

**\*\*NOT FOR PUBLICATION\*\***

## **Supplementary Online Appendices**

### Fiscal Innovation in Non-Democratic Regimes

These appendices contain materials, results and robustness checks that supplement the main text.

#### **Appendices**

- A. Data Details
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## A. Data Details

### i. Crossnational Data Sources

*Income Tax Adoption:* Aidt, T. S., and Jensen, P. S. (2009). “The taxman tools up: An event history study of the introduction of the personal income tax”. *Journal of Public Economics*, 93, 160-175.

*Franchise Level:* Aidt, T. S., and Jensen, P. S. (2009). “The taxman tools up: An event history study of the introduction of the personal income tax”. *Journal of Public Economics*, 93, 160-175.

*Polity score:* Marshall, Monty G. and Keith Jaggers. 2000. *Polity IV Project: Political Regime Characteristics and Transitions, 1800-2010*. Center for International Development and Conflict Management. University of Maryland.

*Conservative Vote Share:* Beramendi, Pablo and Didac Queralt. 2016. “The Electoral Origins of the Fiscal State.” Mimeo .

*Land Inequality:* computed as the share of farms not in family hands in Vanhanen, Tatu. 2003. *Democratization: A Comparative Analysis of 170 Countries*. New York: Routledge.

*Tax Barriers:* Mares, Isabela and Didac Queralt. 2015. “The Non-Democratic Origins of Income Taxation.” *Comparative Political Studies* 48(14):1974-2009.

### ii. German Principality Data Sources

*Adoption Year:* Popitz, Johannes. 1926. Einkommensteuer. In *Handwörterbuch der Staatswissenschaften*, ed. Ludwig Elster, Adolf Weber and Friedrich Wiese. Jena: Gustav Fischer pp. 400-413.

*Landholding Inequality:* Information of farm size is drawn from Kaiserliches Statistisches Amt. 1898. *Statistik des Deutschen Reichs*. Bd. 112. Berlin: Verlag des Königlich Preussischen Statistischen Bureaus, pp. 351-413 [Table 9].

*Electoral Provisions:* Various sources. Refer to Appendix Table A-1.

*Percentage of Catholics:* Inter-university Consortium for Political and Social Research. 1984.

*German Reichstag Election Data, 1871-1912.* Ann Arbor: Inter-university Consortium for Political and Social Research.

*Total Population:* Inter-university Consortium for Political and Social Research. 1984. *German Reichstag Election Data, 1871-1912.* Ann Arbor: Inter-university Consortium for Political and Social Research.

*Industrial Labor:* Source: Hohls, Rüdiger and Kaelble, Hartmut. 1989. Die regionale Erwerbsstruktur im deutschen Reich und in der Bundesrepublik Deutschland. St. Katharinen: Scripta Mercaturae Verlag.

*Population under Poor relief:* Kaiserliches Statistisches Amt. 1887. Statistik der öffentlichen Armenpflege im Jahre 1885. Berlin: Puttkamer & Mühlbrecht.

*SPD Vote Share:* Inter-university Consortium for Political and Social Research. 1984. *German Reichstag Election Data, 1871-1912.* Ann Arbor: Inter-university Consortium for Political and Social Research.

### **iii. Prussian District Data Sources**

*Roll Call Data:* Preussen Haus der Abgeordneten and Preussen Landtag. 1891. Stenographische Berichte über die Verhandlungen des Preussischen Hauses der Abgeordneten.

*Landholding Inequality:* Ziblatt, Daniel. 2008. “Does Landholding Inequality Block Democratization.” *Wor Sachsen-Weimar-ld Politics* 60(4):61041.

*Representative’s Partisanship:* Kühne, Thomas. 1994. *Handbuch der Wahlen zum Preussischen Abgeordnetenhauses, 1867- 1918.* Düsseldorf: Droste.

*Linguistic Fractionalization:* arzArdanaz, Martin and Isabela Mares. 2014. Rural inequality, labor mobility and democratic reforms. *Comparative Political Studies* 47(12):17391769.

*Population:* as of 1890 is drawn from Preussische Statistik, Volume 121a, pp.96-151.

*Population under Poor relief:* Kaiserliches Statistisches. 1887. Statistik der Öffentlichen Armenpflege. Berlin: Kaiserliches Statistisches. The information is available at the level of Prussian localities, which we then aggregate to the Prussian electoral district, using the correspondence between localities and districts presented in Kuhne (1994).

*Urbanization*: As of 1890 is drawn from Preussische Statistik, Volume 121a, pp.96-151. For *Urban Growth* we compute percentage change with respect to 1875. Data for 1875 is drawn from Preussische Statistik, volume 42, pages 202-231.

*Turnout*: Kühne, Thomas. 1994. *Handbuch der Wahlen zum Preussischen Abgeordnetenhaus*, 1867- 1918. Düsseldorf: Droste.

*Party Vote Share*: Kühne, Thomas. 1994. *Handbuch der Wahlen zum Preussischen Abgeordnetenhaus*, 1867- 1918. Düsseldorf: Droste. When by-elections are held after the 1888 general election but before March 6, 1891, we update the 1888 vote share with results of the by-election.

*Tax burden*: The source of 1878 data is: Herrfurth, Ludwig and Conrad Studt. 1880. "Finanzstatistik der Kreise des Preussischen Staates für das Jahr 1877/78". *Zeitschrift des Preussischen Statistischen Landesamtes*, Ergänzungshefte, Vol. 7. Berlin: Verlag des Königlichen Statistischen Bureaus, which is digitized and made available by Becker, Sascha O., Francesco Cinnirella, Erik Hornung and Ludger Woessmann. 2014. "iPEHDThe ifo Prussian Economic History Database." *Historical Methods: A Journal of Quantitative and Interdisciplinary History* 47(2):5766. The source of the 1900 data is: Preussische Festschrift 1905, pages 122- 126. We match localities to districts using the tables presented in Kühne (1994).

Table A-1: Publications used to collect information on electoral laws of all Principalities of the German Empire during the period 1870-1912.

STATE	PUBLICATION	YEARS OF ELECTORAL REFORM
Anhalt	Gesetzsammlung für das Herzogtum Anhalt	1859, 1872, 1913
Baden	Gesetz und Verordnungsblatt für das Grossherzogtum Baden	1896, 1905
Bayern	Gesetz und Verordnungsblatt für das Königreich Bayern	1848, 1881, 1906, 1910
Braunschweig	Gesetz betreffend die Zusammensetzung der Landesversammlung	1851, 1899
Bremen	Gesetzblatt der freien Hansestadt Bremen	1875, 1894, 1898, 1912
Hamburg	Gesetzsammlung der freien und Hansestadt Hamburg	1860, 1879, 1913
	Grossherzoglich Hessisches Regierungsblatt	1872, 1911
Lippe	Gesetzsammlung für das Fürstentum Lippe	1876, 1912
Lübeck	Sammlung der Lüibeckschen Gesetze und Verordnungen	1875, 1878, 1905
Oldenburg	Gesetzblatt für das Herzogtum Oldenburg	1868, 1909
Preussen	Gesetzsammlung für die Königlich Preussischen Staaten	1854, 1893
Reuss Ältere Linie	Gesetzsammlung für das Fürstentum Reuss ältere Linie	1867, 1913
Reuss Jüngere Linie	Gesetzsammlung für die Fürstlich Reussischen Lande Jüngerer Linie	1871, 1913
Sachsen	Gesetz und Verordnungsblatt für das Königreich Sachsen	1868, 1896, 1909
Sachsen-Altenburg	Gesetzsammlung für das Herzogtum Sachsen-Altenburg	1870, 1873, 1898, 1904, 1909
Sachsen-Coburg und Gotha	Gesetzsammlung für das Herzogtum Coburg	1904
Sachsen-Meiningen	Sammlung der landesherrlichen Verordnungen im Herzogtum Sachsen-Meiningen	1848, 1852, 1873
Sachsen-Weimar-Eisenach	Regierungsblatt für das Grossherzogtum Sachsen-Weimar-Eisenach	1852, 1884, 1896, 1906
Schaumburg-Lippe	Schaumburg Lippsche Landesverordnungen	1868, 1906
Schwarzburg-Rudolstadt	Gesetzsammlung für das Fürstentum Schwarzburg-Rudolstadt	1870
Schwarzburg-Sondershausen	Gesetzsammlung für das Fürstentum Schwarzburg-Sondershausen	1856, 1912
Waldeck- und Pyrmont	Fürstlich Waldeckische Regierungsblätter	1852, 1856, 1879
Württemberg	Regierungsblatt für das Königreich Württemberg	1874, 1906

Table A-2: **Summary Statistics for Cross-Sectional Analysis Across German Principalities.**

<i>Variable</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min.</i>	<i>Max.</i>
Landholding Gini	70.976	7.569	55.798	87.731
Vote-Tax Link	0.519	0.5	0	1
Censitary System	0.42	0.494	0	1
Share Catholics	11.241	20.056	0.1	71.31
ln(Population)	13.176	1.596	11.068	18.258
Industrial Labor	9.561	3.863	1.002	28.124
Percent Poor	2.84	1.174	1.64	6.188
SPD Vote Share	19.918	17.554	0	62.309
Margin of Victory (Cons-Lib)	-39.032	35.967	-99.823	72.254
N		645		

Table A-3: **Summary Statistics for Roll Call Analysis in Prussia. Unit: Parliamentary Seat.**

<i>Variable</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min.</i>	<i>Max.</i>	<i>N</i>
Landholding Inequality	77.538	9.294	50.806	94.215	440
Urban Population	32.57	21.132	0	100	443
ln(Population 1890)	11.611	0.555	9.951	14.272	443
Language Fractionalization	11.4	17.857	0.093	69.89	421
Population Poor	3.045	1.505	0.975	9.720	432
SPD Vote Share	13.018	14.23	0	66.099	443
Margin of Victory	60.348	34.321	1	100	406
Napoleon Treatment	0.485	0.5	0	1	443
Labor Shortage	0.991	0.203	0.596	1.554	358

Table A-4: **Summary statistics for the Fiscal Gains Test. Unit: Electoral District.**

<i>Variable</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min.</i>	<i>Max.</i>	<i>N</i>
Income Tax Yields % increase 1878-1900	95.008	106.718	-8.301	977.657	231
Income Tax Per Capita 1878	2.014	0.68	0.786	4.593	231
Urban Population in 1875	25.81	13.867	0	81.962	231
Urbanization Growth 1875-1900	21.178	32.514	-100	268.188	228
Landholding Gini	75.898	9.839	48.995	94.215	231
Rural Productivity Growth 1893-1897	956.468	203.865	745	1356	231
Language Fractionalization	11.106	17.911	0.093	69.89	229
Percent Poor	2.973	1.428	0.975	9.720	246
Vote Share SPD	13.472	14.194	0	66.099	252



Table A-5: **Summary Statistics for the Political Gains Test. Unit: Parliamentary Seat.**

<i>Variable</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min.</i>	<i>Max.</i>	<i>N</i>
Turnout Differential	-0.305	10.474	-45.8	51.5	420
Free Liberal Vote Share 1888	11.168	20.147	0	100	420
Conservative Vote Share Increase 1893-1888	3.033	23.922	-100	100	420
National Liberal Vote Share Increase 1893-1888	-0.591	22.508	-100	100	420
Zentrum Vote Share Increase 1893-1888	-0.514	9.867	-52.492	94.077	420
Minority Vote Share Increase 1893-1888	0.602	9.380	-60.299	81.988	420
Landholding Gini	77.587	9.210	50.806	94.215	416
Urban Population	32.63	21.22	0	100	421
Language Fractionalization	11.393	18.008	0.093	69.89	399
ln(Population)	11.614	0.559	9.951	14.272	421
Percent Poor	3.049	1.497	0.975	9.720	409
SPD Vote Share	12.963	14.127	0	66.099	419

## B. Robustness tests of Duration Models of Income Tax Adoption in Germany

Table A-6: Complementary Log-Log Duration Models of Income Tax Adoption in German States.

	(1)	(2)	(3)	(4)	(5)	(6)
Landholding Inequality <sup>†</sup>	0.098**	0.108**	0.090*	0.104**	0.110*	0.010
	(0.041)	(0.043)	(0.048)	(0.052)	(0.063)	(0.062)
Landholding Inequality × Vote-Tax Link					0.386**	
					(0.197)	
Landholding Inequality × Censitary System						0.246**
						(0.106)
Catholics (%)	0.009	0.014	0.011	0.026	0.097	-0.028
	(0.023)	(0.024)	(0.023)	(0.028)	(0.063)	(0.033)
ln(Population)	0.382	0.364	0.356	0.252	0.143	0.640
	(0.316)	(0.311)	(0.322)	(0.374)	(0.532)	(0.454)
Industrial Labor (%)	0.165**	0.185***	0.191***	0.133*	0.270***	0.218***
	(0.069)	(0.062)	(0.065)	(0.078)	(0.099)	(0.080)
# Principalities having Income Tax by Year $t$		-0.260***	-0.260***	-0.265***	-0.230**	-0.246***
		(0.090)	(0.091)	(0.092)	(0.091)	(0.096)
Population Poor (%)			0.220	0.056	-0.256	0.075
			(0.194)	(0.257)	(0.424)	(0.289)
SPD Vote Share for Reichstag (%)				0.029		
				(0.027)		
Vote-Tax Link					-26.859*	
					(13.719)	
Censitary System						-18.412**
						(7.900)
Constant	-19.465***	-20.957***	-20.276***	-19.138***	-23.747***	-18.432**
	(5.513)	(5.321)	(5.904)	(6.232)	(7.649)	(7.993)
Duration Dependence	Yes	Yes	Yes	Yes	Yes	Yes
German Principalities	22	22	22	22	22	22
Principality-Year	645	645	645	645	645	645
Pseudo-LogL	-72.91	-67.36	-66.83	-66.14	-59.13	-63.01

<sup>†</sup>Landholding Inequality is rescaled from 0-1 to 0-100 to facilitate comparison with other continuous variables. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A-7: Duration Models of Income Tax Adoption in German States, in which the baseline hazard is accounted by three splines with knots at values 1, 4 and 7 (Beck and Katz, 1995).

	(1)	(2)	(3)	(4)	(5)	(6)
Landholding Inequality <sup>†</sup>	0.053** (0.021)	0.055*** (0.021)	0.046** (0.022)	0.044** (0.021)	0.077*** (0.023)	0.001 (0.025)
Landholding Inequality × Vote-Tax Link					0.227** (0.103)	
Landholding Inequality × Censitary						0.143*** (0.049)
Catholics (%)	0.011 (0.011)	0.012 (0.011)	0.010 (0.011)	0.007 (0.012)	0.066** (0.026)	-0.006 (0.015)
ln(Population)	0.124 (0.145)	0.129 (0.146)	0.122 (0.152)	0.146 (0.156)	-0.040 (0.193)	0.235 (0.200)
Industrial Labor (%)	0.083*** (0.031)	0.091*** (0.031)	0.093*** (0.031)	0.106*** (0.040)	0.146*** (0.054)	0.116*** (0.039)
# Principalities having Income Tax by Year $t$		-0.028 (0.025)	-0.027 (0.025)	-0.030 (0.026)	-0.017 (0.027)	-0.027 (0.025)
Population Poor (%)			0.105 (0.099)	0.137 (0.122)	-0.143 (0.230)	0.042 (0.142)
Years Elapsed since 1871	14.135*** (4.426)	14.364*** (4.387)	14.537*** (4.344)	15.761*** (5.041)	28.323*** (8.871)	17.085*** (5.446)
Spline 1	1.758*** (0.579)	1.754*** (0.565)	1.778*** (0.559)	1.926*** (0.637)	3.418*** (1.098)	2.059*** (0.689)
Spline 2	-0.486*** (0.168)	-0.477*** (0.162)	-0.484*** (0.160)	-0.524*** (0.180)	-0.924*** (0.305)	-0.554*** (0.195)
Spline 3	0.027** (0.014)	0.022* (0.012)	0.022* (0.012)	0.024* (0.013)	0.040** (0.019)	0.022 (0.014)
SPD Vote Share for Reichstag (%)				-0.006 (0.011)		
Vote-Tax Link					-15.853** (7.111)	
Censitary						-10.447*** (3.653)
Constant	-29.607*** (7.793)	-30.404*** (7.777)	-30.248*** (7.737)	-32.398*** (9.076)	-53.607*** (15.198)	-32.971*** (10.033)
German Principalities	22	22	22	22	22	22
German Principalities-Year	645	645	645	645	645	645
Pseudo-R2	0.253	0.260	0.265	0.267	0.355	0.317

<sup>†</sup>Landholding Inequality is rescaled from 0-1 to 0-100 to facilitate comparison with other continuous variables. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## C. A time-varying proxy of Landed Elite's bargaining power - Germany Test

The main text uses landholding inequality as a proxy of landed elite's bargaining power. This Appendix considers an alternative proxy that presents two advantages: First, it is time-varying, and second, it takes into account the bargaining power of politicians representing urban, industrial interests, namely, the Liberals.

To complete this test, we compute the vote share difference between Conservative and Liberal parties for each Reichstag election and principality. The electoral system of Reichstag elections was the same for all principalities. The system was permissive: all adult males were allowed to vote and no party was banned to run. Importantly, in this analysis, we do not include controls for tax-based electoral provision, landholding inequality, or industrial development as that would result in post-treatment bias.

Data of party vote share are drawn from ICPSR (1984). Conservative-family parties are: Conservative, Empire, and Antisemitic Party. Liberal-family parties are: Liberal, Liberal Empire, National, Liberal Union, Progress, People, South German People Party, Free Thinkers Union, Free Thinkers People.

Consistent with our expectation, the likelihood of income tax adoption increases if the vote share of Conservatives relative to Liberals is larger. In column 2 we include the square term of the vote share difference to test for non-linearities. The square term is also positive, suggesting that the likelihood of income tax adoption increases disproportionately in the bargaining power of landed elites.

Table A-8: **Duration Models of Income Tax Adoption as a function of the Vote Share Difference between Conservatives and Liberals across German Principalities**

	(1)	(2)
Conservatives' Margin over Liberals (%)	0.007*	0.011***
	(0.004)	(0.004)
(Conservatives' Margin over Liberals) <sup>2</sup>		0.000*
		(0.000)
Catholics (%)	-0.009	-0.009
	(0.010)	(0.010)
ln(Population)	0.127	0.179
	(0.120)	(0.120)
Population Poor (%)	0.210***	0.234***
	(0.079)	(0.085)
# Principalities having Income Tax by Year $t$	-0.109***	-0.119***
	(0.038)	(0.039)
Constant	-4.593***	-5.689***
	(1.550)	(1.574)
Duration Dependence	Yes	Yes
German Principalities	22	22
German Principalities - Years	645	645

Robust standard errors in parentheses

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

## D. Statistical Evidence of Sector Specialization and Party Representation

In the main text we argue that landholding inequality is a proxy of the bargaining power of the landed elites. We also claim that the landed interest was represented by Conservative parties. Table A-9 shows this association using Prussian district data. For completeness, we also regress Liberal Vote Share on landholding inequality and other controls to show that the opposite holds: that is, Liberals are weak in district with high levels of landholding inequality, whereas they are popular in districts with high industrialization, proxied by the share of labor working on industry, or *industrial labor*.

Table A-9: **Conservative/Liberal Representation in Prussia as a Function of District-Level Economic Characteristics.** Notice that 1891 and 1893 deputies correspond to the same session. The pool of legislators varies slightly between years as a result of by-elections.

	(1) Conservative Deputy 1891	(2) Conservative Deputy 1893	(3) Liberal Deputy 1891	(4) Liberal Deputy 1893
Landholding Inequality <sup>†</sup>	0.051*** (0.008)	0.051*** (0.009)	-0.004 (0.009)	-0.004 (0.009)
Urbanization (%)	-0.012*** (0.004)	-0.013*** (0.005)	0.021*** (0.004)	0.021*** (0.005)
ln(Population)	0.122 (0.152)	0.181 (0.158)	-0.718*** (0.174)	-0.651*** (0.175)
Linguistic Fractionalization	-0.009** (0.004)	-0.007* (0.004)	-0.003 (0.005)	-0.008 (0.005)
Constant	-4.921*** (1.817)	-5.611*** (1.910)	7.262*** (1.954)	6.483*** (1.980)
Electoral Districts	418	411	418	411
Pseudo-R2	0.0863	0.0865	0.0958	0.103

<sup>†</sup>Landholding Inequality is rescaled from 0-1 to 0-100 to facilitate comparison with other continuous variables. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## E. Did industrial elites benefit from income taxation?

One could conjecture that industrial elites derive political gains from the adoption of the income tax adoption if the new revenue is invested in productivity-enhancing policies, such as communications or education. The revenue-raising capacity of the new income tax does not support this alternative hypothesis of income tax adoption.

First, income tax yields are not large enough to change expenditure priorities in any significant way. In 1892, direct taxes raised 9.9% of total revenue. In 1902, direct taxes represent 8.4% of total revenue (Schremmer and Stern, 1989, Table 80). That is, the weight of direct taxes in the budget decreases over time. The reason is that the income tax is not intended to be a money machine. The main goal of the new tax, we argue, is changing the incidence of taxation across sectors, not increasing revenue per se. Consistent with our hypothesis, Section 4.3 shows that the tax burden radically shifts from rural to urban districts within 10 years of adoption.

Second, data about the composition of the budget also does not support this conjecture. Ten years after the adoption of the income tax, Prussia's spending priorities remain virtually constant (Schremmer and Stern, 1989, Table 81). State monopolies (including railroads) keep the lion's share of the budget: 43.7 in 1892 and 45.3% in 1902. Administration (19.1% in 1892 and 15.4% in 1902), debt (15.2% and 11.7%) and transfers to the Reich (10.7% and 14.1%) remain relatively constant over time. Education and culture, which might have enhanced labor force productivity, only increases 0.3 points ten years after adoption, from 5.6 to 5.9%. This evidence suggests that there is no significant change in spending on productivity-enhancing policy that might benefit the industrial sector and explain their support in the roll calls of 1891 and 1893. Instead, the political gain that we document in Section 4.4 seems to be the driving factor explaining industrial elite's support of the income tax.

Third, the conjecture that industrial elites supported because of expectations of higher investments in supply-side policy is not supported by the Parliamentary debates either. These include no reference to these expectations.

## F. Classifying Roll Call Votes

Table A-10: **Prussian Roll Call Breakdown**

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<b>1891 Roll Call</b>		
Against		49
In Favor		295
Abstention		3
Sick (non-excused)		10
Vacation (non-excused)		4
Excused		53
Absent		11
Total		425
<b>1893 Roll Call</b>		
Against		26
In Favor		223
Abstention		84
Sick (non-excused)		6
Vacation (non-excused)		11
Excused		57
Absent		37
Total		444

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Table A-11: Ordinal Probit Models of Income Tax Roll Call Votes of 1891 and 1893 with different assumptions about how to code Excused and Non-Excused deputies. 0 - against, 1 - abstention, 2 - in favor. Zentrum Deputy is the excluded category.

	Excused and Non-excused as Abstainers		Excused and Unexcused to Missing	
	(1) 1891 Vote	(2) 1893 Vote	(3) 1891 Vote	(4) 1893 Vote
Conservative Deputy	0.388** (0.167)	1.950*** (0.177)	0.807*** (0.269)	3.018*** (0.323)
National Liberal Deputy	0.411* (0.220)	1.690*** (0.258)	0.537* (0.298)	2.544*** (0.441)
Free Liberal Deputy	-2.089*** (0.418)	-0.842** (0.395)	-2.614*** (0.688)	-1.348* (0.794)
Minority Deputy	-0.032 (0.294)	0.017 (0.274)	0.071 (0.582)	0.116 (0.301)
ln(Population)	-0.110 (0.134)	-0.122 (0.150)	-0.272 (0.196)	-0.242 (0.203)
Linguistic Fractionalization	0.004 (0.004)	-0.003 (0.004)	0.019** (0.008)	-0.007 (0.005)
Population Poor	-0.046 (0.046)	-0.040 (0.052)	0.021 (0.071)	-0.028 (0.071)
SPD Vote Share [Reichstag 1890]	-0.004 (0.006)	-0.006 (0.007)	-0.003 (0.008)	-0.026** (0.011)
Observations	409	403	332	310
Pseudo-R2	0.107	0.295	0.262	0.522

Robust standard errors in parentheses

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

## G. Robustness Tests for Roll Call Analysis

Table A-12: Ordinal Probit Models of the Roll Call Vote of 1891 while including Margin of Victory

	(1)	(2)	(3)
Conservative Deputy	0.719*** (0.213)	0.721*** (0.213)	0.695*** (0.211)
National Liberal Deputy	0.880*** (0.289)	0.883*** (0.289)	0.828*** (0.296)
Free Liberal Deputy	-2.439*** (0.656)	-2.455*** (0.678)	-2.461*** (0.676)
Minority Deputy	0.020 (0.316)	0.020 (0.316)	-0.003 (0.318)
ln(Population)	-0.221 (0.183)	-0.218 (0.183)	-0.260 (0.184)
Linguistic Fractionalization	0.012* (0.006)	0.012* (0.007)	0.010 (0.007)
Population Poor	0.026 (0.069)	0.027 (0.070)	0.034 (0.071)
SPD Vote Share [Reichstag 1890]	-0.005 (0.008)	-0.004 (0.008)	-0.006 (0.008)
Margin	0.002 (0.003)	-0.001 (0.013)	0.047 (0.036)
Margin <sup>2</sup>		0.000 (0.000)	-0.001 (0.001)
Margin <sup>3</sup>			0.000 (0.000)
Observations	337	337	337
Pseudo-R2	0.192	0.192	0.197

Robust standard errors in parentheses

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

Table A-13: **Ordinal Probit Models of Income Tax Adoption using an alternative proxy of labor bargaining power to obtain concessions from the wealthy: Labor Scarcity (Ardanaz and Mares, 2014).** 0 - against, 1 - abstention, 2 - in favor. Zentrum Deputy is the excluded category. Excused deputies are coded as missing and Non-Excused as Abstainers.

	1891 Bill		1893 Bill	
	(1)	(2)	(3)	(4)
Landholding Inequality <sup>†</sup>	0.024** (0.010)		0.043*** (0.009)	
Urban Population (%)	-0.003 (0.008)		0.001 (0.007)	
Conservative Deputy		0.744*** (0.225)		2.271*** (0.256)
National Liberal Deputy		0.819** (0.326)		2.385*** (0.340)
Free Liberal Deputy		-2.240*** (0.654)		-1.210* (0.643)
Minority Deputy		-0.182 (0.339)		0.139 (0.271)
ln(Population)	-0.081 (0.220)	0.036 (0.215)	-0.560** (0.223)	-0.671*** (0.200)
Linguistic Fractionalization	-0.004 (0.005)	0.005 (0.007)	-0.017*** (0.005)	-0.012** (0.005)
Labor Shortage	-0.080 (0.545)	-0.379 (0.583)	-0.771 (0.519)	-1.533*** (0.541)
Observations	297	296	297	296
Pseudo-R2	0.0189	0.159	0.0855	0.420

<sup>†</sup>Landholding Inequality is rescaled from 0-1 to 0-100 to facilitate comparison with other continuous variables. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Acemoglu et al. (2011) argue that the Napoleonic invasion was associated with a number of far-reaching economic reforms that removed feudal legacies and strengthened the power of the industrial sector in Germany. This implies that the strength of landowning elites was significantly lower in regions that experienced a “Napoleonic” treatment. As such, one can expect to find a negative relationship between the Napoleonic treatment and political support for the adoption of the income tax. To test this hypothesis, following Acemoglu et al. (2011), we code variation in the Napoleonic treatment across different administrative regions in Prussia.

Results in Appendix Table A-14 show that the inclusion of this variable does not modify in any significant way the results reported in Table 4.

Table A-14: **Ordinal Probit Models of Income Tax Adoption controlling for Napoleonic presence.** 0 - against, 1 - abstention, 2 - in favor. Zentrum Deputy is the excluded category. Excused deputies are coded as missing and Non-Excused as Abstainers.

	1891 Bill		1893 Bill	
	(1)	(2)	(3)	(4)
Landholding Inequality <sup>†</sup>	0.021** (0.009)		0.029*** (0.009)	
Urban Population (%)	-0.016*** (0.004)		-0.008** (0.004)	
Conservative Deputy		0.675*** (0.203)		2.260*** (0.226)
National Liberal Deputy		0.708*** (0.255)		1.911*** (0.316)
Free Liberal Deputy		-2.573*** (0.620)		-1.221*** (0.444)
Minority Deputy		-0.260 (0.308)		-0.001 (0.274)
ln(Population)	-0.054 (0.163)	-0.204 (0.167)	-0.304* (0.161)	-0.513*** (0.145)
Linguistic Fractionalization	-0.001 (0.005)	0.010 (0.007)	-0.015*** (0.004)	-0.004 (0.005)
Napoleon Treatment	0.118 (0.180)	-0.122 (0.197)	-0.146 (0.165)	-0.039 (0.191)
Observations	363	362	362	361
Pseudo-R2	0.0399	0.192	0.0495	0.407

<sup>†</sup>Landholding Inequality is rescaled from 0-1 to 0-100 to facilitate comparison with other continuous variables. Data for Napoleonic presence drawn from Acemoglu, Daron, Davide Cantoni, Simon Johnson and James A. Robinson. 2011. “The Consequences of Radical Reform: The French Revolution.” *American Economic Review* 101(7):3286-3307. Robust standard errors in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## H. Additional Tests of the Fiscal Gains Hypothesis

In columns 1 to 2 we test for the strong alignment between landed elite interest and conservative representation. In other words, we investigate whether conservative deputies in the 1889-1893 session truly advanced the interest of the landed elite. To test for this, we include a measure of conservative representation: specifically, a *Conservative District* is one in which more than half of its representatives are affiliated with either the Conservative or Free Conservative parties.<sup>20</sup> Results in column 1 speak for themselves: districts with conservative representatives in 1891 are those experiencing negative increases in tax burden following the tax reform. On average, a conservative district pays 37% less taxes in 1900 than in 1878. Results are equivalent when we use the 1893 vote (column 2) to identify *Conservative Districts*.<sup>21</sup> All in all, districts that elect conservative deputies experience a reduction of tax incidence over time. These are districts that have a strong landed interest, and thus elect Conservative deputies.<sup>22</sup>

In column 3 and 4, we investigate the relationship between the vote casted in the roll calls of 1891 and 1893, and the subsequent increase in the tax burden. We observe no relationship whatsoever. That is, districts whose deputies voted in favor of the income tax did not systematically benefit from lower taxes. This is perfectly consistent with the fiscal gains hypothesis. As it has been argued (and shown in Table 4), the income tax was not only favored by the Conservatives, but the National Liberals too, who represented big business. National Liberal's vote was only justified on electoral grounds, not fiscal. They would benefit from the participation barriers that the income tax imposed, as it will become clearer in the next section. But, given their weaker bargaining position relative to the Conservatives, the political gain did not come for free: in exchange for gaining political leverage, National Liberals had to assume higher tax burden on their (hitherto untapped) industrial income. All in all, since deputies representing both the landed and big industrialist interest voted in favor of the new tax, we should not find any effect of roll call votes on subsequent tax burdens.

To conclude, we corroborate what we just argued by showing in columns 5 and 6 that districts represented by Liberals (National or Free) deputies in 1891 and 1893 experience the highest increases in personal direct taxation over time. Altogether, we interpret results in Table A-15 as evidence in favor of the fiscal gain test, by which the incidence of taxation disproportionately fell into the industrial sector, which concentrated in urban areas represented

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<sup>20</sup>Districts vary in their magnitude: from 1 to 3.

<sup>21</sup>This is hardly surprising, as the pool of representatives in 1893 was virtually identical to that of 1891. The few by-elections between 1891 and 1893 marginally changed the composition of the Prussian lower chamber.

<sup>22</sup>Refer to Appendix Appendix Table A-9 for further evidence on this correspondence.

by Liberal deputies. Similarly, results illustrate the trade-off that National Liberals face in supporting income taxation: in order to advance their political influence, they have to pay a bigger (fairer?) share of the pie.

Table A-15: Additional Tests of Fiscal Outcomes of Income Tax Adoption. Dependent Variable: Percentage Growth of Per Capita Income Tax at the Electoral District Level

	(1)	(2)	(3)	(4)	(5)	(6)
Pre-reform Urbanization (1878)	3.963*** (0.966)	3.935*** (0.964)	3.936*** (0.979)	3.973*** (0.995)	3.890*** (0.927)	3.953*** (0.940)
Landholding Inequality	-1.662* (0.852)	-1.807*** (0.861)	-2.377*** (0.888)	-2.436** (0.945)	-1.913** (0.761)	-1.939** (0.766)
Urbanization Growth (1878-1900)	0.799 (0.618)	0.787 (0.623)	0.904 (0.616)	0.894 (0.611)	0.733 (0.585)	0.797 (0.587)
Pre-Reform Personal Taxation (1878)	-39.005*** (13.438)	-39.033*** (13.468)	-38.309*** (13.800)	-39.222*** (14.060)	-38.291*** (13.632)	-37.030*** (13.741)
Rural Productivity (1893-1897)	-0.009 (0.034)	-0.003 (0.035)	-0.012 (0.034)	-0.012 (0.037)	-0.023 (0.036)	-0.024 (0.037)
Pre-Reform Population Poor	7.506* (4.479)	7.901* (4.551)	10.637** (4.577)	11.250** (4.686)	8.596* (4.907)	8.366 (5.067)
Pre-Reform SPD Vote Share	0.916 (0.713)	0.919 (0.706)	1.074 (0.715)	1.047 (0.717)	0.652 (0.741)	0.730 (0.750)
Linguistic Fractionalization	-0.855*** (0.240)	-0.789*** (0.249)	-0.664*** (0.233)	-0.661*** (0.251)	-0.665*** (0.225)	-0.584** (0.230)
Conservative District in 1891	-37.230*** (9.417)					
Conservative District in 1893		-35.283*** (9.718)				
Yes Vote in 1891			-11.467 (12.810)			
Yes Vote in 1893				2.280 (13.870)		
Liberal District in 1891					51.697*** (17.728)	
Liberal District in 1891						46.770** (18.380)
Constant	184.065*** (64.449)	187.651*** (63.983)	216.928*** (64.832)	211.128*** (66.909)	187.739*** (61.410)	183.560*** (61.751)
Observations	214	214	214	214	214	214
R-squared	0.367	0.365	0.345	0.344	0.375	0.371

Robust standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1