
War	2.466** (1.100)	4.023** (1.611)
WWI participant	1.395 (1.231)	0.435 (1.324)
ln(Population)	-0.391 (0.355)	-0.268 (0.606)
ln(GDP/cap)	-1.654 (1.317)	1.443 (2.424)
Urbanization	0.236*** (0.085)	0.562*** (0.130)
Temporary Income Tax	-2.291 (1.765)	-3.675** (1.853)
Local Income Tax	1.318 (0.937)	6.532*** (2.308)
Constant	-25.720*** (6.326)	-52.565*** (9.998)
$\hat{\theta}$	0.536 (0.799)	2.353* (1.340)
Observations	844	844
Number of groups	17	17
Duration Dependence	YES	YES
Europe FE	YES	YES

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A-7: Robustness tests: Splines and Cloglog Models

	Splines			Cloglog		
	(1)	(2)	(3)	(4)	(5)	(6)
Franchise	-0.037* (0.021)	-0.040* (0.022)	-0.022 (0.021)	-0.044** (0.021)	-0.046** (0.022)	-0.026 (0.023)
Polity	-0.201** (0.087)	-0.204** (0.086)	-0.199** (0.091)	-0.489*** (0.145)	-0.491*** (0.145)	-0.500*** (0.161)
Landholding Inequality	0.049** (0.021)		0.068*** (0.025)	0.047* (0.025)		0.059* (0.035)
Rural Inequality		0.001*** (0.000)			0.001** (0.000)	
Vote-Tax Link			1.826*** (0.702)			1.621** (0.755)
War	2.393* (1.291)	2.497* (1.285)	2.848* (1.548)	1.570 (1.067)	1.664 (1.055)	1.732 (1.074)
WW1 Participant	2.669* (1.563)	2.687* (1.632)	2.551* (1.358)	1.248 (0.784)	1.234 (0.829)	1.072 (0.766)
ln(Population)	0.032 (0.222)	0.008 (0.228)	-0.013 (0.248)	0.798* (0.435)	0.797* (0.455)	0.839* (0.433)
ln(GDP per cap)	1.619 (1.248)	1.729 (1.245)	1.408 (1.301)	5.230** (2.354)	5.301** (2.332)	4.721** (2.302)
Urbanization	0.103** (0.046)	0.149*** (0.053)	0.104** (0.046)	0.151*** (0.058)	0.193*** (0.069)	0.169*** (0.062)
Temporary Tax	-3.137*** (1.043)	-3.259*** (1.024)	-3.122*** (1.015)	-6.714*** (2.270)	-6.857*** (2.226)	-6.949*** (2.399)
Local Tax	1.778*** (0.624)	1.895*** (0.702)	2.231*** (0.642)	1.662** (0.795)	1.723** (0.824)	1.818* (0.960)
Constant	-60.762** (27.453)	-62.134** (27.495)	-65.370** (26.567)	-2.508 (4.638)	-3.681 (4.538)	-5.935 (5.807)
Observations	849	849	849	849	849	849
Splines with linear trend	YES	YES	YES	NO	NO	NO
Flexible Polynomial of Time Elapsed	NO	NO	NO	YES	YES	YES
Europe FE	YES	YES	YES	YES	YES	YES

Country-clustered robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Secret Ballot vs. the Vote-Tax Link

Aidt and Jensen (2009) find that the Secret Ballot is a strong predictor of the adoption of the income tax. Table 4 indicates that the effect disappears when we control for the vote-tax link. Here we run the same exercise but keeping Aidt and Jensen (2009) original specification, which includes a squared term for Franchise, a control for Tax Technology (an additive index of census, local tax, primary school enrollment, and a dummy variable for high urbanization), and linguistic proximity between countries. Likewise, duration dependence here is fitted with splines (Beck, Katz and Tucker, 1998). Results in column 1 confirm Aidt and Jensen (2009) finding: the presence of the Secret Ballot increases the likelihood of adoption of the income tax. Column 2 suggests that this effect vanishes once we control for the Vote-Tax Link, which remains statistically significant. In other words, results in Table 4 are independent of specification.

Table A-8: Secret Ballot vs. the Vote Tax Link assessed with Aidt and Jensen (2009) specification

	(1)	(2)
Temporary Income Tax	-2.514*** (0.834)	-2.765*** (1.044)
Franchise	-0.269*** (0.098)	-0.282*** (0.100)
Franchise Squared	0.002** (0.001)	0.002*** (0.001)
Secret Ballot	2.286* (1.338)	0.925 (1.146)
Vote-Tax Link		2.228* (1.305)
War	2.404** (1.168)	2.619* (1.366)
ln(GDP/cap)	-0.712 (1.253)	-0.473 (1.478)
ln(Population)	0.181 (0.271)	0.174 (0.270)
Tax Technology	1.296** (0.536)	1.191** (0.556)
Linguistic Distance	2.133* (1.150)	2.379* (1.293)
Constant	-50.098*** (19.197)	-50.408** (19.848)
Observations	948	948
Splines	YES	YES
Europe FE	YES	YES

Country-clustered robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1