Responding to the First Era of Globalization: Canadian Trade Policy, 1870-1913

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Online Appendix Material

Measuring Political Influence

The industry characteristics we incorporate into our political influence variable ($Influence$) reflect the notion that more concentrated, profitable, productive, technologically advanced, and larger industries in 1871, would have had the potential to exert greater political influence over Canada's tariff setting agenda in 1879. We also recognize that the size of downstream industries who use imported intermediate inputs that may be close substitutes for domestic production, may have had an offsetting effect on the influence exerted by upstream producers. Inspired by the historical literature on Canadian trade policy, and Trefler (1993: 140), we associate five industry characteristics with political influence in our primary specifications. To capture the effect of industry size, we include both the total number of establishments recorded in the manuscripts of the 1871 Canadian industrial census that were producing each HS4 import product listed in the 1871 trade tables, and the total value added generated by these establishments. To measure industry profitability, we calculate average accounting profit for these same establishments, defined as value added less wages and salaries paid, scaled by total gross output. Output concentration ratios are measured as the gross output of the largest 1% of import competing establishments recorded in the 1871 census manuscripts, divided by total gross output. And finally, to capture the offsetting influence exerted by downstream producers, we measure relative downstream employment as total employment in all domestic establishments producing import substitutes, divided by total employment in all establishments using each import product as an intermediate input. Other industry characteristics that we include in robustness checks (available from the authors) include: the share of establishments using steam power, total employment, labor productivity, output per establishment, and total employment in all downstream industries.

The location characteristics in our influence variable capture the political importance of industries located in districts that were more densely populated with potential voters in 1871, and industries that were locally important because their production was densely concentrated in particular districts (Beaulieu and Emery 2001: 1091). The manuscripts of the 1871 indus-

trial census allow us to identify the location (census district) of every domestic establishment that produced products recorded as imports in the 1871 trade tables. We identify the districts in which the domestic production of these products was concentrated enough to account for at least 20% of aggregate domestic production. To capture voter density, we include an urban dummy in our political influence measures that takes the value 1 for those products with domestic production concentrated in census districts with population densities exceeding 10 people per acre. This density threshold includes all districts in the cities of Toronto, Montreal, Hamilton, Ottawa, and Quebec City, and the urban core in some smaller cities. We also include the total population in the census districts with highly concentrated domestic production to capture the effect of the aggregate number of potential voters, and as a measure of local importance we add a concentration ratio that captures local production in the most concentrated districts as a share of aggregate domestic production. Other district-level location characteristics that we use in robustness checks include Conservative vote shares in the 1878 federal election, industrial employment shares, foreign born population shares, and local union activity.

Porritt (1908), Clark (1939), and McDiarmid (1946) attach particular importance to the political access enjoyed by the Canadian Manufacturers' Association (CMA) in the process of rewriting the Canadian tariff schedule in 1879. During the 1870s, the CMA was actually comprised of two local associations, the Ontario Manufacturers' Association (OMA) and the Manufacturers' Association of Montreal (MAM). In our measures of political influence we include an indicator of political representation based on our belief that products produced by manufacturing industries concentrated in Toronto or Montreal, that had a representative among the leadership of the Ontario or Montreal manufacturers' associations, had a greater opportunity to influence the tariff changes introduced under the National Policy in 1879. We capture political representation with a categorical variable that takes the value 1 for the products that were produced by establishments that had a representative on the executive committees of the Ontario Manufacturers' Association or the Manufacturers' Association of Montreal during the late 1870s, while also producing at least 20% of their gross output in establishments located in Toronto or Montreal in 1871. A wide range of Toronto-Montreal-CMA executive interaction terms have been used in robustness checks.

Because all of our indicators of political influence tend to be strongly collinear across products, use of a single, summary measure in our estimating equations results in very little information loss, while significantly increasing the degrees of freedom available for estimation. In Tables 4 and 5 our primary reduced form specifications use the simplest, most transparent aggregation approach in an effort to capture the intensity of products' potential influence without imposing any *ad hoc* assessment of the relative importance of the individual influ-

ence determinants. Specifically, for all of the 204 HS4 products identified in the 1871 trade tables, and for every industry, location, and representation indicator, we measure the value of each product-specific indicator relative to the maximum over all products. We then take an unweighted average across the nine ratios, thereby measuring the average intensity of each product's potential political influence relative to the 'most influential' characteristics. Our preferred measure of $Influence$, therefore, lies in the range $(0, 1)$, with 0 representing a product with no domestic production, and hence, no political influence, and 1 representing a product with the maximum value for all nine indicators. Across the 204 products imported in 1871, $Influence \in (0, 0.63)$.

In robustness checks (available from the authors) we have used three additional aggregation techniques to calculate summary measures of political influence. First, rather than taking an unweighted average across all indicator ratios, we have also calculated $Influence$ using principal components analysis to derive a weighted average over the nine determinants. The weights assigned to each indicator in principal components analysis are a function of the covariance among the indicators. Variables that provide more 'new' information in the aggregation (relatively low covariance with the other indicators), receive larger weights in this aggregation. Second, we measure each product's influence indicators relative to the median, rather than the maximum product, again aggregating across the indicators using both unweighted averages, and principal component weights. Our final aggregation technique follows the approach used by Goldberg and Maggi (1999), and Gawande and Bandyopadhyay (2000), by employing a simple categorical variable to identify politically influential products. Our theory consistent specifications use a dummy variable that takes the value 1 for those products with an average influence intensity, as measured by $Influence$, in the top quartile of all products, 0 otherwise. Although this blunt approach discards information about the intensity of political influence across products, it does allow for a clean categorization of influential and non-influential products, and it allows us to easily explore the sensitivity of our results to changes in the threshold for identifying influential producers. All aggregation techniques generate measures of political influence that are closely correlated at the product-level, with high rank correlations when averaged across products within each SIC2 manufacturing industry. The simple pair-wise correlations among the four summary measures of political influence range from 0.95 to 0.70.

Appendix Table A1: Intermediate Inputs Used in *ERP* Calculations

	Manufacturing Industries' Intermediate Inputs (1871)		
	HS4 Code	Description	Frequency
Food	1001	Wheat and Meslin	0.483
	1004	Oats	0.362
	1003	Barley	0.362
	1008	Buckwheat	0.327
	1005	Maize (Corn) Seed	0.318
	1002	Rye	0.305
	1101	Wheat or Meslin Flour	0.214
	1102	Cereal Flours	0.209
Tobacco	2401	Tobacco, Raw	1.000
Rubber	4001	Natural Rubber	1.000
Leather	4107	Leather (After Tanning)	0.717
	4103	Raw Hides and Skins	0.242
Textiles	5106	Yarn of Carded Wool	0.734
	5107	Yarn of Combed Wool	0.734
	5108	Yarn of Animal Hair	0.734
	5109	Yarn of Wool	0.734
	5110	Yarn of Coarse Animal Hair	0.728
	5205	Cotton Yarn (>85% Uncombed)	0.666
	5206	Cotton Yarn (<85% Uncombed)	0.666
	5207	Cotton Yarn	0.666
	5201	Raw Cotton	0.201
Clothing	5208	Woven Fabrics of Cotton (>85% <200g/m2)	0.867
	5209	Woven Fabrics of Cotton (>85% >200g/m2)	0.867
	5210	Woven Fabrics of Cotton (<85% <200g/m2)	0.867
	5211	Woven Fabrics of Cotton (<85% >200g/m2)	0.867
	5212	Other Woven Fabrics of Cotton	0.867
Wood	4403	Wood in the Rough	0.872
Paper	4801	Newsprint	0.513
	4802	Paper, Uncoated (Writing)	0.513
	4804	Paper, Uncoated (Kraft)	0.513
	1213	Cereal Straw, Husks, Fibers	0.385
Printing	4804	Paper, Uncoated (Kraft)	0.949
	4801	Newsprint	0.933
	4802	Paper, Uncoated (Writing)	0.929
	3215	Ink	0.577
Iron	7201	Pig Iron	0.728
	4403	Wood in the Rough	0.431
Transport	4403	Wood in the Rough	0.827
	7201	Pig Iron	0.432
Non-Ferrous	8004	Tin Plates, Sheets, Strips (>0.2 mm)	0.510
	8001	Unwrought Tin	0.402
	7409	Copper Plates, Sheets, Strips (>0.15 mm)	0.280
	7905	Zinc Plates, Sheets, Strips, Foil	0.201
Non-Metallic	2521	Limestone	0.518
	2508	Clays	0.273
Petroleum	2709	Petroleum Oils, Crude	0.833
	2710	Petroleum Oils, Refined	0.333
Chemical	2620	Slag, Ash, Residues	0.677
Miscellaneous	7106	Silver	0.298
	7108	Gold	0.287
	7107	Silver Clad Metals	0.279
	7109	Gold Clad Metals	0.279
	7111	Platinum Clad Metals	0.274

Notes: HS4 products reported as intermediate inputs by at least 20% of industrial establishments in each SIC2 industry are used in ERP calculations. Frequency = establishments reporting given intermediate input / total establishments in each industry.

Appendix Table A2: Protection for Sale Summary Statistics

	No. HS4	ΔAWT	ϵ	$\widetilde{m}$	$Influence$
All Products	204	0.050	-1.885	0.358	0.132
Unmanufactured	42	0.041	-2.346	0.396	0.077
Manufactured	162	0.052	-1.765	0.348	0.146
Food	28	0.011	-1.318	0.239	0.128
Tobacco	2	0.002	-1.166	0.000	0.256
Rubber	0	.	.	.	.
Leather	6	0.059	-1.620	0.335	0.187
Textile	12	0.058	-1.950	0.337	0.136
Clothing	6	0.069	-1.541	0.245	0.075
Wood	11	0.028	-1.136	0.455	0.164
Paper	3	0.079	-0.749	0.334	0.200
Printing	5	0.025	-3.084	0.600	0.042
Iron	21	0.072	-2.489	0.286	0.209
Transport	3	0.149	-2.817	0.000	0.237
Non-Ferrous	10	0.096	-1.092	0.500	0.148
Non-Metallic	9	0.062	-1.775	0.435	0.065
Petroleum	3	0.093	-1.002	0.333	0.104
Chemical	29	0.047	-2.154	0.416	0.141
Miscellaneous	14	0.058	-1.510	0.371	0.152

Notes: See notes from Tables (1)-(5), text, and appendix for definitions and sources. No. HS4 = number of import products listed in 1871 *Trade and Navigation Tables* (at the HS4 level of aggregation). $\Delta AWT = (\tau_{1880} - \tau_{1877})$, averaged over HS4 import products. ϵ = Kee, Nicita and Olarreaga (2008) modern, but disaggregate trade elasticities (aggregated up to HS4). $\widetilde{m}$ = average 1871 import penetration ratio. $Influence$ = 1871 political influence determinants measured relative to maximum over all products.

Appendix Table A3: Additional Political Influence Robustness Tests

	(Test 4) Alt. Protection		(Test 5) Gawande et al.	(Test 6) Extend Protection	(Test 7) Alt. Fixed Effects		(Test 8) Influence=0	
	ΔTRI_{NP}	ΔDWL_{NP}	AWT_{1880}	$\Delta AWT_{1890-1877}$	*Drop SIC FE*	*Prov. FE*	*Drop Q=0*	*Drop Exotic*
ϵ^{-1}	0.008*	0.002*		0.001	0.008**	0.008	0.009	0.007*
	(0.004)	(0.001)		(0.004)	(0.004)	(0.009)	(0.006)	(0.004)
$Influence \times \epsilon^{-1}$	-0.064***	-0.029***		-0.031	-0.068***	-0.056**	-0.061*	-0.054**
	(0.023)	(0.006)		(0.049)	(0.020)	(0.017)	(0.034)	(0.025)
$\widetilde{m}^{-1}$	-0.241***	-0.053***		-0.137***	-0.268***	-0.272***	-0.209***	-0.236***
	(0.052)	(0.010)		(0.039)	(0.049)	(0.023)	(0.047)	(0.047)
$Influence \times \widetilde{m}^{-1}$	0.938***	0.150***		0.598***	0.968***	1.066***	0.840***	0.931***
	(0.198)	(0.050)		(0.153)	(0.210)	(0.091)	(0.181)	(0.188)
$Influence$	0.183***	0.075***		0.239***	0.025**	0.178**	0.217***	0.176***
	(0.055)	(0.026)		(0.082)	(0.010)	(0.063)	(0.078)	(0.056)
$(\widetilde{m} \times \epsilon)^{-1}$			-0.004***					
			(0.0001)					
$Influ. \times (\widetilde{m} \times \epsilon)^{-1}$			0.151***					
			(0.054)					
$\widehat{\omega}$			0.152***					
			(0.054)					
SIC2 Industry FE	✓	✓	✓	✓	✓	✓	✓	✓
N	177	177	183	186	177	176	138	171
R^2	0.062	0.046	0.036	0.057	0.074	0.043	0.070	0.065

Notes: See notes from Tables 5 and 6, and text for definitions and specifications. Test (4): alternate measures of protection include changes in trade restrictiveness, and changes in deadweight loss (1877-1880). Test (5): Gawande and Bandyopadhyay (2000), with elasticity interacted with import penetration on RHS; $\widehat{\omega} \in (0, 1)$ = government's political influence relative to social welfare weight. Test (6): extends the protectionist period from 1880 to 1890. Test (7): explores the impact of fixed effects, dropping industry fixed effects, and adding province fixed effects (with two-way clustered standard errors). Test (8): restricts sample to products with (potential) Canadian production, dropping all products with no domestic production in 1871, and all products identified as 'exotic' due to their revenue generating capacity, low trade elasticities, and little, or no Canadian production (see Beaulieu and Cherniwchan 2014: 162).